

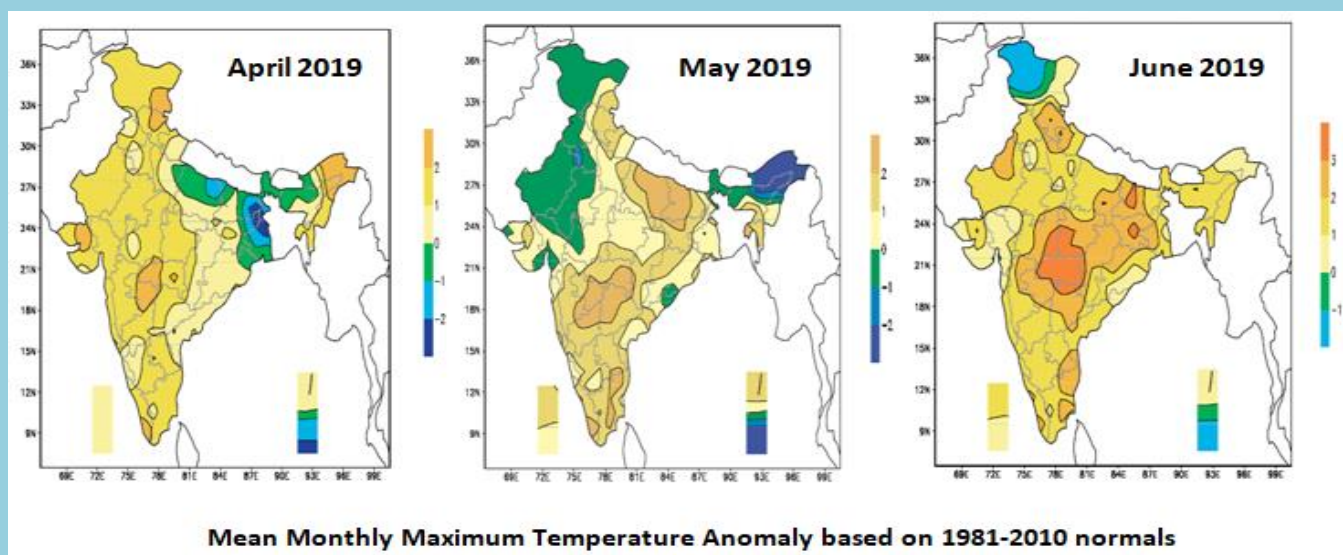


INDIA METEOROLOGICAL DEPARTMENT

Report No.: ESSO/IMD/FDP/Heat Wave Warning Implementation
Report-2019/02(2020)/10

Forecast Demonstration Project (FDP) for Improving Heat Wave Warning over India

Implementation Report, 2019



National Weather Forecasting Centre, New Delhi

February 2020

***Forecast Demonstration Project (FDP) for Improving
Heat Wave Warning in India***

Implementation Report, 2019

Contributors:

Shobhit Katiyar, Surendra Pratap Singh, Krishna Mishra, Naresh Kumar,
Sunitha Devi, D.R. Pattanaik, Sathi Devi, R.K Jenamani, S.C. Bhan

CONTENTS

CHAPTER NO	DESCRIPTION	PAGE NO
i	PREFACE	iii
ii	ABSTRACT	iv
I	INTRODUCTION	1-2
II	IMPLEMENTATION PLAN FOR FDP -2019	3-4
III	IMPLEMENTATION OF FDP-2019	5-9
IV	SALIENT FEATURES OF HEAT WAVES OVER INDIA IN 2019	10-39
V	FORECAST VERIFICATION OF HEAT WAVES	40-60
VI	HEAT ACTION PLAN	61
VII	LESSONS LEARNT AND CONCLUSIONS	62-63
VIII	REFERENCE	64
IX	ACKNOWLEDGEMENTS	65
X	ANNEXURE I – SEASONAL FORECAST	66-69
XI	ANNEXURE II – EXTENDED HEAT WAVE BULLETINS	70-78
XII	ANNEXURE III – DAILY HEAT WAVE BULLETINS	79-697
XIII	ANNEXURE IV – COLOR CODE FOR WARNING	698-699
XIV	ANNEXURE V – IMPACT AND ACTION SUGGESTED	700-701
XV	ANNEXURE VI – SKILL SCORES	702-704

PREFACE

Heat waves are emerging as a public health problem which is obvious from observational evidence of the huge number of deaths associated with the events. With Climate change scenarios predicting a rise in frequency and intensity of Heat wave events, Heat Warning Systems in the form of Heat Action Plans (HAP) are a necessary adaptation strategy to mitigate the effects of these events. India Meteorological Department (IMD) plays a vital role in expanding HAP and has been collaborating with other institutions under the Ministry of Earth Sciences (MOES) to develop new forecast systems. IMD has been issuing impact based heat wave warnings since 2017. The Forecast Demonstration Project (FDP) for improving Heat wave forecasting was taken up for the first time over India from April 2017 to June 2017. The program was aimed at addressing the heat wave issues cutting across various sectors and institutions and also to provide guidelines to the states in planning actions during the heat wave period. This report deals with the implementation of the program, salient features of Heat wave occurrences, forecast performance, weather summaries issued at different time scales and the lessons learnt.

The FDP helped in continuous monitoring of the environmental conditions for occurrence of Heat waves and provide early warning to various stakeholders. Along with causing harm to human life and livestock, heat wave also severely cripples telecommunication and power sectors. Heat waves can have dramatic consequences on the production means or the electrical grid of a country including physical damage to the infrastructure. This year in addition to regular stakeholders like various government agencies, academic institutions and other knowledge partners, Heat wave warning was also disseminated in real time to the Power and Health sectors to decide their load forecast and to be circulated to doctors for inventorization of reported cases of Heat stress/stroke at hospitals and awareness to prevent exposure to severe heat during the day. With the improvement in Observation Systems and Numerical Weather Models, IMD is now able to issue heat wave forecast at different time scales. From the summer of 2016 IMD is also generating seasonal outlook of temperatures and heat wave conditions over the country. A special press release on heat wave conditions in extended range (during next two weeks) is issued on weekly basis every Thursday. A special bulletin is also prepared daily indicating past heat wave conditions in the country and the forecast and warning on Heat waves over the entire country for the next five days in both text and graphics form. The press and electronic media are briefed twice a day daily. The timely warnings have resulted in significant reduction of loss of lives. A special web page has been created for the dissemination of heat wave information on IMD web site (www.imd.gov.in). It has helped in strengthening the multi institutional mechanism and will help in refining and improving the forecasting skills in future FDP campaigns. Various lessons were also learnt during this period.

I place on record my sincere appreciation for all the officers and staff in NWFC, New Delhi for their valuable contribution in services of monitoring, predicting and issuing warning of Heat waves during the period with improved forecast skills which enhanced the confidence of stakeholders and resulted in timely action leading to reduced loss of lives.

February 2020

Dr. M. Mohapatra

Director General of Meteorology

ABSTRACT

In recent decades a number of heat extremes resulting in devastating health outcomes around the globe have highlighted the need for a more effective early warning system. It is now widely recognized that heat related risks are manageable through timely warnings about an impending event and adopting a Heat Action Plan. IMD is the nodal agency for providing current and forecast temperature information including the heat wave and cold wave warnings for optimum operation of weather-sensitive activities. The chief objective of addressing heat wave issues cutting across various sectors and institutions and guiding the states in planning for actions during the heat wave period resulted in the planning of the FDP of Heat wave warning over India.

IMD has been providing 5 days forecast of maximum temperature and other meteorological parameters at district level since 2008. Forecasts for more than 300 cities are being provided by IMD to various users. In 2017 IMD also started providing heat wave guidance in extended range time scale (2 weeks). Since summer season of 2016 IMD has also started providing the seasonal outlook of temperature and heat wave conditions over the country at sub-divisional scale. Several institutions at the national level also participated in the joint observational, communicational and NWP activities during FDP 2019.

In the month of April heat wave to severe heat wave conditions were observed over some parts of Maharashtra, northwest and central India during the first week. In the second week some parts of Rajasthan, Madhya Pradesh and Vidarbha had heat waves on few days. Heat wave conditions were again observed in the last week of the month over some parts of Central India and Maharashtra.

In the month of May heat wave to severe heat wave conditions were observed throughout the month in some parts over Vidarbha. Heat wave conditions also prevailed on a few days at isolated places over Bihar, East Uttar Pradesh, East Madhya Pradesh, Madhya Maharashtra, Coastal Andhra Pradesh and Telangana and on one or two days over Odisha, West Rajasthan, Chhattisgarh, Marathwada, Rayalaseema, North interior Karnataka and Tamil Nadu during the month. The severity and spatial extent of heat wave increased over the last three days of the month as severe heat wave conditions persisted over West Rajasthan, East Uttar Pradesh and Madhya Maharashtra and heat wave conditions persisted over Haryana, Chandigarh & Delhi, Punjab, East Rajasthan and Jharkhand.

In the month of June heat wave to severe heat wave conditions were observed over some parts of North India, Central India, northwest India and peninsular India on various days during the second week of the month.

The FDP campaign resulted in lesser number of Heat wave related deaths as compared to the last few years. During the FDP campaign various lessons were also learnt, which will further help in better understanding of physical processes involved in Heat wave forecasting and also strengthen the multi institutional involvement.

Key words: Heat waves, Maximum Temperature, Forecast Demonstration Project, FAR, MR, POD, CSI, HSS.

CHAPTER I

INTRODUCTION

1.1 Background

Heat wave impacts rural and urban areas, natural habitats like forests, water resources, poultry and a range of sectors like agriculture, health, power etc, Though there is no universally acceptable or uniform definition for a heat wave, they are understood to be periods of abnormally high temperatures, more than the normal maximum temperature that occurs during the pre-monsoon (April to June) summer season. In India heat -waves typically occur between March to June, and in some rare cases even extend till July. Heat waves are more frequent over the Indo-Gangetic plains of India. The temperatures in excess of 46°C have been recorded in many parts of the country in the past, especially over north and central India. Fig.1 (a) and Fig. 1(b) illustrates the seasonal climatology of Heat waves and Severe Heat waves respectively over India (Pai et al 2013.)

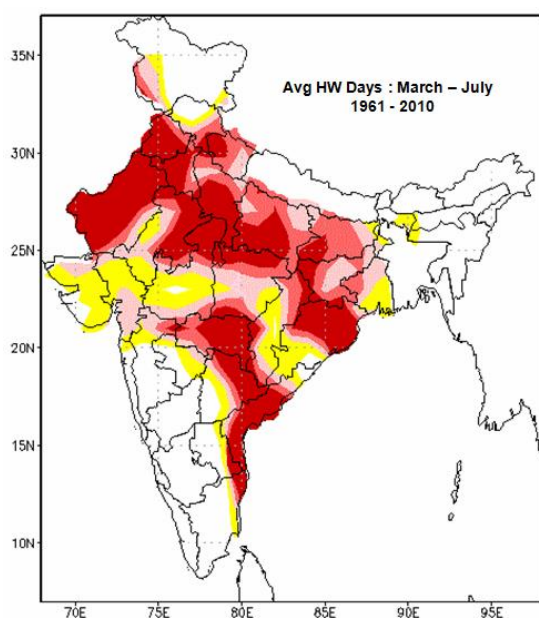


Fig. 1(a)

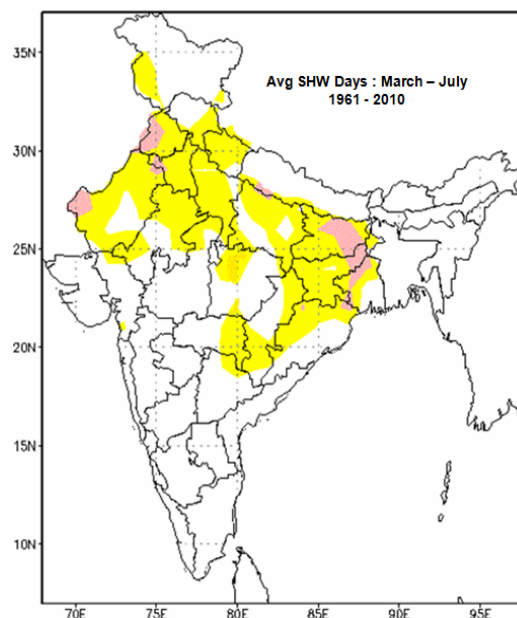


Fig. 1 (b)

Fig.1: Seasonal climatology map of number of HW days and SHW days over India during the hot weather season (March - July). The climatology was computed by averaging the number of HW days for the period 1961-2010

It is seen from the above figures that except over northeast India and large parts of Peninsula (South of $\sim 21^\circ$ N & west of 80° E), most areas of the country have experienced on an average ≥ 2 HW days. Many areas of West Rajasthan, Punjab, Haryana, northern parts of East Rajasthan, Madhya Pradesh, Chhattisgarh, Vidarbha, western Uttaranchal, East Uttar Pradesh, western parts of Jharkhand & Bihar, Gangetic West Bengal, northern parts of Orissa, Telangana, Coastal Andhra Pradesh, eastern parts of Rayalaseema and north Tamil Nadu on an average have experienced ≥ 8 HW Days. It is seen that average SHW days of 1-3 days were mainly experienced over northwest, north and eastern parts of the country.

In the recent years the heat wave casualties have increased over India, 1995, 2005, 2015 and 2016 to cite a few years when the casualties have crossed 1000. The worst was in 2015 when 2300 deaths were reported, making it the fifth highest in world history in terms of number of deaths. Most of the deaths were concentrated in Andhra Pradesh, Telangana, Punjab, Odisha and Bihar. Many states have now adopted a Heat Wave Action Plan (HAP) to counter the negative impacts of extreme heat.

The India Meteorological Department (IMD) is mandated to provide current and forecast meteorological information for optimum operation of weather-sensitive activities. It also provides real time data and weather prediction of maximum temperature, heat-wave warning, extreme temperatures, and heat-alert at district level through its National Weather Forecasting Centre (NWFC) at New Delhi and through the Regional Meteorological Centers (RMC) and Meteorological Centers (MC). With an array of models ranging in resolution from Global to Regional, IMD has the capability to issue forecasts ranging from nowcast to short & medium to extended range and seasonal scales. So IMD's improved observational systems and enhanced numerical capabilities led to the planning of the first Forecast Demonstration Project (FDP) for Heat waves over India in 2017.

1.2 Key Scientific Objectives and goals for FDP:

- To prepare Heat Action Plan for 2019
- To upscale the operationalisation of heat wave management plan at city, state and national levels.
- To demonstrate the ability of Numerical models to predict heat wave conditions on daily to seasonal time scales.

1.3 Program :

Some states like Gujarat worked with IMD and its state level offices to provide early warning on extreme heat at city level (Ahmedabad) for the first time in 2016. The FDP on heat wave warnings was taken up by IMD to improve the skill of heat wave warnings over India. During the FDP campaign from 1st April 2019 to 30th June 2019 several national institutions coordinated for joint observational, communicational and Numerical Weather Prediction (NWP) activities. During the FDP phase using IMD's improved observational and computational capabilities heat wave guidance was provided in various time scales, thereby supporting state and local governments in being prepared for extreme heat.

The detailed implementation plan is presented in Chapter-II. The detailed implementation program is presented in Chapter-III. The salient features of heat waves over India are presented and discussed in Chapter-IV. Forecast performance during the season is presented in Chapter-V. The summary and conclusions as well as lessons learnt are presented in Chapter-VI. Seasonal forecasts issued during FDP-2019 are presented in Annexure-I. Extended Heat wave bulletins issued are appended in Annexure II. Daily weather summary and warnings issued are presented in Annexure III. Annexure IV gives the color code used for indicating the severity of warnings and Annexure V gives impact of heat wave and action suggested and Annexure VI gives the various heat wave skill scores for the year 2019 for all 5 days.

CHAPTER II

PROGRAMME IMPLEMENTATION PLAN FOR FDP-2019

2.1 Background

Global warming is leading to an increase in mean temperatures. Under these circumstances increase in number of Heat Wave events can be expected. It is observed that India too is experiencing increased intensity and incidence of Heat Waves. North West and Central India are most likely to be affected. An appropriate coordinated strategy is to be implemented to address the issue in its totality from information generation, weather forecasts at different scales and adaptation & mitigation measures. With IMD's available technology, local and state governments can be ably guided to be better prepared for extreme heat.

2.2 Key scientific objectives and goals

- To prepare Heat Action Plan for 2019
- To upscale the operationalisation of heat wave management plan at city, state and national levels.
- To demonstrate the ability of Numerical models to predict heat wave conditions on daily to seasonal time scales.

2.3 Initiatives in FDP Planning

India Meteorological Department (IMD) is the nodal agency mandated for issuing all current weather information and forecast weather information. It is also mandated to issue warnings for all weather related hazards. For proper strategization of the FDP program an internal meeting was held under the chairmanship of the Director General of Meteorology (DGM), IMD. It was decided to hold a workshop to take the requirement of the various stakeholders into consideration.

2.4 Implementation Plan

- For FDP 2018 period, it was decided upon to create a special web page on IMD's website for heat wave related information and warning and it was continuing in 2019 also.
- From 2016 IMD is issuing a seasonal outlook for the hot weather season (March to June). The seasonal outlook for 2019 was released on 28th February 2019 with an update of the seasonal forecast released on 1st April 2019.
- From 2017 it was planned to issue exclusively heat related warnings twice a day for the FDP period. These bulletins were issued at 0800 hours IST with warnings valid for the next 24 hours and at 1600 hrs IST with warnings valid for the next 5 days on daily basis. These heat wave warning bulletins were continued in 2018 & 2019 also.
- Bulletins in extended range with outlook for next two weeks were planned to be issued on every Thursday

- Climate Forecast System based forecasts maps of daily maximum temperatures and their departures from normal for next 4 weeks were also planned to be generated and updated on IMD website.
- A color code system of four colors was to be followed to alert the public of the predicted severity of the hazard.
- From 2019 IMD started giving action suggested corresponds to different color coded warning for heat waves.
- Timely dissemination of heat wave advisories to state and central government authorities and various sectors like health, power etc likely to have impact by heat waves.
- NWP Division, IMD New Delhi will provide analyzed and forecasted fields from global and regional models in short, medium and extended range.
- Expansion of heat wave action plan to various important cities.
- Verification of forecast

2.5 National Operational Centre

It was decided upon that the FDP campaign would be monitored and guided by the National Weather Forecasting Centre (NWFC), New Delhi. Communication conferencing and data exchange would be facilitated by NWFC. All Regional Meteorological Centers (RMC) and Meteorological Centre (MC) were to coordinate with NWFC.

2.6 Multi institutional initiative

The institutions involved in the campaign are as follows:

- India Meteorological Department
- National Centre for Medium Range Forecasting
- Indian National Centre for Ocean Information Services
- Climate and Development Knowledge Network
- Public Health Foundation of India
- Indian Institute of Public health, Ahmadabad
- Indian Red Cross Society

CHAPTER III

IMPLEMENTATION OF FDP - 2019

3.1 Introduction

World Meteorological Organization defines a heat wave as five or more consecutive days during which the daily maximum temperature exceeds the average maximum temperature by five degrees Celsius. Different countries define heat wave differently in context of their local conditions. In recent years due to the improved skills of NWP models and access to Doppler Radar Products, satellite and other non-conventional data, a revision of terms and terminologies used by IMD was enforced from 1st January 2016.

While declaring a heat wave the following are to be noted:

- Since the heat wave, hot day, warm night, cold wave, cold day etc are distinct phenomena, these may co-exist in the 'weather warnings'
- To declare heat waves, the heat wave criteria (discussed in the next paragraph) should be met with at least in 2 stations in a Met. Sub-division for at least two consecutive days and the heat wave is to be declared on the second day.
- Forecasts of heat waves over a sub-division will be issued only if at least two stations in the sub-division are expected to experience such conditions.

3.2 Heat wave Criteria:

In India, Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains and at least 30°C or more for Hilly regions.

a) Based on Departure from Normal

Heat Wave: Departure from normal is 4.5°C to 6.4°C
Severe Heat Wave: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature

Heat Wave: When actual maximum temperature $\geq 45^{\circ}\text{C}$
Severe Heat Wave: When actual maximum temperature $\geq 47^{\circ}\text{C}$

c) Warm Night

It should be considered only when maximum temperature remains 40°C or more. It may be defined based on departures or actual minimum temperatures as follows:

Warm night: minimum temperature departure is 4.5°C to 6.4°C
Very warm night: minimum temperature departure is >6.4°C

d) Criteria for describing Heat Wave for coastal stations

When maximum temperature departure is 4.5°C or more from normal, Heat Wave may be declared provided actual maximum temperature is 37°C or more.

3.3 Operation Management

The operational program of the FDP campaign was implemented as per the Implementation Plan during the FDP period 1st April 2019 to 30th June 2019. The operational management was monitored and guided by NWFC, New Delhi. Detailed daily discussions held over video conferencing by NWFC, New Delhi with RMC's and MC's formed the decision support system. Synoptic guidance of prevailing meteorological parameters like temperature, humidity and wind, NWP guidance giving analysis and forecast fields of these parameters, characteristic features from satellite and radar observations enabled decisions on the warnings issued.

3.4 Numerical Weather Models

The following is a brief description of the models used for obtaining NWP guidance on real time basis. The operational suite is ported in ADITYA HPCS at IITM Pune for day-to-day operational run.

- **Global Forecast System (GFS)**

The Global Forecast System (GFS), adopted from National Centre for Environmental Prediction (NCEP), at T1534 (~ 12 km in horizontal) resolution (incorporating Grid point Statistical Interpolation (GSI) scheme as the global data assimilation for the forecast up to 10days) is implemented operationally at IMD, New Delhi. The model is run twice in a day (00 UTC and 12 UTC).

- **Non-hydrostatic mesoscale modeling system WRFDA-WRF-ARW**

The mesoscale forecast system Weather Research and Forecast WRFDA (version 3.2) with 3DVAR data assimilation is being operated daily twice to generate mesoscale analysis at 9km and 3 km horizontal resolutions using IMD GFS-T1534 analysis/forecast as first guess. Using initial and boundary conditions from the WRFDA, the WRF (ARW) is run for the forecast up to 3 days with double nested configuration and horizontal resolution of 9 km and 3 km and 38 Eta levels in the vertical. The model mother domain covers the area between lat. 25° S to 45° N and long 40° E to 120° E and child domain covers whole of India.

- **Global Ensemble Forecast System (GEFS –T574)**

To address the uncertainty in weather observations which are used to initialize weather forecast models, ensemble forecasts are generated with slightly different initial conditions. Ensemble forecast produces a set or ensemble of forecasts to give a range of possible future states of atmosphere, each minutely different from the original observations. It is a single model system with 20 ensemble members. The Global Ensemble Forecast System (GEFS) of NCEP is used for operational forecasting. It is run for a forecast length of 192 hours (8 days) based on 00Z initial conditions.

- **Extended Range Forecast System**

Recently, with the efforts from the Ministry of Earth Sciences (MoES), operational implementation of coupled model with a suite of models from CFSv2 coupled model has been implemented in IMD from July 2016. This dynamical prediction system developed at IITM has been transferred to IMD and the same has been implemented by IMD for generating operational Extended Range Forecast products to different users. This suite of models at different resolutions with atmospheric and oceanic Initial conditions obtained from NCMRWF and INCOIS assimilation system respectively are (i) CFSv2 at T382 (≈ 38 km) (ii) CFSv2 at T126 (≈ 100 km) (iii) GFSbc (bias corrected SST from CFSv2) at T382 and (iv) GFSbc at T126. The Multi-model ensemble (MME) out of the above 4 suite of models are run operationally for 32 days based on every Wednesday initial condition with 4 ensemble members (one control and 3 perturbed) each for CFSv2T382, CFSv2T126, GFSbcT382 and GFSbcT126. The same suites of model are also run on hindcast mode for 13 years (2003-2015). The average ensemble forecast anomaly of all the 4 set of model runs of 4 members each is calculated by subtracting corresponding 13-years model hindcast climatology. For the preparation of mean and anomaly forecast on every Thursday, which is valid for 4 weeks for days 3-9 (week 1; Friday to Thursday), days 10-16 (week 2; Friday to Thursday), days 17-23 (week 3; Friday to Thursday) and days 24-30 (week 4; Friday to Thursday).

3.5 Heat Wave Bulletins / Warning

The knowledge of conditions favorable for the hazardous event to occur, the anticipation of how events are likely to develop guided by radar, satellite pictures and output of NWP models are some elements of successful warning decision. The lead time of warnings, the frequency of warnings and mode of communication are also important. Discussed below are the forecasts and bulletins issued by IMD in various time scales as per the implementation plan, the frequency and mode of communication is also discussed.

- Seasonal outlook for the hot weather season (March to May) was issued on 28th February 2019 by IMD based on predictions using an ocean-atmosphere coupled climate model. (It was issued for the first time in 2016). An update to seasonal outlook for temperatures valid for April to June was issued on 1st April 2019. These seasonal outlooks are issued in the form of a press release on the IMD website, and through electronic and print media. These are also provided to all concerned Chief Secretaries, Disaster Managers and to the health sector through the India Medical Association (IMA). (Annexure I)
- Heat Wave Bulletins in extended range with outlook for the next two weeks were issued every Thursday. This bulletin contains highlights of the past week, sub-division wise distribution of realized maximum temperature and occurrence of HW/SHW in the past week, chief synoptic conditions and large scale features on the day of issuance. The bulletin also contains forecasts of heat wave and maximum temperatures for the forthcoming two weeks along with spatial maps of Multimodel Ensemble Bias corrected maximum temperature and maximum temperature anomaly for ensuing two weeks. (Annexure II)

- Heat wave Bulletins were issued daily during the FDP period (April to June 2019) which provides spatial information on the previous day's maximum temperature, the departure from normal, the sub-division wise occurrence of HW/SHW, the forecast generated for the subsequent 5 days with spatial maps depicting watch /warning if any. These were effective from April 2019 to June 2019 and were issued at 1600 hrs IST daily. These are provided to all concerned authorities (Departments of health, disaster management, Indian Red Cross and Indian Medical Association, NDMA etc.) for taking suitable action at their end. (Daily Heat wave Bulletins at Annexure III)
- Color signals for heat alert. IMD currently follows a single system of issuing warnings for the entire country through a color code system of four colors. (Annexure IV).
- IMD started impact based forecast and action suggested corresponds to different color coded warning for heat waves from 2019 (Annexure V).
- GFS (T1534) Heat wave products were generated daily based on 00 UTC run of global model. The forecast is generated for 240 hours (10 days). The products generated are the forecasted Maximum temperatures, Maximum Temperature anomaly, Maximum Heat Index, Minimum temperatures, Minimum Temperature anomaly and Minimum Heat Index. The forecasts were direct model outputs as well as bias corrected. Spatial plots of observed T_{MAX} at 12 UTC and observed T_{MIN} at 03 UTC along with their anomalies were also generated. These GFS heat wave products are available on IMD website.

(http://nwp.imd.gov.in/heatwave_fc.php, http://nwp.imd.gov.in/heatwave_ob.php)

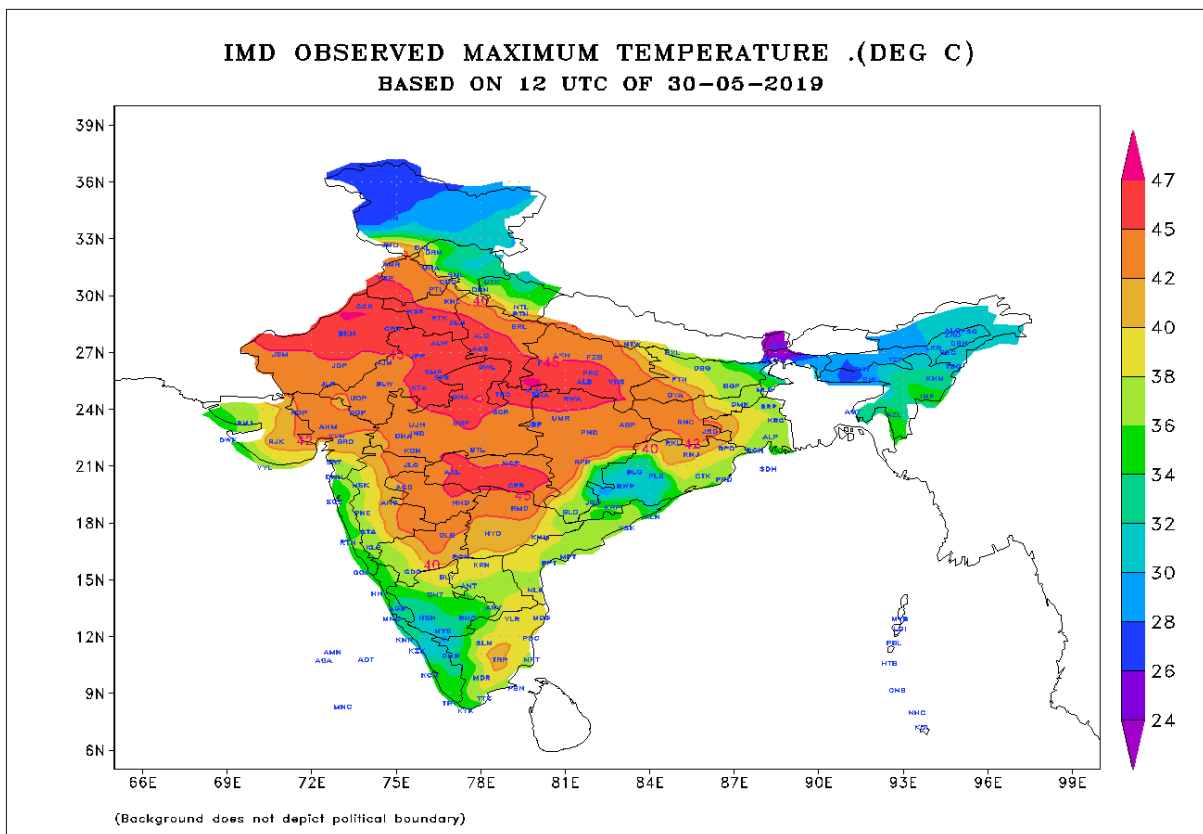


Fig.1: Spatial Distribution of GFS Maximum Temperature

- Maximum Temperature and Minimum Temperature ensemble forecasts for 8 days were also generated from the GEFS T574 run of 00 UTC every day. This ensemble forecast is the mean of 20 ensembles and is available at <http://nwp.imd.gov.in/gefspro.php> on IMD website.
- Forecasts of daily Maximum Temperature, Maximum Temperature anomaly, Minimum temperature, Minimum Temperature anomaly were generated in the extended range (21 days). These forecasts are generated by the 00 UTC run of coupled ocean –atmosphere model Climate Forecast System (CFS) and are available at <http://nwp.imd.gov.in/cfs.php?param=tmax>, <http://nwp.imd.gov.in/cfs.php?param=tmin> respectively.

CHAPTER IV

SALIENT FEATURES OF HEATWAVES OVER INDIA IN 2019

4.1 Introduction

The salient features observed during the FDP period (1st April 2019 to 30th June 2019) are presented for the season as a whole and month wise. The following features are presented in Text and Graphical form.

- Frequency of occurrence of HW /SHW events for the entire season
- Distribution in space and time of the events for the entire season
- Subdivision wise persistence of Heat waves month wise
- Spatial distribution of monthly mean of Maximum and Minimum Temperature anomalies
- Spatial distribution month wise of percentage of warm days.
- Time Series depicting the inter annual variability of mean temperature averaged over India along with 5-year running mean (month wise).
- Daily Maximum Temperature for some selected stations representative of each homogeneous zone.
- Mean flow pattern and anomalous flow pattern month wise at lower level (850 hpa), middle level (500hpa) and upper level (250 hpa).

4.2 Frequency of occurrence of HW /SHW events

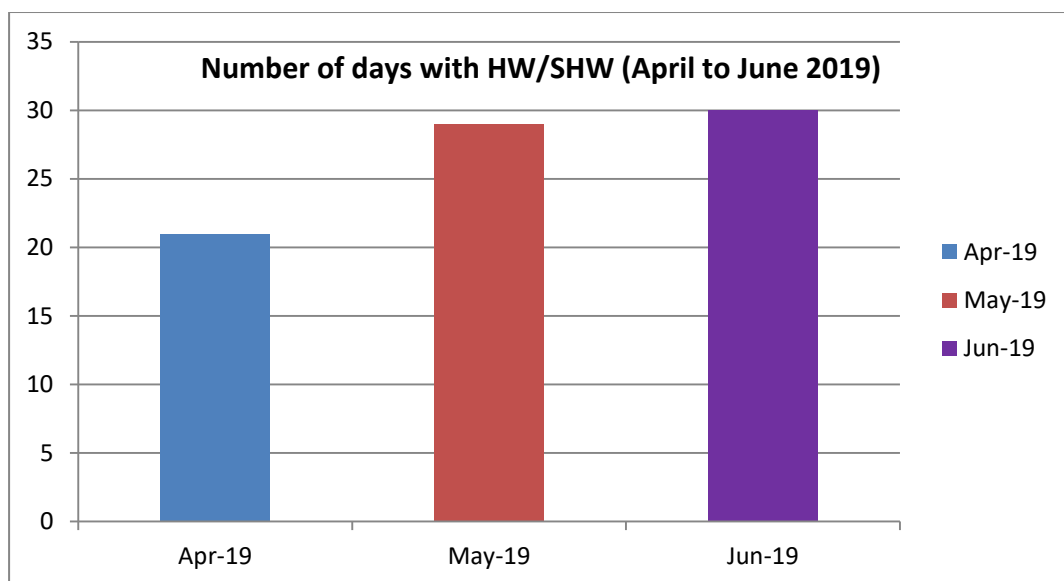


Fig 1: Monthly frequency of HW/SHW days in 2019

Figure 1 shows the monthly occurrence of HW/SHW for the period April to June 2019. For arriving at the number of counts of HW/SHW days, on any given day if at least one subdivision reports HW/SHW then it is considered as a HW/SHW day. Using this criterion on examining the records the monthly occurrence is calculated. The graph depicts that the frequency of occurrence is the most in June, reported 30 HW/SHW days. But May reported 29 HW/SHW days. However, April when not many occurrences are expected reported 21 days of HW/SHW. It is also interesting to note that out of 21 days of HW/SHW events reported in April, 05 days there was at least one subdivision reporting SHW. However in May though the number of HW/SHW days are more (29), only 06 days reported SHW in at least one sub-division. In the month of June 19 days reported HW/SHW in at least one sub-division out of total 30 HW/SHW days in the month.

4.3 Distribution in space and time of the events

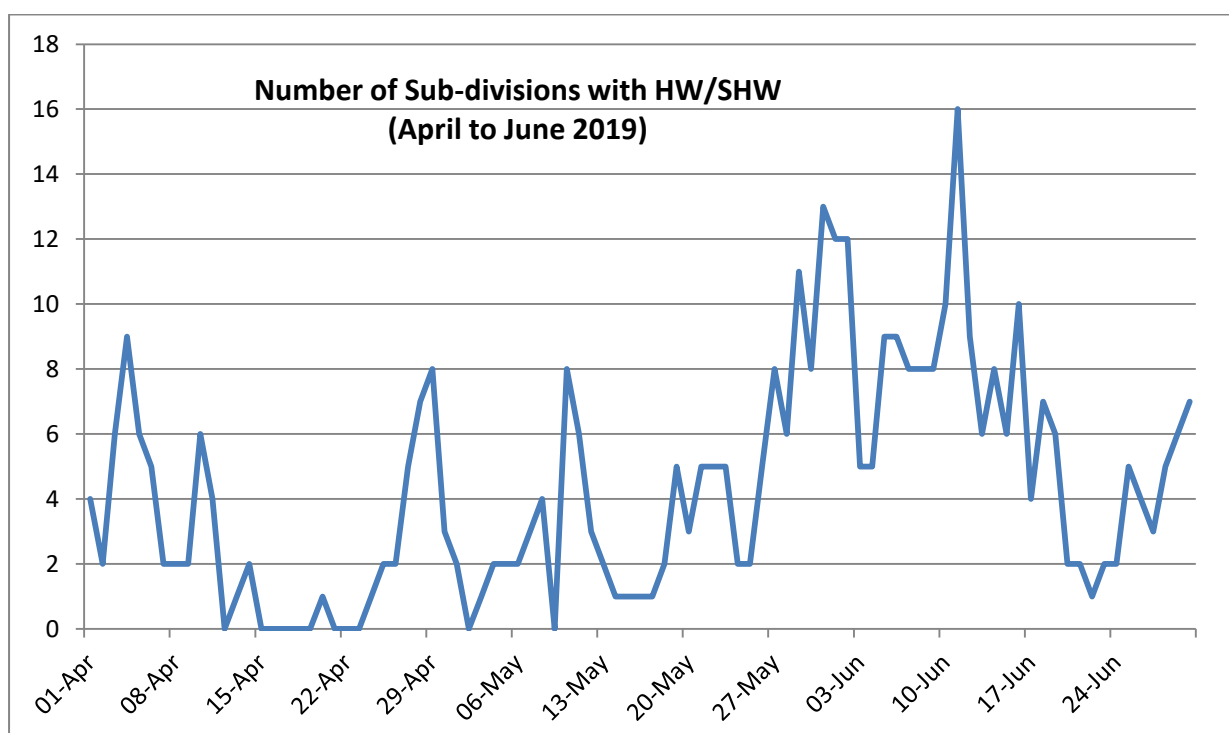


Fig 2: Distribution of HW/SHW days in space and time

Figure 2 illustrates the spread of the HW/SHW events across the season. According to IMD the core HW zone covers states of Punjab, Himachal Pradesh, Uttarakhand, Delhi, Haryana, Rajasthan, Uttar Pradesh, Gujarat, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, West Bengal, Orissa and Telangana and met subdivisions of Marathwada, Vidharbha, Madhya Maharashtra and coastal Andhra Pradesh. From investigating the heat wave occurrences it was found that out of the 36 meteorological subdivisions, 27 sub-divisions had at least one HW/SHW day in the current season (April- June 2019).

In the month of April out of 21 HW/SHW days, 18 days reported HW/SHW in at least 2 sub-divisions and 3 days reported HW/SHW in only 1 sub-division. In the month of May out of 29 HW/SHW days, 24 days reported HW/SHW in at least 2 sub-divisions and 05 days reported HW/SHW in only 1 sub-division. In the month of June out of 30 HW/SHW days, 29 days reported HW/SHW in at least 2 sub-divisions and 1 day reported HW/SHW in only 1 sub-division.

4.4 Subdivision wise no. of heat wave to severe heat wave days during the season.

	Heat wave to severe heat wave days			
Sub-division	April 2019	May 2019	June 2019	Total 2019
Andaman & Nicobar Islands				
Arunachal Pradesh				
Assam & Meghalaya				
Nagaland, Manipur, Mizoram & Tripura				
Sub-Himalayan West Bengal & Sikkim				
Gangetic West Bengal		3	5	8
Odisha		2	1	3
Jharkhand		1	5	6
Bihar		4	8	12
East Uttar Pradesh	2	11	9	22
West Uttar Pradesh	1	2	5	8
Uttarakhand				
Haryana, Chandigarh & Delhi	2	3	8	13
Punjab		1	3	4
Himachal Pradesh	1		1	2
Jammu & Kashmir			2	2
West Rajasthan	9	4	14	27
East Rajasthan	9	3	12	24
West Madhya Pradesh	13	4	15	32
East Madhya Pradesh	9	6	12	27
Gujarat region	3		2	5
Saurashtra & Kutch	8		5	13
Konkan & Goa				
Madhya Maharashtra	4	11	2	17
Marathwada	4	5	7	16
Vidarbha	8	27	22	57
Chhattisgarh		3	6	9
Coastal Andhra Pradesh		6	7	13
Telangana		9	10	19
Rayalaseema		3		3
Tamilnadu & Puducherry		4	3	7
Coastal Karnataka				
North Interior Karnataka		3	0	3
South Interior Karnataka				
Kerala				
Lakshadweep				
No. of sub-divisions	13	21	23	25
No. of Days	21	29	30	80

Season as a whole maximum no of HW/SHW days reported in Vidarbha (57) and minimum no. of HW/SHW days reported in Jammu & Kashmir and Himachal Pradesh (2). In the month of April, maximum no. of HW/SHW days reported in West Madhya Pradesh (13) and minimum no. of HW/SHW days reported in Himachal Pradesh and West Uttar Pradesh (1). In the month of May, maximum no of HW/SHW days reported in Vidarbha (27) and minimum no. of HW/SHW days reported in Punjab & Jharkhand (1) and in the month of June, maximum no of HW/SHW days reported in Vidarbha (22) and minimum no. of HW/SHW days reported in Odisha and Himachal Pradesh (1).

4.5 Frequency of occurrence of SHW events

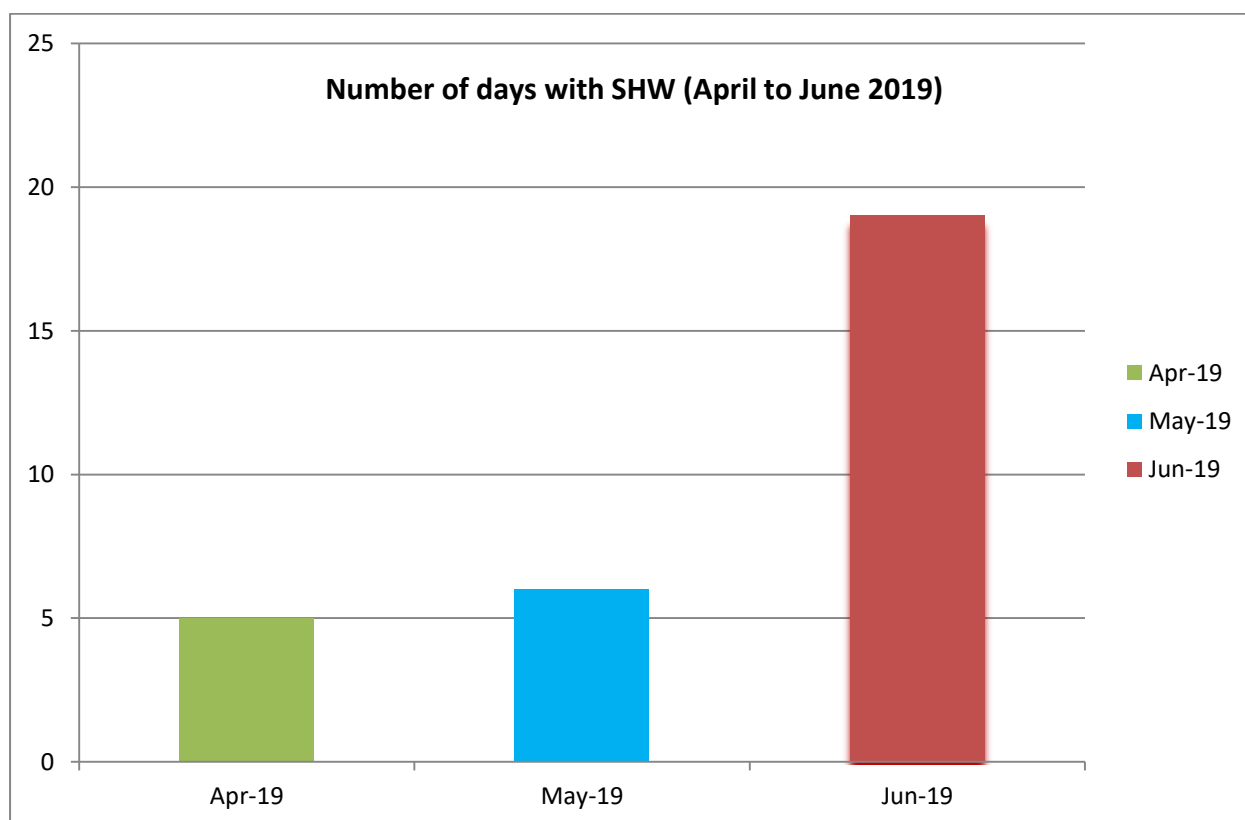


Fig 3: Monthly frequency of HW/SHW days in 2019

Figure 3 shows the monthly occurrence of SHW for the period April to June 2019. For arriving at the number of counts of SHW days, on any given day if at least one subdivision reports SHW then it is considered as a SHW day. Using this criterion on examining the records the monthly occurrence is calculated. The graph depicts that the frequency of occurrence is the most in June, reported 19 SHW days. But May reported 06 SHW days. However, April when not many occurrences are expected reported 05 days of SHW and seasonal as whole total 30 days reported SHW in one or more sub-divisions.

4.6 Distribution in space and time of the events

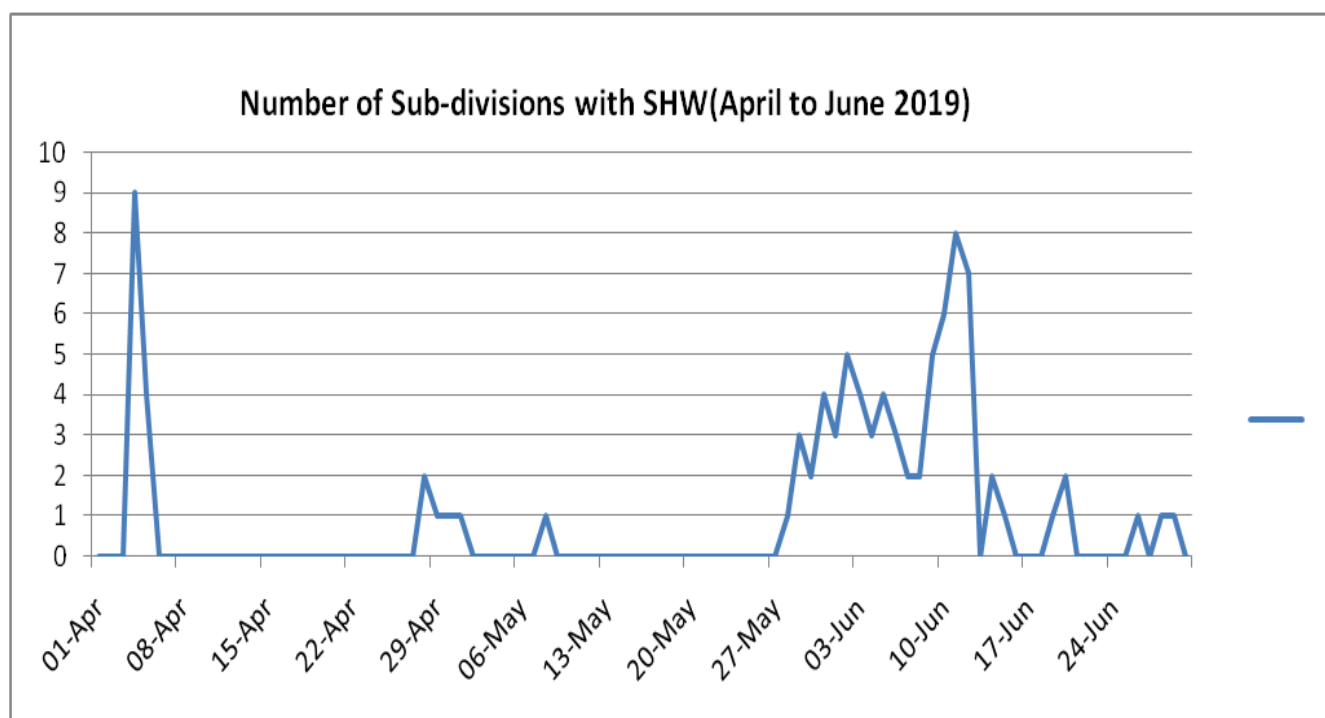


Fig 4: Distribution of HW/SHW days in space and time

Figure 4 illustrates the spread of the SHW events across the season. According to IMD the core HW zone covers states of Punjab, Himachal Pradesh, Uttarakhand, Delhi, Haryana, Rajasthan, Uttar Pradesh, Gujarat, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, West Bengal, Orissa and Telangana and met subdivisions of Marathwada, Vidharbha, Madhya Maharashtra and coastal Andhra Pradesh. From investigating the severe heat wave occurrences it was found that out of the 36 meteorological subdivisions, 16 sub-divisions had at least one SHW day in the current season (April- June 2019). Maximum frequency of SHW was in the month of June and minimum was in April as expected.

4.7 Subdivision wise no. of severe heat wave days during the season.

	Severe heat wave days			
Sub-division	April 2019	May 2019	June 2019	Total 2019
Andaman & Nicobar Islands				
Arunachal Pradesh				
Assam & Meghalaya				
Nagaland, Manipur, Mizoram & Tripura				
Sub-Himalayan West Bengal & Sikkim				
Gangetic West Bengal				
Odisha			1	1
Jharkhand			2	2
Bihar			2	2
East Uttar Pradesh	1	3	7	11
West Uttar Pradesh	1	1	2	4
Uttarakhand				
Haryana, Chandigarh & Delhi			1	1
Punjab				
Himachal Pradesh				
Jammu & Kashmir				
West Rajasthan	2	3	11	16
East Rajasthan	2		6	8
West Madhya Pradesh	3		10	13
East Madhya Pradesh	2		9	11
Gujarat region	1			1
Saurashtra & Kutch	2			2
Konkan & Goa				
Madhya Maharashtra		1		1
Marathwada				
Vidarbha	2	3	8	13
Chhattisgarh			1	1
Coastal Andhra Pradesh		1	1	2
Telangana				
Rayalaseema				
Tamilnadu & Puducherry				
Coastal Karnataka				
North Interior Karnataka				
South Interior Karnataka				
Kerala				
Lakshadweep				
No. of sub-divisions	09	06	13	16
No. of Days	05	06	19	30

Season as a whole maximum no of SHW days reported in West Rajasthan (16) and minimum no. of SHW days reported in Odisha, Haryana, Chandigarh & Delhi, Gujarat region, Chhattisgarh and Madhya Maharashtra (1 each). In the month of April, total 09 sub-divisions reported SHW at least 1 day and maximum no. of SHW days reported in West Madhya Pradesh (3) and minimum no. of SHW days reported in Uttar Pradesh, and Gujarat region (1). In the month of May, total 06 sub-divisions reported SHW at least one day and maximum no of SHW days reported in East Uttar Pradesh, West Rajasthan & Vidarbha (3) and minimum no. of SHW days reported in West Uttar Pradesh, Madhya Maharashtra & Coastal Andhra Pradesh (1) and in the month of June total 13 sub-divisions reported SHW and maximum no of HW/SHW days reported in West Rajasthan (11) and minimum no. of SHW days reported in Odisha, Haryana, Chhattisgarh and Coastal Andhra Pradesh (1).

4.8 Spatial distribution of monthly mean of Maximum and Minimum Temperature anomalies

Heat waves are declared when maximum temperatures exceed a certain threshold value along with fulfilling other criteria (as mentioned in section 3.2). Minimum temperatures are also found to be rising. In this context the spatial distribution of Maximum and Minimum temperature anomalies are discussed in this section. The spatial distribution of the mean monthly anomalies for each month is depicted. The anomaly is based on the 1981-2010 normals.

4.8.1 April 2019

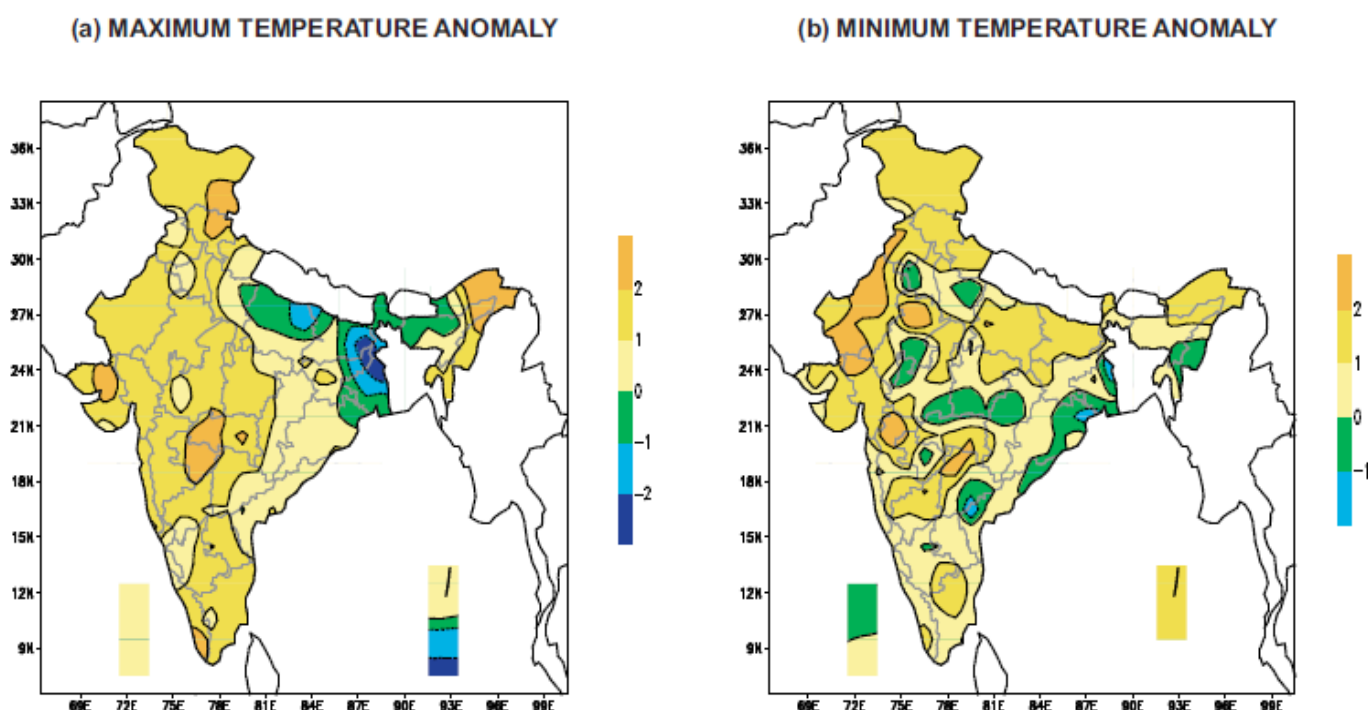


Fig.5: Spatial Distribution of Maximum and Minimum Temperature Anomaly for the month of April 2019

Mean temperature for the month of April over the country as a whole this year (28.81°C) was above normal by about 0.77°C and is 7th highest since 1901. **Figure 5** shows the Mean monthly maximum and minimum temperature anomalies. In the month of April Maximum temperature was above normal over most parts of the country except for parts of east and northeast parts of India and Andaman & Nicobar Islands. Maximum temperature anomaly was more than 2°C over parts of Arunachal Pradesh, Assam & Meghalaya, Jammu & Kashmir, Himachal Pradesh, Marathawada, Vidarbha and Saurashtra & Kutch. Maximum temperature anomaly was less than -2°C over parts of Gangetic West Bengal, Jharkhand, Bihar and Andaman & Nicobar Islands. Similarly, minimum temperature was also above normal over most parts of the country. It was above normal by more than 2°C over Rajasthan, Punjab, Madhya Maharashtra and Telangana.

4.8.2 May 2019

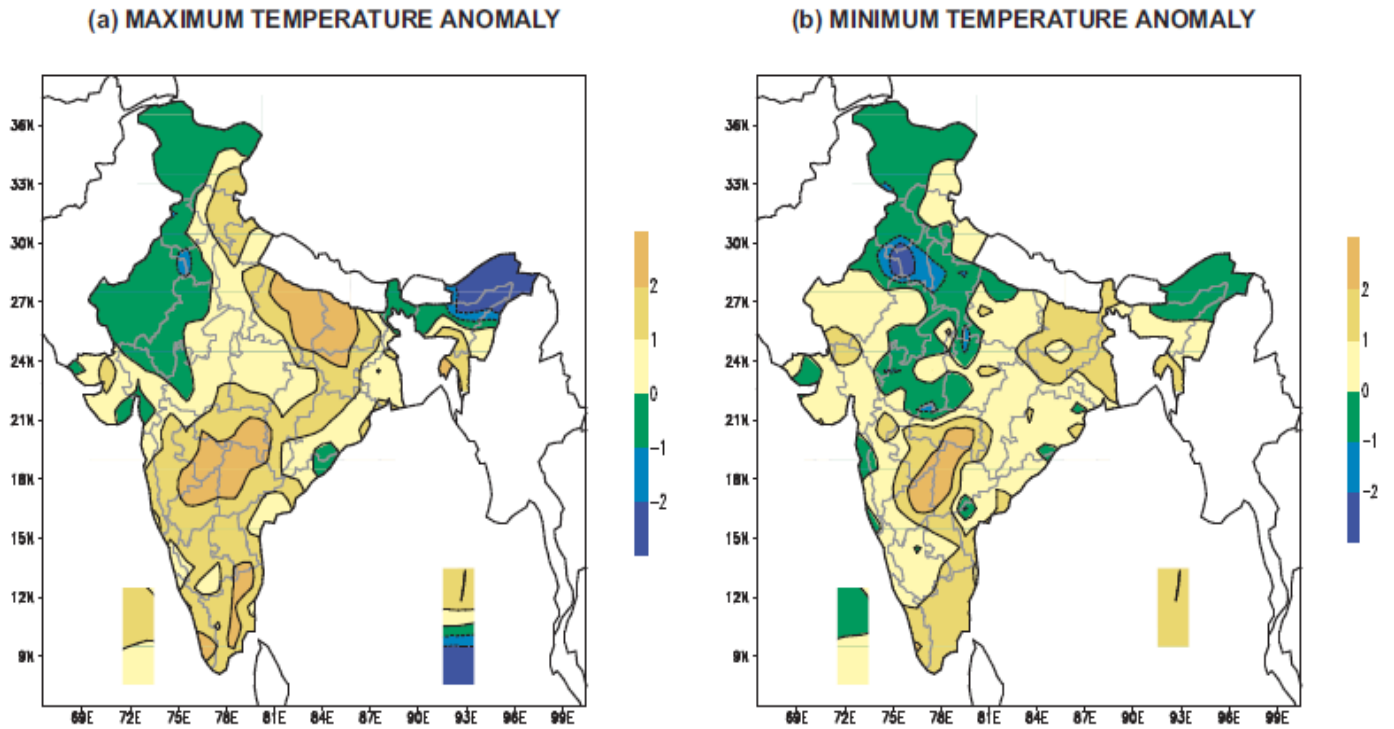


Fig.6: Spatial Distribution of Maximum and Minimum Temperature Anomaly for the month of May 2019

Mean temperature for the month of May over region of south peninsula was the highest since 1901. In month of May, Mean monthly maximum and minimum temperature anomalies are shown in **Figs. 6**. Maximum temperature was above normal over most parts of the country except north, northeastern region and Andaman & Nicobar Islands. Maximum temperature anomaly was more than 2 °C over parts of Uttar Pradesh, Madhya Maharashtra, Marathawada, Vidarbha, Telangana, Tamil Nadu & Puducherry and Kerala. Similarly, minimum temperature was also above normal over most parts of the country. Minimum temperature anomaly was more than 2 °C over parts of Vidarbha, north interior Karnataka and Telangana. Minimum temperature anomaly was less than -1 °C over parts of Punjab, Haryana, Chandigarh & Delhi and west Uttar Pradesh.

4.8.3 June 2019

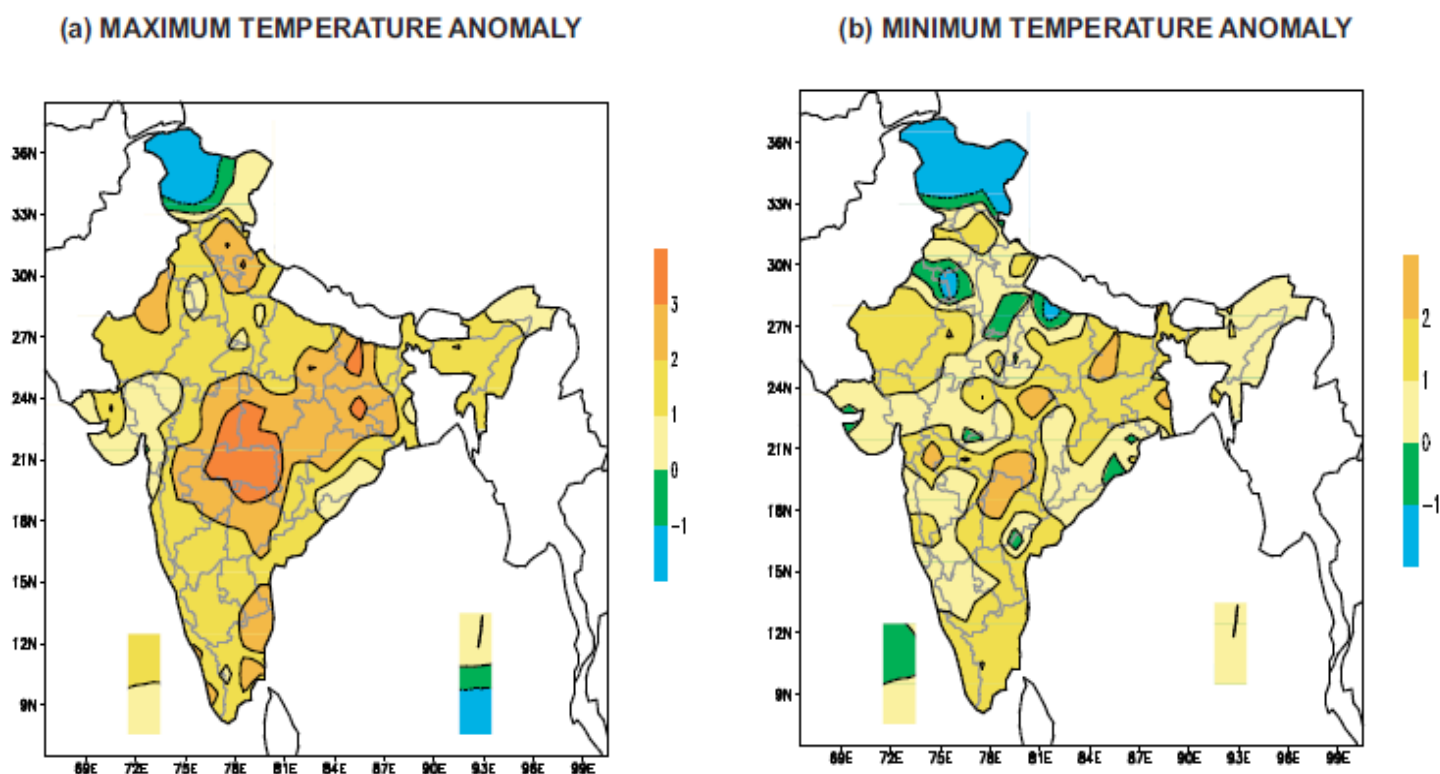


Fig.7: Spatial Distribution of Maximum and Minimum Temperature Anomaly for the month of June 2019

During June 2019, the mean temperature over all India was fourth highest since 1901. In month of June, Mean monthly maximum and minimum temperature anomaly is shown in **Fig. 7**. Maximum temperature was above normal over most parts of the country except Jammu & Kashmir and Andaman & Nicobar Islands. Maximum temperature anomaly was more than 2 °C over parts of Jharkhand, Bihar, east Uttar Pradesh, Gangetic West Bengal, Odisha, Chhattisgarh, Marathawada, Vidarbha, Madhya Pradesh, Uttarakhand, Himachal Pradesh, west Rajasthan, Tamil Nadu & Puducherry, coastal Andhra Pradesh and Rayalaseema. It was more than 3 °C over parts of Vidarbha, Madhya Pradesh, Jharkhand and Bihar. Minimum temperature was above normal over most parts of the country except Jammu & Kashmir, Lakshadweep and some isolated places. Minimum temperature anomaly was more than 2 °C over parts of Bihar, east Madhya Pradesh, Madhya Maharashtra, Vidarbha and Telangana.

Based on real time available data some stations (Guwahati, Jhansi, Kota, Pilani, Bhopal, Guna, Gwalior, Aurangabad, Baramati, Karwar and Kozhikode) of northeast, northwest and central India even recorded highest maximum temperature for the month of June.

4.9 Percentage of Warm days

Along with expected increase in the duration and frequency of heat waves, numbers of warm days are also expected to increase. The percentage of warm days for every month is presented here. A warm day is defined when the maximum temperature exceeds the 90th percentile value.

4.9.1 April 2019

Over some parts of Madhya Pradesh, Madhya Maharashtra, Marathwada, Vidarbha, Rayalaseema and Kerala, maximum temperature was greater than 90 percentile for more than 50 to 60 % of the days of the month as shown in Figure 8.

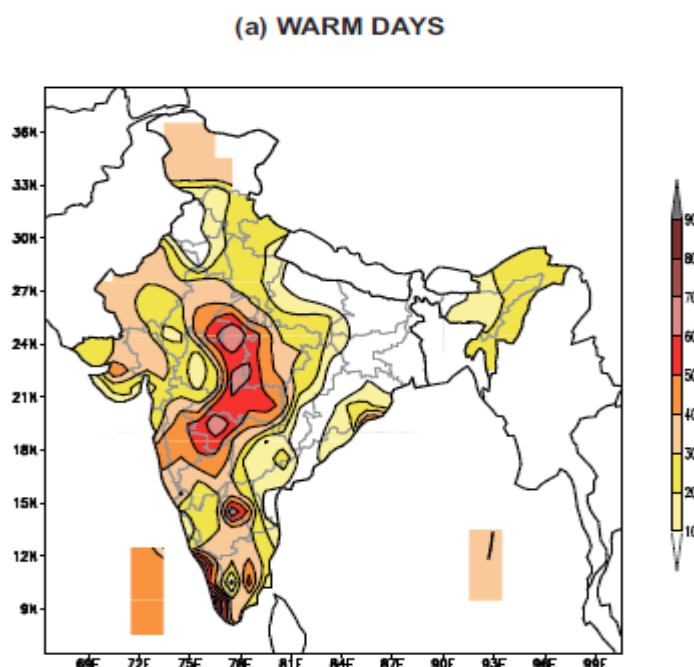


Fig.8: Spatial Distribution of percentage of warm days for the month of April 2019

4.9.2 May 2019

Over some parts of Andaman & Nicobar Islands, Tamil Nadu & Puducherry, coastal Karnataka and Kerala, maximum temperature was greater than 90 percentile for over 50 % of the days of the month as shown in Figure 9.

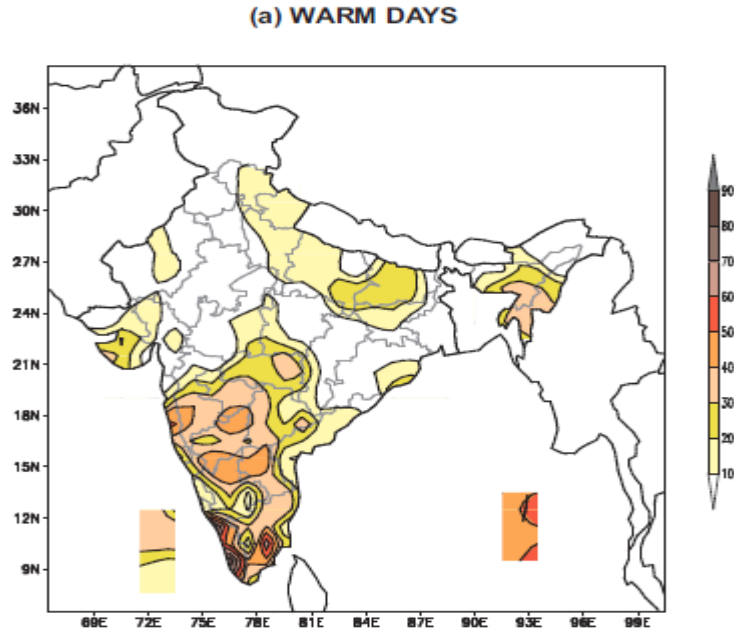


Fig.9: Spatial Distribution of percentage of warm days for the month of May 2019

4.9.3 June 2019

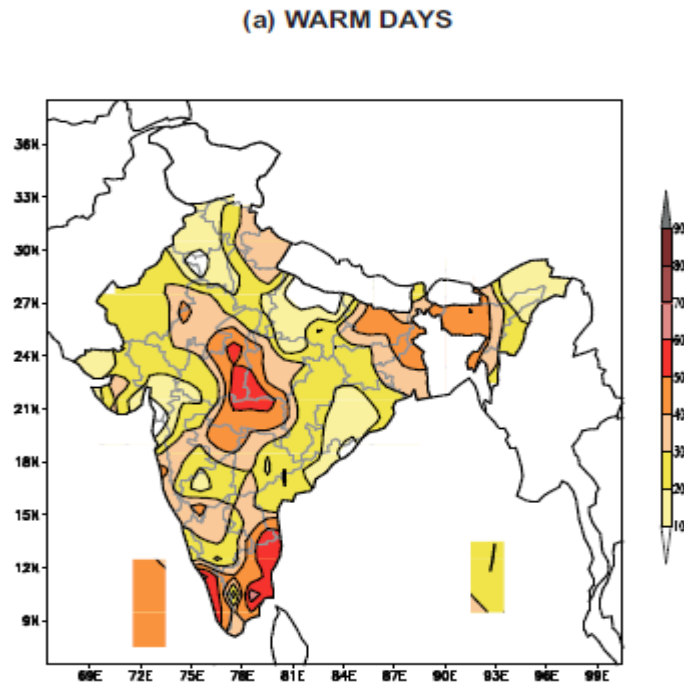


Fig.10: Spatial Distribution of percentage of warm days for the month of June 2019

Over parts of Tamil Nadu & Puducherry, Kerala, Vidarbha, Madhya Pradesh maximum temperature was greater than 90 percentile for more than 50% of the days of the month as shown in Figure 10.

4.10 Average temperature over India

In this section the inter annual variability of the mean temperature for the country as a whole is depicted from the year 1971 for each of the individual months. The normal values and the five year moving average values are also shown. The normals used are 1981 – 2010 normals. The moving average values are used to remove the effect of extremes on the time series and depict the underlying variations.

4.10.1 April 2019

Fig.11 shows the mean temperature for the country as a whole for April since 1971. Five year moving average values are also shown. The mean temperature for the month this year (28.81°C) was above normal by about 0.77°C . The mean temperature was the 7th highest since 1901.

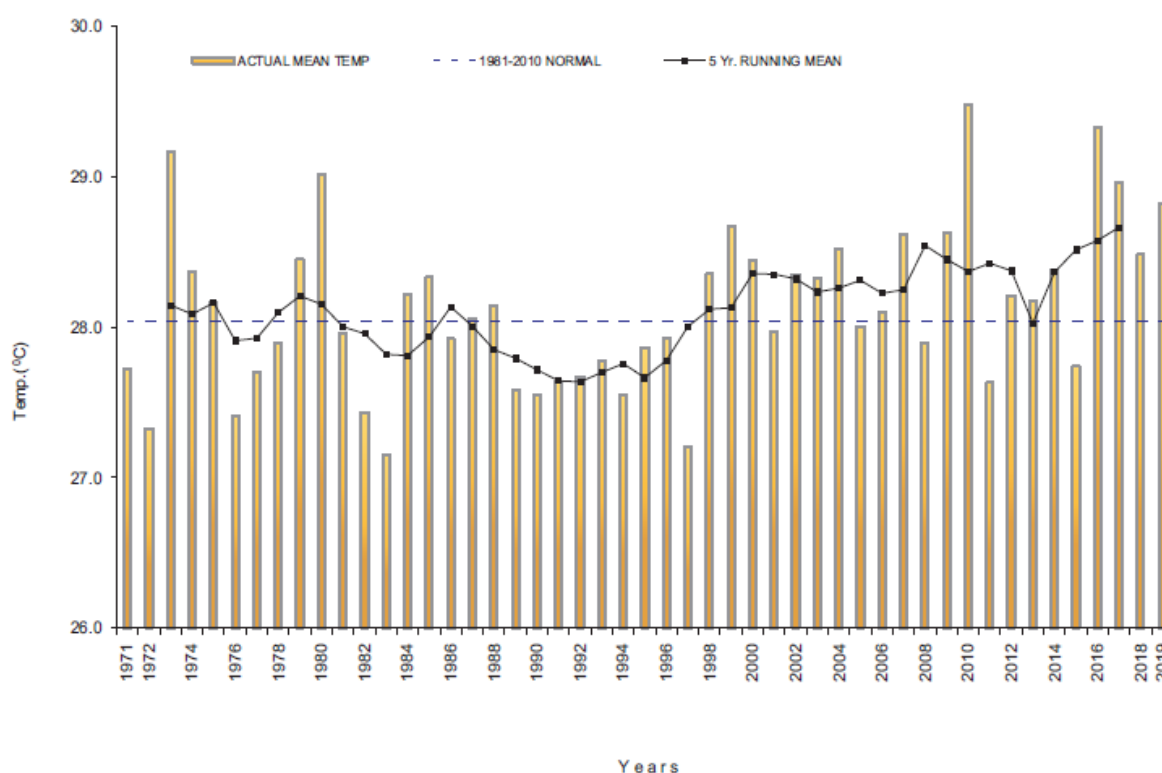


Fig. 11: Time Series of Mean Temperature averaged over India (Vertical Bars) and five year running mean (continuous line) for April (1971 – 2019) .

4.10.2 May 2019

Fig.12 shows the mean temperature for the country as a whole for May since 1971. Five year moving average values are also shown. The mean temperature for the month this year (30.3°C) was near to its normal value.

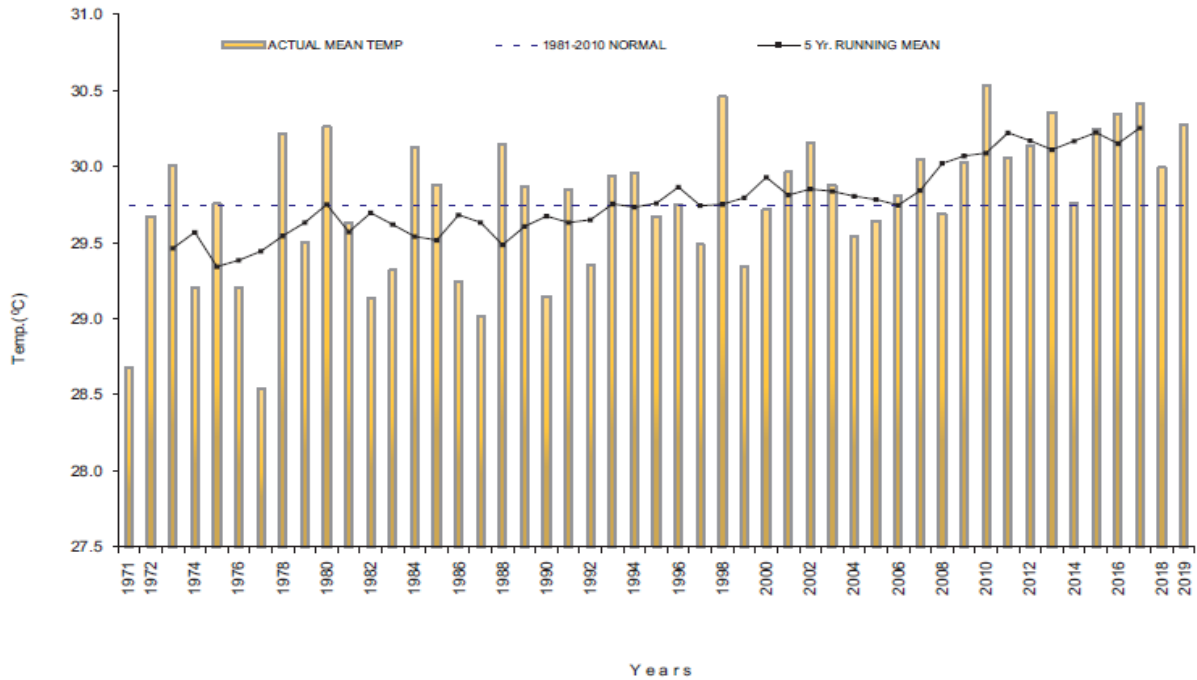


Fig. 12: Time Series of Mean Temperature averaged over India (Vertical Bars) and five year running mean (continuous line) for May (1971 – 2019) .

4.10.3 June 2019

Figure 13 shows the mean temperature for the country as a whole for June since 1971. Five year moving average values are also shown. The mean temperature (30.26°C) for the month this year was above normal and was fourth highest since 1901 after the years 1958(30.3382°C), 2014(30.3381°C) and 1926(30.31°C).

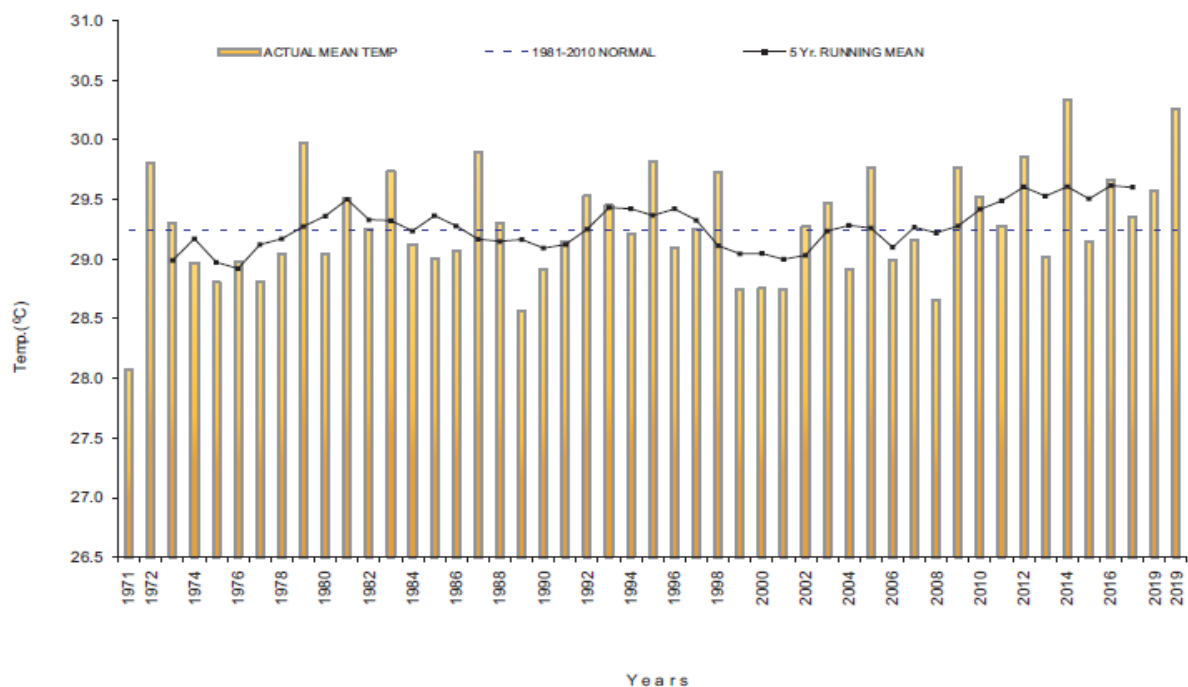


Fig. 13: Time Series of Mean Temperature averaged over India (Vertical Bars) and five year running mean (continuous line) for June (1971 – 2019) .

4.11 Daily Maximum Temperatures.

4.11.1 April 2019

Fig. 14(a) & 14(b) show the maximum and minimum temperature series respectively for the country as a whole and the four homogeneous regions during the month since 1971. Maximum temperature was above normal over all the homogeneous regions, except northeast India. Minimum temperature was above normal over all the homogeneous regions. Maximum temperature over south peninsula was 3rd highest since 1901 after the years, 2016(35.86°C), 2010(35.26°C). Maximum temperature over all India and the homogeneous region of central India was 7th highest since 1901. Fig.15 shows the daily maximum temperature recorded over five major stations of the country viz. Kolkata, New Delhi, Nagpur, Chennai and Mumbai during the month.

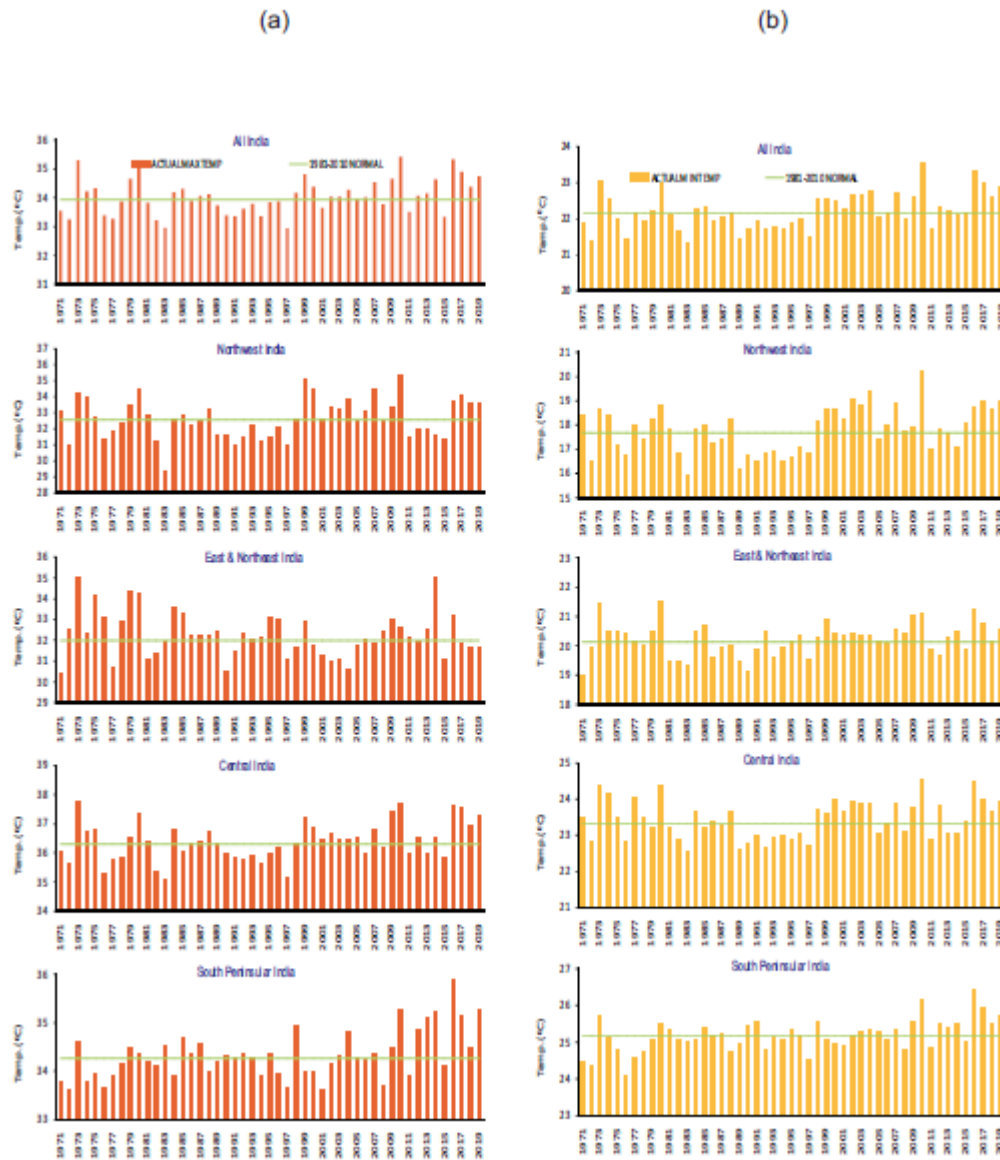


Fig. 14: Time series of temperature for the country as a whole and the four homogeneous regions for April (1971-2019) (a) maximum (b) minimum

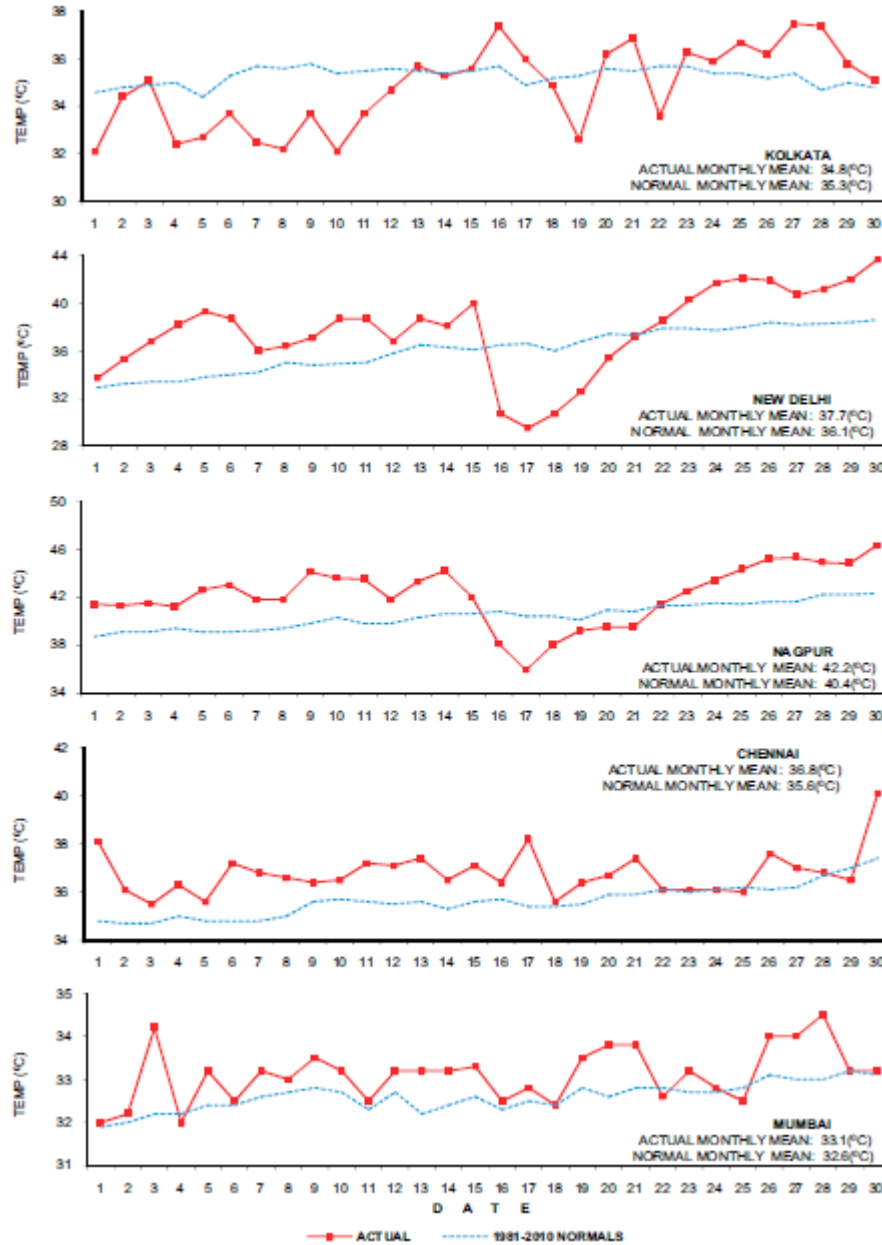


Fig. 15: Time Series of Daily Maximum Temperature for April 2019 for some select stations over India.

4.11.2 May 2019

Fig.16 (a) & 16(b) show the maximum and minimum temperature series respectively for the country as a whole and the four homogeneous regions during the month since 1971. Both maximum and minimum temperatures were above normal over all the homogeneous regions and country as a whole. Maximum temperature (35.6°C) over south peninsular India was the highest since 1901. Minimum temperature (26.74°C) over south peninsular India was the second highest since 1901 after the year 1942 (26.85°C). Fig.17 shows the daily maximum temperature recorded over five major stations of the country viz. Kolkata, New Delhi, Nagpur, Chennai and Mumbai during the month.

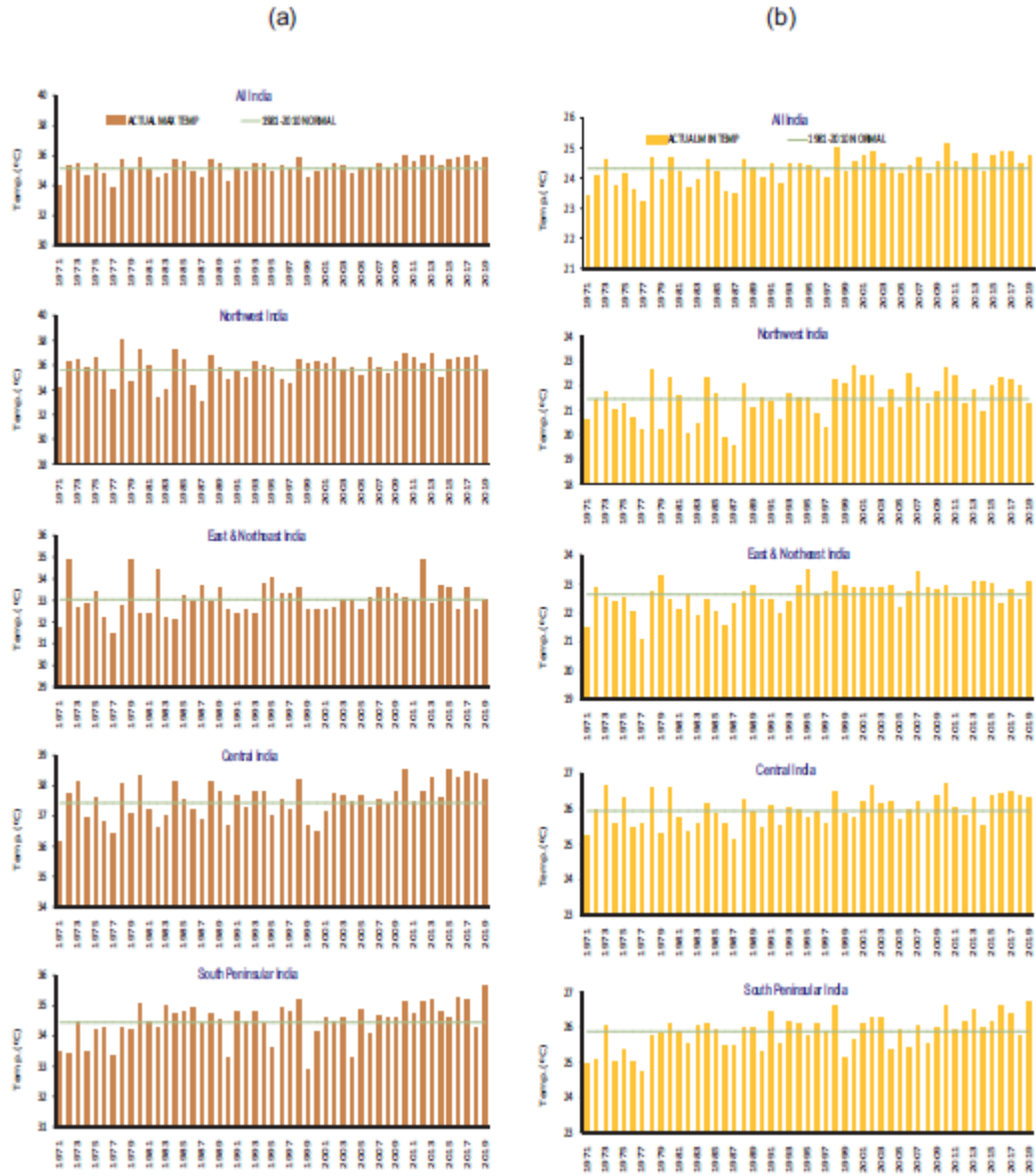


Fig. 16: Time series of temperature for the country as a whole and the four homogeneous regions for May (1971-2019) (a) maximum (b) minimum

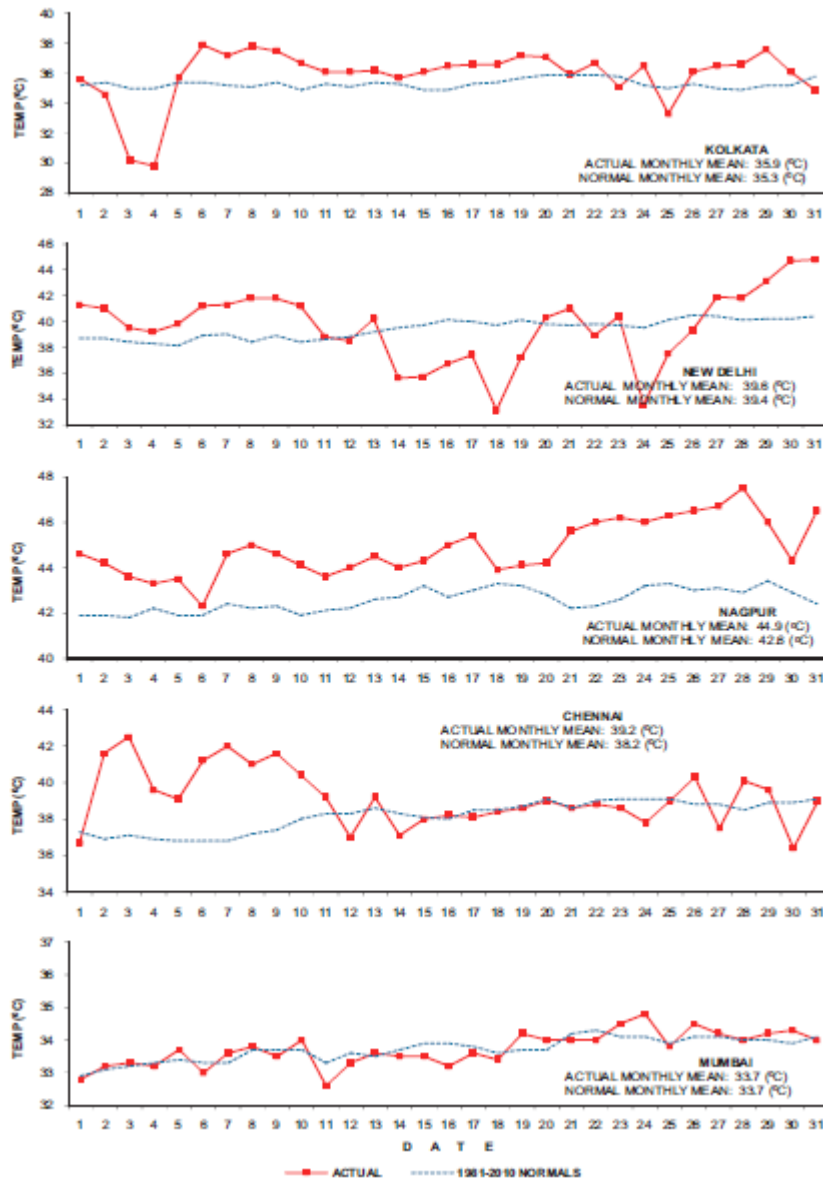


Fig. 17: Time Series of Daily Maximum Temperature for May 2019 for some select stations over India.

4.11.3 June 2019

Fig. 18(a) & 18(b) show the maximum and minimum temperature series respectively for the country as a whole and the four homogeneous regions during the month since 1971. Both maximum and minimum temperatures were above normal by about 1.0 °C except minimum temperature over northwest India. Maximum temperature over India as a whole (35.0728 °C) was the second highest since 1901 after the year 1958 (35.077 °C).

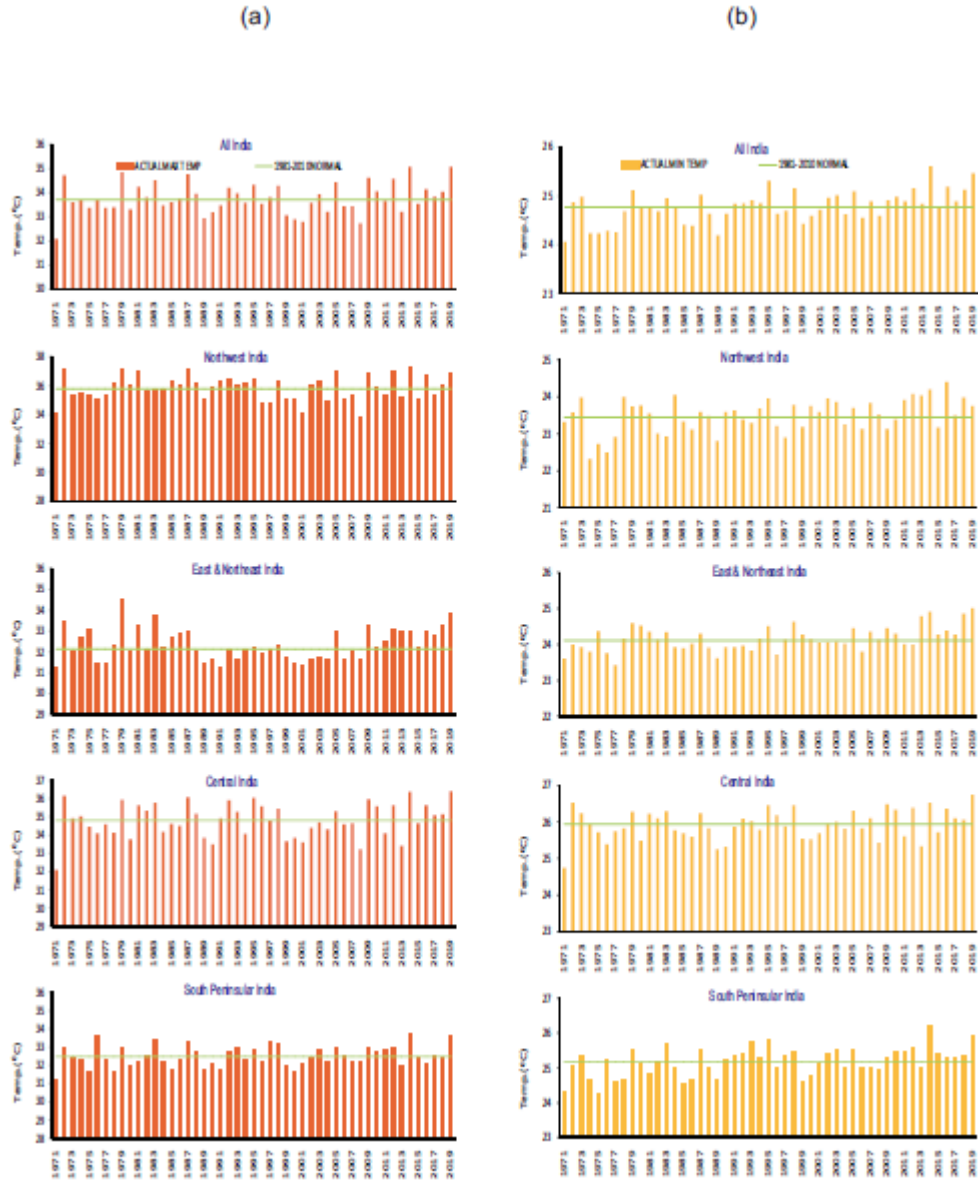


Fig. 18: Time series of temperature for the country as a whole and the four homogeneous regions for June (1971-2019) (a) maximum (b) minimum

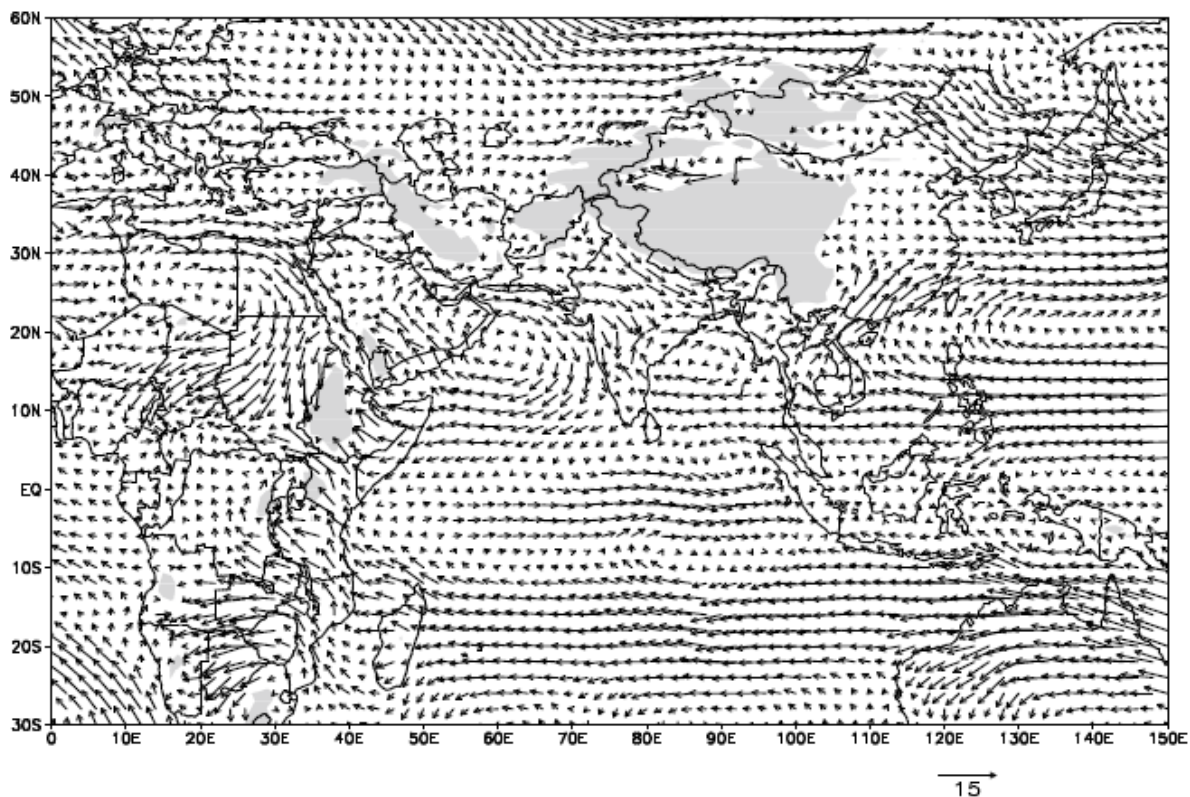
4.12 Mean Circulation patterns and Anomalous Flow patterns at 850 hpa, 500 hpa and 250 hpa.

There are many underlying mechanisms which contribute to the development of a heat wave. It can form when a warm high pressure system stalls in a region. The high and the associated anti cyclonic flow cause a sinking motion which leads to increased surface temperatures due to adiabatic compression. The outward anti cyclonic flow makes it difficult for other systems to enter the area. Variations in jet stream, flow of air that steers movement of high and low pressure areas which transports hot dry air into a region are favorable conditions for development of heat wave. So the mean circulation patterns and the wind anomalies are presented month wise at different levels – lower, middle and higher levels represented by 850hpa, 500hpa and 250hpa respectively. The flow patterns depicted are from the operational NWP analysis of IMD GFS T-574 runs. The anomaly is based on the 1959-88 climatology.

4.12.1 April 2019

Fig.19(a) & 19(b), Fig.20(a) & (b) and Fig.21(a) & (b) shows the mean circulation patterns and its anomalies for the month of April 2019 at 850, 500 & 250 hPa levels respectively. At 850 hPa level, an anomalous anticyclonic circulation was observed over central and adjoining peninsular parts of the country. At 500 hPa level, an anticyclonic circulation was observed over northwestern parts and adjoining extratropical region. At 250 hPa level, an anomalous cyclonic circulation was observed over the central parts of the country.

(a) MEAN WIND : 850 hPa



(b) WIND ANOMALY : 850 hPa

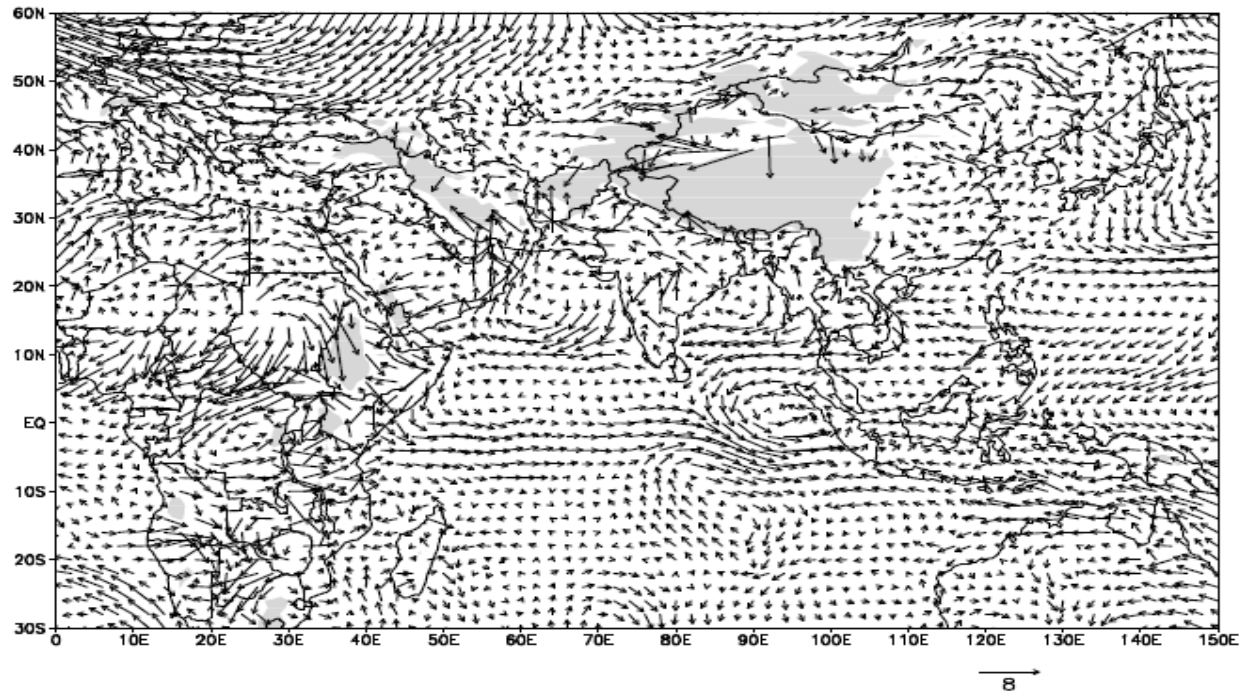
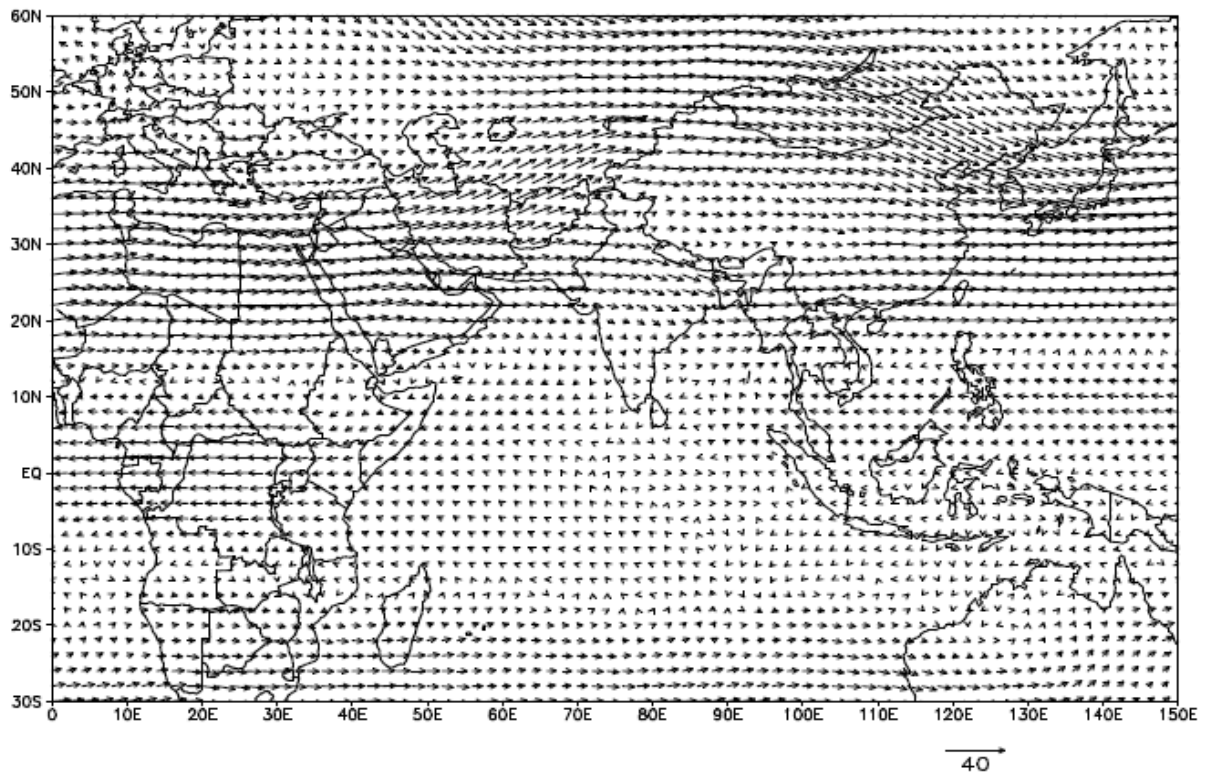


Fig.19: (a) Monthly Mean Wind (m/s) and (b) Monthly Wind Anomaly for April 2019 at 850 hPa

(a) MEAN WIND : 500 hPa



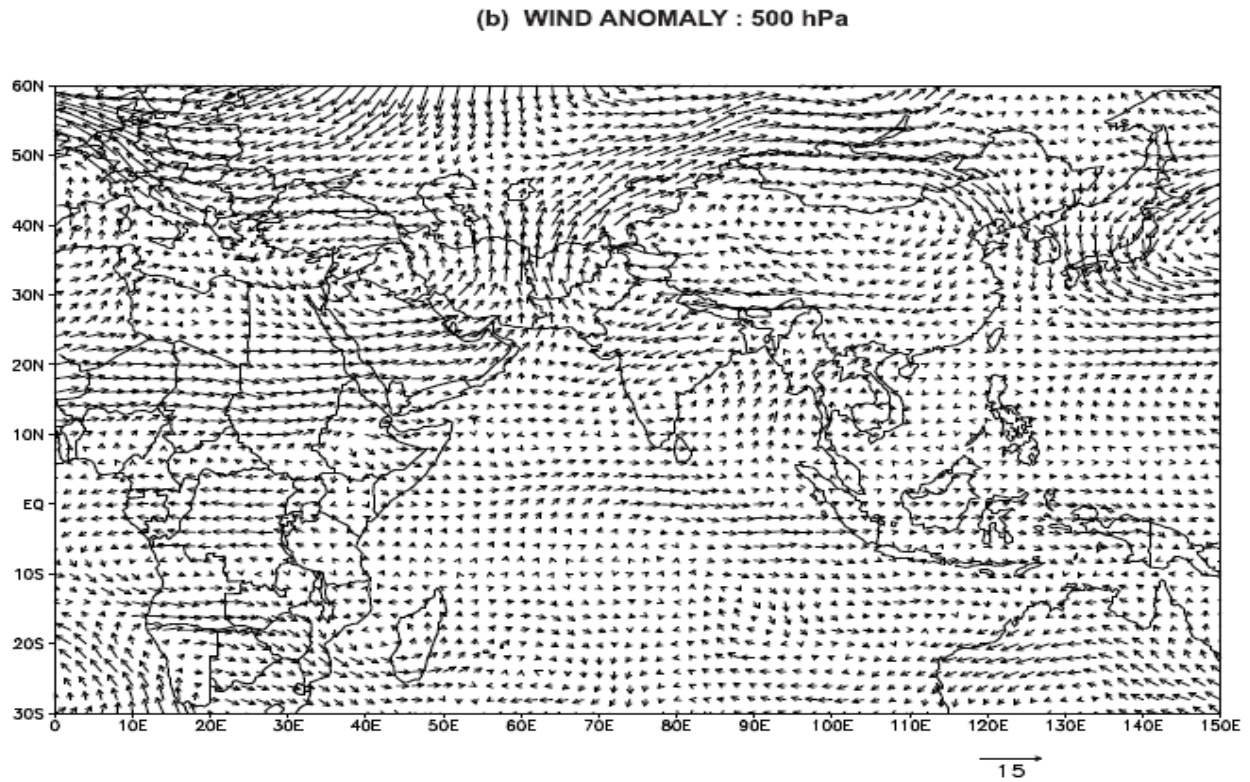
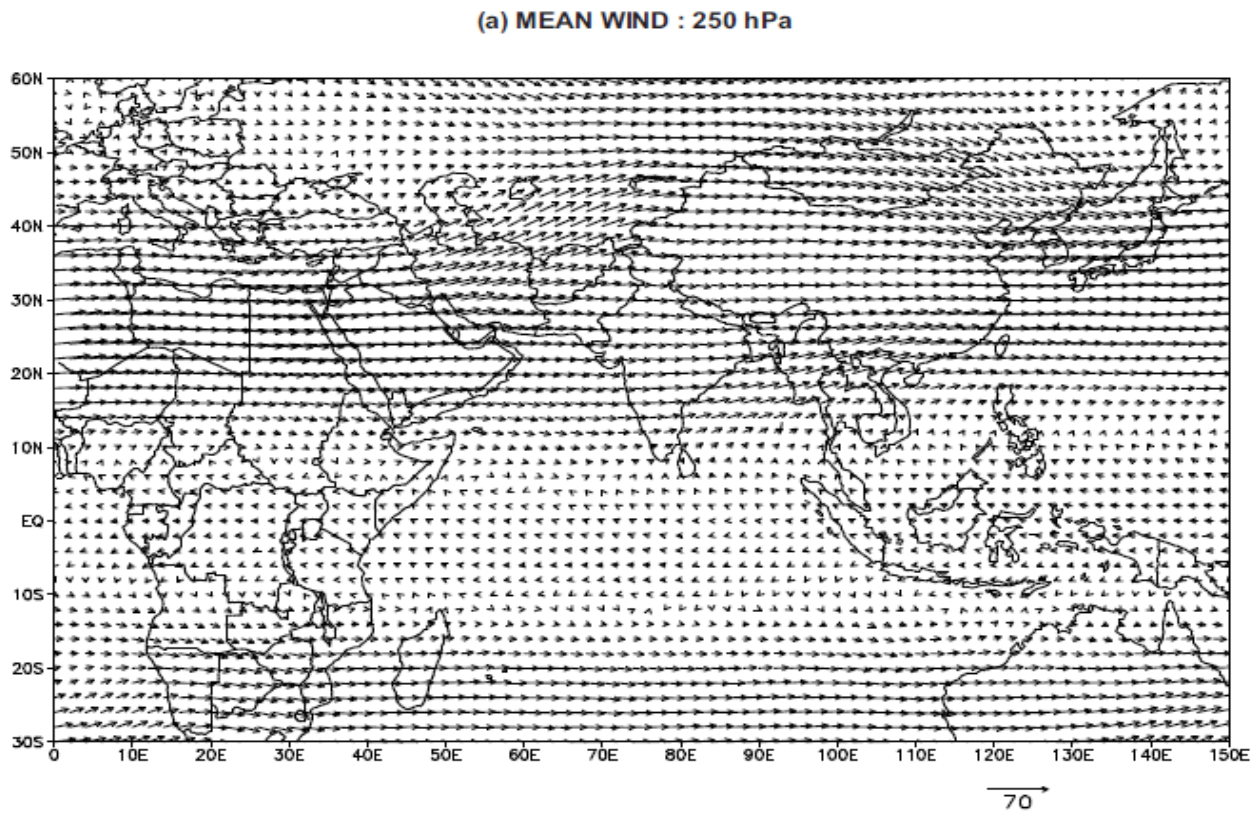


Fig.20: (a) Monthly Mean Wind (m/s) and (b) Monthly Wind Anomaly for April 2019 at 500hpa



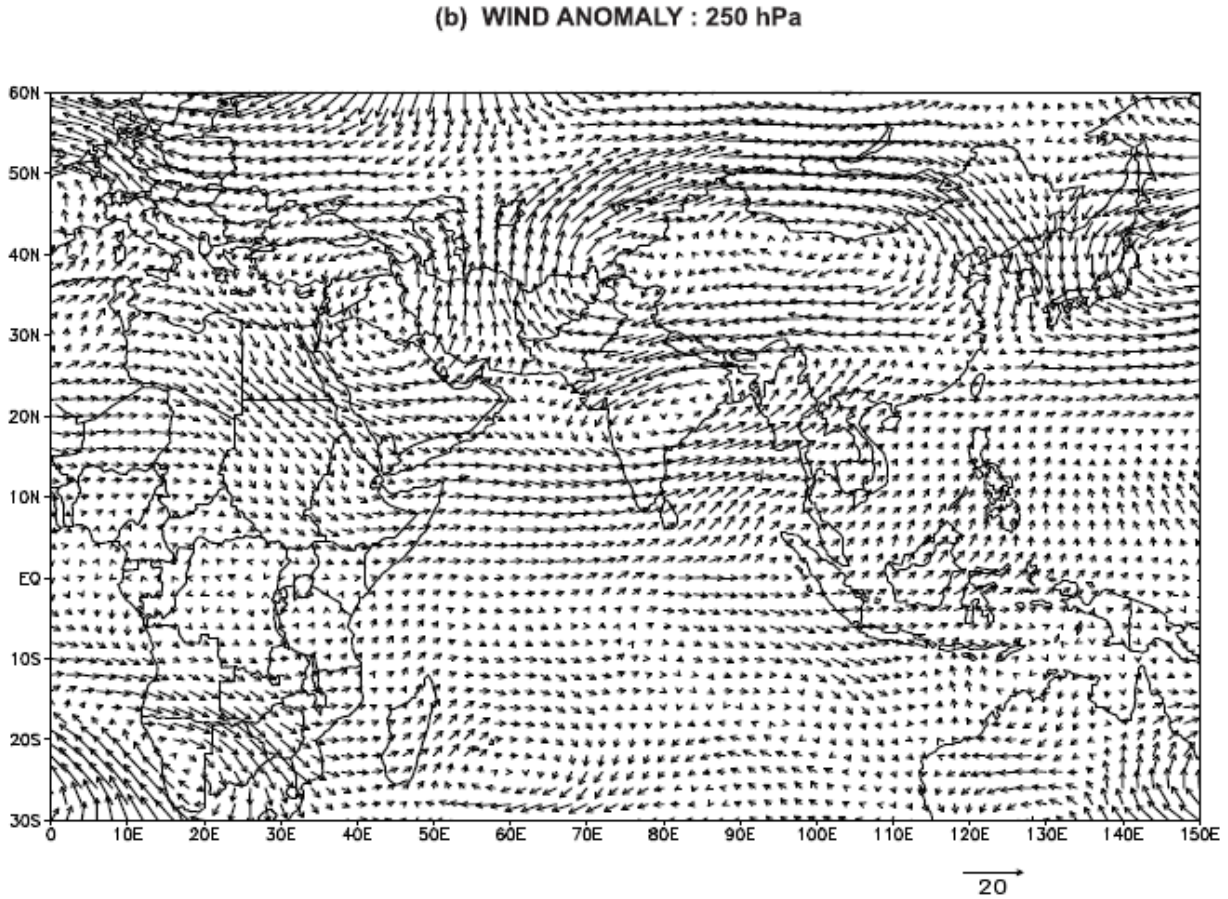


Fig.21: (a) Monthly Mean Wind (m/s) and (b) Monthly Wind Anomaly for April 2019 at 250hpa

4.12.2 May 2019

Figs. 22(a) & 22(b), 23(a) & 23(b) and 24(a) & 24(b) shows the mean circulation patterns and its anomalies for the month of May 2019 at 850, 500 & 250 hPa levels respectively. At 850 hPa level anomalous easterlies prevailed almost throughout the peninsula. At 500 hPa level an anomalous cyclonic circulation over the central Arabian Sea and adjoining region and spreading almost throughout the country was observed. At 250 hPa level, an anomalous trough over the northwest region and anomalous ridge over the northeastern parts and adjoining areas were observed.

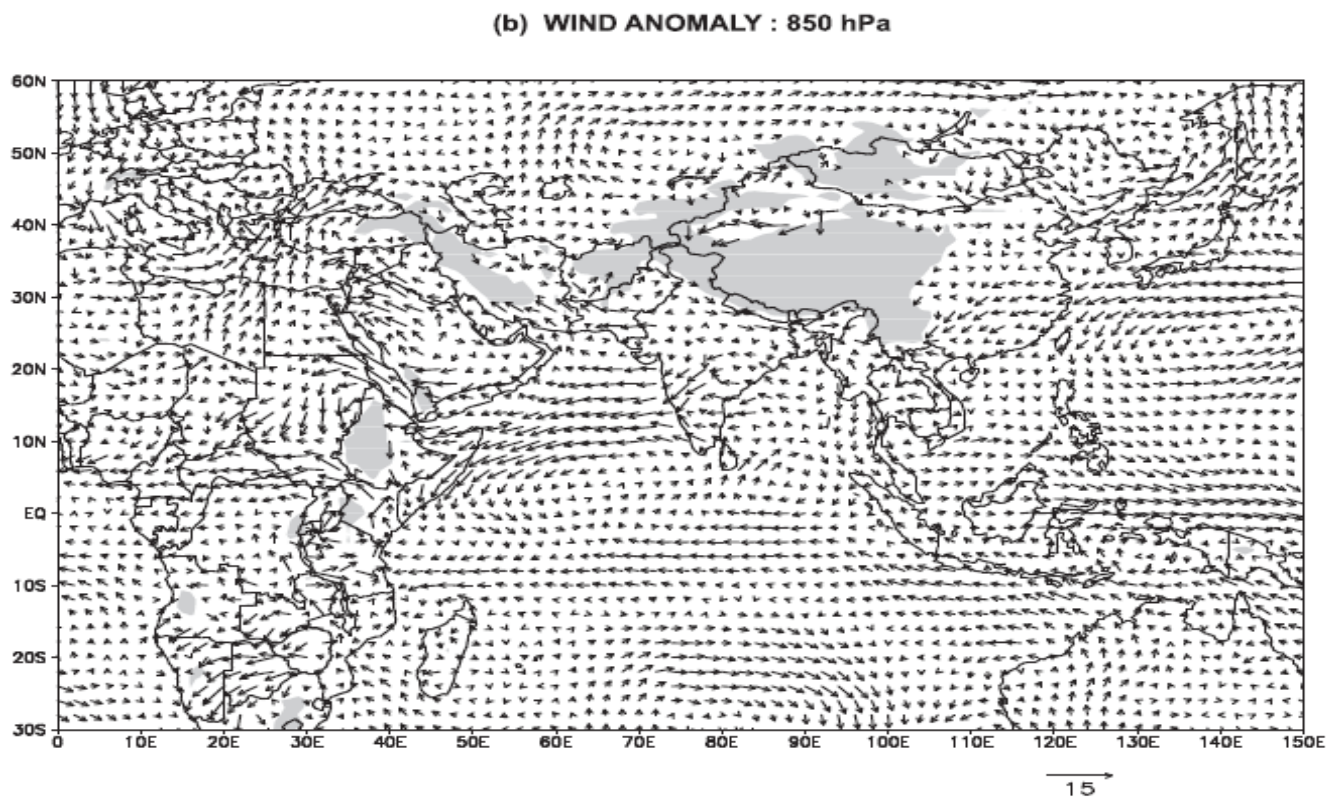
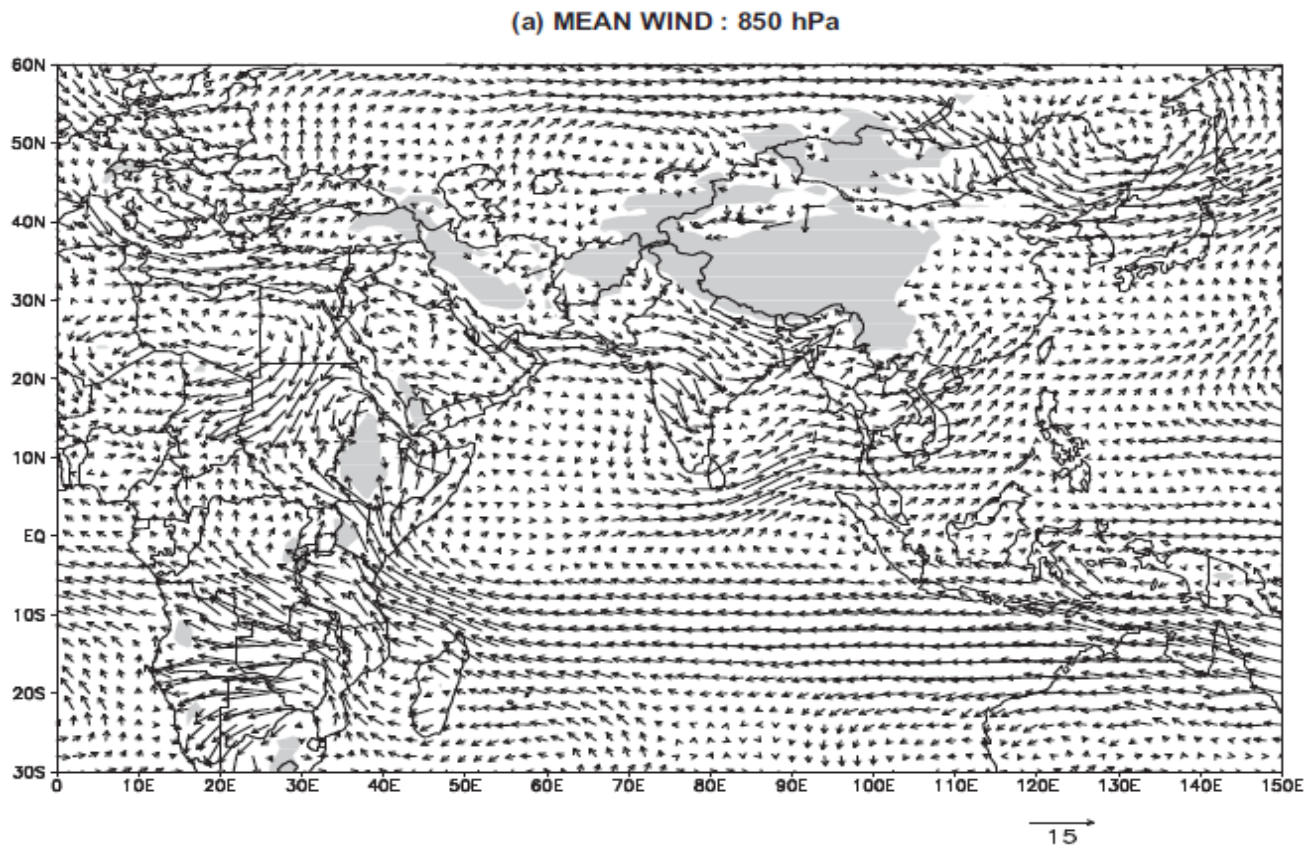


Fig.22: (a) Monthly Mean Wind (m/s) and (b) Monthly Wind Anomaly for May 2019 at 850hpa

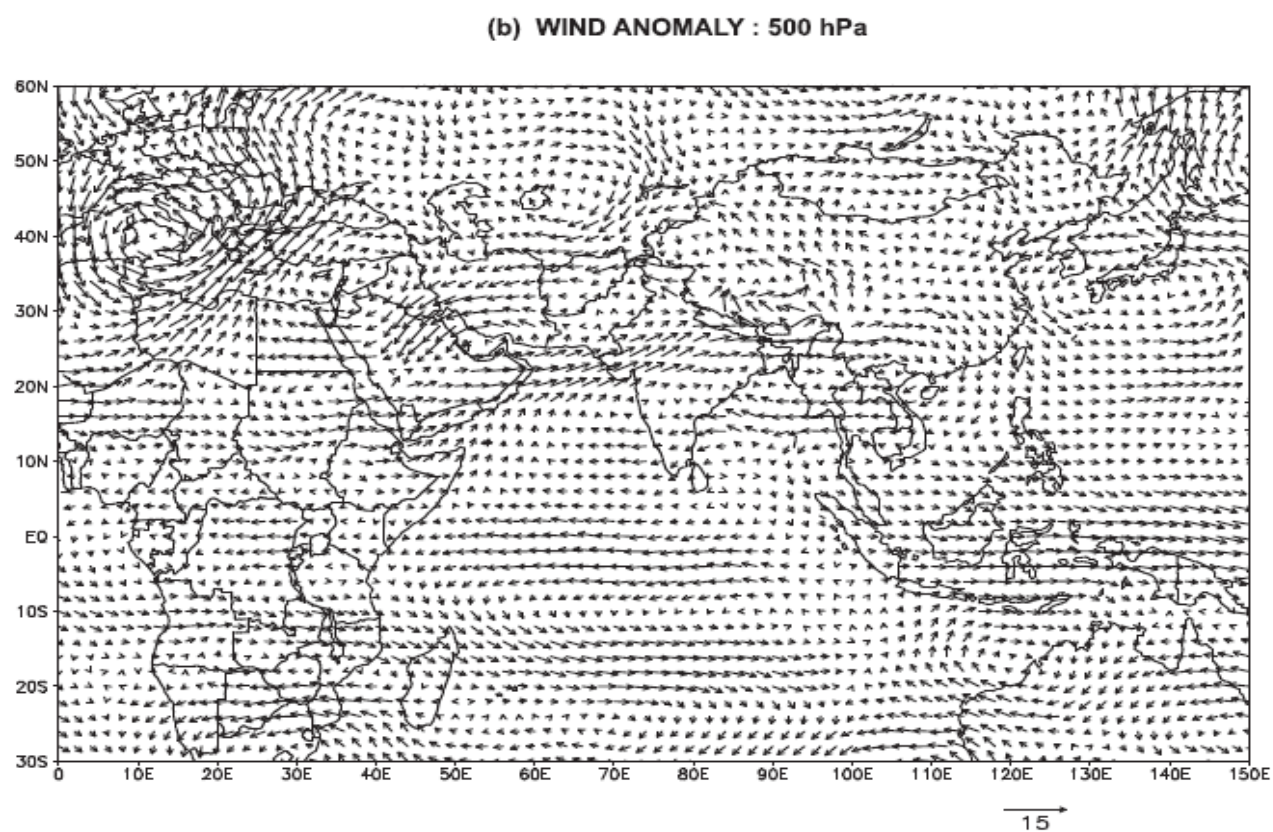
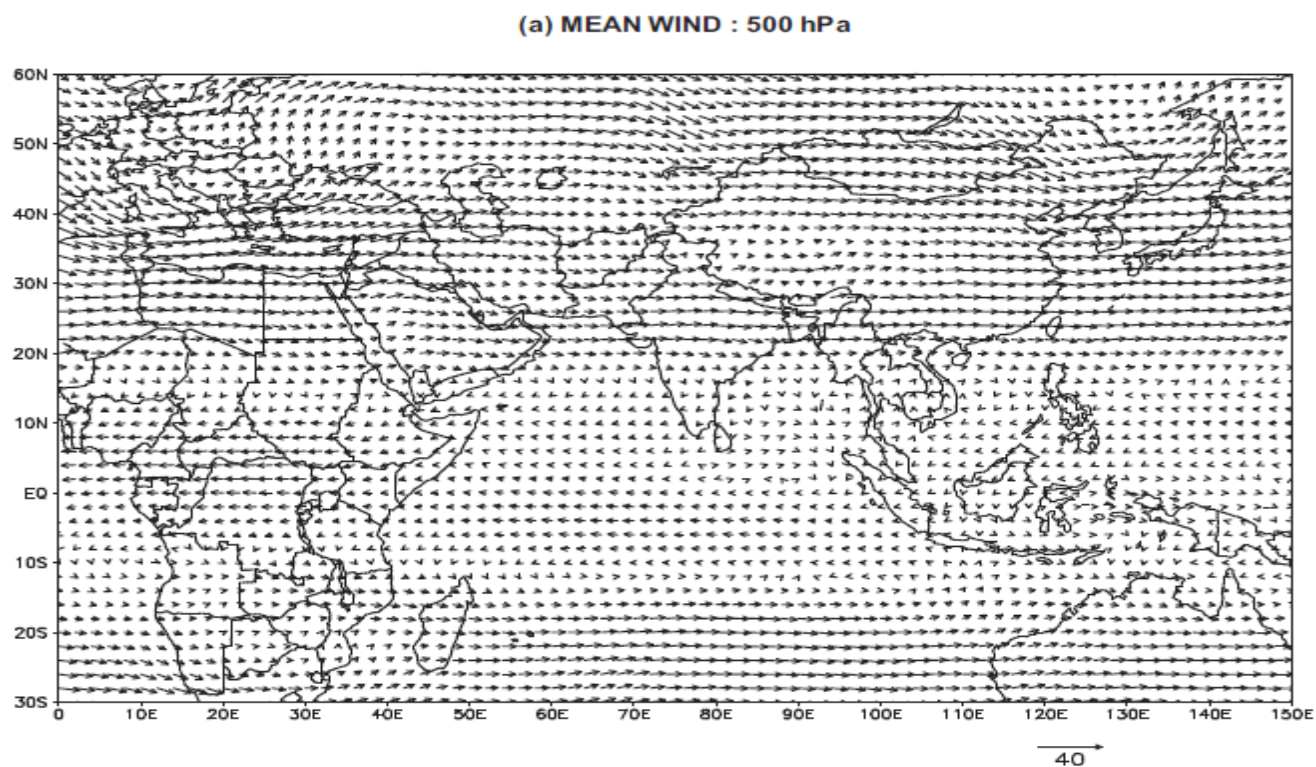
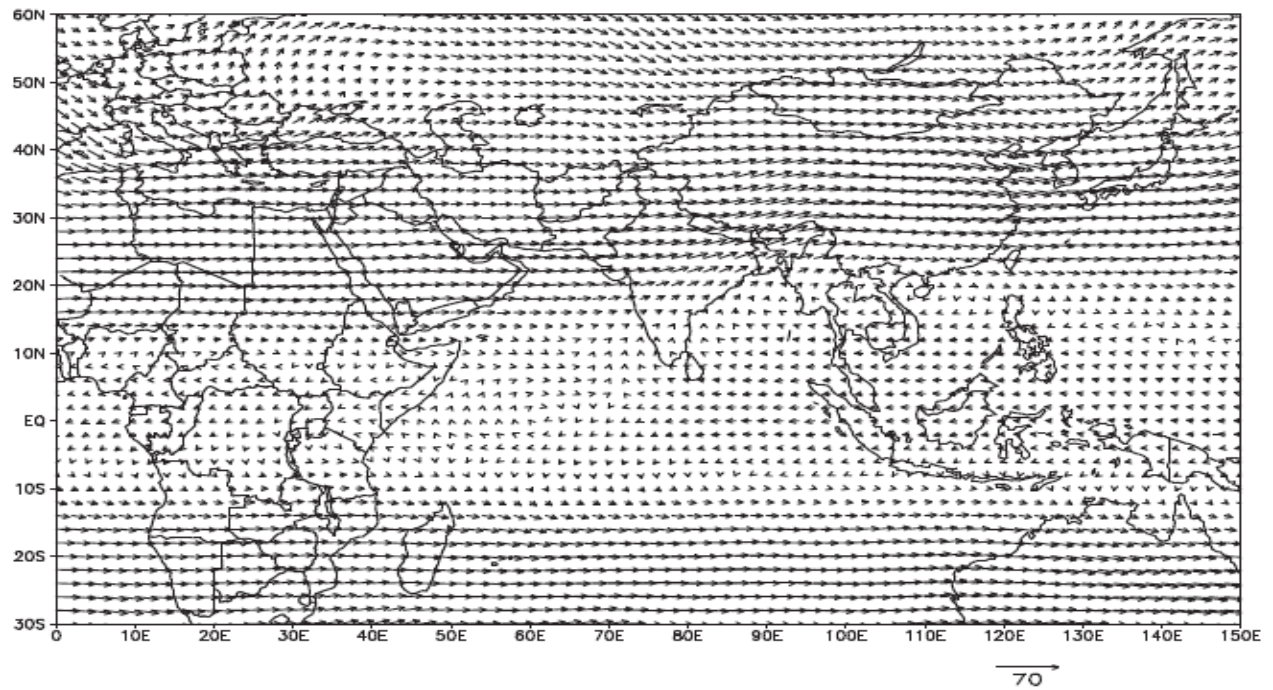


Fig.23: (a) Monthly Mean Wind (m/s) and (b) Monthly Wind Anomaly for May 2019 at 500hpa

(a) MEAN WIND : 250 hPa



(b) WIND ANOMALY : 250 hPa

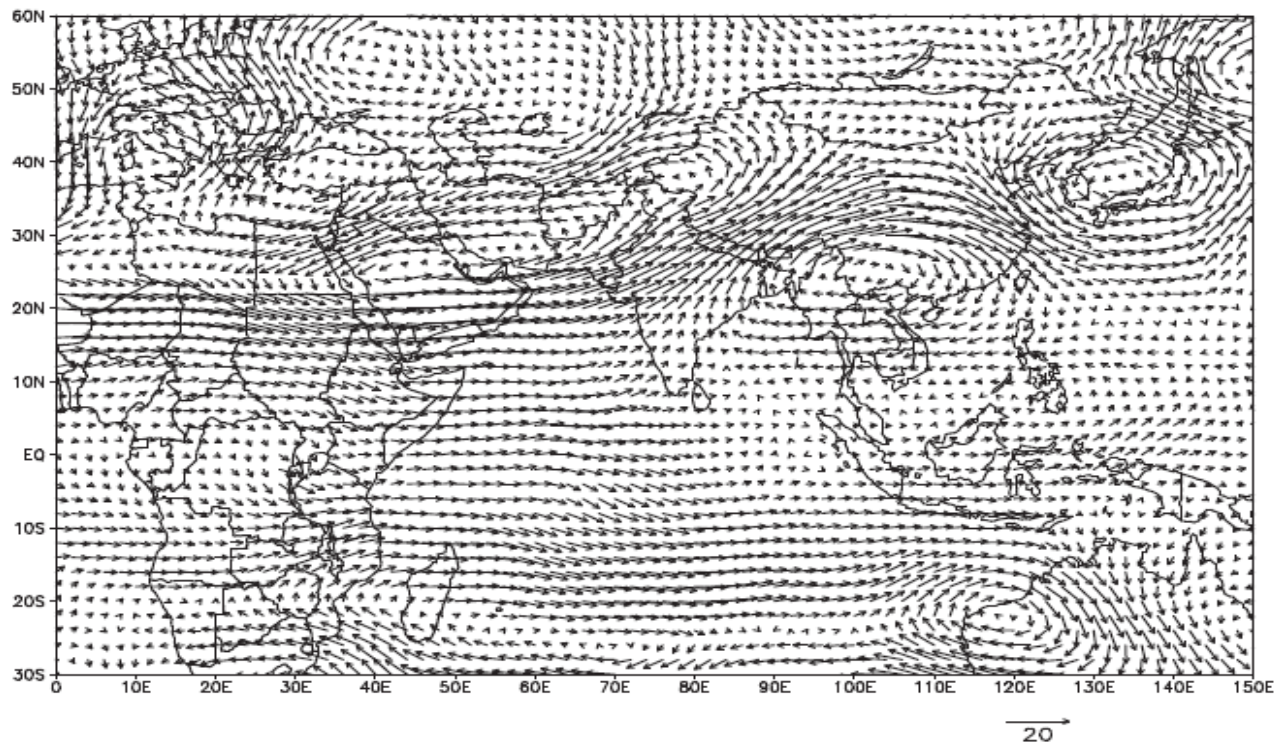
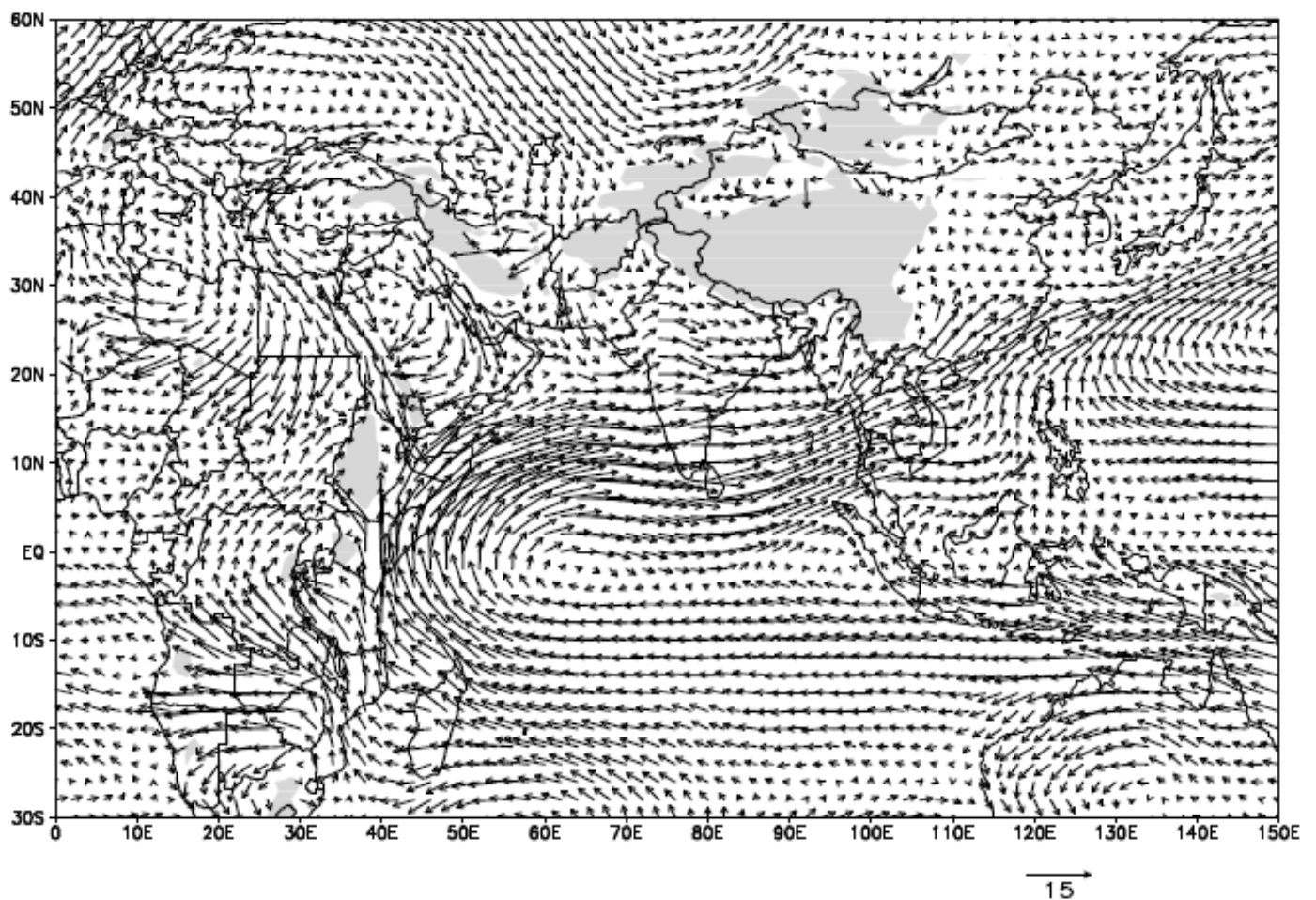


Fig.24: (a) Monthly Mean Wind (m/s) and (b) Monthly Wind Anomaly for May 2019 at 250hpa

4.12.3 June 2019

Figs. 25(a) & 25(b), 26(a) & 26(b) and 27(a) & 27(b) shows the mean circulation patterns and its anomalies for the month of June 2019 at 850, 500 & 250 hPa levels respectively. At 850 hPa level, anomalous easterlies prevailed over peninsula. At 500 hPa level, anomalous anticyclonic circulation was observed over the central parts and the adjoining region. At 250 hPa level, an anomalous cyclonic circulation was observed over the extreme northern parts and neighborhood.

(a) MEAN WIND : 850 hPa



(b) WIND ANOMALY : 850 hPa

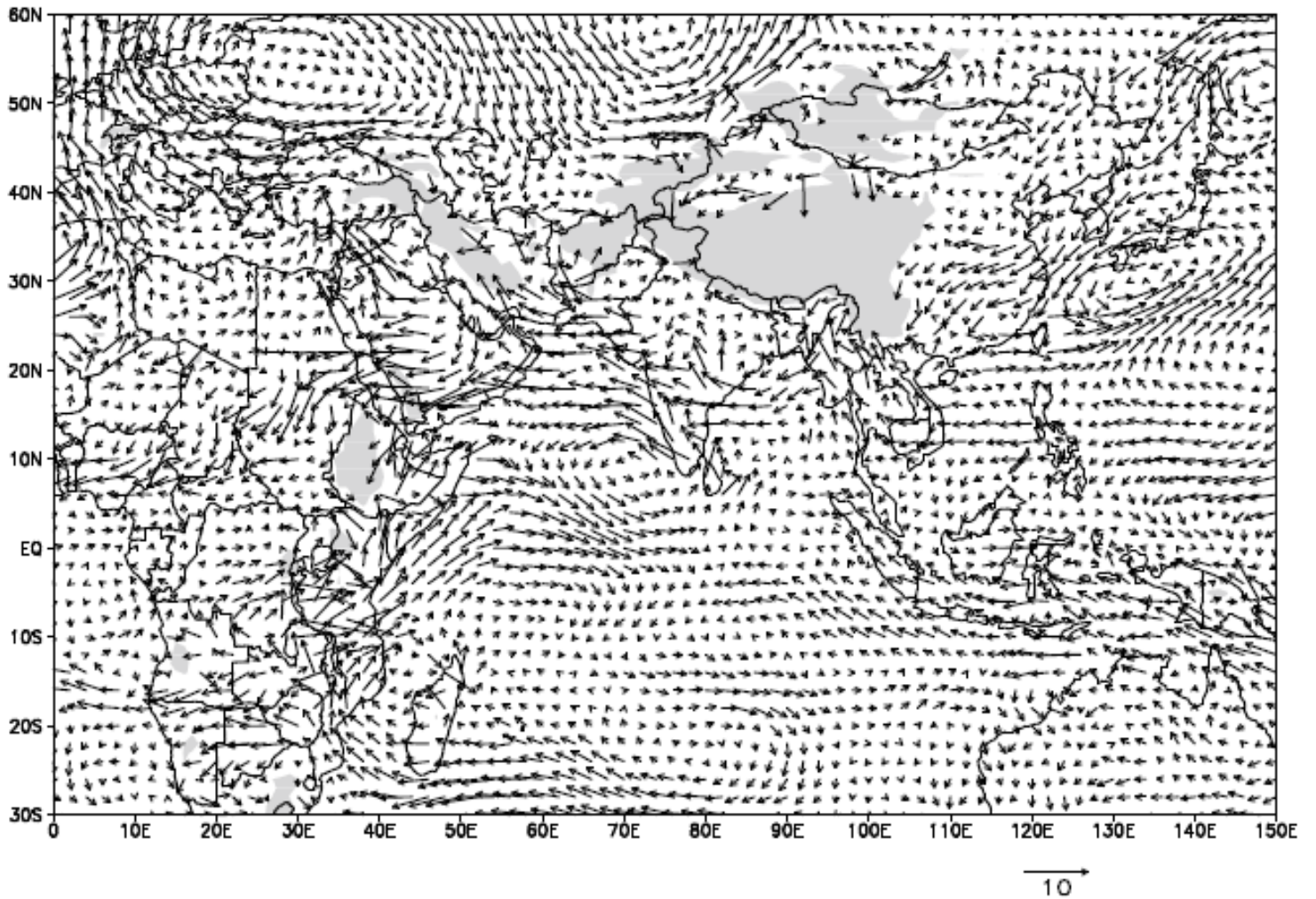


Fig.25: (a) Monthly Mean Wind (m/s) and (b) Monthly Wind Anomaly for June 2019 at 850hpa

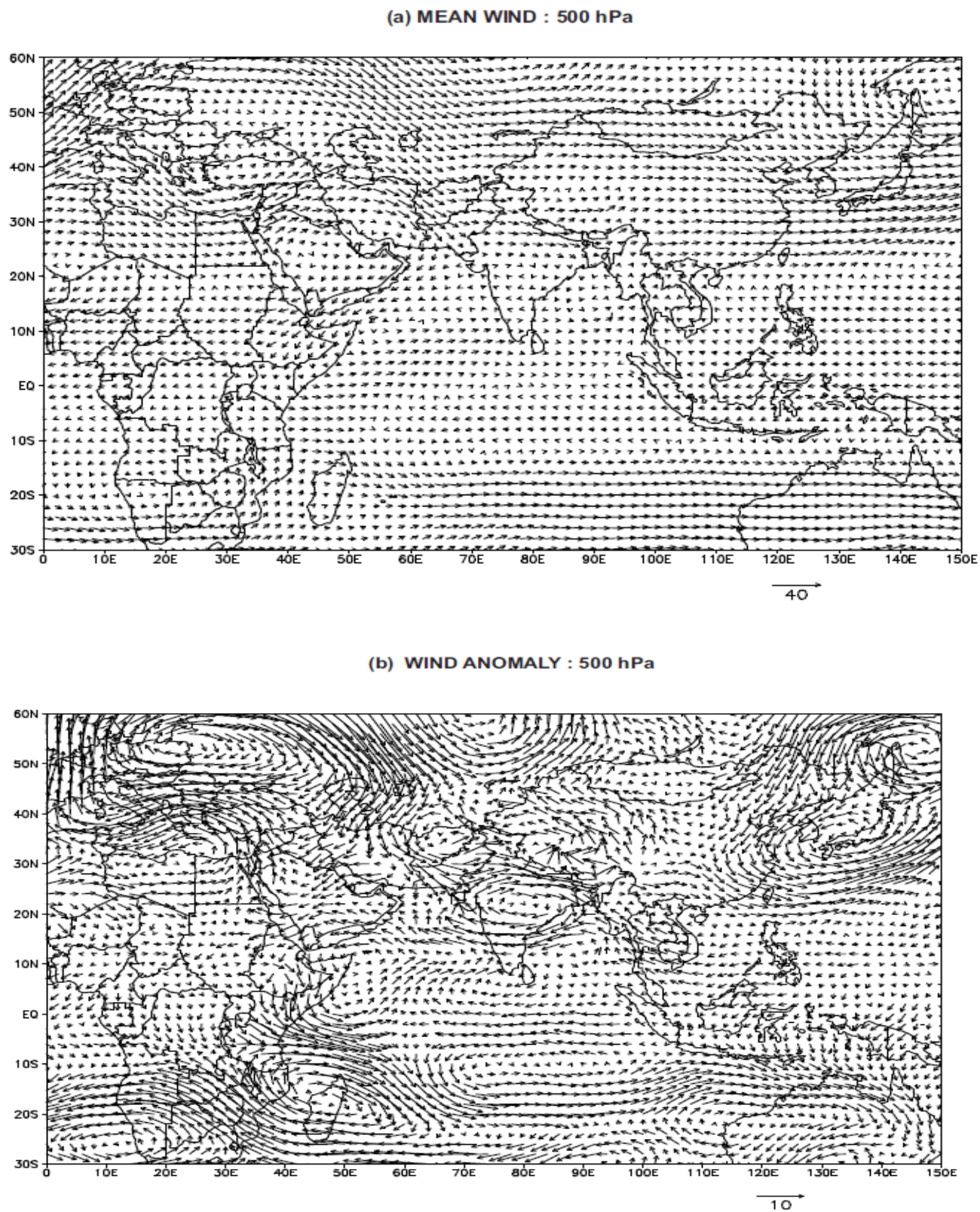


Fig.26: (a) Monthly Mean Wind (m/s) and (b) Monthly Wind Anomaly for June 2019 at 500hpa

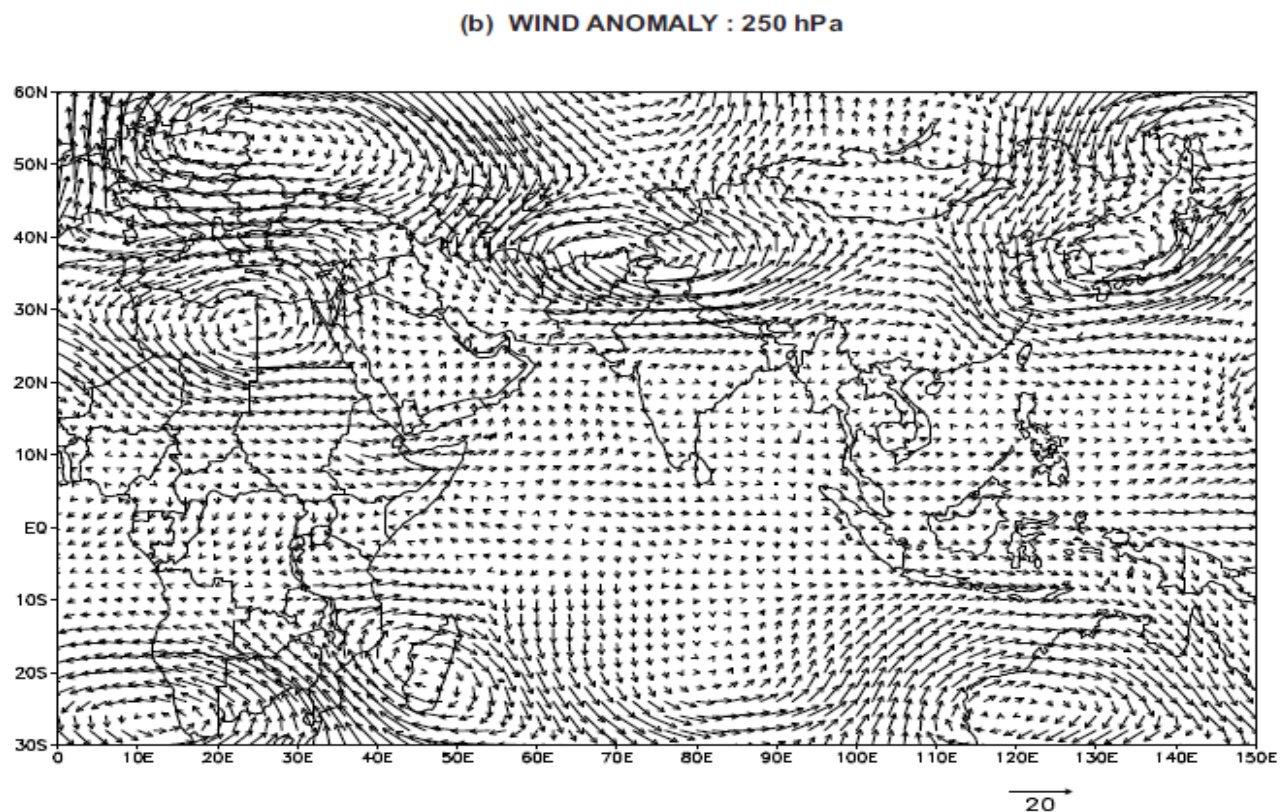
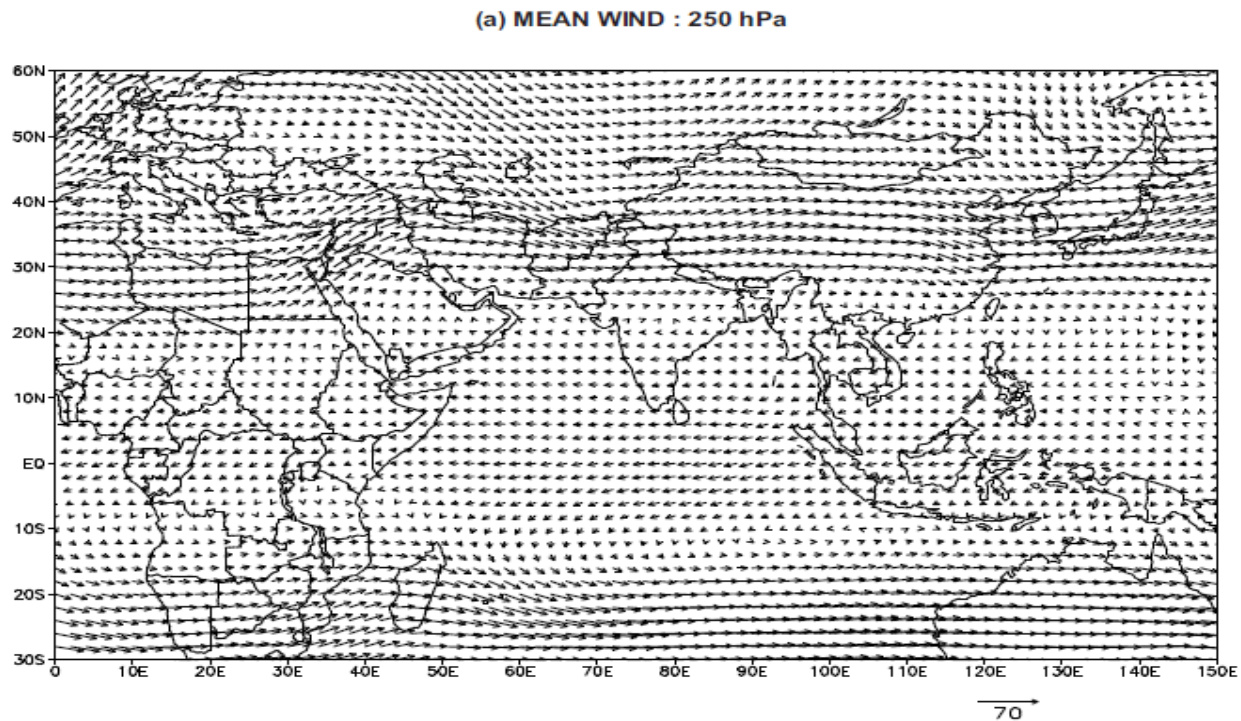


Fig.27: (a) Monthly Mean Wind (m/s) and (b) Monthly Wind Anomaly for June 2019 at 250 hpa

CHAPTER V

FORECAST VERIFICATION OF HEAT WAVES

Introduction:

Verification of heat wave (HW) is carried out upto 5 days i.e. D1, D2, D3, D4 & D5 at National Weather Forecasting Centre (NWFC), IMD, New Delhi. D1, D2, D3, D4 & D5 represents 24, 48, 72, 96 & 120 hours forecast respectively based on 0300 UTC observations and other inputs. The verification has been carried out for heat wave (HW) forecast issued for all the 36 sub-divisions of India. Verification of forecasts & warnings is a necessary component of operational forecasting activity and it is done by assessing its accuracy by comparing the predicted weather with the observed one. It is necessary to re-analyze the failure and success of heat wave forecast events.

Data and Methodology

NWFC of IMD is issuing Met-subdivision wise operational weather forecast & warnings up to 120 hours for all the 36 sub-divisions of India.

In the present study, 24, 48, 72, 96 & 120 hours forecast verification for heat wave is carried out for all the 36 meteorological sub-divisions of India. As per the criterion of IMD: To declare the heat waves the following criteria should be met at least in 2 stations in a Met. sub-division for at least two consecutive days and it will be declared on second day. Heat wave temperature of a station reaches at least 40⁰C or more for plains and at least 30⁰C or more for hilly regions.

Based on departure from normal:

Heat wave: Departure from normal is 4.5⁰C to 6.4⁰C

Severe heat wave: Departure from normal is >6.4⁰C

For coastal areas: If maximum temperature departure is 4.5⁰C or more from normal, Heat wave may be described provided actual maximum temperature is 37⁰C or more.

Heat wave verification has been carried out by using 2x2 contingency table, given below:

Forecast	Observed		
	Yes	No	Total
Yes	Hits (a)	False alarms (b)	Forecast yes
No	Misses (c)	Correct negatives (d)	Forecast no
Total	Observed yes	Observed no	Total

Using above table, following scores are calculated:

- a) **Frequency Bias Index**, $FBI = \frac{(a+b)}{(a+c)}$, Range: 0 to ∞ , Perfect score = 1
- b) **Probability of Detection**, $PoD = \frac{a}{(a+c)}$, Range: 0 to 1, Perfect score = 1
- c) **Miss Rate**, $MR = \frac{c}{(a+c)}$, Range: 0 to 1, Perfect score = 0
- d) **Percentage Correct**, $PC = \frac{(a+d)}{n}$, Range: 0 to 1, Perfect score = 1
- e) **False Alarm Rate**, $F = \frac{b}{(b+d)}$, Range: 0 to 1, Perfect score = 0
- f) **Critical Success Index**, $CSI = \frac{a}{(a+b+c)}$, Range: 0 to 1, Perfect score = 1
- g) **Heidke Skill Score**, $HSS = \frac{2(ad-bc)}{[(a+c)(c+d) + (a+b)(b+d)]}$, Range: $-\infty$ to 0
Perfect score = 1
- h) **Correct Non-Occurrence**, $C-NON = \frac{d}{(b+d)}$, Range: 0 to 1, Perfect score = 1

DISCUSSIONS OF VARIOUS SCORES AND CONCLUSIONS

In India, Heat wave generally occurs in the months of April, May & June mainly over plains of northwest India, central & east India and adjoining parts of south Peninsula. In the present study, we have verified the heat wave warnings issued by NWFC for day one, day two, day three, day four and day five, sub-division wise and for all India also. The various skill scores for all India and sub-division wise for season as whole and for all five days is discussed in the following sections.

Scores for All India during the summer season

False Alarm Rate (FAR) during the season country as whole was 0.11, 0.10, 0.08, 0.05 & 0.04 for D1, D2, D3, D4 & D5 respectively. Missing rate (MR) during the season country as whole was 0.08, 0.15, 0.38, 0.49 & 0.58 for D1, D2, D3, D4 & D5 respectively. Critical Success Index (CSI) during the season country as a whole was 0.49, 0.47, 0.38, 0.37 & 0.32 for D1, D2, D3, D4 & D5 respectively. Heidke Skill Score (HSS) during the season country as whole was 0.60, 0.58, 0.49, 0.48 & 0.43 for D1, D2, D3, D4 & D5 respectively and Probability of Detection (POD) during the season country as a whole was 0.92, 0.85, 0.62, 0.51 & 0.42 for D1, D2, D3, D4 & D5 respectively. **[(Figure-1(a) and (Annexure VI - Table-1)].**

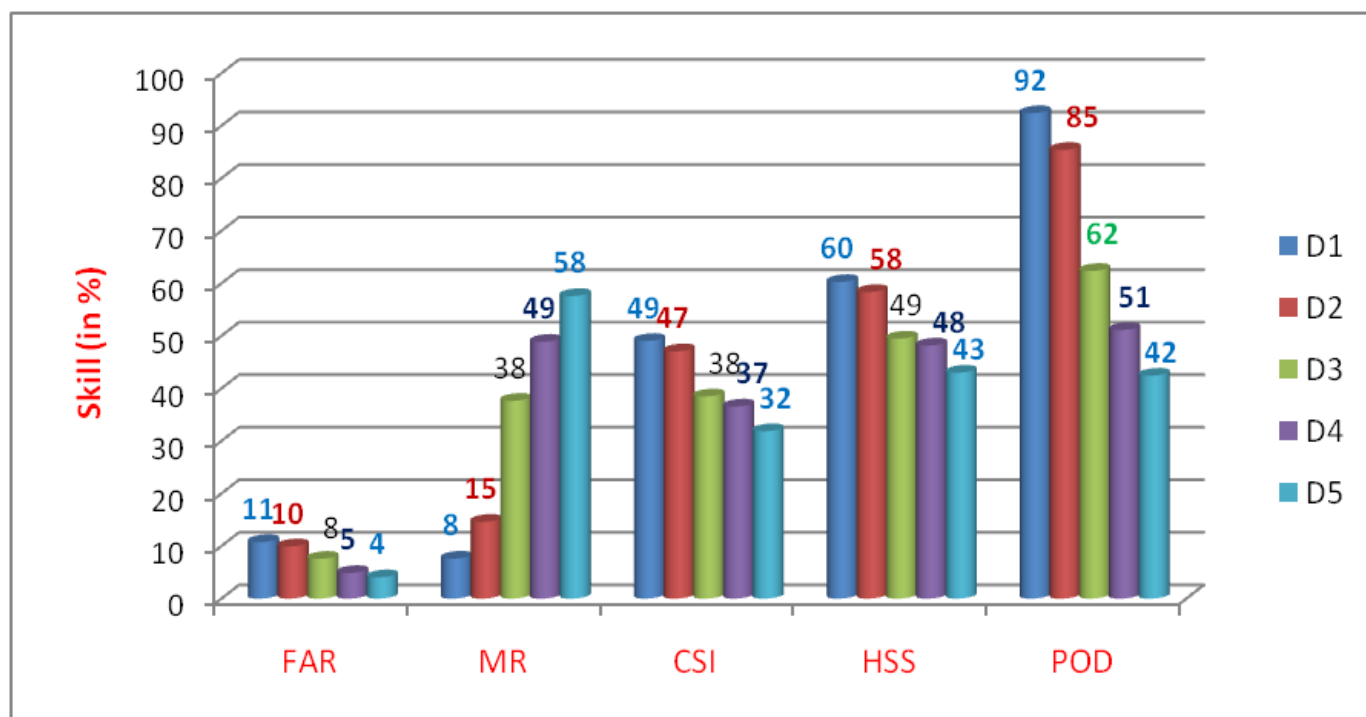


Figure-1 (a): FAR, MR, CSI, HSS and POD for All India during the season for all five days

Scores for Homogeneous region and All India for Day one:

- FAR for all India during the season was 0.11 in day one. However for the homogeneous region during the season FAR was 0.11 for east, west and northwest India; 0.24 for central India and 0.10 for south India for day one.
- MR for all India during the season was 0.08 in day one. However for the homogeneous region during the season MR was 0.17 for east India; 0.04 for northwest India; 0.06 for central India, 0.12 for west India and 0.11 for south India for day one.
- CSI for all India during the season was 0.49 in day one. However for the homogeneous region during the season CSI was 0.29 for east India; 0.55 for northwest India; 0.64 for central India; 0.47 for west India and 0.34 for south India for day one.
- HSS for all India during the season was 0.60 in day one. However for the homogeneous region during the season HSS was 0.40 for east India; 0.65 for northwest India; 0.64 for central India, 0.58 for west India and 0.46 for south India for day one.
- POD for all India during the season was 0.92 in day one. However for the homogeneous region during the season POD was 0.83 for east India, 0.96 for northwest India, 0.94 for central India, 0.88 for west India and 0.89 for south India for day one. [(Figure-1(b) and (Annexure VI - Table-1)].

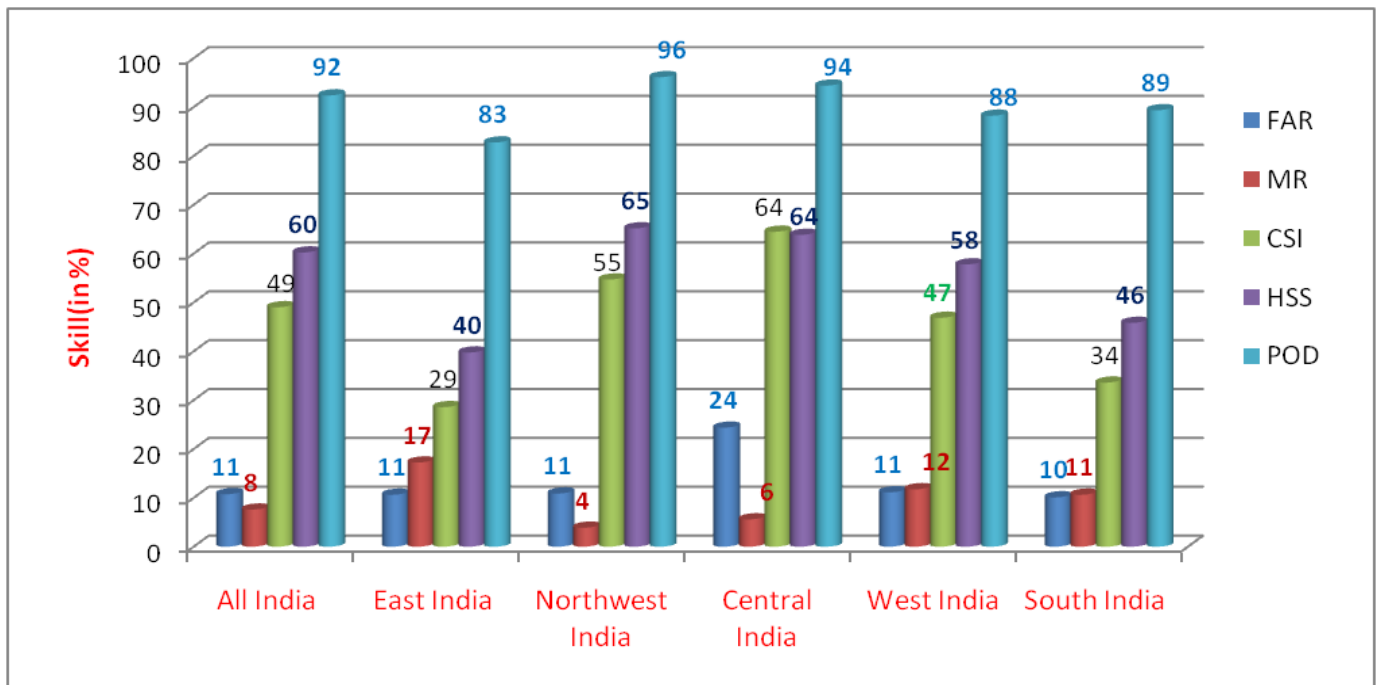


Figure-1 (b): FAR, MR, CSI, HSS and POD for All India and homogeneous regions during the season for day one.

Scores for Homogeneous region and All India for Day two:

- FAR for all India during the season was 0.10 in day two. However for the homogeneous region during the season FAR was 0.10 for east, 0.10 for northwest India, 0.25 for central India, 0.10 for west India and 0.09 for south India for day two.
- MR for all India during the season was 0.15 in day two. However for the homogeneous region during the season MR was 0.14 for east India; 0.12 for northwest India; 0.15 for central India, 0.16 for west India and 0.19 for south India for day two.
- CSI for all India during the season was 0.47 in day two. However for the homogeneous region during the season CSI was 0.31 for east India; 0.53 for northwest India; 0.58 for central India, 0.46 for west India and 0.33 for south India for day two.
- HSS for all India during the season was 0.58 in day two. However for the homogeneous region during the season HSS was 0.43 for east India; 0.64 for northwest India; 0.55 for central India, 0.57 for west India and 0.45 for south India for day two.
- POD for all India during the season was 0.85 in day two. However for the homogeneous region during the season POD was 0.86 for east India, 0.88 for northwest India, 0.85 for central India, 0.84 for west India and 0.81 for south India for day two. **[(Figure-1(c) and (Annexure VI - Table-1)].**

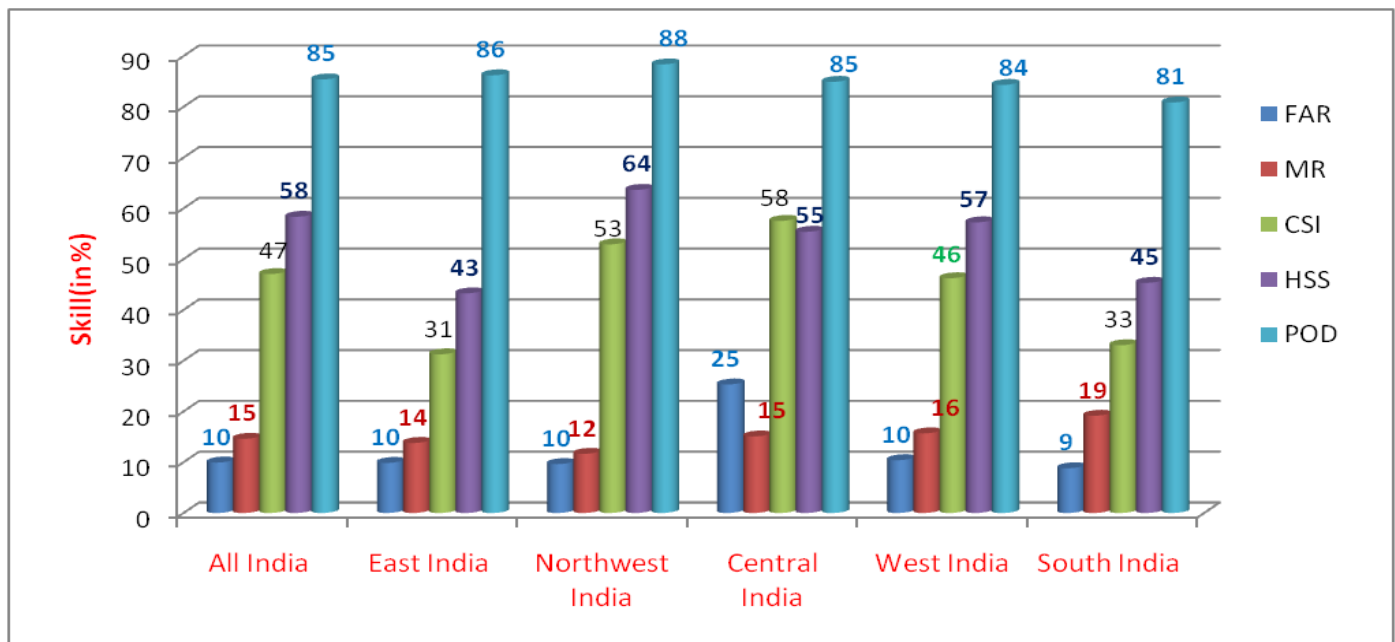


Figure-1 (c): FAR, MR, CSI, HSS and POD for All India and homogeneous regions during the season for day two

Scores for Homogeneous region and All India for Day three:

- FAR for all India during the season was 0.08 in day three. However for the homogeneous region during the season FAR was 0.05 for east, 0.08 for northwest India, 0.25 for central India, 0.06 for west India and 0.07 for south India for day three.
- MR for all India during the season was 0.38 in day three. However for the homogeneous region during the season MR was 0.69 for east India; 0.32 for northwest India; 0.25 for central India, 0.49 for west India and 0.53 for south India for day three.
- CSI for all India during the season was 0.38 in day three. However for the homogeneous region during the season CSI was 0.16 for east India; 0.44 for northwest India; 0.51 for central India; 0.34 for west India and 0.22 for south India for day three.
- HSS for all India during the season was 0.49 in day three. However for the homogeneous region during the season HSS was 0.23 for east India; 0.55 for northwest India; 0.48 for central India, 0.44 for west India and 0.31 for south India for day three.
- POD for all India during the season was 0.62 in day three. However for the homogeneous region during the season POD was 0.31 for east India, 0.68 for northwest India, 0.75 for central India, 0.51 for west India and 0.47 for south India for day three. [(Figure-1(d) and (Annexure VI - Table-1)].

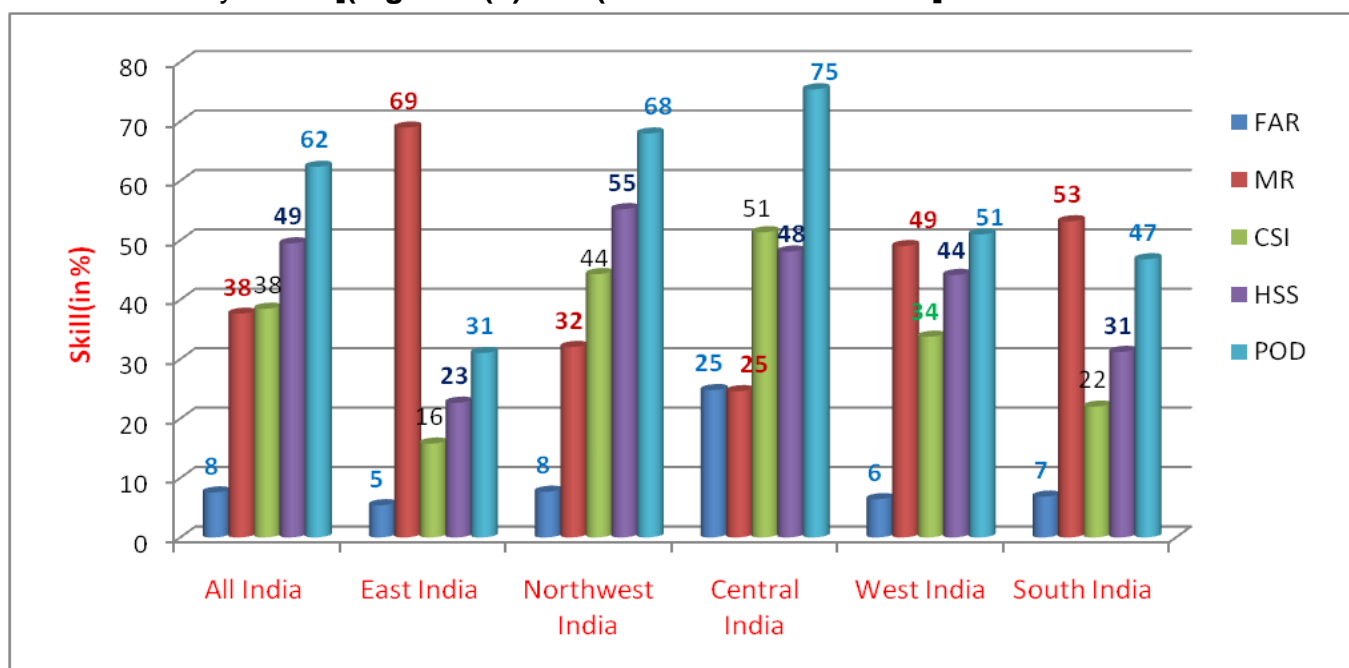


Figure-1 (d): FAR, MR, CSI, HSS and POD for All India and homogeneous regions during the season for day three

Scores for Homogeneous region and All India for Day four:

- FAR for all India during the season was 0.05 in day four. However for the homogeneous region during the season FAR was 0.03 for east, 0.06 for northwest India, 0.18 for central India, 0.04 for west India and 0.04 for south India for day four.
- MR for all India during the season was 0.49 in day four. However for the homogeneous region during the season MR was 0.97 for east India; 0.43 for northwest India; 0.30 for central India, 0.61 for west India and 0.70 for south India for day four.
- CSI for all India during the season was 0.37 in day four. However for the homogeneous region during the season CSI was 0.02 for east India; 0.41 for northwest India; 0.52 for central India; 0.30 for west India and 0.18 for south India for day four.
- HSS for all India during the season was 0.48 in day four. However for the homogeneous region during the season HSS was 0.01 for east India; 0.53 for northwest India, 0.40 for west India and 0.27 for south India for day four.
- POD for all India during the season was 0.51 in day four. However for the homogeneous region during the season POD was 0.03 for east India, 0.57 for northwest India, 0.70 for central India, 0.39 for west India and 0.30 for south India for day four. [(Figure-1(e) and (Annexure VI - Table-1)].

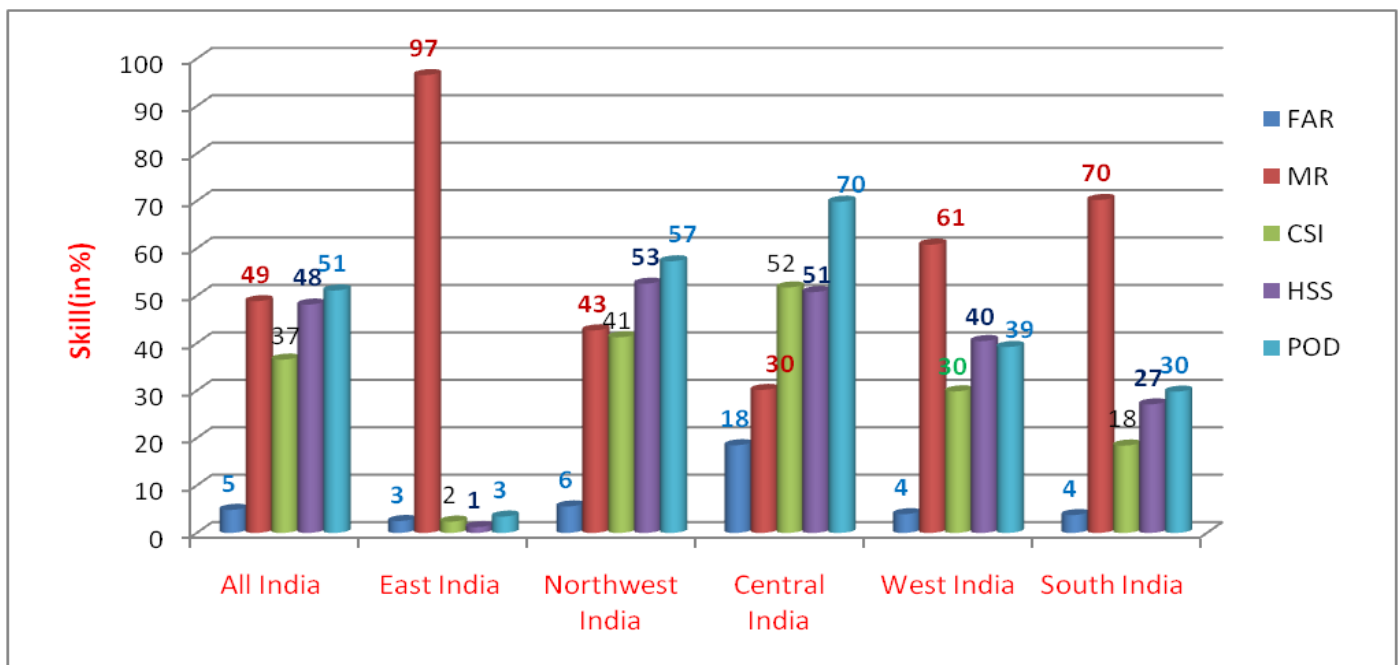


Figure-1 (e): FAR, MR, CSI, HSS and POD for All India and homogeneous regions during the season for day four.

Scores for Homogeneous region and All India for Day five:

- FAR for all India during the season was 0.04 in day five. However for the homogeneous region during the season FAR was 0.01 for east, 0.05 for northwest India, 0.17 for central India, 0.03 for west India and 0.03 for south India for day five.
- MR for all India during the season was 0.58 in day five. However for the homogeneous region during the season MR was 0.97 for east India; 0.59 for northwest India; 0.34 for central India, 0.75 for west India and 0.74 for south India for day five.
- CSI for all India during the season was 0.32 in day five. However for the homogeneous region during the season CSI was 0.03 for east India; 0.30 for northwest India; 0.50 for central India; 0.20 for west India and 0.18 for south India for day five.
- HSS for all India during the season was 0.43 in day five. However for the homogeneous region during the season HSS was 0.03 for east India; 0.40 for northwest India, 0.49 for central India, 0.28 for west India and 0.27 for south India for day five.
- POD for all India during the season was 0.42 in day five. However for the homogeneous region during the season POD was 0.03 for east India, 0.41 for northwest India, 0.66 for central India, 0.25 for west India and 0.26 for south India for day five. [(Figure-1(f) and (Annexure VI - Table-1)].

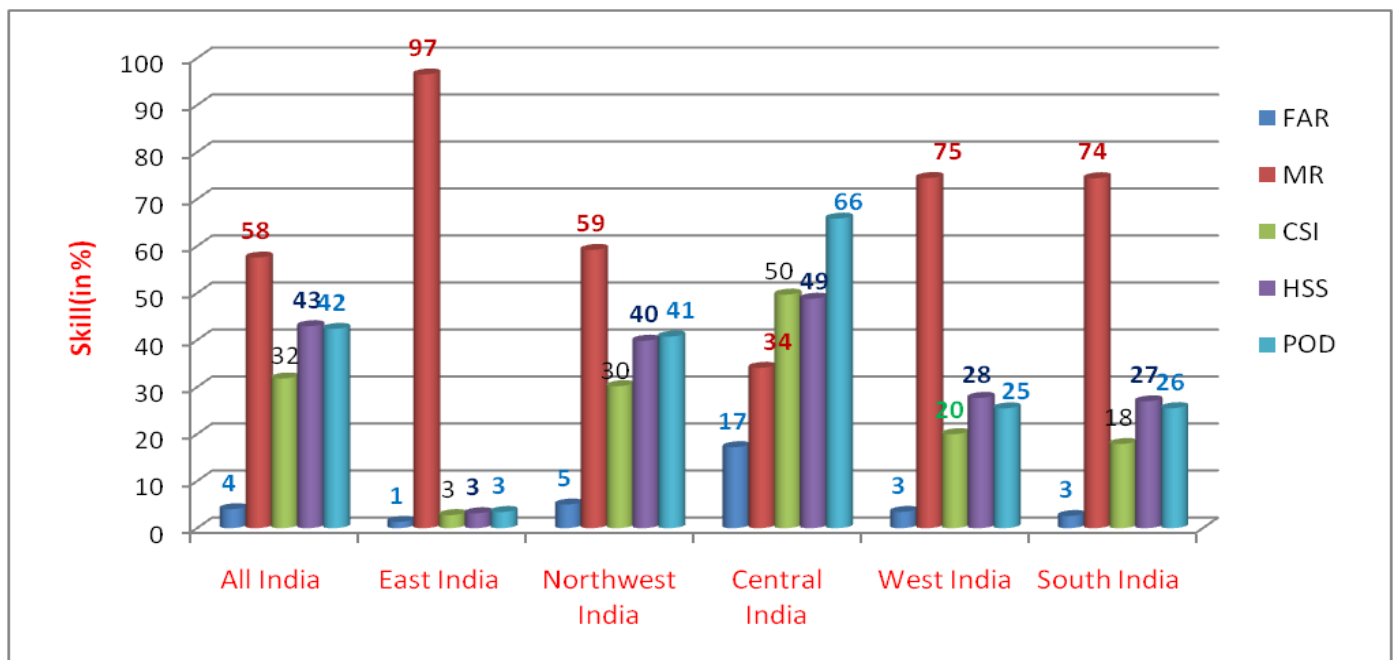
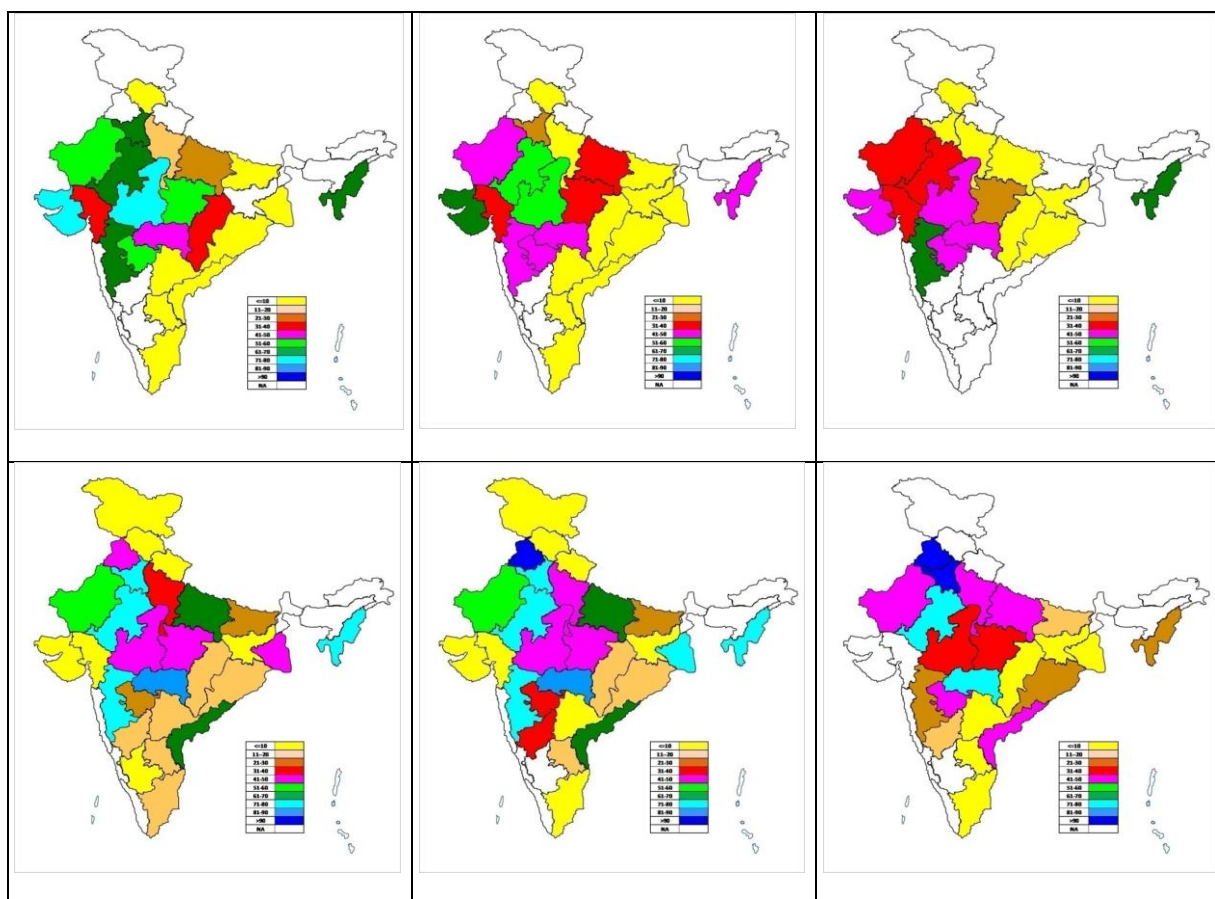


Figure-1 (f): FAR, MR, CSI, HSS and POD for All India and homogeneous regions during the season for day five.

Critical Success Index (CSI)

CSI for India for the season as a whole was 49% against 54% in 2018 in day one; it was 51% in month of April, 40% in month of May and 57% in month of June. In Day, CSI for season as a whole was more than 50% over 10 sub-divisions with highest score over East Rajasthan (80%), Vidarbha (79%), West Madhya Pradesh (74%) and west Rajasthan (73%) and lowest CSI is observed over Rayalaseema (12%). In day two CSI for India season as a whole was 47%; it was 40% in month of April, 41% in month of May and 57% in month of June. CSI was more than 50% over 9 sub-divisions with highest CSI score over Vidarbha (79%), East Rajasthan (74%), West Madhya Pradesh (65%) and West Rajasthan (64%). Lowest CSI is observed over Rayalaseema (12%). Similarly in day three CSI for India season as a whole was 38%, it was 33% in month of April, 35% in May and 45% in June. CSI was more than 50% Vidarbha (68%), West Madhya Pradesh (60%), East Rajasthan (57%), and west Rajasthan (55%).**[(Figure-2(a) and (Annexure VI - Table-2)].**



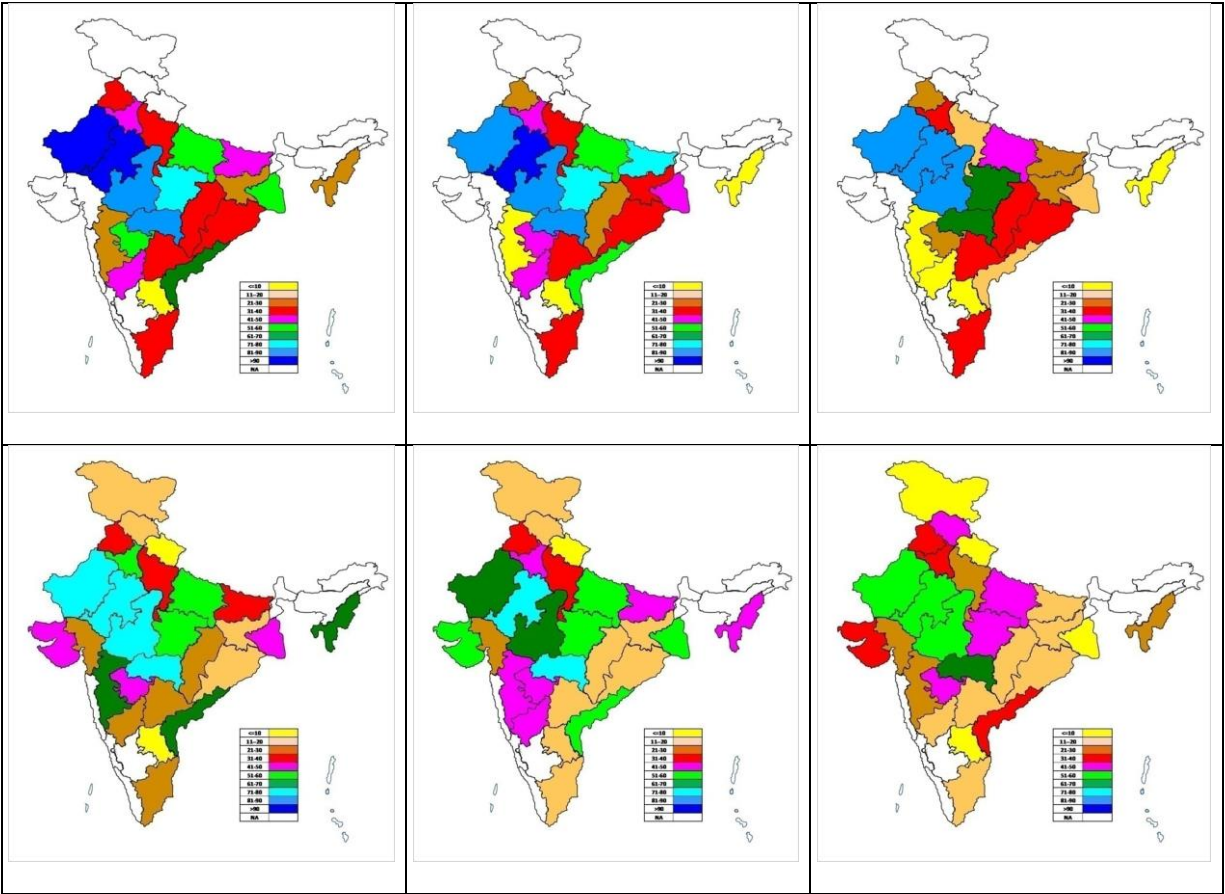


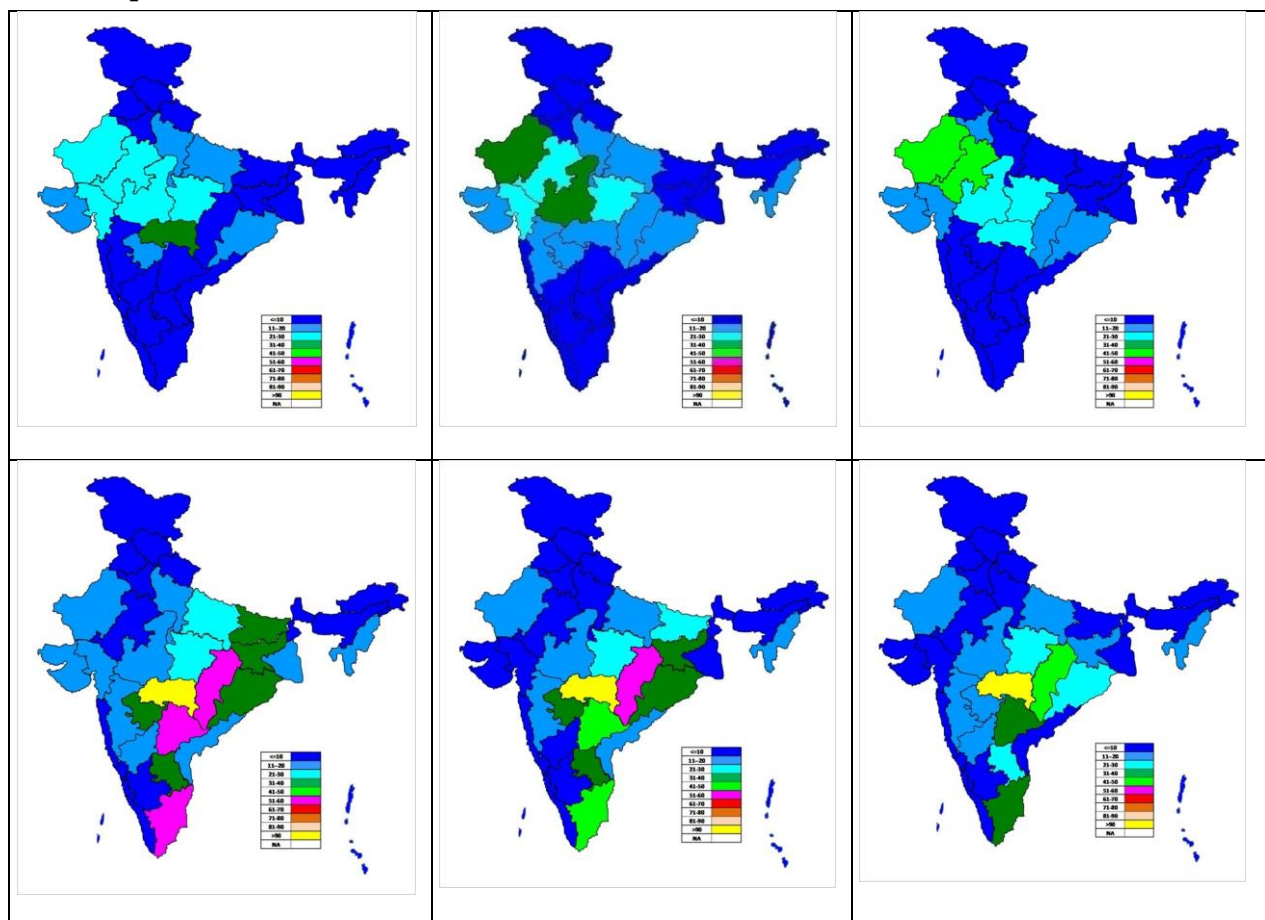
Figure-2 (a): Seasonal and month wise CSI for day one, two and three.

	≤10
	11--20
	21-30
	31-40
	41-50
	51-60
	61-70
	71-80
	81-90
	>90

Legends

False Alarm Rate (FAR)

FAR for all India season as a whole was 11% in 2019 against 3% in 2018 in day one and month-wise FAR was least in month of April (7%) and was highest in month of May (14%) and it was 11% in month of June in day one. Season as a whole, FAR was less than 10% over 18 sub-divisions with lowest FAR over South Interior Karnataka (1%) Jammu & Kashmir (4%), Uttarakhand (5%), Himachal Pradesh (6%) and Punjab (7%) in day one. FAR for all India season as a whole was 10% in day two, month-wise FAR was least in month of April (7%) and was highest in month of May (13%), and it was 9% in month of June in day two. Season as a whole, FAR was less than 10% over 17 sub-divisions of India with North Interior Karnataka (2%), Jammu & Kashmir and Uttarakhand (3%) Himachal Pradesh (4%) and Saurashtra (5%) in day two. FAR for all India season as a whole was 8% in day three and month-wise FAR was least in month of April (6%) and was highest in month of May (9%) and it was 7% in month of June in day three. Season as a whole, FAR was less than 10% over 22 sub-divisions of India with lowest FAR Uttarakhand (1%) in day three. [(Figure-2(b) and (Annexure VI - Table-2)].



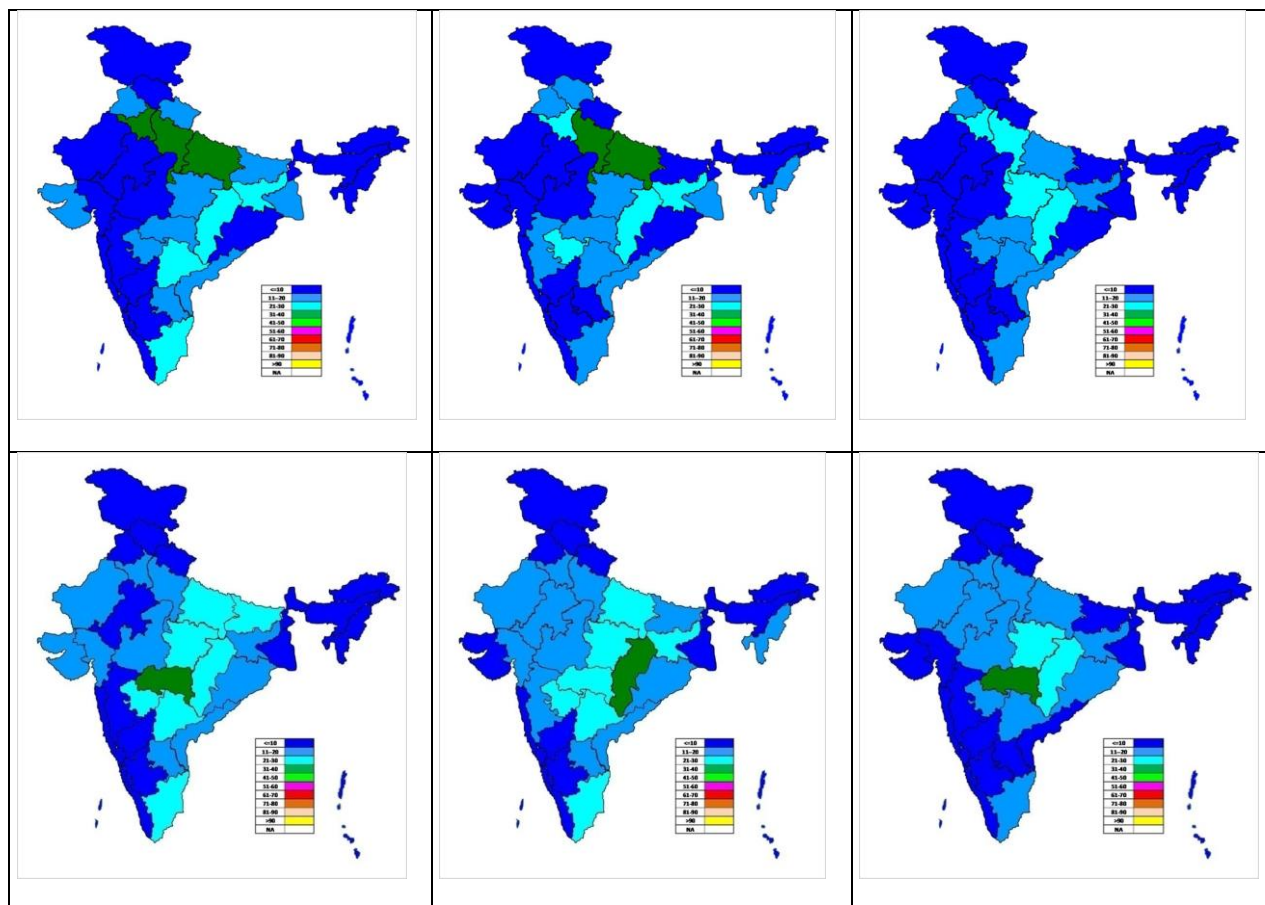


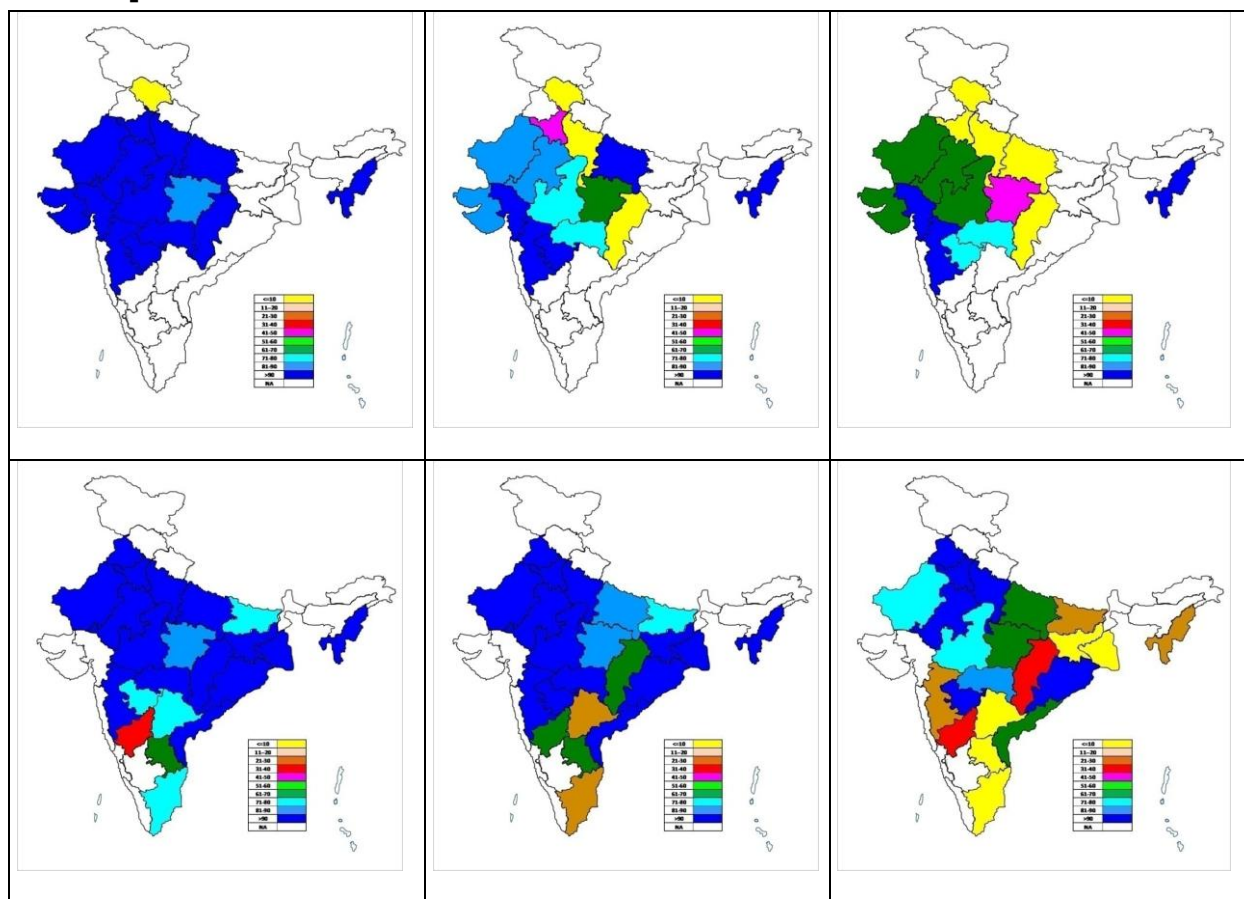
Figure-2 (b): Seasonal and month wise FAR for day one, two and three.

	<=10
	11--20
	21-30
	31-40
	41-50
	51-60
	61-70
	71-80
	81-90
	>90

Legends

Probability of Detection (POD)

POD is very sensitive to hits and ignores false alarms. During 2019, POD for India season as a whole was 92% against 91% in 2018 in day one; it was 97% in months of April, 93% in month of May and 90% in month of June in day one. PoD for season as a whole was more than 75% over 20 sub-divisions with highest score over Gangatic West Bengal, Odisha, West Uttar Pradesh, Haryana, Chandigarh, Delhi, Punjab, East Rajasthan, Coastal Andhra Pradesh and Telangana are 100% in day one. PoD for India season as a whole was 85% in day two, it was 89% in month of May, 85% in June and 80% in April for day two. Season as a whole, POD was more than 75% over 19 sub-divisions with highest score over Odisha (100%), East Rajasthan (96%), Marathwada (94%), Coastal Andhra Pradesh (92%) and East Uttar Pradesh (91%) in day two. Similarly PoD for India season as a whole was 62% in day three, it was 64% in month of May, 62% in June and 61% in April in day three. PoD season as a whole was more than 75% over Odisha (100%), East Rajasthan (83%), East Rajasthan (96%), Vidarbha (81%) and West Rajasthan (79%) in day three. **[(Figure-2(c) and (Annexure VI - Table-2)].**



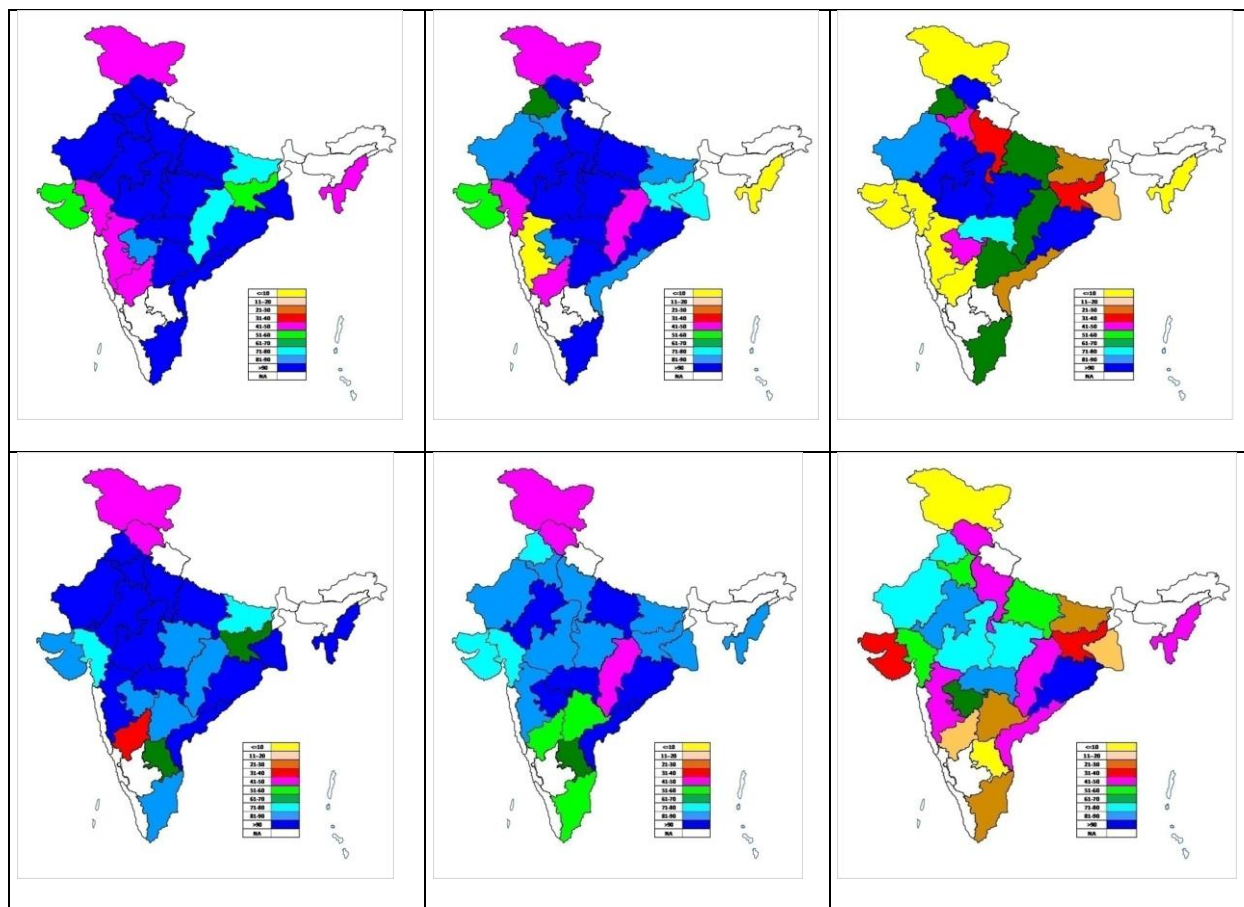


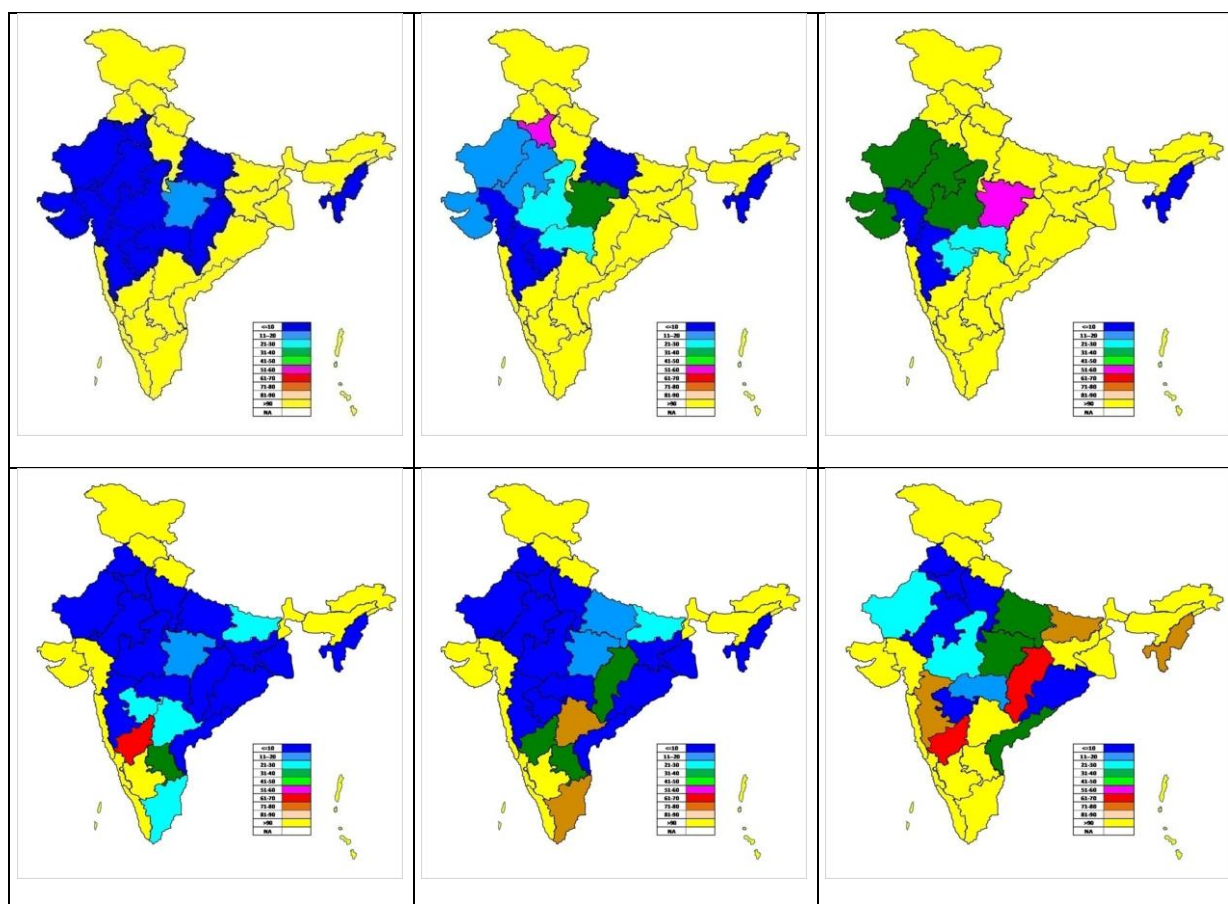
Figure-2 (c): Seasonal and month wise POD for day one, two and three.

	<=10
	11--20
	21-30
	31-40
	41-50
	51-60
	61-70
	71-80
	81-90
	>90

Legends

Missing Rate (MR)

MR for India season as a whole was 8% in 2019 against 9% in 2018 in day one and month-wise MR was least in month of April (3%) and was highest in month of June (10%) and it was 7% in months of May in day one. Season as a whole, MR was less than 20% over 18 sub-divisions in day one. MR for India season as a whole was 15% and month-wise MR was least in month of May (10%) and was highest in month of April (20%) and it was 15% in month of June in day two. Season as a whole, MR was less than 20% over 18 sub-divisions in day two. Similarly MR for India season as a whole was 38% and month-wise MR was least in month of May (35%) and was highest in month of April (39%) and it was 38% in month of June in day three. Season as a whole, MR was less than 20% over 3 subdivisions in day three. [(Figure-2(d) and (Annexure VI - Table-2)].



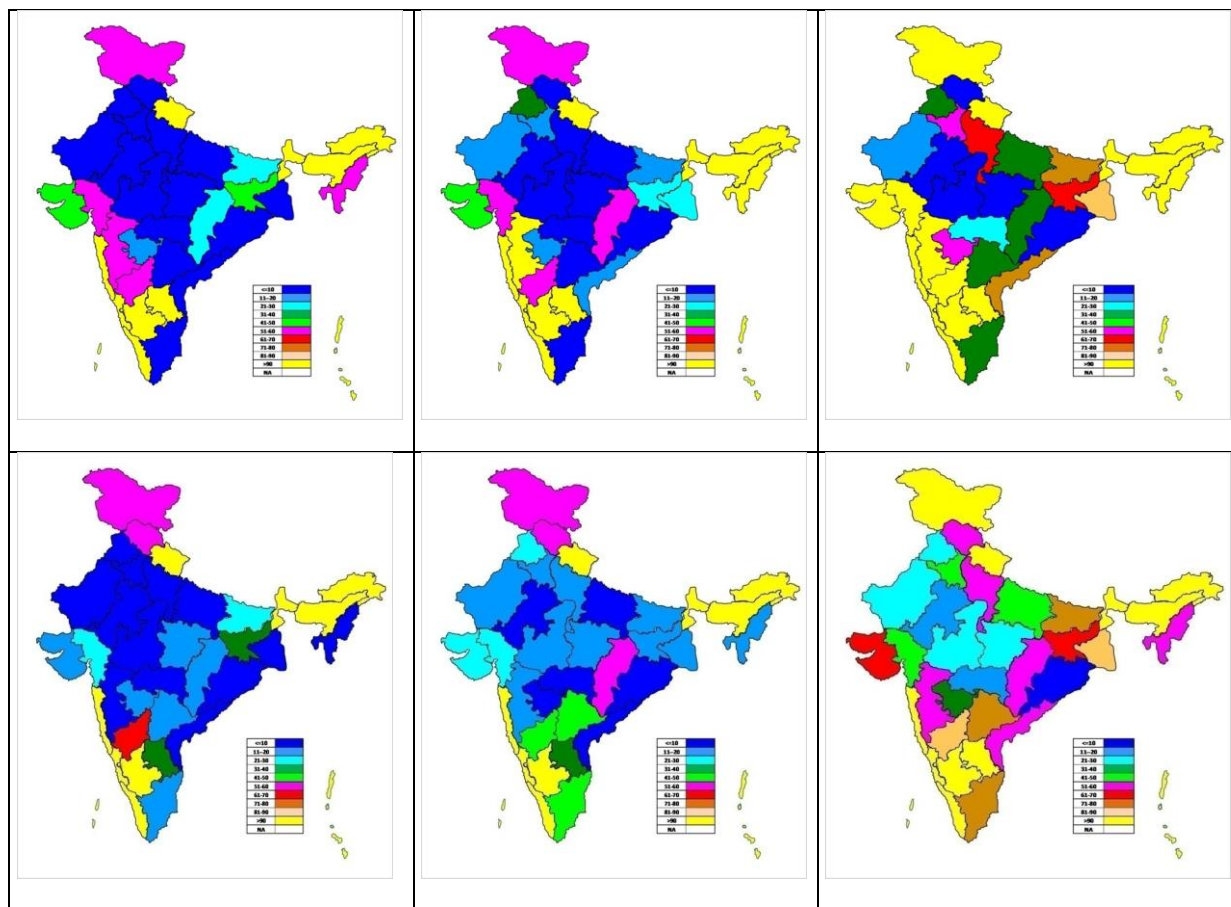


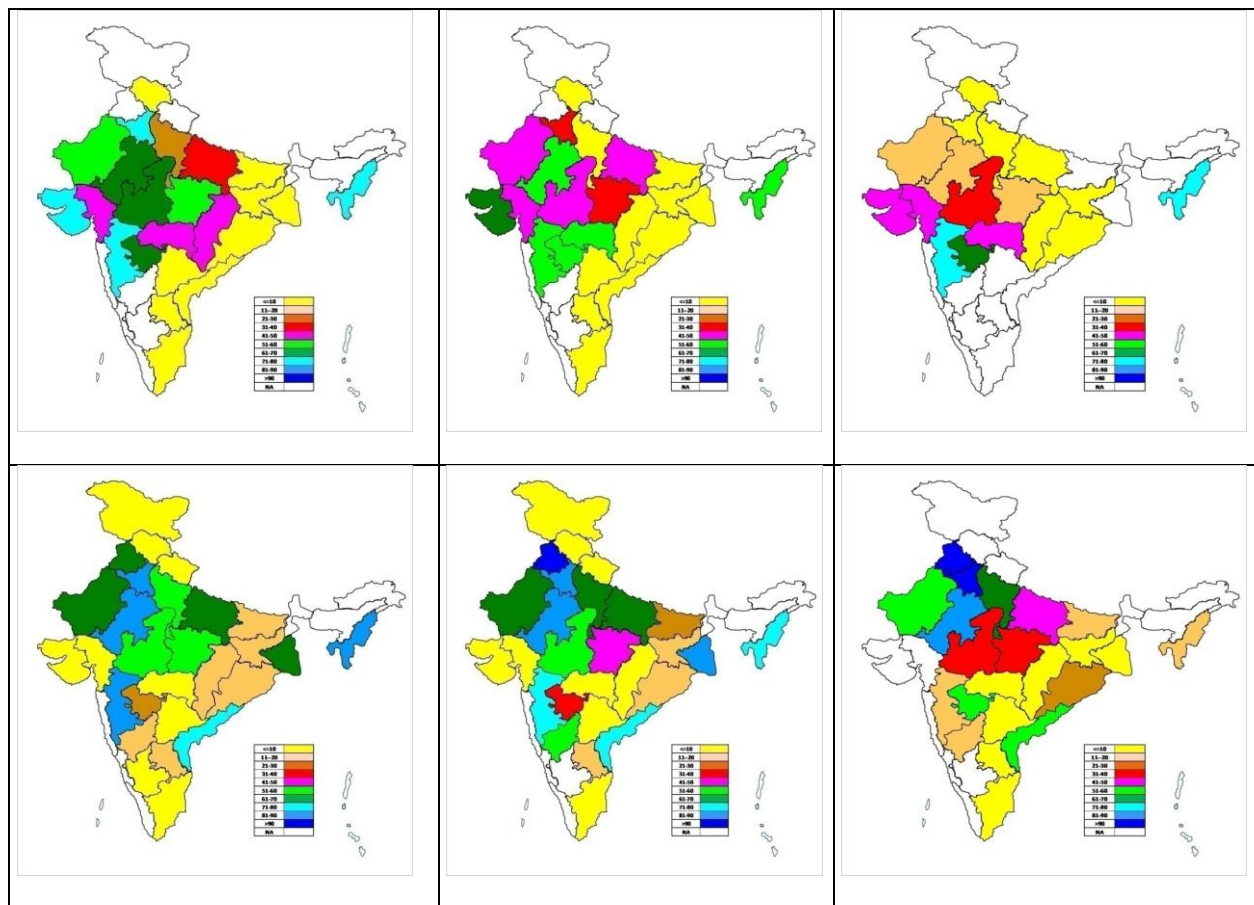
Figure-2 (d): Seasonal and month wise MR for day one, two and three.

	<=10
	11--20
	21-30
	31-40
	41-50
	51-60
	61-70
	71-80
	81-90
	>90

Legends

Heidke Skill Scores (HSS)

It is the measure of forecast skill as compare to random forecast. HSS for India season as a whole was 60%, month-wise it was 66% in month of June, 64% in moth of April and 50% in May for day one. Season as a whole HSS was more than 50% over 12 sub-divisions with highest score over East Rajasthan (84%), West Madhya Pradesh & Madhya Maharashtra (75%) and Coastal Andhra Pradesh (71%) in day one. HSS for India season as whole was 58%, month-wise, it was 66% in month of June, 53% in moth of April and 52% in June for day two. HSS was more than 50% over 13 sub-divisions with highest HSS scores in East Rajasthan (79%), Saurashtra (70%) and West Rajasthan & Coastal Andhra Pradesh (67%) season as a whole for day two. Similarly HSS for India season as a whole was 49%, month-wise it was 55% in month of June and 45% in moths of April and May for day three. Season as a whole HSS was more than 50% over Himachal Pradesh (66%), East Rajasthan (61%), West Madhya Pradesh (60%), West Rajasthan (56) and Punjab (52%) in day three. [(Figure-2(e) and (Annexure VI - Table-2)].



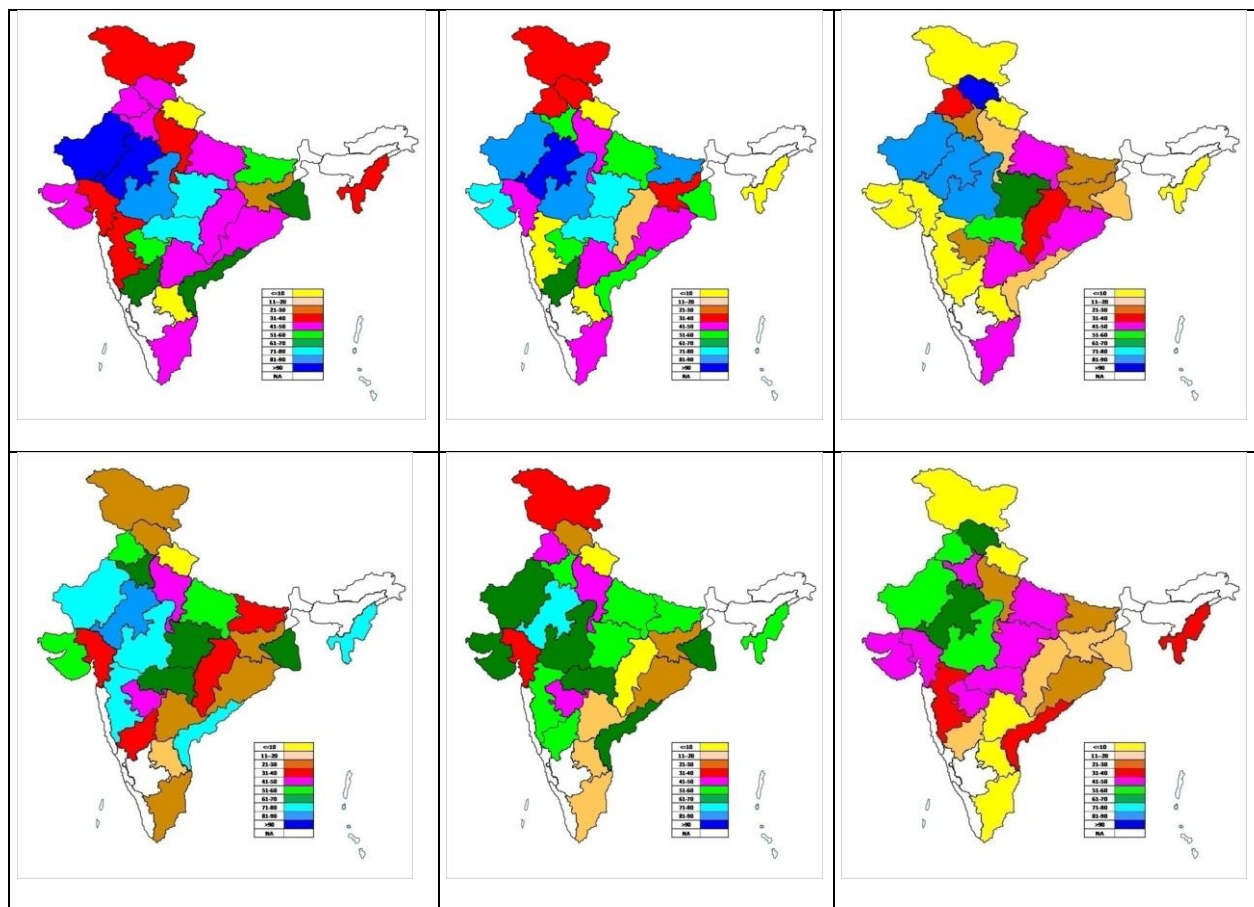


Figure-2 (e): Seasonal and month wise HSS for day one, two and three.

	<=10
	11--20
	21-30
	31-40
	41-50
	51-60
	61-70
	71-80
	81-90
	>90

Legends

In summer season of 2019, Probability of detection (POD) was more than 90% in Odisha, Gangetic West Bengal, West Uttar Pradesh, Haryana, Chandigarh & Delhi, Punjab, East Rajasthan, Coastal Andhra Pradesh and Telangana (100%) each, West Madhya Pradesh (97%), West Rajasthan & Vidarbha (96%), East Uttar Pradesh (95%) and Madhya Maharashtra (94%) in day one. POD was more than 90% in Odisha (100%), East Rajasthan (96%), Marathawada (94%), Coastal Andhra Pradesh (92%) and East Uttar Pradesh & Vidarbha (91%) in day two. POD was more than 80% in Odisha (100%), East Rajasthan (83%) and Vidarbha (81%) in day three. POD was more than 70% in West Rajasthan (75%), West Madhya Pradesh & Vidarbha (72%) and East Madhya Pradesh (70%) in day four. POD was more than 60% in West Madhya Pradesh (69%), Vidarbha (68%) and West Rajasthan & East Madhya Pradesh (64%) in day five.

In summer season of 2018, POD was East Rajasthan (93%), West Uttar Pradesh (91%) and Gangetic West Bengal (75%) in day one, while these subdivisions has 100% POD in day one of 2019. Thus Probability of detection (POD) in the summer season of 2019 has improved significantly as compared to summer season of 2018 over East Rajasthan, West Uttar Pradesh and Gangetic West Bengal in day one. In day two of 2018 summer season Odisha has (80%) while in day of 2019 summer season Odisha has (100%). Thus Probability of detection (POD) in the summer season of 2019 has improved significantly as compared to summer season of 2018 over Odisha in day two. Similarly in day three also POD has increased significantly over Odisha in 2019 as compared to 2018.

Comparison of heat wave scores during 2014 to 2019

Missing Rate (MR): Missing Rate was lowest in 2019 and highest in 2017 for all five days during 2014 to 2019. Missing Rate increased from 2015 to 2017 and then decreased till 2019 continuously for all five days. As expected, Missing Rate is lowest in day one and highest in day five and it increases from day one to day five continuously during 2014 to 2019 [Figure 3 (a)].

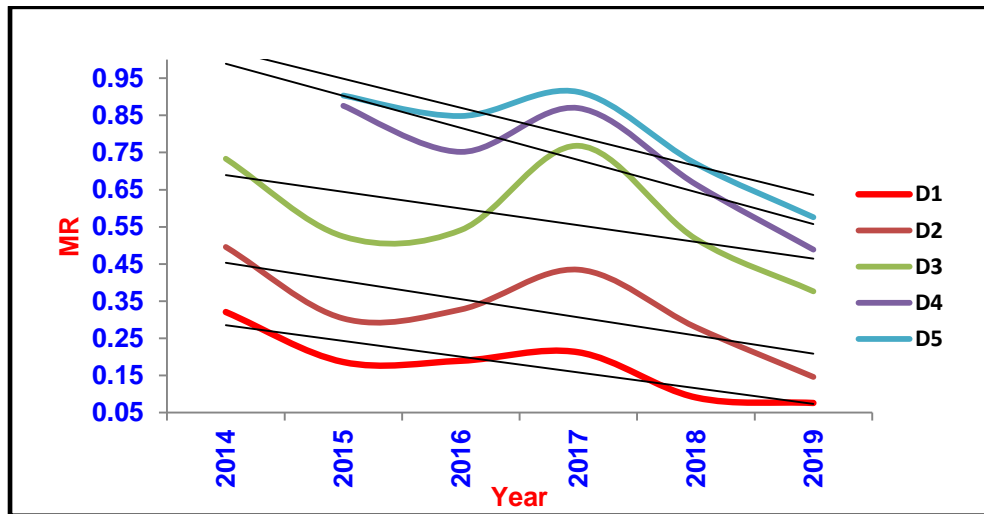


Figure-3 (a): Missing Rate during 2014 to 2019 for all five days.

False Alarm Rate (FAR): False Alarm Rate is lowest in 2015 and highest in 2019 for all five days and it increases from 2015 to 2016 for all five days. After 2016 FAR decreases till 2018 and again increases in 2019 for all five days. False Alarm Rate is lowest in day five and highest in day one and it decreases from day one to day five continuously during 2014 to 2019 [Figure 3 (b)].

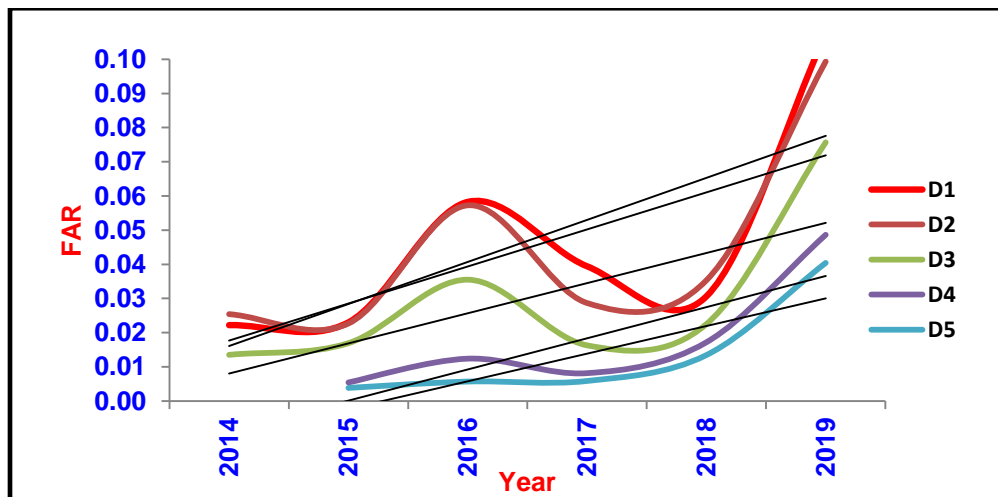


Figure-3 (b): False Alarm Rate during 2014 to 2019 for all five days.

Critical Success Index (CSI): Critical Success Index increase from 2014 to 2015 and decreases thereafter till 2017 and again increases during 2018 and 2019 for day one, two & three. CSI increases from 2015 to 2016 and decrease thereafter till 2017 and increase during 2018 and 2019 continuously for day four and five. CSI is lowest in day five and highest in day one and it decreases from day one to day five continuously during 2014 to 2019 [Figure 3 (c)].

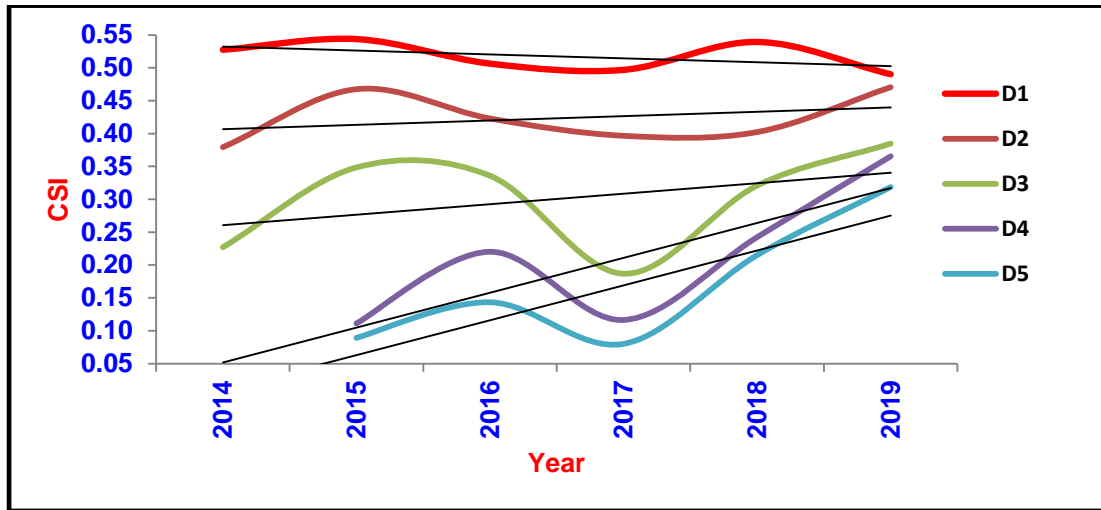


Figure-3 (c): Critical Success Index during 2014 to 2019 for all five days.

Probability of Detection (PoD): Probability of Detection increase from 2014 to 2015 and decreases thereafter till 2017 and again increases during 2018 and 2019 for day one, two & three. PoD increases from 2015 to 2016 and decrease thereafter till 2017 and increase during 2018 and 2019 continuously for day four and day five. PoD is lowest in day five and highest in day one and it decreases from day one to day five continuously during 2014 to 2019 [Figure 3 (d)].

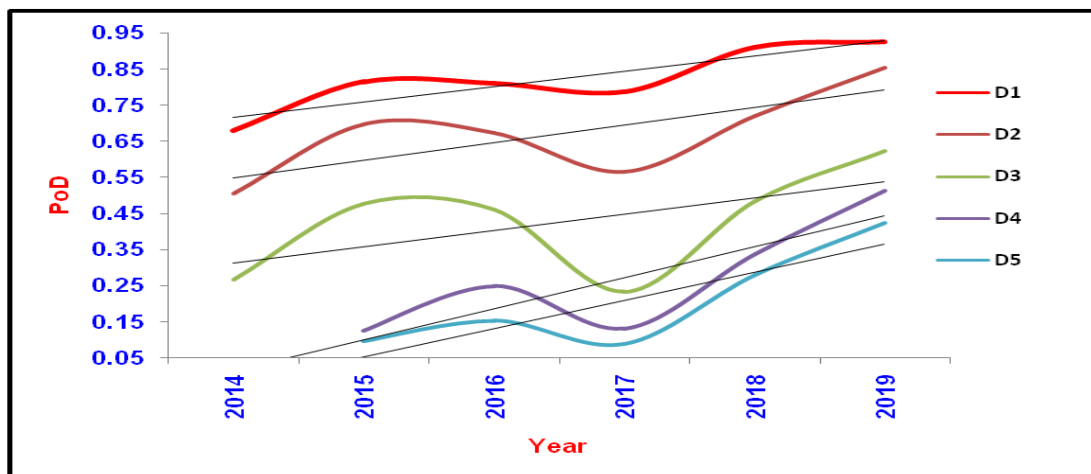


Figure-3 (d): Probability of Detection during 2014 to 2019 for all five days.

CHAPTER VI

ROLE OF IMD IN IMPLEMENTATION OF HEAT ACTION PLAN

The Heat Action Plan (HAP) is guide to extreme heat planning and includes an early warning system for extreme heat. The HAP aims to provide a framework for the implementation, coordination, and evaluation of extreme heat response activities. The Plan's primary objective is to alert those populations at risk of heat-related illness and to take appropriate precautions. HAP also includes longer term measures.

- IMD and NDMA are working with 23 states (Table-1) that generally record high temperatures leading to heat-wave conditions to develop heat action plans. Currently 20 cities have implemented HAP and implementations in next 100 cities are under process for which IMD has provided required data to NDMA.
- IMD is also planning to start district wise HAP in collaboration with NDMA etc.
- Public health advisories in consultation with health ministry to be initiated.
- Data is being provided to National remote Sensing Center (NRSC) and they are putting it in the Bhuvan map after calculating heat index.

Table 1: States, which are developing action plan for heat waves jointly with IMD and NDMA (Source: Natural Resources Defense Council: NRDC INTERNATIONAL: INDIA-EXPANDING HEAT RESILIENT CITIES ACROSS INDIA)

S.N.	States	S.N.	States
1	Andhra Pradesh	13	Kerala
2	Arunachal Pradesh	14	Maharashtra
3	Bihar	15	Madhya Pradesh
4	Chhattisgarh	16	Odisha
5	Delhi	17	Punjab
6	Gujarat	18	Rajasthan
7	Goa	19	Tamil Nadu
8	Haryana	20	Telangana
9	Himachal Pradesh	21	Uttarakhand
10	Jharkhand	22	Uttar Pradesh
11	Jammu and Kashmir	23	West Bengal
12	Karnataka		

CHAPTER VII

LESSONS LEARNT AND CONCLUSIONS

The FDP on heat waves was implemented from 1st April 2019 to 30th June 2019 as per the implementation plan. The FDP help in continuous monitoring of the environmental conditions to issue early warning of potential heat wave events over a particular area and thereby enable disaster managers to take appropriate measures to mitigate the adverse impacts of heat waves.

Lesson learnt

- There is still scope to determine the likelihood of Heat wave in a more quantitative manner making use of the probabilistic forecast by ensemble GFS, NCUM, ECMWF etc.
- The extreme forecast index, based on GFS & ECMWF need to be utilized & validated for assessing the extreme conditions.
- The potential studies carried out by CRS Pune and NWFC, need to be considered while deciding the heat wave warning.
- Currently the heat wave conditions and its warning is described largely in sub-division scale by NWFC and at district level by state level meteorological centers. It is to mention that a large category of population in urban areas is affected by heat waves. The city forecast issued by IMD does not include the warning for city, hence attempt should be made to provide location specific warning mainly for city areas as and when required.
- To further analyze the accuracy the heat wave warning errors based on persistence forecast needs to be calculated and forecast skill to be compared with persistence error.
- In view of increased marine activity possibility of issuing warning for marine heat wave needs to be explored.

Concluding Remarks

- The FDP resulted in betterment of the forewarning of impending heat wave events which led to a significant decrease in mortality rates.
- The FDP has resulted in enhanced monitoring of the heat wave occurrence bringing several institutions together.
- It has helped in development of several products with respect to Numerical weather prediction (NWP) and Satellite data, benefitted further prediction of the events.
- There has been visual improvement in the detection of the events, thus bringing increase in accuracy of the forecast.
- Gaps in response mechanism existing between advisories of IMD and field action needs to be bridged through a structural feedback mechanism from stake holders.
- In order to commence impact based district level warning for Heat wave, historical data regarding the causalities etc due to heat wave is required, for this purpose, NDMA has been approached.
- Training of health scientists of RED CROSS in understanding meteorological data analysis to address health impacts in general need to be initiated.

Reference list

1. Forecast Demonstration Project (FDP) for Improving Heat Wave Warning over India: Implementation Report, 2017
2. Forecast Demonstration Project (FDP) for Improving Heat Wave Warning over India: Implementation Report, 2018
3. National Climate Centre, Pune, Climate diagnostics Bulletin of India, March 2019
4. National Climate Centre, Pune, Climate diagnostics Bulletin of India, April 2019
5. National Climate Centre, Pune, Climate diagnostics Bulletin of India, May 2019
6. National Disaster Management Authority, Government of India, Guidelines for Preparation of Action Plan – Prevention and management of Heat Wave, 2017
7. D. S. PAI, SMITHA ANIL NAIR and A. N. RAMANATHAN*, Long term climatology and trends of heat waves over India during the recent 50 years (1961-2010) , Mausam Vol 64, Oct 13, 585-604

Acknowledgements

We are thankful to Secretary Ministry of Earth Sciences (MOES) and Director General of Meteorology, IMD for their continued encouragement and support in bringing out the Forecast Demonstration Project (FDP) on Heat waves implementation report for 2019. We are also thankful to National Centre for Medium Range Forecasting (NCMRWF), Indian National Centre for Ocean Information Services (INCOIS), Climate and Development Knowledge Network, Public Health Foundation of India, Indian Institute of Public Health, Ahmadabad and the Indian Red Cross Society for their valuable co-ordination during the FDP period. We immensely appreciate the valuable and wholehearted coordination extended by all the officers and staff of all the Regional and Meteorological Centers of the India Meteorological Department. We also acknowledge the valuable and timely inputs from Satellite Meteorology Division, NWP Division, Information System Services Division and Radar Division. We also thank the officers and staff of NWFC for their valuable contribution and guidance in bringing out the FDP report.

PRESS RELEASE
New Delhi, 01st April, 2019



भारत सरकार
Government of India
पृथ्वीविज्ञानमंत्रालय (एम. ओ. ई. एस.)
Ministry of Earth Sciences (MoES)
भारत मौसम विज्ञानविभाग
INDIA METEOROLOGICAL DEPARTMENT

**Seasonal Outlook for the Temperatures during
 April to June, 2019**

Highlights

- The April to June (AMJ) season average maximum temperatures are likely to be warmer than normal by 0.5°C over most of the meteorological subdivisions from central India and some subdivisions from northwest India. Near normal maximum temperatures are likely in the remaining subdivisions.
- The seasonal average minimum & mean temperatures over West Rajasthan are likely to be above normal by more than 1.0°C.
- Above normal heat wave conditions are likely in the core heat wave (HW) zone during the season (April to June).

1. Background

Since 2016, India Meteorological Department (IMD), has been issuing seasonal forecast outlooks for sub-divisional seasonal temperatures over the country during both hot and cold weather seasons. These seasonal outlooks are based on model simulations from the Monsoon Mission Coupled Forecasting System (MMCFS) Model developed under the Monsoon Mission project. This year IMD had issued temperature outlook for the hot weather season of March to May on 1st March, 2019. IMD has now prepared an updated seasonal outlook for the average temperatures during the hot weather season of April to June, 2019.

The MMCFS has a spatial resolution of about 38 km and improved modules of physics. The model climatology was prepared based on retrospective forecasts for 27 years (1982-2008). The seasonal temperature forecast outlook for the April to

June, 2019 presented here is prepared using MMCFS simulations based on the initial conditions of March, 2019. The forecast was prepared using 38 ensemble member forecasts. The model hindcasts and forecasts were bias corrected using the probability distribution function (pdf) method. The model shows moderate skill over many subdivisions over northwest and central India during the period 1982-2008.

2. Forecast for the AMJ Season (April to June 2019)

Fig.1, Fig.2 & Fig.3 show the sub-divisional forecasts for averaged maximum, minimum and mean temperature anomalies (departures from the long term normal) respectively for April-June (AMJ) season, 2019. The forecast indicates AMJ season averaged temperatures are likely to be warmer than normal by $\geq 0.5^{\circ}\text{C}$ to $< 1^{\circ}\text{C}$ over most of the subdivisions except over a few subdivisions from North, Northeast, and South India where near normal temperatures are most likely.

The season averaged maximum temperatures (**Fig.1**) are likely to be warmer than normal by $\geq 0.5^{\circ}\text{C}$ to $< 1^{\circ}\text{C}$ over Haryana, Chandigarh & Delhi (HCD), west & east Uttar Pradesh, west & east Rajasthan, west & east Madhya Pradesh, Chhattisgarh, Jharkhand, Odisha, Gujarat, Madhya Maharashtra, Vidharbha, Marathawada, Coastal Karnataka, North Interior Karnataka, Rayalaseema and Telangana. Subdivisions from rest of the country are likely to experience near normal maximum temperatures (Departure from normal between -0.5°C and 0.5°C).

The season averaged minimum temperatures (**Fig.2**) are likely to be near normal (departure from normal between -0.5°C and 0.5°C) in Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sub Himalayan West Bengal and Sikkim, Assam and Meghalaya, Arunachal Pradesh and Nagaland, Manipur, Mizoram & Tripura (NMMT). It is likely to be warmer than normal by $\geq 1^{\circ}\text{C}$ over west & east Rajasthan and warmer than normal by $\geq 0.5^{\circ}\text{C}$ to $< 1^{\circ}\text{C}$ over remaining subdivisions of the country.

The season averaged mean temperatures (**Fig.3**) are likely to be near normal (Departure from normal between -0.5°C and 0.5°C) in Jammu and Kashmir, Punjab, Himachal Pradesh, Uttarakhand, Sub Himalayan West Bengal and Sikkim, Gangetic west Bengal, Assam and Meghalaya, Arunachal Pradesh and NMMT. It is likely to be warmer than normal by $\geq 1^{\circ}$ over west Rajasthan and warmer than normal by $\geq 0.5^{\circ}\text{C}$ to $< 1^{\circ}\text{C}$ over remaining subdivisions of the country.

There is about 44% probability of maximum temperatures in the core heat wave (HW) zone during April to June 2019 to be above normal (**Fig.4**). Core HW zone covers states of Punjab, Himachal Pradesh, Uttarakhand, Delhi, Haryana, Rajasthan, Uttar Pradesh, Gujarat, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, West Bengal, Odisha and Telangana and meteorological subdivisions of Marathawada,

Vidharbha, Madhya Maharashtra and coastal Andhra Pradesh. **This in turn suggests that above normal heat wave conditions are likely in the core HW zone during the season.**

3. ENSO conditions in the Pacific Ocean

Current observations suggest that weak El Niño conditions are prevailing over the equatorial Pacific Ocean. The latest MMCFS forecast indicates that these conditions are likely to persist during this period April-June.

4. Extended Range Forecast Services

IMD also provides extended range forecasts (7 –day averaged forecasts for the next four weeks) of maximum and minimum temperatures over the country updated every Thursday. This is based on the Multi-model ensemble dynamical Extended Range Forecasting System currently operational at IMD, New Delhi. The forecasts are available through IMD, Delhi website (www.imd.gov.in).

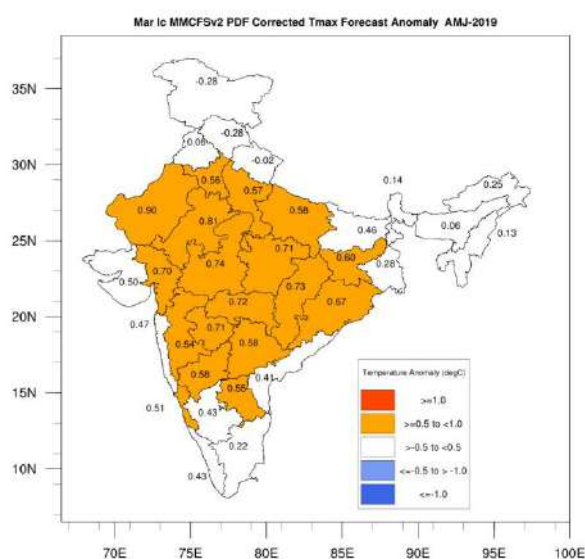


Fig.1.Subdivision averaged Maximum Temperature Anomaly forecast for April to June 2019

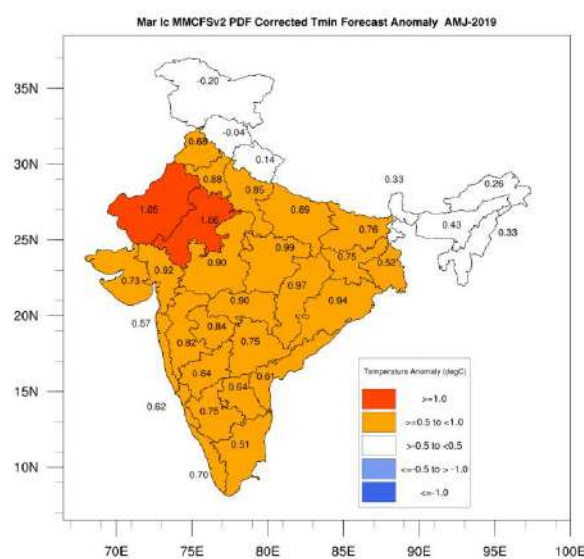


Fig.2. Subdivision averaged Minimum Temperature Anomaly forecast for April to June 2019.

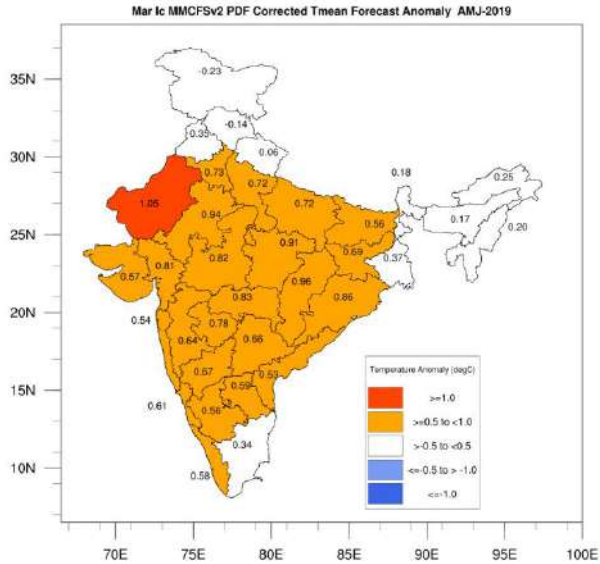


Fig.3. Subdivision averaged Mean Temperature Anomaly forecast for April to June 2019.

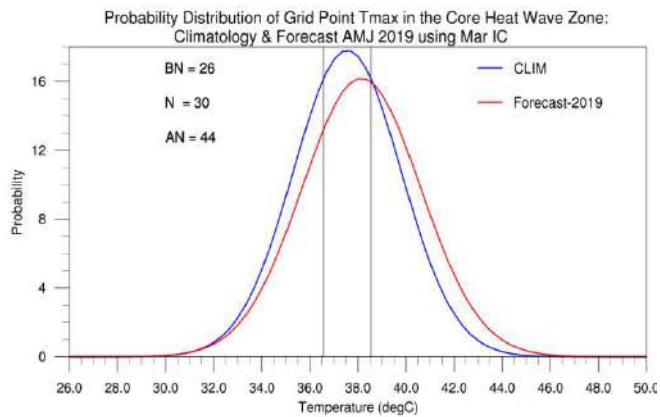


Fig.4. Climatological probability distribution (Blue colour) of maximum temperatures over the Core Heat wave Zone (CHZ) along with forecast probability distribution (Red colour) of the same for April to June 2019 suggesting above normal temperatures during the 2019 season.

ANNEXURE II

EXTENDED RANGE FORECAST (MAXIMUM TEMPERATURE AND ANOMOLY)

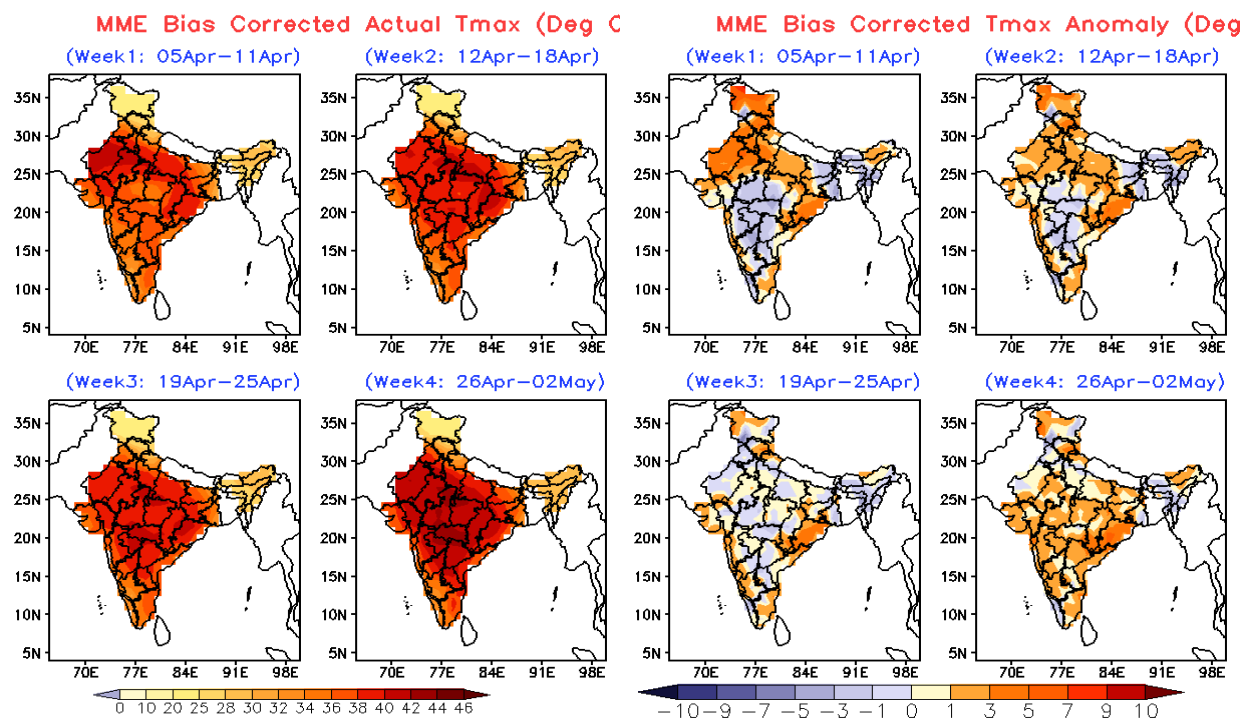


Figure 1: ERF based on 00 UTC of 3rd April, 2019

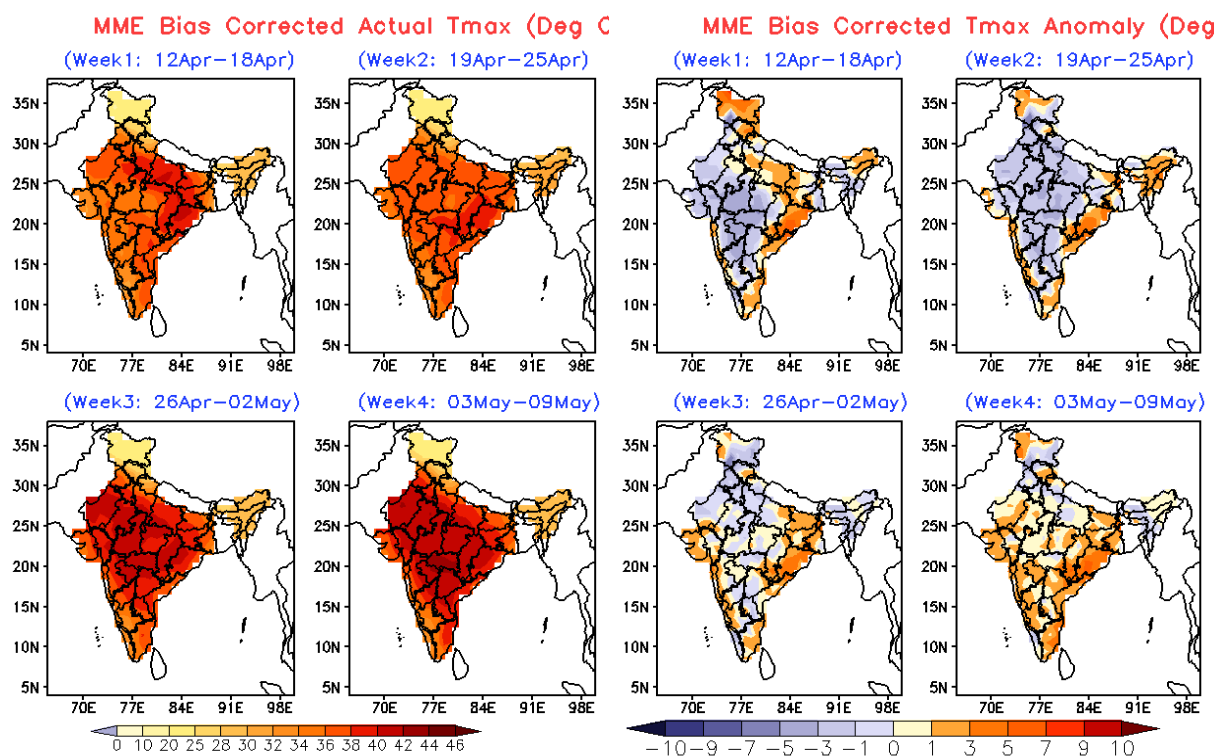


Figure 2: ERF based on 00 UTC of 10th April, 2019

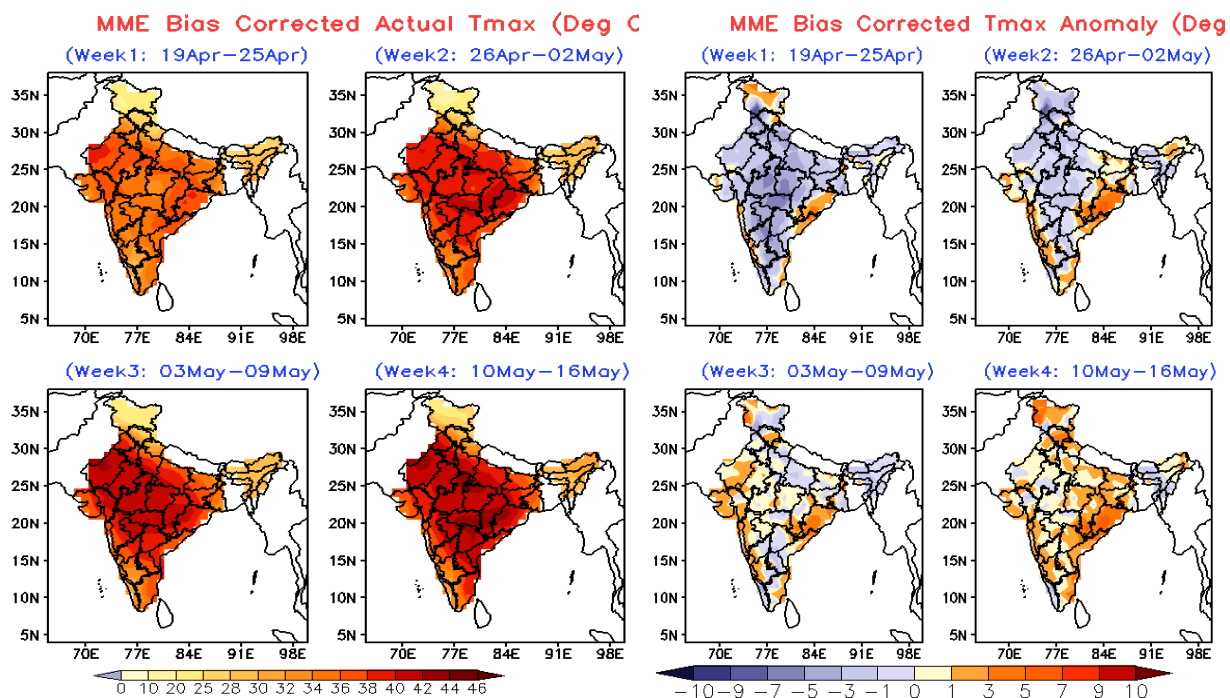


Figure 3: ERF based on 00 UTC of 17th April, 2019

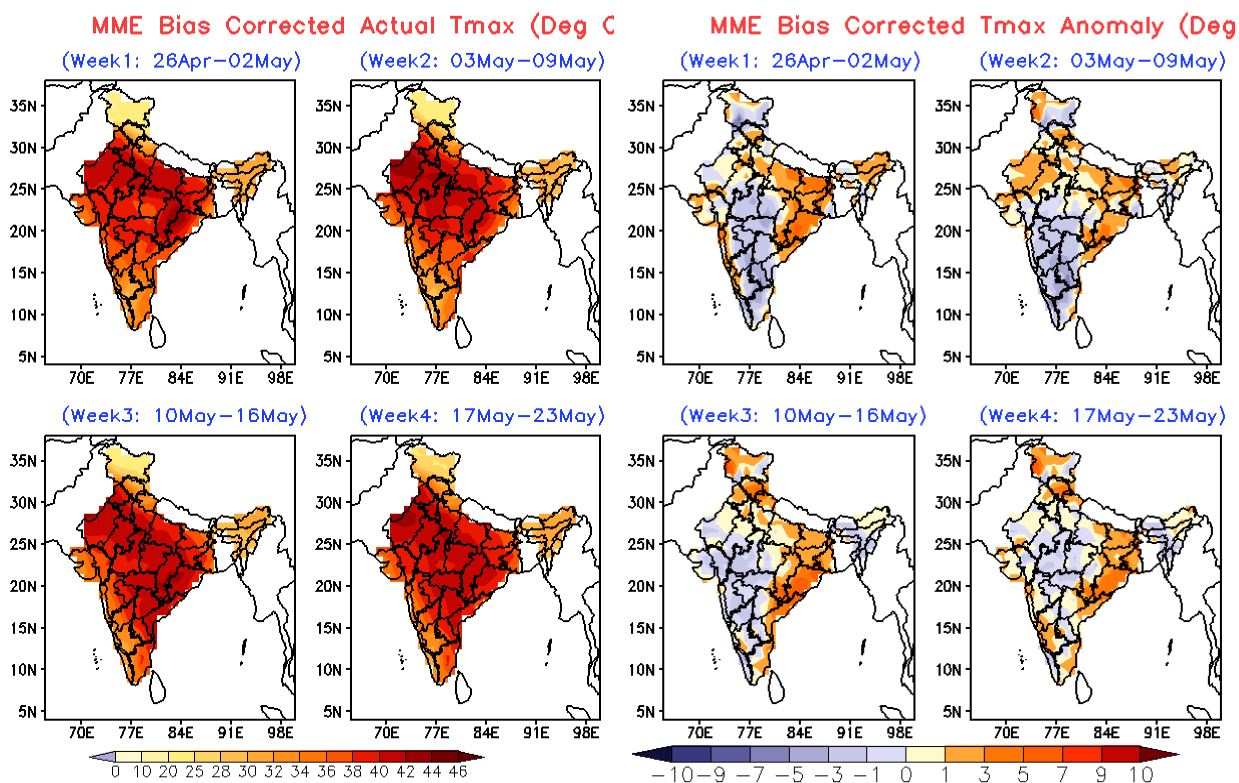


Figure 4: ERF based on 00 UTC of 24th April, 2019

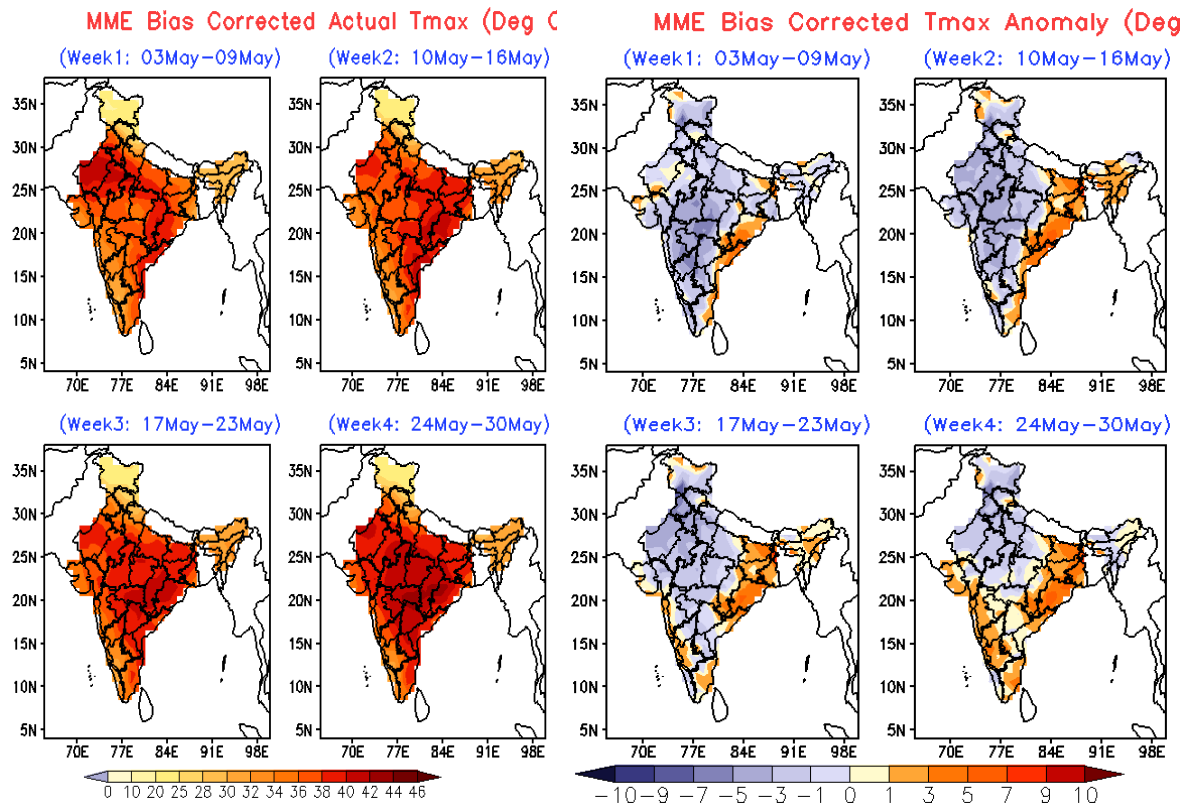


Figure 5: ERF based on 00 UTC of 1st May, 2019

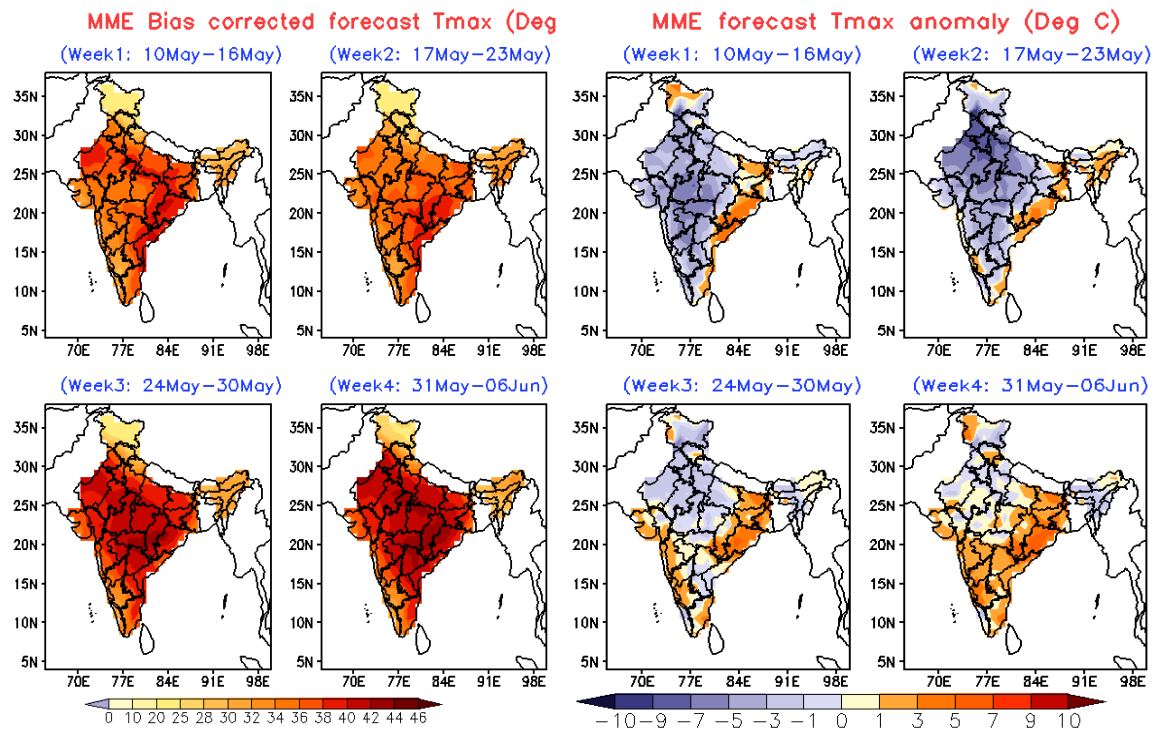


Figure 6: ERF based on 00 UTC of 8th May, 2019

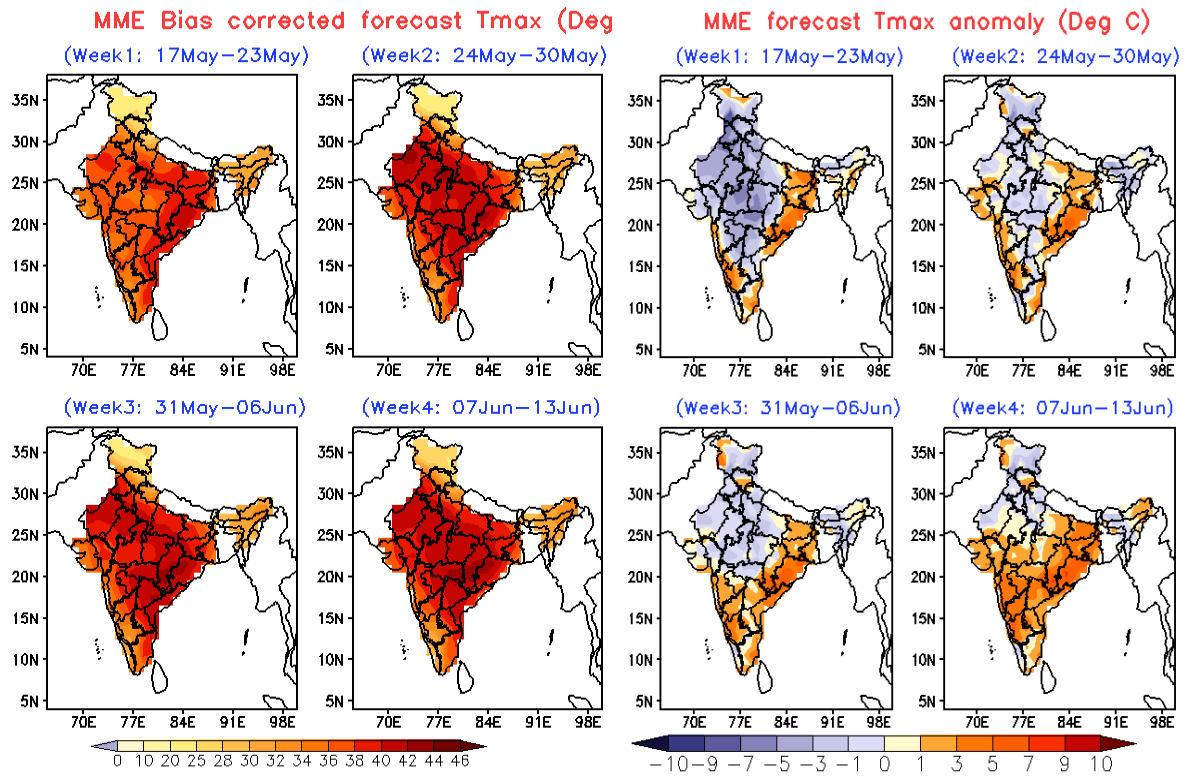


Figure 7: ERF based on 00 UTC of 15th May, 2019

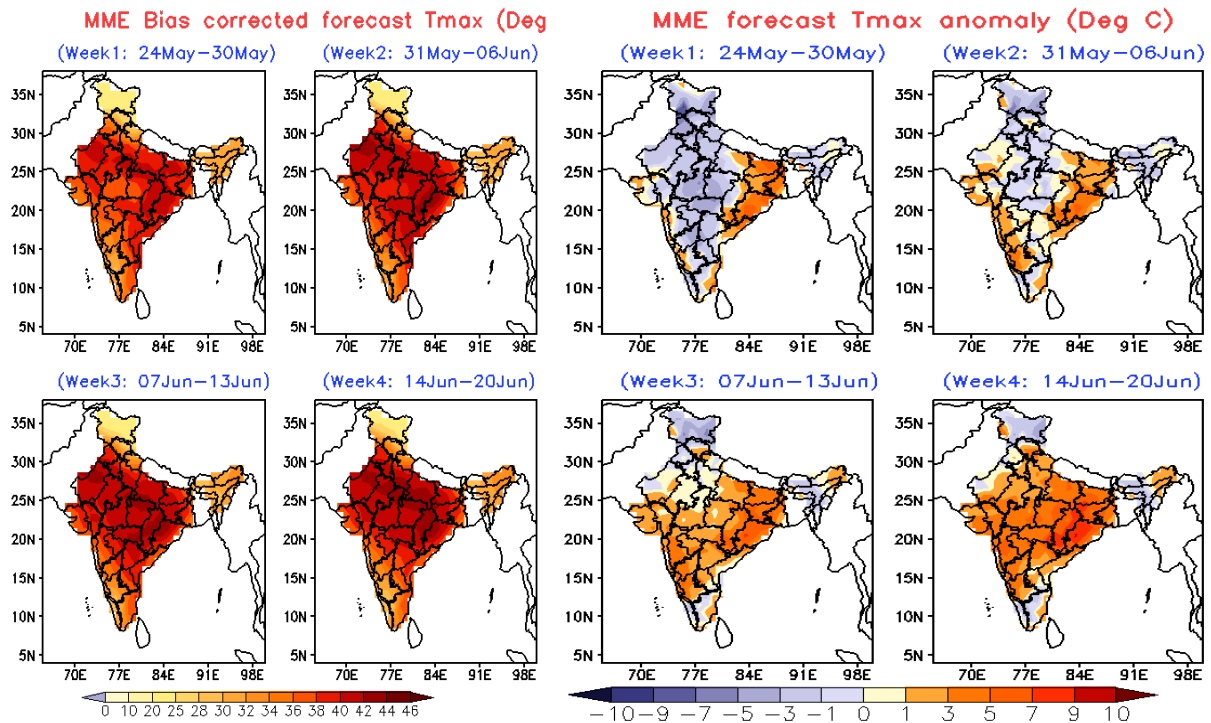


Figure 8: ERF based on 00 UTC of 22nd May, 2019

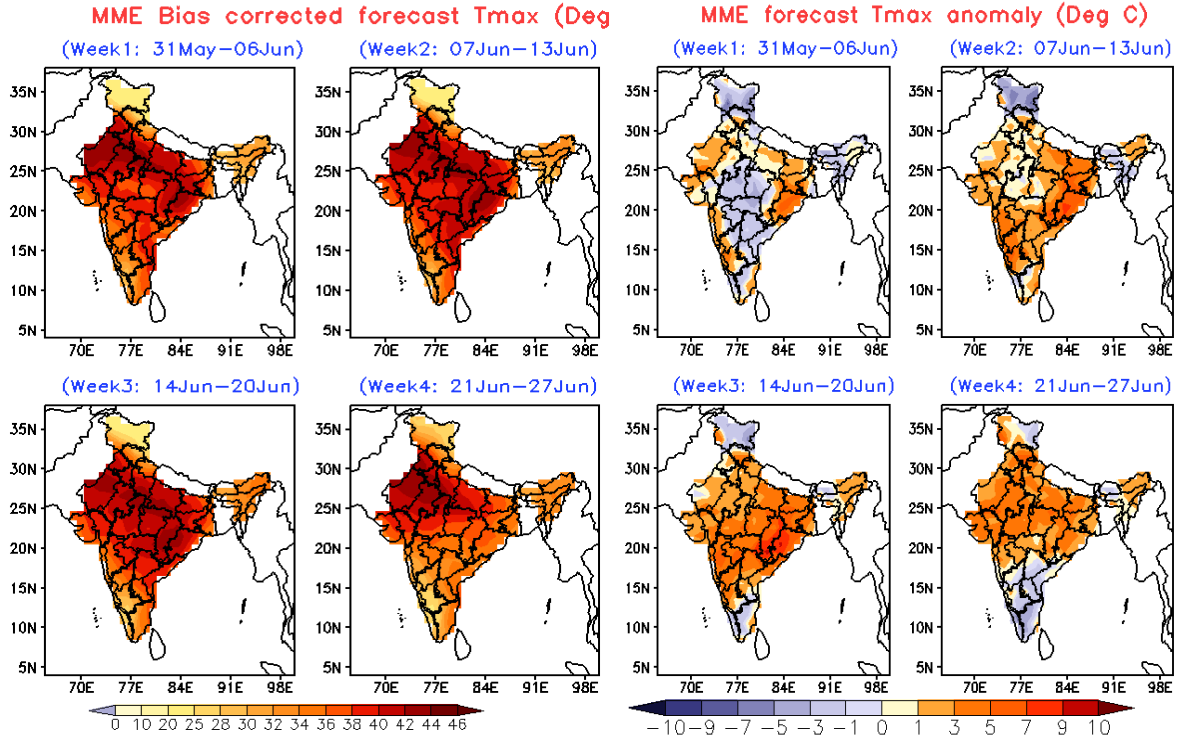


Figure 9: ERF based on 00 UTC of 29th May, 2019

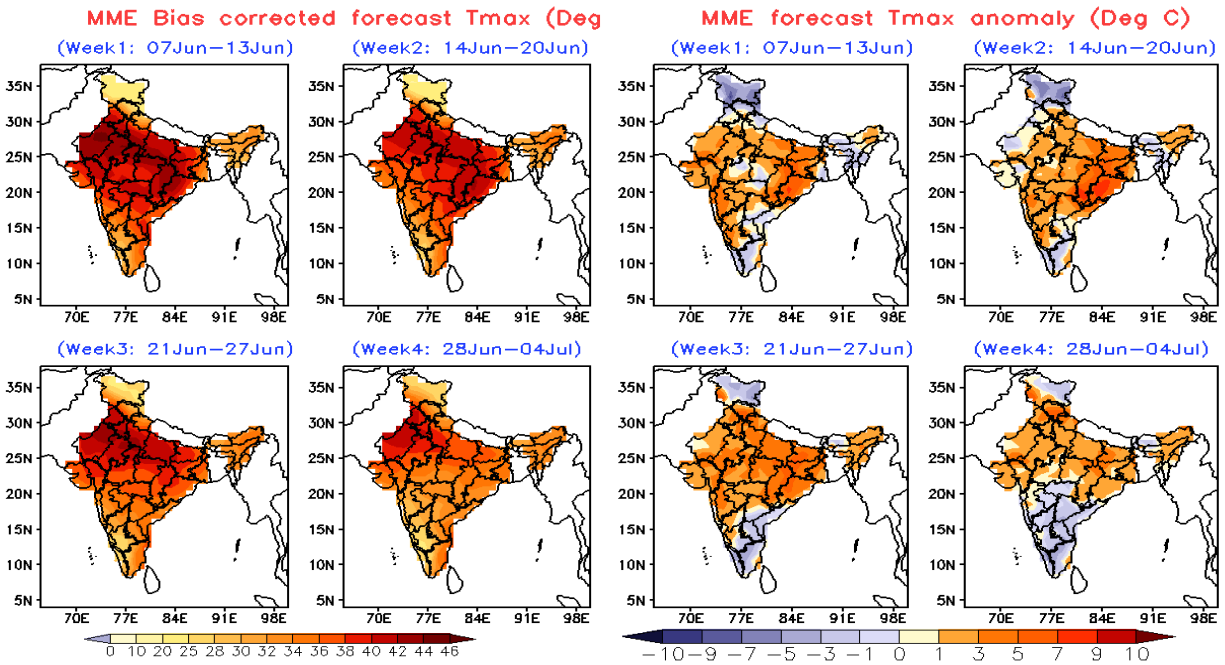


Figure 10: ERF based on 00 UTC of 5th June, 2019

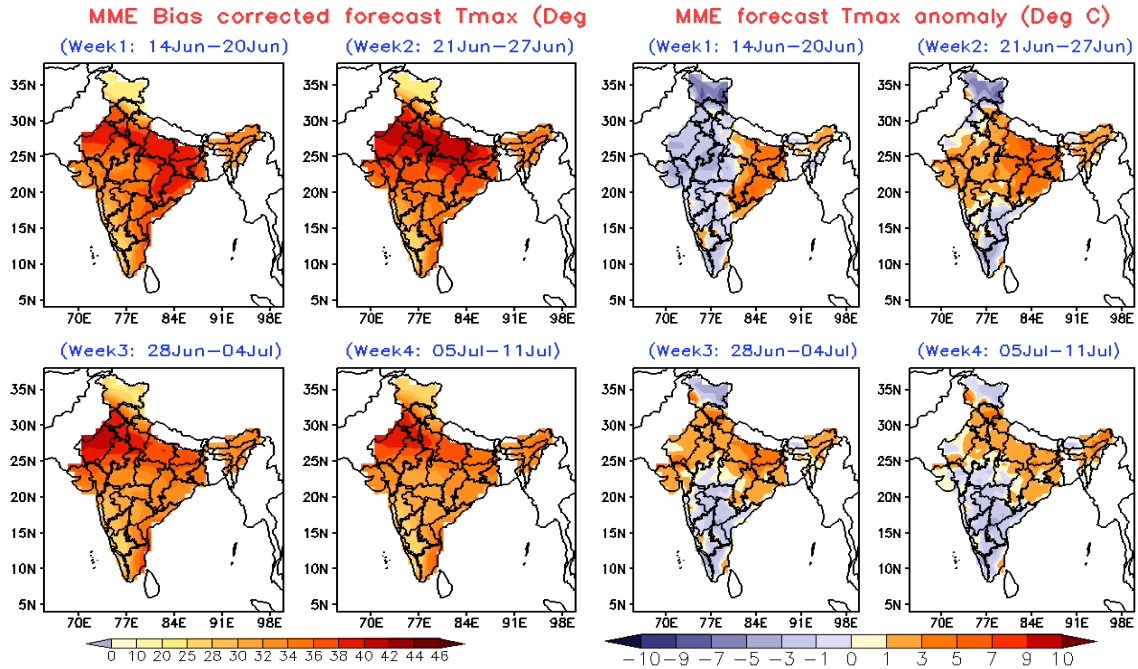


Figure 11: ERF based on 00 UTC of 12th June, 2019

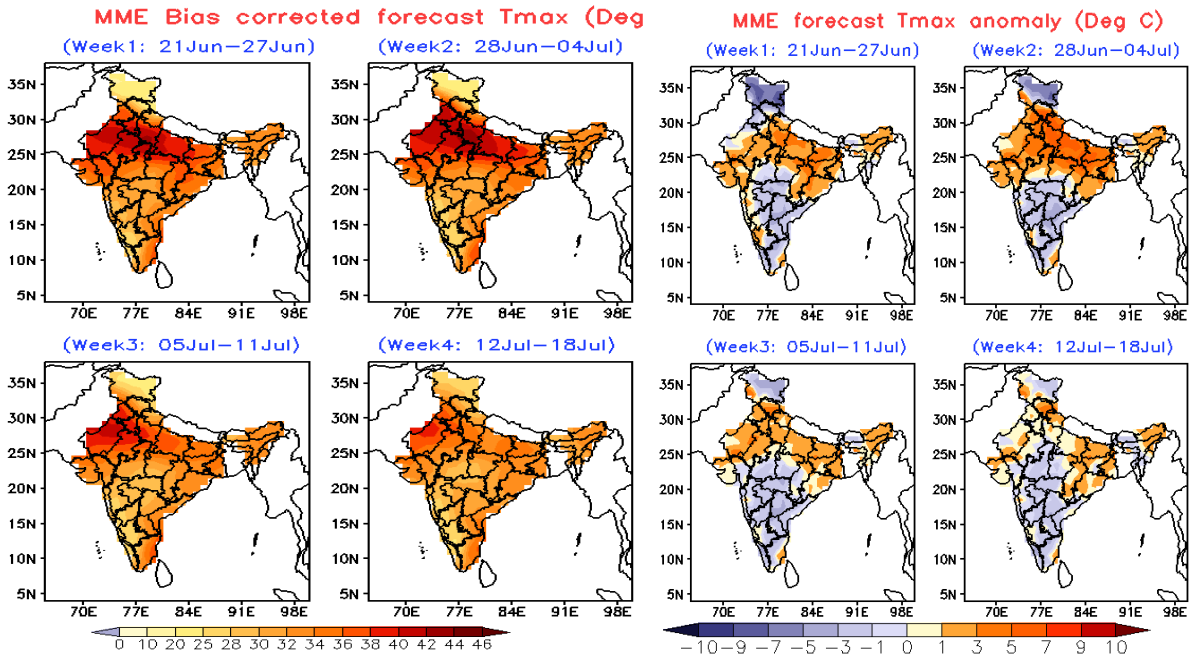


Figure 12: ERF based on 00 UTC of 19th June, 2019

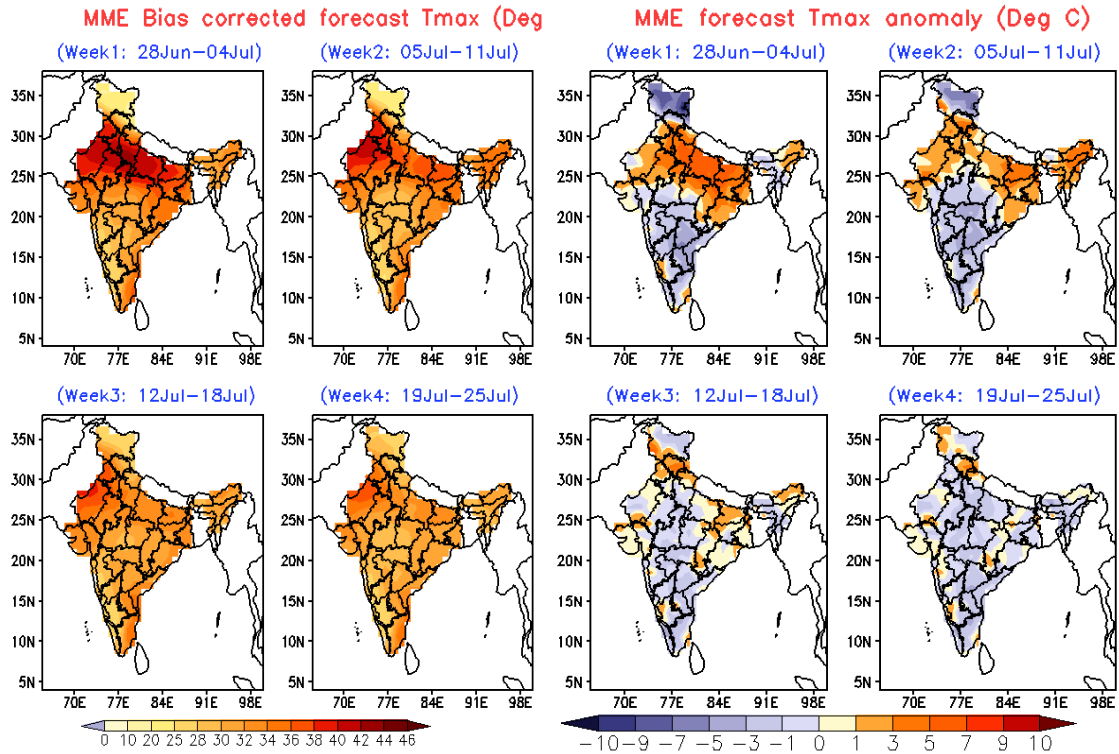


Figure 13: ERF based on 00 UTC of 26th June, 2019



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 01st April, 2019

Time of Issue: 1600 Hours IST

Seasonal Outlook for the Temperatures during April to June, 2019

- The April to June (AMJ) season average maximum temperatures are likely to be warmer than normal by 0.50°C over most of the meteorological subdivisions from central India and some subdivisions from northwest India. Near normal maximum temperatures are likely in the remaining subdivisions.
- The seasonal average minimum & mean temperatures over West Rajasthan are likely to be above normal by more than 1.00°C.
- Above normal heat wave conditions are likely in the core heat wave (HW) zone during the season (April to June).

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 31 March to 0830 hrs IST 01 April, 2019)

Heat Wave:

Yesterday, heat wave conditions were observed at many places over East Madhya Pradesh and at isolated pockets over West Madhya Pradesh, Gujarat, Marathwada and Vidarbha (**Annexure 1 & 2**).

Maximum Temperature

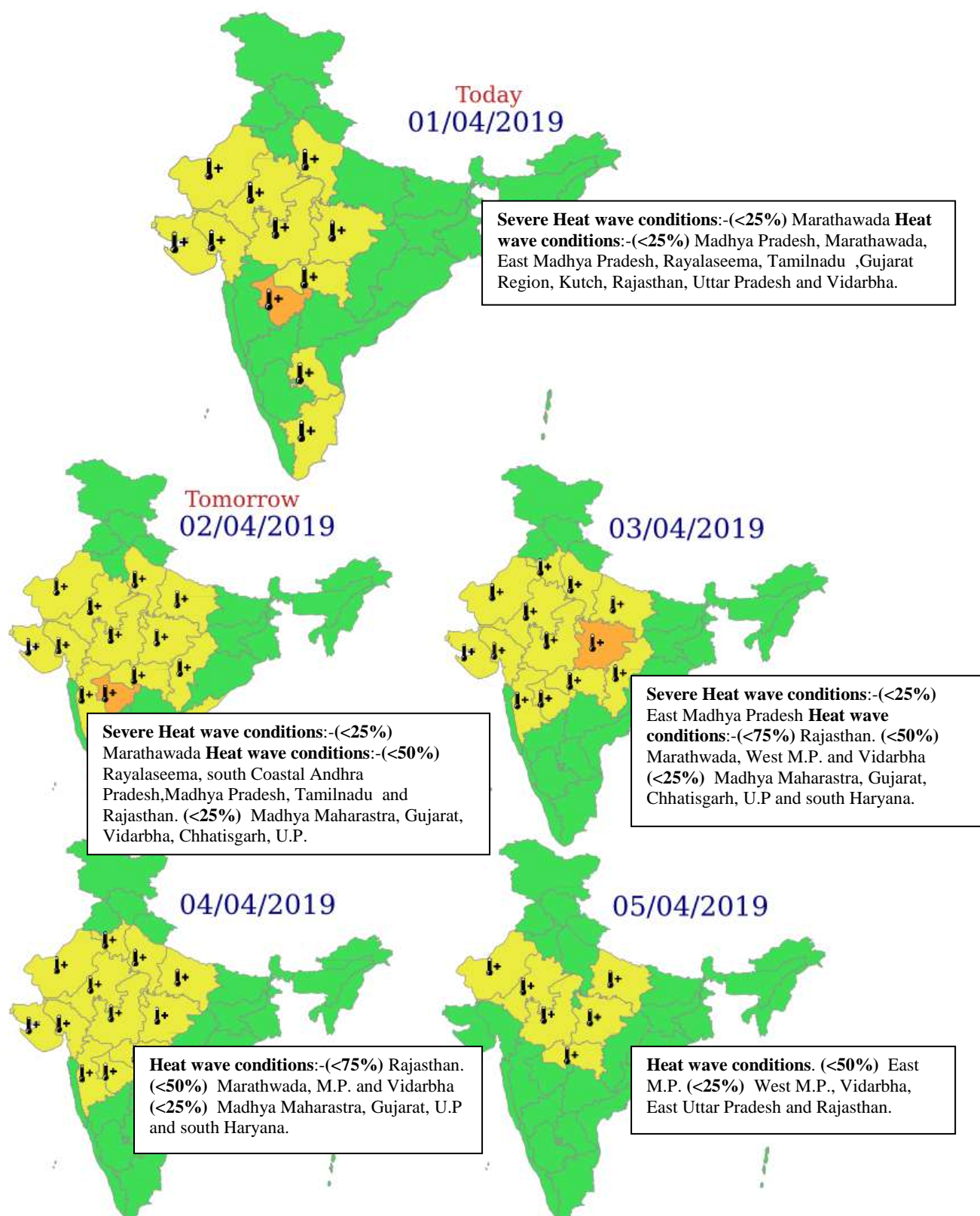
Maximum temperatures were **markedly above normal (5.1°C or more)** at a few places over Himachal Pradesh, East Madhya Pradesh and at isolated places over Uttarakhand, Vidarbha, Marathwada and Chhattisgarh; **appreciably above normal (3.1°C to 5.0°C)** at many places over West Madhya Pradesh; at a few places over Jammu & Kashmir, Gujarat, Telangana, Rayalseema, South Andhra Pradesh, Tamil Nadu, Jharkhand and Bihar; at isolated places over East Uttar Pradesh, Madhya Maharashtra, Rajasthan and Kerala. They were above **normal (1.6°C to 3.0°C)** over some pockets of the rest of the country outside Northeastern states and adjoining east India. Yesterday, the **highest maximum temperature** of 43.5°C was recorded at Bir (**Marathwada**) over the country (**Annexure 1 & 2**).

Temperatures Recorded at 1430 Hours IST of Today, the 01st April, 2019

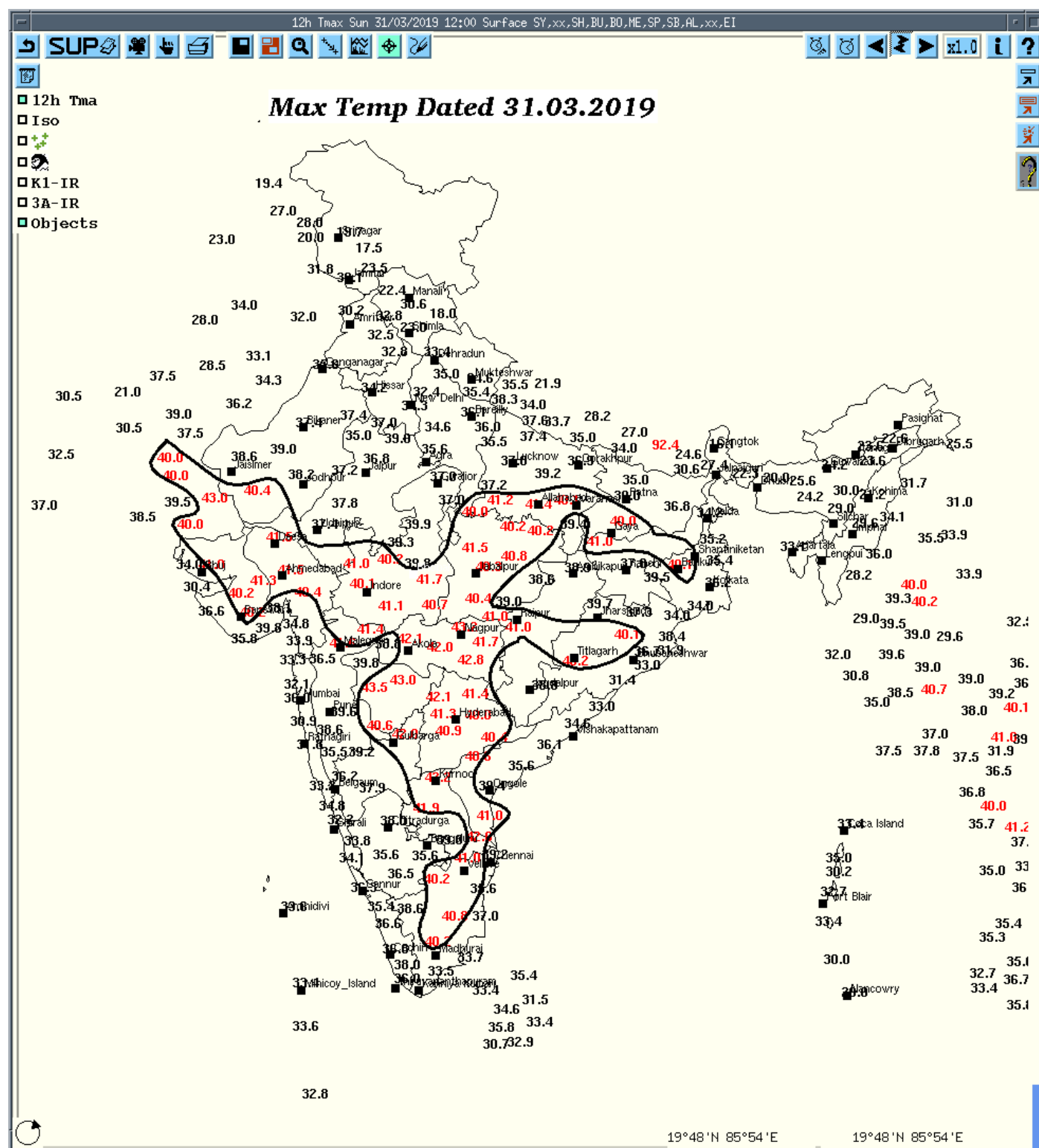
- **Chandrapur (Vidarbha)** recorded a maximum temperature of 42.6°C (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at many places over Jammu & Kashmir and Assam & Meghalaya and one or two pockets of Punjab, West Rajasthan, Saurashtra & Kutch, Coastal Andhra Pradesh, Konkan & Goa and Gangetic West Bengal (**Annexure 4**).

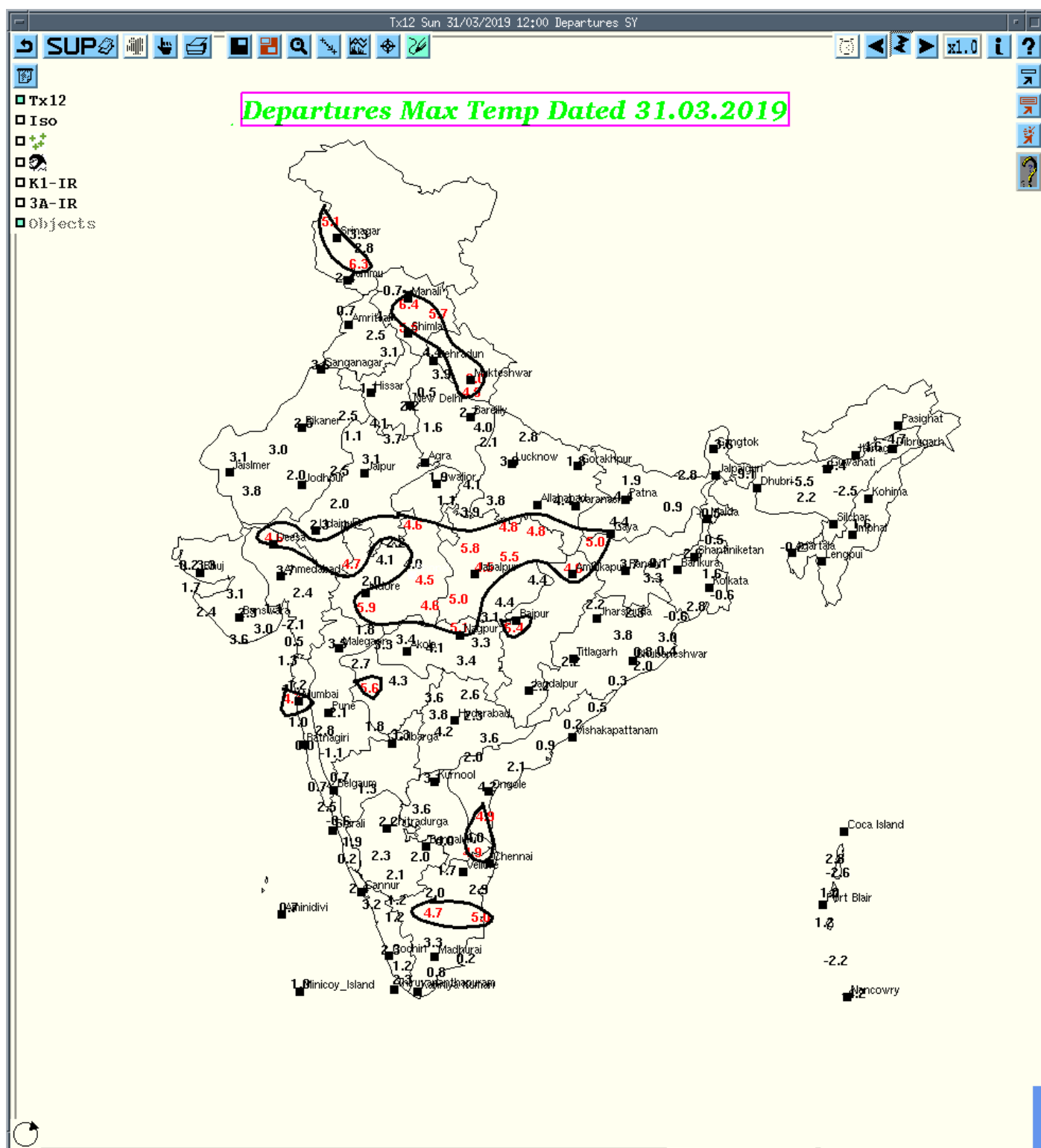
Heat Wave Warnings for Next 5 Days (on next page)

(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

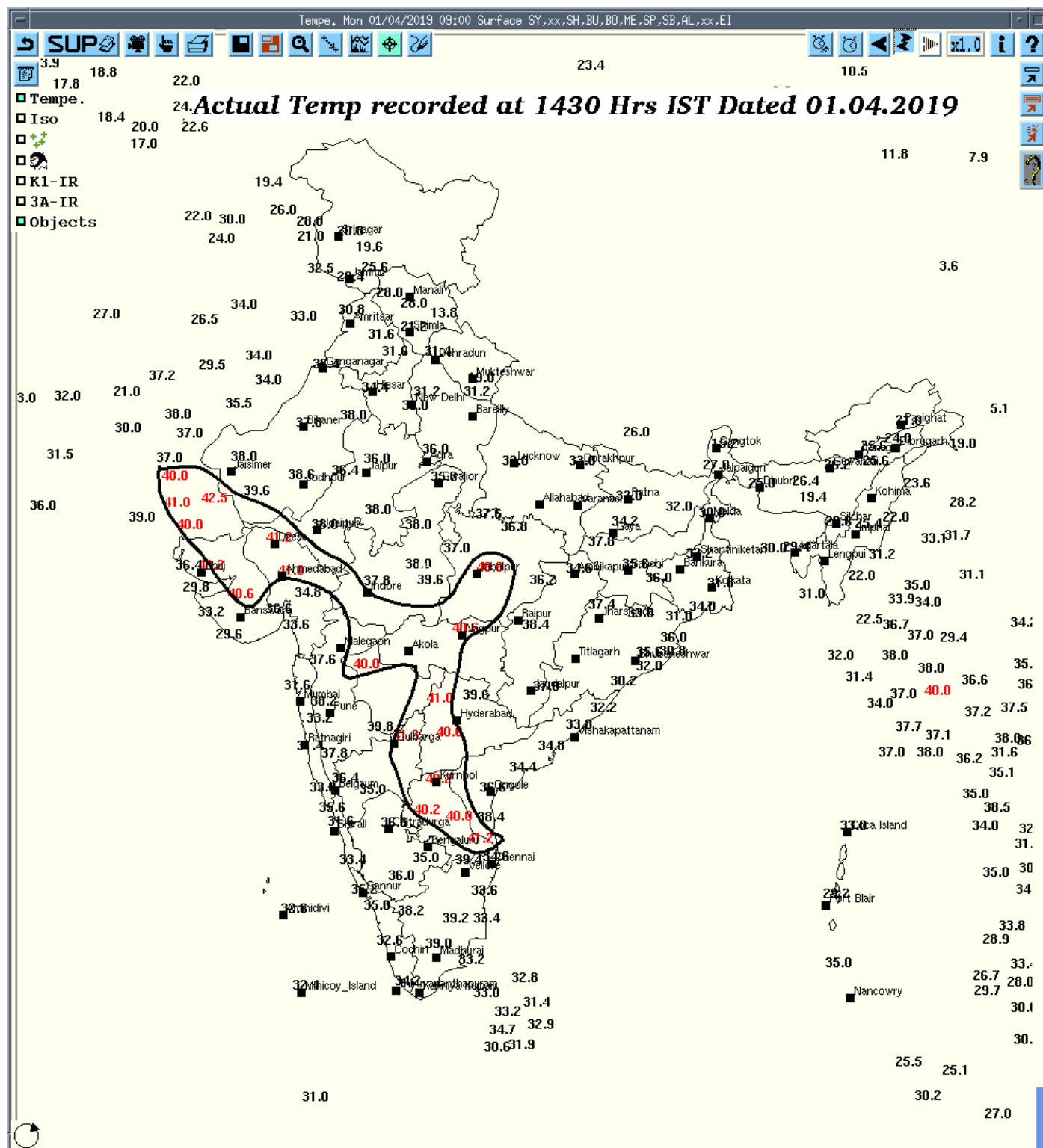


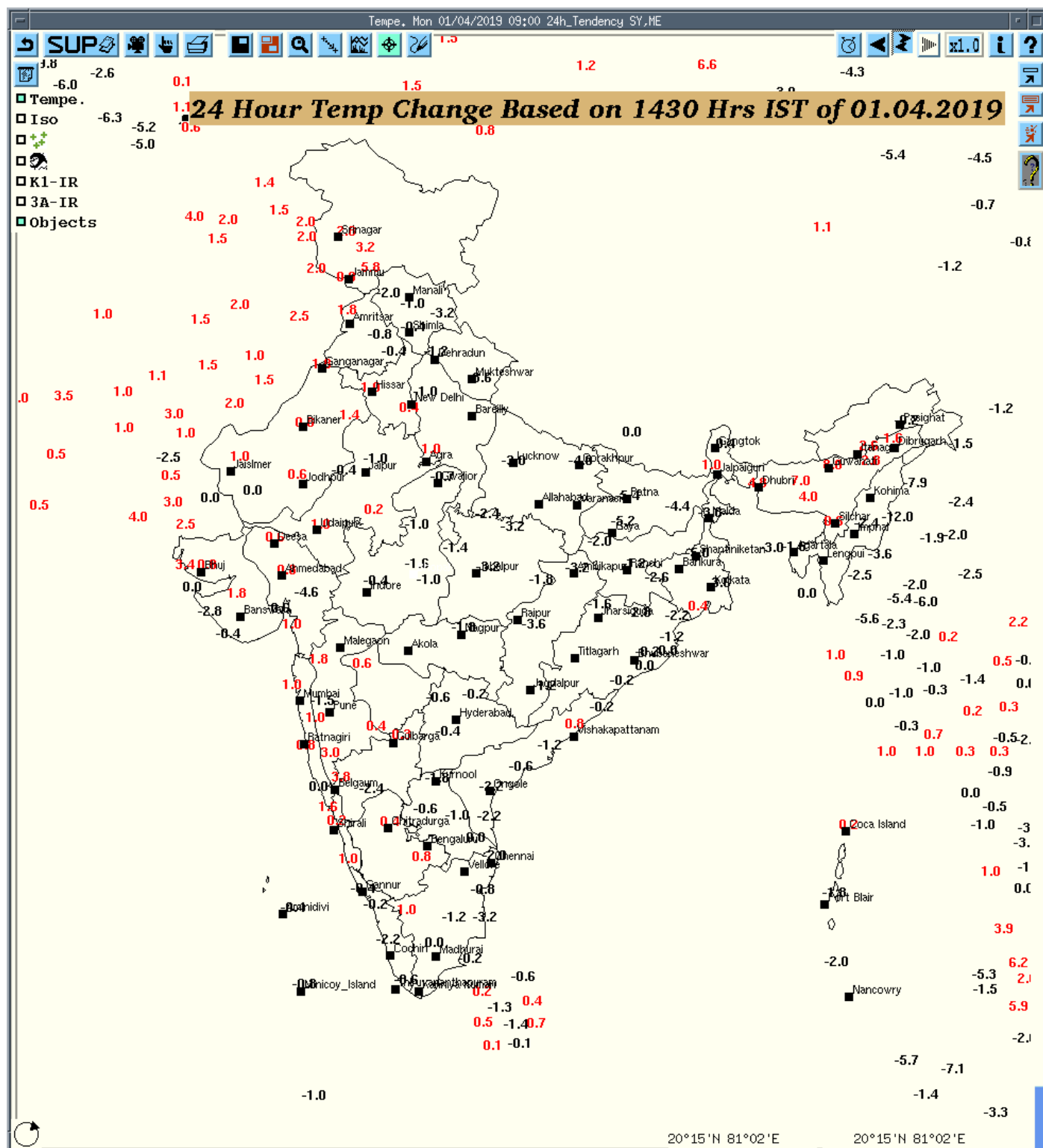
- For NDMA guideline on Heat Wave Kindly Visit (<https://ndma.gov.in/en/media-public-awareness/disaster/natural-disaster/heat-wave.html>)





Annexure 4





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 02nd April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 01 April to 0830 hrs IST 02 April, 2019)

Heat Wave:

Yesterday, **heat wave** conditions observed at isolated pockets over Saurashtra & Kutch, Marathwada, East Madhya Pradesh and Chhattisgarh (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over Jammu & Kashmir; **appreciably above normal (3.1°C to 5.0°C)** at many places over Himachal Pradesh; at a few places over Saurashtra & Kutch, Rayalseema and Tamilnadu & Puducherry; at isolated places over West Rajasthan, Gujarat Region, Marathawada and Telangana. They were above **normal (1.6°C to 3.0°C)** at most places over East Rajasthan, West Madhya Pradesh and Vidarbha; at many places over Madhya Maharashtra and Kerala; at a few places over East Madhya Pradesh and Konkan & Goa; at isolated places over Jharkhand, Coastal Andhra Pradesh and Coastal Karnataka. Yesterday, the **highest maximum temperature** of 43.4°C was recorded at Chandrapur (**Vidarbha**) over the country (**Annexure 1 & 2**).

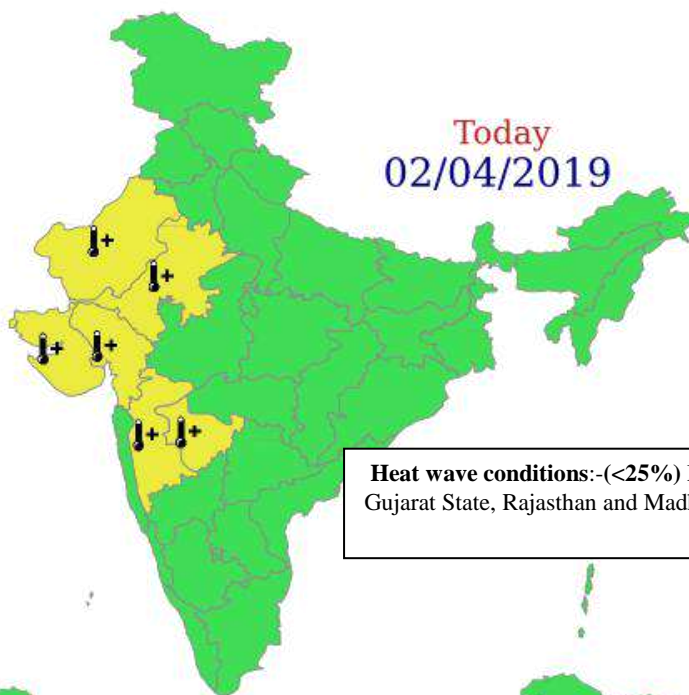
Temperatures Recorded at 1430 Hours IST of Today, the 02nd April, 2019

- **Akola(Vidarbha)** recorded a maximum temperature of 42.1°C (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at most places over Jammu & Kashmir, Bihar and Assam & Meghalaya; at a few places over West Bengal & Sikkim and Odisha and one or two pockets of Punjab, Rajasthan, Saurashtra & Kutch, Coastal Andhra Pradesh and Madhya Pradesh(**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

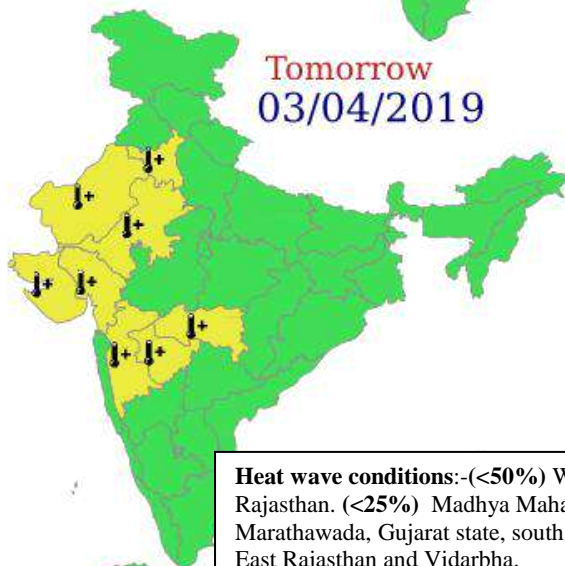
(For significance of colour code, criteria of Heat Wave and its impact and action suggested based on NDMA guideline kindly refer to Annexure-5 at end of this document)

Today
02/04/2019



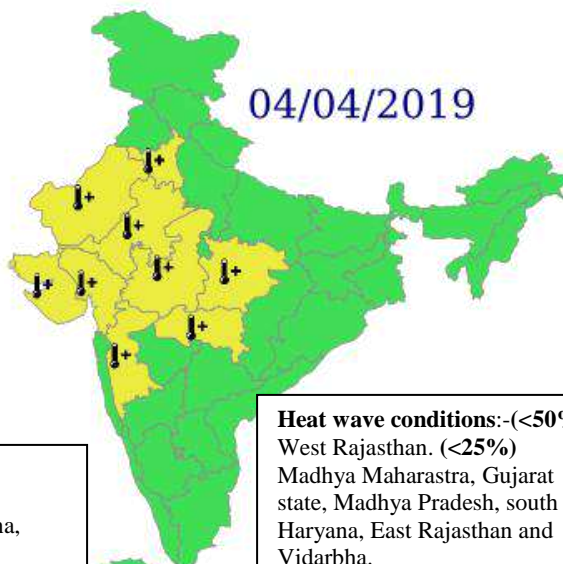
Heat wave conditions:-(<25%) Marathawada, Gujarat State, Rajasthan and Madhya Maharashtra.

Tomorrow
03/04/2019



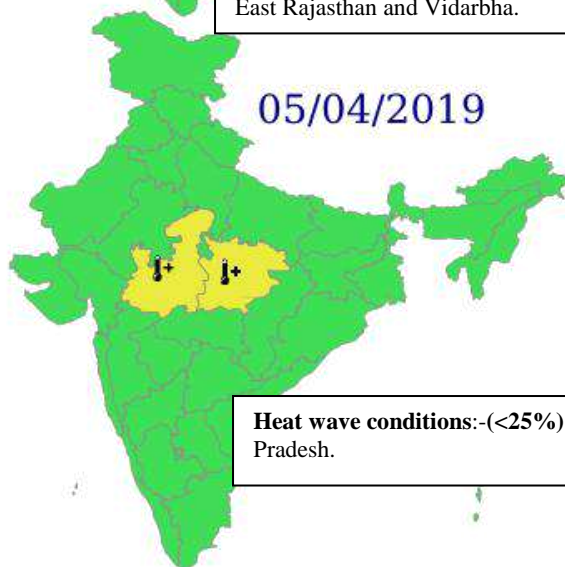
Heat wave conditions:-(<50%) West Rajasthan. (<25%) Madhya Maharashtra, Marathawada, Gujarat state, south Haryana, East Rajasthan and Vidarbha.

04/04/2019



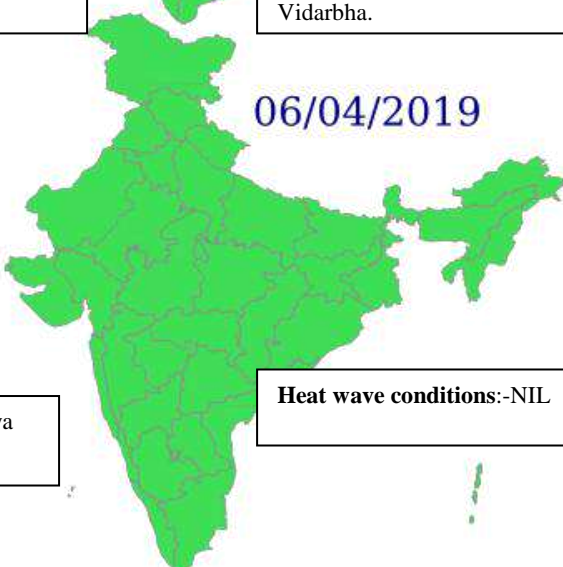
Heat wave conditions:-(<50%) West Rajasthan. (<25%) Madhya Maharashtra, Gujarat state, Madhya Pradesh, south Haryana, East Rajasthan and Vidarbha.

05/04/2019

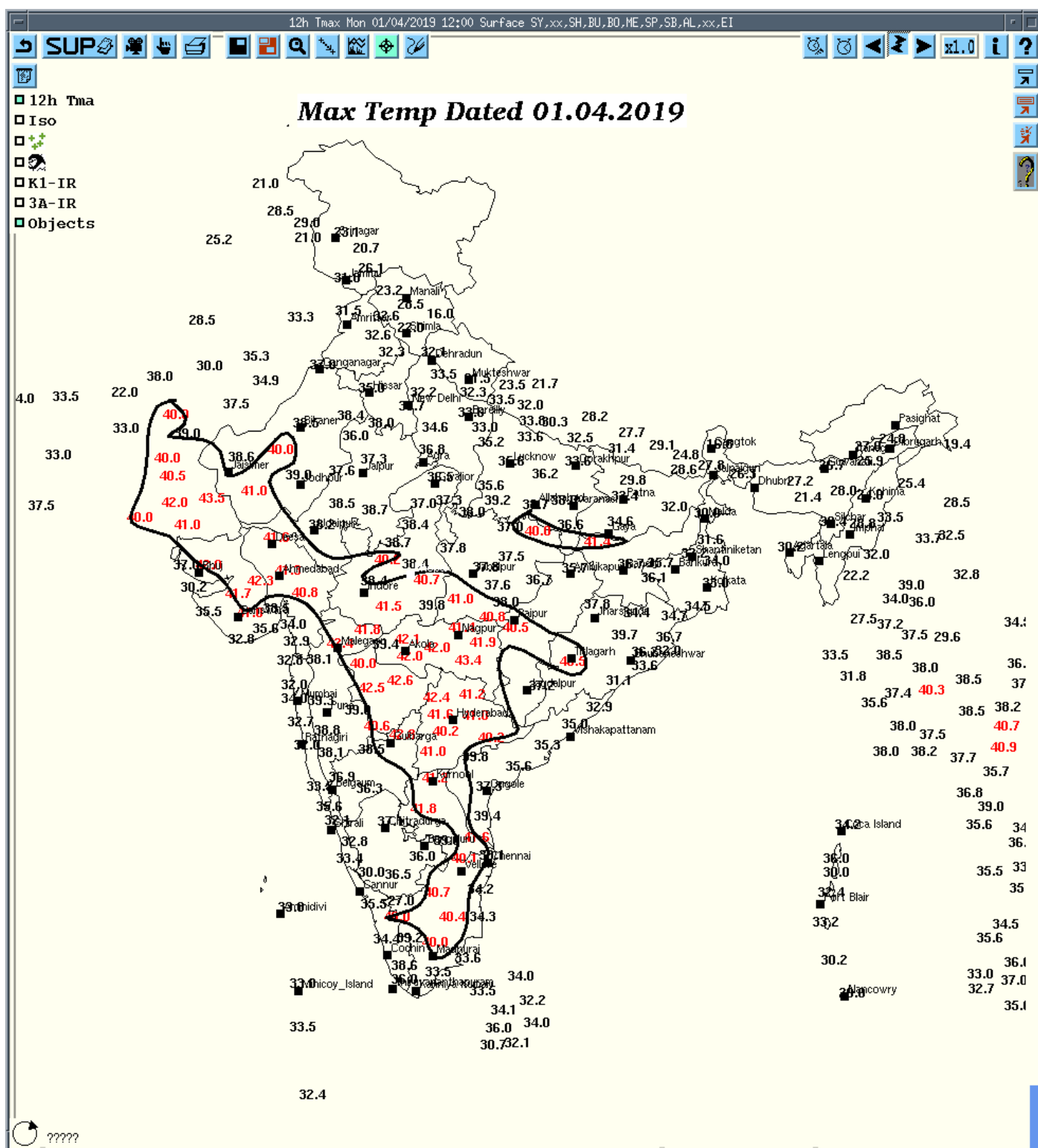


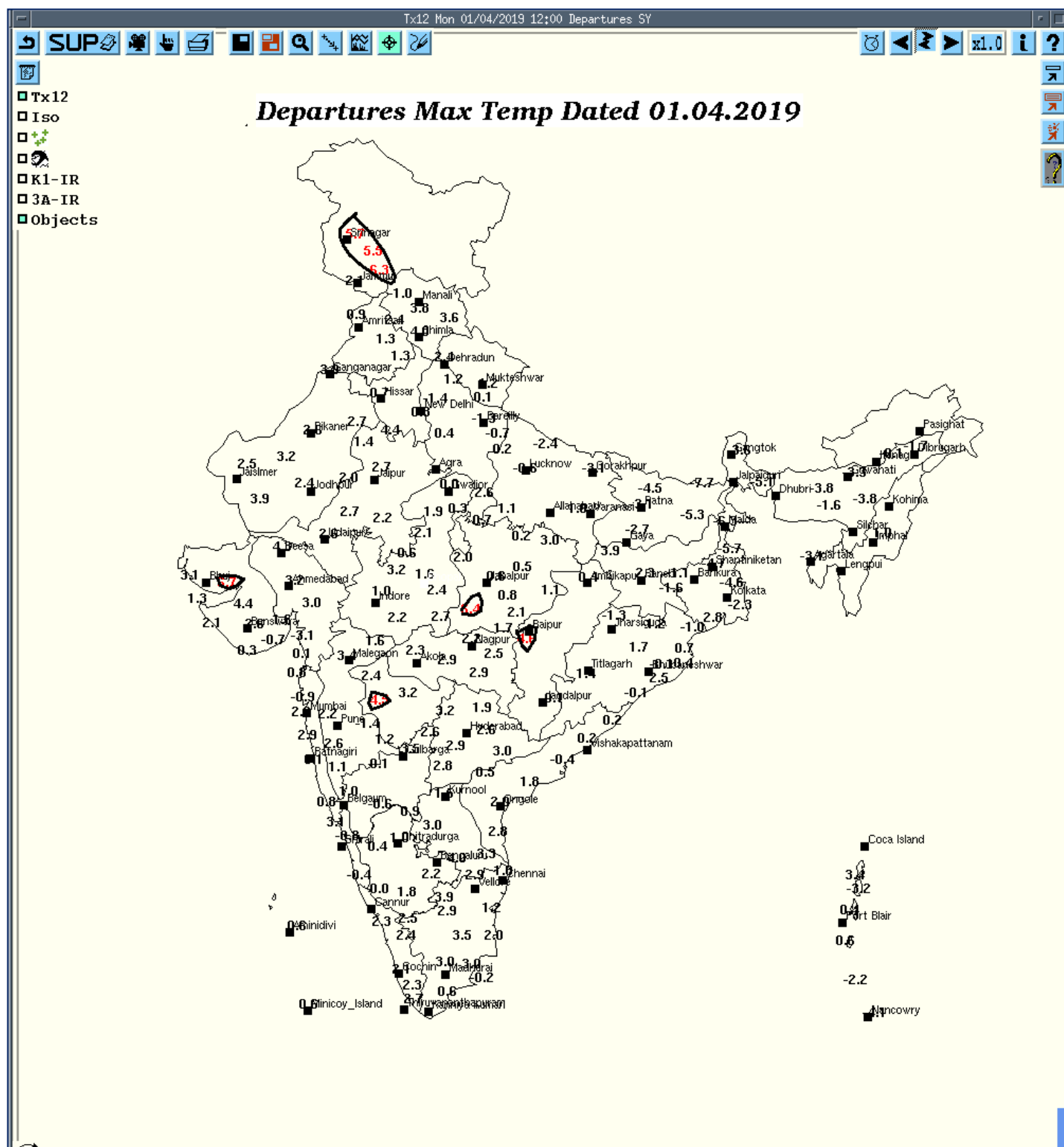
Heat wave conditions:-(<25%) Madhya Pradesh.

06/04/2019

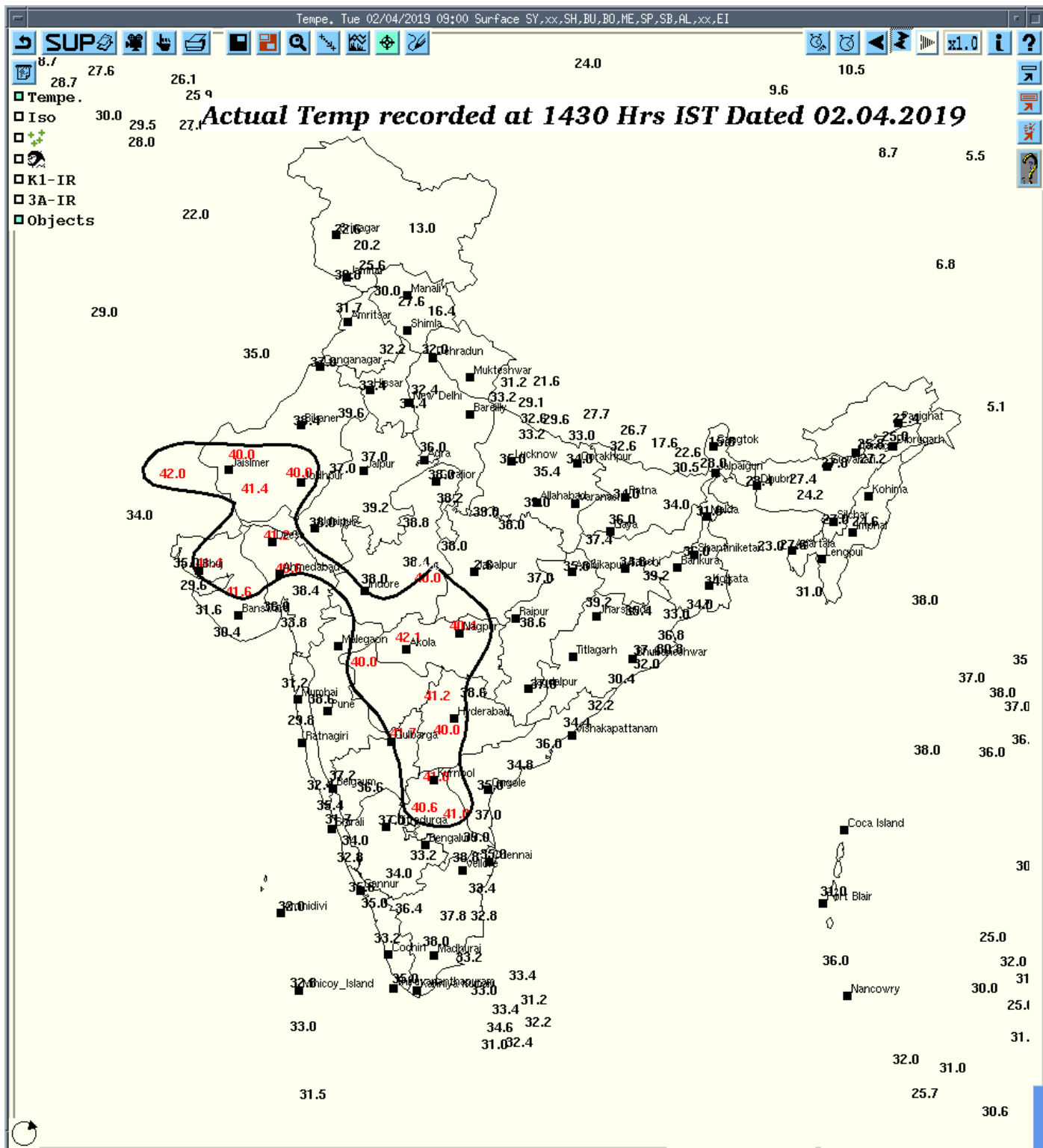


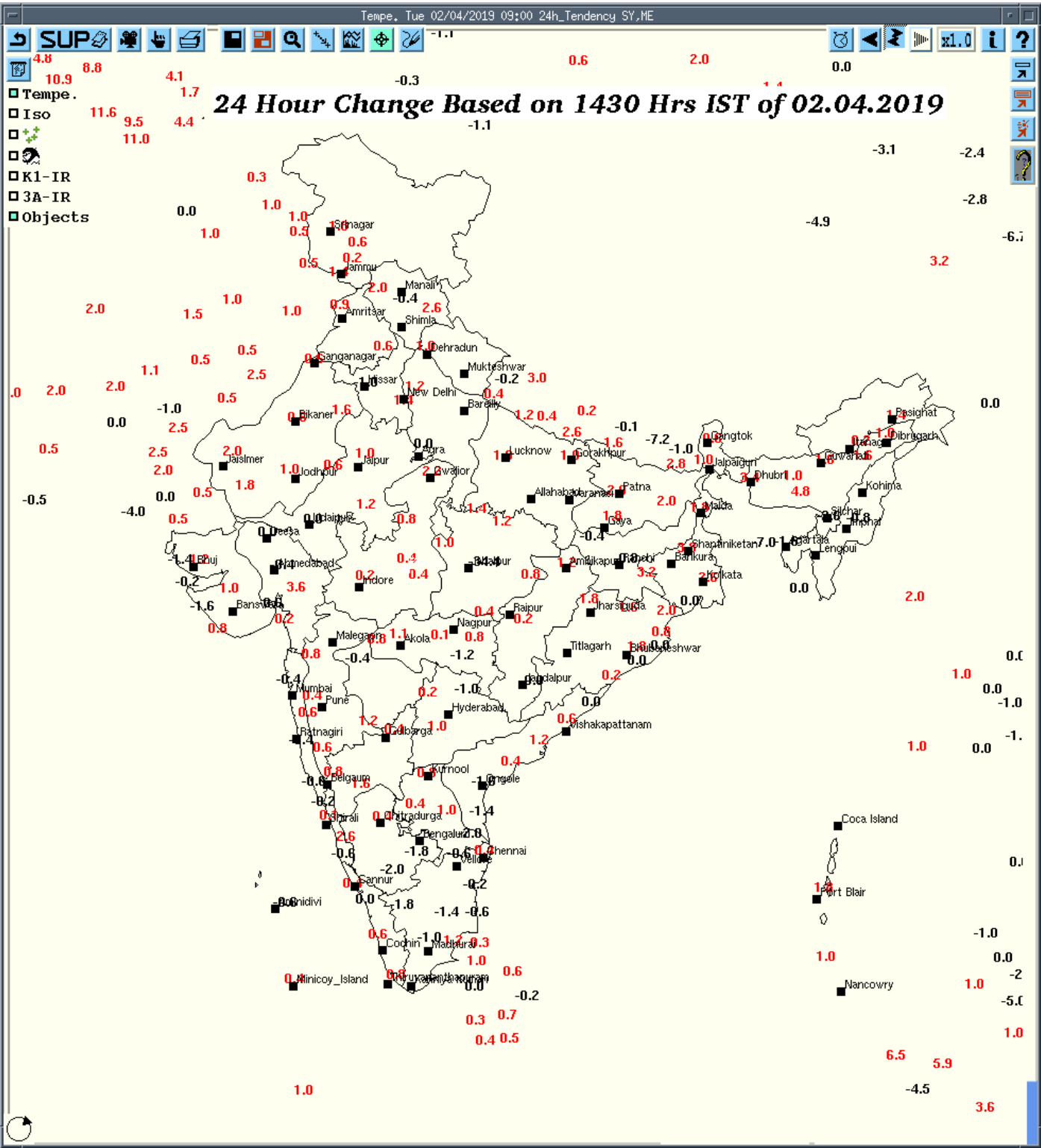
Heat wave conditions:-NIL





Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Colour Code	Alert	Warning	Impact	Suggested Actions
Green (No action)	Normal Day	Nil	Comfortable temperatures	No cautionary action required
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
Orange Alert (Be prepared)	Severe Heat Alert for the day	i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
Red Alert (Take Action)	Extreme Heat Alert for the day	i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 03rd April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 02 April to 0830 hrs IST 03 April, 2019)

Heat Wave:

Yesterday, heat wave conditions observed at isolated pockets over West Rajasthan and Saurashtra & Kutch (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over Jammu & Kashmir; **appreciably above normal (3.1°C to 5.0°C)** at most places over Himachal Pradesh and West Rajasthan; at a few places over East Rajasthan, Saurashtra & Kutch; at isolated places over Gujarat region, West Madhya Pradesh, Madhya Maharashtra, Marathwada, Vidarbha, Telangana and Rayalseema; **above normal (1.6°C to 3.0°C)** at many places over Punjab, Kerala and Tamilnadu & Puducherry; at a few places over East Madhya Pradesh and North Interior Karnataka; at isolated places over West Uttar Pradesh and Odisha. Yesterday, the highest maximum temperature of **43.4°C** was recorded at **Amraoti (Vidarbha)** over the country (**Annexure 1 & 2**).

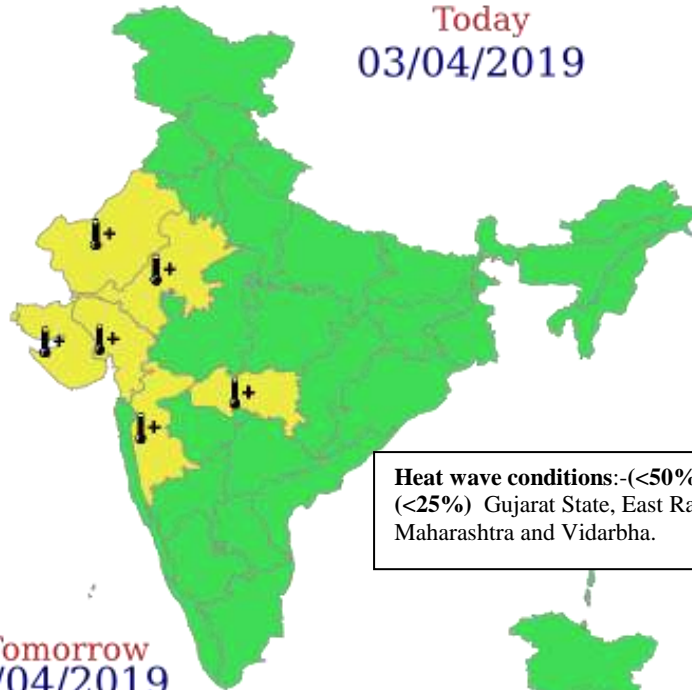
Temperatures Recorded at 1430 Hours IST of Today, the 03rd April, 2019

- **Bramhapuri (Vidarbha) recorded a maximum temperature of 42.2°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at most places over Jammu & Kashmir, Himachal Pradesh, Haryana, East Rajasthan and Madhya Pradesh; at a few places over Uttar Pradesh, Bihar and Konkan & Goa; at one or two pockets over Punjab, Jharkhand, Odisha, Gangetic West Bengal, West Rajasthan, Gujarat, Karnataka, Kerala, Tamilnadu & Puducherry and northeastern states(**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

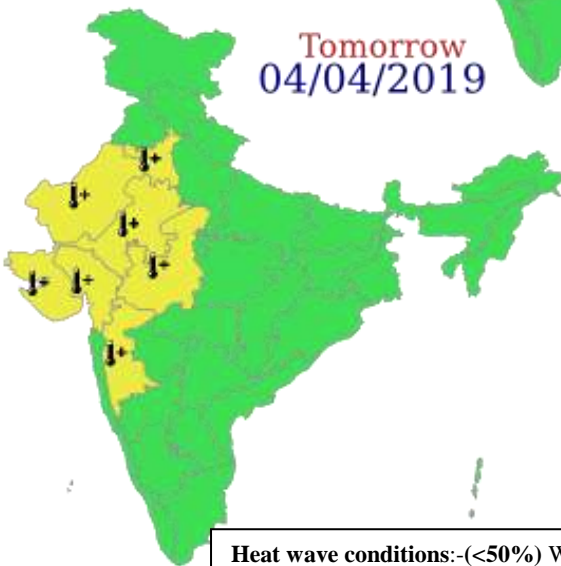
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
03/04/2019



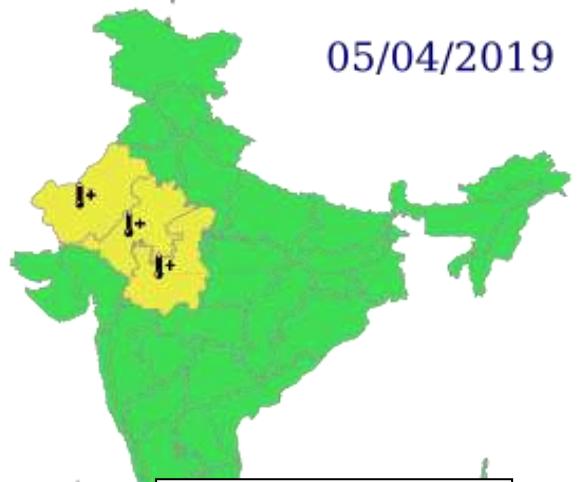
Heat wave conditions:-(<50%) West Rajasthan.
(<25%) Gujarat State, East Rajasthan, Madhya
Maharashtra and Vidarbha.

Tomorrow
04/04/2019



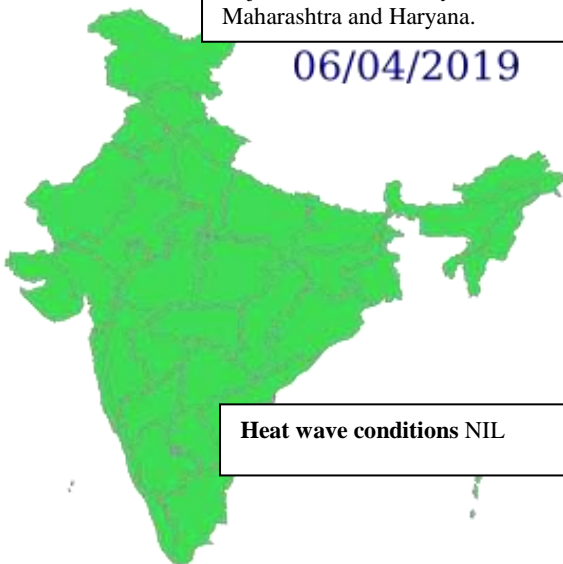
Heat wave conditions:-(<50%) West
Rajasthan. (<25%) Gujarat State, East
Rajasthan, West Madhya Pradesh, Madhya
Maharashtra and Haryana.

05/04/2019



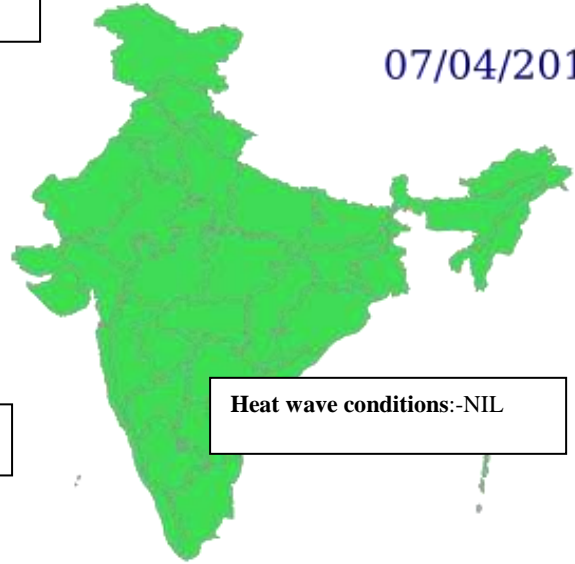
Heat wave conditions:-(<50%)
West Rajasthan. (<25%) East
Rajasthan and West Madhya
Pradesh.

06/04/2019

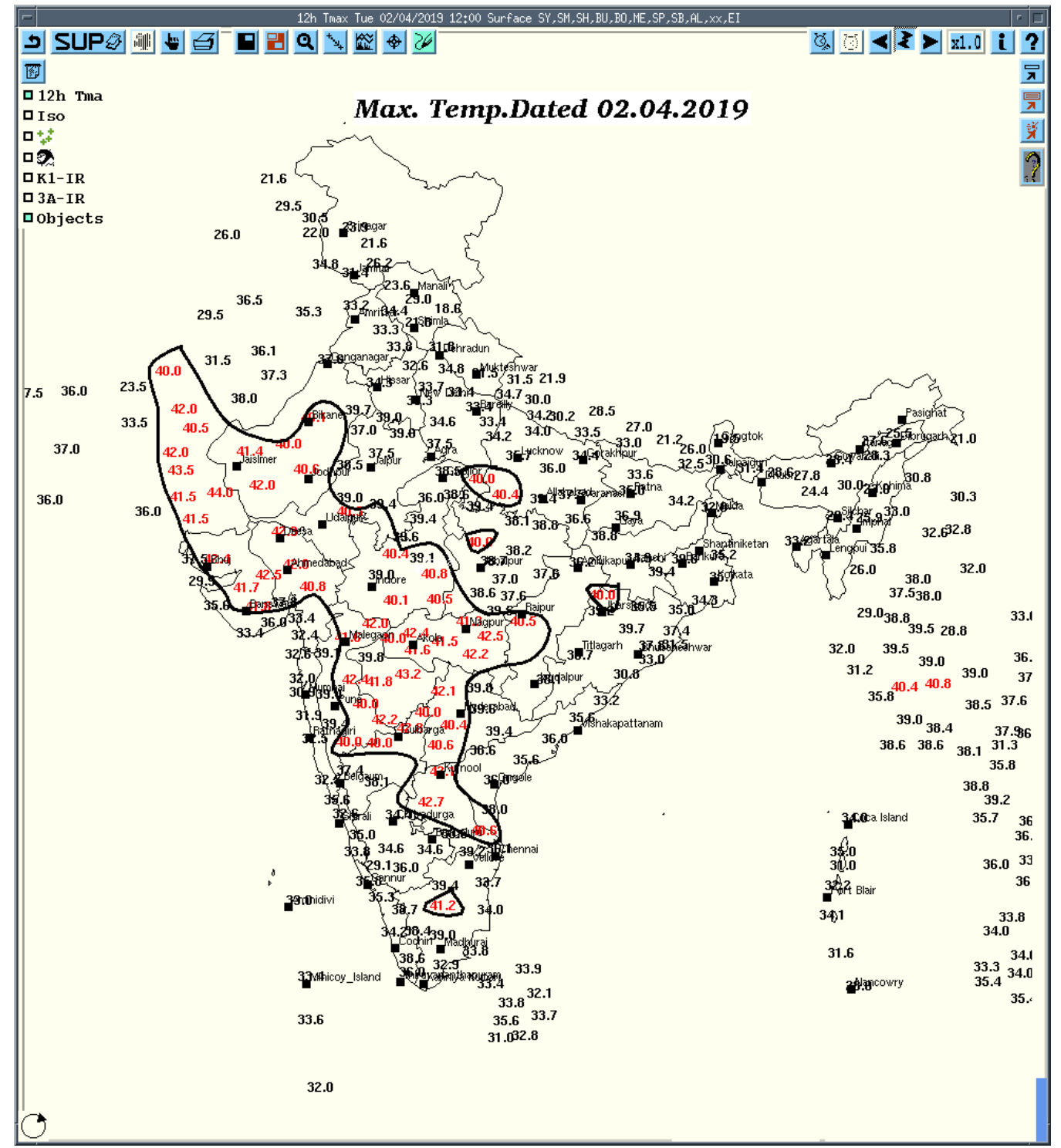


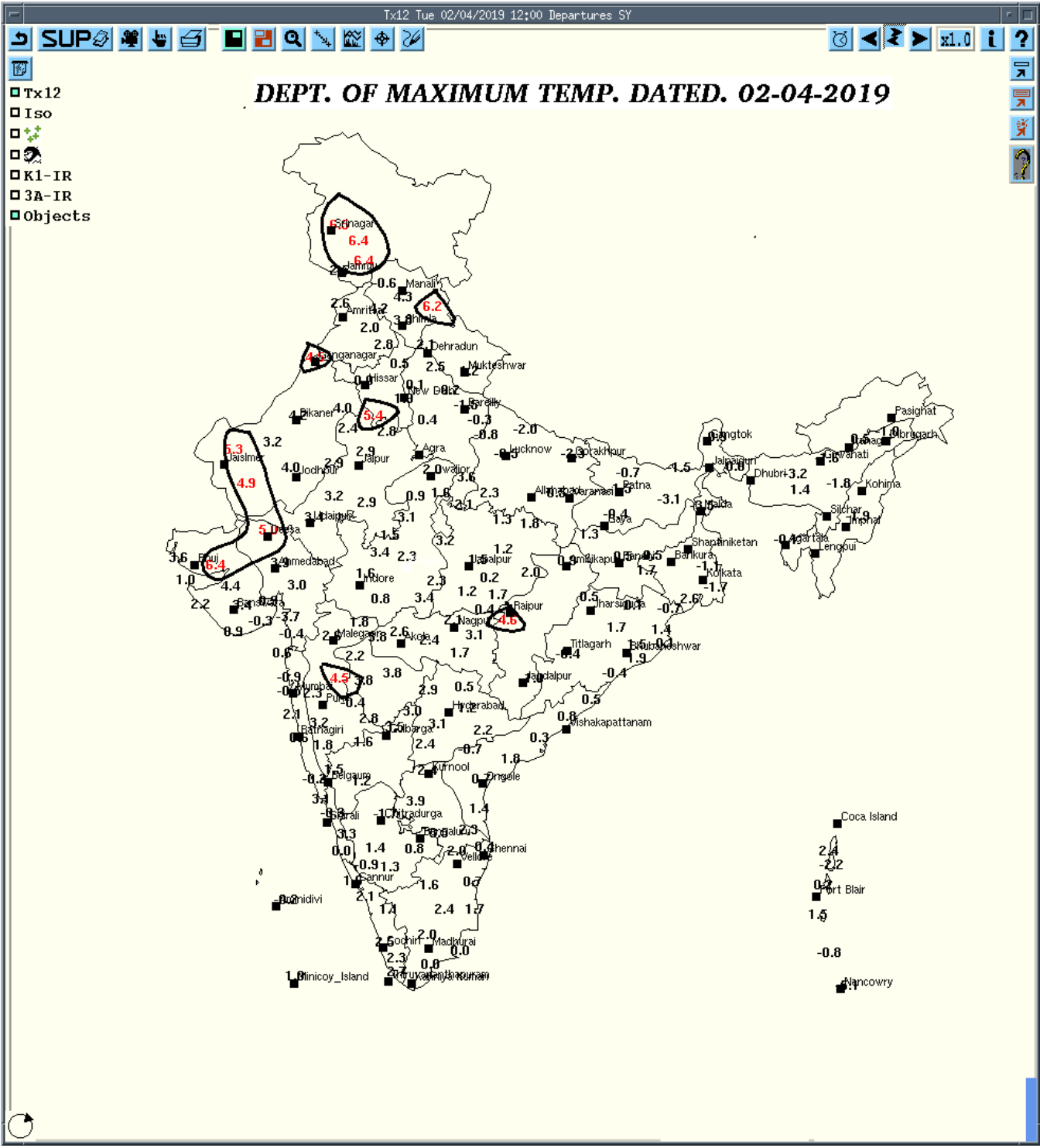
Heat wave conditions NIL

07/04/2019

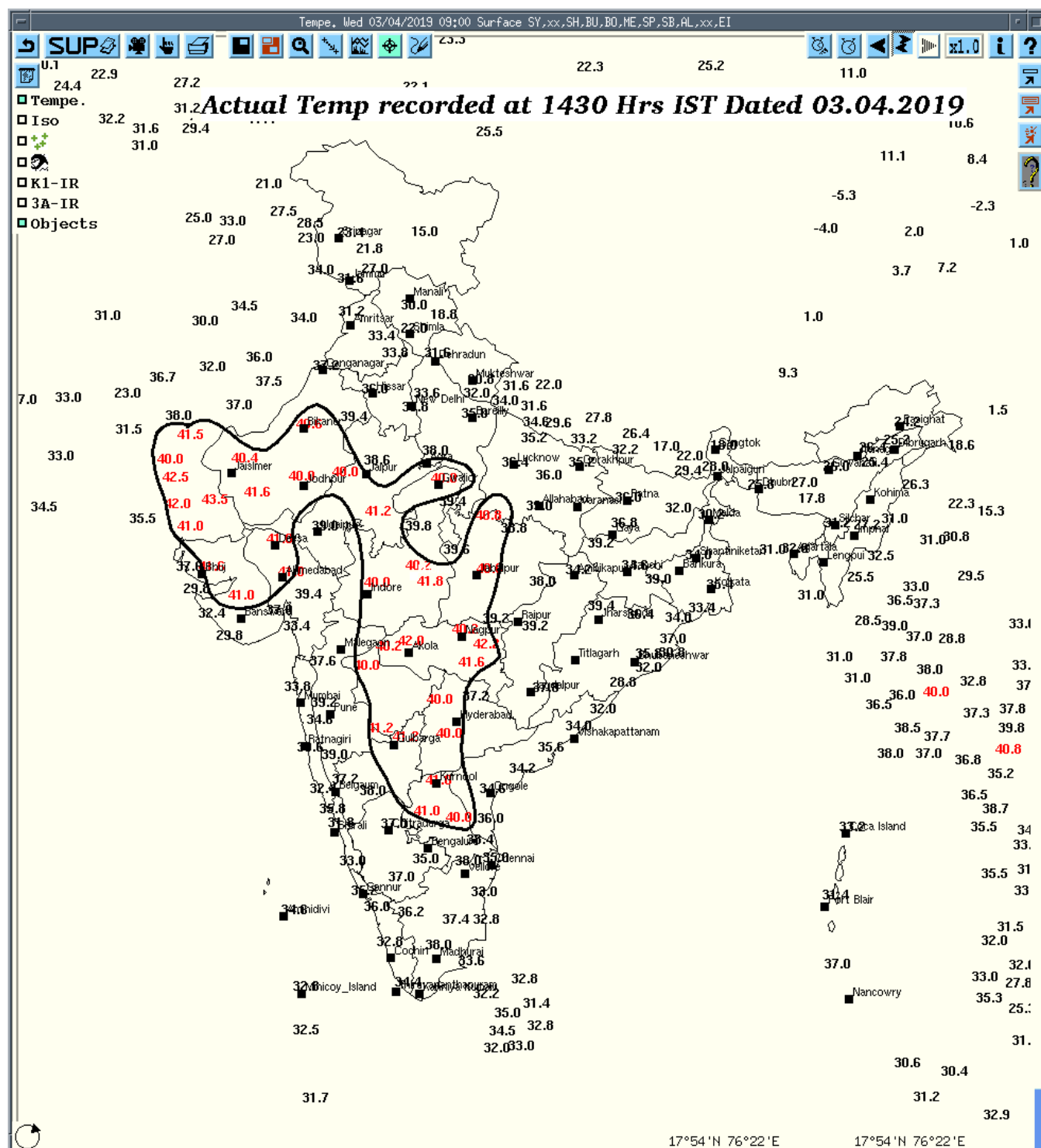


Heat wave conditions:-NIL

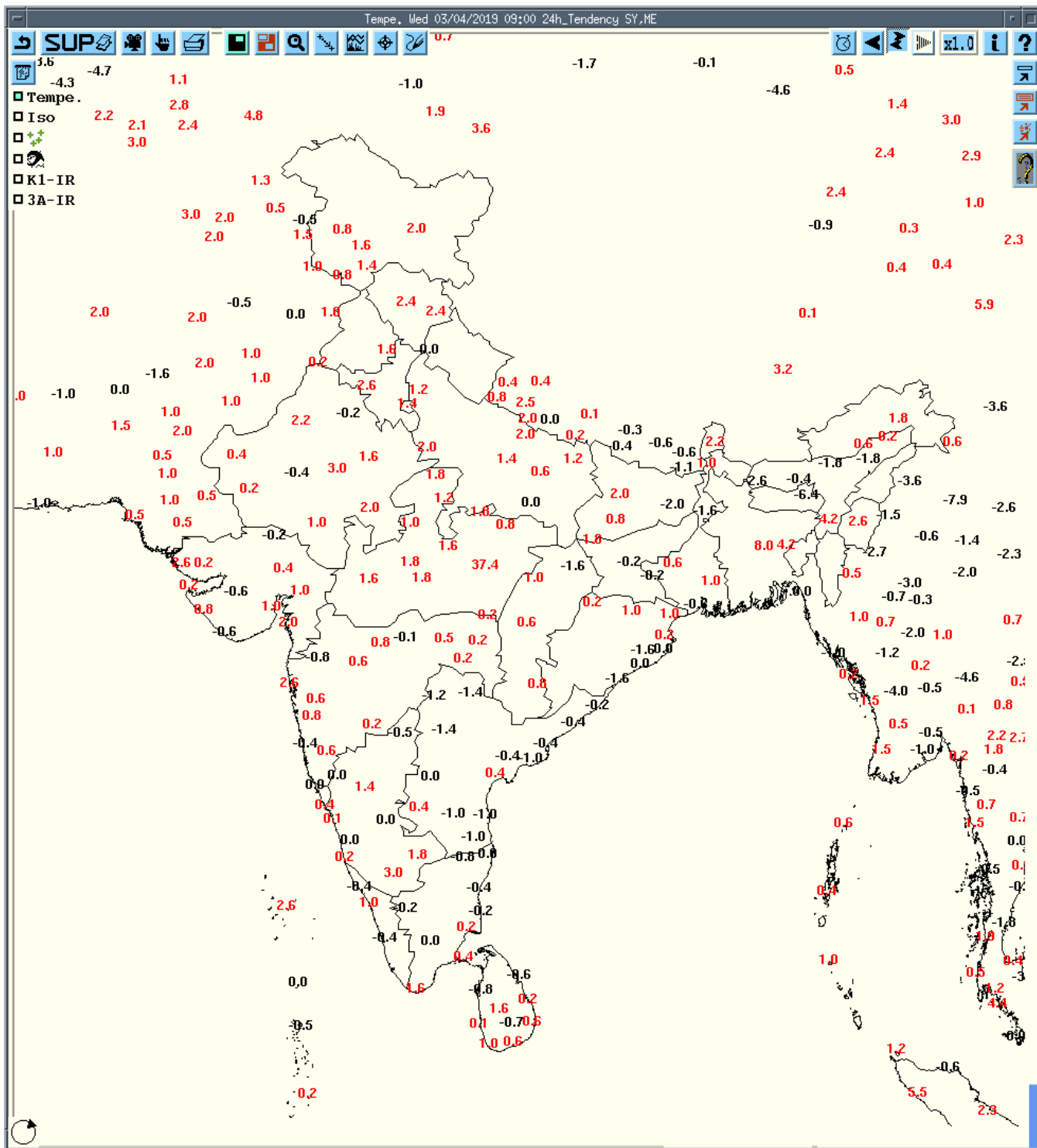




Annexure 3



Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 04th April, 2019

Time of Issue: 1530 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 03 April to 0830 hrs IST 04 April, 2019)

Heat Wave:

Yesterday, heat wave conditions were observed at some parts over Rajasthan; at isolated pockets over Gujarat state, Madhya Maharashtra and Chhattisgarh. (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over Jammu & Kashmir and West Rajasthan; at a few places over Himachal Pradesh and East Rajasthan; at isolated places over Saurashtra & Kutch; **appreciably above normal (3.1°C to 5.0°C)** at many places over West Madhya Pradesh and Marathwada; at a few places over West Uttar Pradesh, East Madhya Pradesh, Vidarbha, Gujarat region, Madhya Maharashtra and Chhattisgarh; at isolated places over Punjab, Haryana, Chandigarh & Delhi, East Uttar Pradesh, Konkan & Goa, Karnataka and Rayalaseema; **above normal (1.6°C to 3.0°C)** at most places over Jharkhand; at many places over Uttarakhand and Kerala; at a few places over Odisha and Tamil Nadu & Puducherry; at isolated places over Gangetic West Bengal. Yesterday, the highest maximum temperature of 43.3°C was recorded at Rajkot (Saurashtra & Kutch) over the country. (**Annexure 1 & 2**).

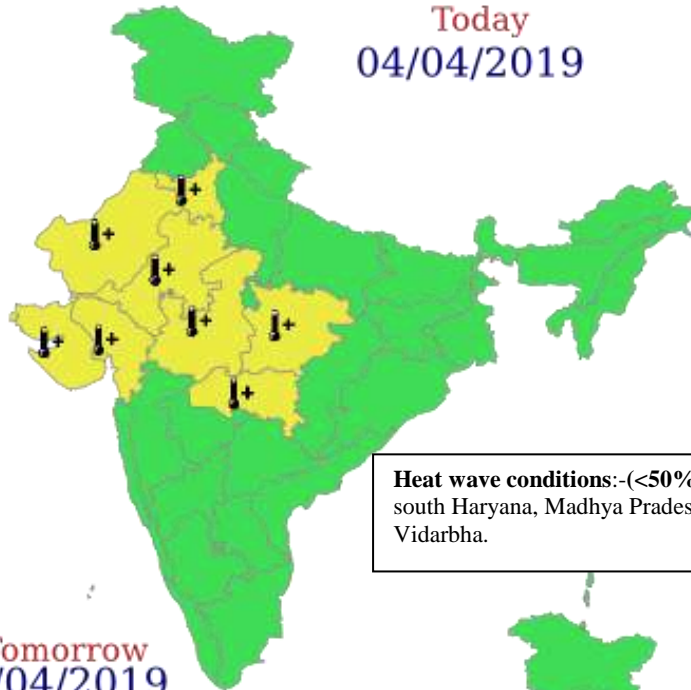
Temperatures Recorded at 1430 Hours IST of Today, the 04th April, 2019

- **Akola (Vidarbha) recorded a maximum temperature of 43.4°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at most places over Rajasthan, Punjab, Haryana, Delhi, Gujarat region and East Madhya Pradesh; at many places over Jharkhand and Tamilnadu & Puducherry; at a few places over Uttar Pradesh, Bihar and Jammu & Kashmir; at one or two pockets over Himachal Pradesh, Uttarakhand, West Madhya Pradesh, Saurashtra & Kutch, Madhya Maharashtra, Kerala, Coastal Andhra Pradesh, Odisha, Chhattisgarh and northeastern states (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

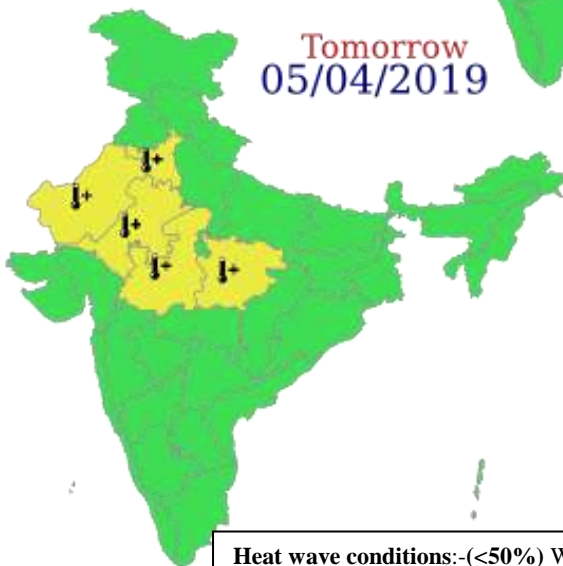
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
04/04/2019



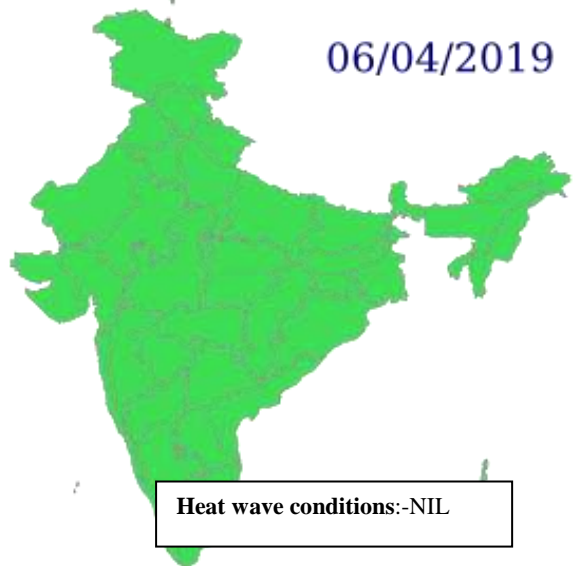
Heat wave conditions:-(<50%) Rajasthan. (<25%) south Haryana, Madhya Pradesh, Gujarat State, and Vidarbha.

Tomorrow
05/04/2019



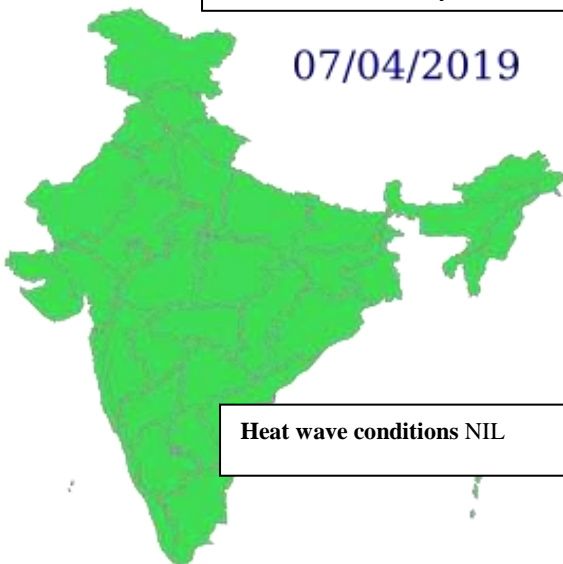
Heat wave conditions:-(<50%) West Rajasthan. (<25%) East Rajasthan, Madhya Pradesh and south Haryana.

06/04/2019



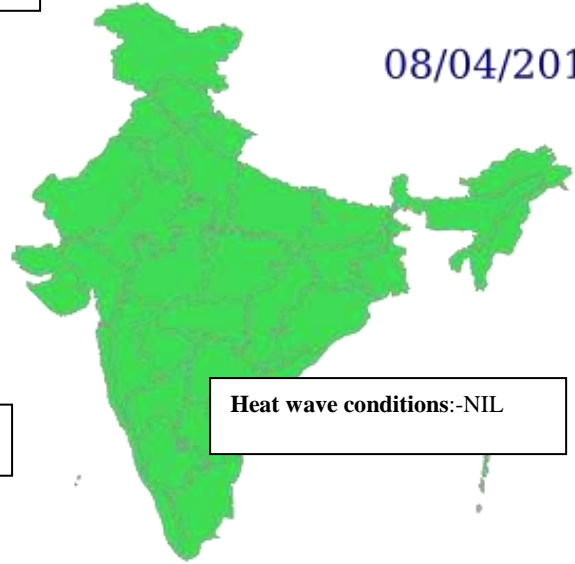
Heat wave conditions:-NIL

07/04/2019

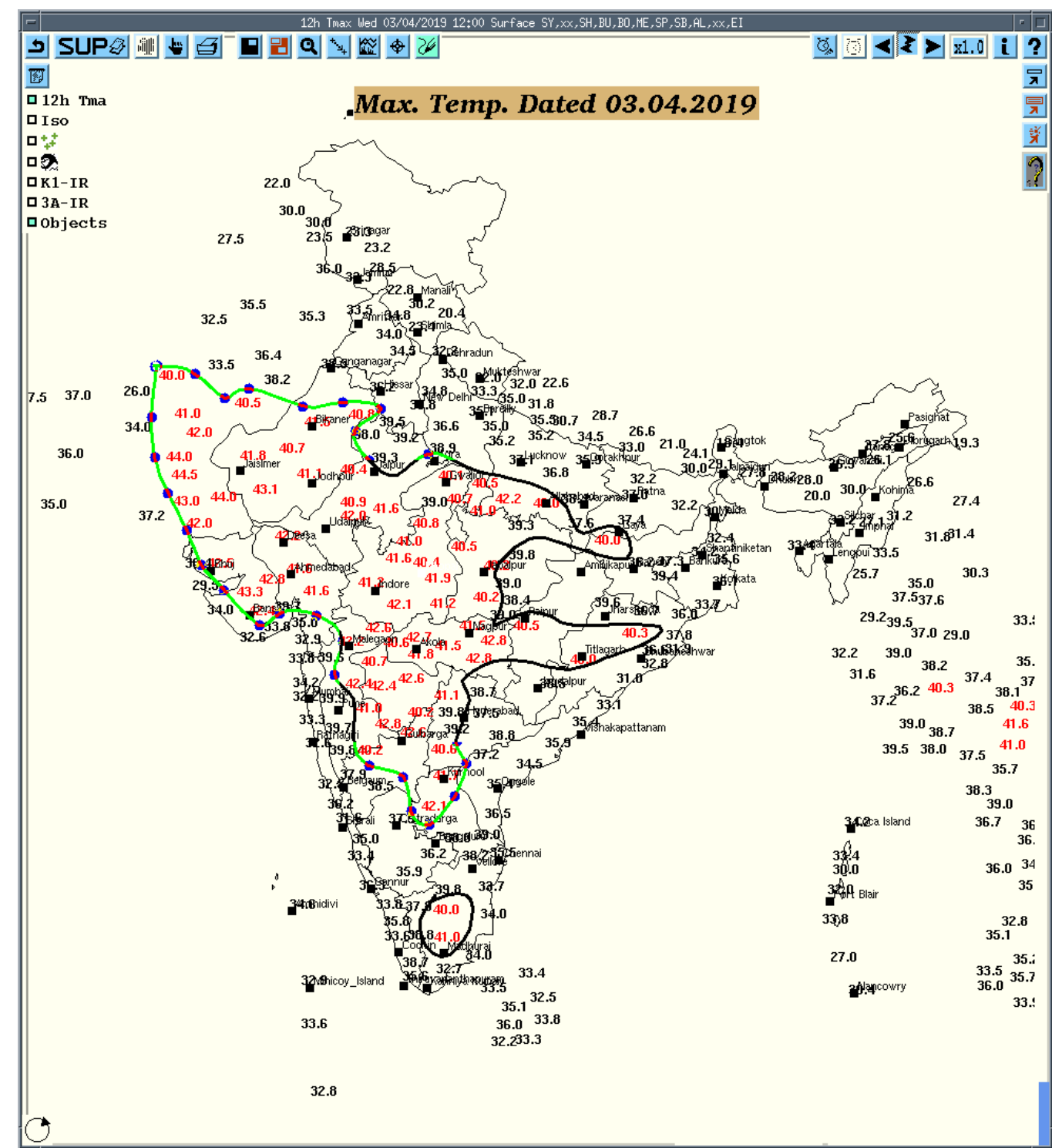


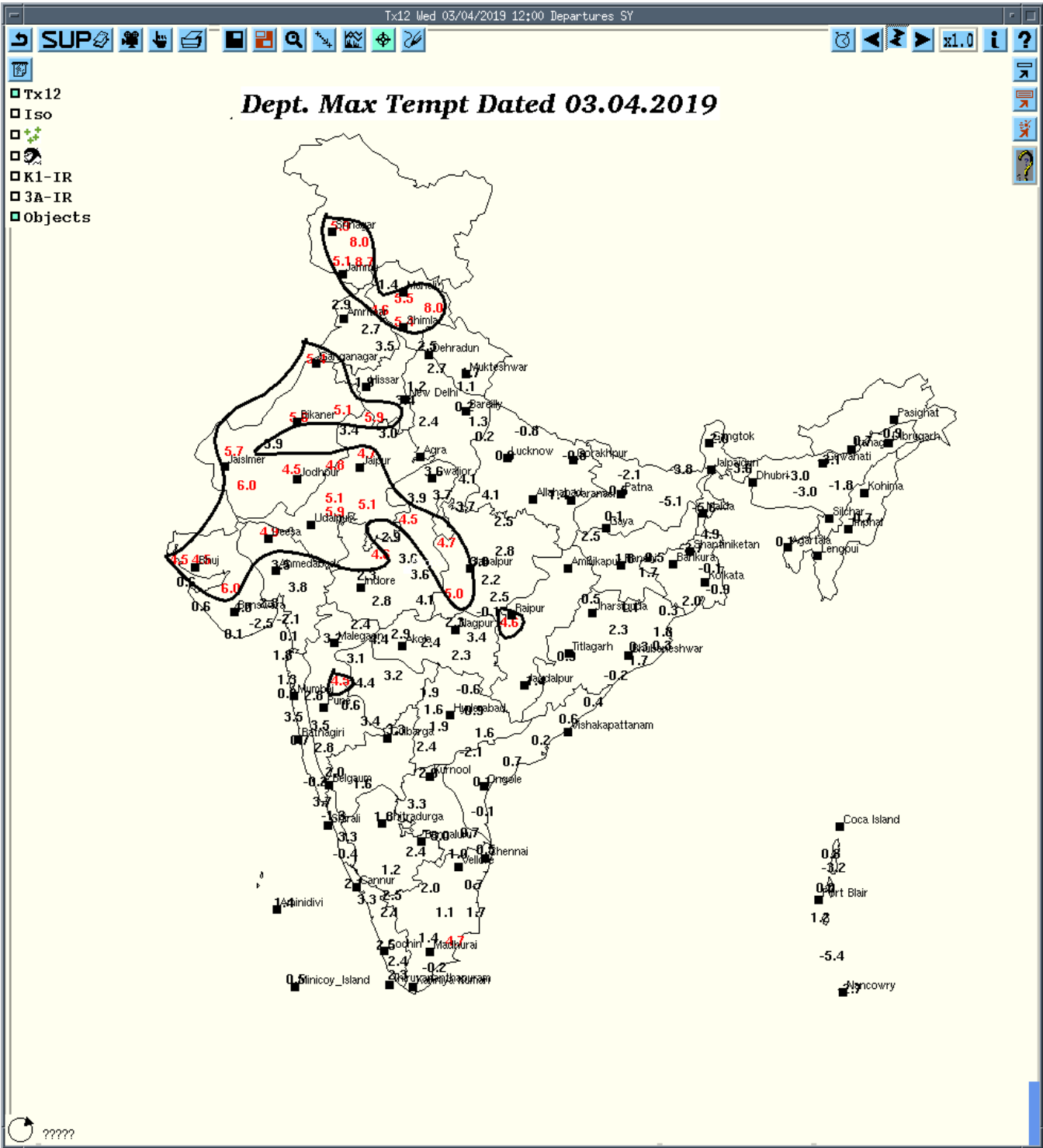
Heat wave conditions NIL

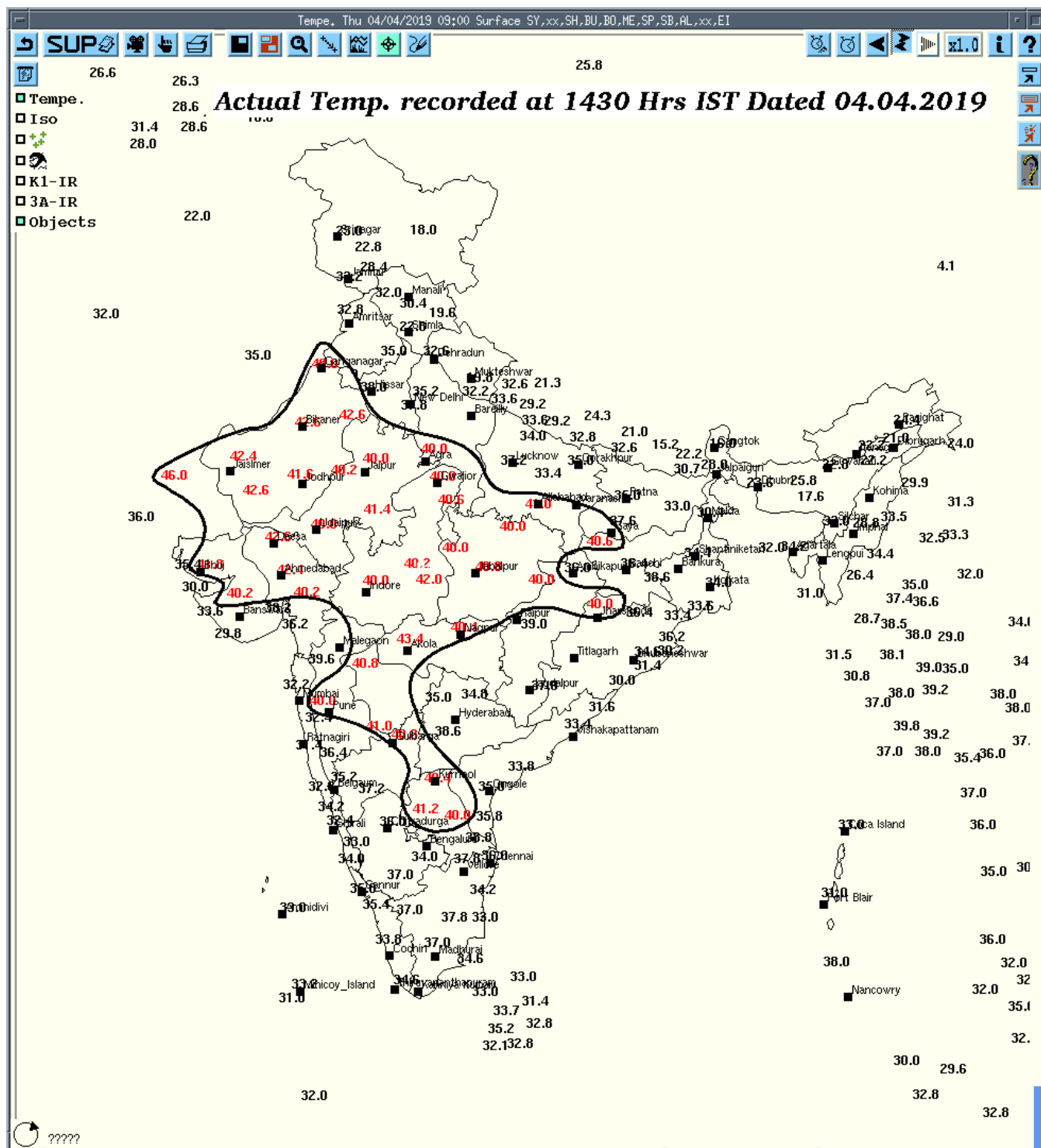
08/04/2019

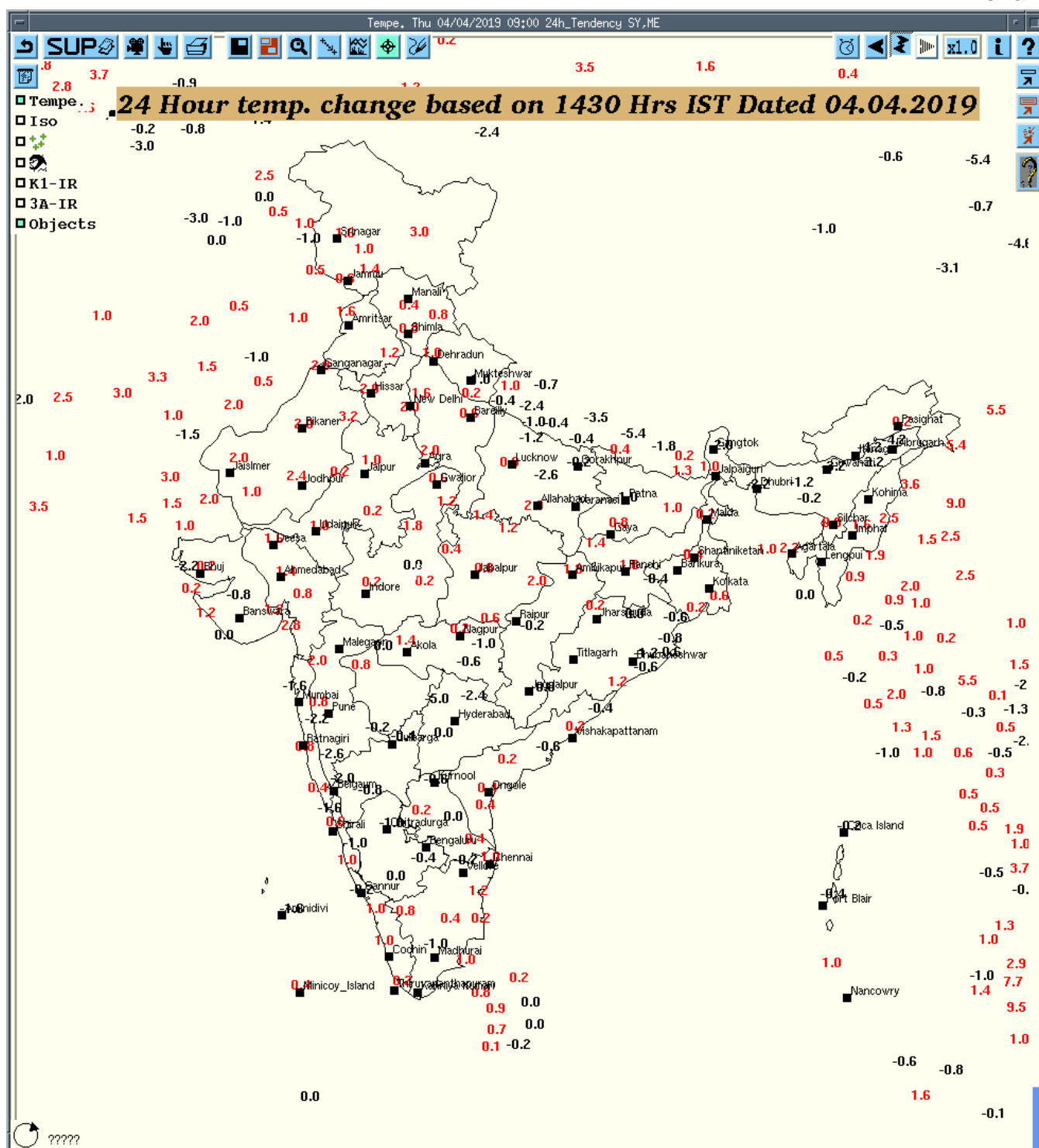


Heat wave conditions:-NIL









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department

Dated: 05th April, 2019
Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 04 April to 0830 hrs IST 05 April, 2019)

Heat Wave:

Yesterday's **Heat wave**: severe heat wave conditions were observed at many parts over west Rajasthan; most parts over east Rajasthan; some parts over Gujarat State, Madhya Pradesh and Chhattisgarh; at isolated pockets over East Uttar Pradesh and Chhattisgarh. (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over Jammu & Kashmir, Himachal Pradesh and Rajasthan; at isolated places over Gujarat region; **appreciably above normal (3.1°C to 5.0°C)** at most places over Madhya Pradesh; at many places over Uttarakhand, Punjab, Haryana Delhi & Chandigarh, Chhattisgarh and Vidarbha; at a few places over Marathwada, Madhya Maharashtra and Saurashtra & Kutch; above **normal (1.6°C to 3.0°C)** at many places over Jharkhand and Kerala; at a few places over East Uttar Pradesh, Konkan & Goa, Rayalseema and Tamil Nadu & Puducherry. Yesterday, **the highest maximum temperature** of 45.0°C was recorded at Khargone (**West Madhya Pradesh**) over the country (**Annexure 1 & 2**).

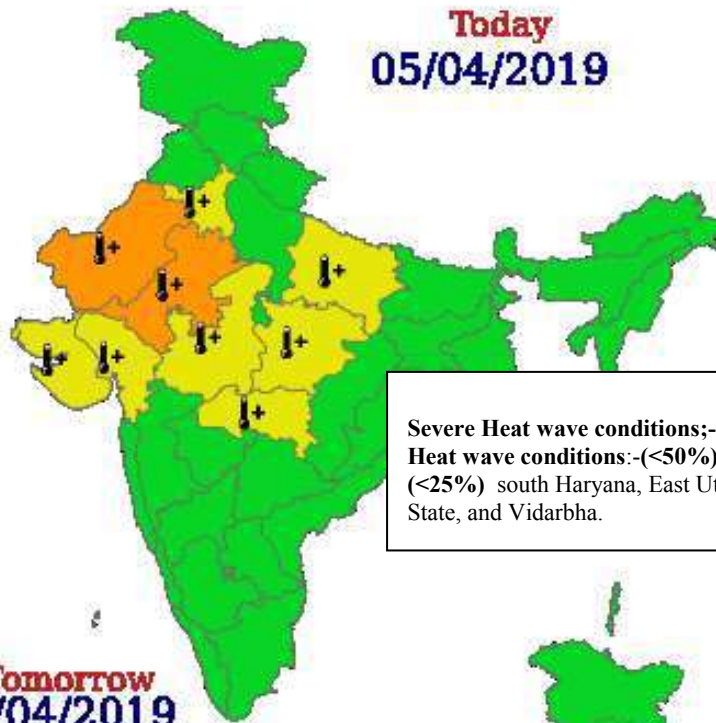
Temperatures Recorded at 1430 Hours IST of Today, the 05th April, 2019

- **Khajuraho (East Madhya Pradesh) recorded a maximum temperature of 43.2°C(Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at most places over Rajasthan, Punjab, Haryana, Delhi, Gujarat region and East Madhya Pradesh; at many places over Jharkhand and Tamilnadu & Puducherry; at a few places over Uttar Pradesh, Bihar and Jammu & Kashmir; at one or two pockets over Himachal Pradesh, Uttarakhand, West Madhya Pradesh, Saurashtra & Kutch, Madhya Maharashtra, Kerala, Coastal Andhra Pradesh, Odisha, Chhattisgarh and northeastern states (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

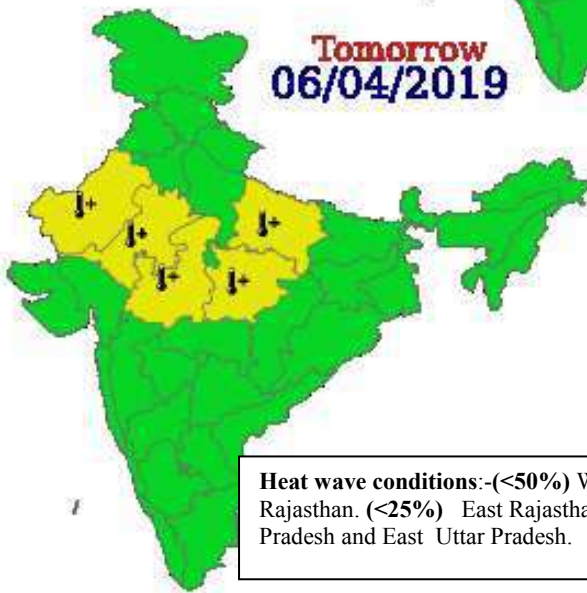
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
05/04/2019



Severe Heat wave conditions:-(<25%) Rajasthan
Heat wave conditions:-(<50%) Madhya Pradesh.
(<25%) south Haryana, East Uttar Pradesh, Gujarat
State, and Vidarbha.

Tomorrow
06/04/2019



Heat wave conditions:-(<50%) West
Rajasthan. (<25%) East Rajasthan, Madhya
Pradesh and East Uttar Pradesh.

07/04/2019



Heat wave conditions:-NIL

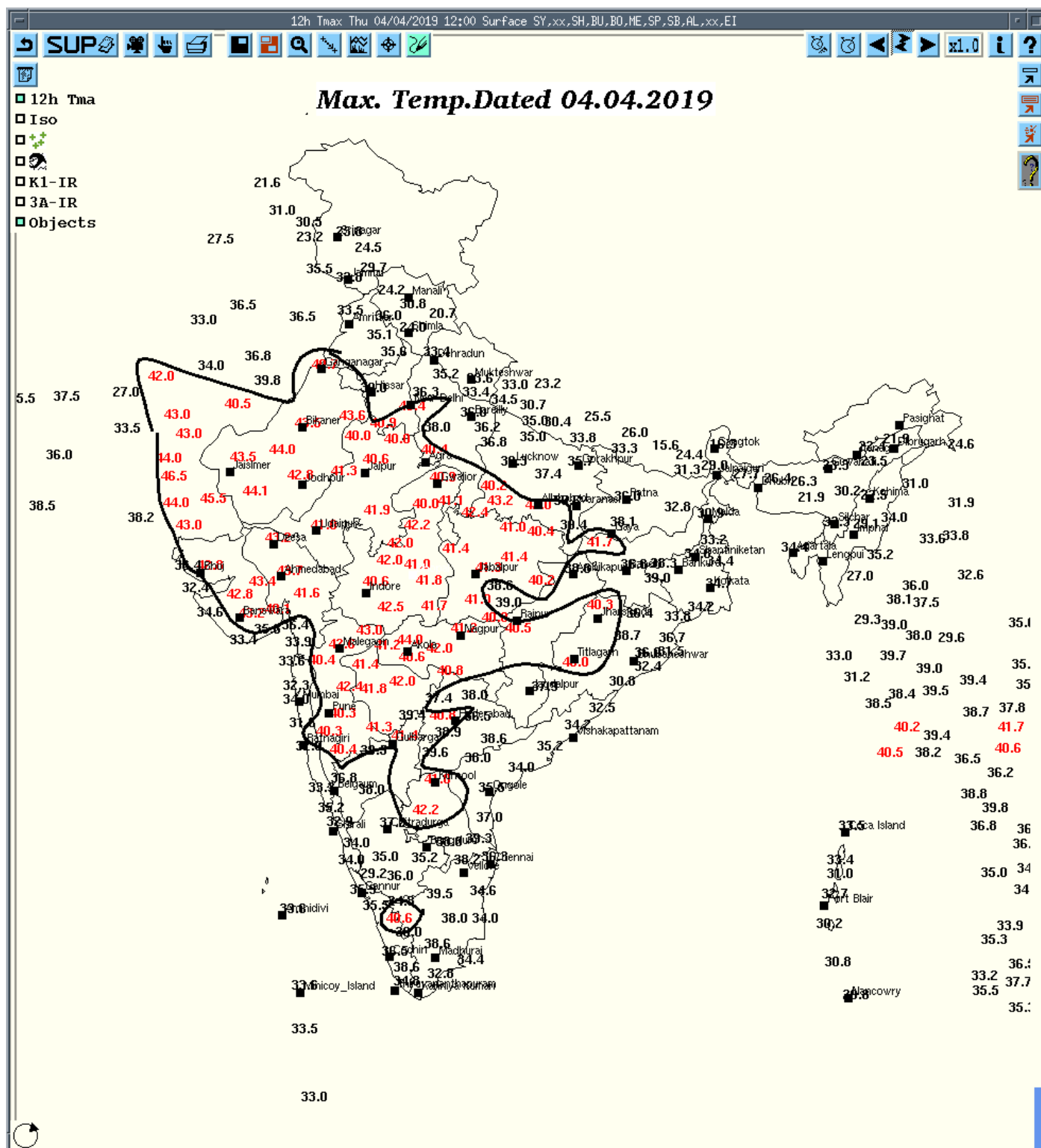
08/04/2019

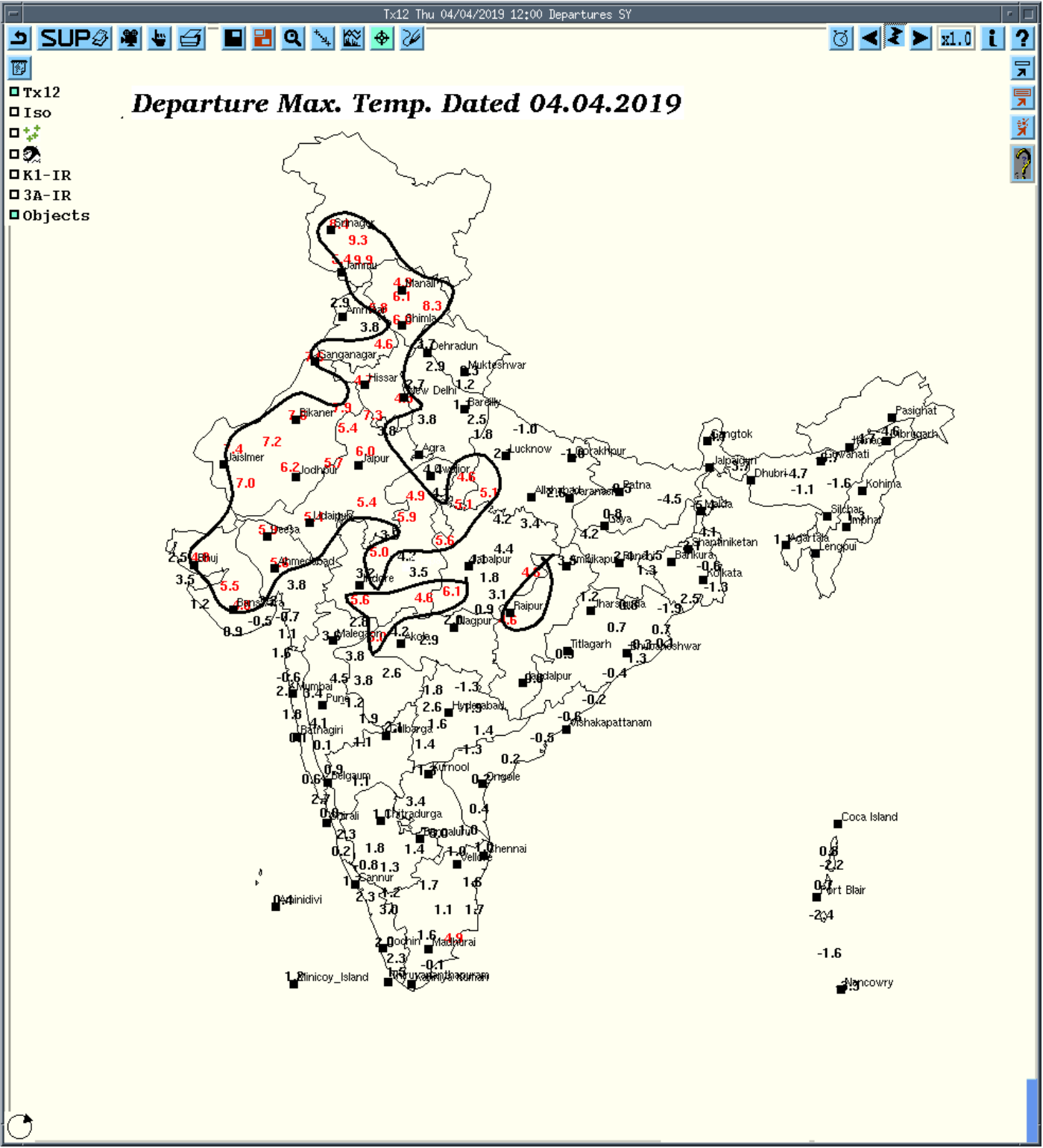


09/04/2019

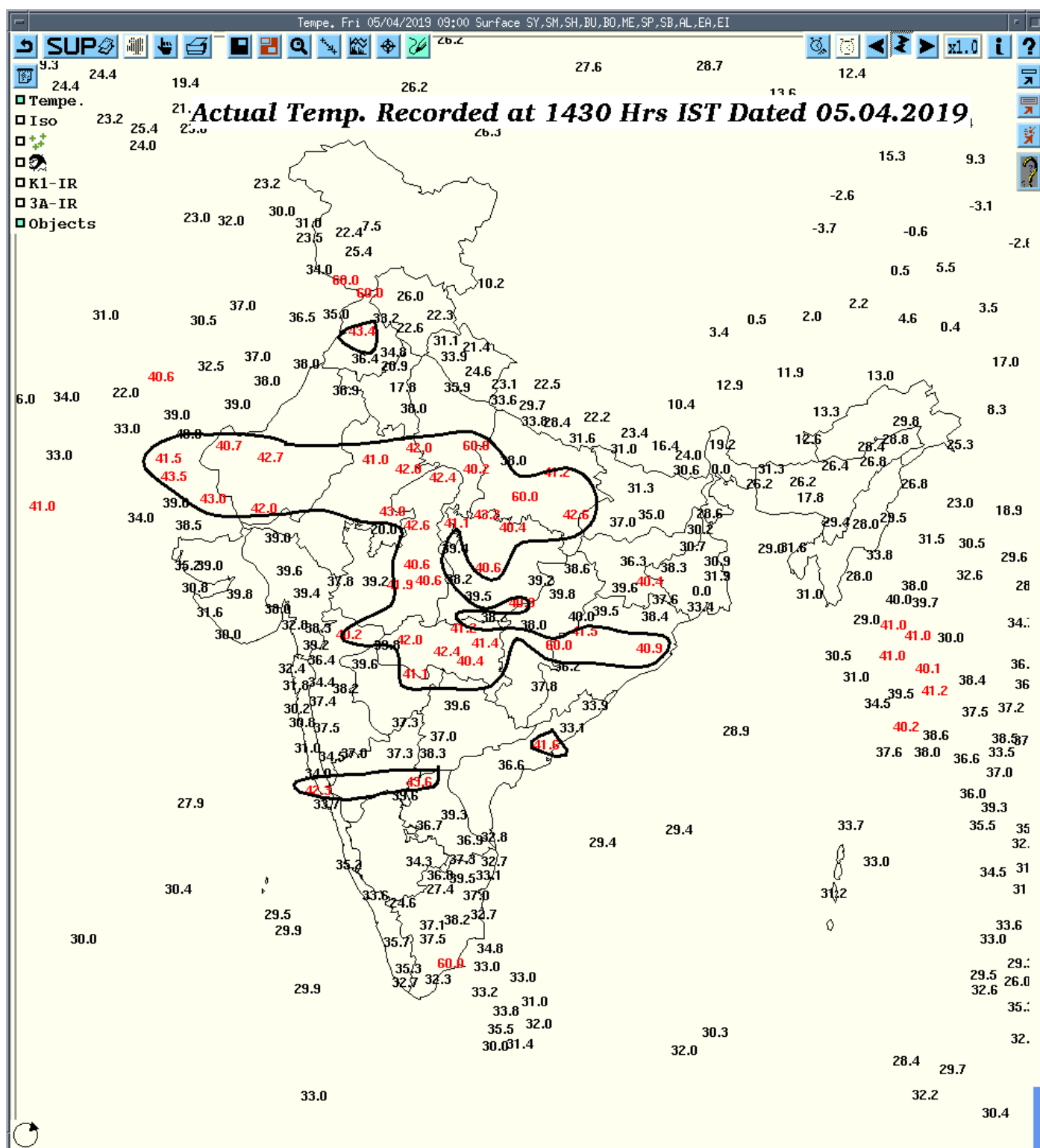


Annexure 1

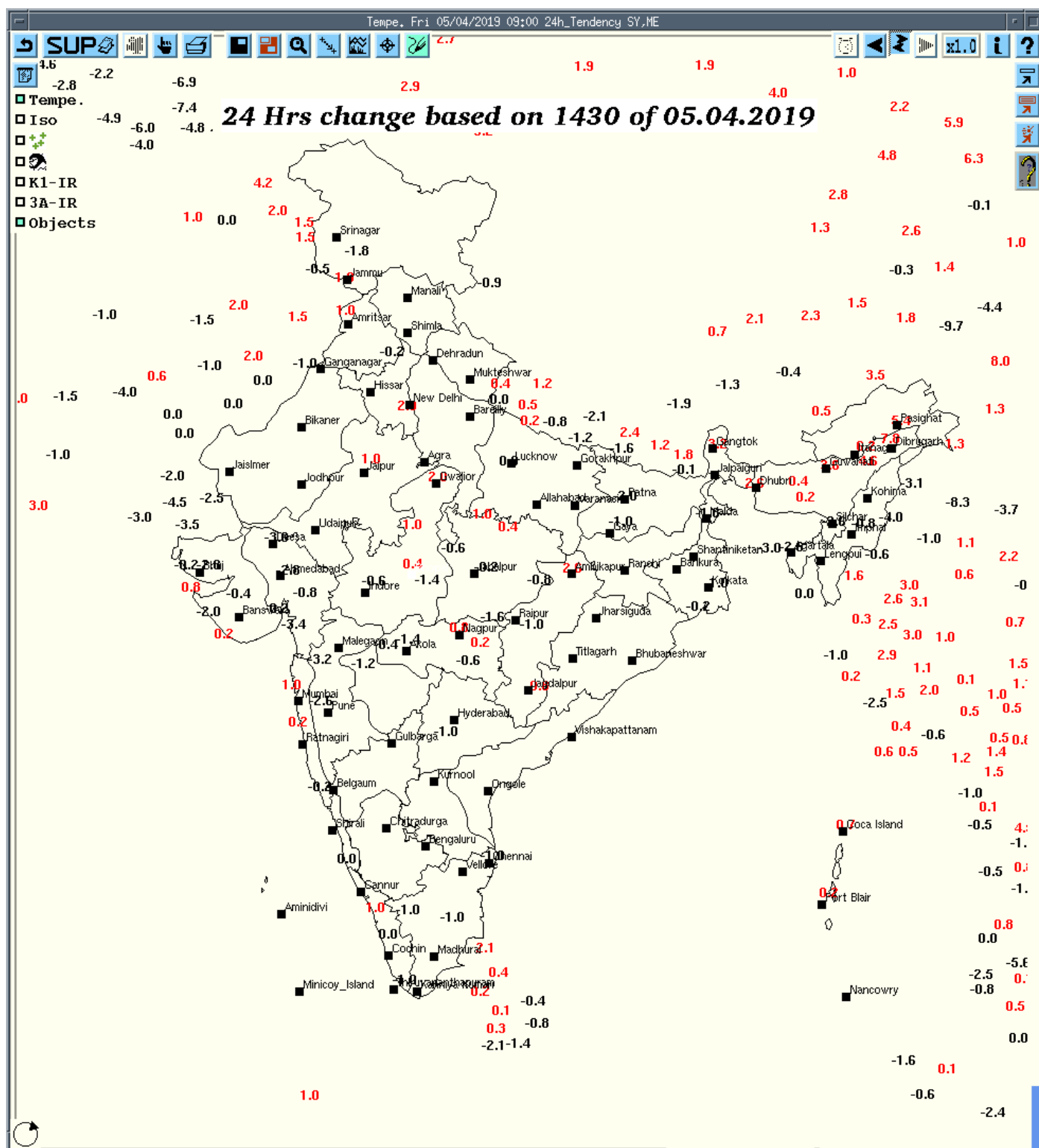




Annexure 3



Annexure 4



Annexure 5

Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 06th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 05 April to 0830 hrs IST 06 April, 2019)

Heat Wave:

Yesterday, Heat wave conditions were observed at many parts with severe heat wave at isolated pockets over Rajasthan; in many parts over East Madhya Pradesh; in isolated pockets over Haryana, Chandigarh & Delhi and West Madhya Pradesh (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over Himachal Pradesh and West Rajasthan; at many places over Jammu & Kashmir and East Rajasthan; at a few places over East Madhya Pradesh and at isolated places over West Madhya Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at most places over Punjab, Haryana Delhi & Chandigarh; at a few places over Chhattisgarh, Jharkhand and Vidarbha and at isolated places over Gujarat Region; **above normal (1.6°C to 3.0°C)** at many places over Uttarakhand, Tamilnadu & Puducherry, Rayalaseema, Saurashtra & Kutch; at a few places over Konkan & Goa and at isolated places over Kerala, Madhya Maharashtra, Marathwada and Odisha. Yesterday, the highest maximum temperature of 43.8°C was recorded at Churu (West Rajasthan) over the country (**Annexure 1 & 2**).

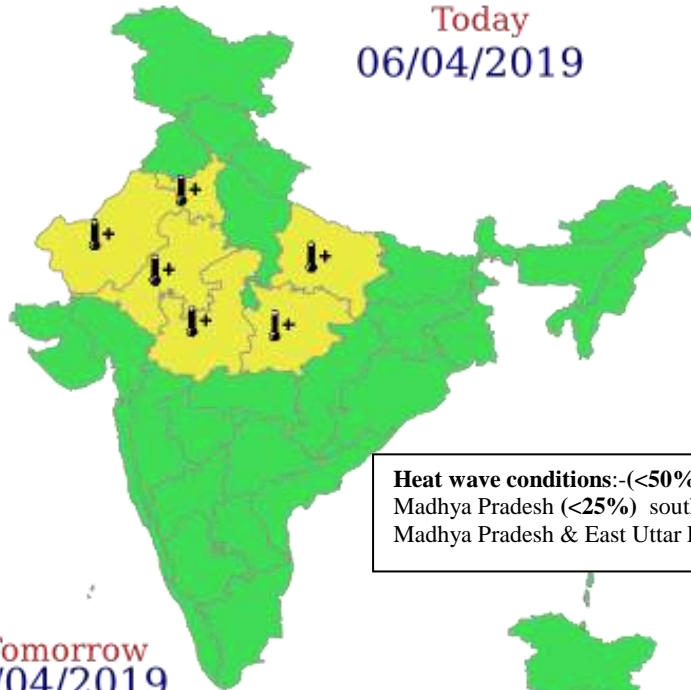
Temperatures Recorded at 1430 Hours IST of Today, the 06th April, 2019

- **Akola (Vidarbha) recorded a maximum temperature of 41.9°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at most places over Assam & Meghalaya; at few places over Kerala and at one or two pockets of Gujarat, Punjab, Uttarakhand, Vidarbha, Chhattisgarh, Odisha, Telengana and Tamilnadu & Puducherry (Annexure 4).**

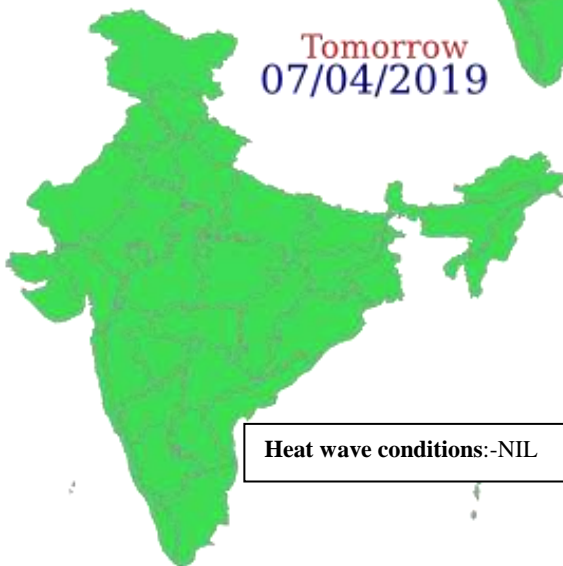
Heat Wave Warnings for Next 5 Days (on next page)

(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

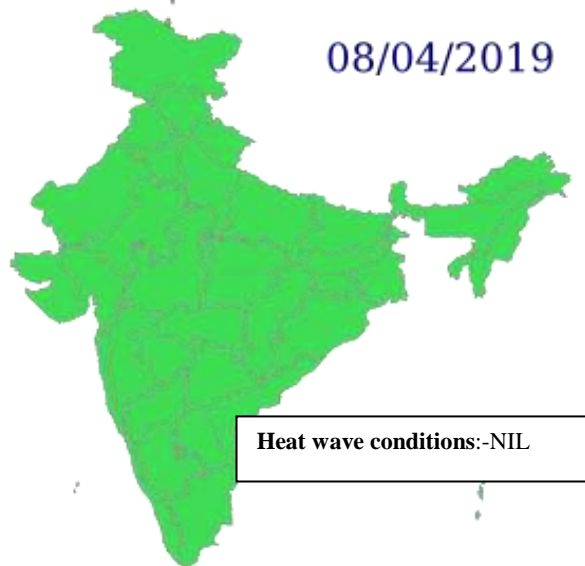
Today
06/04/2019



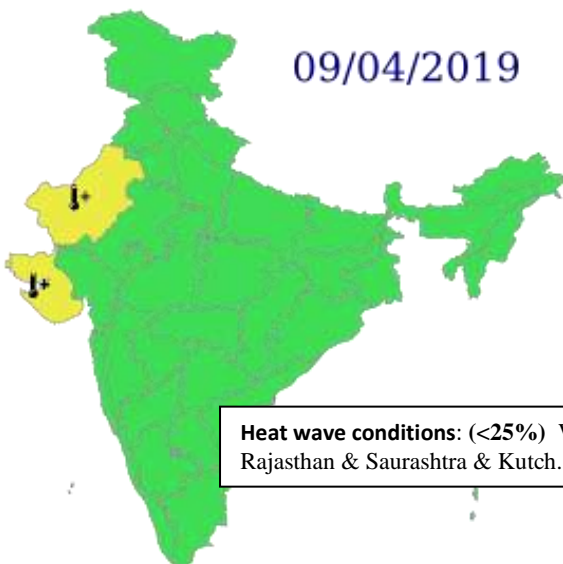
Tomorrow
07/04/2019



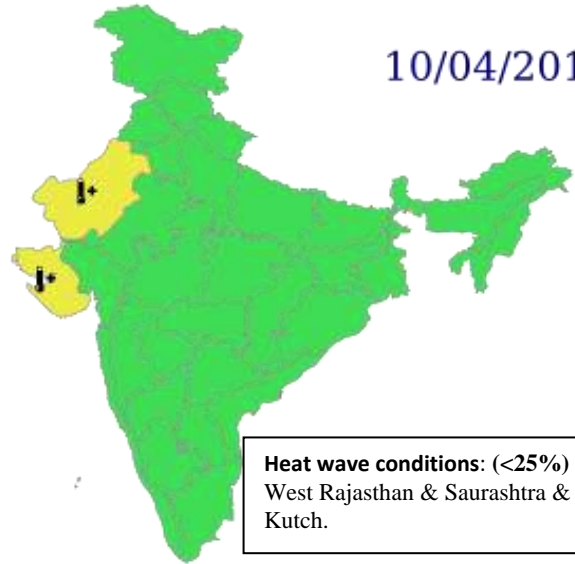
08/04/2019

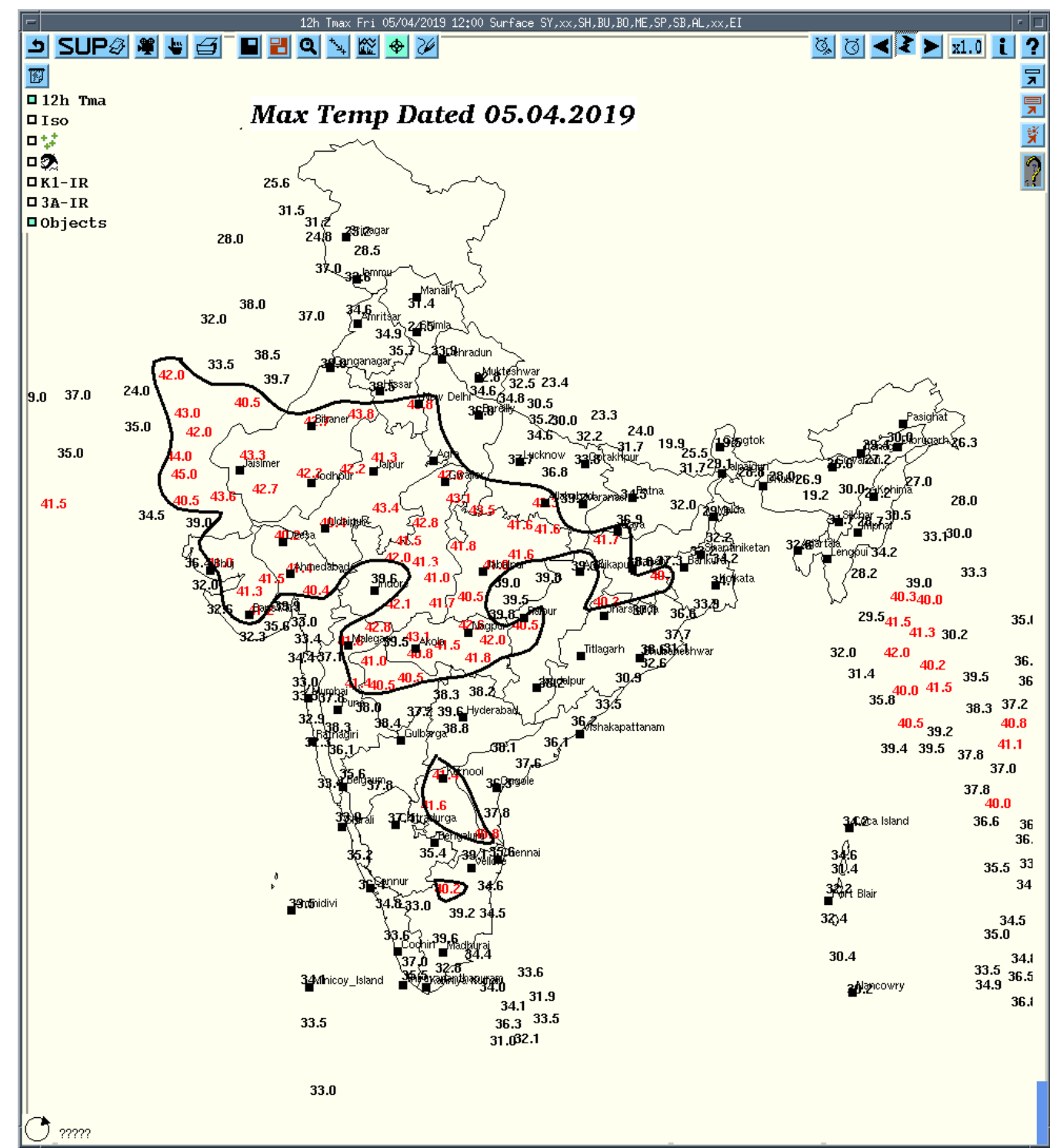


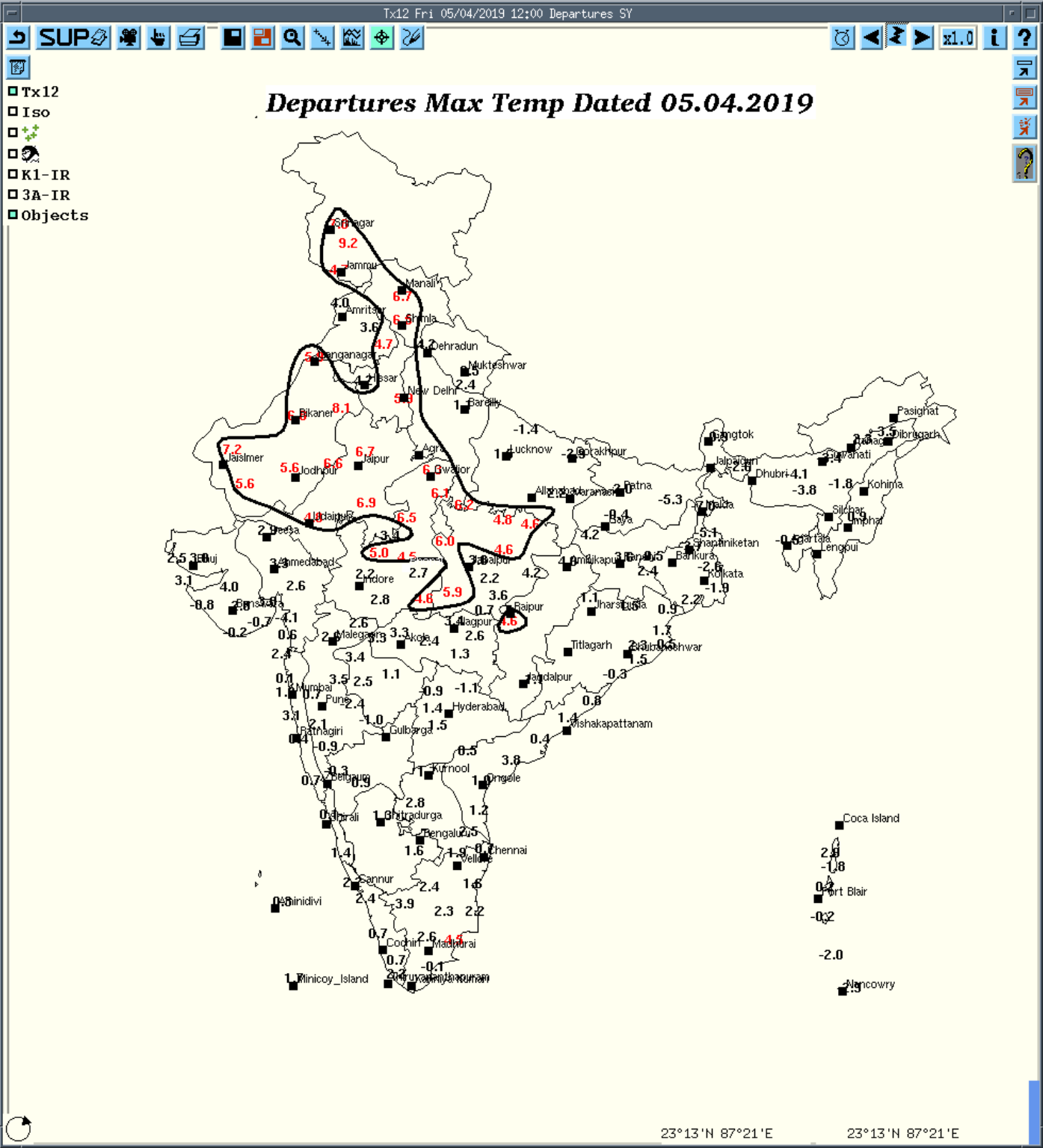
09/04/2019



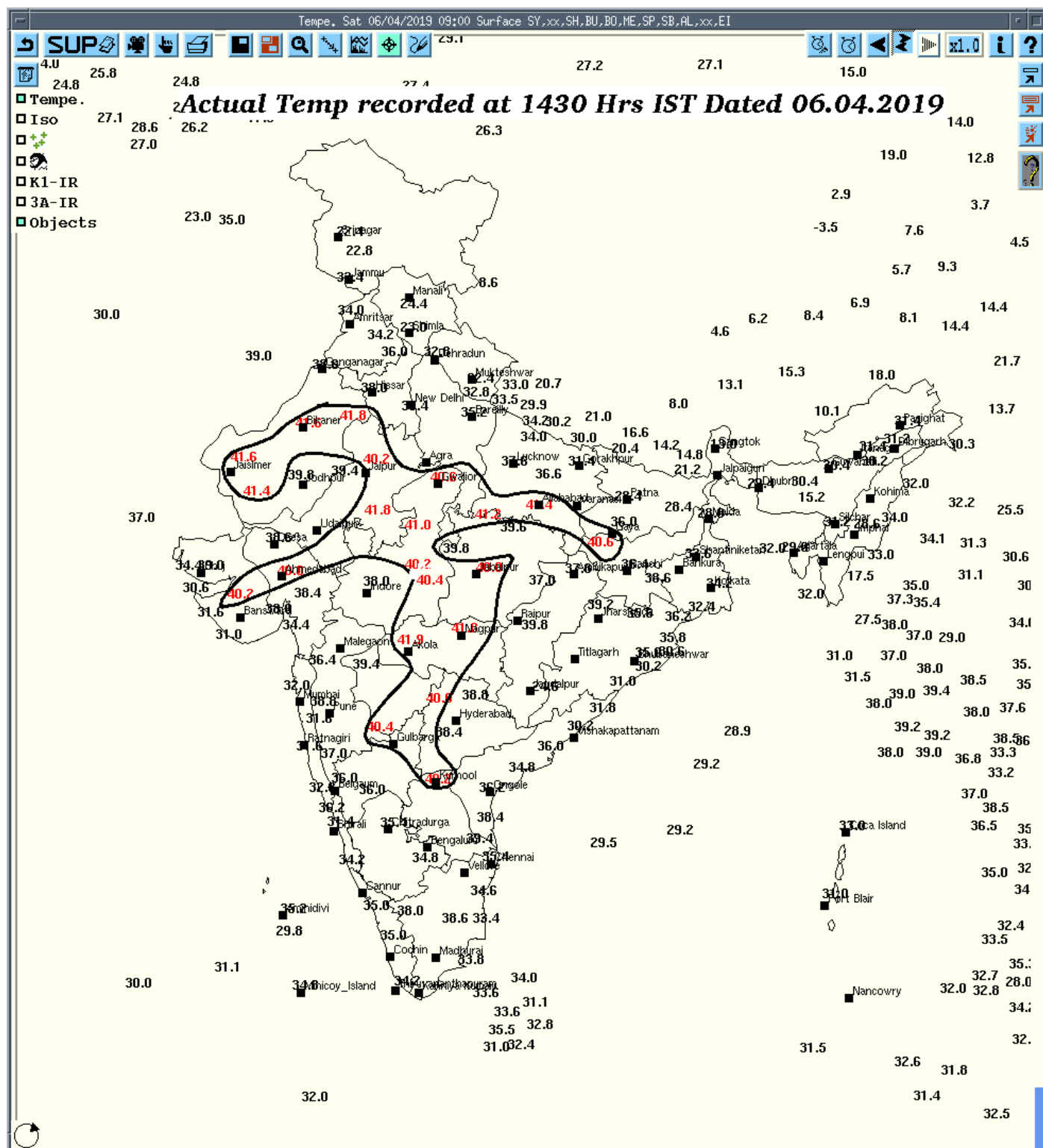
10/04/2019

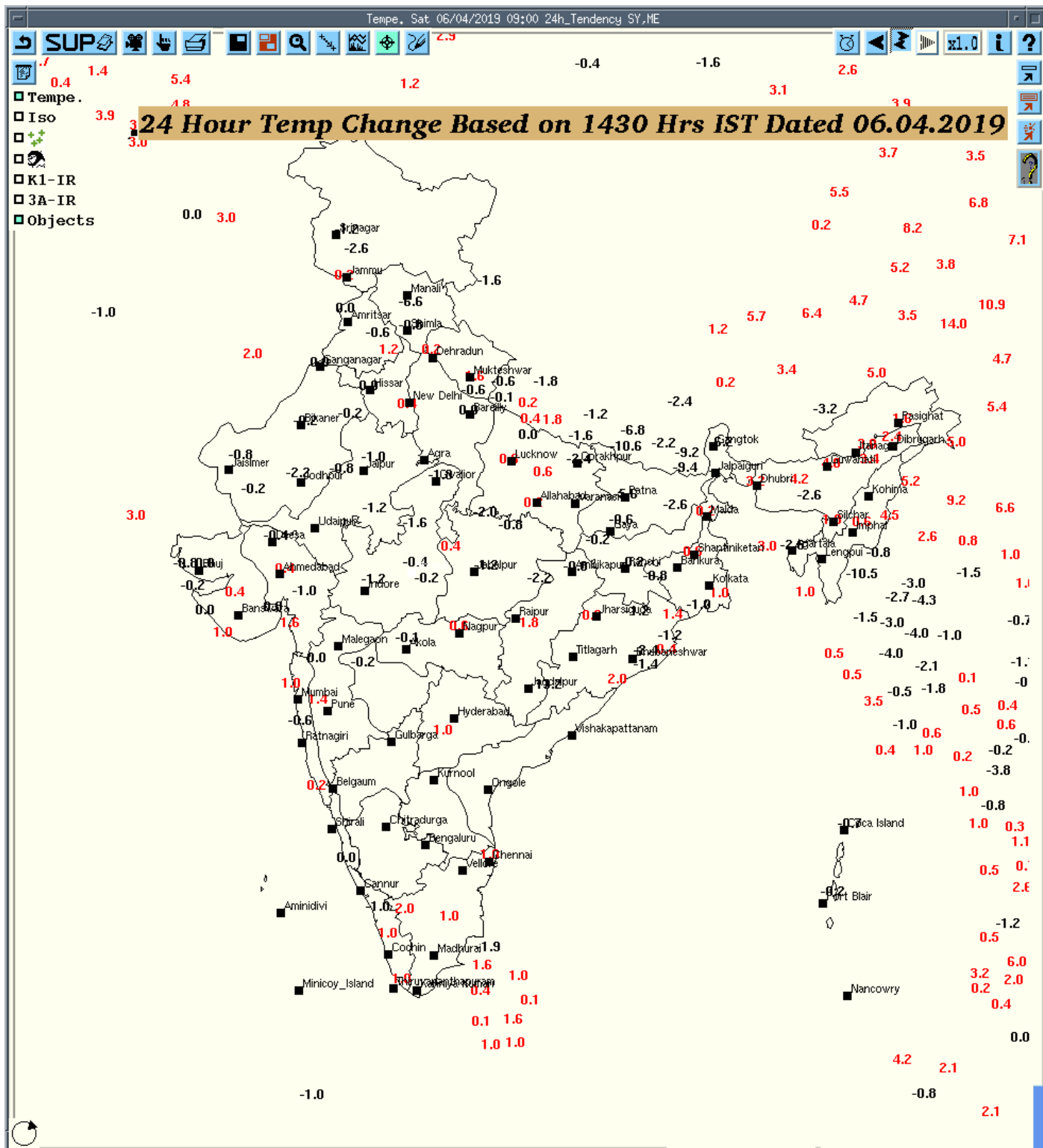






Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 07th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 06 April to 0830 hrs IST 07 April, 2019)

Heat Wave:

Yesterday, **heat wave** conditions observed at most places over West Rajasthan; at a few places over East Rajasthan; at isolated pockets over Himachal Pradesh, Haryana, Chandigarh & Delhi and West Madhya Pradesh (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Jammu & Kashmir and West Rajasthan; at a few places over Himachal Pradesh; at isolated places over East Rajasthan; **appreciably above normal (3.1°C to 5.0°C)** at most places over Punjab, at a few places over Madhya Pradesh and Vidarbha; at isolated places over Haryana, Chandigarh & Delhi, east Assam & Meghalaya and Kerala; above **normal (1.6°C to 3.0°C)** at most places over Marathwada; at many places over Rayalaseema, Coastal Karnataka and Tamilnadu & Puducherry; at a few places over West Uttar Pradesh, Uttarakhand, Madhya Maharashtra, Chhattisgarh and Jharkhand; at isolated places over Telangana and Konkan & Goa. Yesterday, The **highest maximum temperature** of 43.6°C was recorded at Khargone (**West Madhya Pradesh**) over the country (**Annexure 1 & 2**).

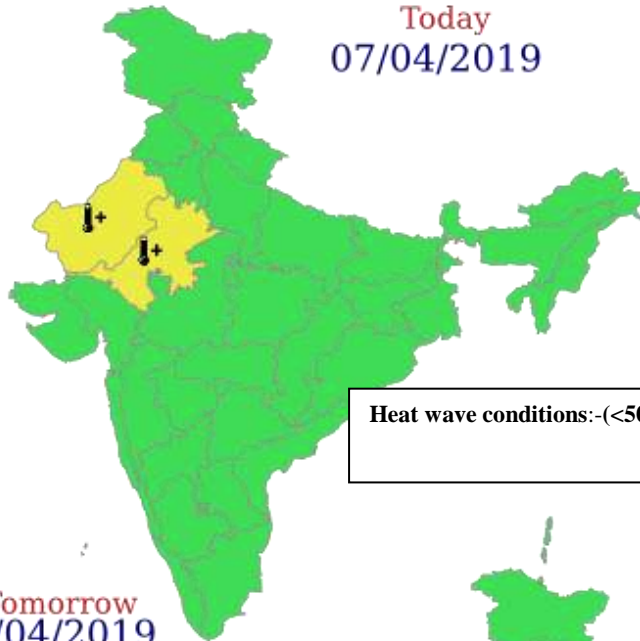
Temperatures Recorded at 1430 Hours IST of Today, the 07th April, 2019

- **Bramhapuri (Vidarbha)** recorded a maximum temperature of 42.6°C (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at a few places over Bihar and at one or two pockets over Jammu & Kashmir, Himachal Pradesh, West Madhya Pradesh, Gujarat state, Konkan & Goa, Coastal Andhra Pradesh, Rayalaseema and West Rajasthan (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

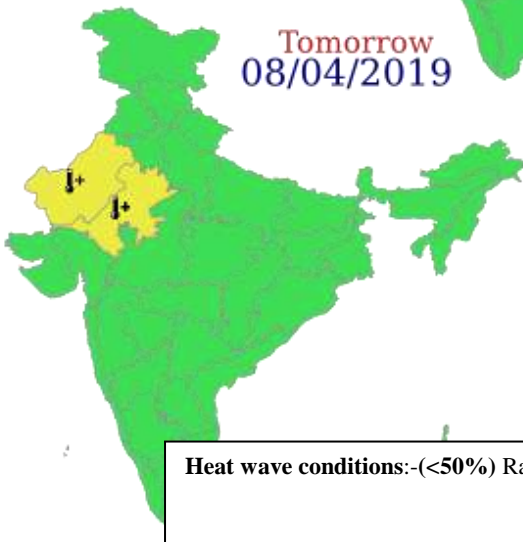
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
07/04/2019



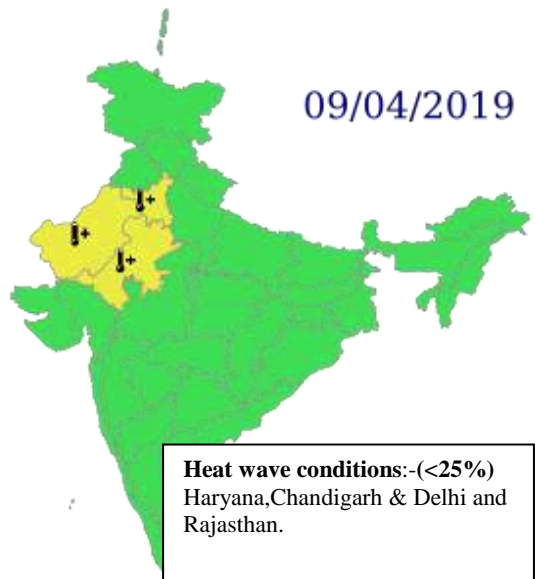
Heat wave conditions:-(<50%) Rajasthan

Tomorrow
08/04/2019



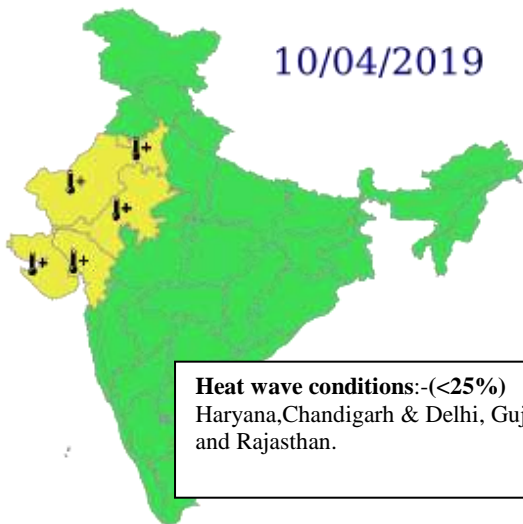
Heat wave conditions:-(<50%) Rajasthan

09/04/2019



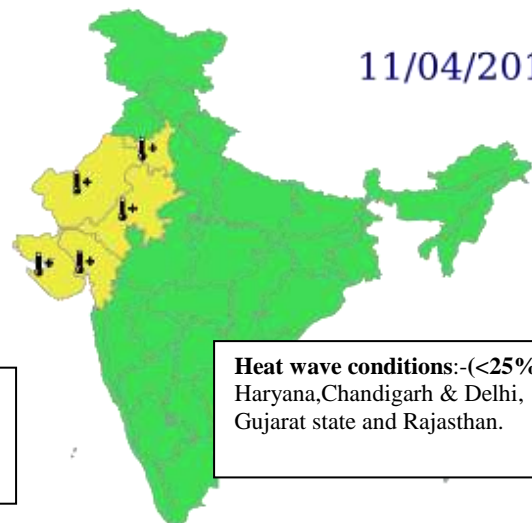
Heat wave conditions:-(<25%)
Haryana, Chandigarh & Delhi and
Rajasthan.

10/04/2019

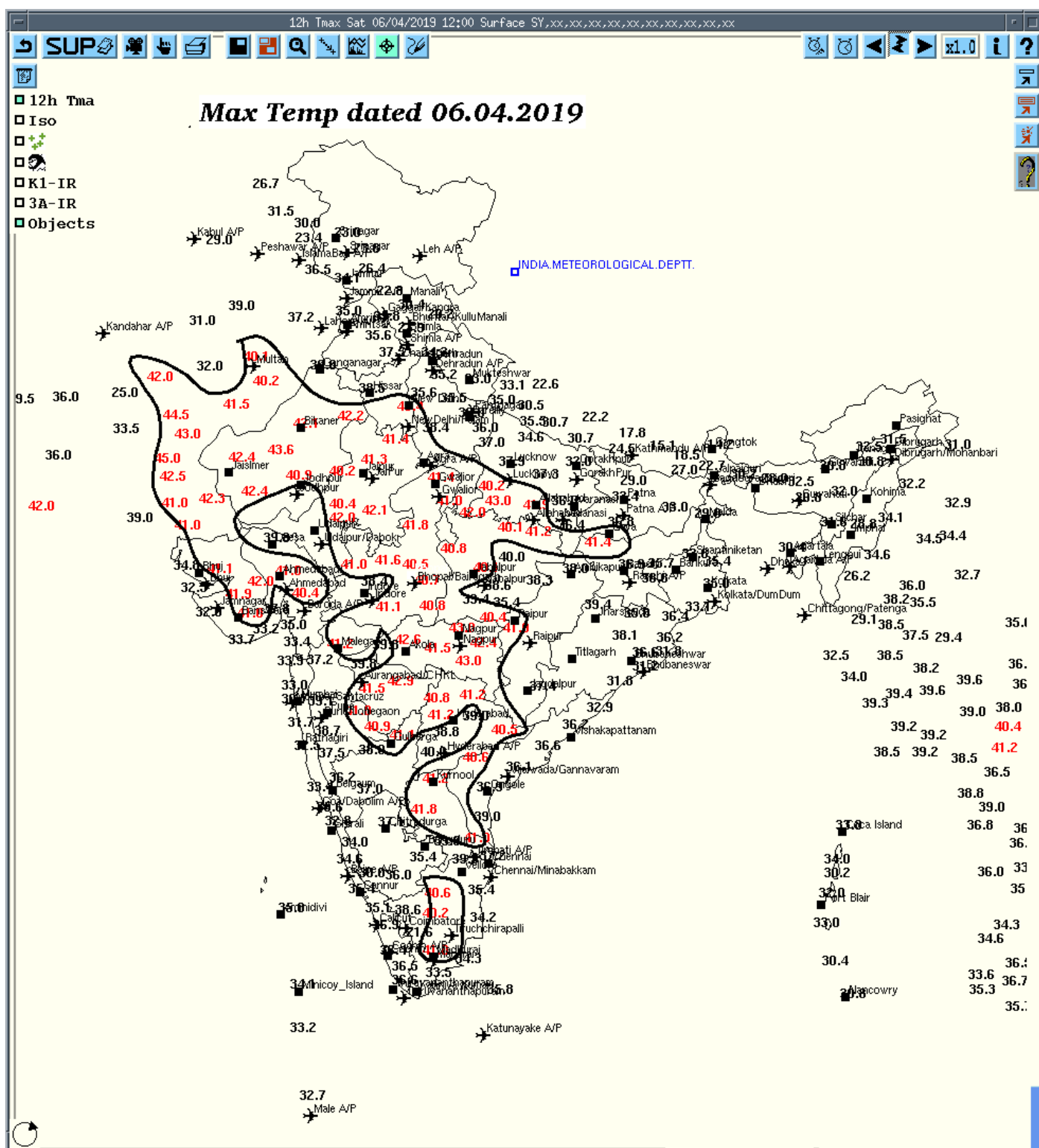


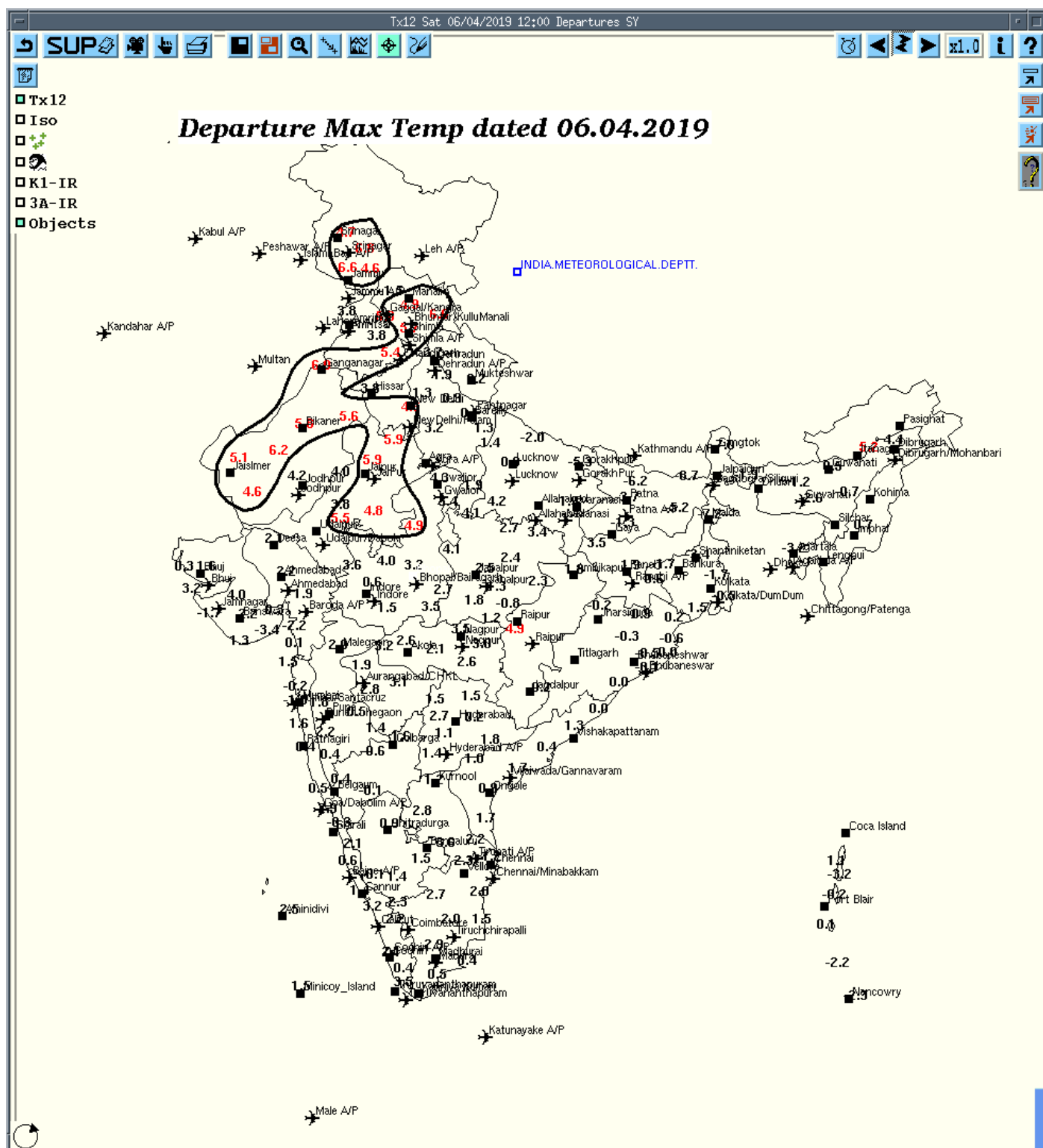
Heat wave conditions:-(<25%)
Haryana, Chandigarh & Delhi, Gujarat state
and Rajasthan.

11/04/2019

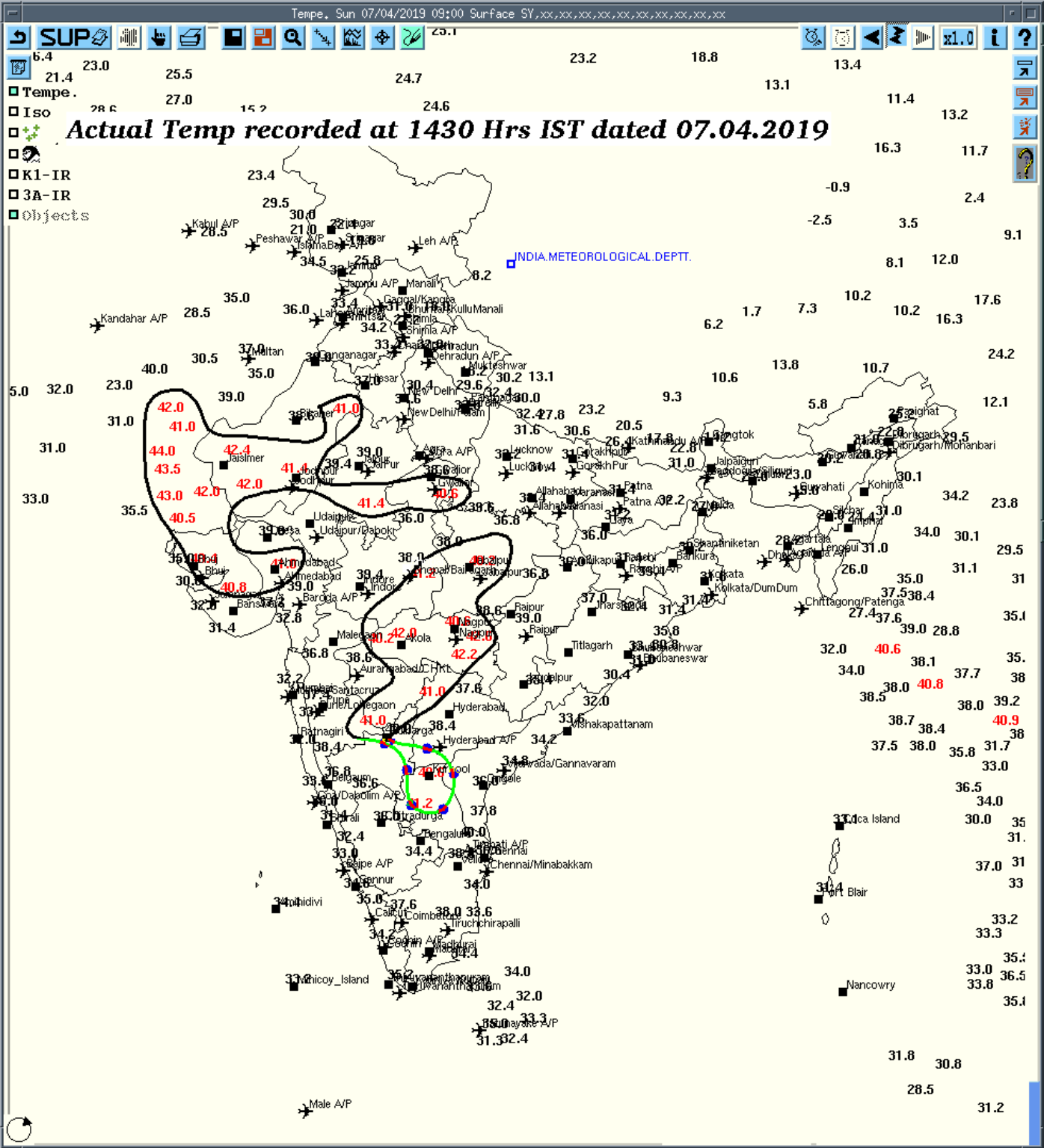


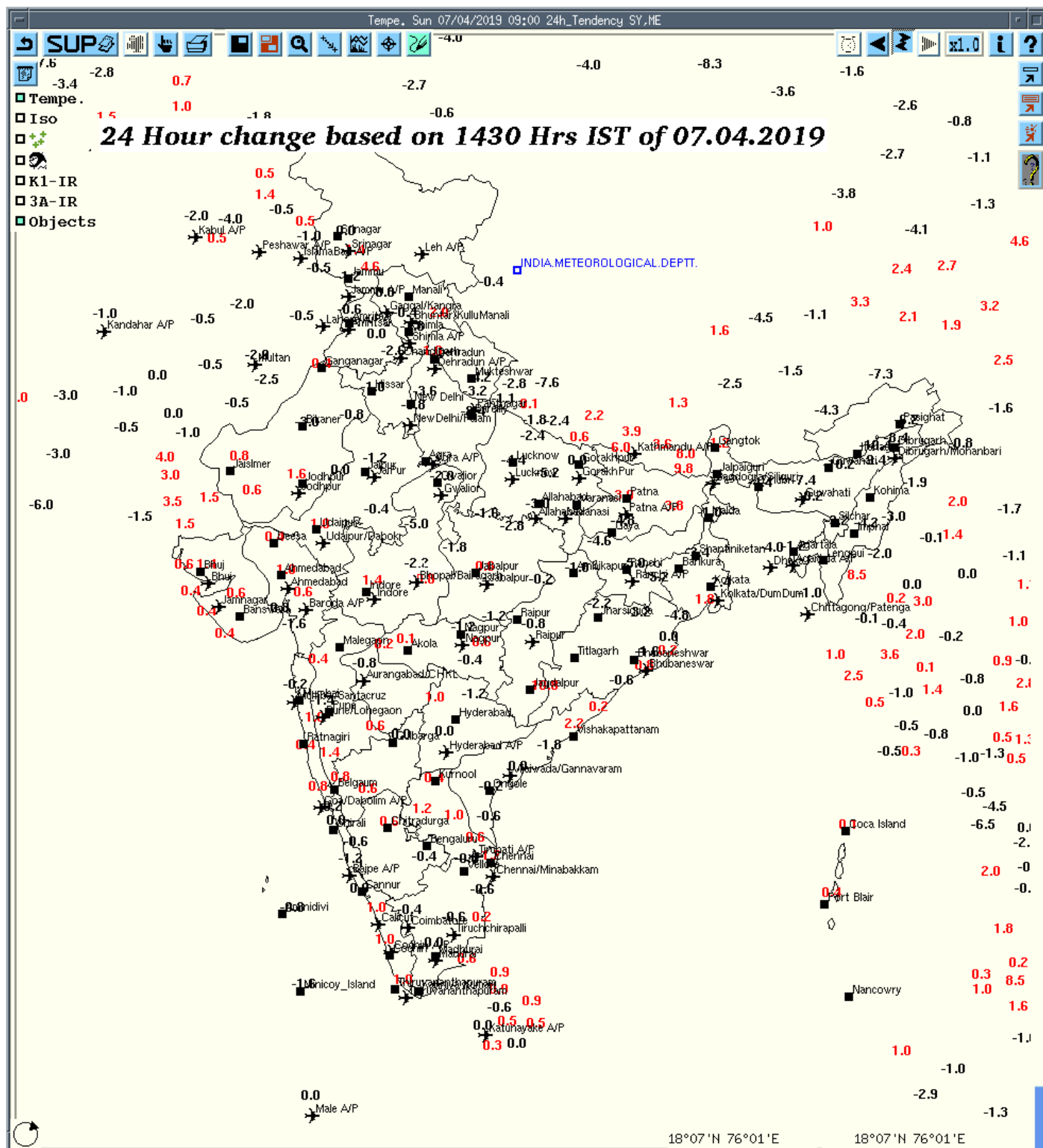
Heat wave conditions:-(<25%)
Haryana, Chandigarh & Delhi,
Gujarat state and Rajasthan.





Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department

Dated: 08th April, 2019
Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 07 April to 0830 hrs IST 08 April, 2019)

Heat Wave:

Yesterday, **heat wave conditions** were observed in many parts over West Rajasthan and in some parts over East Rajasthan (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Jammu & Kashmir and West Rajasthan; at a few places over East Rajasthan; at isolated places over Haryana, Chandigarh & Delhi; **appreciably above normal (3.1°C to 5.0°C)** at many places over Himachal Pradesh and West Madhya Pradesh; at a few places over Punjab, East Madhya Pradesh, Marathwada, Vidarbha, Gujarat region and Coastal Karnataka; at isolated places over Saurashtra & Kutch, Chhattisgarh and Rayalaseema; above **normal (1.6°C to 3.0°C)** at many places over Kerala; at a few places over South Interior Karnataka, Coastal Andhra Pradesh, Lakshadweep and Tamilnadu & Puducherry; at isolated places over Konkan & Goa, North Interior Karnataka and Andaman & Nicobar Islands. Yesterday, **the highest maximum temperature** of 44.0°C was recorded at Khargone (**West Madhya Pradesh**) over the country (**Annexure 1 & 2**).

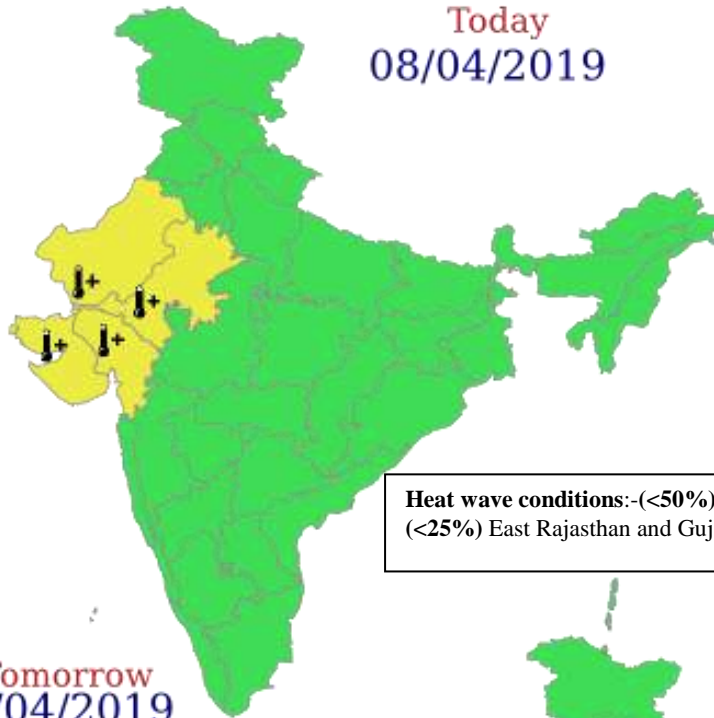
Temperatures Recorded at 1430 Hours IST of Today, the 08th April, 2019

- **Bramhapuri (Vidarbha)** recorded a maximum temperature of 42.8°C (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at most places over Assam & Meghalaya; at many places over East Uttar Pradesh; at a few places over Bihar and at one or two pockets over West Madhya Pradesh, Gujarat region, Konkan & Goa and Sub Himalayan West Bengal & Sikkim (**Annexure 4**).

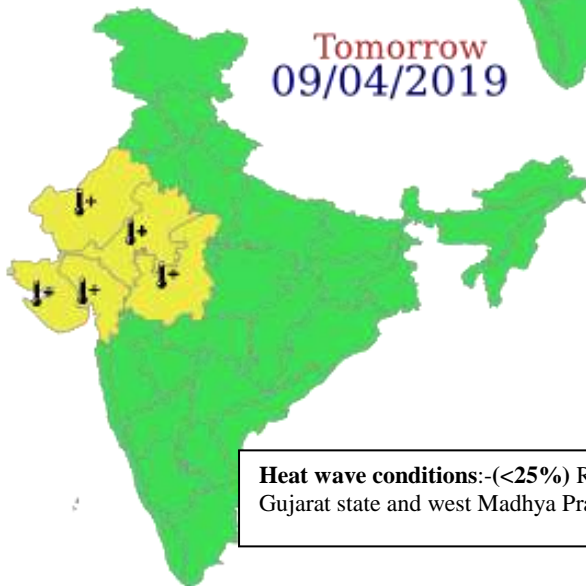
Heat Wave Warnings for Next 5 Days (on next page)

(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

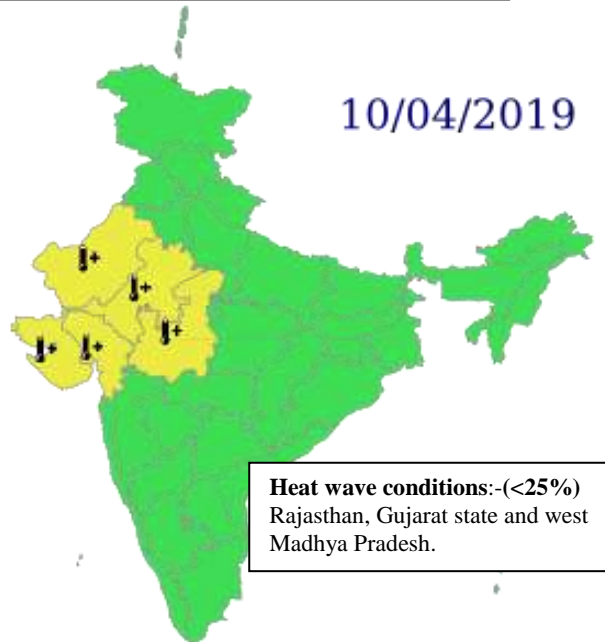
Today
08/04/2019



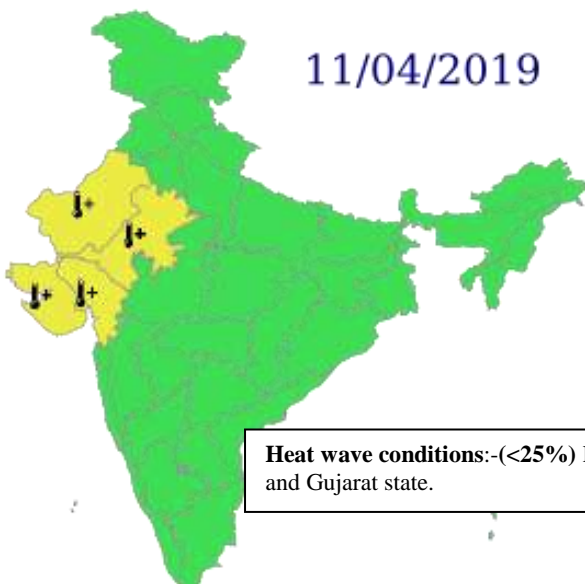
Tomorrow
09/04/2019



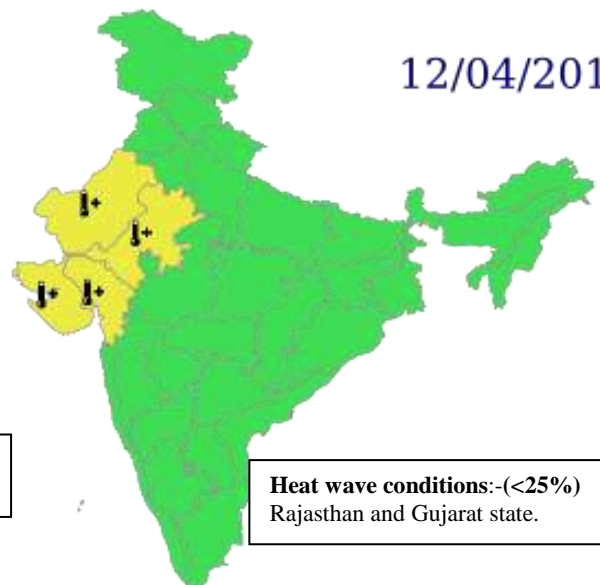
10/04/2019



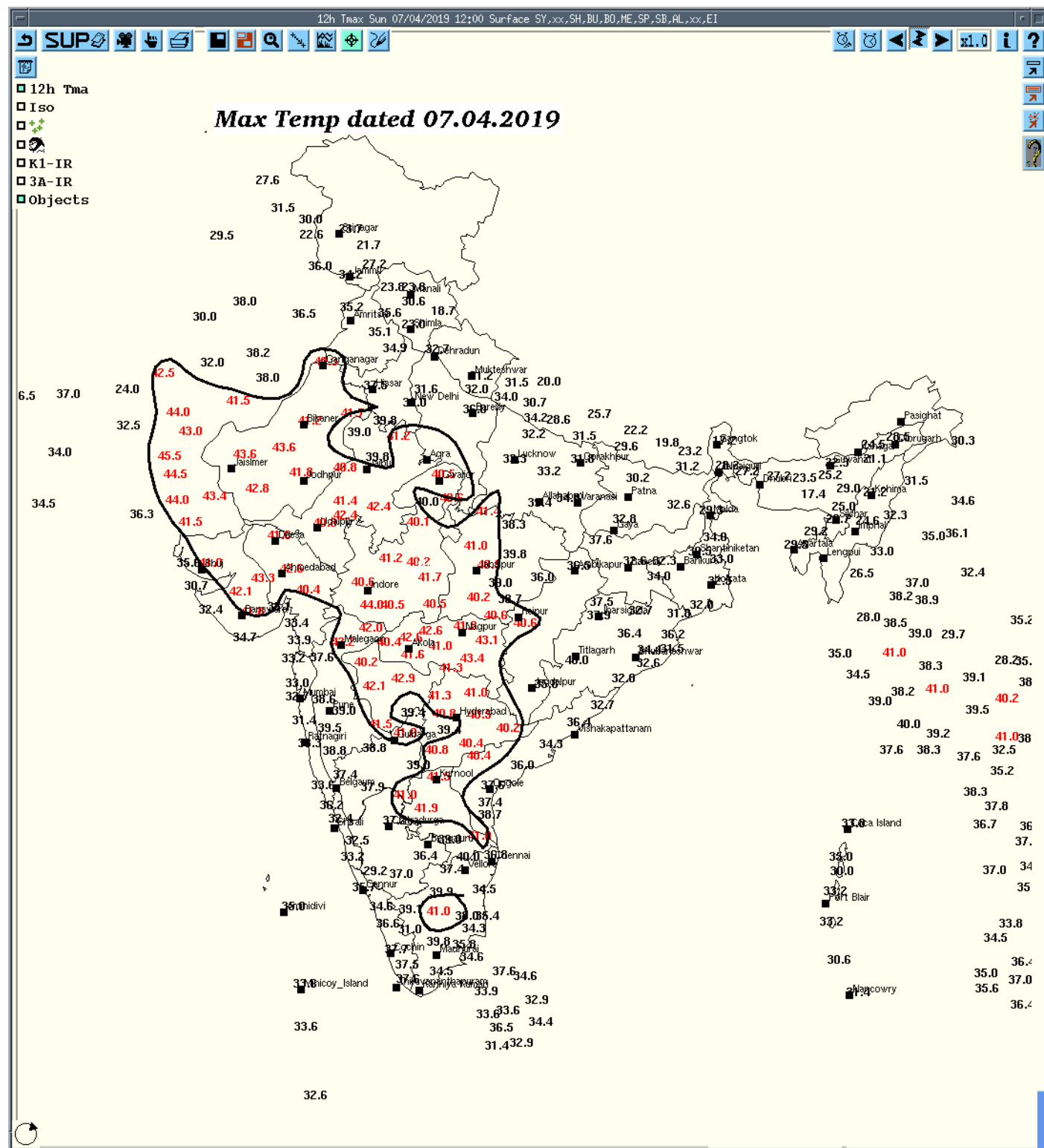
11/04/2019

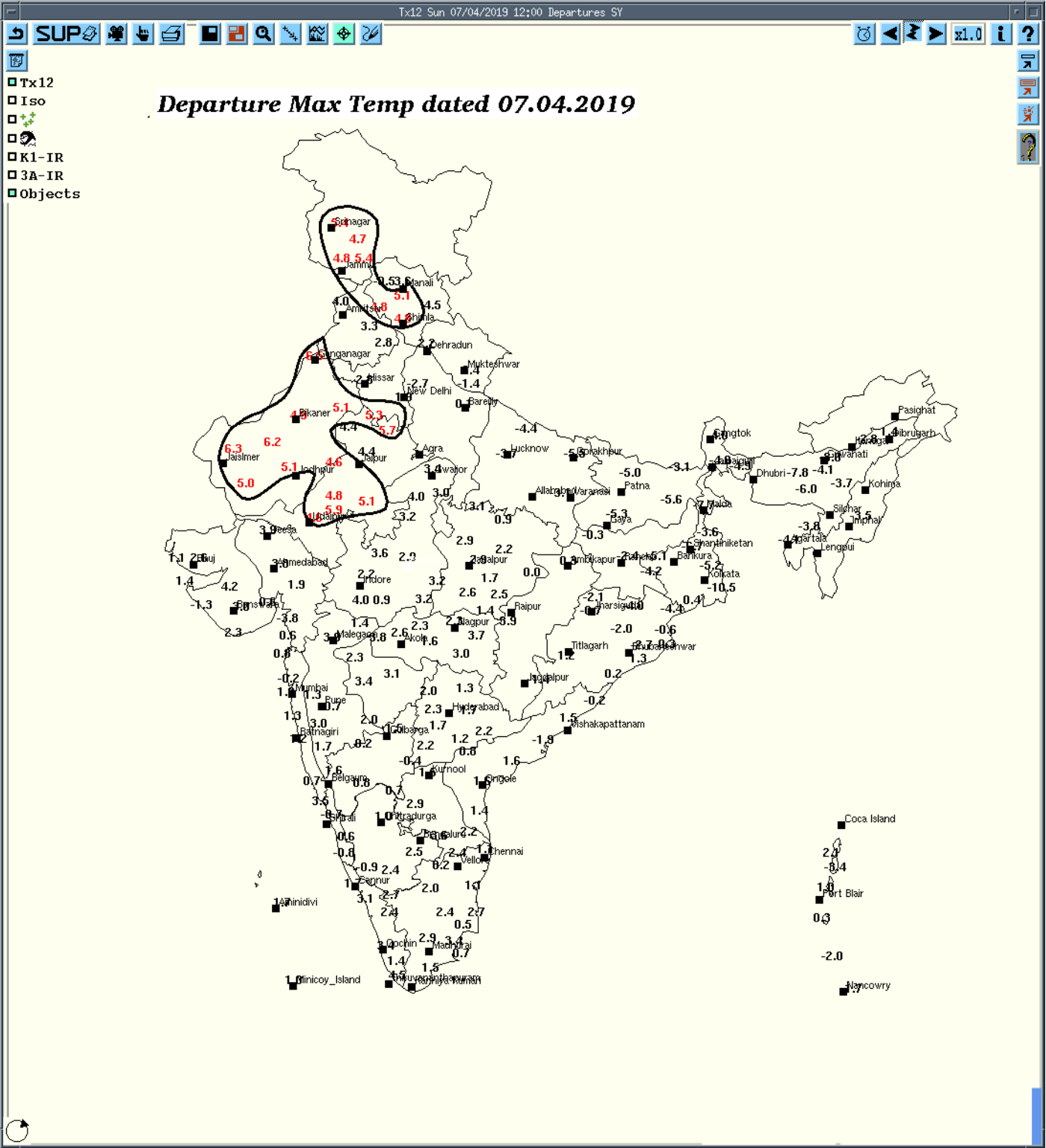


12/04/2019

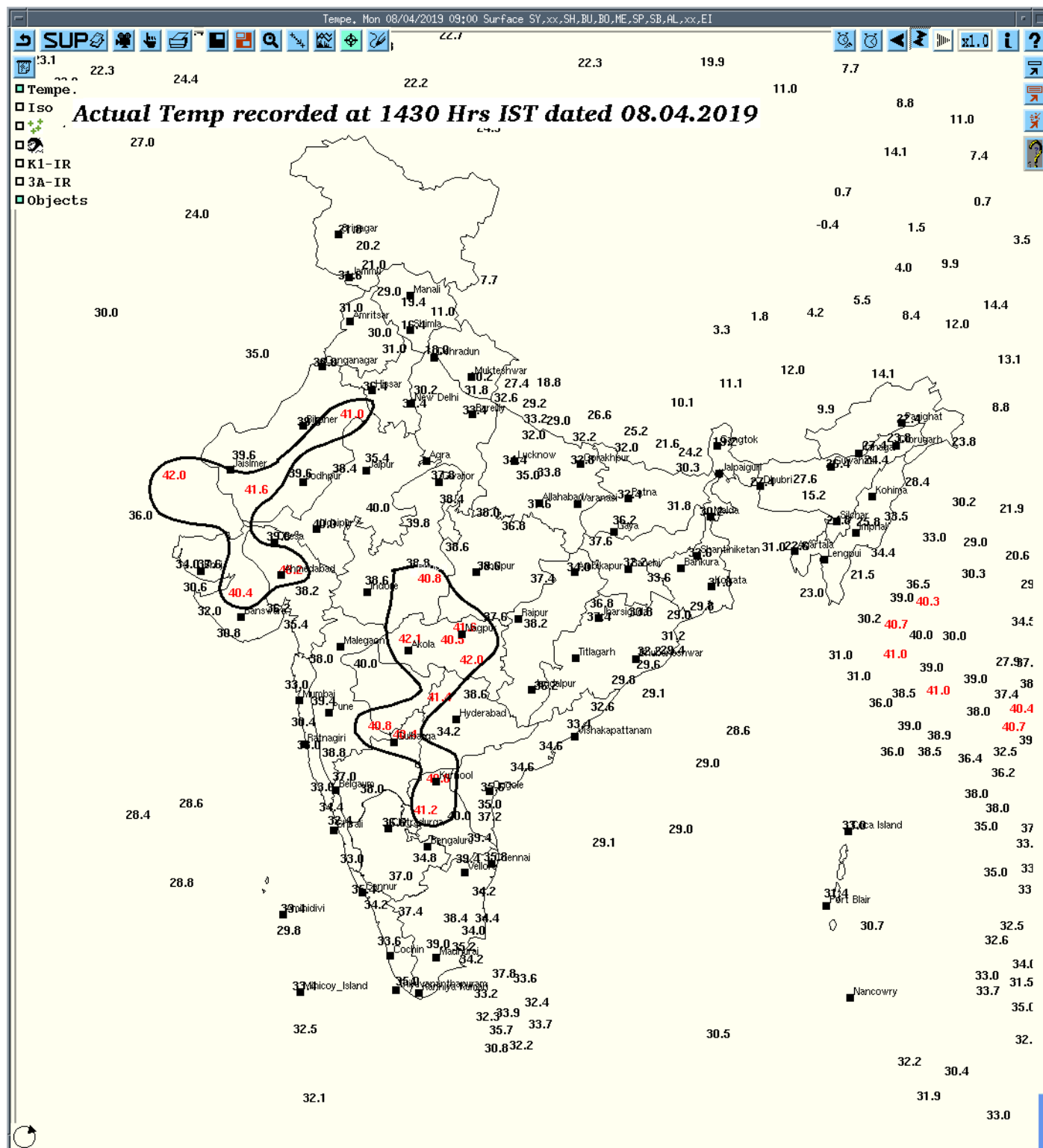


Annexure 1

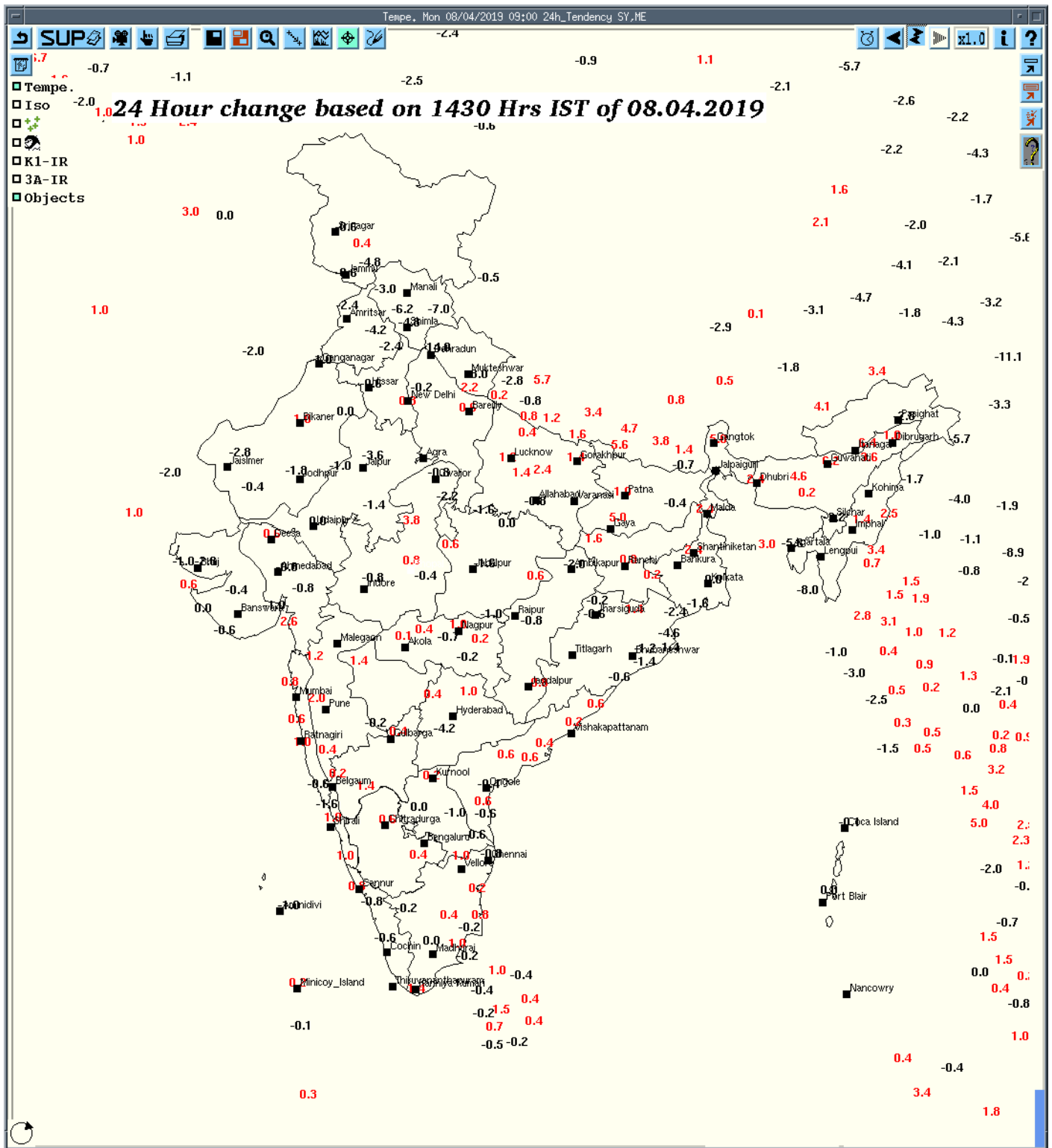




Annexure 3



Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 09th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 08 April to 0830 hrs IST 09 April, 2019)

Heat Wave:

Yesterday, heat wave conditions were observed in some parts over West Rajasthan and at isolated pockets over East Rajasthan (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Jammu & Kashmir and West Rajasthan; at many places over East Rajasthan; at a few places over West Madhya Pradesh, Madhya Maharashtra and Vidarbha; **above normal (1.6°C to 3.0°C)** at most places over Marathwada, Rayalaseema, Coastal & South Interior Karnataka; at many places over Haryana, Chandigarh & Delhi, East Madhya Pradesh, Tamilnadu, North Interior Karnataka, Kerala and Lakshadweep; at a few places over Chhattisgarh, Gujarat State, Konkan & Goa, Telangana and at isolated places over Jharkhand. Yesterday, the highest maximum temperature of **44.5°C** was recorded at **Khargone (West Madhya Pradesh)** over the country (**Annexure 1 & 2**).

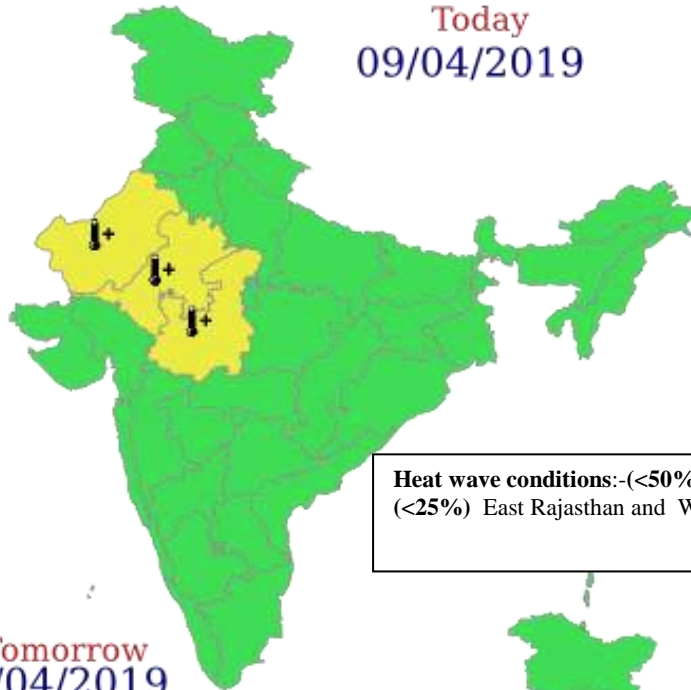
Temperatures Recorded at 1430 Hours IST of Today, the 09th April, 2019

- **Akola (Vidarbha) recorded a maximum temperature of 42.9°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-5°C** at most places over Jammu & Kashmir and Himachal Pradesh; at many places over Uttarakhand; at few places over Odisha and at one or two pockets of East Uttar Pradesh and northeastern states; **and risen by 1-3°C** at most places over Rajasthan and Punjab; at many places over Madhya Pradesh; at few places over Haryana, Delhi and Konkan & Goa and at one or two pockets of Bihar, Jharkhand, Gangetic West Bengal, Chhattisgarh, Vidarbha, Telengana, Karnataka, Coastal Andhra Pradesh, Kerala and Tamilnadu (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

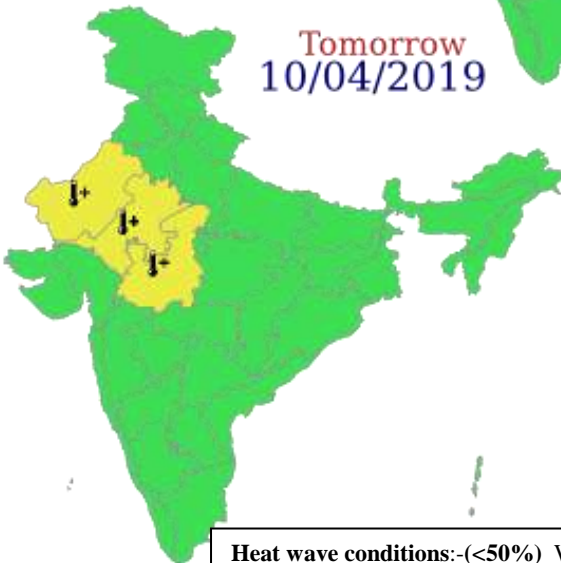
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
09/04/2019



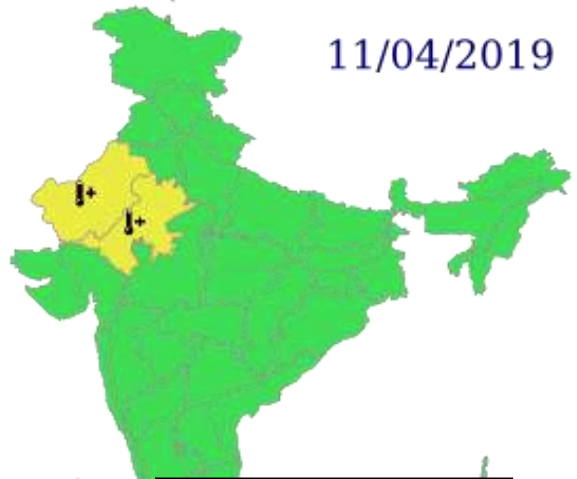
Heat wave conditions:-(<50%) West Rajasthan
(<25%) East Rajasthan and West Madhya Pradesh .

Tomorrow
10/04/2019



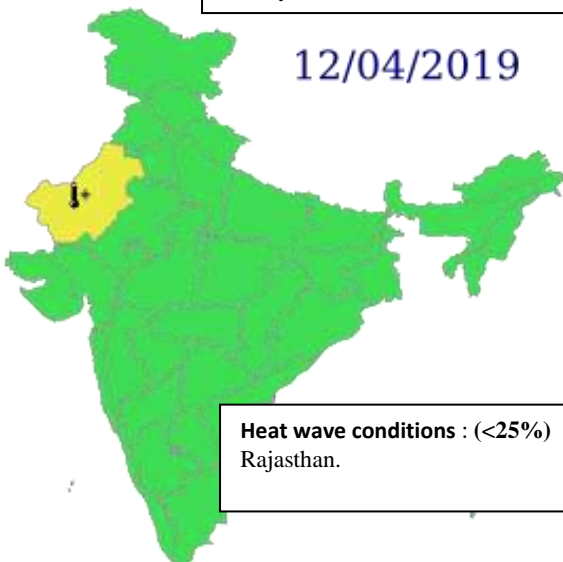
Heat wave conditions:-(<50%) West
Rajasthan (<25%) East Rajasthan and West
Madhya Pradesh .

11/04/2019



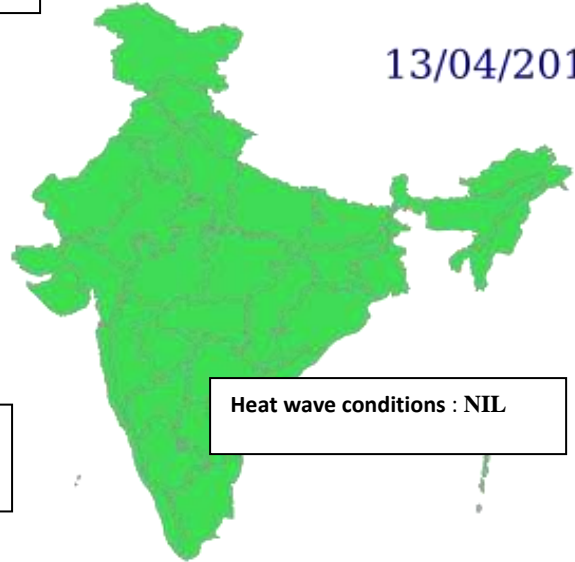
Heat wave conditions:-(<25%)
Rajasthan

12/04/2019

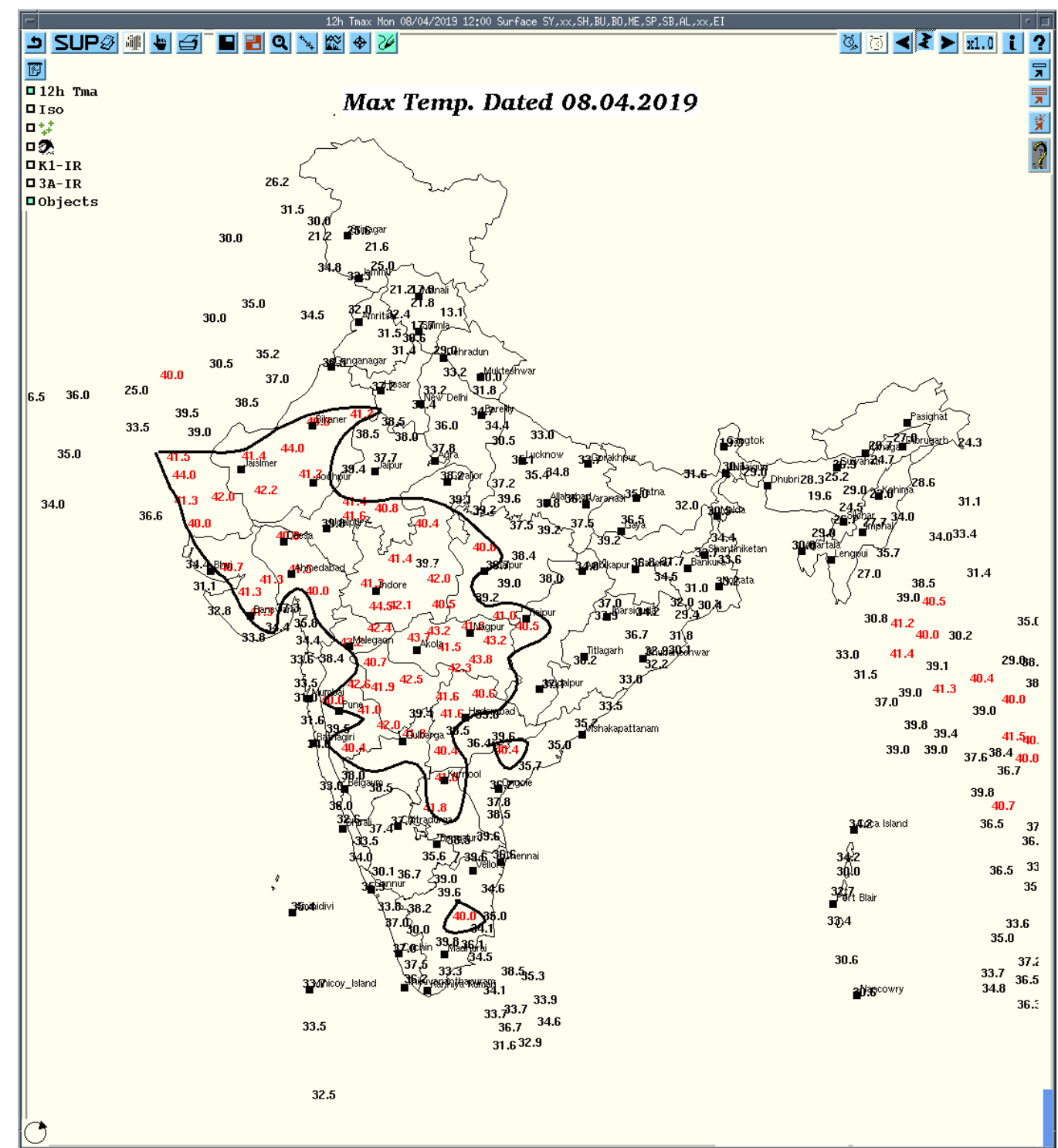


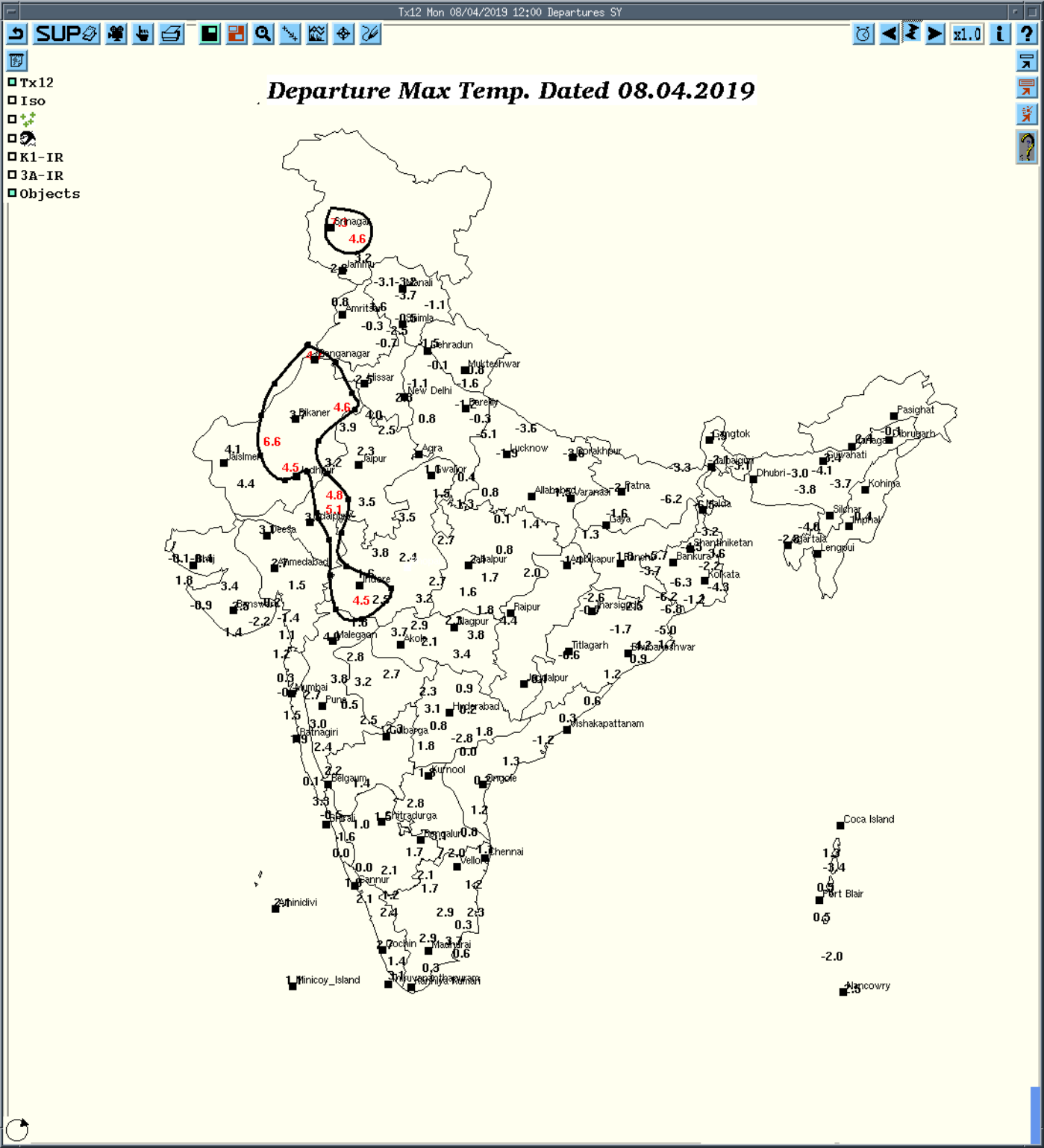
Heat wave conditions : (<25%) West
Rajasthan.

13/04/2019

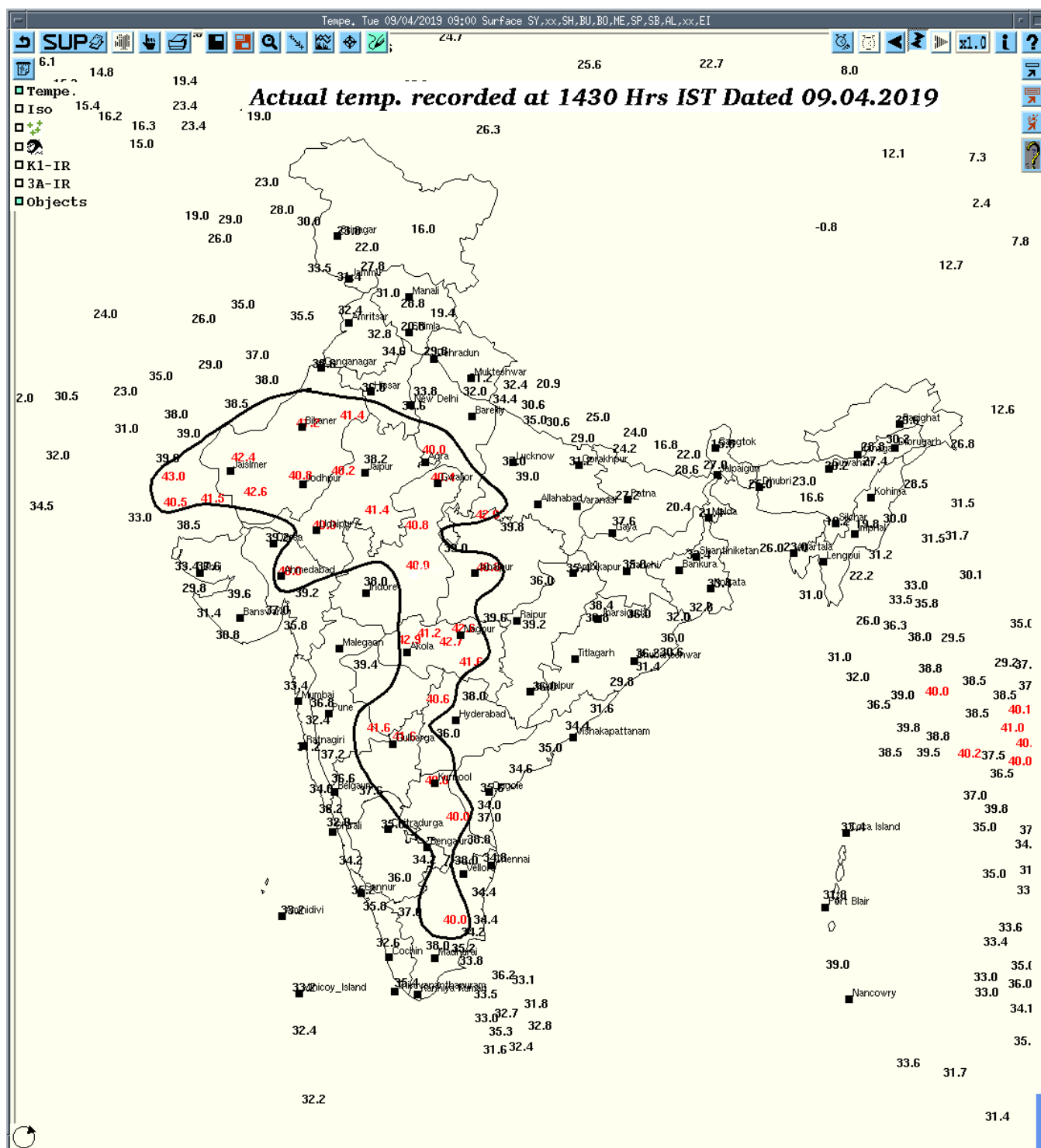


Heat wave conditions : NIL

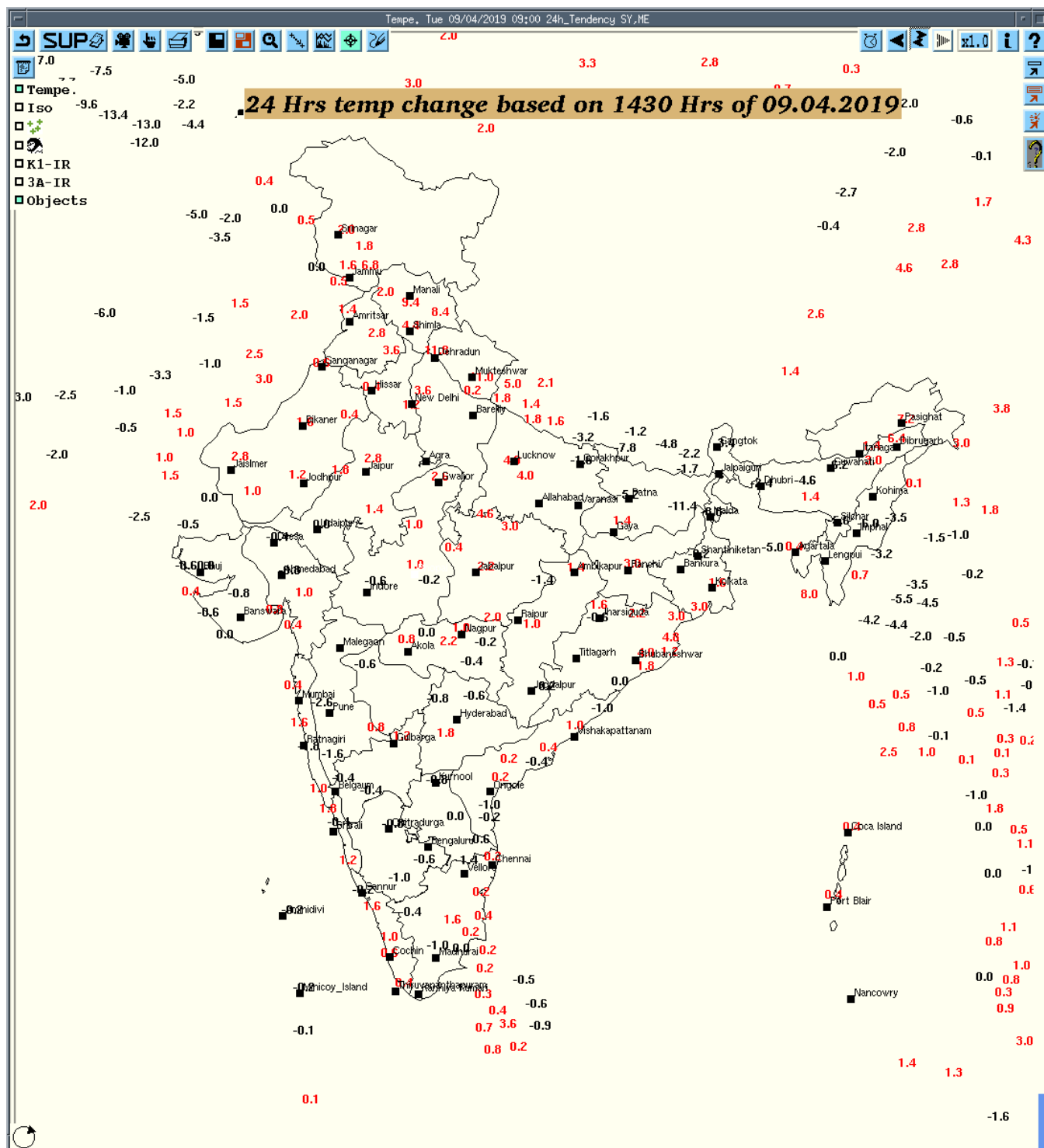




Annexure 3



Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 10th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 09 April to 0830 hrs IST 10 April, 2019)

Heat Wave:

Yesterday, Heat wave conditions observed in many places over West Rajasthan and at isolated pockets over East Rajasthan. (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were markedly above normal (5.1°C or more) at many places over Jammu & Kashmir and West Rajasthan; appreciably above normal (3.1°C to 5.0°C) at most places over East Rajasthan and East Madhya Pradesh; at many places over Himachal Pradesh, West Madhya Pradesh, Vidarbha and Marathwada; at a few places over Konkan & Goa and Kerala; at isolated places over Haryana, Chandigarh & Delhi, Uttar Pradesh and Tamilnadu; above normal (1.6°C to 3.0°C) at most places over Punjab; at many places over Jharkhand; at a few places over Gujarat State, Madhya Maharashtra and Rayalseema and at isolated places over Telangana. Yesterday, the **highest maximum temperature** of 44.1°C was recorded at **Nagpur (Vidarbha)** over the country (**Annexure 1 & 2**).

Temperatures Recorded at 1430 Hours IST of Today, the 10th April, 2019

- **Bramhapuri (Vidarbha) recorded a maximum temperature of 43.6°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at many places over Himachal Pradesh, Chhattisgarh, Punjab, Sub-Himalayan West Bengal & Sikkim, Assam & Meghalaya and Madhya Maharashtra; at a few places over Uttarakhand and Bihar and at one or two pockets over Coastal Andhra Pradesh, Kerala, Madhya Pradesh, Gujarat state, Telangana and Konkan & Goa (**Annexure 4**).

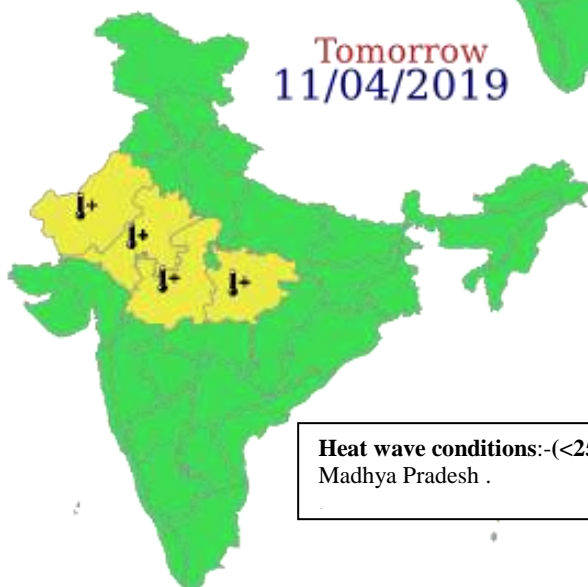
Heat Wave Warnings for Next 5 Days (on next page)

(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

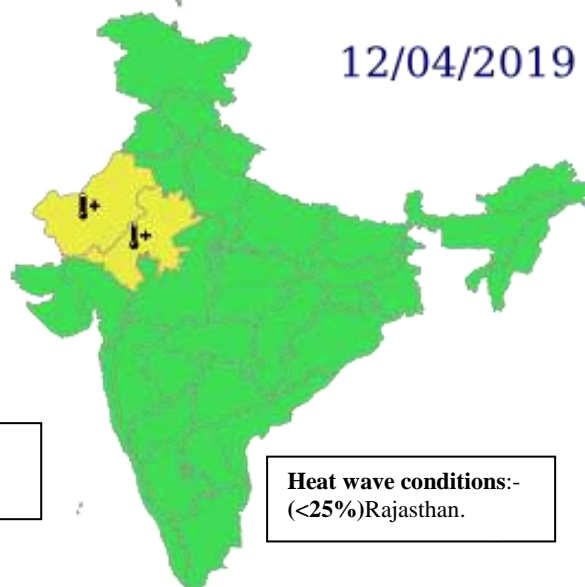
Today
10/04/2019



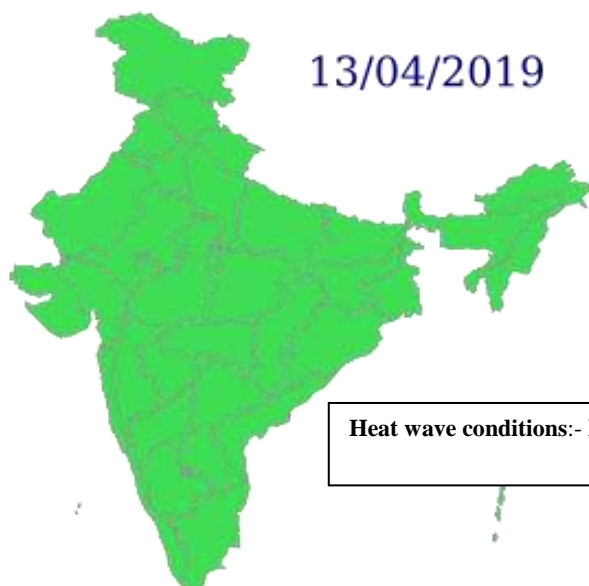
Tomorrow
11/04/2019



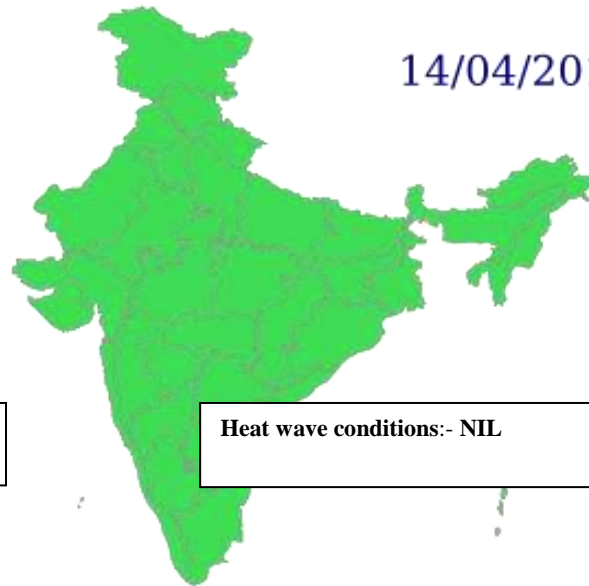
12/04/2019

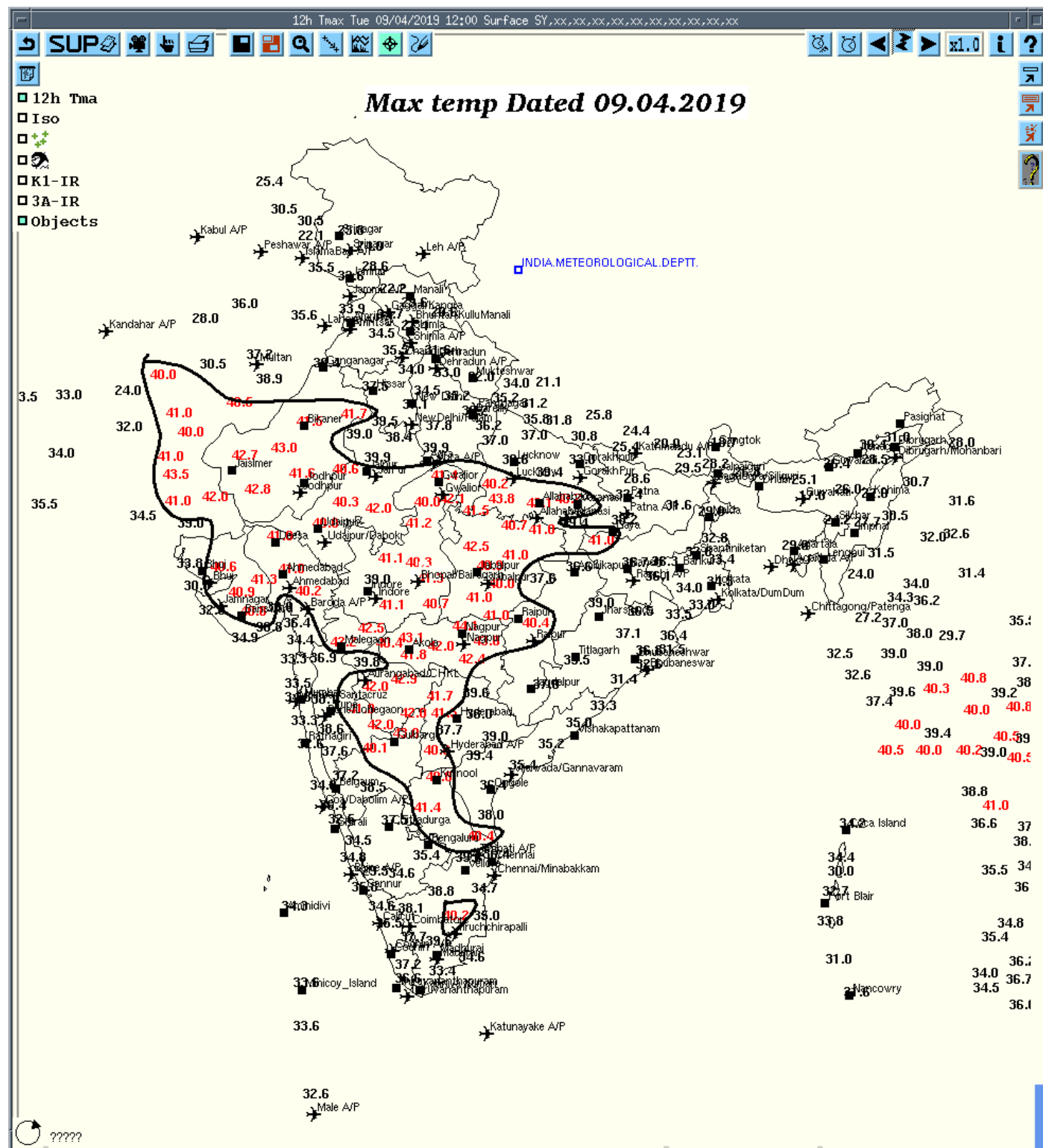


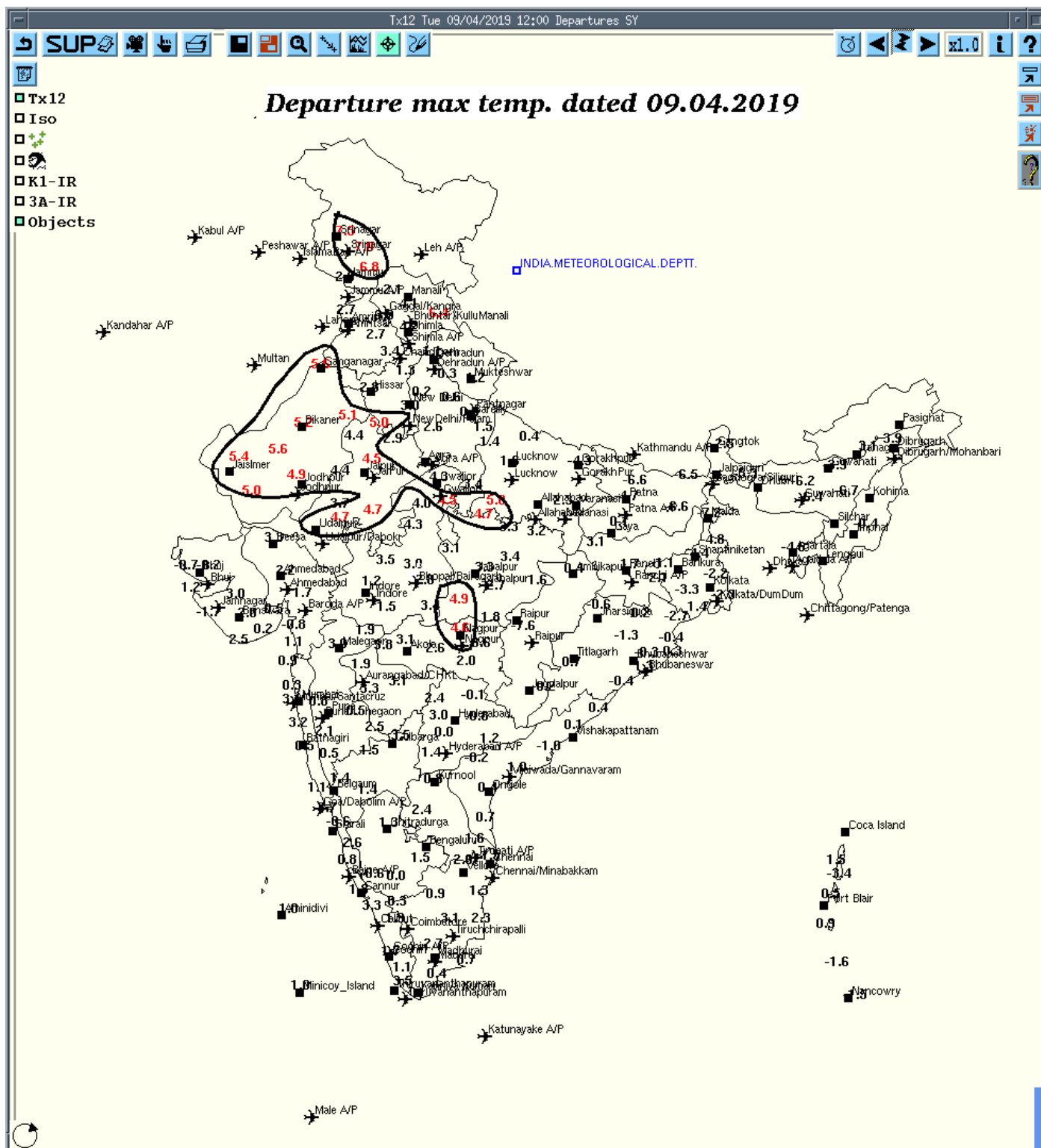
13/04/2019



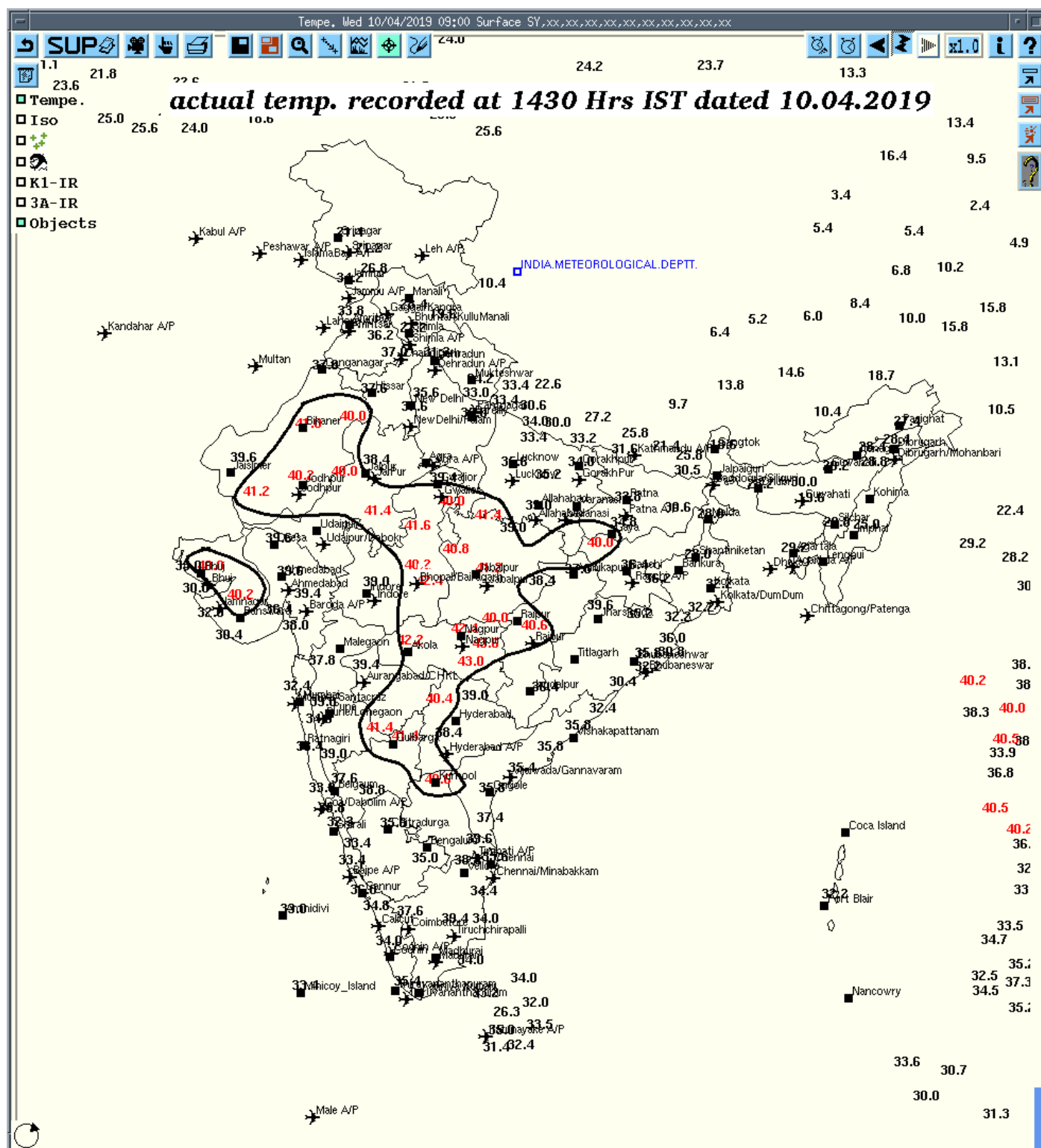
14/04/2019



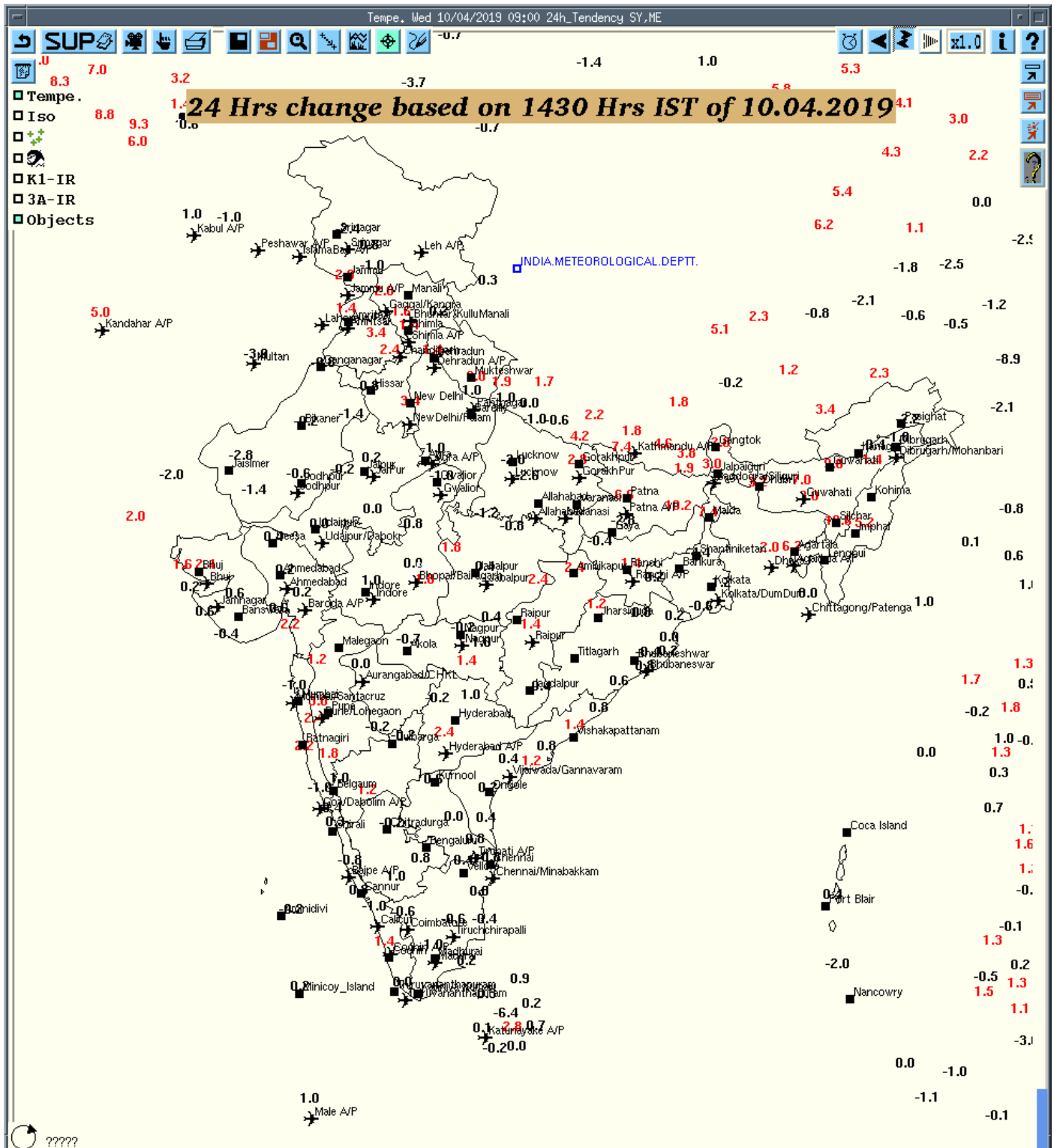




Annexure 3



Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 11th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 10 April to 0830 hrs IST 11 April, 2019)

Heat Wave:

Yesterday, heat wave conditions observed in some parts over Rajasthan and at isolated pockets over Madhya Pradesh, Vidarbha and Chhattisgarh. (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Jammu & Kashmir; at many places over Punjab; at a few places over Uttarakhand and Himachal Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at most places over Madhya Pradesh, Rajasthan and Haryana, Chandigarh & Delhi; at many places over Vidarbha; at a few places over Madhya Maharashtra and Uttarakhand; **above normal (1.6°C to 3.0°C)** at most places over North Interior Karnataka, Rayalaseema, Gujarat Region and Kerala; at many places over West Uttar Pradesh, Saurashtra & Kutch, Coastal Karnataka, South Interior Karnataka and Tamil Nadu & Puducherry; at a few places over Telangana and at isolated places over East Uttar Pradesh. Yesterday, the highest maximum temperature of 44.2°C was recorded at Brahmapuri (Vidarbha) over the country (**Annexure 1 & 2**).

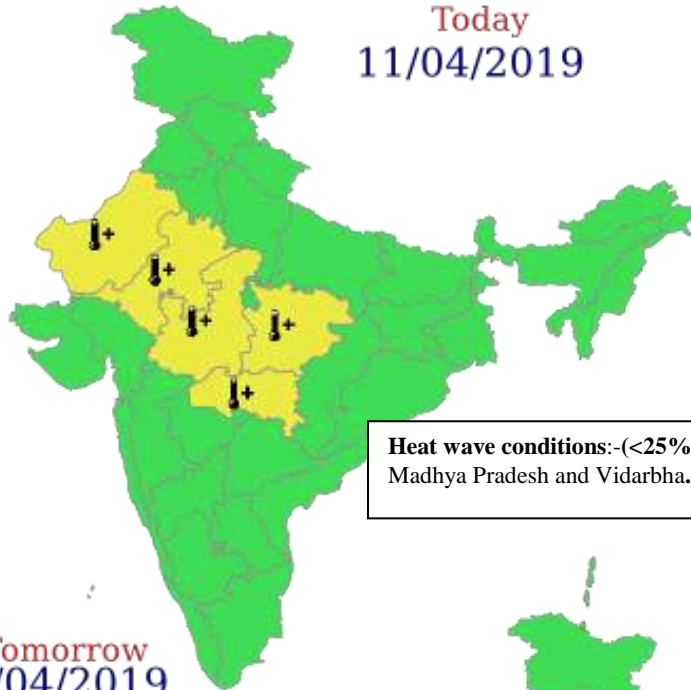
Temperatures Recorded at 1430 Hours IST of Today, the 11th April, 2019

- **Chandrapur (Vidarbha) recorded a maximum temperature of 44.0°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at most places over north eastern states, East Uttar Pradesh, Bihar, Vidarbha, Telangana, West Bengal and Sikkim; at many places over East Rajasthan and Gujarat region; at a few places over West Uttar Pradesh, Madhya Pradesh and Jharkhand and at one or two pockets over Jammu & Kashmir, Himachal Pradesh, Uttarakhand, West Rajasthan, Rayalaseema, Konkan & Goa, Odisha, Kerala and Tamilnadu & Puducherry (Annexure 4).**

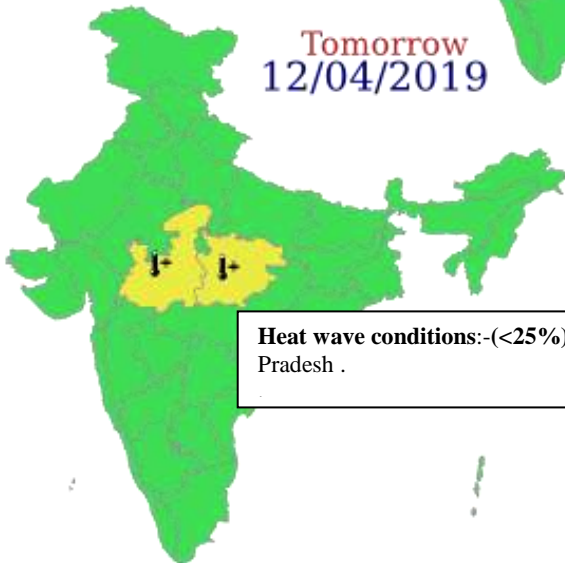
Heat Wave Warnings for Next 5 Days (on next page)

(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

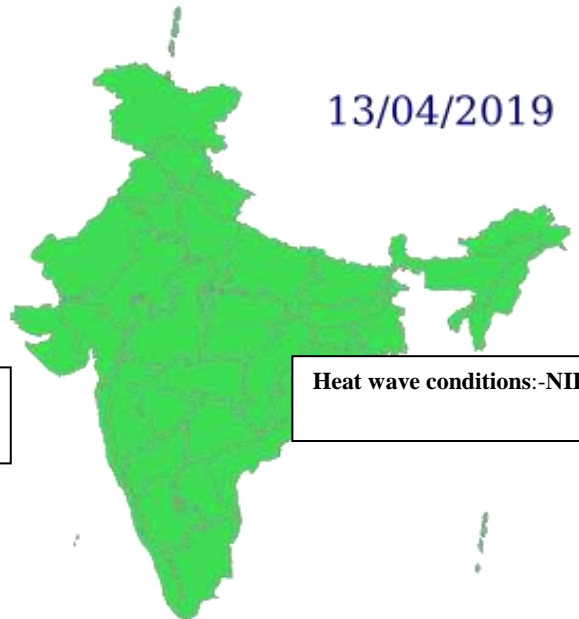
Today
11/04/2019



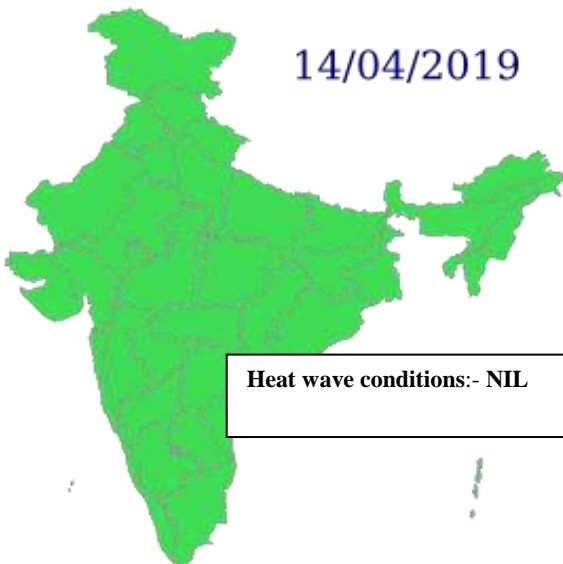
Tomorrow
12/04/2019



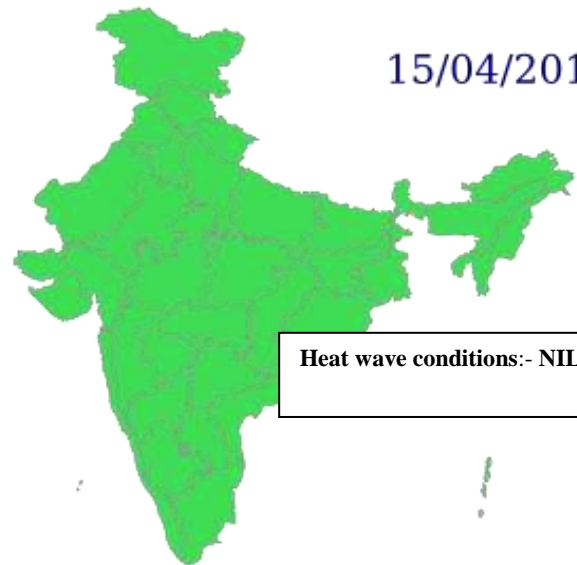
13/04/2019

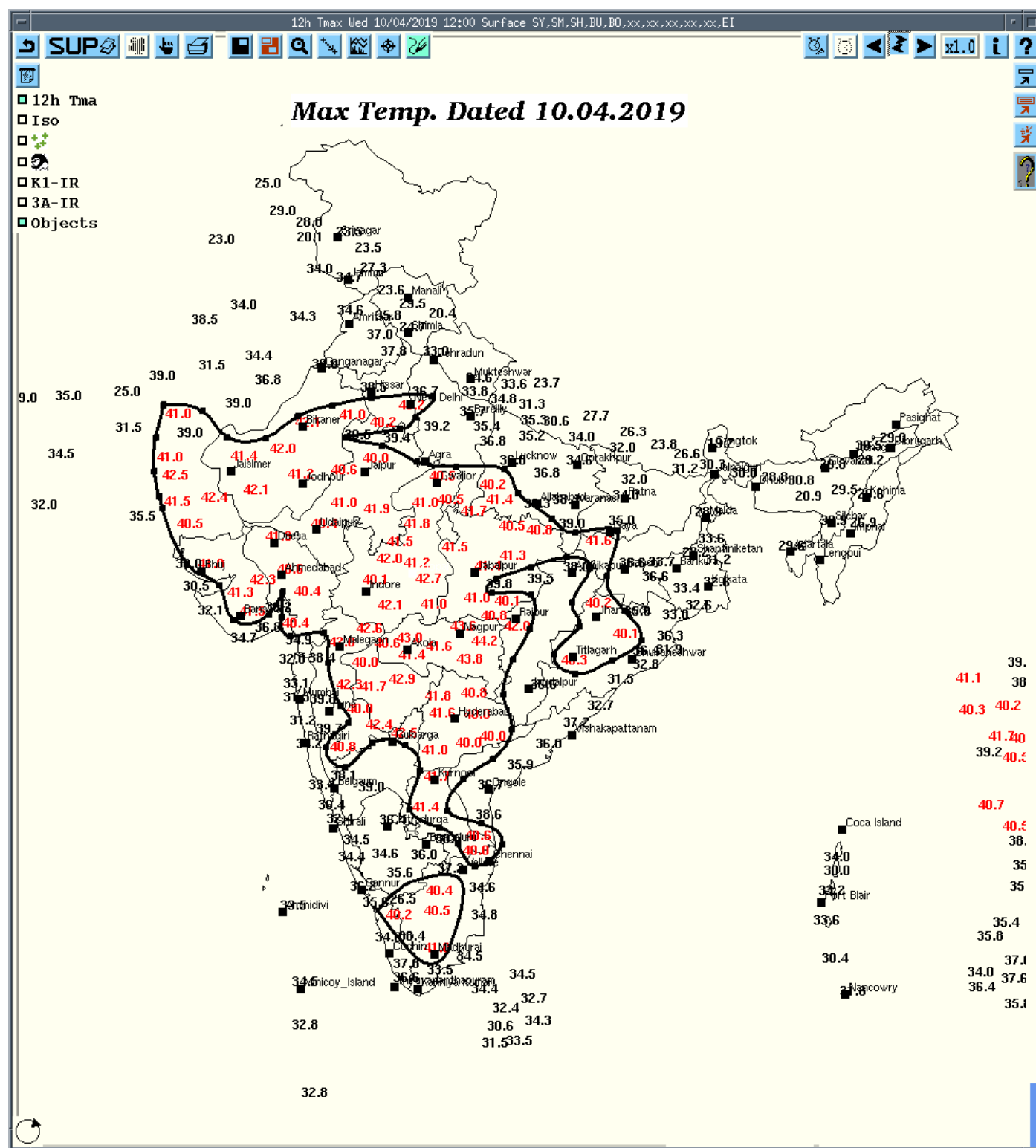


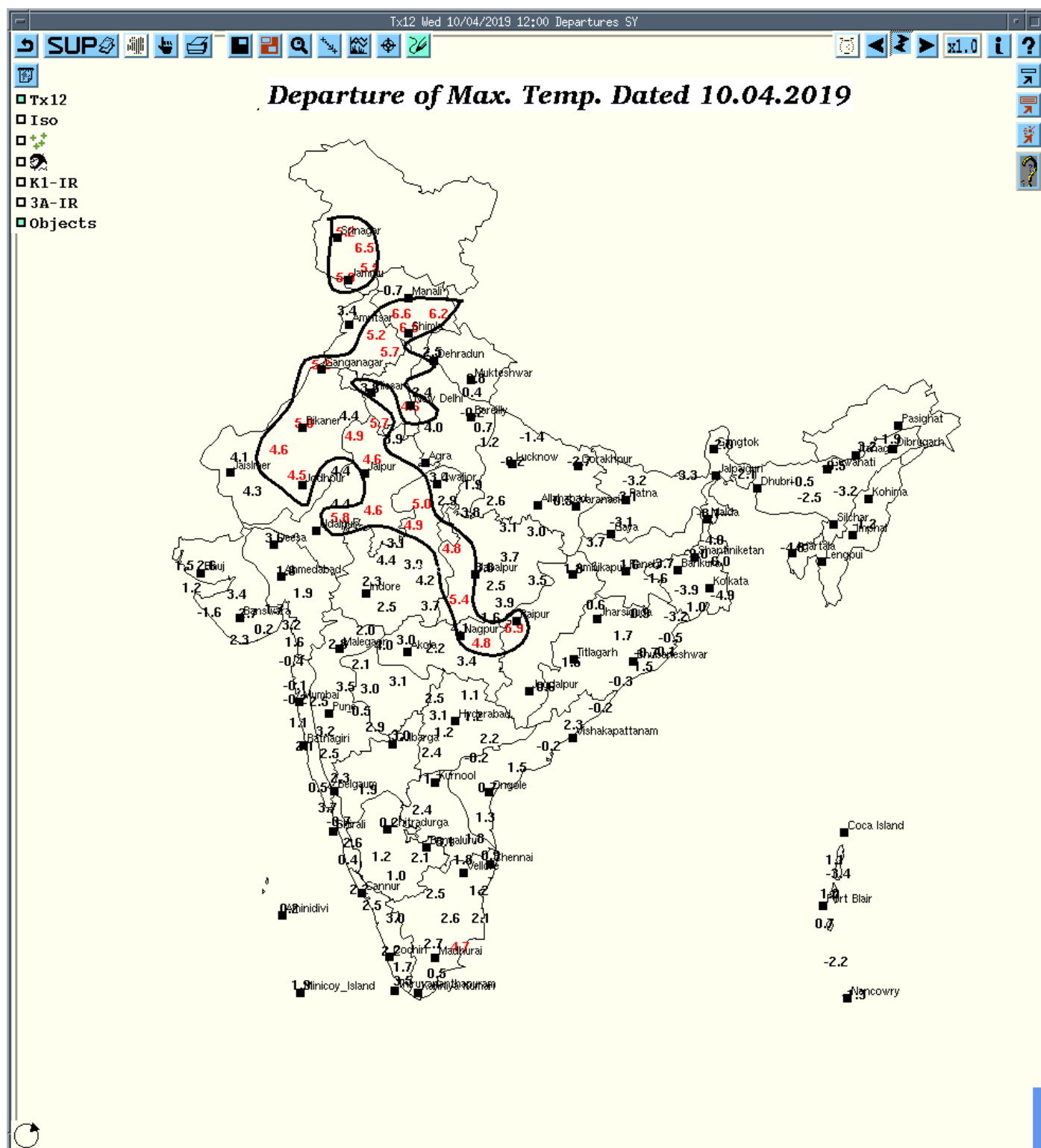
14/04/2019



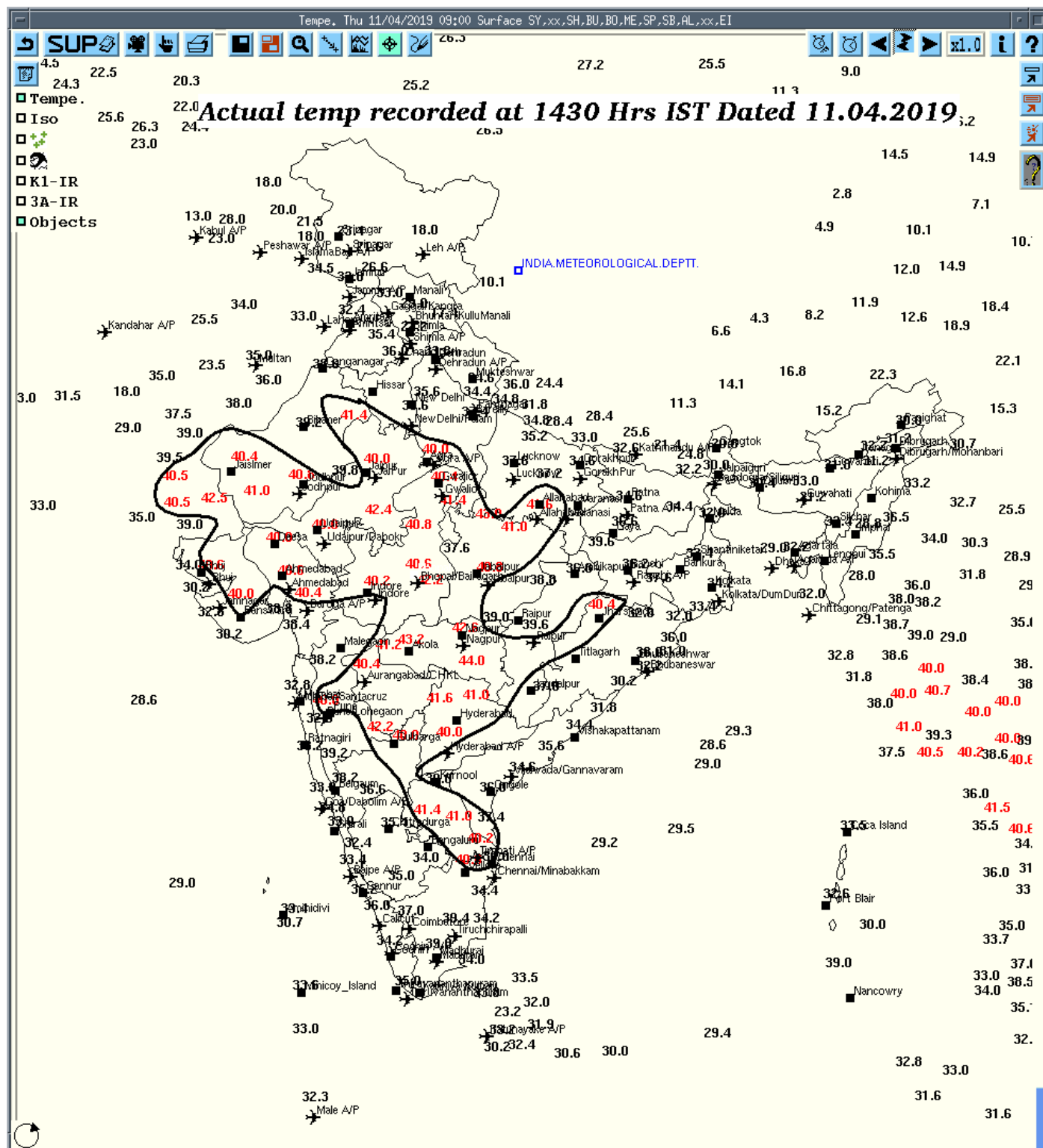
15/04/2019

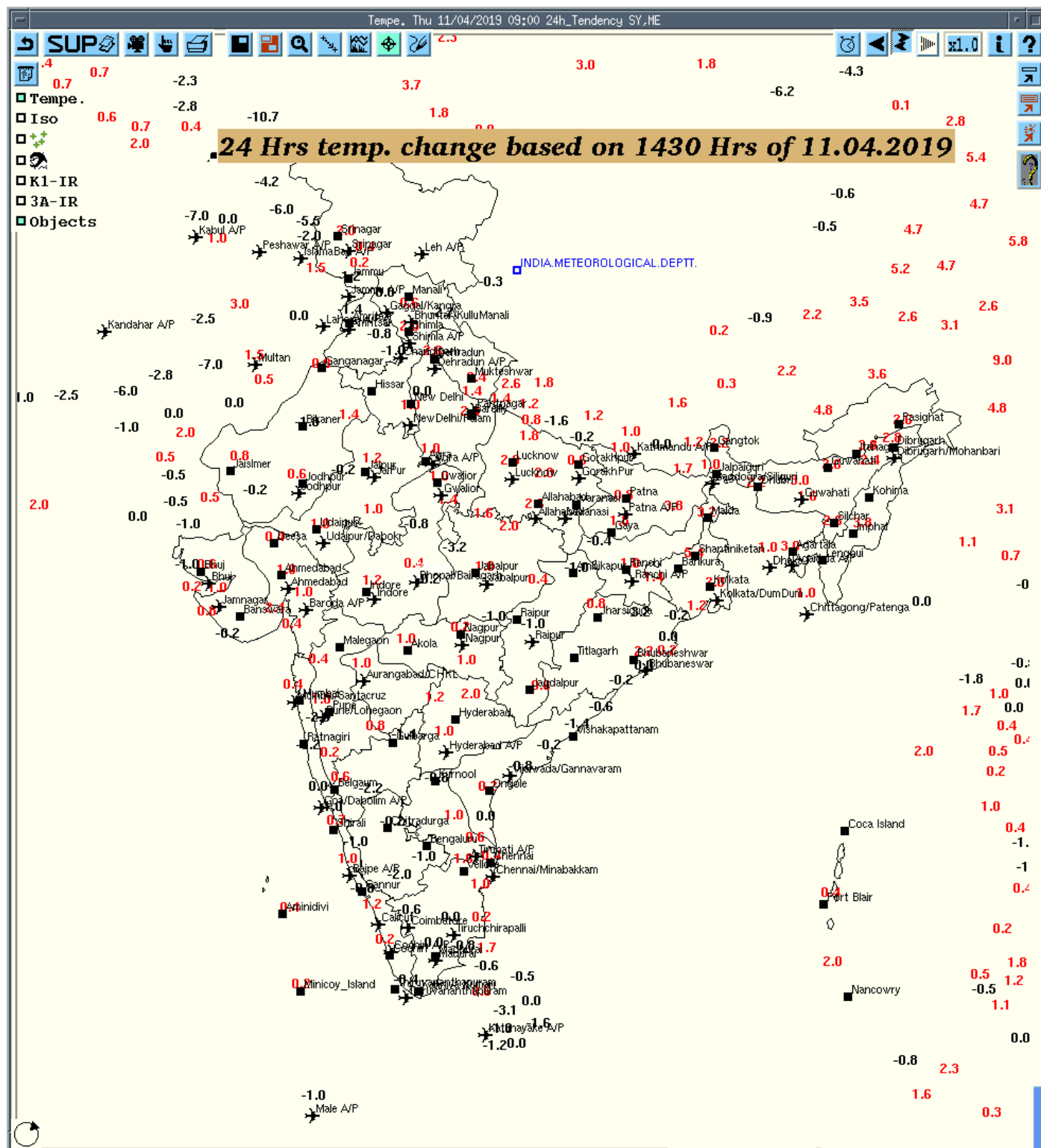






Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 12th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 11 April to 0830 hrs IST 12 April, 2019)

Heat Wave:

Yesterday, Heat Wave conditions were observed in isolated pockets over East Rajasthan, Madhya Pradesh and Vidarbha (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures **were markedly above normal (5.1°C or more)** at a few places over Jammu & Kashmir; **appreciably above normal (3.1°C to 5.0°C)** at a few places over Himachal Pradesh, Rajasthan, Punjab, Haryana, Chandigarh & Delhi, Madhya Pradesh, Vidarbha, Madhya Maharashtra, Marathwada and Kerala and at isolated places over Uttarakhand, Uttar Pradesh, Gujarat, Tamilnadu & Puducherry and Andaman & Nicobar Islands; **above normal (1.6°C to 3.0°C)** at most places over Telangana; at a few places over Konkan & Goa, Coastal & North Interior Karnataka and Rayalaseema and at isolated places over Jharkhand, south Interior Karnataka and Coastal Andhra Pradesh. Yesterday, **the highest** maximum temperature of 45.2°C recorded at **Chandrapur (Vidarbha)** over the country (**Annexure 1 & 2**).

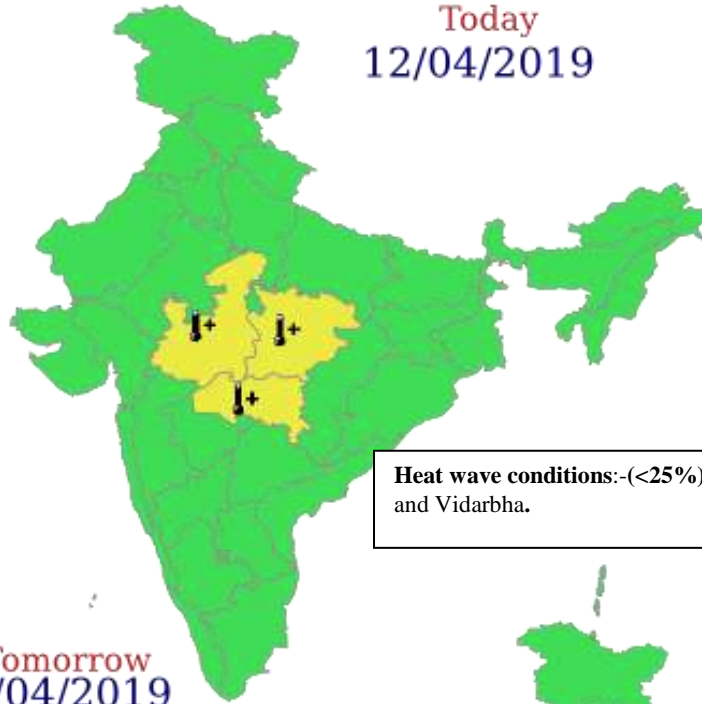
Temperatures Recorded at 1430 Hours IST of Today, the 12th April, 2019

- **Bramhapuri (Vidarbha) recorded a maximum temperature of 43.6°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at most places over East Uttar Pradesh, Bihar, West Bengal and Assam & Meghalaya; at a few places over Odisha and Karnataka and at one or two pockets over Gujarat state, Madhya Pradesh, West Rajasthan, Coastal Andhra Pradesh and Jharkhand (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

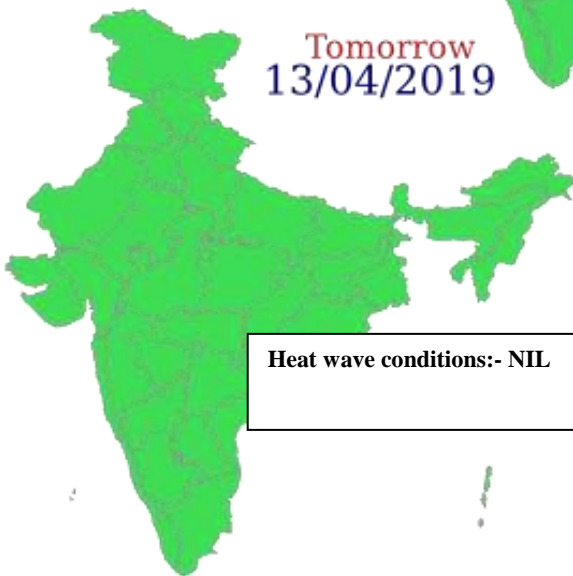
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
12/04/2019



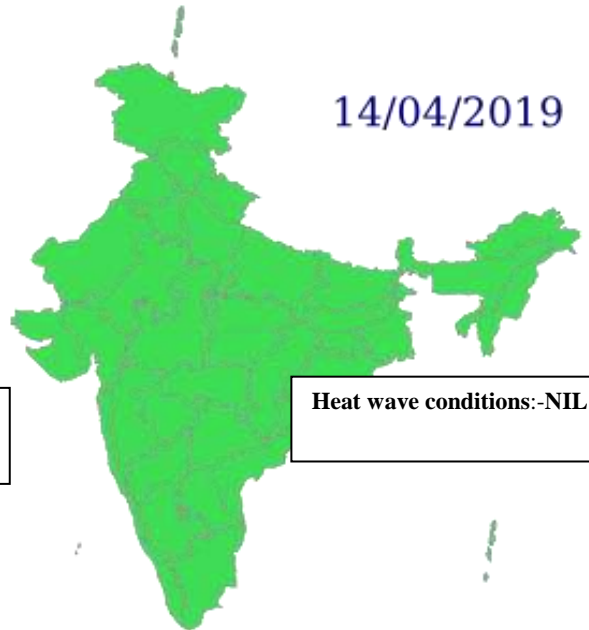
Heat wave conditions:-(<25%) Madhya Pradesh and Vidarbha.

Tomorrow
13/04/2019



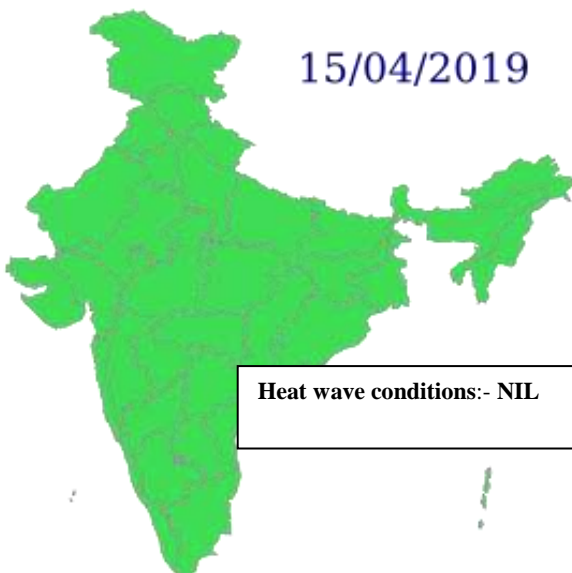
Heat wave conditions:- NIL

14/04/2019



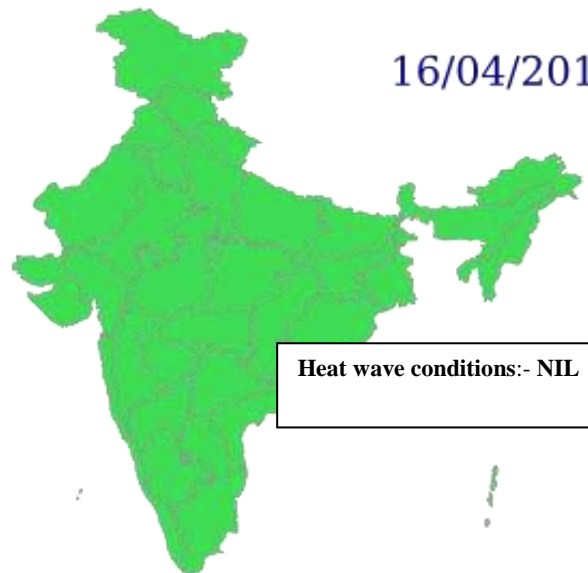
Heat wave conditions:-NIL

15/04/2019

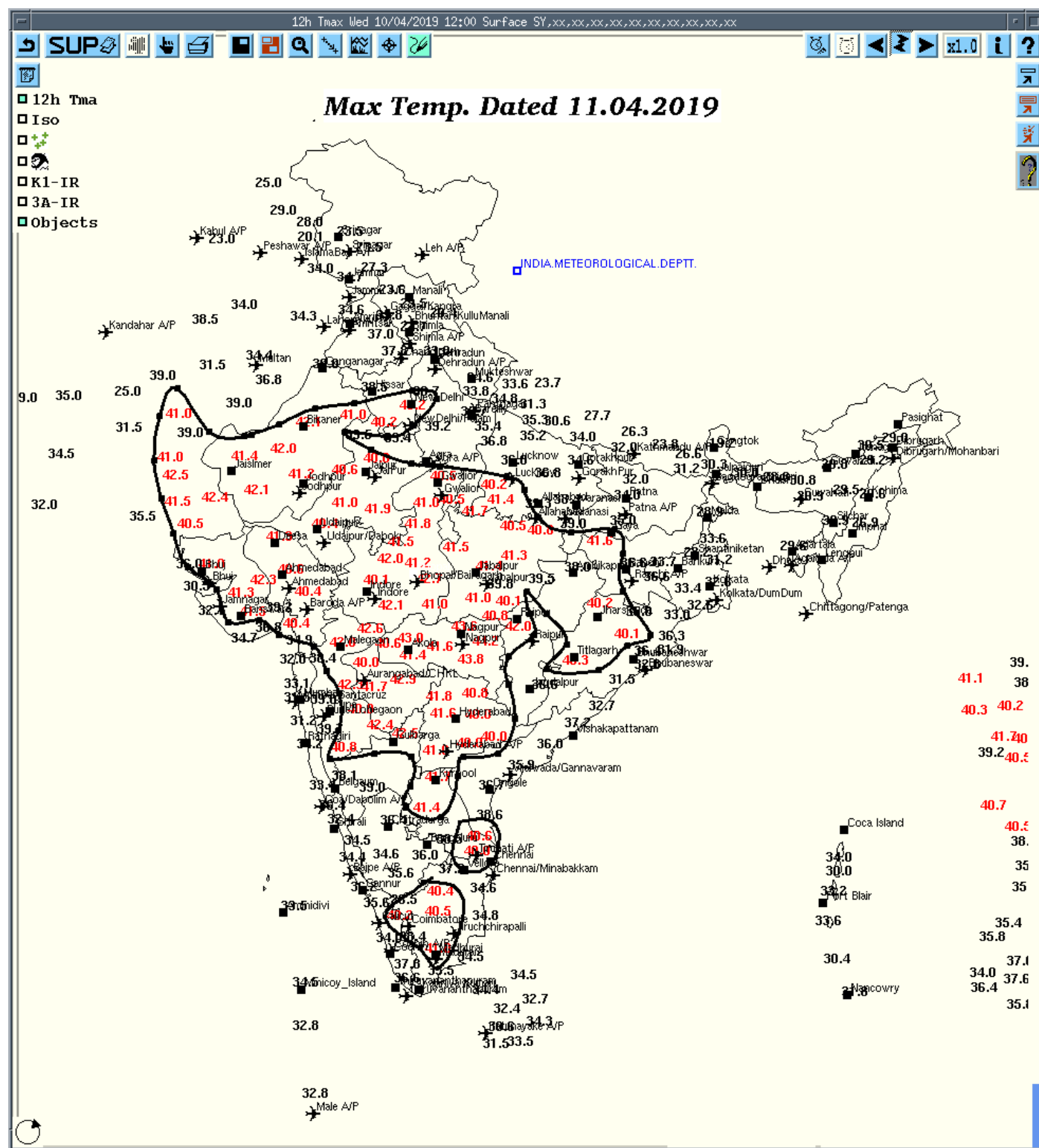


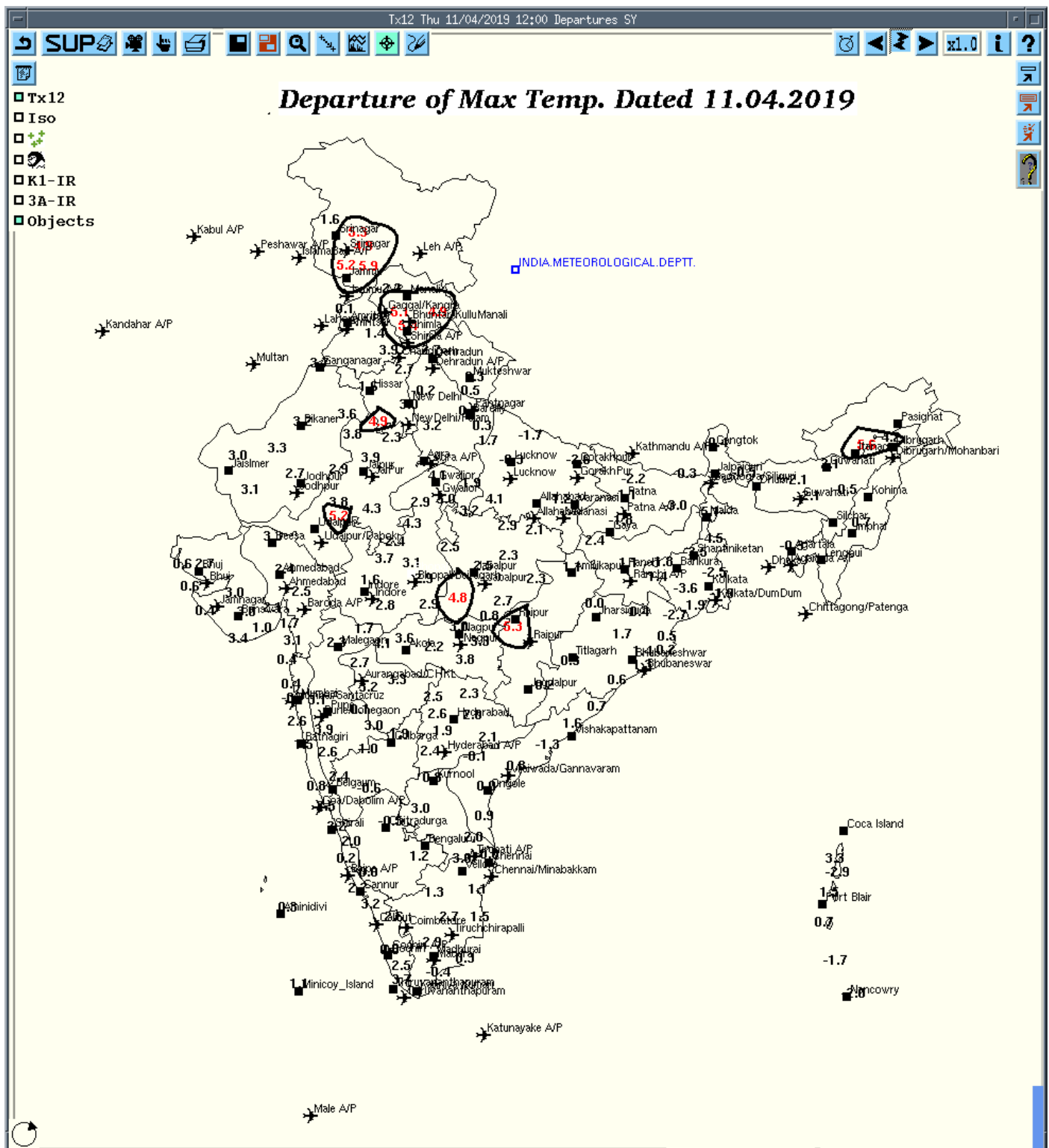
Heat wave conditions:- NIL

16/04/2019

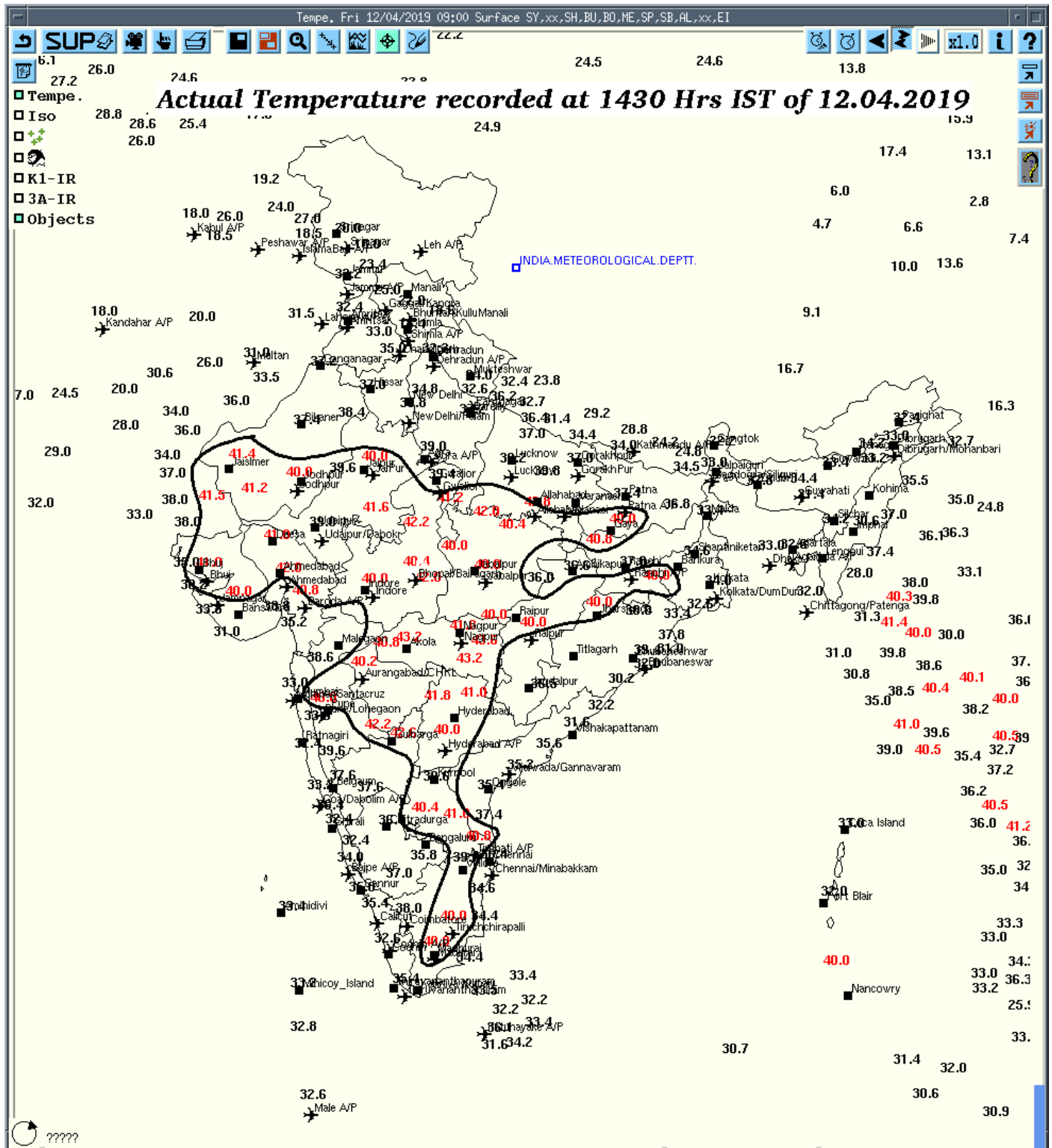


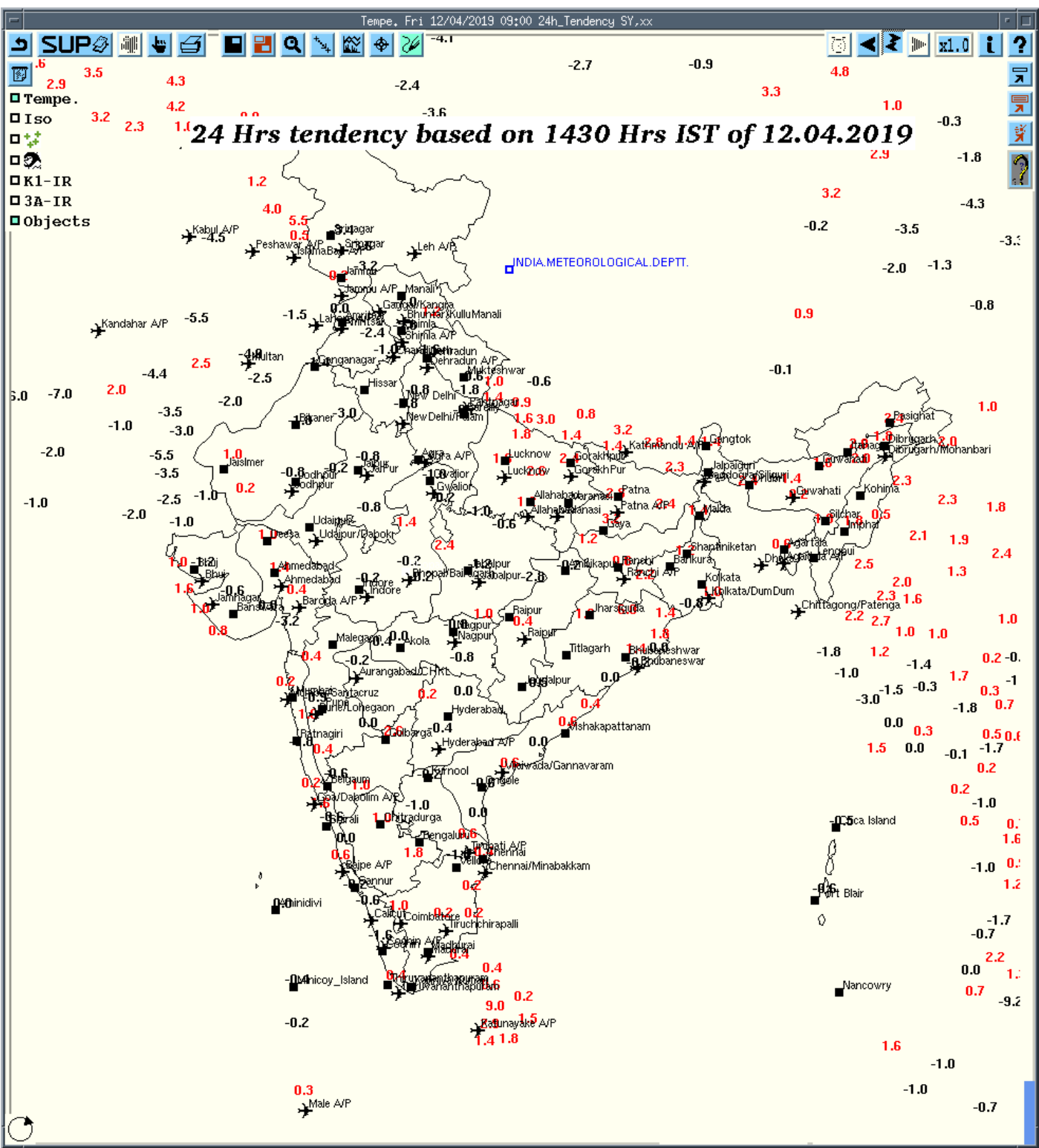
Heat wave conditions:- NIL





Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 13th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 12 April to 0830 hrs IST 13 April, 2019)

Heat Wave:

Yesterday, No heat wave conditions observed over any part of the country (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at many places over Assam & Meghalaya, West Madhya Pradesh and Gujarat Region; at a few places over Madhya Maharashtra and Kerala; at isolated places over Himachal Pradesh, Vidarbha and Tamil Nadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over East Rajasthan, East Madhya Pradesh and Marathwada; at many places over Jammu & Kashmir, West Rajasthan, Saurashtra & Kutch, Konkan & Goa, Rayalaseema, Karnataka, Jharkhand and Sub Himalayan West Bengal & Sikkim; at a few places over Haryana, Chandigarh & Delhi, Telangana and Lakshadweep; at isolated places over Odisha, Uttarakhand and East Uttar Pradesh. Yesterday, **the highest maximum temperature of 45.0°C** was recorded at **Khargone (West Madhya Pradesh)** over the country (**Annexure 1 & 2**).

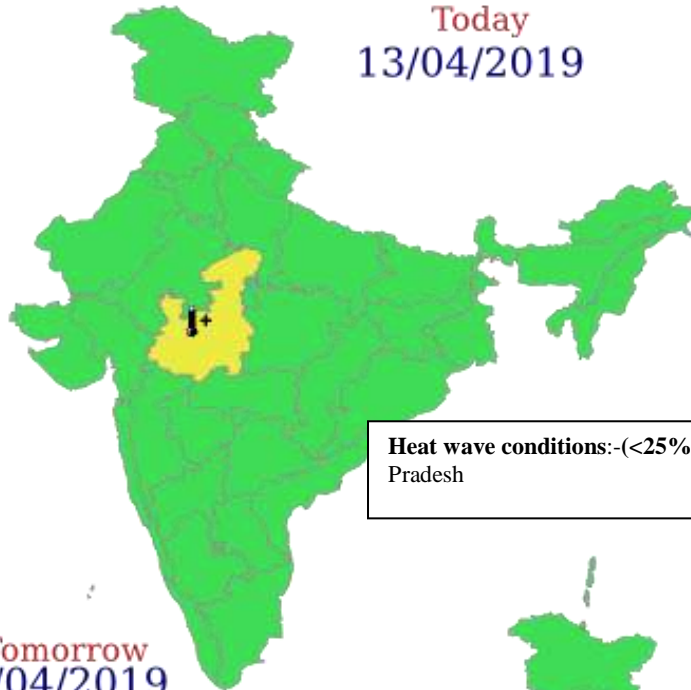
Temperatures Recorded at 1430 Hours IST of Today, the 13th April, 2019

- **Bramhapuri & Akola (Vidarbha) recorded a maximum temperature of 43.6°C each (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at most places over Himachal Pradesh. East Uttar Pradesh, Bihar, Gangetic West Bengal and Coastal Andhra Pradesh; at few places over Chhattisgarh, Rayalseema, Coastal Karnataka and northeastern states and at one or two pockets of Delhi, West Uttar Pradesh, Madhya Pradesh, Gujarat, Vidarbha, Madhya Maharashtra, Kerala and Odisha (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

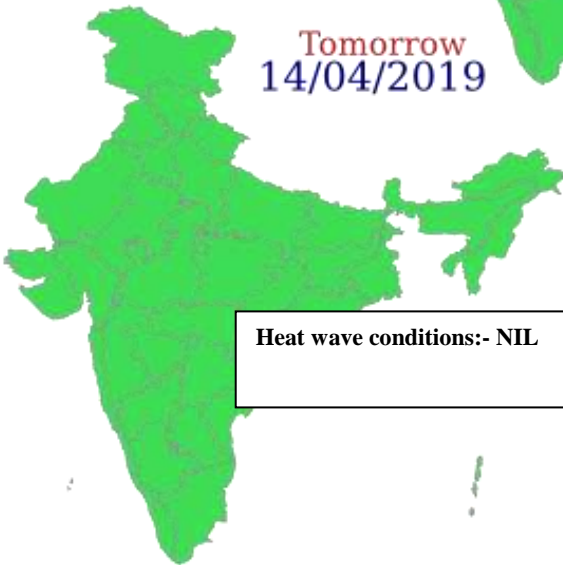
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
13/04/2019



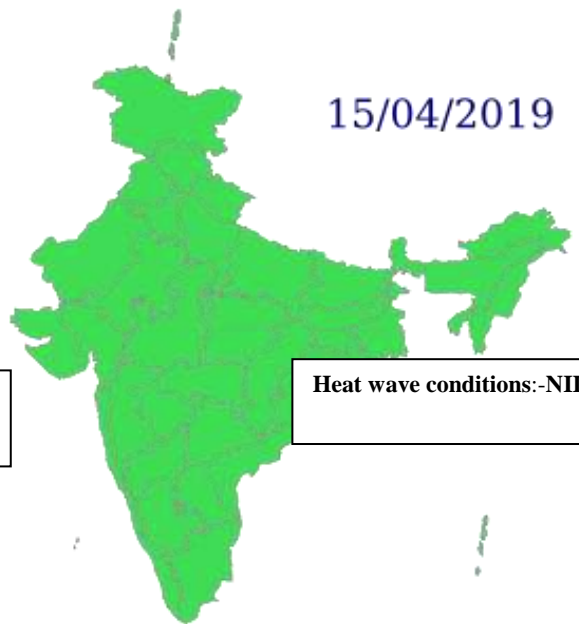
Heat wave conditions:-(<25%) West Madhya Pradesh

Tomorrow
14/04/2019



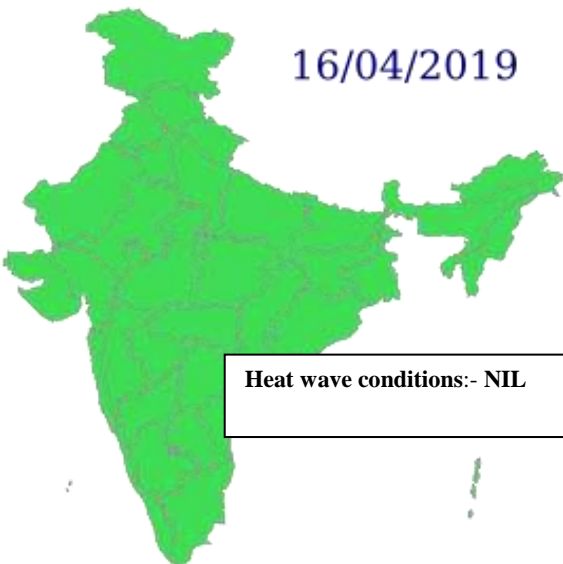
Heat wave conditions:- NIL

15/04/2019



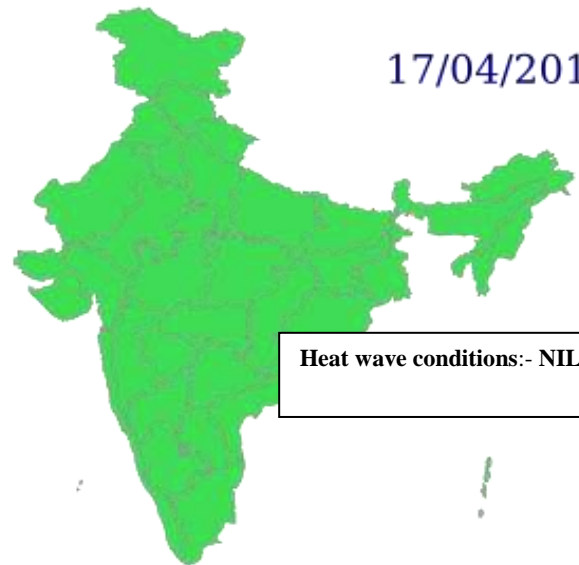
Heat wave conditions:-NIL

16/04/2019

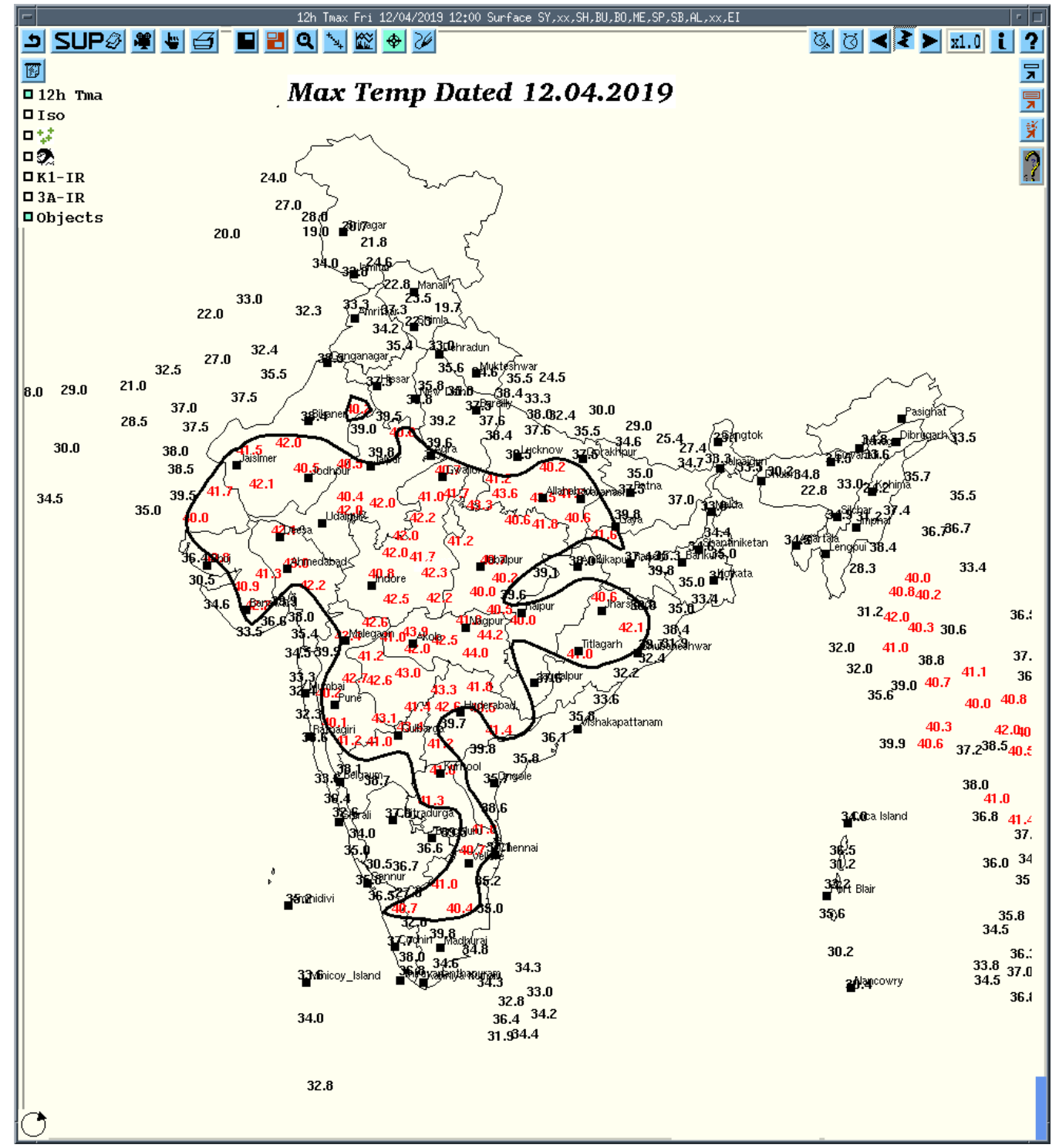


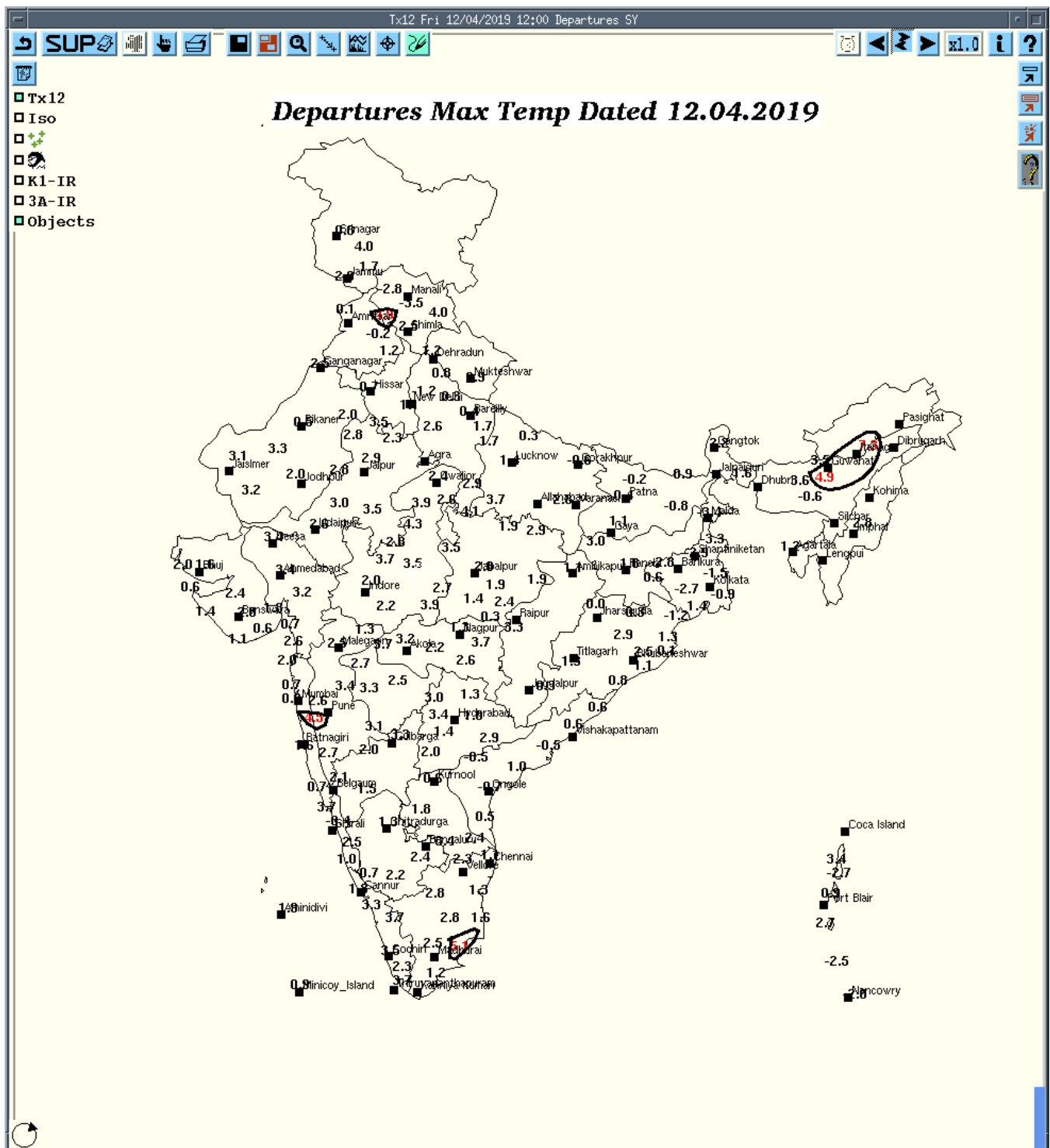
Heat wave conditions:- NIL

17/04/2019

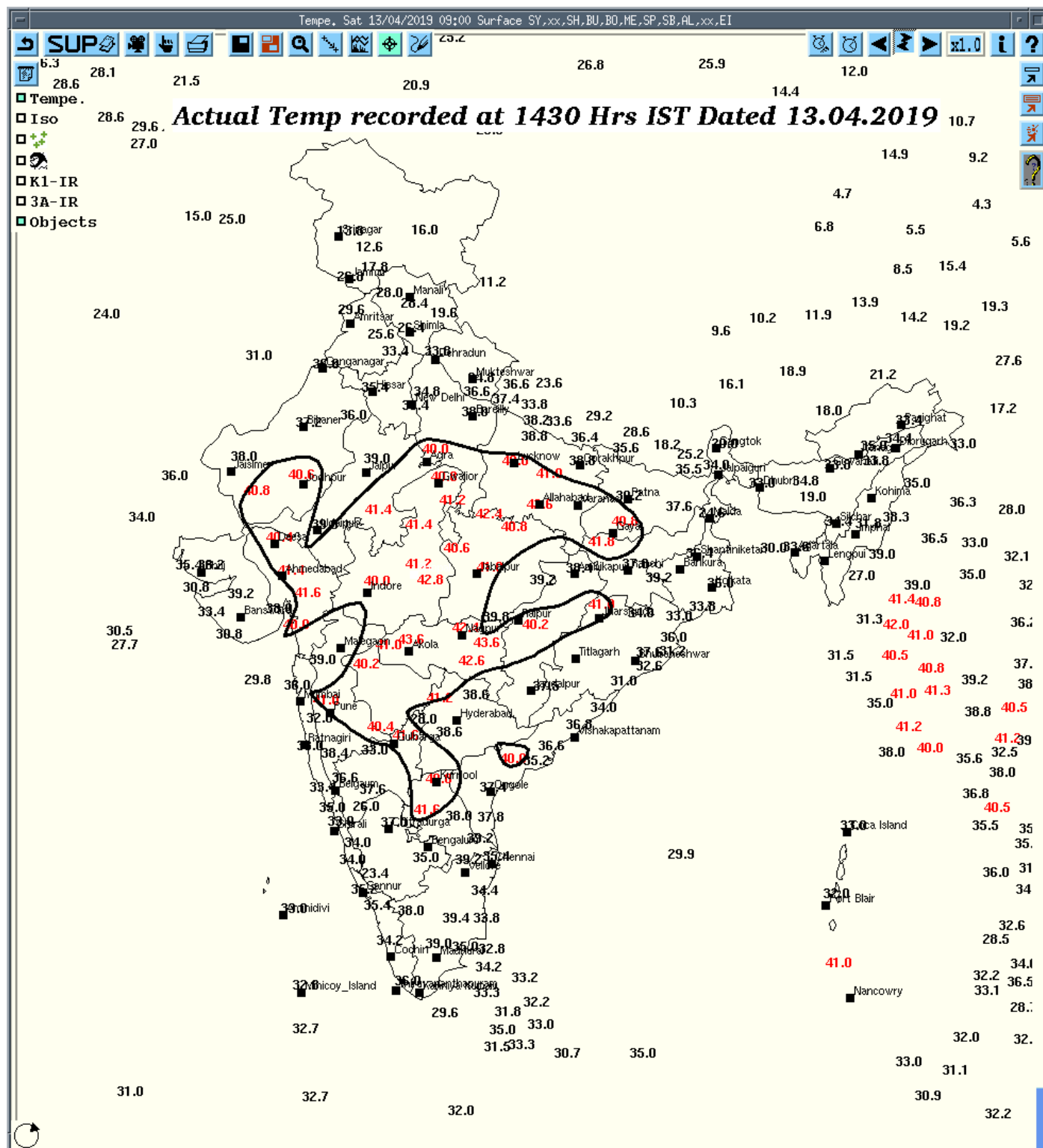


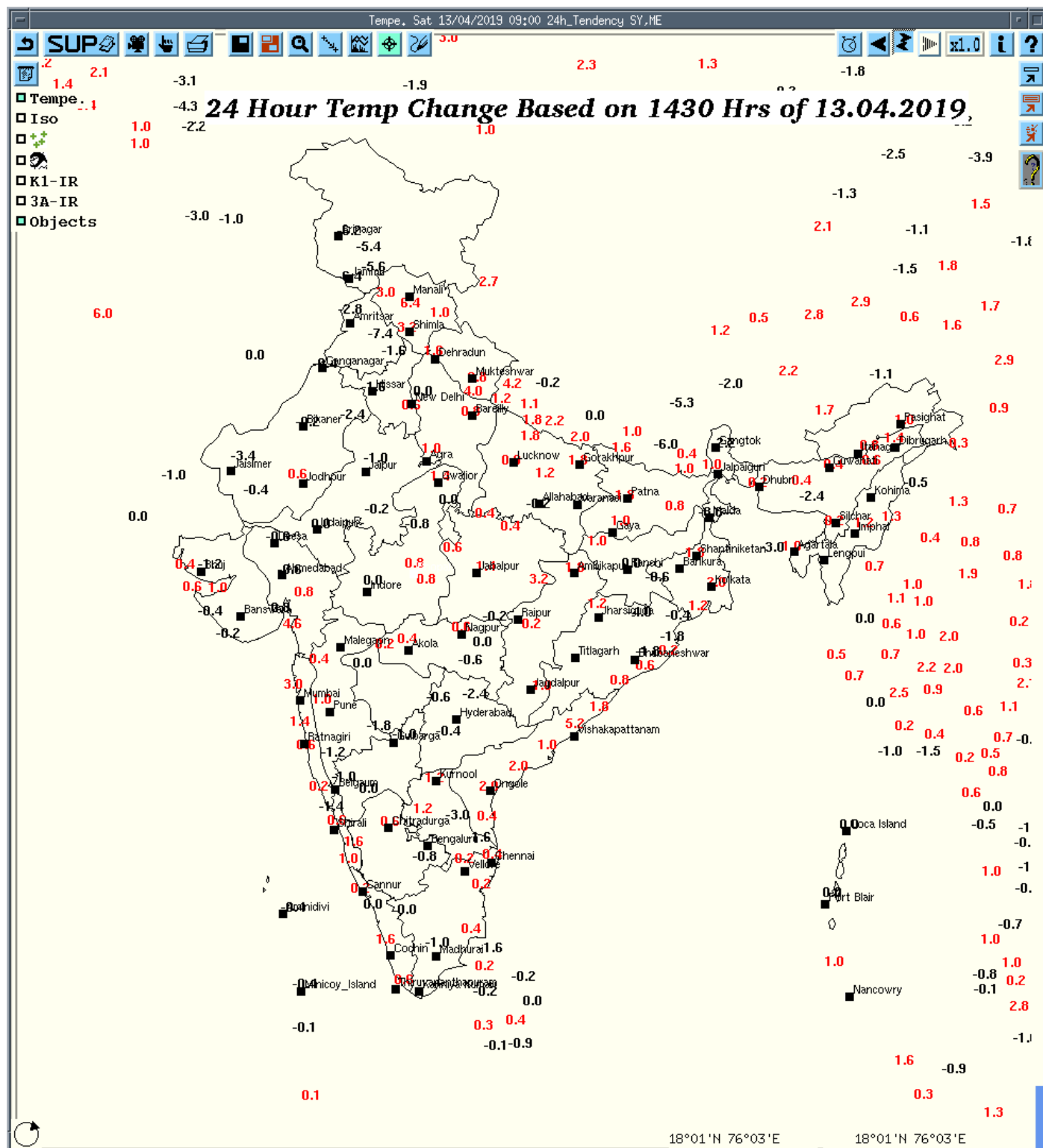
Heat wave conditions:- NIL





Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 14th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 13 April to 0830 hrs IST 14 April, 2019)

Heat Wave:

Yesterday, **Heat Wave** conditions observed at isolated pockets over south West Madhya Pradesh (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperature departures as on 13-04-2019: Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at many places over East Rajasthan and West Madhya Pradesh; at a few places over Assam & Meghalaya, East Madhya Pradesh, Vidarbha, Marathwada, Madhya Maharashtra, Konkan & Goa and Kerala; at isolated places over Himachal Pradesh and Gujarat State; above **normal (1.6°C to 3.0°C)** at most places over East Uttar Pradesh and Uttarakhand; at many places over Chhattisgarh, Tamilnadu & Puducherry, South Interior Karnataka and Jharkhand; at a few places over Sub-Himalayan West Bengal & Sikkim, Bihar, West Uttar Pradesh, Odisha, Coastal Andhra Pradesh, Telangana, North Interior Karnataka, Coastal Karnataka and Rayalseema and at isolated places over Nagaland, Manipur, Mizoram & Tripura and West Rajasthan. Yesterday, the **highest maximum temperature** of 45.2°C was recorded at **Khargone (West Madhya Pradesh)** over the country (**Annexure 1 & 2**).

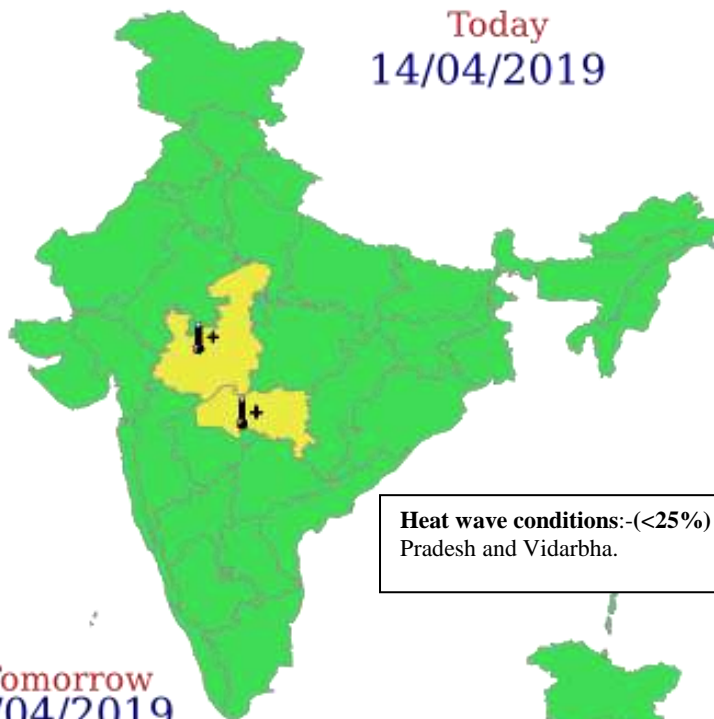
Temperatures Recorded at 1430 Hours IST of Today, the 14th April, 2019

- **Akola (Vidarbha)** recorded the maximum temperature of 44.3°C (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at most places over Jammu & Kashmir, Punjab and Haryana, Chandigarh & Delhi; at few places over Odisha and at one or two pockets of Uttar Pradesh, Himachal Pradesh, Saurashtra & Kutch, Bihar, Jharkhand, Vidarbha, Madhya Maharashtra and Rayalseema (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

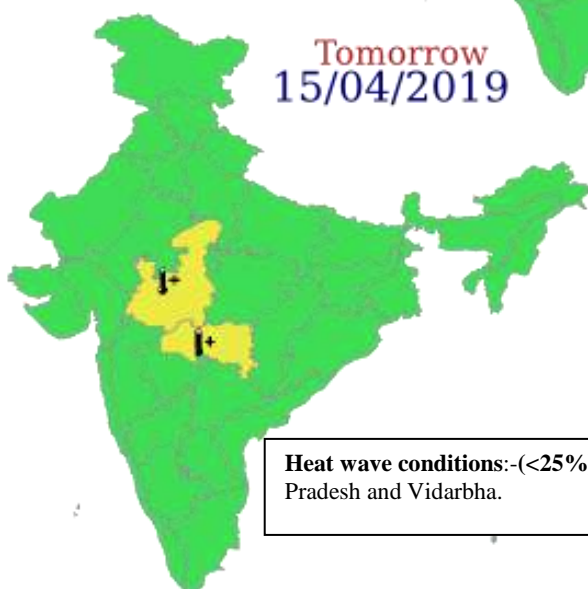
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
14/04/2019



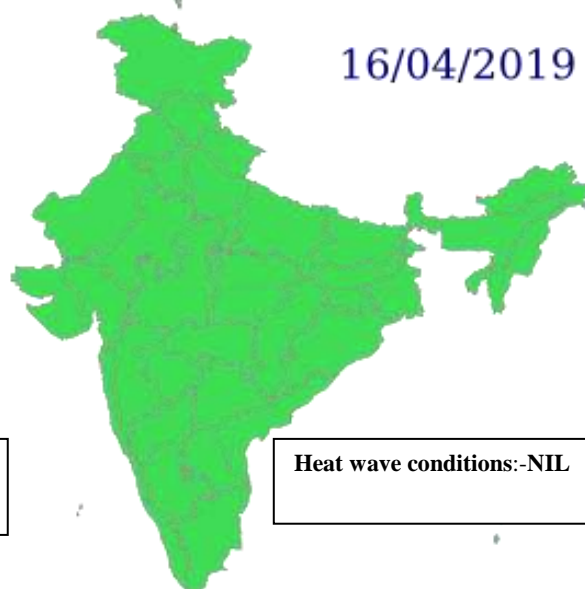
Heat wave conditions:-(<25%) West Madhya Pradesh and Vidarbha.

Tomorrow
15/04/2019



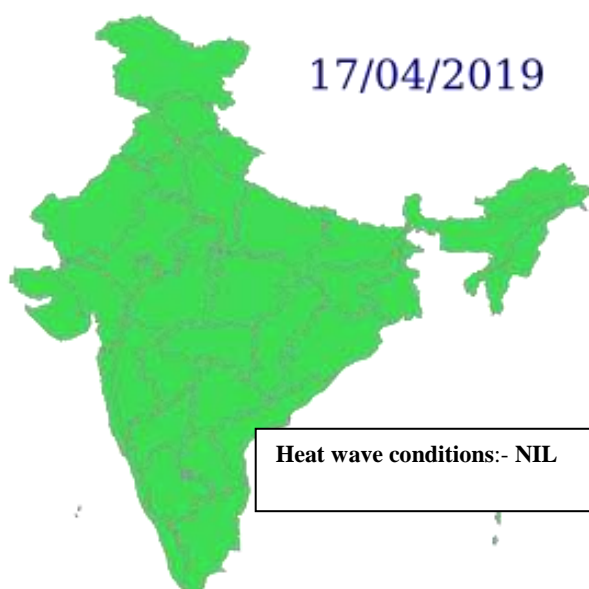
Heat wave conditions:-(<25%) West Madhya Pradesh and Vidarbha.

16/04/2019



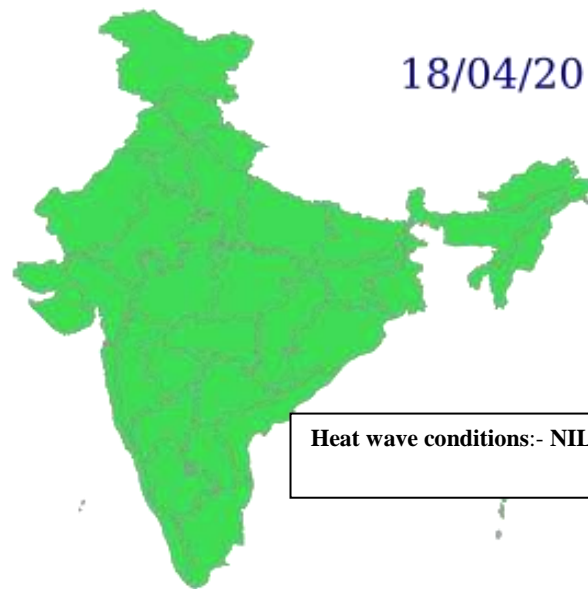
Heat wave conditions:-NIL

17/04/2019

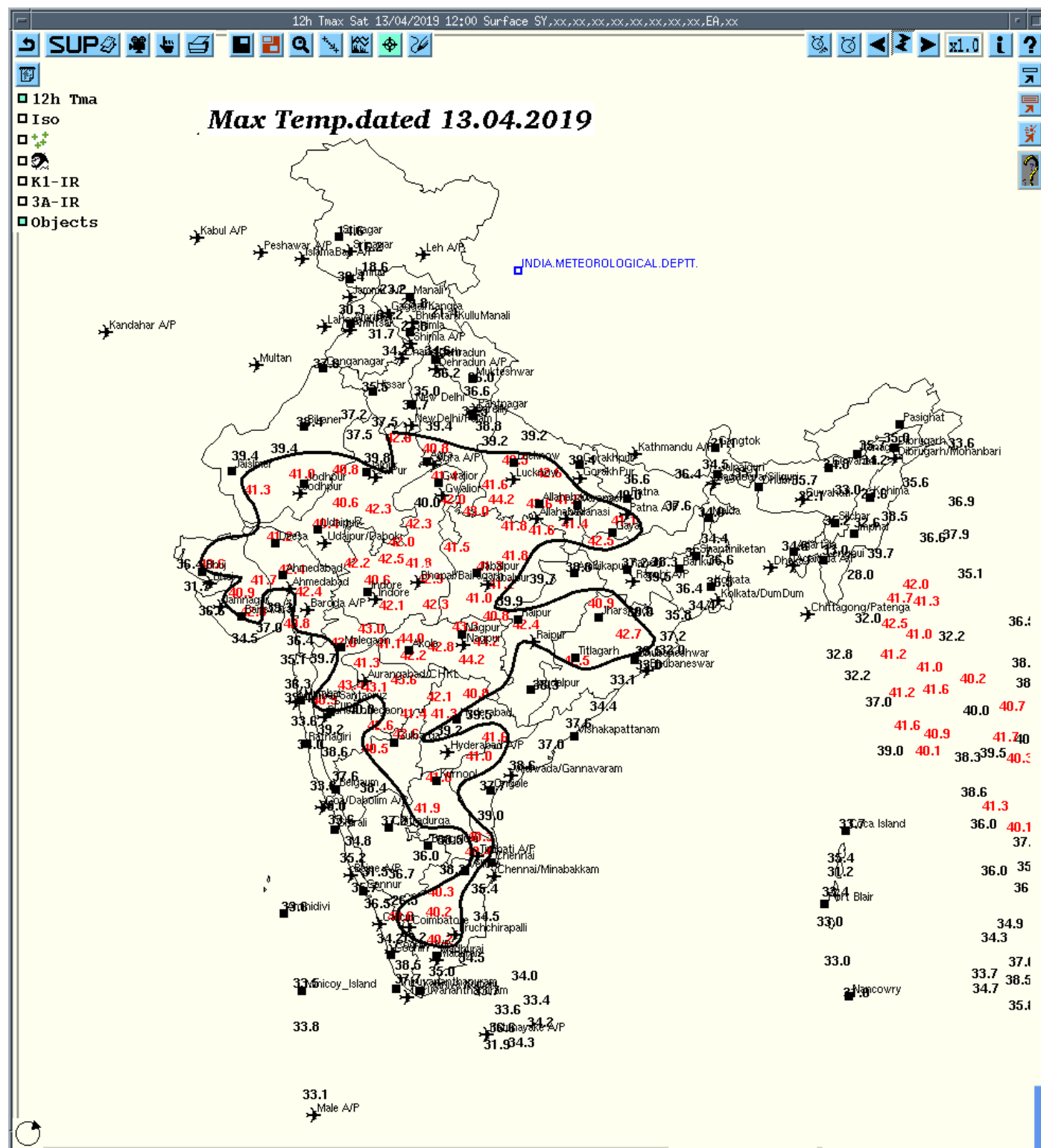


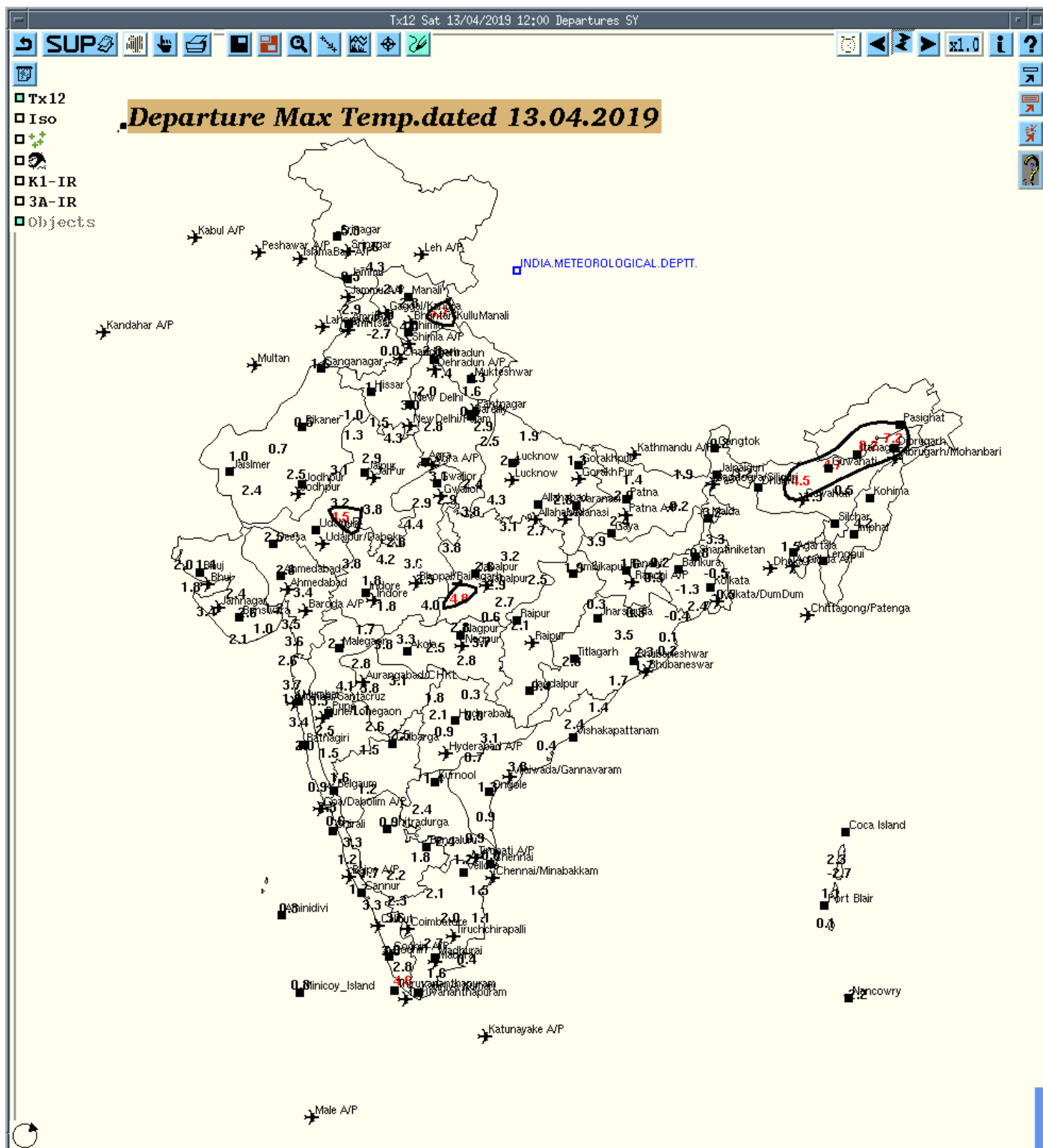
Heat wave conditions:- NIL

18/04/2019

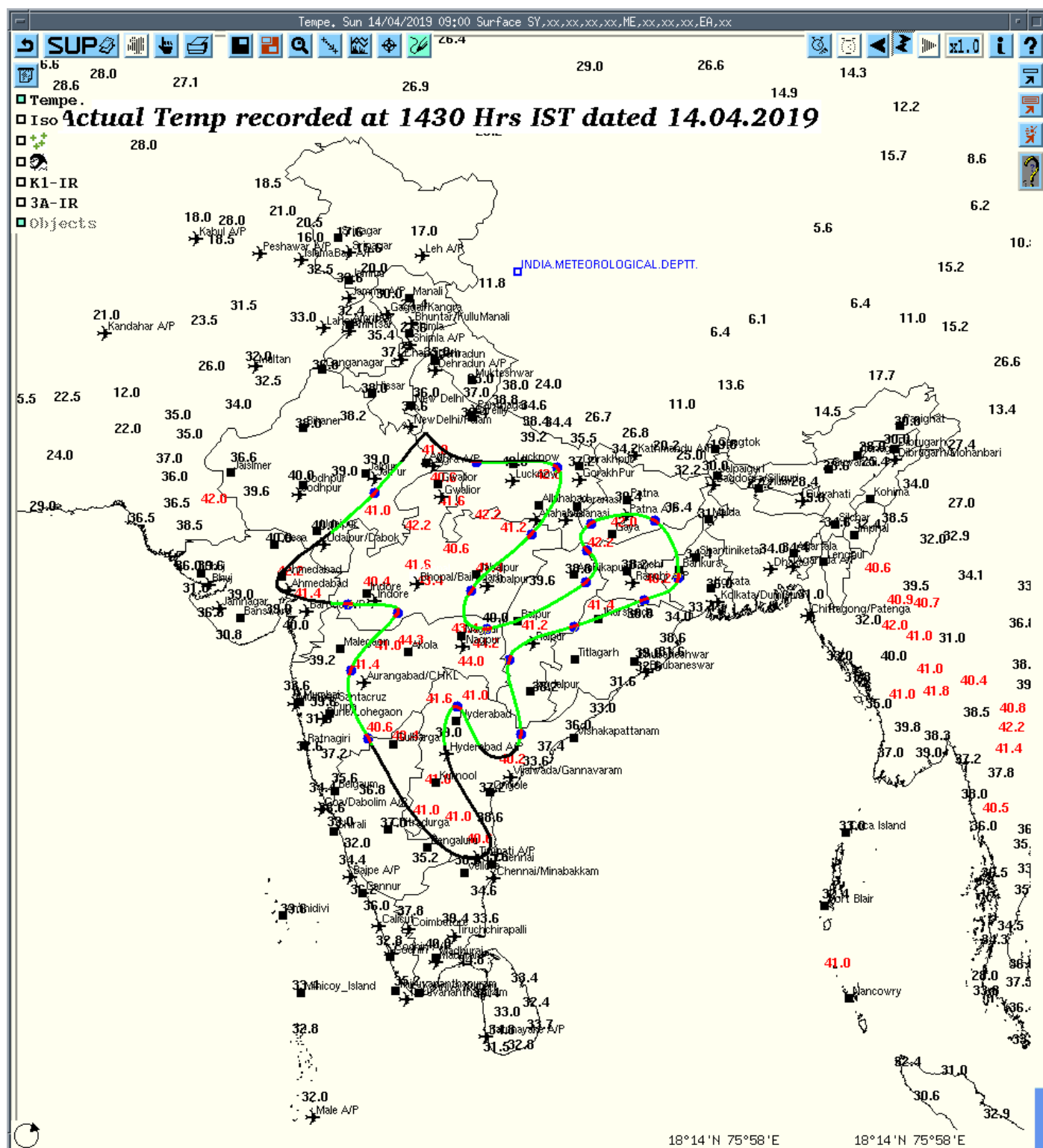


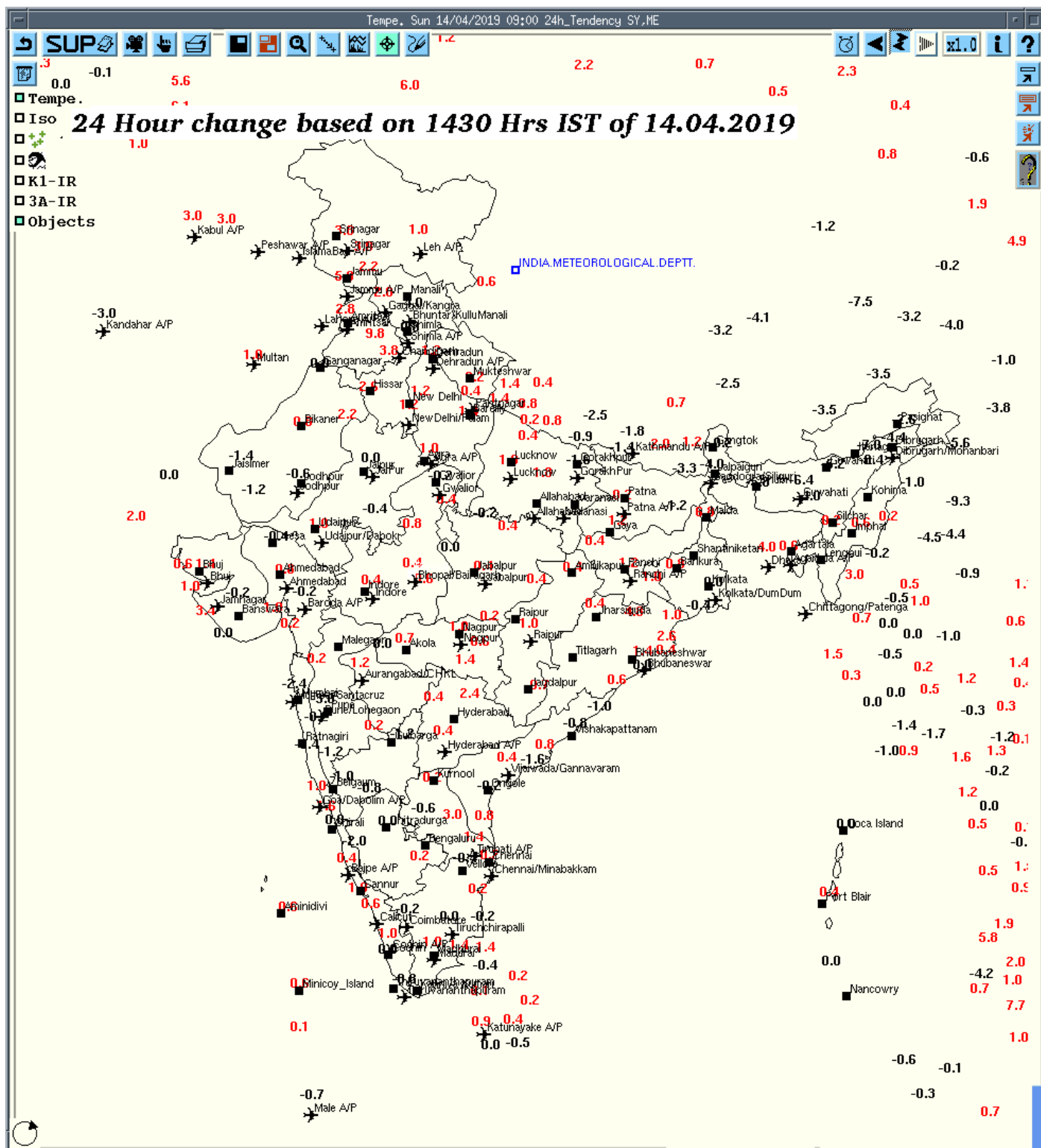
Heat wave conditions:- NIL





Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 15th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 14 April to 0830 hrs IST 15 April, 2019)

Heat Wave:

Yesterday, **Heat Wave** conditions were observed at isolated pockets over Madhya Pradesh and Vidarbha (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Madhya Pradesh and Kerala; at many places over Vidarbha, Marathwada and Uttarakhand; at a few places over West Uttar Pradesh; at isolated places over Assam & Meghalaya; above **normal (1.6°C to 3.0°C)** at most places over Rajasthan, Gujarat region and Konkan & Goa; at many places over Saurashtra & Kutch, Madhya Maharashtra, South Interior Karnataka and Tamilnadu & Puducherry; at a few places over Coastal Andhra Pradesh, Odisha, Bihar and Jharkhand; at isolated places over Chhattisgarh. Yesterday, the **highest maximum temperature** of 45.5°C was recorded at **Khargone (West Madhya Pradesh)** over the country (**Annexure 1 & 2**).

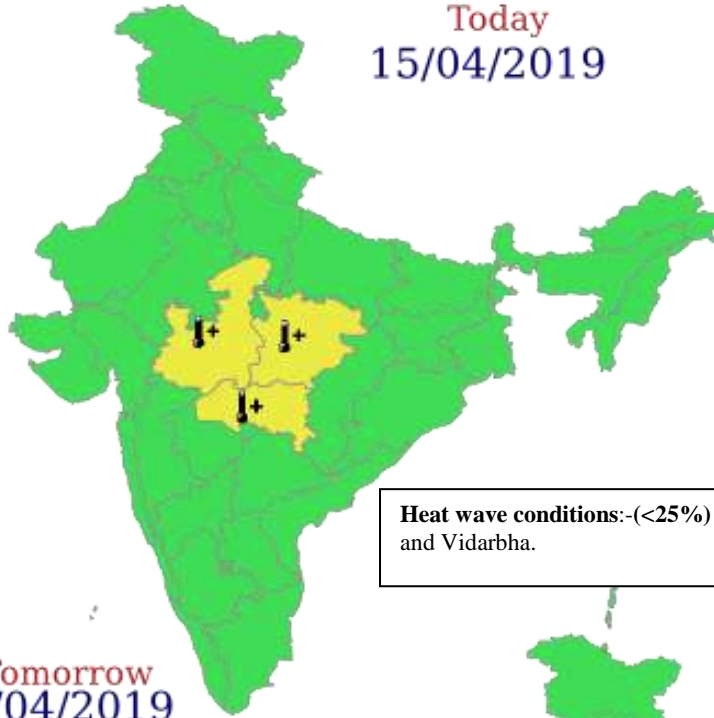
Temperatures Recorded at 1430 Hours IST of Today, the 15th April, 2019

- **Bankura (Gangetic West Bengal)** recorded the maximum temperature of 43.2°C (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at most places over Jammu & Kashmir, Himachal Pradesh and Punjab; at few places over Haryana, Chandigarh & Delhi, Uttarakhand, Gangetic West Bengal and Assam & Meghalaya and at one or two pockets of West Uttar Pradesh, Saurashtra & Kutch, Bihar and Coastal Andhra Pradesh (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

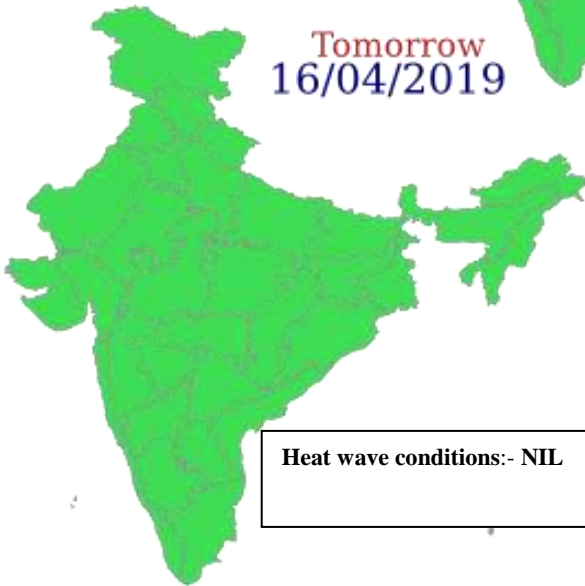
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
15/04/2019



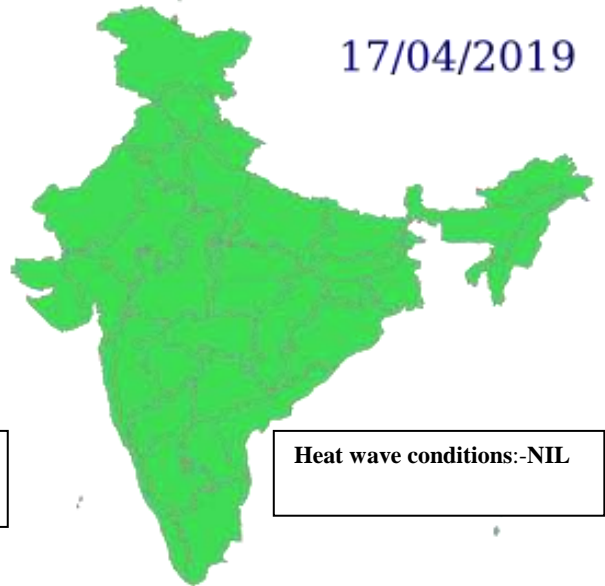
Heat wave conditions:-(<25%) Madhya Pradesh and Vidarbha.

Tomorrow
16/04/2019



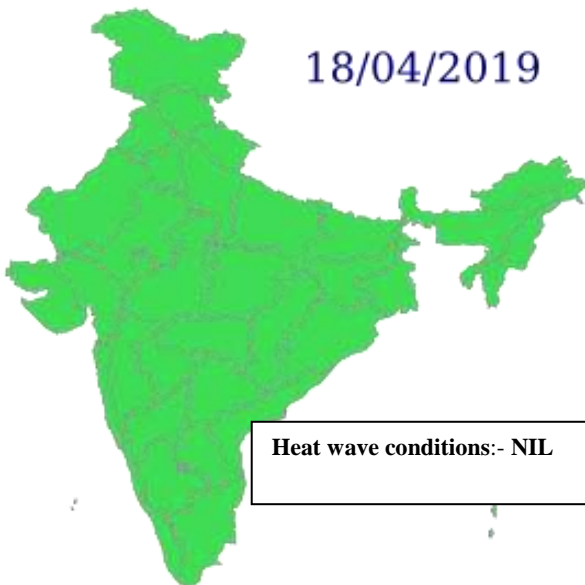
Heat wave conditions:- NIL

17/04/2019



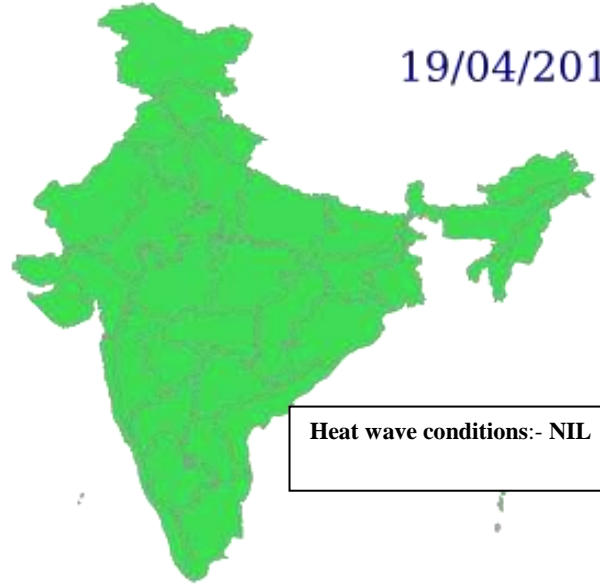
Heat wave conditions:-NIL

18/04/2019



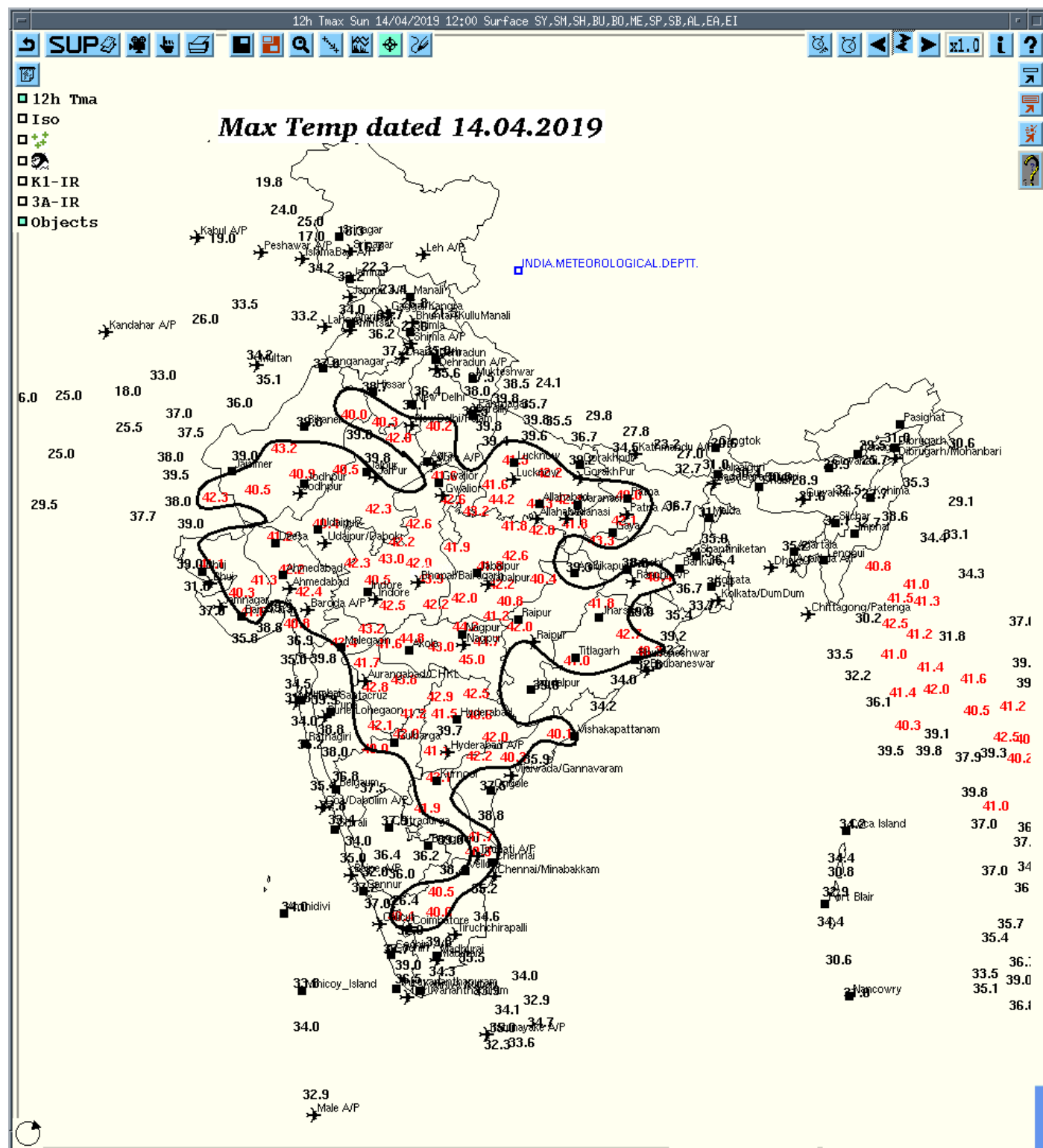
Heat wave conditions:- NIL

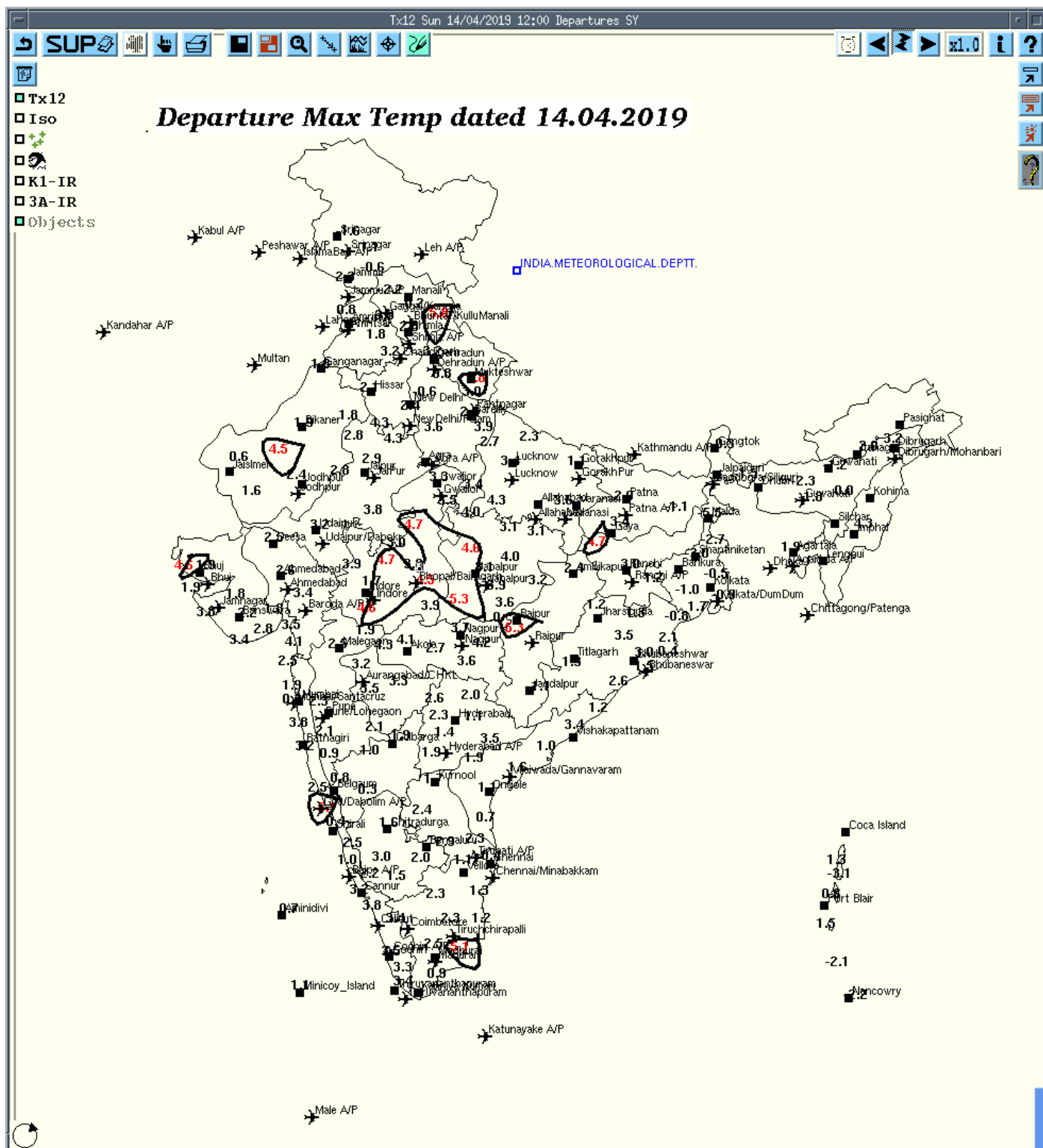
19/04/2019



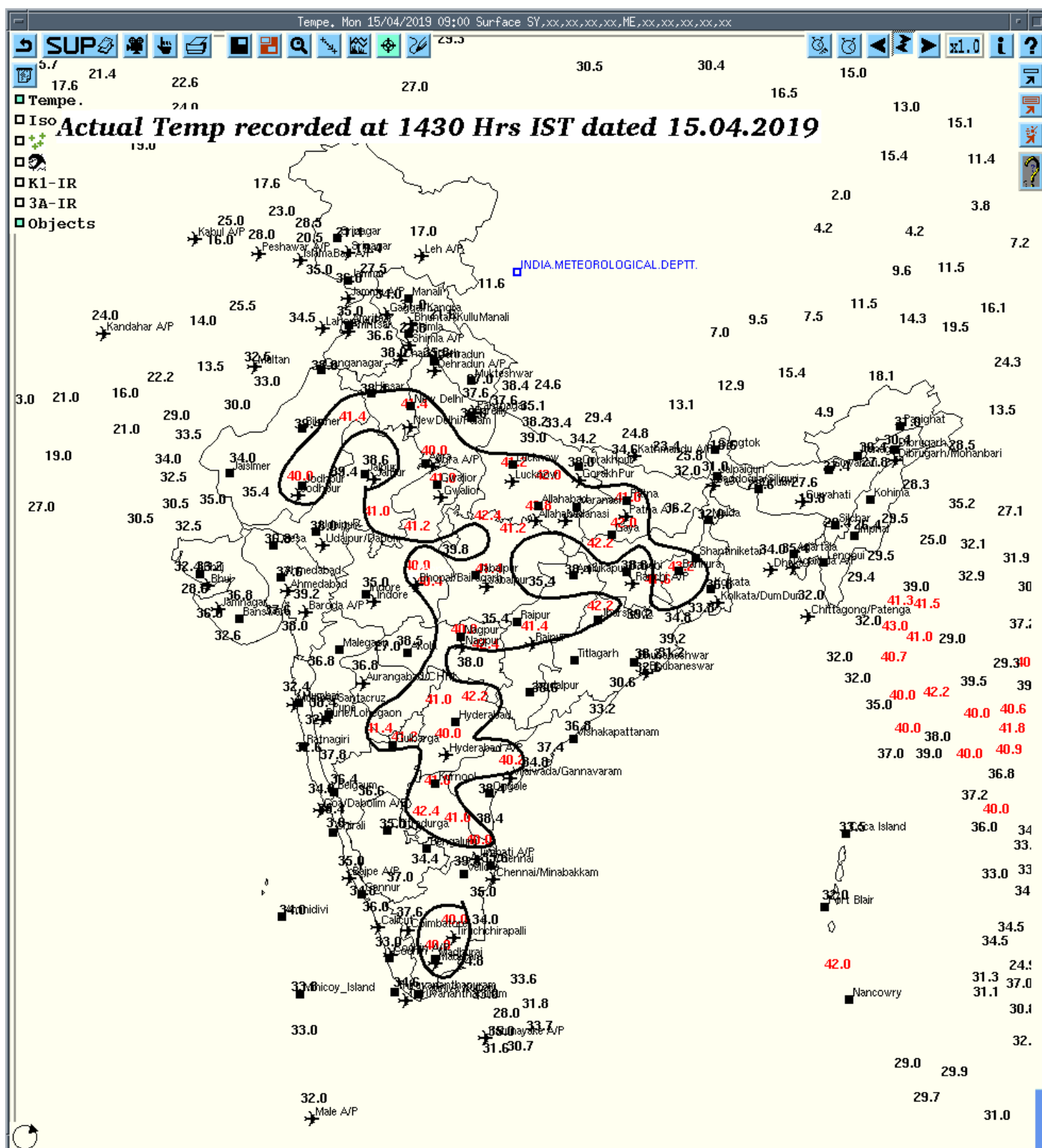
Heat wave conditions:- NIL

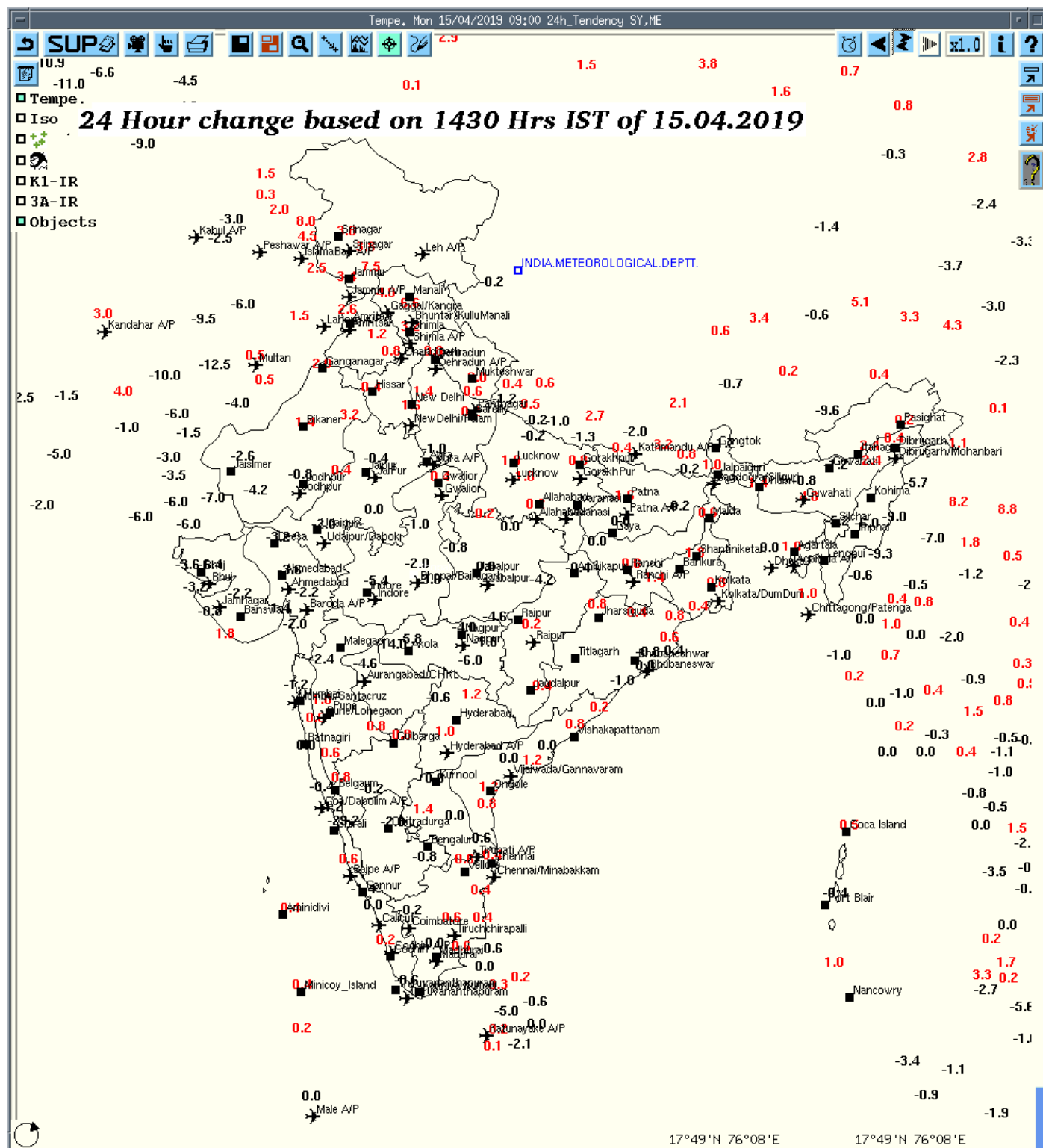
Annexure 1





Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 16th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 15 April to 0830 hrs IST 16 April, 2019)

Heat Wave:

Yesterday, **heat wave** conditions observed in isolated pockets over East Madhya Pradesh (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C and more)** at many places over Uttarakhand; at a few places over Jammu & Kashmir, Himachal Pradesh and Saurashtra & Kutch; at isolated places over Punjab and Chhattisgarh; **appreciably above normal (3.1°C to 5.0°C)** at many places over East Madhya Pradesh and Jharkhand; at a few places over Rajasthan, East Uttar Pradesh; at isolated places over Haryana, Chandigarh & Delhi, West Madhya Pradesh, Gujarat region, Konkan & Goa, Odisha, Chhattisgarh, Telangana, Rayalaseema, Tamilnadu & Puducherry and Coastal Karnataka; above **normal (1.6°C to 3.0°C)** at a few places over Assam & Meghalaya, Coastal Andhra Pradesh and South Interior Karnataka; at isolated places over Nagaland, Manipur, Mizoram & Tripura and Gangetic West Bengal. Yesterday, the **highest maximum temperature** of **44.8°C** was recorded at **Chandrapur (Vidarbha)** over the country (**Annexure 1 & 2**).

Temperatures Recorded at 1430 Hours IST of Today, the 16th April, 2019

- **Bhubaneswar (Odisha)** recorded the maximum temperature of **43.2°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at many places over Sub Himalayan West Bengal & Sikkim; at few places over Gangetic West Bengal and Assam & Meghalaya and at one or two pockets over Saurashtra & Kutch, Vidarbha, South Interior Karnataka, Kerala, Rayalaseema, Odisha and rest northeastern states (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

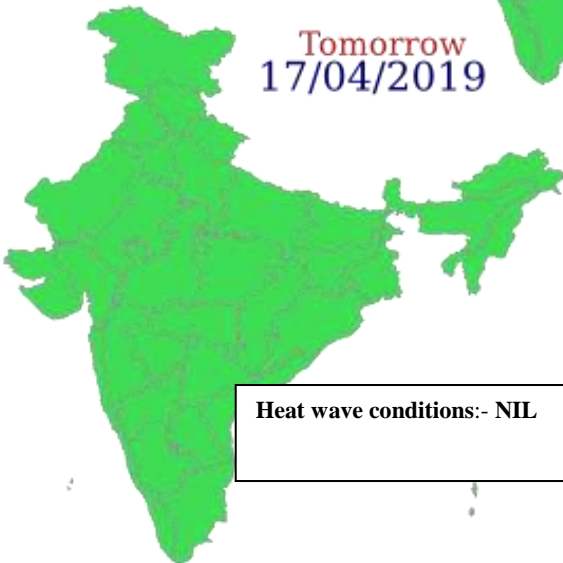
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
16/04/2019



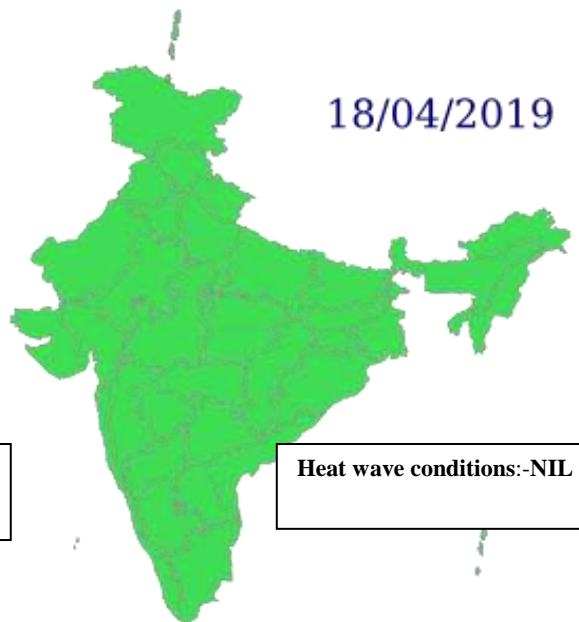
Heat wave conditions:- NIL

Tomorrow
17/04/2019



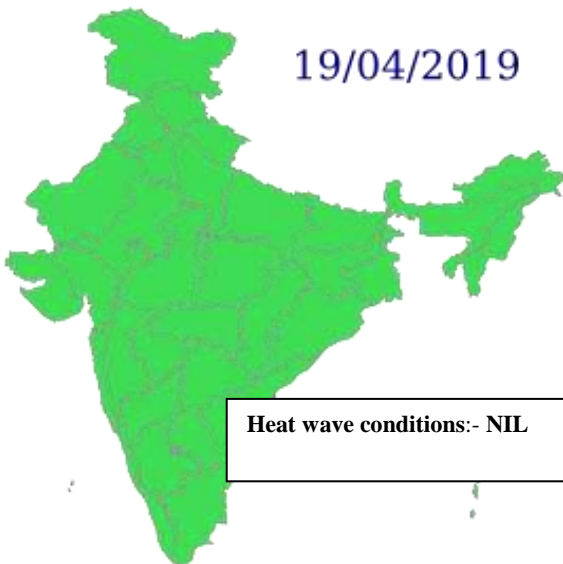
Heat wave conditions:- NIL

18/04/2019



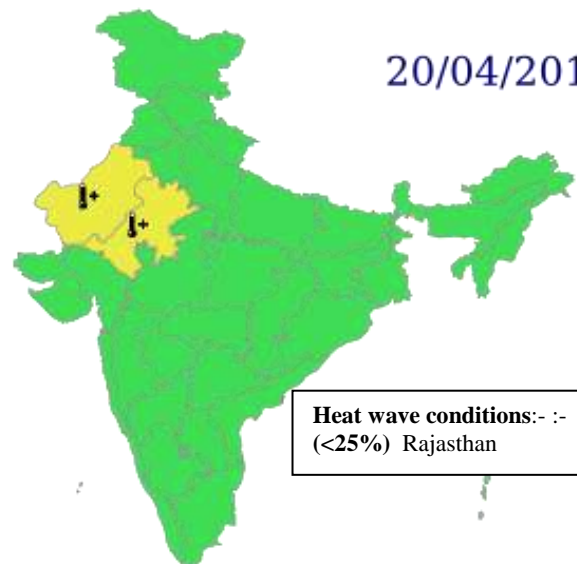
Heat wave conditions:-NIL

19/04/2019

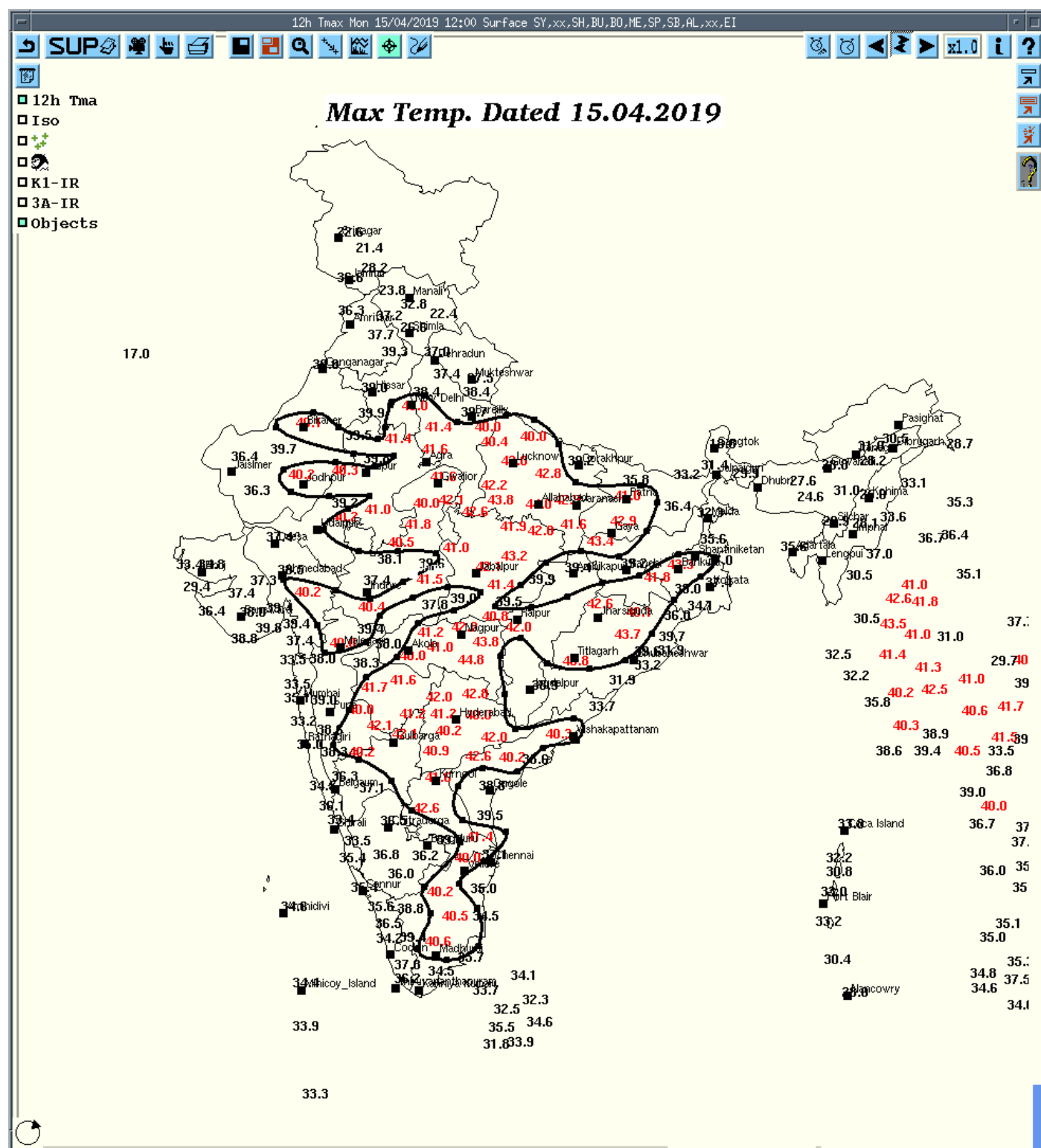


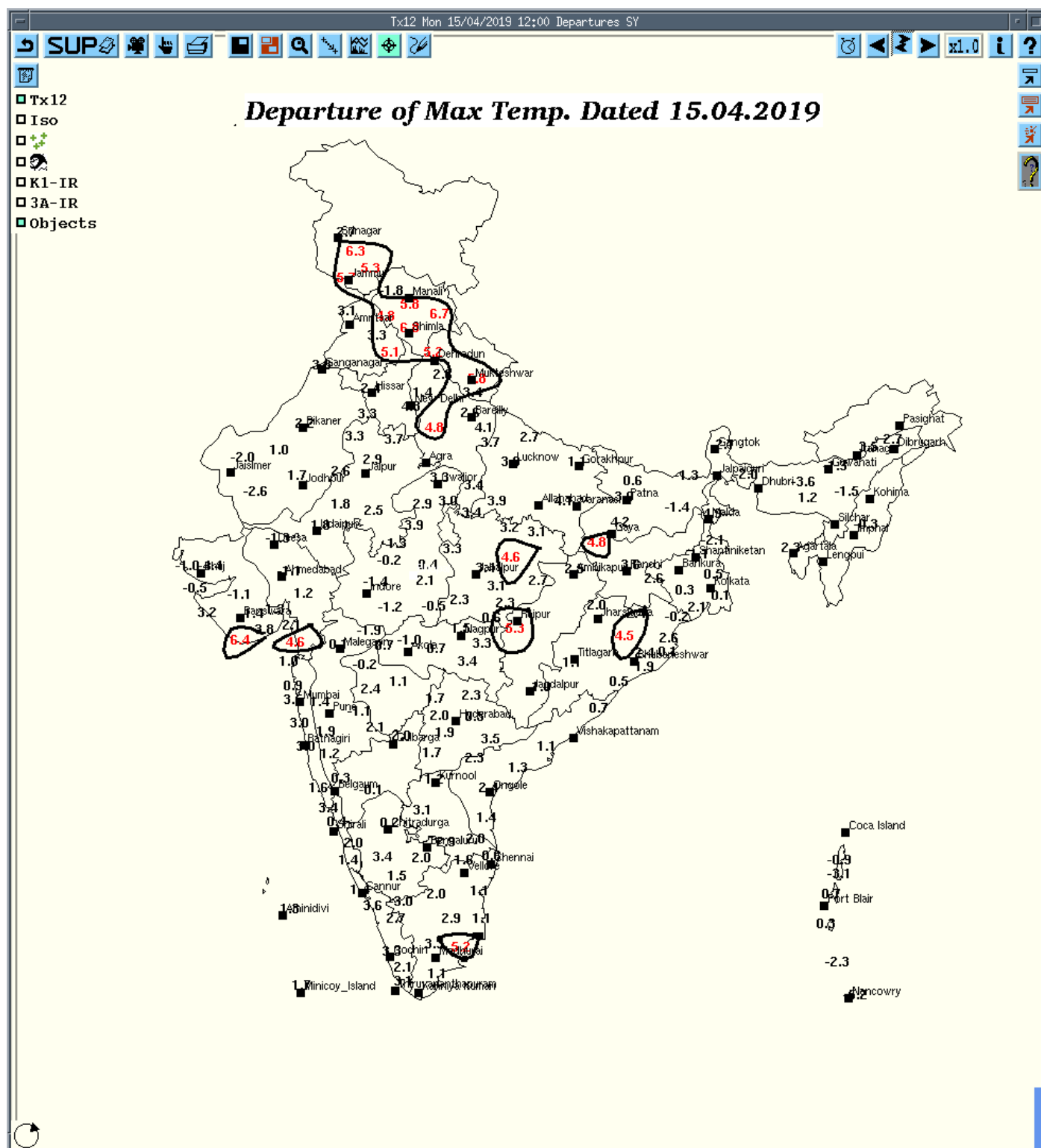
Heat wave conditions:- NIL

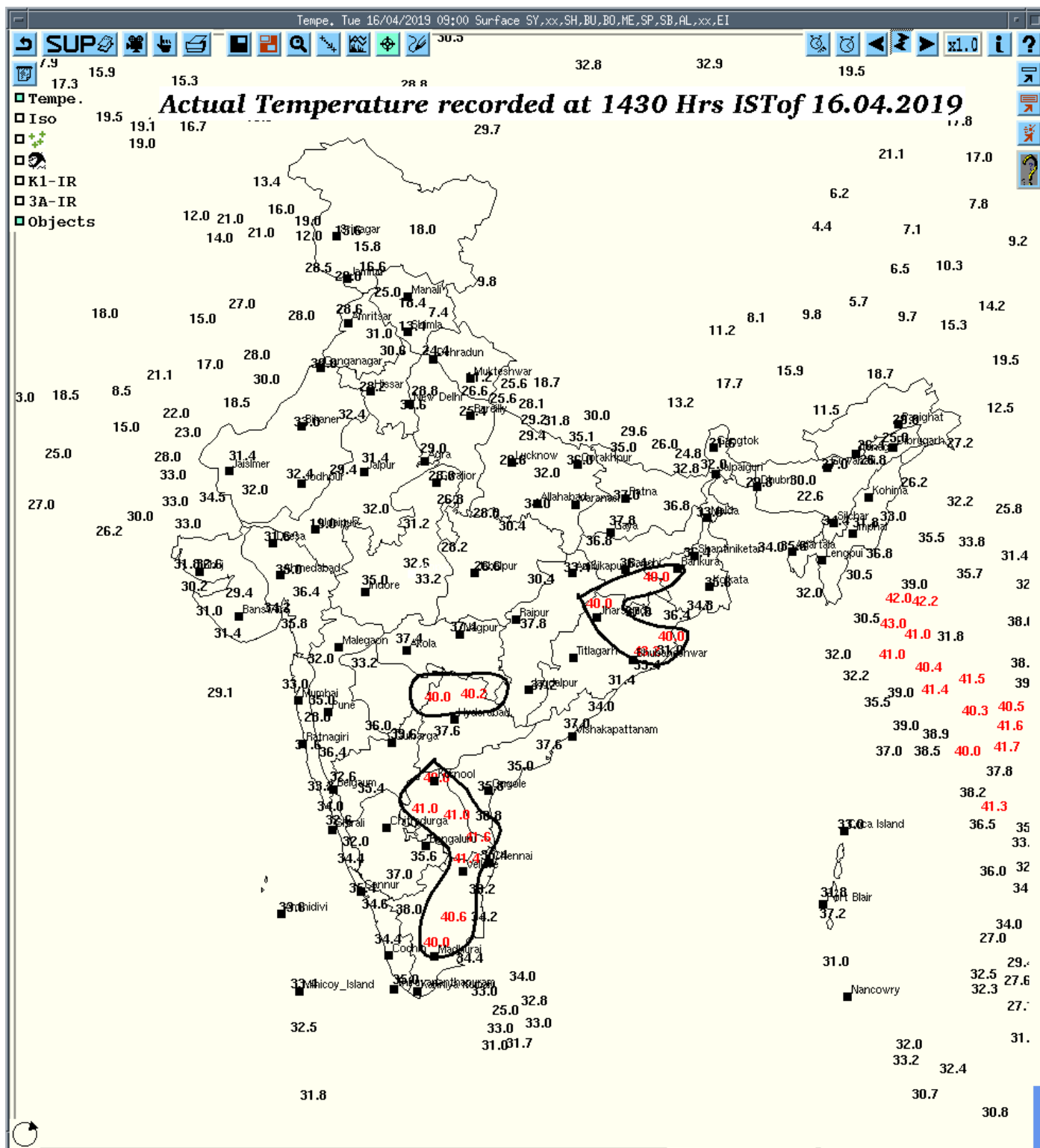
20/04/2019

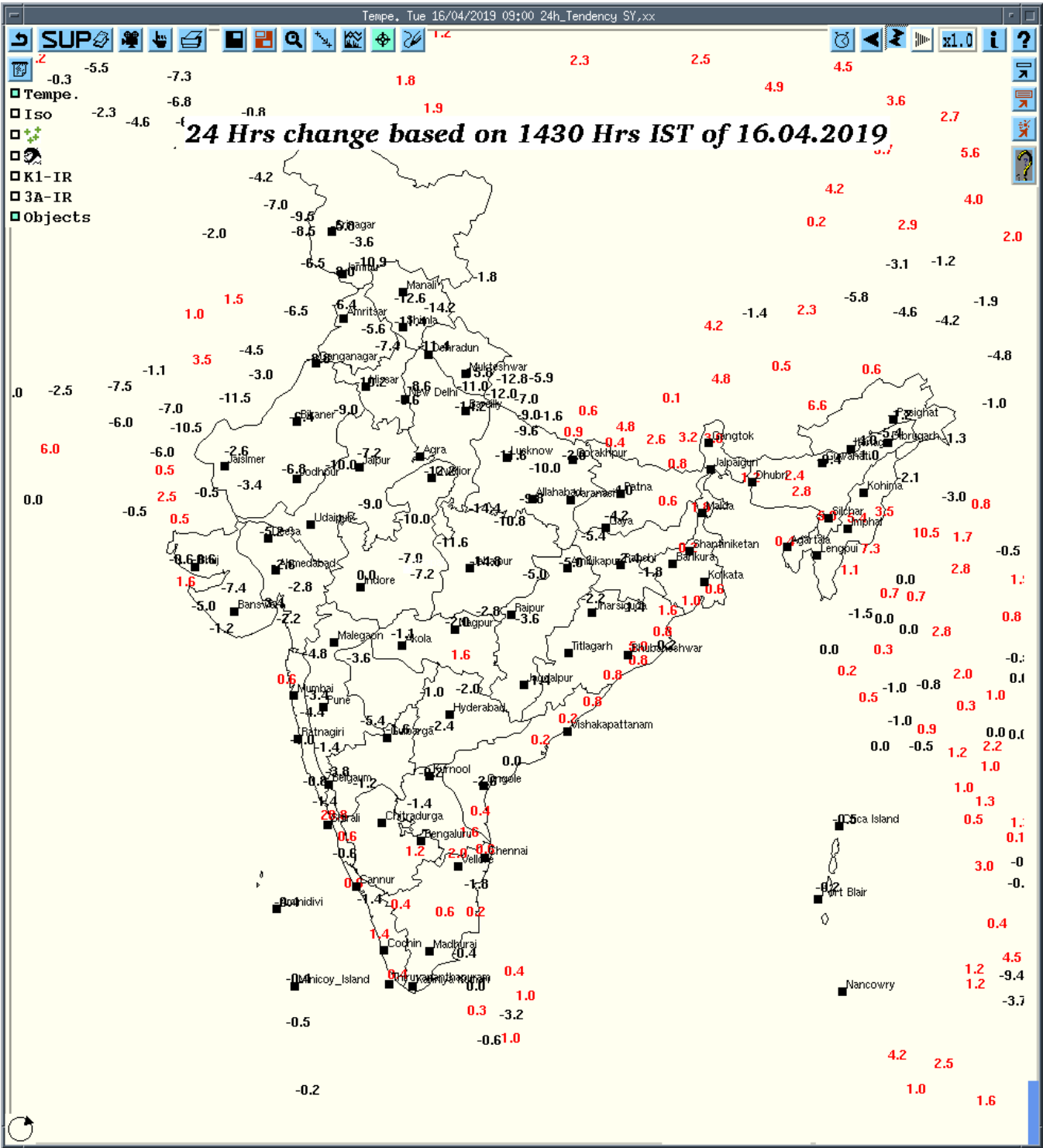


Heat wave conditions:- :-
(<25%) Rajasthan









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 17th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 16 April to 0830 hrs IST 17 April, 2019)

Heat Wave:

Yesterday, there was no heat wave observed in the country.

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at a few places over Rayalaseema, Tamilnadu & Puducherry and Kerala and at isolated places over Odisha and Assam & Meghalaya; **above normal (1.6°C to 3.0°C)** at most places over Konkan & Goa and Nagaland, Manipur, Mizoram & Tripura; at many places over Jharkhand; at a few places over South interior Karnataka, Gangetic West Bengal and Coastal Andhra Pradesh and at isolated places over Coastal Karnataka and Sub-Himalayan West Bengal & Sikkim. Yesterday, Yesterday, **the highest maximum** temperature of **43.7°C** was recorded at Bhubneshwar (Odisha) over the country. (Annexure 1 & 2).

Temperatures Recorded at 1430 Hours IST of Today, the 17th April, 2019

- **Tirupathi (Rayalaseema) recorded the maximum temperature of 41.8°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at a few places over East Madhya Pradesh, Tamil Nadu & Puducherry and Assam & Meghalaya and at one or two pockets over Saurashtra & Kutch. (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

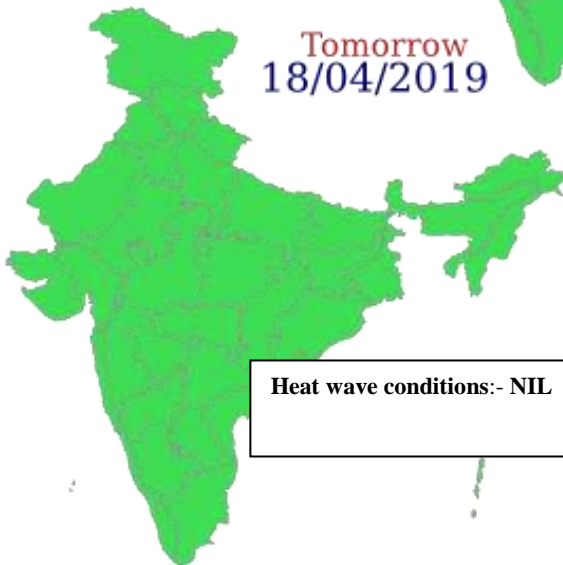
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
17/04/2019



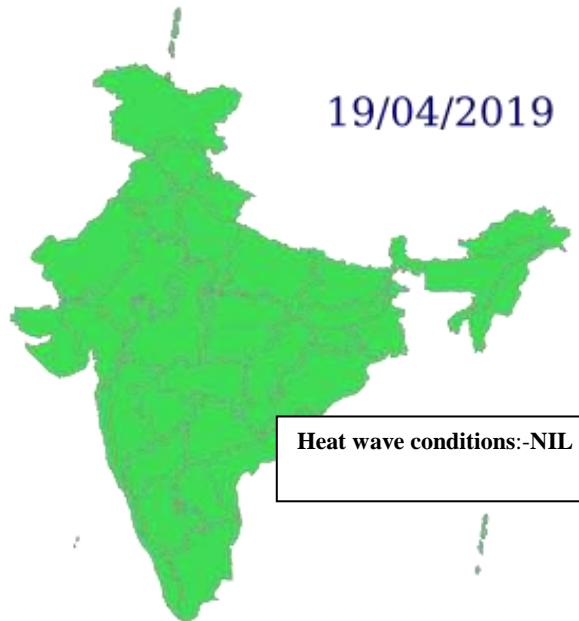
Heat wave conditions:- NIL

Tomorrow
18/04/2019



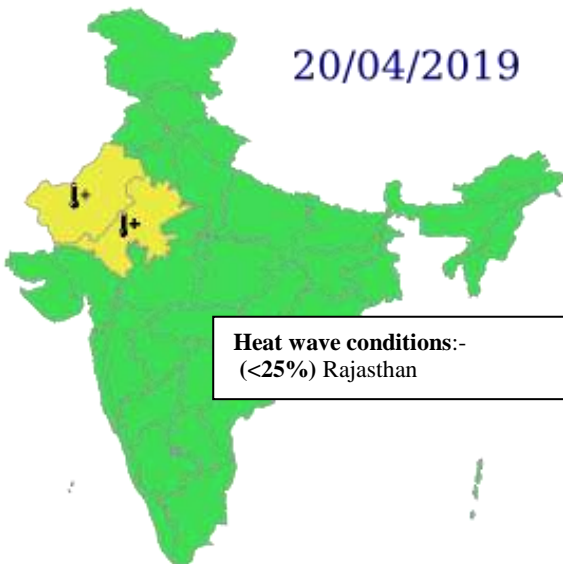
Heat wave conditions:- NIL

19/04/2019



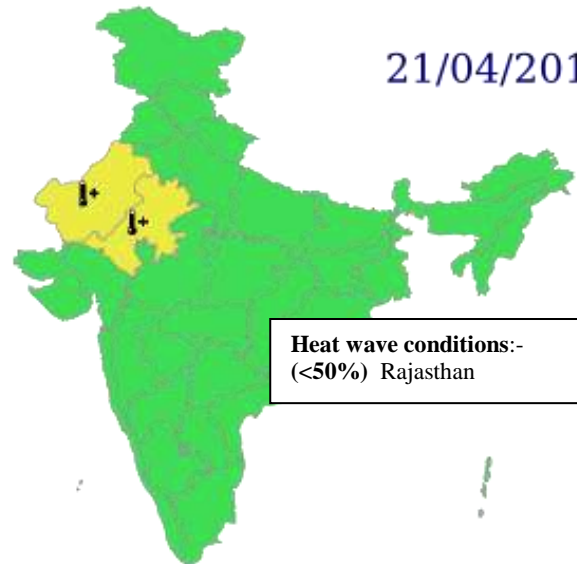
Heat wave conditions:-NIL

20/04/2019

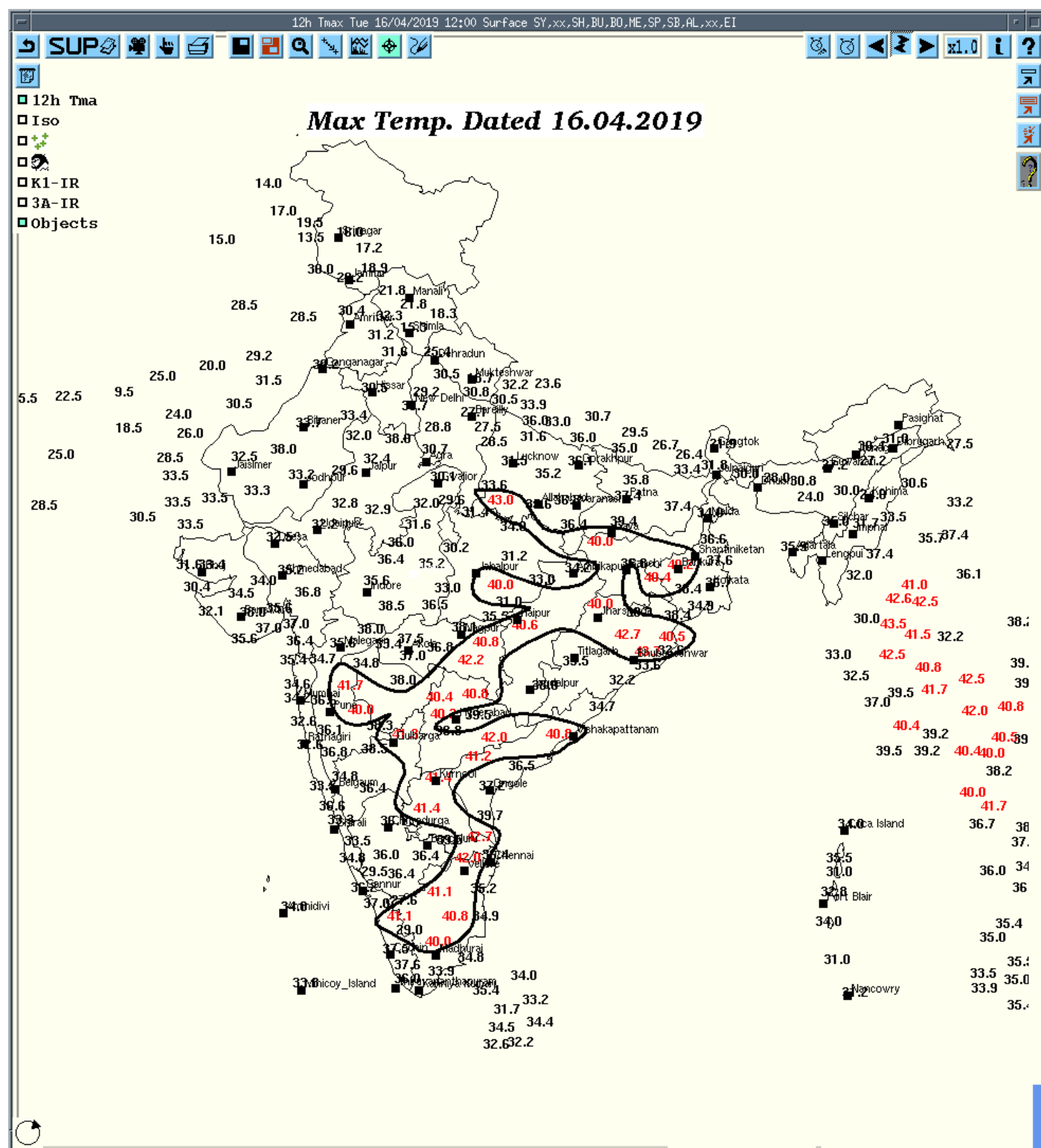


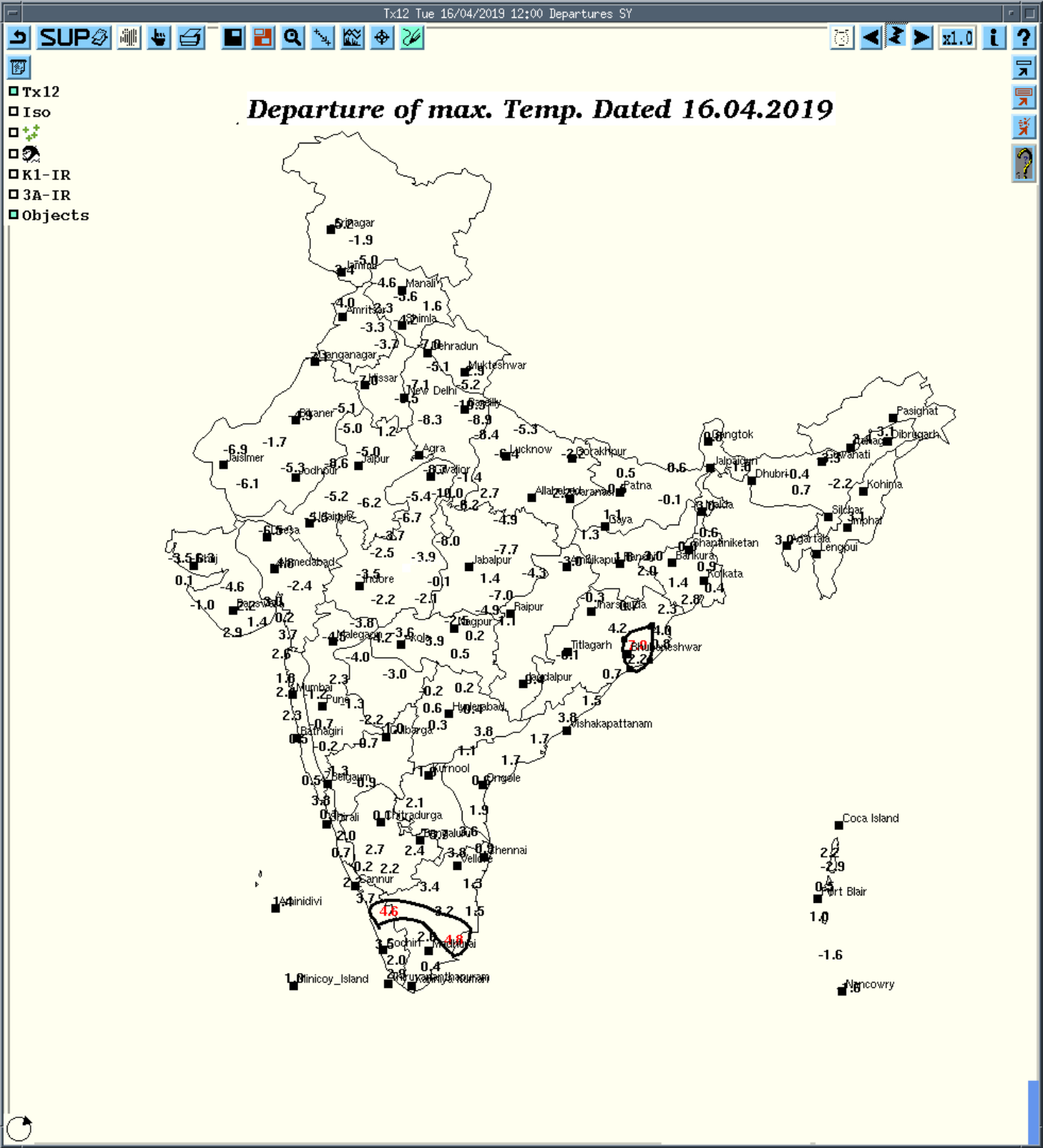
Heat wave conditions:-
(<25%) Rajasthan

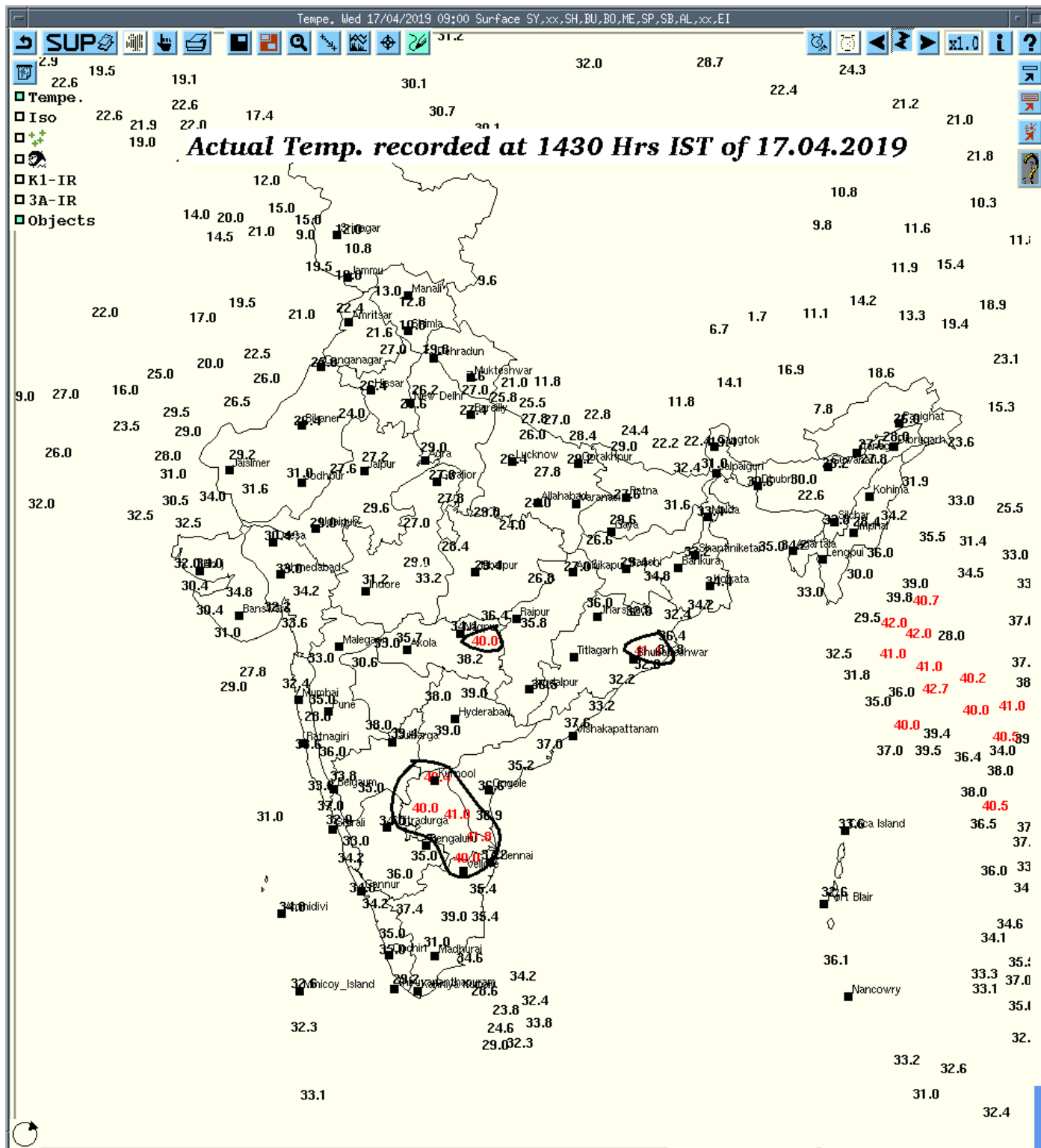
21/04/2019

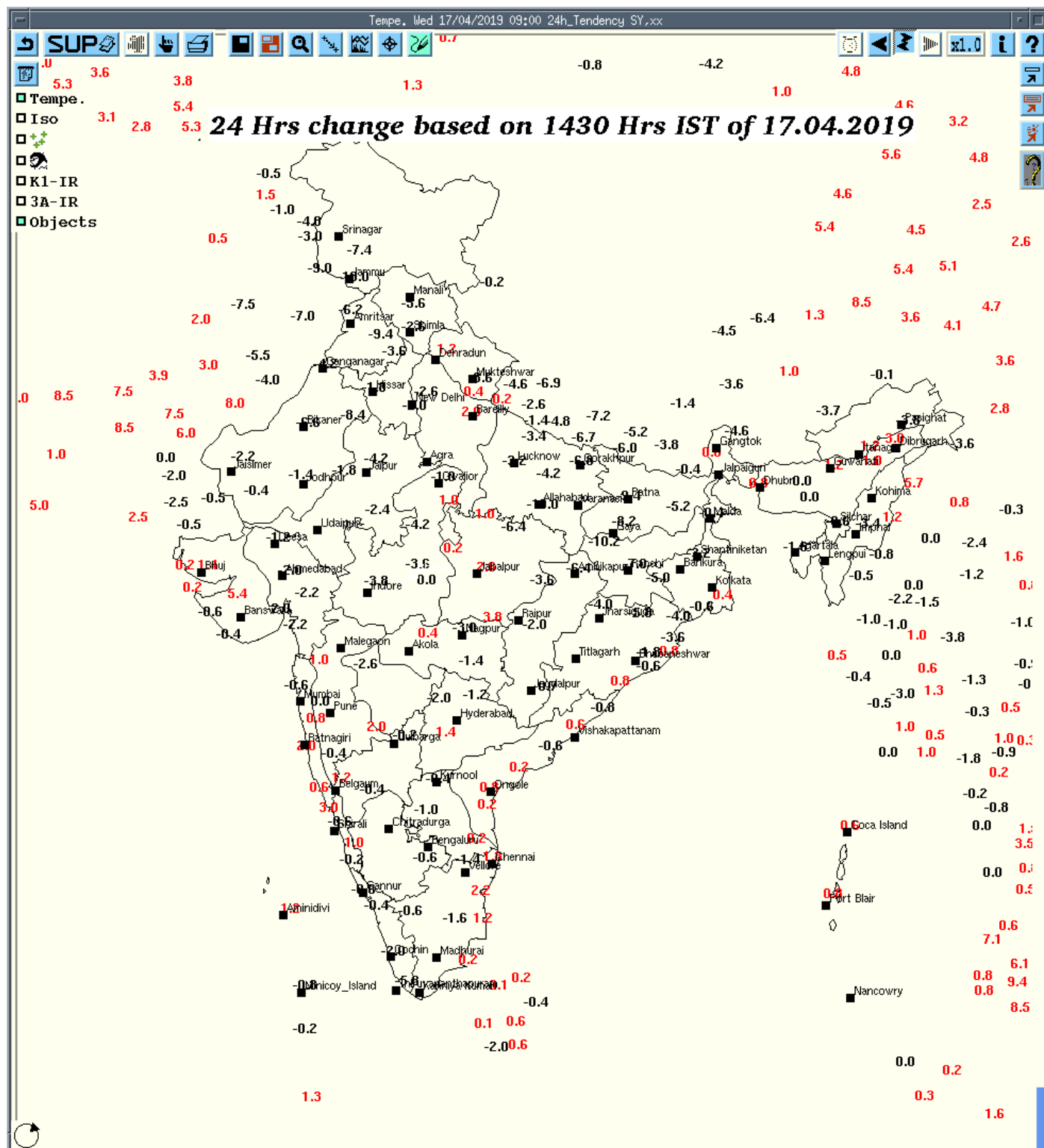


Heat wave conditions:-
(<50%) Rajasthan









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 18th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 17 April to 0830 hrs IST 18 April, 2019)

Heat Wave:

Yesterday, No heat wave conditions were observed over any part of the country (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Kerala and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at isolated places over Coastal & South Interior Karnataka, Odisha and Tripura. Yesterday, **the highest maximum** temperature of **42.6°C** was recorded at **Tirupathi (Rayalseema)** over the country (**Annexure 1 & 2**).

Temperatures Recorded at 1430 Hours IST of Today, the 18th April, 2019

- **Bramhapuri (Vidarbha)** recorded the maximum temperature of **41.4°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 3-6°C** at most places over Jammu and Kashmir, Himachal Pradesh, East Uttar Pradesh, Bihar and Punjab; at many places over Madhya Pradesh and Assam & Meghalaya and at one or two pockets over Rajasthan, Gujarat, Kerala, Jharkhand and Tamilnadu and **risen by 1-3°C** at most parts of north, west, central India at few places over rest Tamilnadu and north eastern state; at one or two pockets over Karnataka, Telangana, Odisha, Gangetic west Bengal, coastal Andhra Pradesh (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

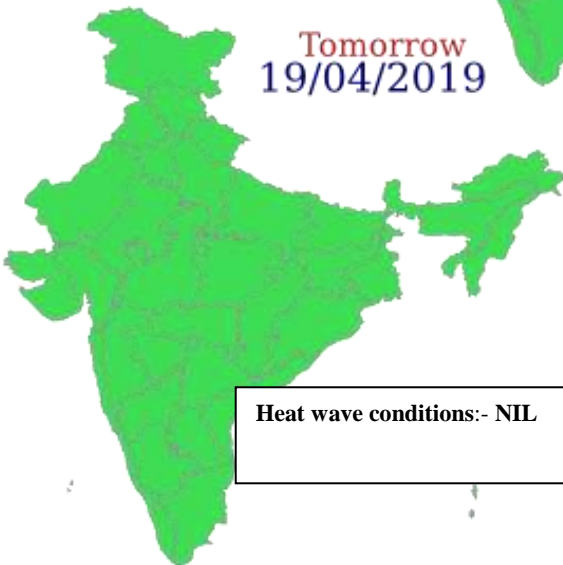
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
18/04/2019



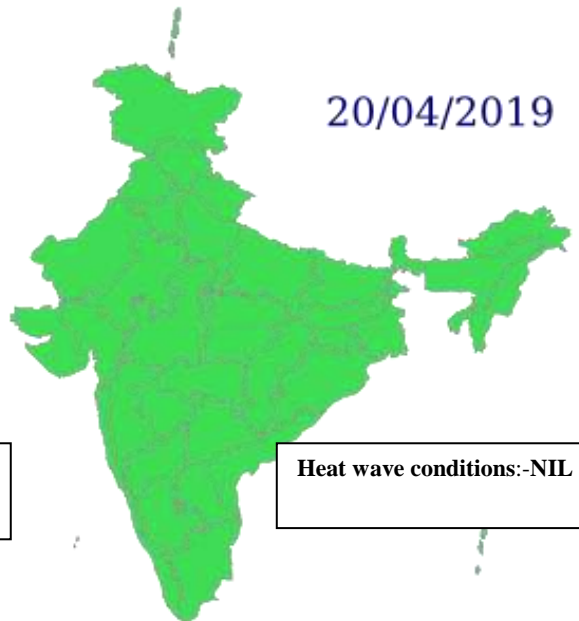
Heat wave conditions:- NIL

Tomorrow
19/04/2019



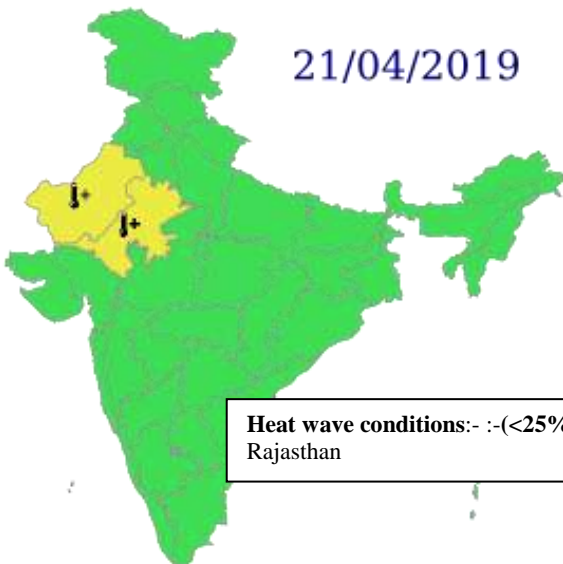
Heat wave conditions:- NIL

20/04/2019



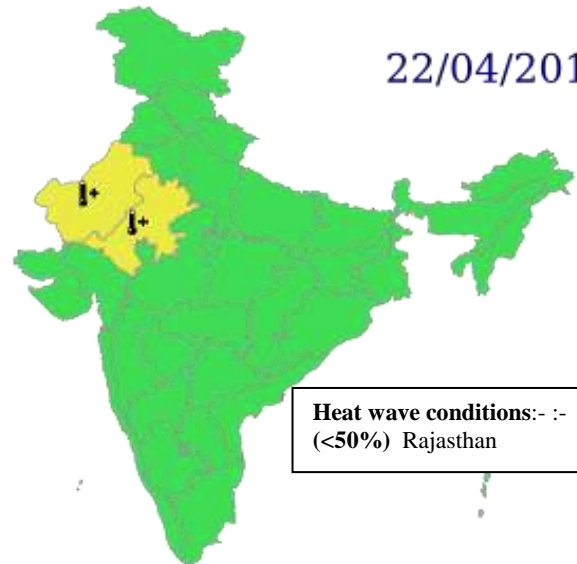
Heat wave conditions:-NIL

21/04/2019

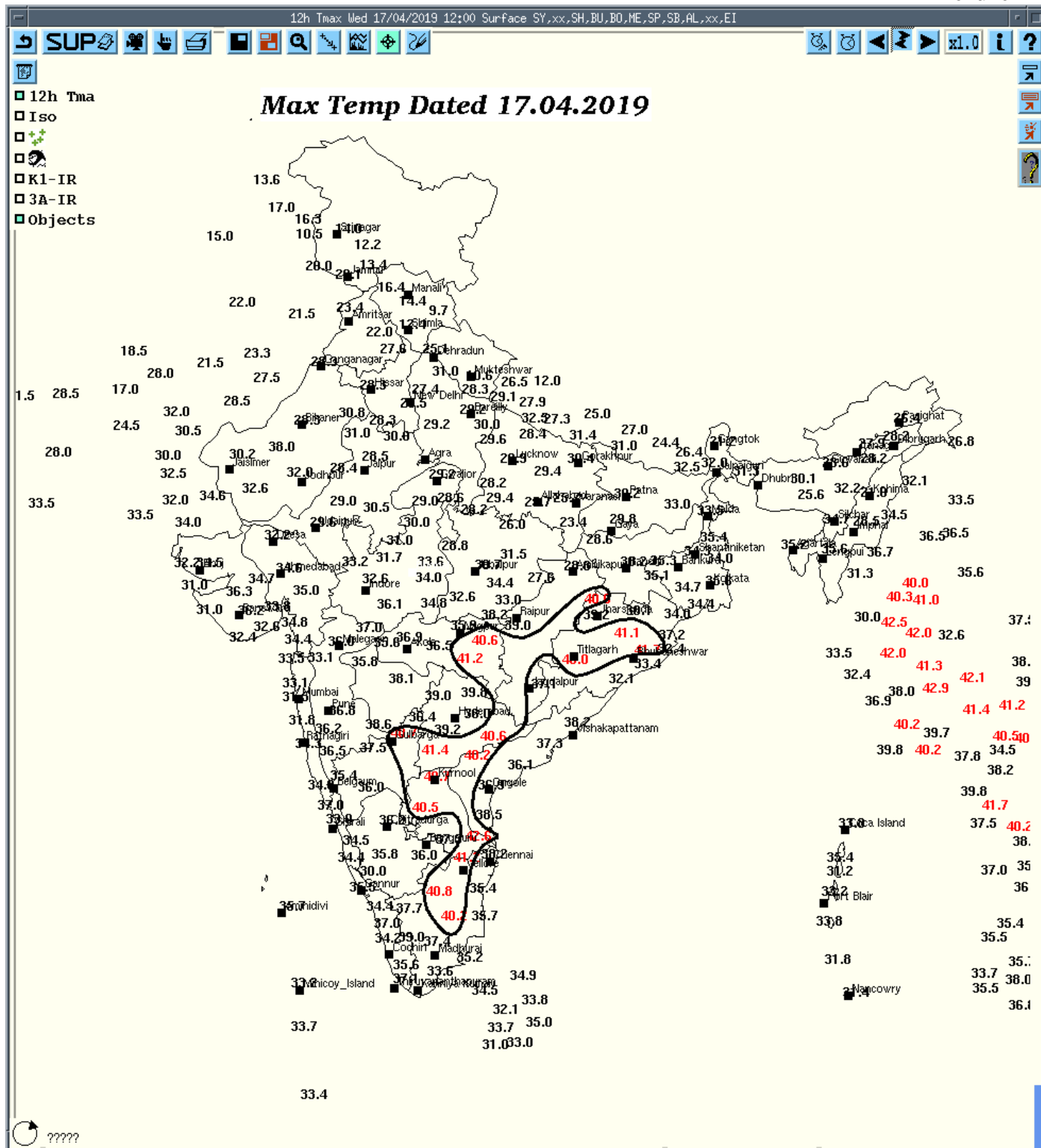


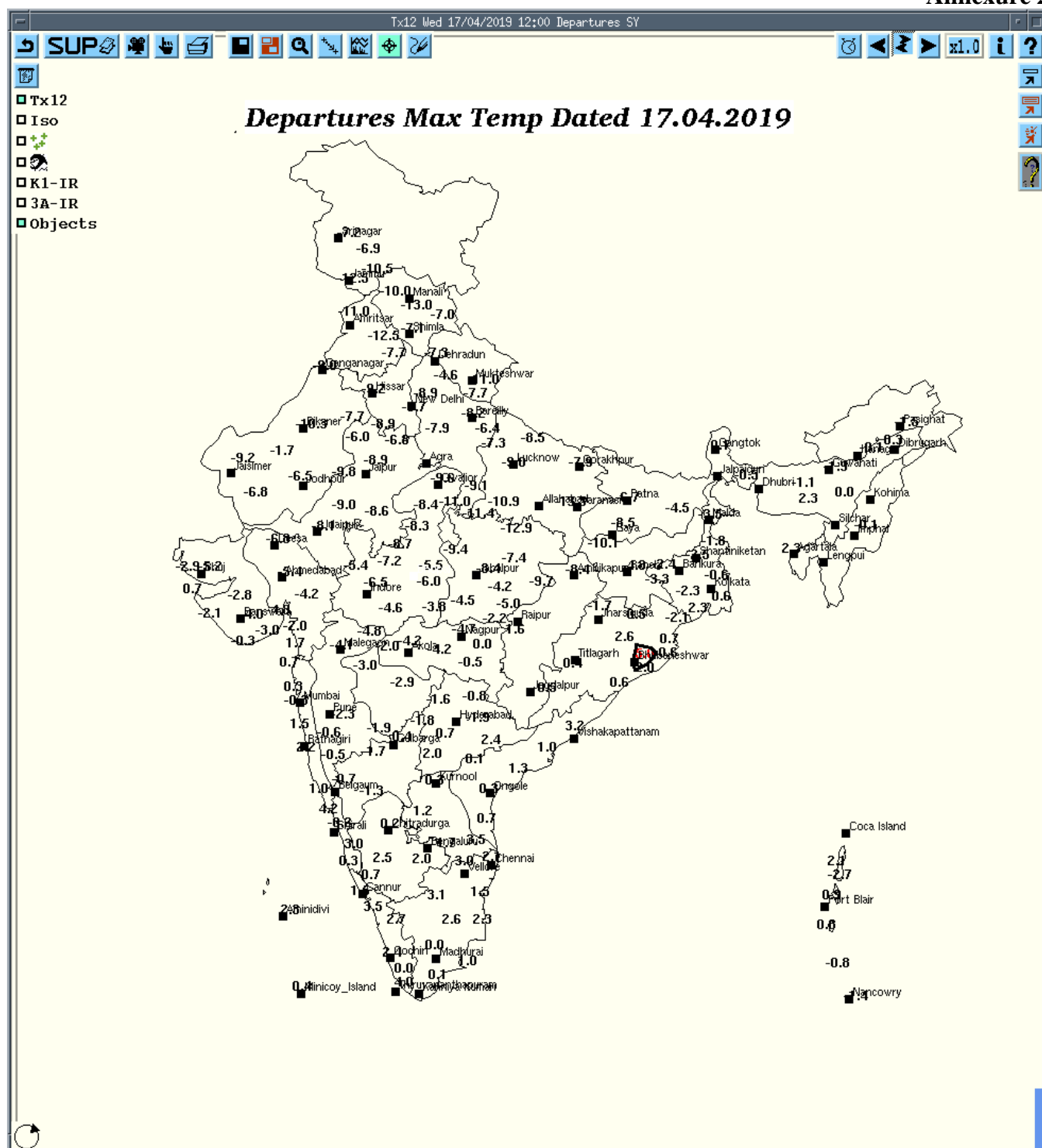
Heat wave conditions:- :-(**<25%**)
Rajasthan

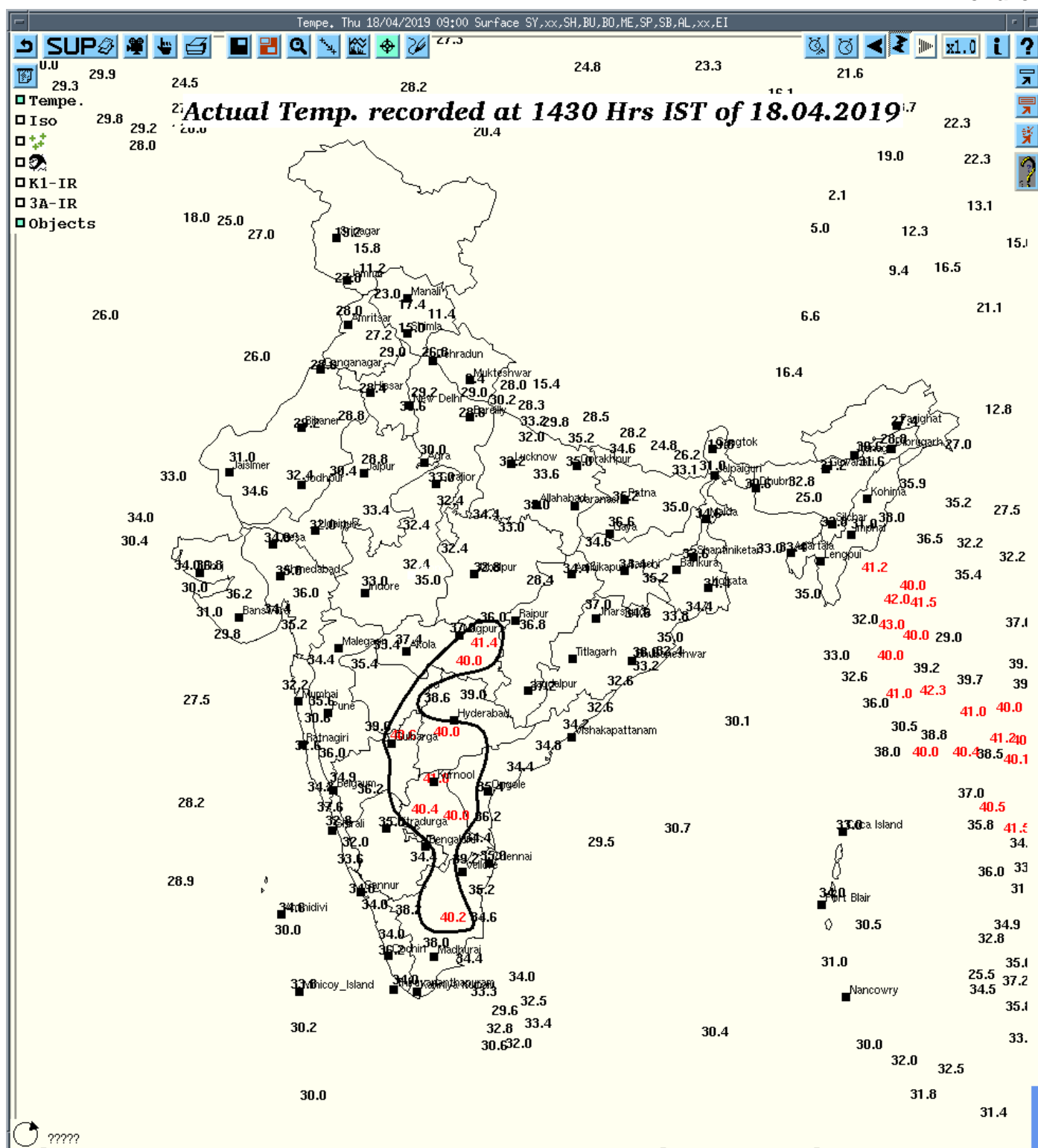
22/04/2019

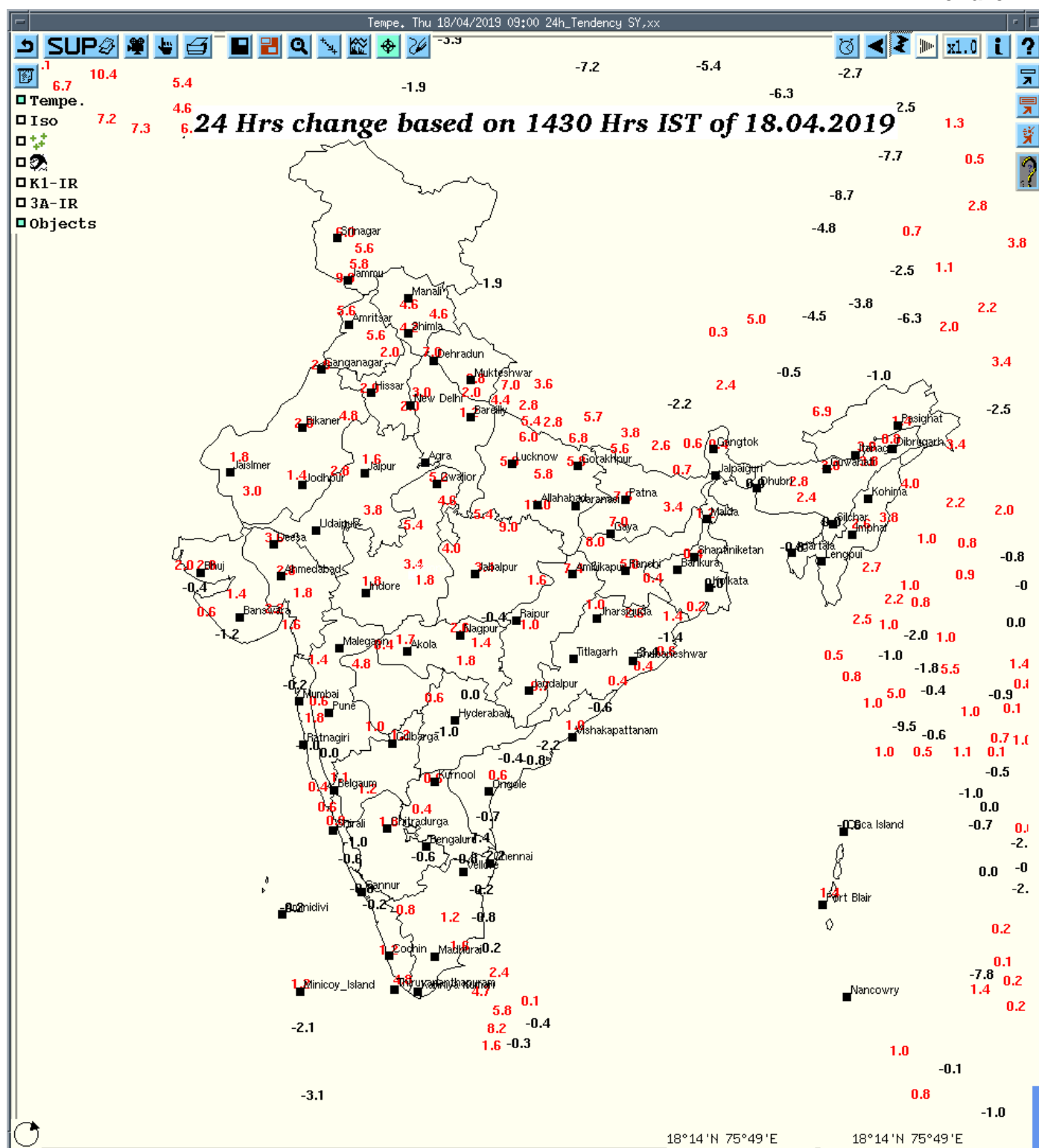


Heat wave conditions:- :-(**<50%**)
Rajasthan









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 19th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 18 April to 0830 hrs IST 19 April, 2019)

Heat Wave:

Yesterday, No heat wave conditions were observed over any part of the country (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were above **normal (1.6°C to 3.0°C)** at many places over Kerala and Lakshadweep; at a few places over Tamilnadu & Puducherry; at isolated places over Odisha, Sub-Himalayan West Bengal & Sikkim and Assam & Meghalaya. Yesterday, the **highest maximum temperature** of 42.1°C was recorded at Bramhapuri (**Vidarbha**) over the country (**Annexure 1 & 2**).

Temperatures Recorded at 1430 Hours IST of Today, the 19th April, 2019

- **Bramhapuri (Vidarbha) recorded the maximum temperature of 42.0°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-5°C at most places over Jammu and Kashmir and Himachal Pradesh; at many places over Uttarakhand and at one or two pockets over Punjab and Haryana risen by 1-3°C at most parts of West Rajasthan, West Uttar Pradesh and Madhya Pradesh; at a few places over Gujarat state, East Uttar Pradesh, Madhya Maharashtra and Assam & Meghalaya and at one or two pockets over North Interior Karnataka, Odisha, Sub Himalayan west Bengal & Sikkim, coastal Andhra Pradesh, Marathwada and Konkan & Goa (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

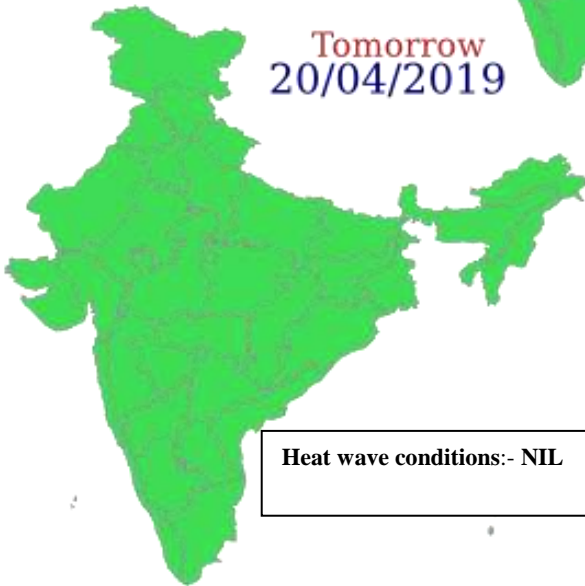
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
19/04/2019



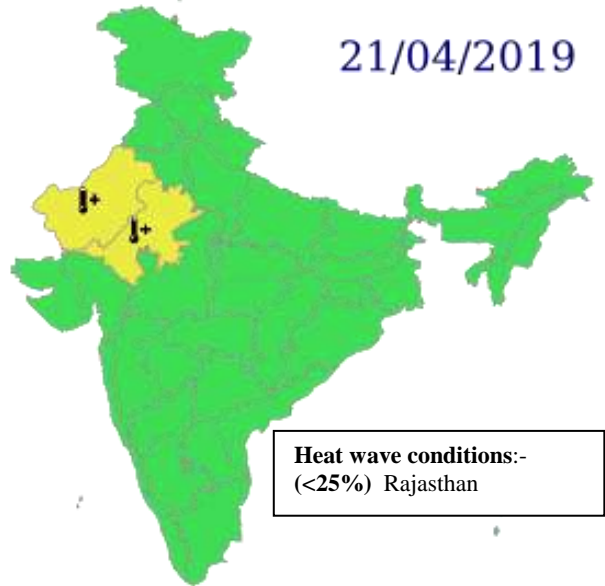
Heat wave conditions:- NIL

Tomorrow
20/04/2019



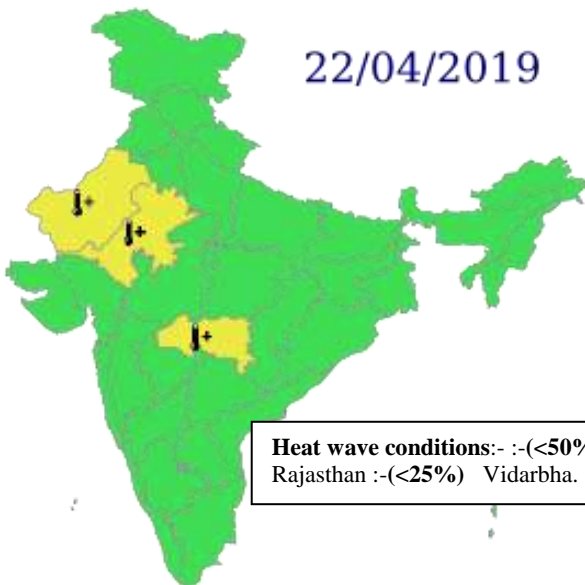
Heat wave conditions:- NIL

21/04/2019



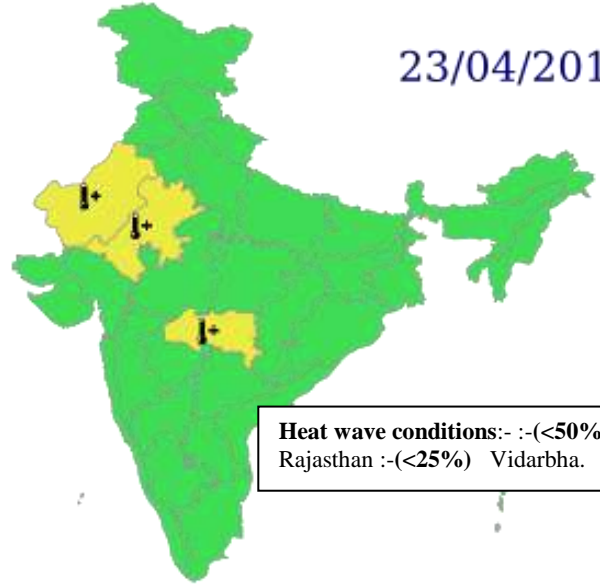
Heat wave conditions:-
(<25%) Rajasthan

22/04/2019



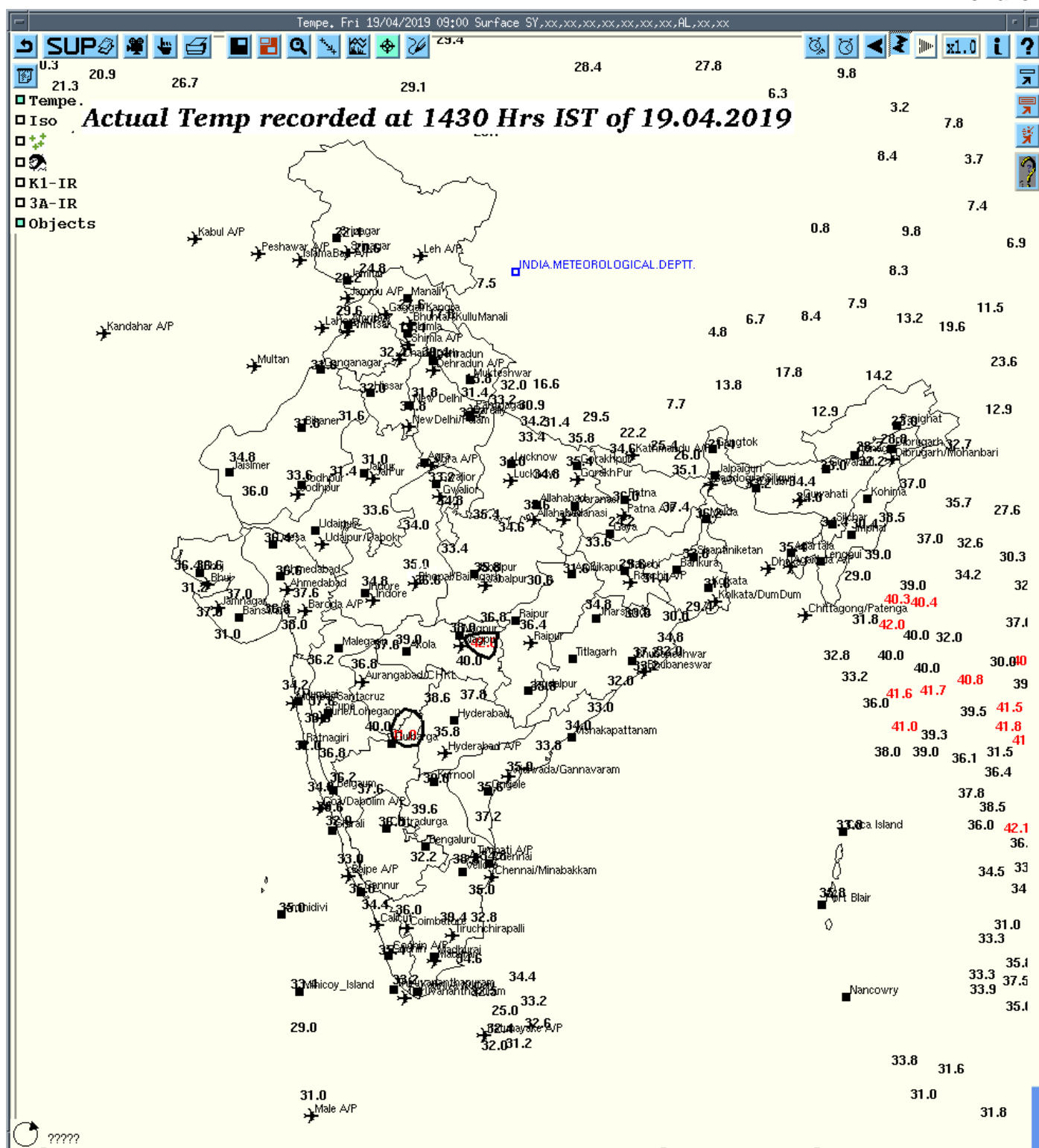
Heat wave conditions:- :-(<50%)
Rajasthan :-(<25%) Vidarbha.

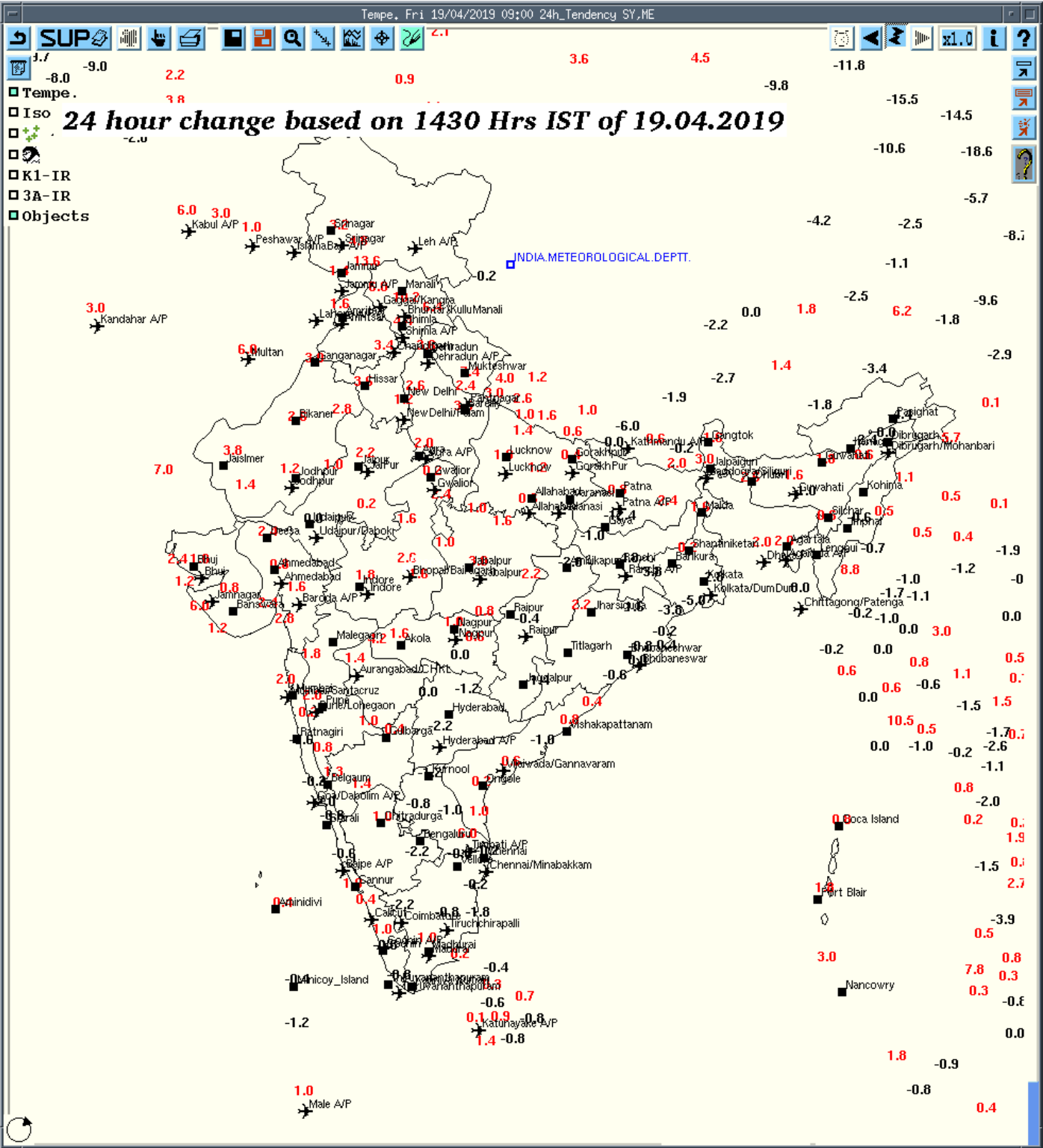
23/04/2019



Heat wave conditions:- :-(<50%)
Rajasthan :-(<25%) Vidarbha.

Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department

Dated: 20th April, 2019
Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 19 April to 0830 hrs IST 20 April, 2019)

Heat Wave:

Yesterday, No heat wave conditions were observed over any part of the country (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at a few places over Assam & Meghalaya and at isolated places over Odisha, Saurashtra & Kutch and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over Nagaland, Manipur, Mizoram & Tripura; at many places over Sub-Himalayan West Bengal & Sikkim; at a few places over Jammu & Kashmir and at isolated places over Rayalseema, Kerala, Coastal Karnataka and Konkan & Goa. Yesterday, the **highest maximum** temperature of **42.6°C** was recorded at **Bramhapuri (Vidarbha)** over the country (**Annexure 1 & 2**).

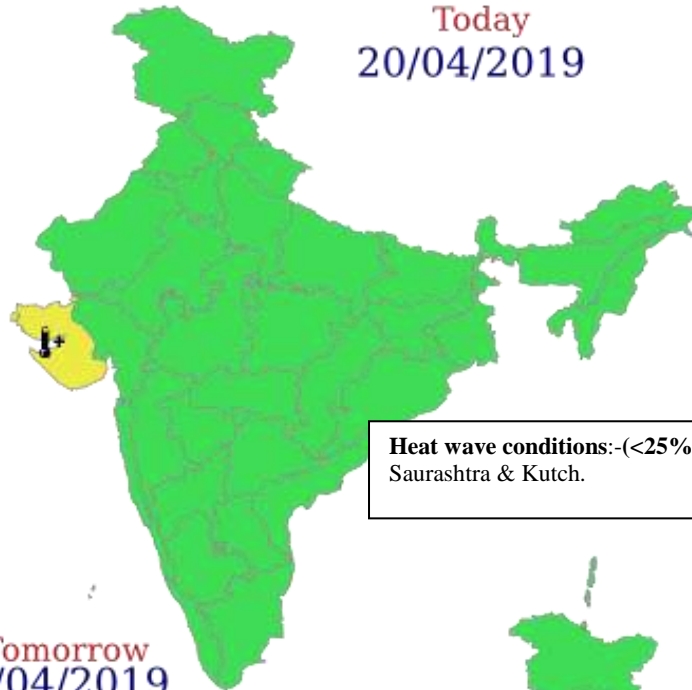
Temperatures Recorded at 1430 Hours IST of Today, the 20th April, 2019

- **Akola and Bramhapuri (Vidarbha) recorded the maximum temperature of 40.6°C each (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-5°C at most places over West Rajasthan, Jharkhand and Gangetic West Bengal and at one or two pockets of Odisha, Bihar and Delhi and risen by 1-3°C at most parts of rest Rajasthan, Punjab, Haryana, Uttar Pradesh and Madhya Pradesh; at a few places over rest Odisha, Telangana and Bihar and at one or two pockets over Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Gujarat, Madhya Maharashtra, Vidarbha, Marathwada, Coastal Andhra Pradesh, Kerala and Tamilnadu & Puducherry (Annexure 4).**

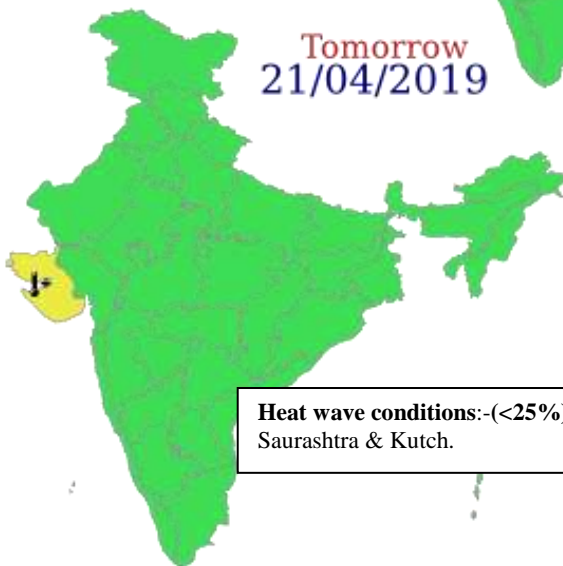
Heat Wave Warnings for Next 5 Days (on next page)

(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

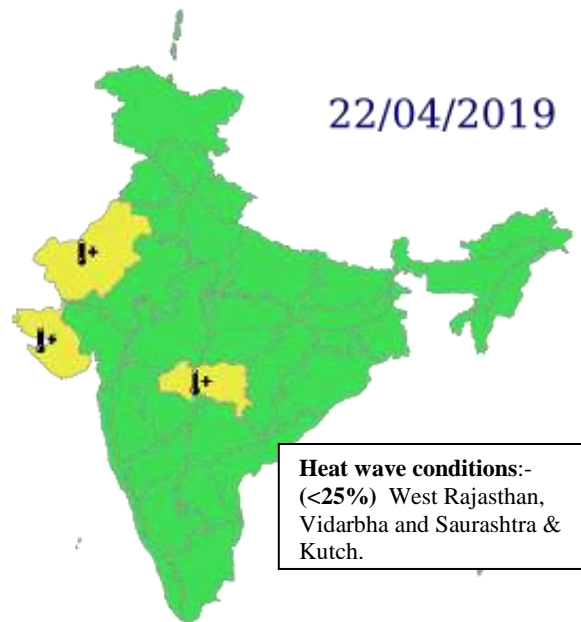
Today
20/04/2019



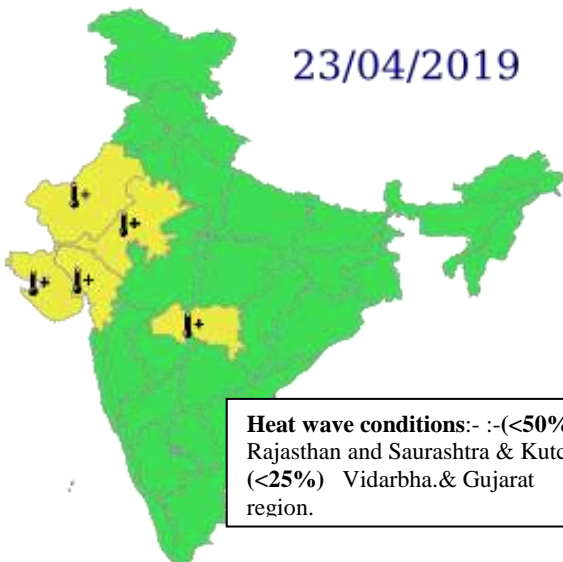
Tomorrow
21/04/2019



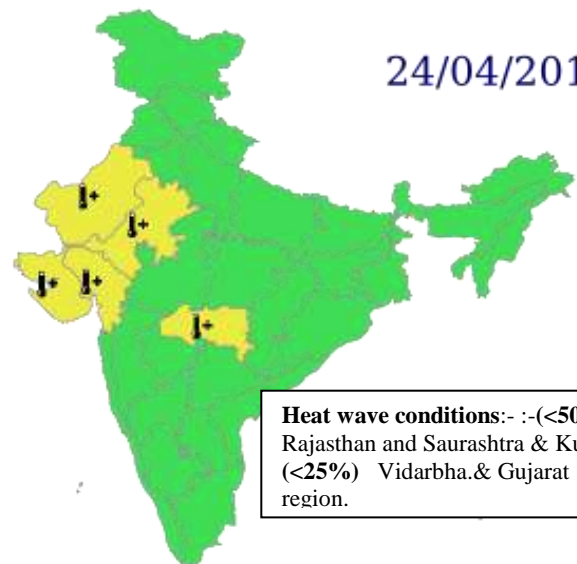
22/04/2019

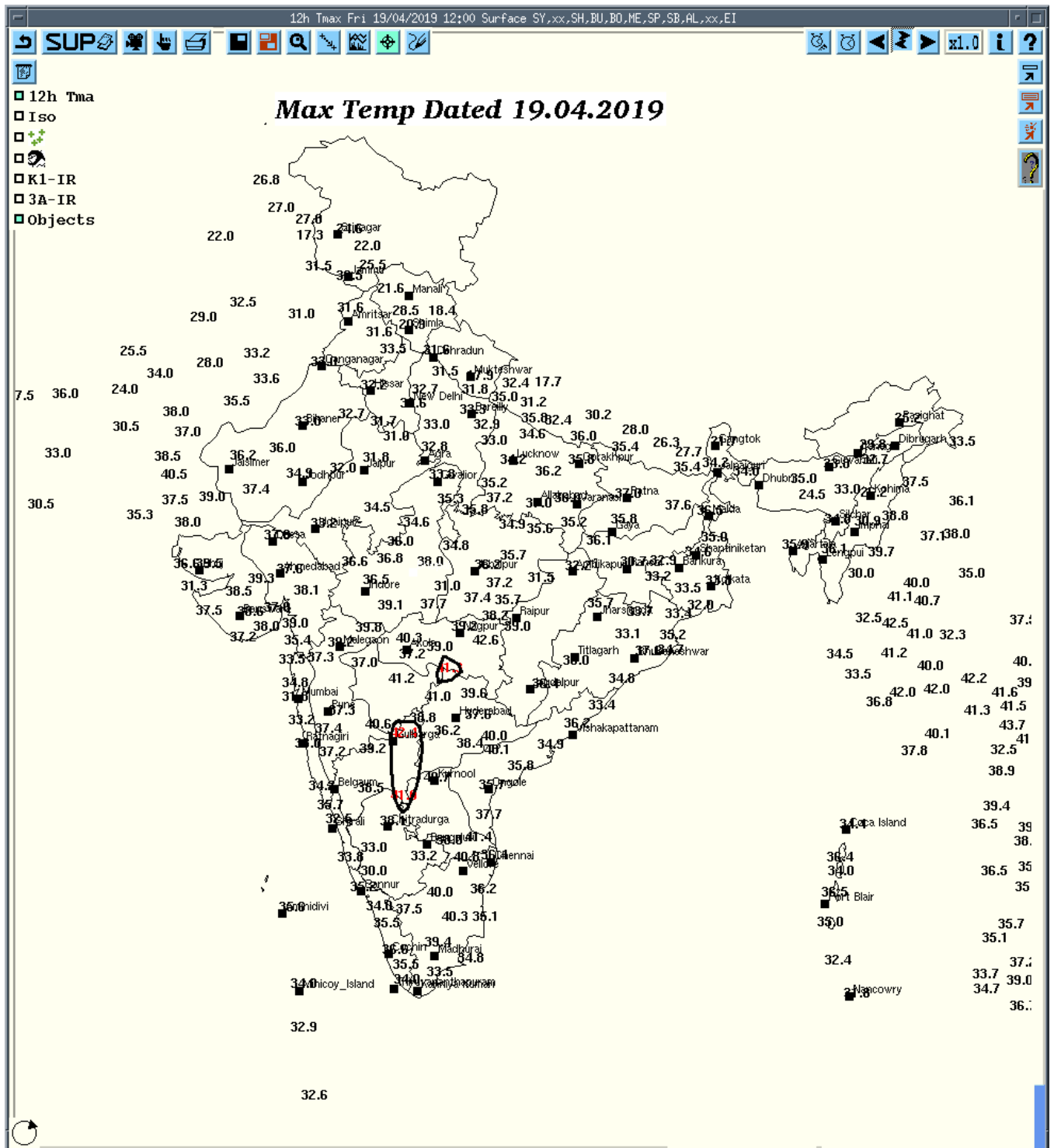


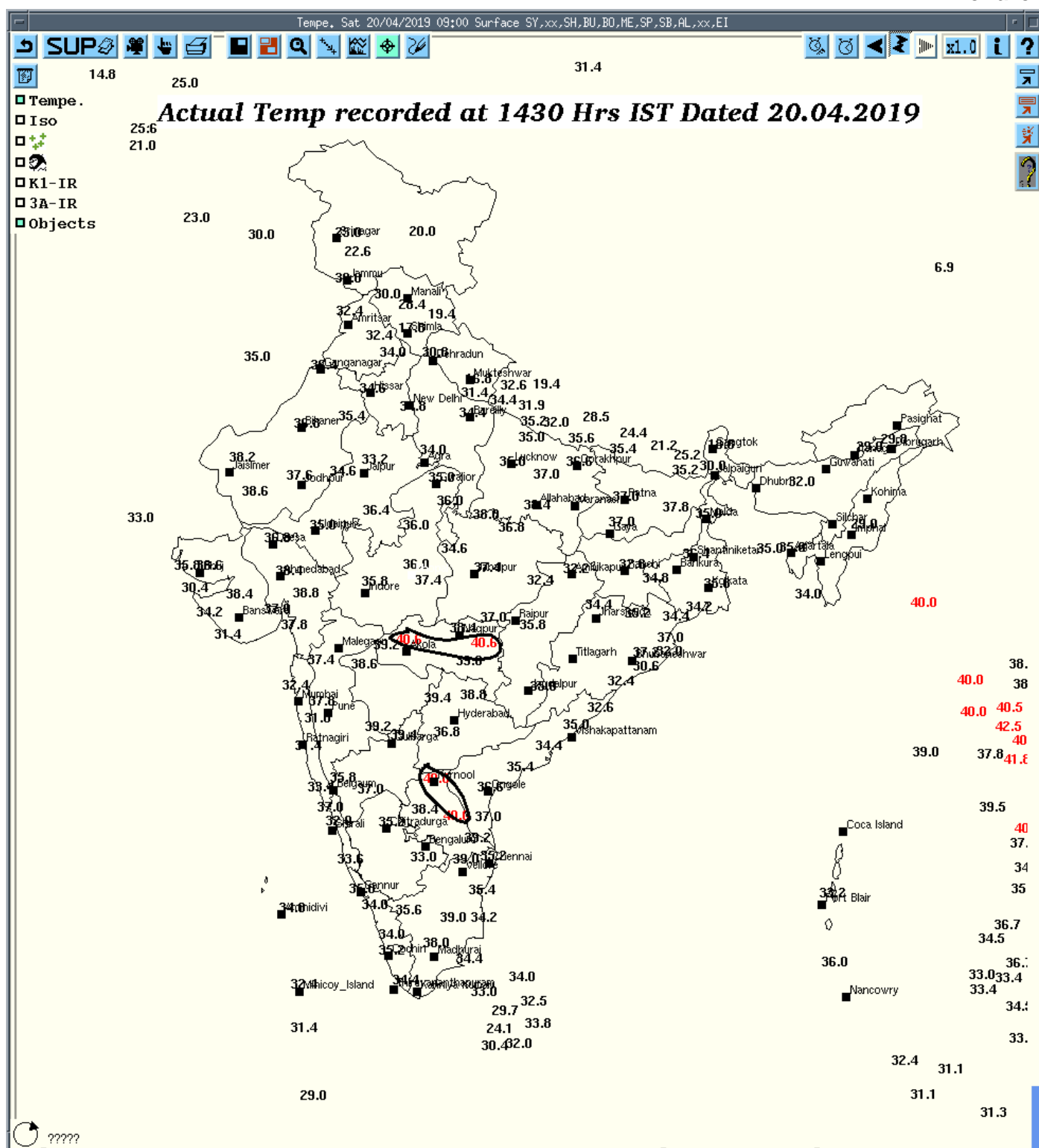
23/04/2019

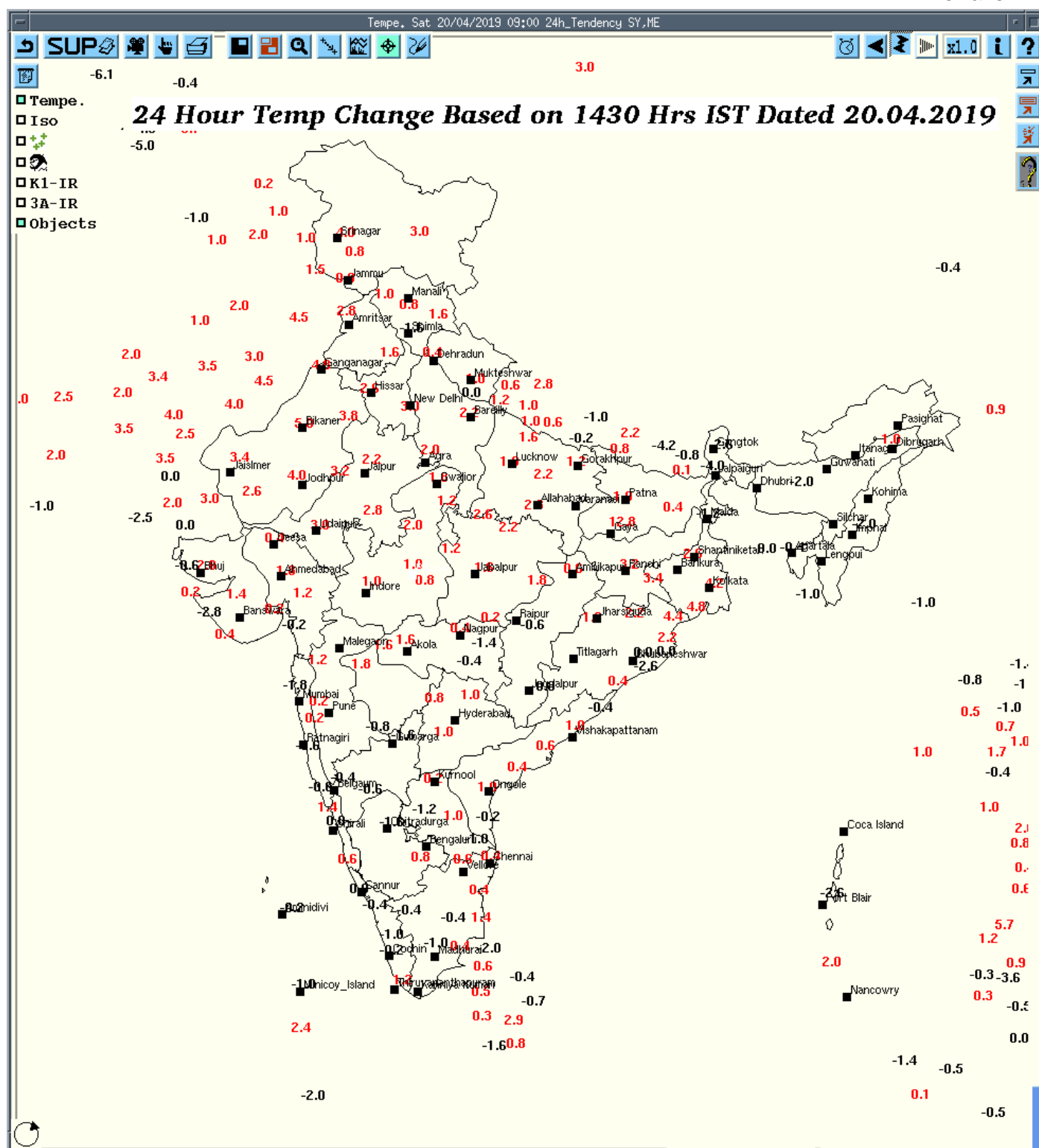


24/04/2019









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 21th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 20 April to 0830 hrs IST 21 April, 2019)

Heat Wave:

Yesterday, there was no heat wave observed in the country.

Maximum Temperature

Maximum temperatures were appreciably above normal (3.1°C to 5.0°C) at many places over Arunachal Pradesh; at a few places over Jammu & Kashmir and Saurashtra & Kutch ; above normal (1.6°C to 3.0°C) at most places over Nagaland, Manipur, Mizoram & Tripura; at many places over Assam & Meghalaya, Konkan & Goa, Coastal Karnataka and Kerala; at a few places over Tamil Nadu and at isolated places over Telangana Yesterday, **the highest maximum** temperature of 42.1°C was recorded at Parbhani (Marathwada) over the country (**Annexure 1 & 2**).

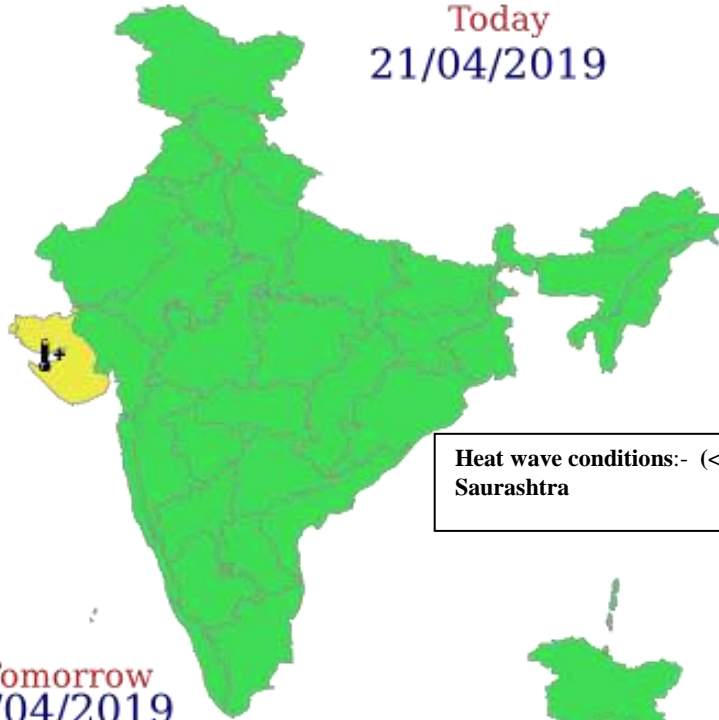
Temperatures Recorded at 1430 Hours IST of Today, the 21th April, 2019

- **Jaisalmer & Barmer (West Rajasthan) and Akola (Vidharbha) recorded the maximum temperature of 41.4°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at most places over Punjab, Chandigarh, Haryana & Delhi, Rajasthan and West Uttar Pradesh; at many parts of Jammu & Kashmir and Chhattisgarh; at a few places over Himachal Pradesh, Madhya Pradesh, East Uttar Pradesh, Bihar and Odisha and at one or two pockets over Uttarakhand, Jharkhand, Telangana and Coastal Andhra Pradesh(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

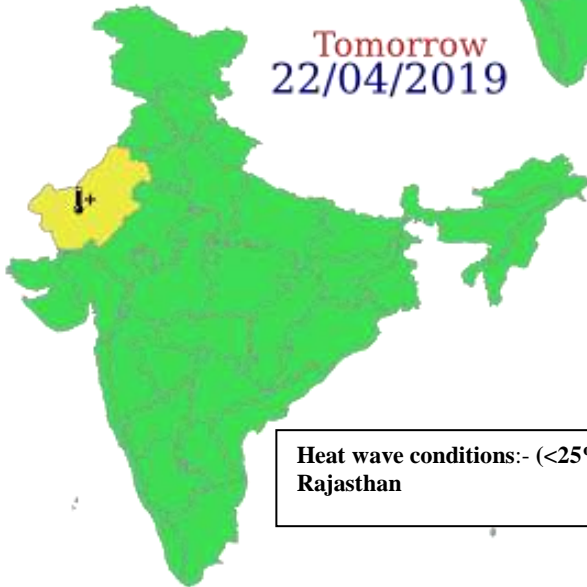
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
21/04/2019



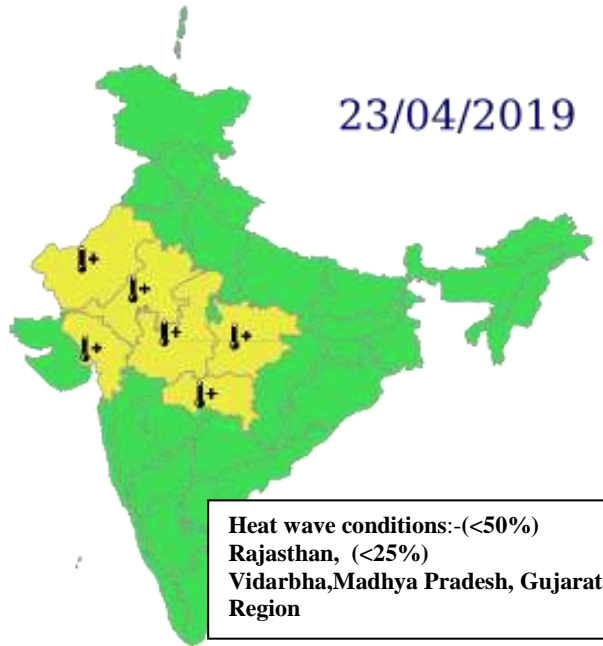
Heat wave conditions:- (<25%)
Saurashtra

Tomorrow
22/04/2019



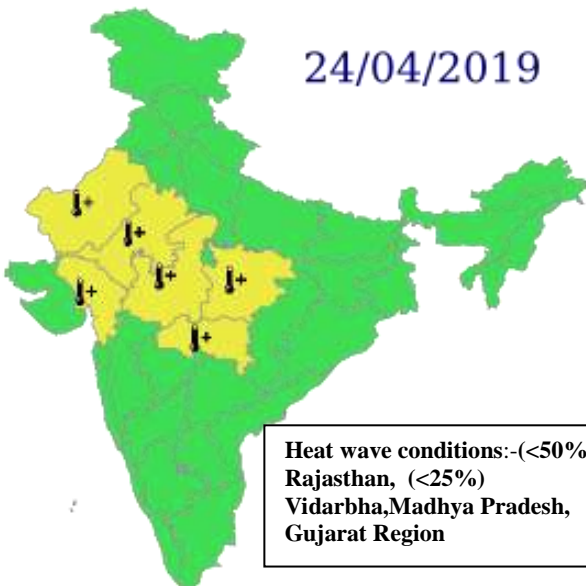
Heat wave conditions:- (<25%) West
Rajasthan

23/04/2019



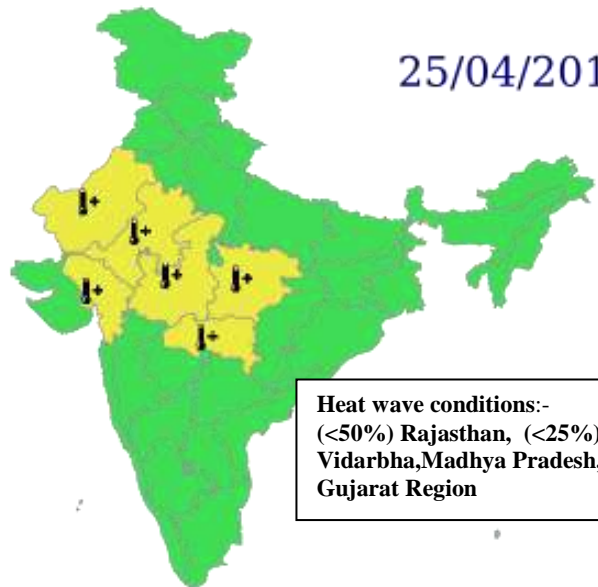
Heat wave conditions:-(<50%)
Rajasthan, (<25%)
Vidarbha,Madhya Pradesh, Gujarat
Region

24/04/2019

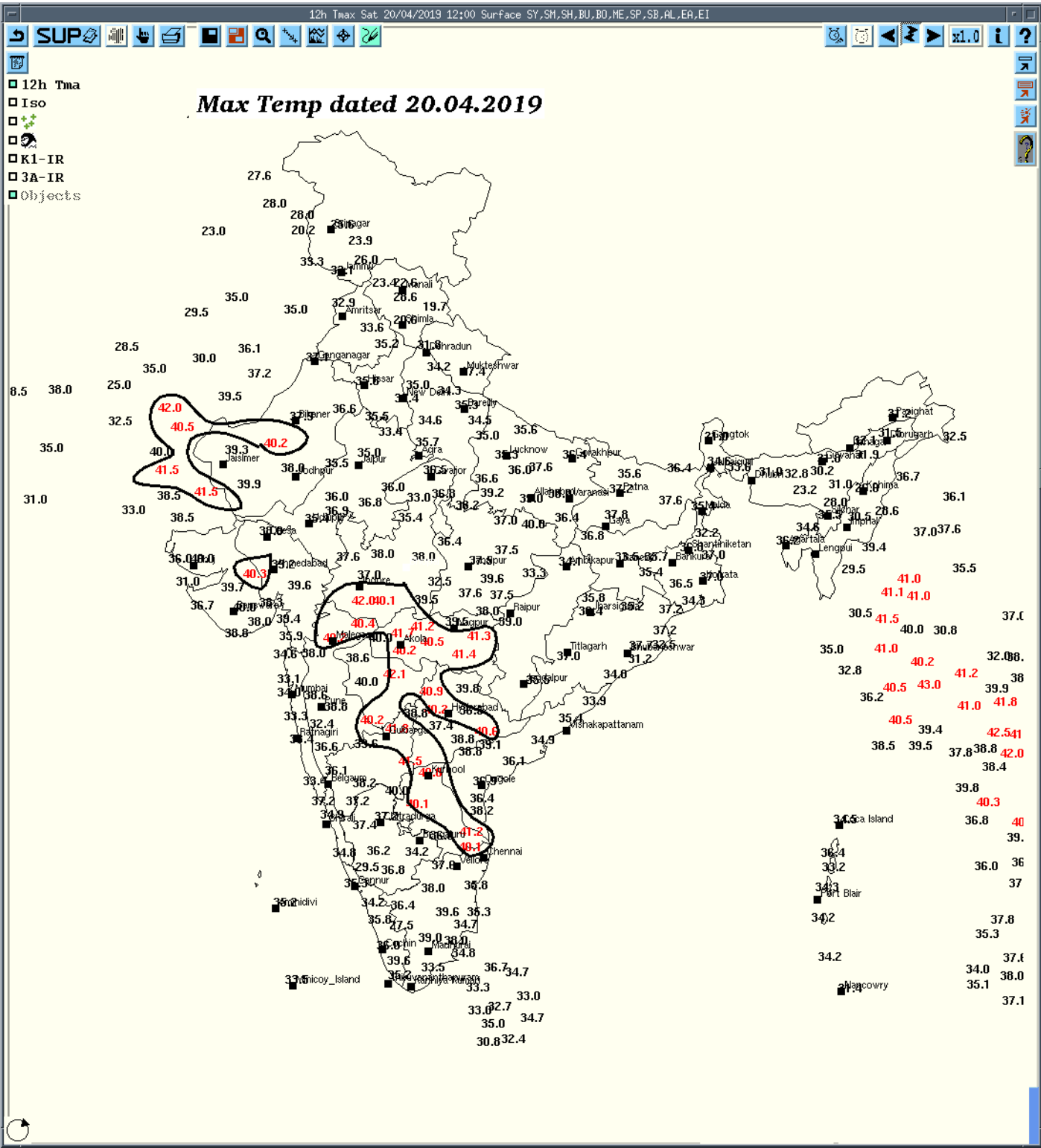


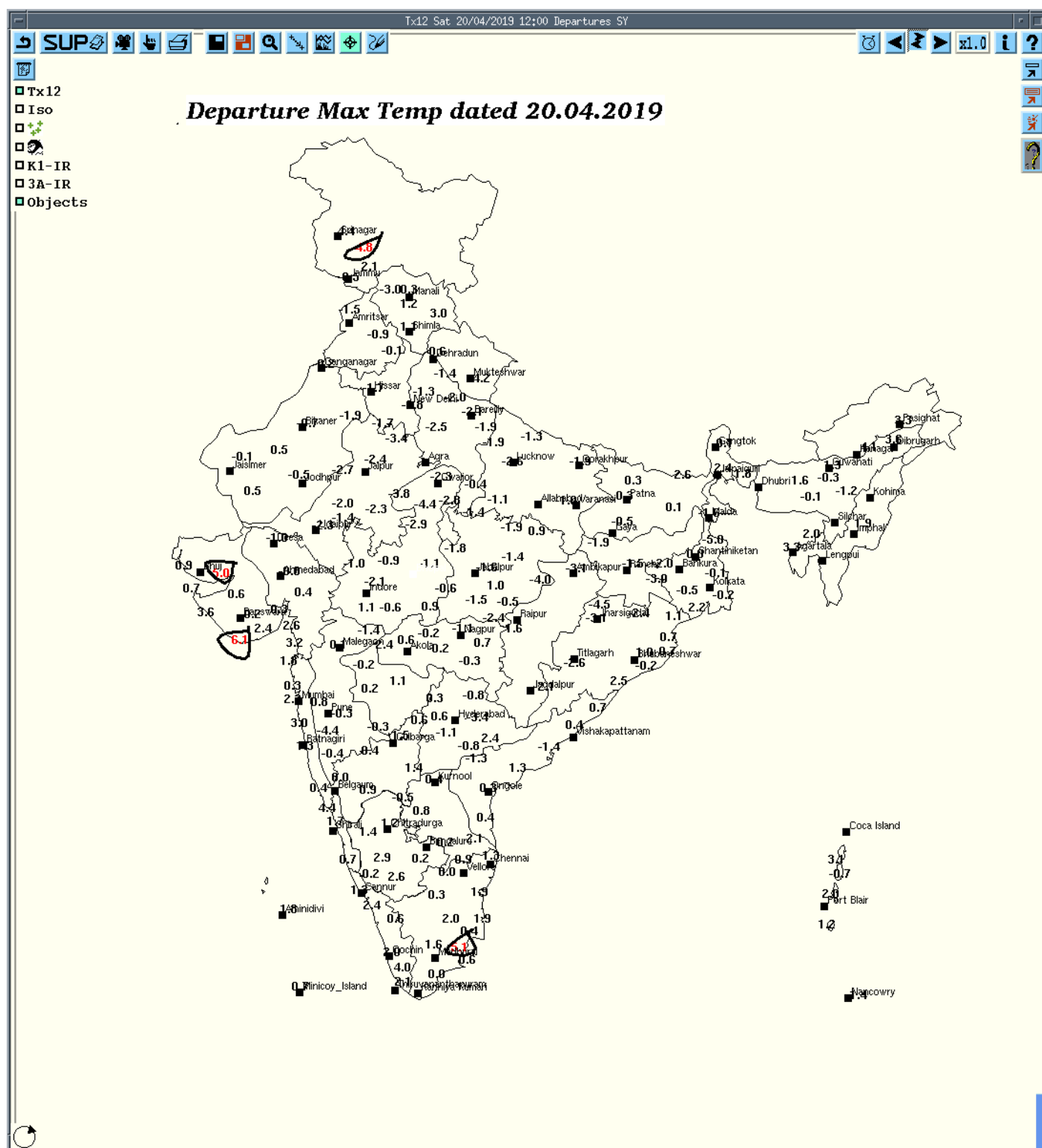
Heat wave conditions:-(<50%)
Rajasthan, (<25%)
Vidarbha,Madhya Pradesh,
Gujarat Region

25/04/2019

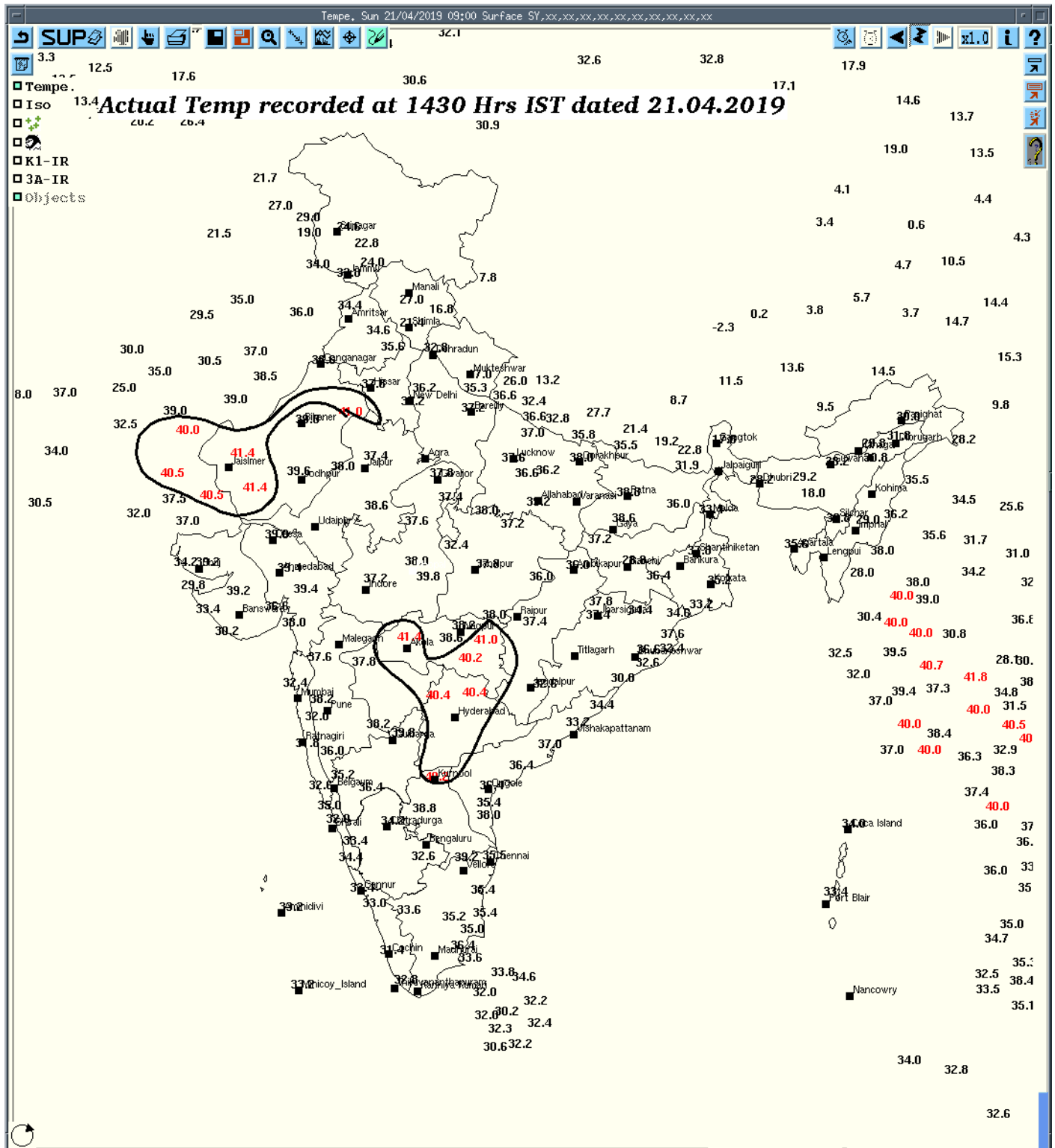


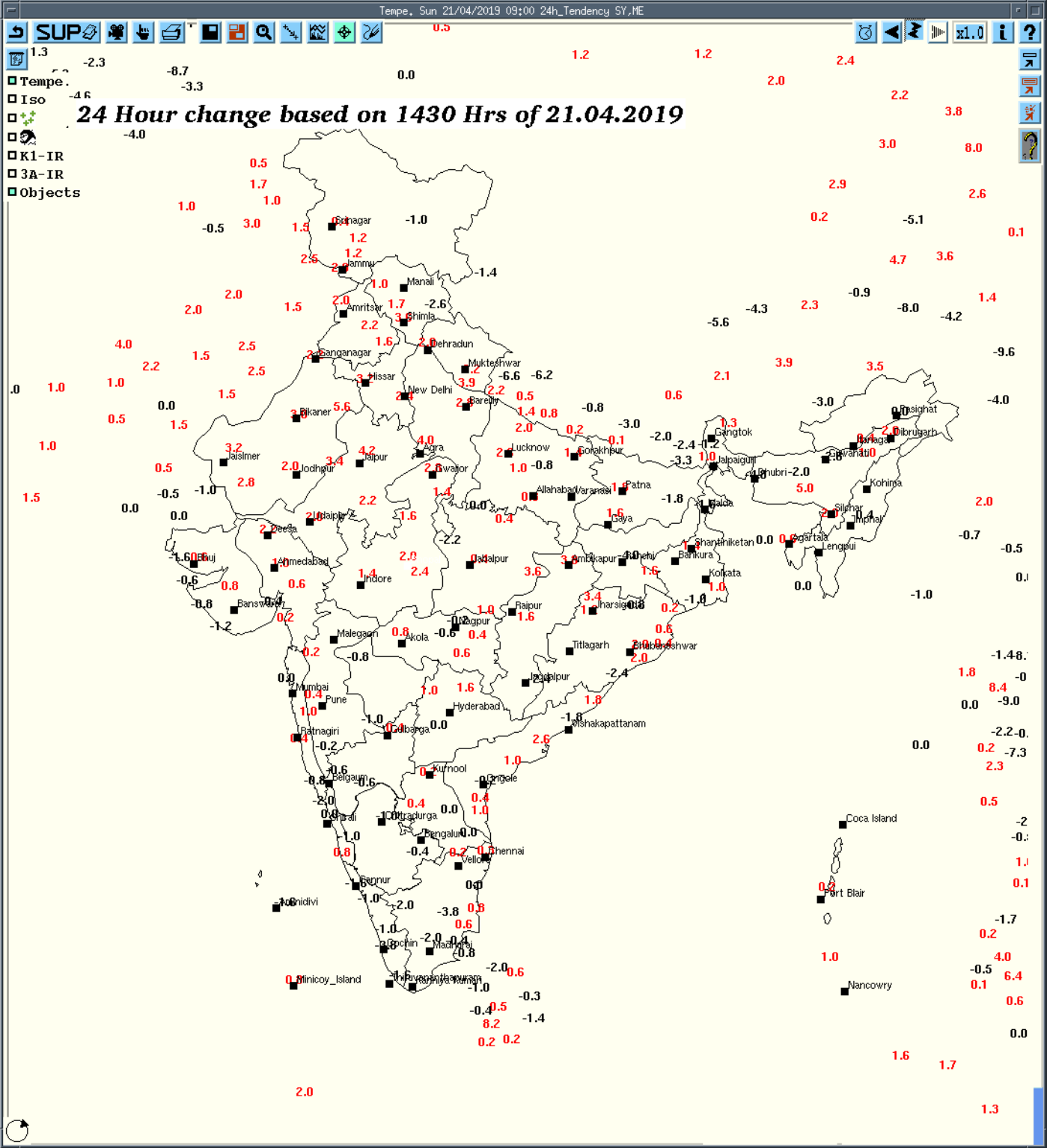
Heat wave conditions:-
(<50%) Rajasthan, (<25%)
Vidarbha,Madhya Pradesh,
Gujarat Region





Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 22nd April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 21 April to 0830 hrs IST 22 April, 2019)

Heat Wave:

Yesterday, No heat wave conditions were observed over any part of the country (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at a few places over Arunachal Pradesh and Jammu & Kashmir; **above normal (1.6°C to 3.0°C)** at a few places over Nagaland, Manipur, Mizoram & Tripura, Saurashtra & Kutch, Konkan & Goa and Coastal Karnataka and at isolated places over Assam & Meghalaya, Gujarat Region, Gangetic West Bengal, Odisha, Coastal Andhra Pradesh and Tamilnadu & Puducherry. Yesterday, the highest maximum temperature of **42.2°C** recorded at **Akola (Vidarbha)** and **Barmer (West Rajasthan)** over the country (**Annexure 1 & 2**).

Temperatures Recorded at 1430 Hours IST of Today, the 22nd April, 2019

- **Barmer (Rajasthan)** recorded the maximum temperature of **43.2°C** each (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 3-6°C** at one or two pockets of Jammu & Kashmir, Himachal Pradesh, East Rajasthan, Jharkhand, Tamilnadu and Kerala and **risen by 1-3°C** at most parts of Punjab, Haryana, Delhi, Rajasthan, Madhya Pradesh, Konkan & Goa, Kerala and South Interior Karnataka; at a few places over Gujarat, Rayalseema, Chhattisgarh and Jharkhand and at one or two pockets over Marathwada, Vidarbha, Coastal Karnataka, Assam & Meghalaya and Gangetic West Bengal (**Annexure 4**).

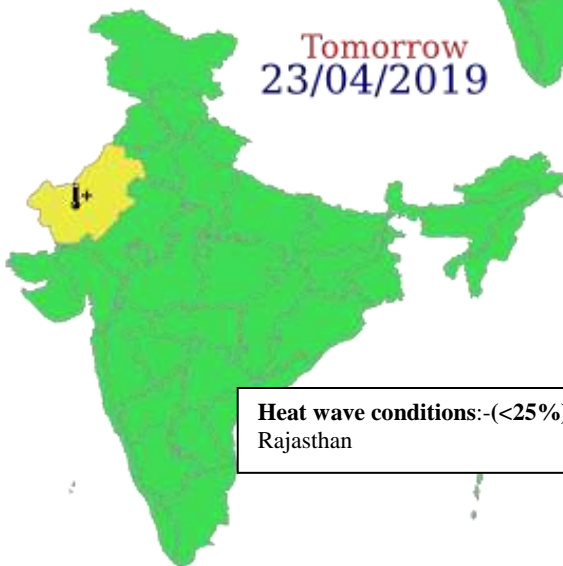
Heat Wave Warnings for Next 5 Days (on next page)

(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

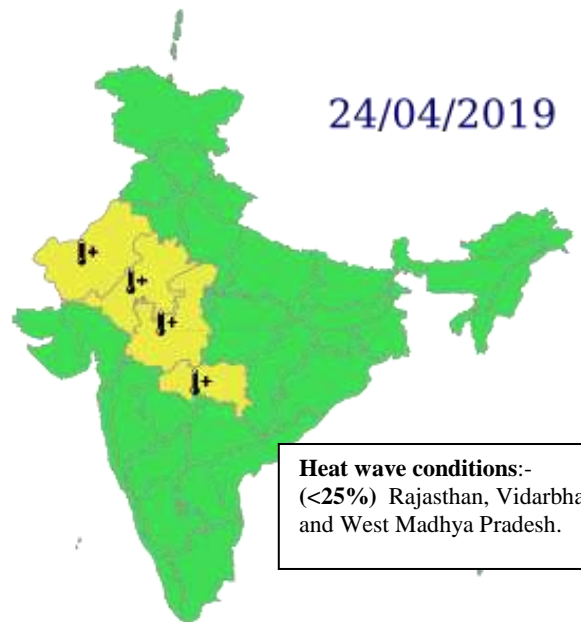
Today
22/04/2019



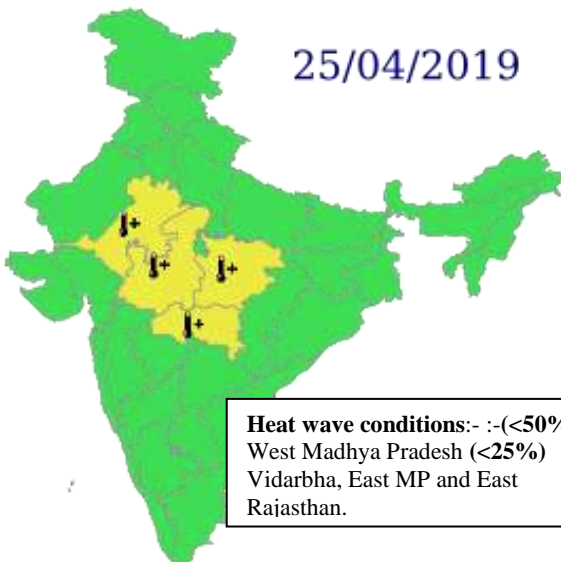
Tomorrow
23/04/2019



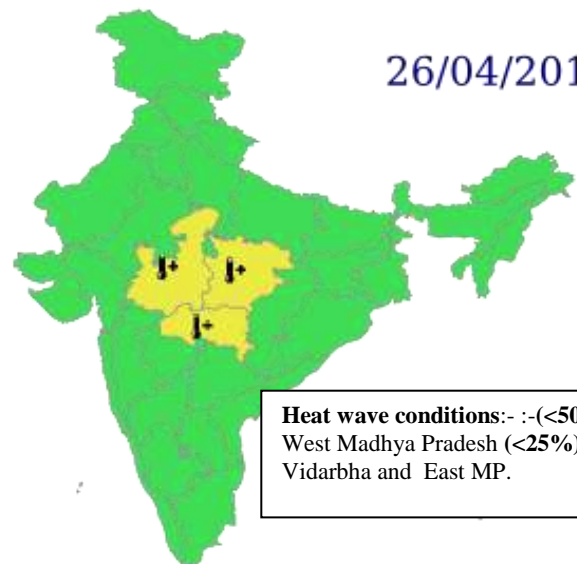
24/04/2019

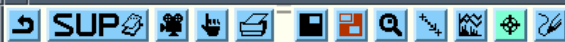


25/04/2019



26/04/2019



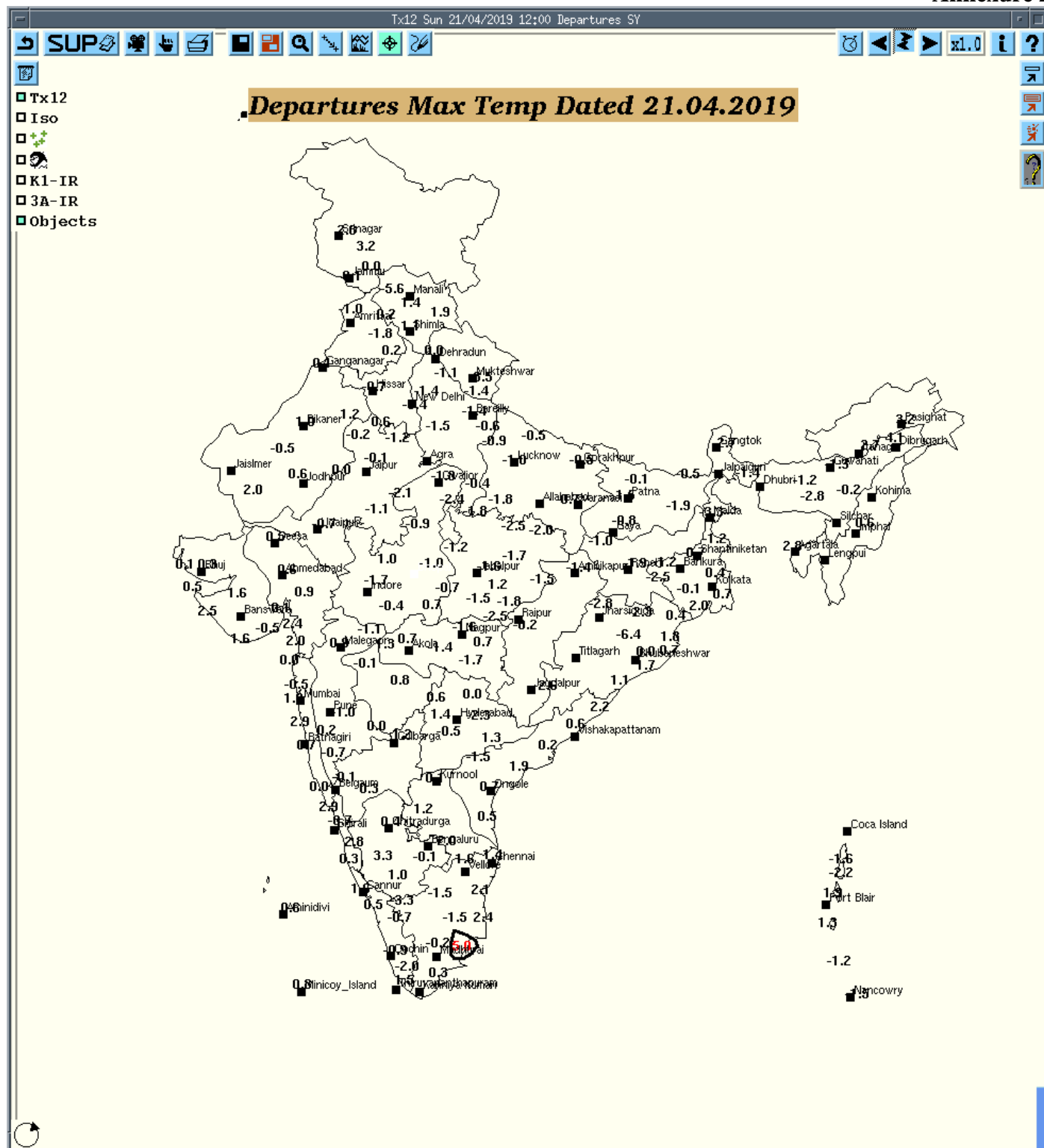


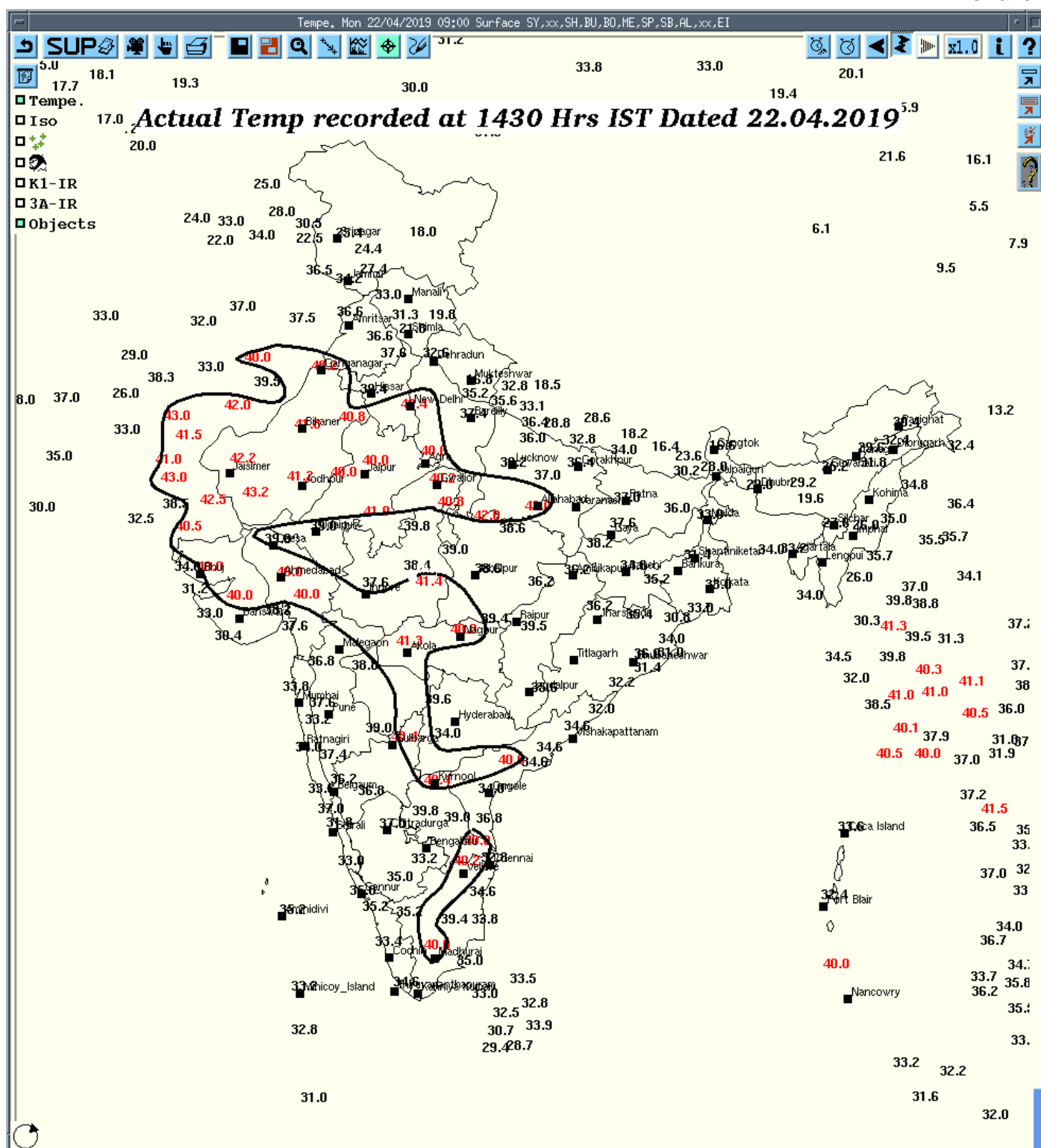
- ☒ 12h Tma
- ☐ Iso
- ☐ K1-IR
- ☐ 3A-IR
- ☐ Objects

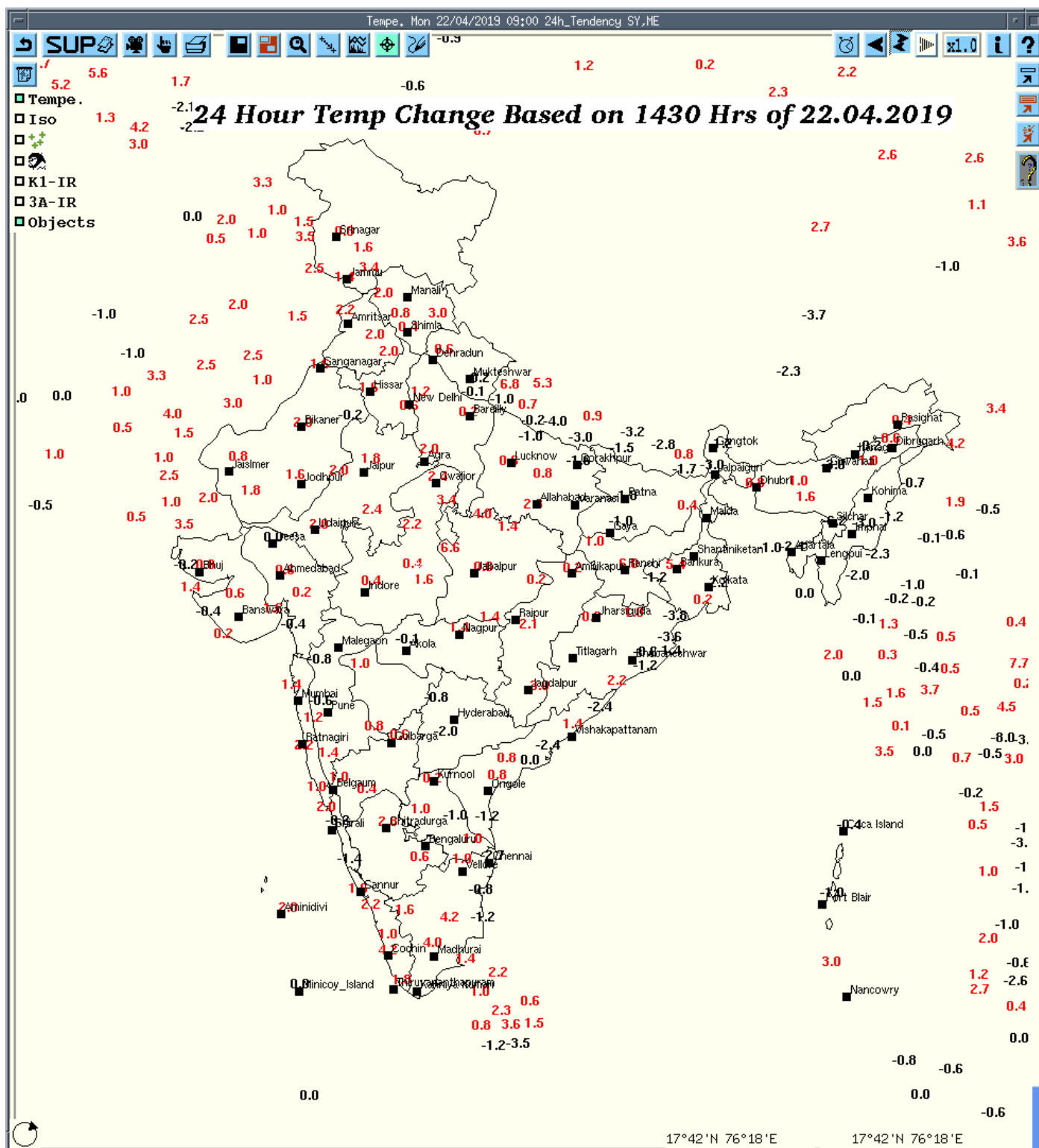
Max Temp Dated 21.04.2019



?????







Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 23rd April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 22 April to 0830 hrs IST 23 April, 2019)

Heat Wave:

Yesterday, No heat wave conditions were observed over any part of the country (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were appreciably above **normal (3.1°C to 5.0°C)** at a many places over Jammu & Kashmir and at isolated places over Assam & Meghalaya; above **normal (1.6°C to 3.0°C)** at many places over Rest West Rajasthan; at a few places over East Rajasthan, Himachal Pradesh, Tamilnadu & Puducherry and South Interior Karnataka and at isolated places over Saurashtra & Kutch, West Madhya Pradesh, Kerala, Coastal Andhra Pradesh and Punjab. Yesterday, the **highest maximum temperature** of 44.0°C was recorded at Phalodi (West Rajasthan) over the country (**Annexure 1 & 2**).

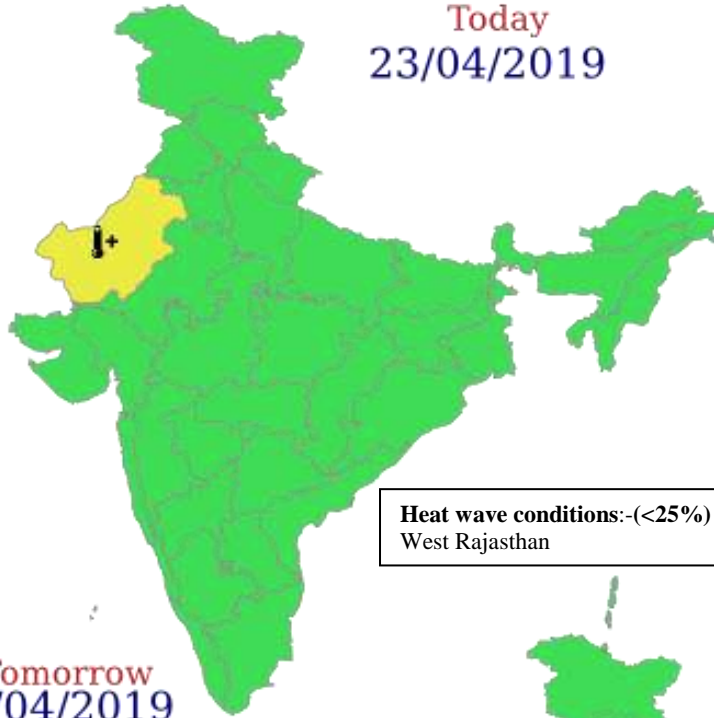
Temperatures Recorded at 1430 Hours IST of Today, the 23rd April, 2019

- **Bramhapuri (Vidarbha) recorded the maximum temperature of 44.4°C each (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at most parts of Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Chandigarh & Delhi, East Rajasthan, Madhya Pradesh, Vidarbha, Gujarat region, Jharkhand, Gangetic West Bengal and Coastal Andhra Pradesh; at many places over West Rajasthan, Telangana and Vidarbha; at a few places over Chhattisgarh and Odisha and at one or two pockets over Saurashtra & Kutch, Konkan & Goa, Madhya Maharashtra, Coastal Karnataka, Uttarakhand and West Uttar Pradesh (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

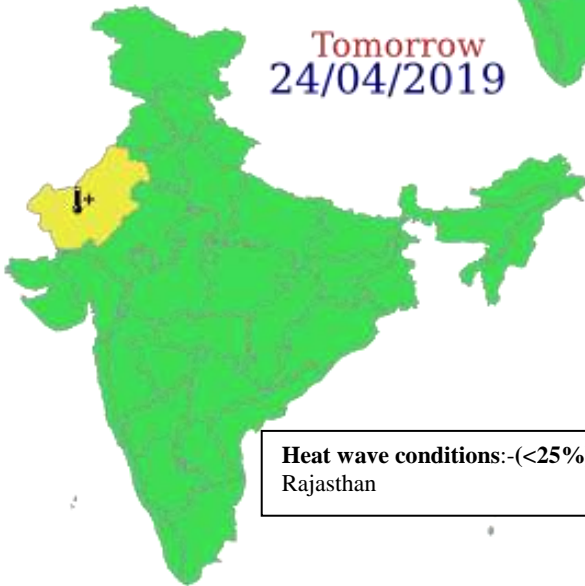
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
23/04/2019



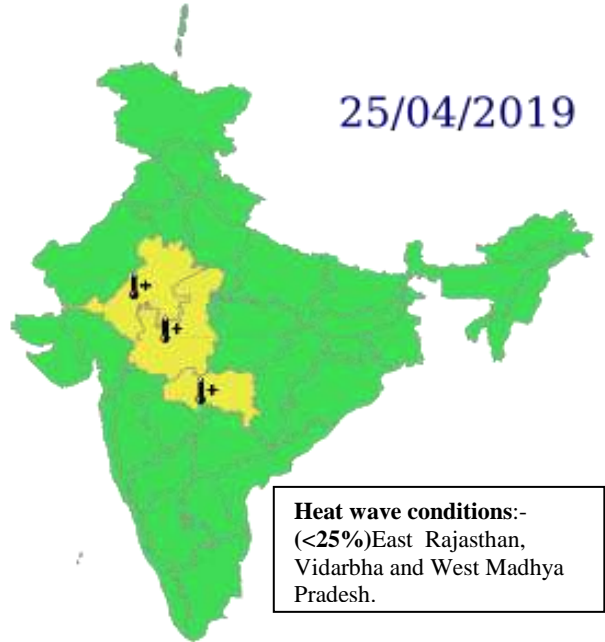
Heat wave conditions:-(<25%)
West Rajasthan

Tomorrow
24/04/2019



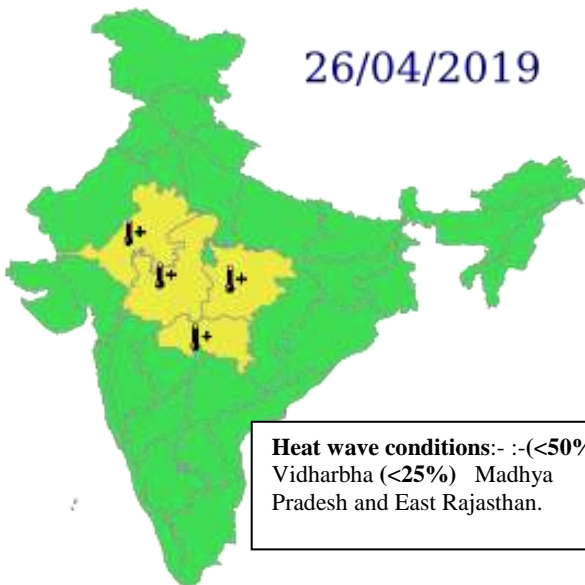
Heat wave conditions:-(<25%) West
Rajasthan

25/04/2019



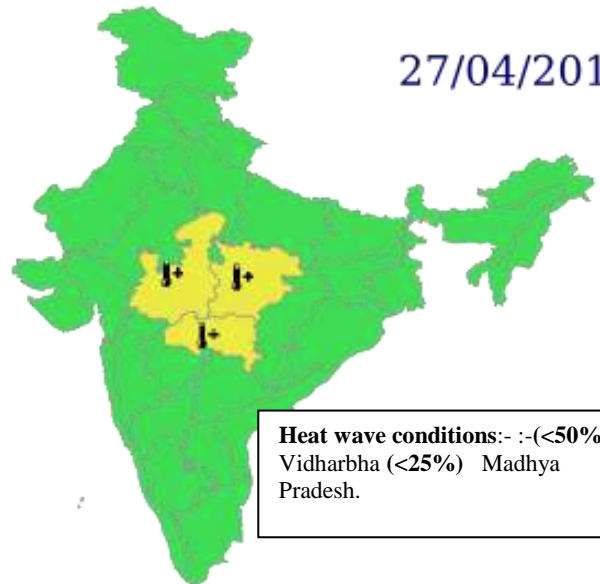
Heat wave conditions:-
(<25%)East Rajasthan,
Vidarbha and West Madhya
Pradesh.

26/04/2019

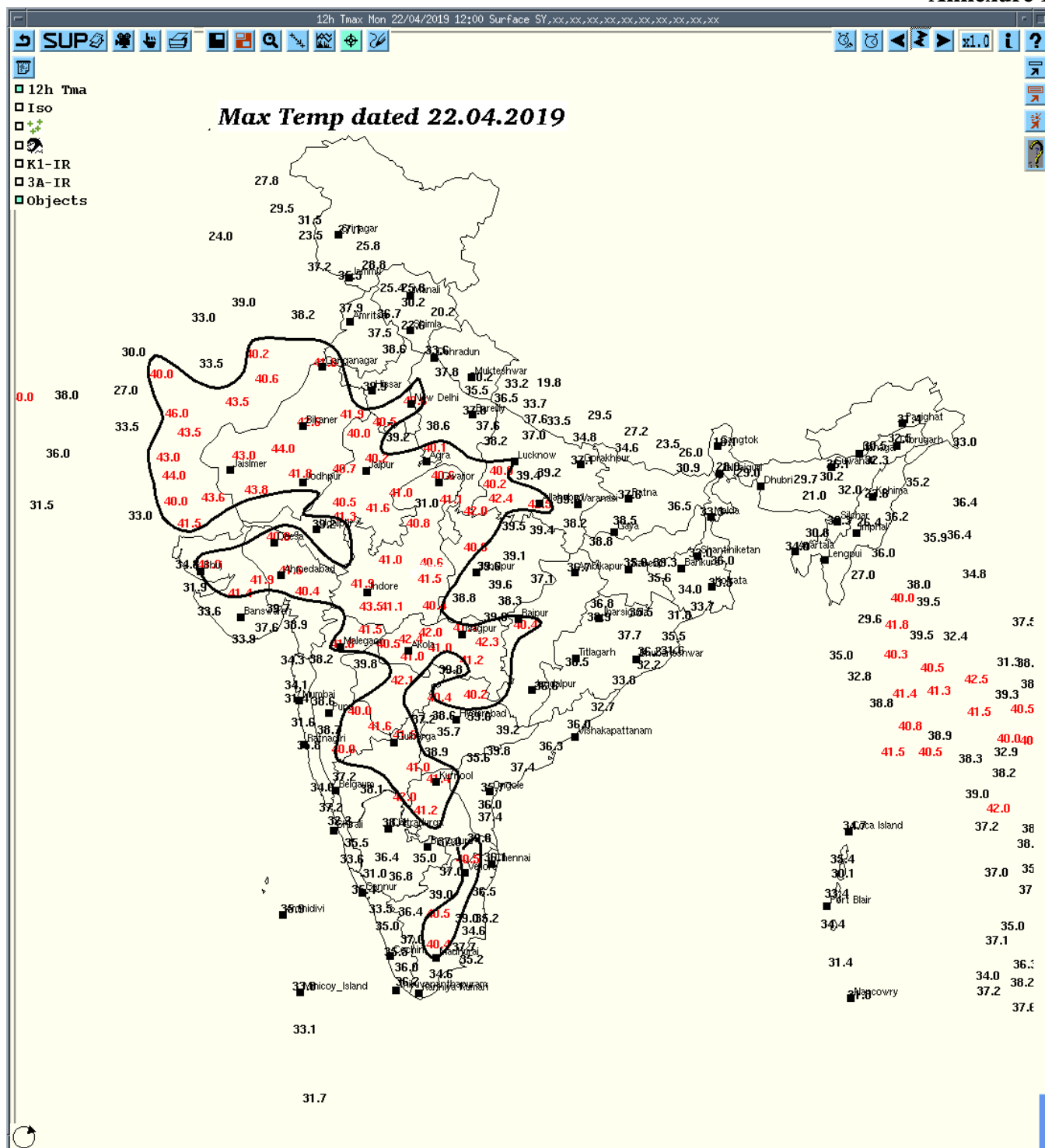


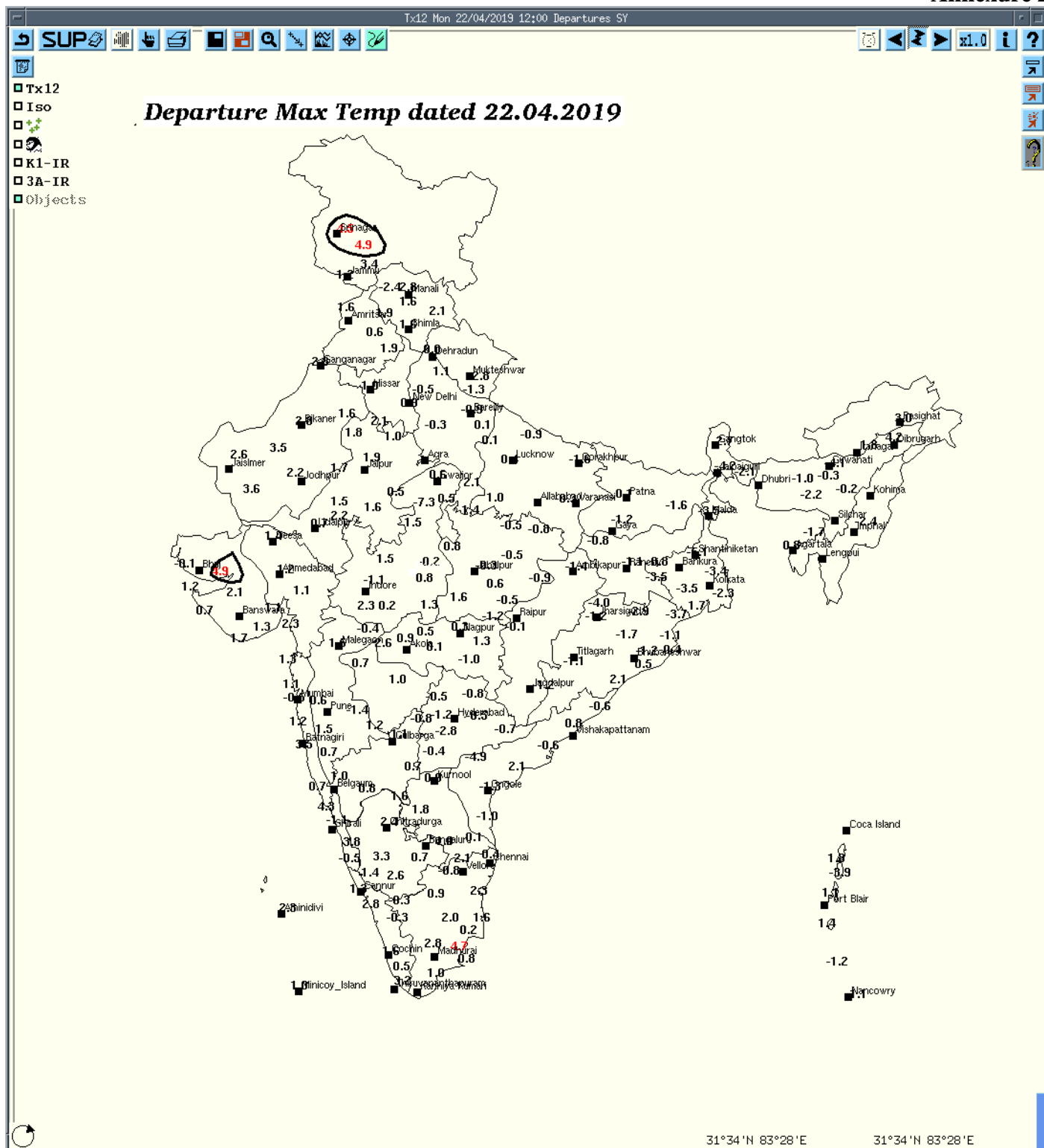
Heat wave conditions:- :-(<50%)
Vidharbha (<25%) Madhya
Pradesh and East Rajasthan.

27/04/2019

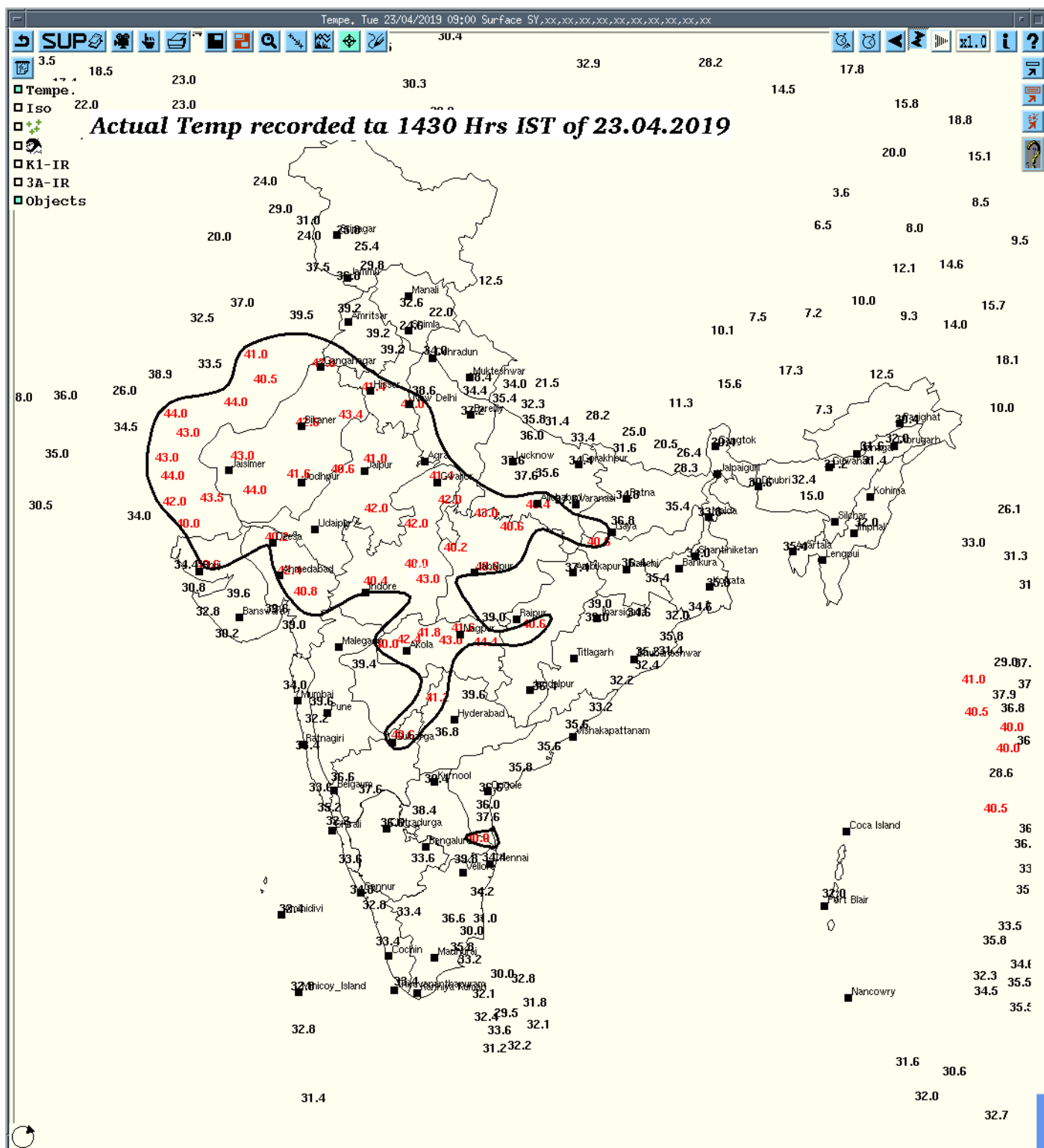


Heat wave conditions:- :-(<50%)
Vidharbha (<25%) Madhya
Pradesh.

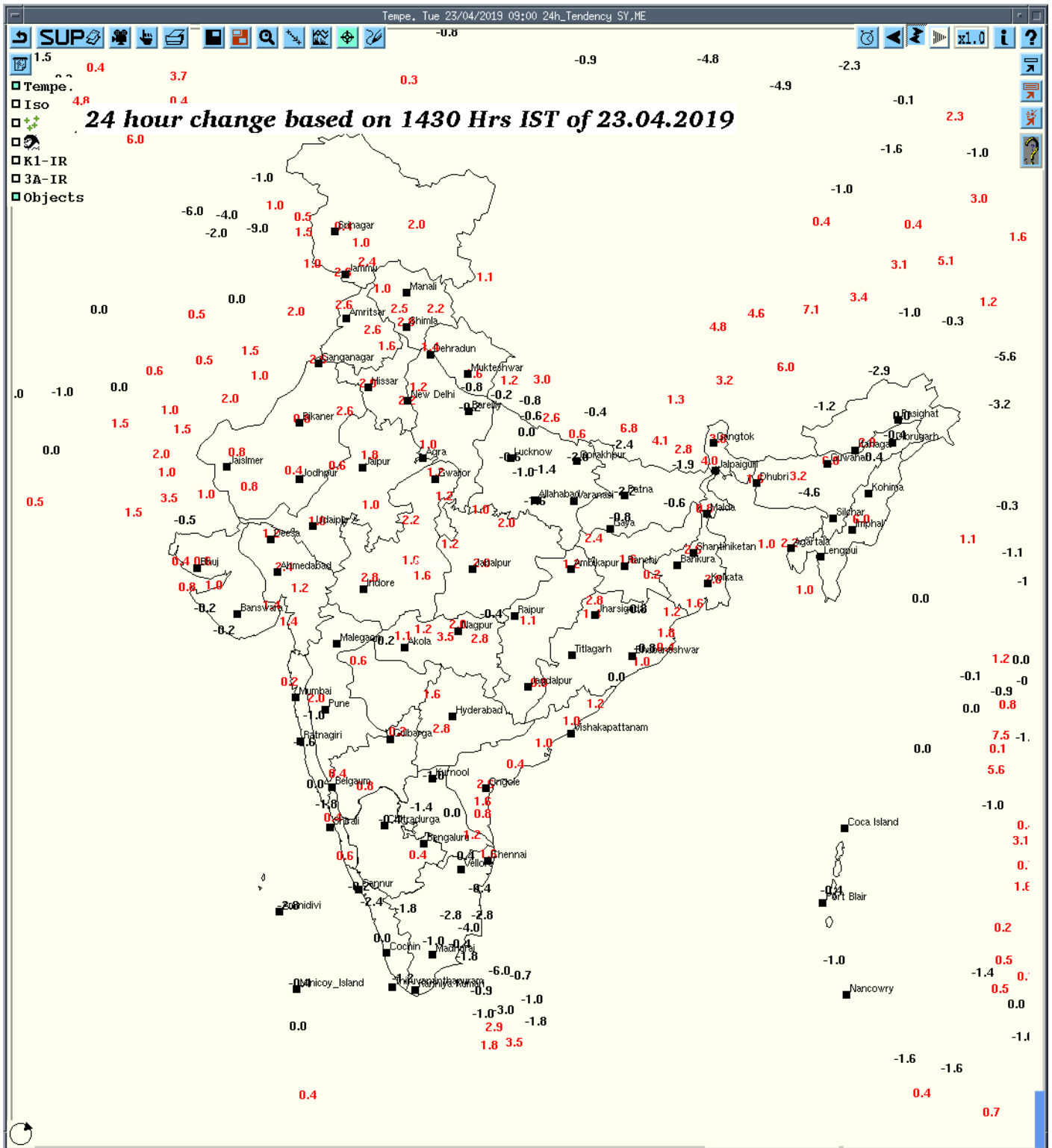




Annexure 3



Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 24th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 23 April to 0830 hrs IST 24 April, 2019)

Heat Wave:

Yesterday, No heat wave conditions were observed over any part of the country (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over West Rajasthan; at many places over Jammu & Kashmir and at a few places over Himachal Pradesh, Punjab, Haryana, Chandigarh & Delhi, West Madhya Pradesh, Arunachal Pradesh and Assam & Meghalaya; at isolated places over East Rajasthan, Gujarat and Konkan & Goa; **above normal (1.6°C to 3.0°C)** at many places over Nagaland, Manipur, Mizoram & Tripura; at a few places over Uttar Pradesh, East Madhya Pradesh, Madhya Maharashtra, Marathwada and Gangetic West Bengal; at isolated places over Andaman & Nicobar islands, Jharkhand, Chhattisgarh, Vidarbha, Telangana and Karnataka. Yesterday, the **highest maximum temperature of 45.1°C** recorded at **Brahmapuri (Vidarbha)** and normal over rest of the country (**Annexure 1 & 2**).

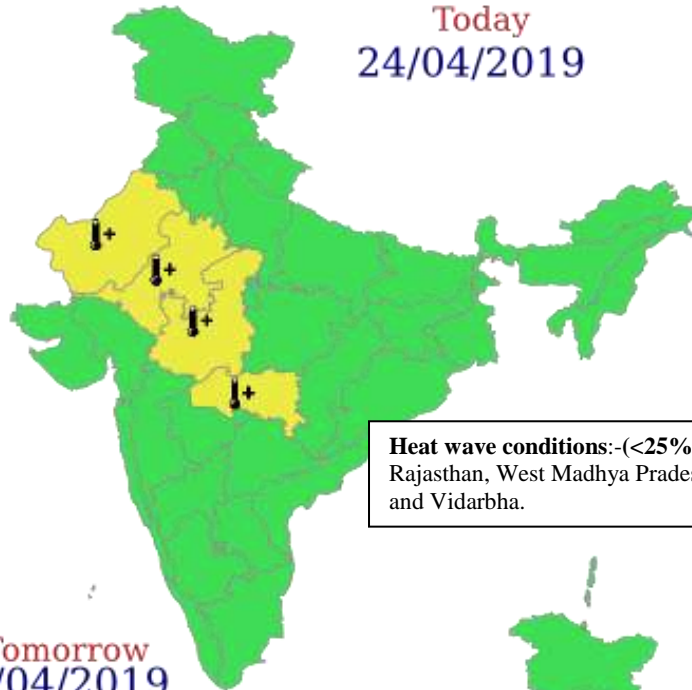
Temperatures Recorded at 1430 Hours IST of Today, the 24th April, 2019

- **Akola (Vidarbha) recorded the maximum temperature of 44.5°C each (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at most parts of northeastern states, Bihar, Telangana and Kerala and at one or two pockets of Uttarakhand, Punjab, east Madhya Pradesh, Vidarbha, Marathwada, North Interior Karnataka, Rayalaseema, Chhattisgarh, Coastal Andhra Pradesh, Odisha, Gangetic West Bengal and Tamilnadu & Puducherry (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

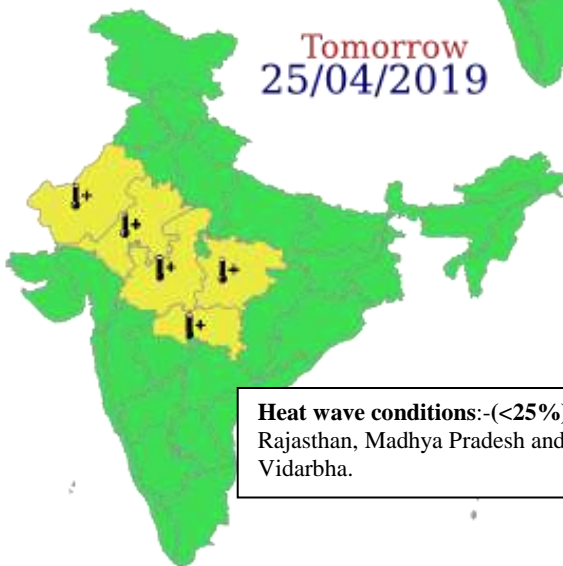
(For significance of colour code and criteria for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
24/04/2019



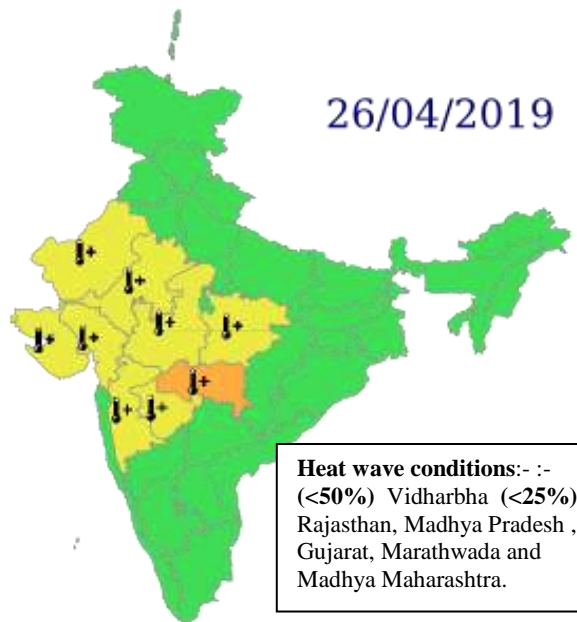
Heat wave conditions:-(<25%)
Rajasthan, West Madhya Pradesh
and Vidarbha.

Tomorrow
25/04/2019



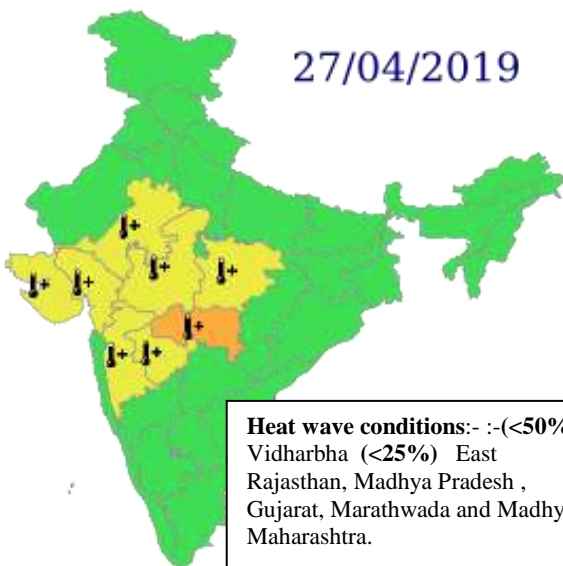
Heat wave conditions:-(<25%)
Rajasthan, Madhya Pradesh and
Vidarbha.

26/04/2019



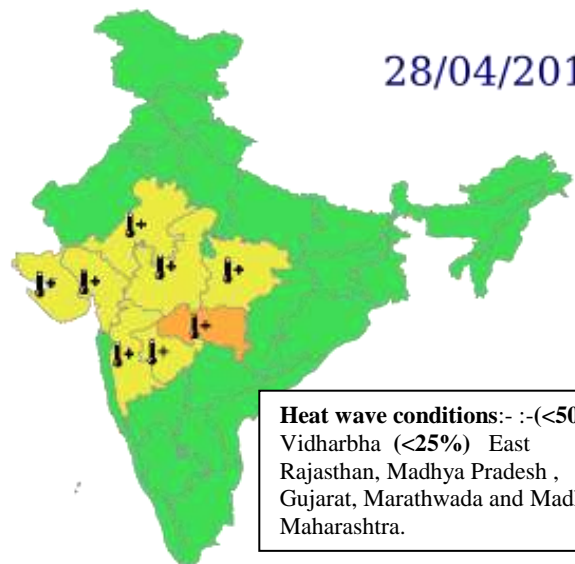
Heat wave conditions:- :-
(<50%) Vidharbha (<25%)
Rajasthan, Madhya Pradesh ,
Gujarat, Marathwada and
Madhya Maharashtra.

27/04/2019

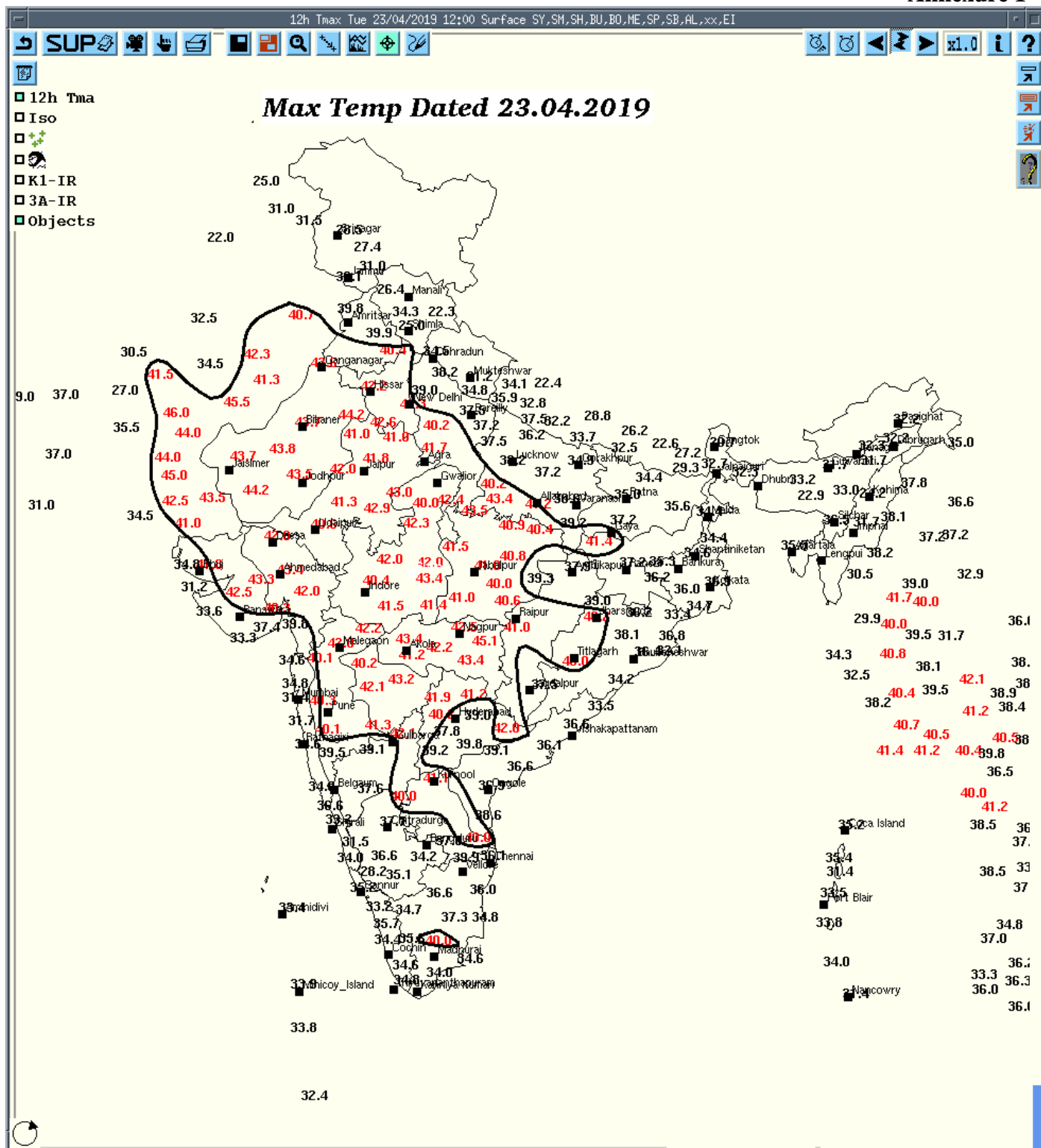


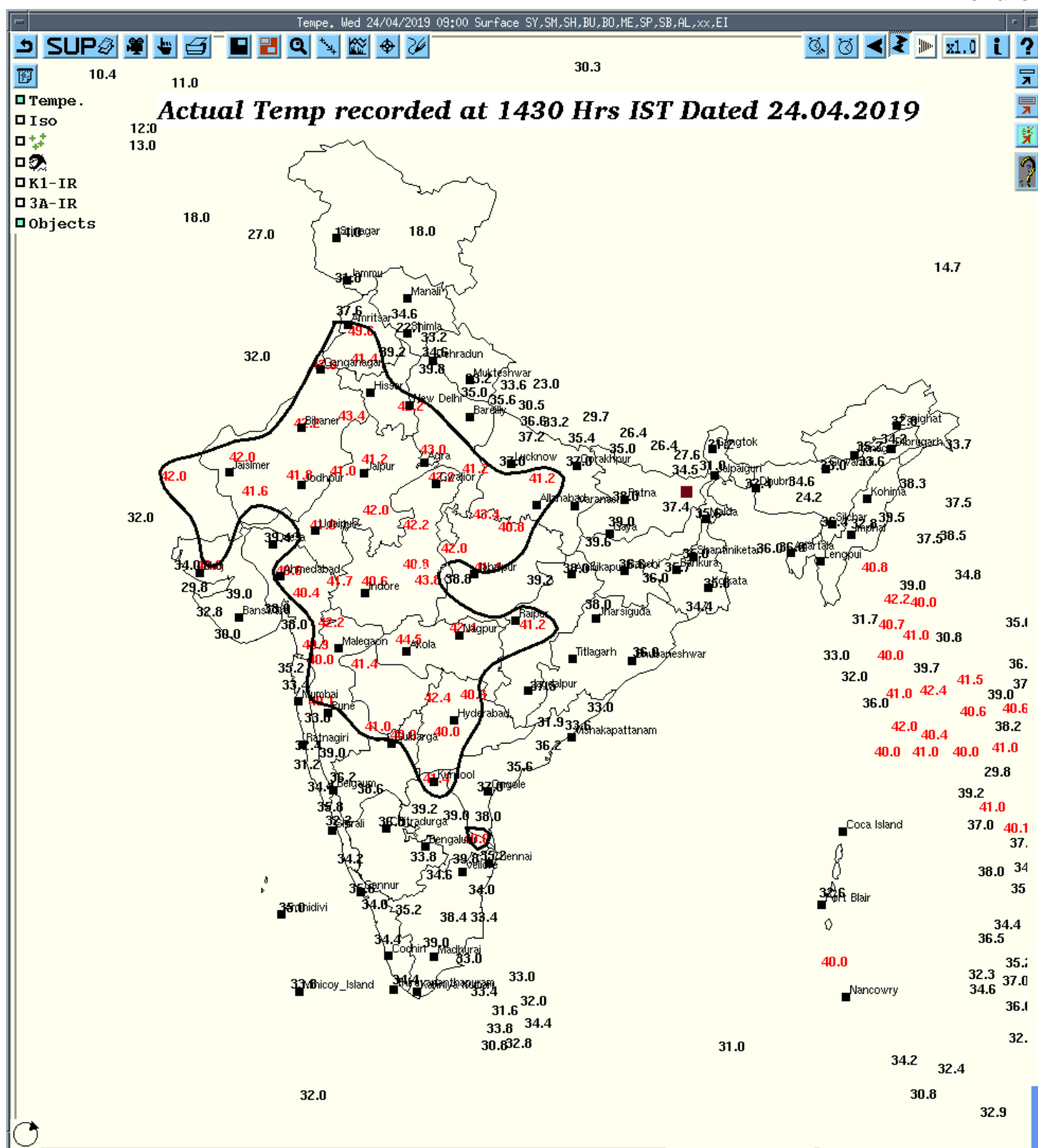
Heat wave conditions:- :-(<50%)
Vidharbha (<25%) East
Rajasthan, Madhya Pradesh ,
Gujarat, Marathwada and Madhya
Maharashtra.

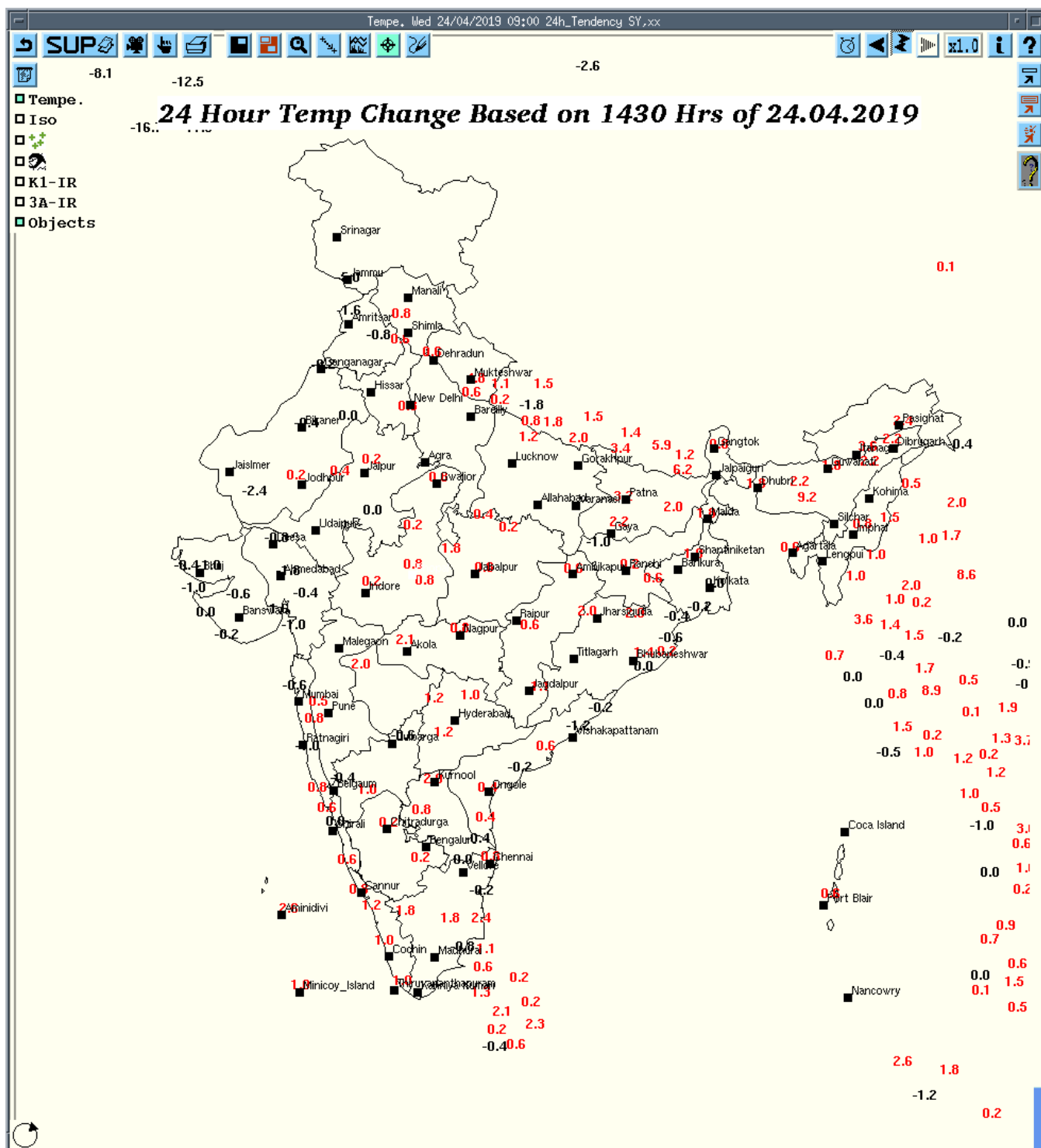
28/04/2019



Heat wave conditions:- :-(<50%)
Vidharbha (<25%) East
Rajasthan, Madhya Pradesh ,
Gujarat, Marathwada and Madhya
Maharashtra.







Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 25th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 24 April to 0830 hrs IST 25 April, 2019)

Heat Wave:

Yesterday, heat wave conditions observed at isolated pockets over West Madhya Pradesh (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Arunachal Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at most places over Nagaland, Manipur, Mizoram & Tripura; at many places over Himachal Pradesh, Haryana, Chandigarh & Delhi, West Madhya Pradesh and Assam & Meghalaya; at a few places over Rajasthan; at isolated places over Gujarat region and East Madhya Pradesh; **above normal (1.6°C to 3.0°C)** at most places over Vidarbha and Marathwada; at many places over West Uttar Pradesh, Madhya Maharashtra and Sub-Himalayan West Bengal & Sikkim; at a few places over Chhattisgarh, Karnataka, Kerala and Lakshadweep; at isolated places over East Uttar Pradesh and Gangetic West Bengal. Yesterday, the **highest maximum temperature of 45.6°C** recorded at **Khargone (West Madhya Pradesh)** (**Annexure 1 & 2**).

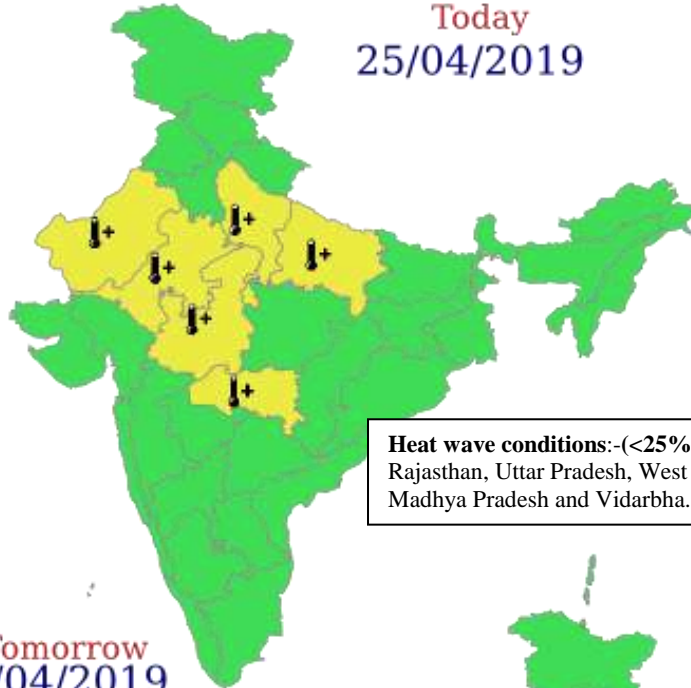
Temperatures Recorded at 1430 Hours IST of Today, the 25th April, 2019

- **Akola (Vidarbha) recorded the maximum temperature of 45.3°C each (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at most parts of Bihar, North Interior Karnataka and South Interior Karnataka; at many places over northeastern states; at a few places over Rayalseema, Vidarbha and Jammu & Kashmir and at one or two pockets of Himachal Pradesh, Uttarakhand, East Uttar Pradesh, Jharkhand, Gangetic West Bengal, Odisha, Saurashtra & Kutch, Coastal Andhra Pradesh and Tamilnadu & Puducherry (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

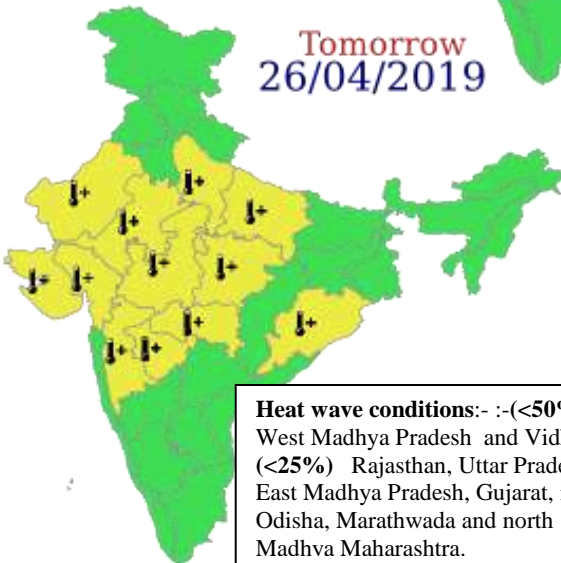
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
25/04/2019



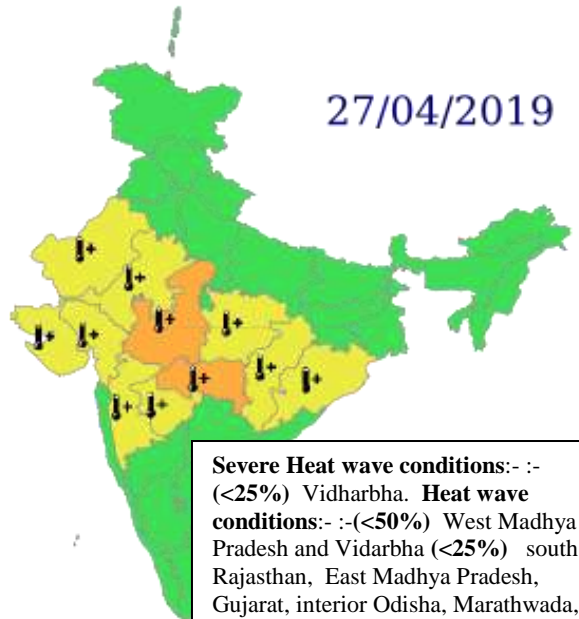
Heat wave conditions:-(<25%)
Rajasthan, Uttar Pradesh, West
Madhya Pradesh and Vidarbha.

Tomorrow
26/04/2019



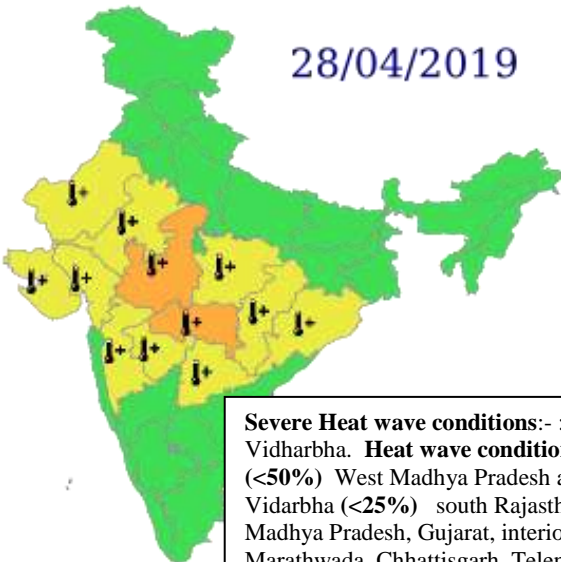
Heat wave conditions:- (<50%)
West Madhya Pradesh and Vidharbha
(<25%) Rajasthan, Uttar Pradesh,
East Madhya Pradesh, Gujarat, interior
Odisha, Marathwada and north
Madhya Maharashtra.

27/04/2019



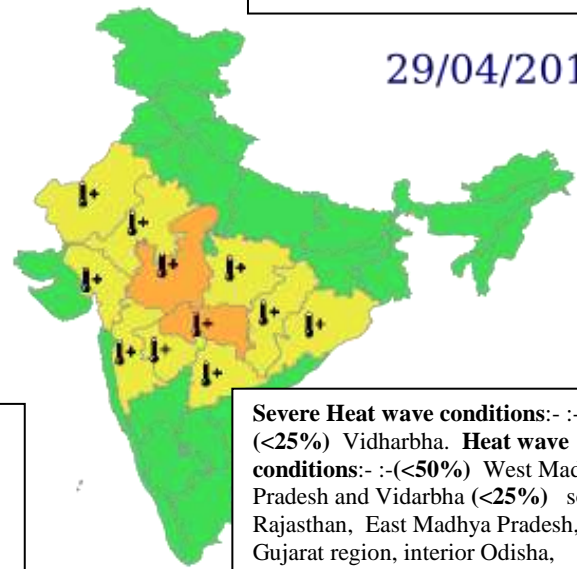
Severe Heat wave conditions:- :- (<25%) Vidharbha. **Heat wave conditions:- (<50%)** West Madhya Pradesh and Vidarbha (<25%) south Rajasthan, East Madhya Pradesh, Gujarat, interior Odisha, Marathwada, Chhattisgarh and north Madhya Maharashtra.

28/04/2019

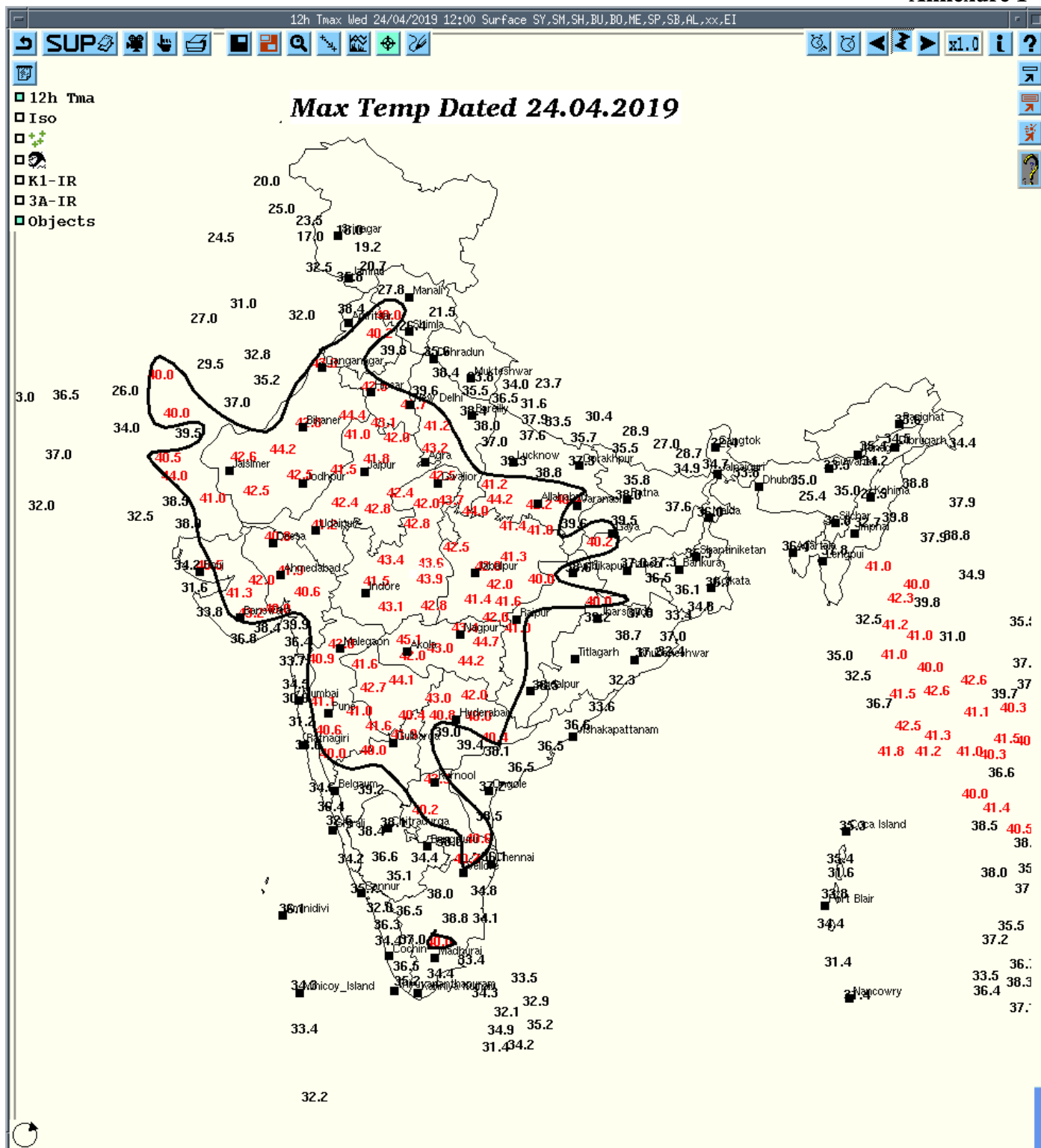


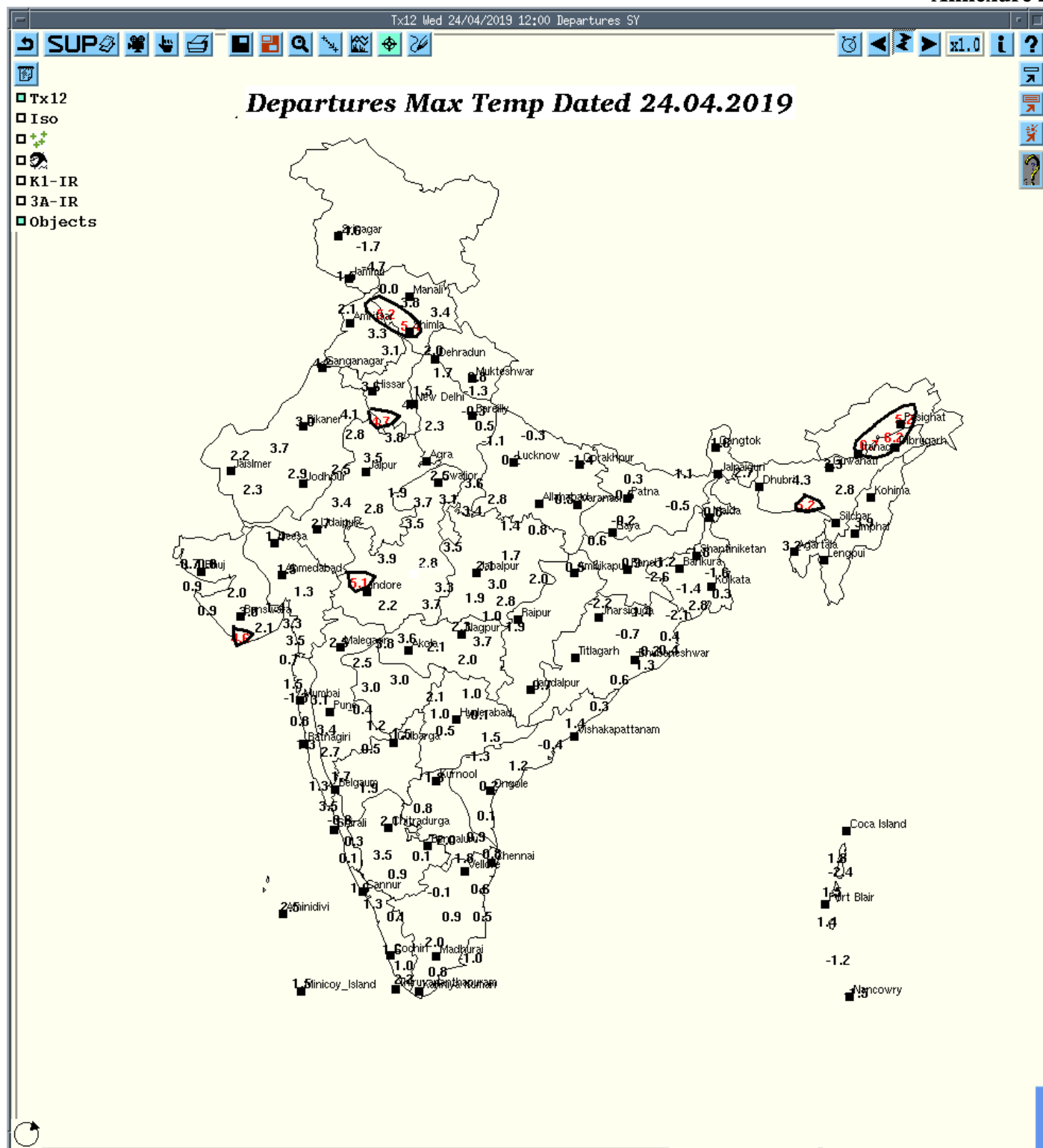
Severe Heat wave conditions:- :- (<25%) Vidharbha. **Heat wave conditions:- :- (<50%)** West Madhya Pradesh and Vidarbha (<25%) south Rajasthan, East Madhya Pradesh, Gujarat, interior Odisha, Marathwada, Chhattisgarh, Telengana and north Madhya Maharashtra.

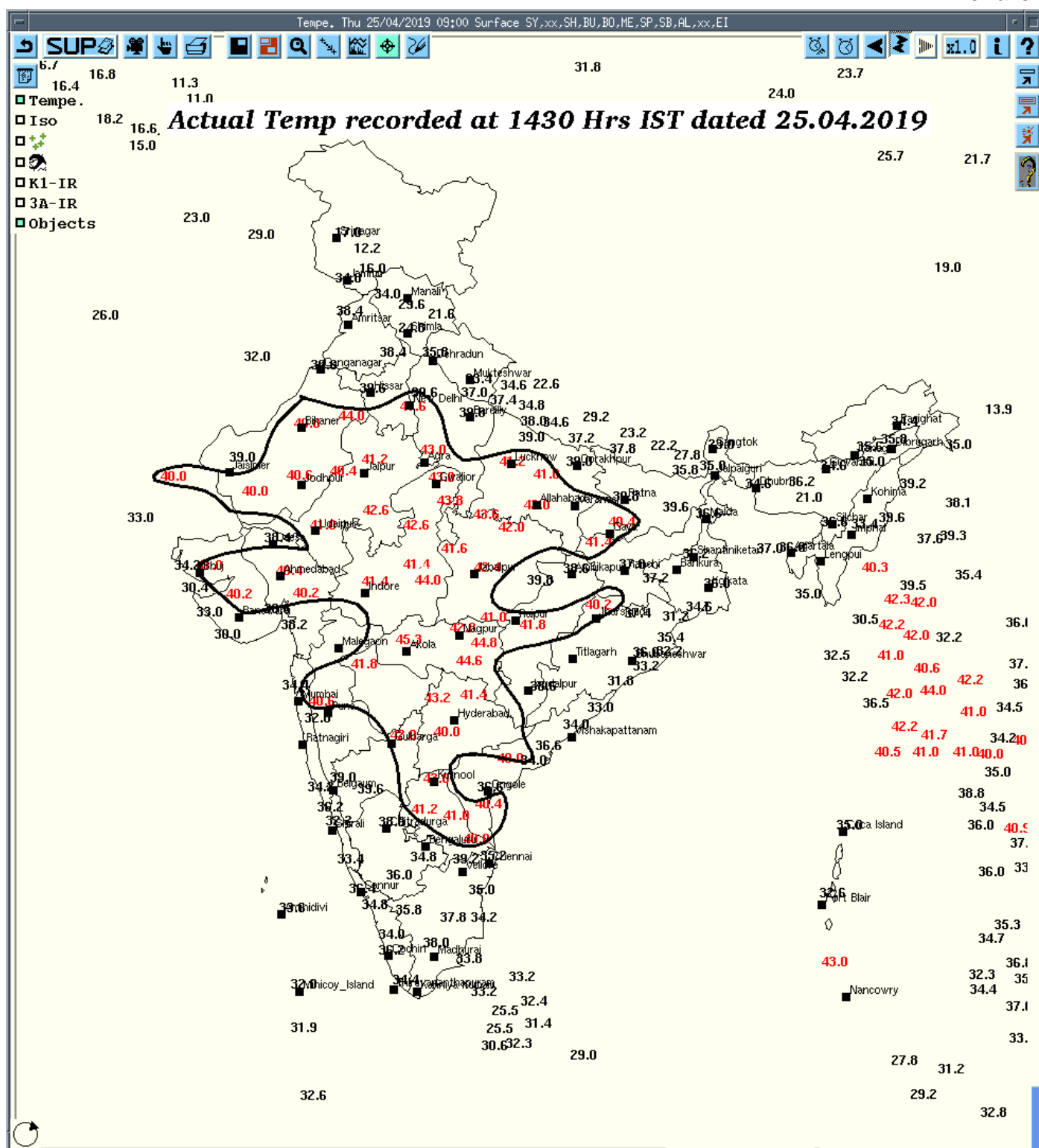
29/04/2019

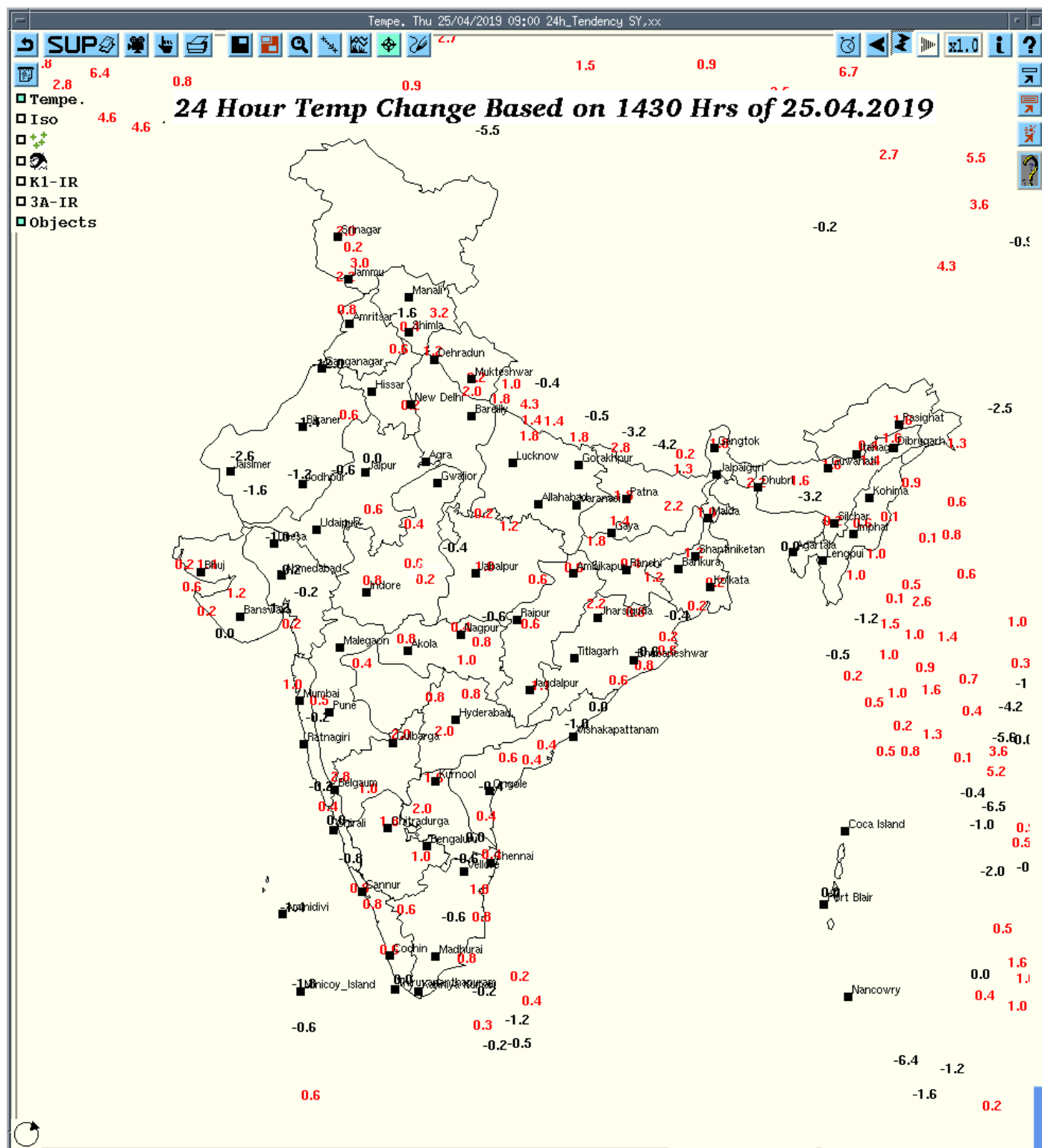


Severe Heat wave conditions:- :- (<25%) Vidharbha. **Heat wave conditions:- :- (<50%)** West Madhya Pradesh and Vidarbha (<25%) south Rajasthan, East Madhya Pradesh, Gujarat region, interior Odisha, Marathwada, Chhattisgarh, Telengana and north Madhya Maharashtra.









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Colour Code	Alert	Warning	Impact	Suggested Actions
Green (No action)	Normal Day	Nil	Comfortable temperatures	No cautionary action required
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
Orange Alert (Be prepared)	Severe Heat Alert for the day	i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
Red Alert (Take Action)	Extreme Heat Alert for the day	i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 26th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 25 April to 0830 hrs IST 26 April, 2019)

Heat Wave:

Yesterday, heat wave conditions observed at isolated pockets over West Madhya Pradesh and Vidarbha (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at a few places over Arunachal Pradesh and Assam & Meghalaya; **appreciably above normal (3.1°C to 5.0°C)** at most places over Vidarbha and Nagaland, Manipur, Mizoram & Tripura; at many places over Haryana, Chandigarh & Delhi, West Madhya Pradesh, Marathwada and Sub-Himalayan West Bengal & Sikkim; at a few places over Himachal Pradesh, East Madhya Pradesh and Madhya Maharashtra; at isolated places over Rajasthan; **above normal (1.6°C to 3.0°C)** at most places over West Uttar Pradesh, Bihar, Jharkhand, North Interior Karnataka, Telangana and Rayalseema ; at many places over Punjab, Uttarakhand, Gujarat Region, East Uttar Pradesh, Chhattisgarh and Kerala; at a few places over Saurashtra & Kutch and Coastal Karnataka; at isolated places over Gangetic West Bengal, Odisha, Konkan & Goa, South Interior Karnataka and Tamilnadu & Puducherry Yesterday, the highest maximum temperature of 46.5°C was recorded at Khargone (West Madhya Pradesh) (**Annexure 1 & 2**).

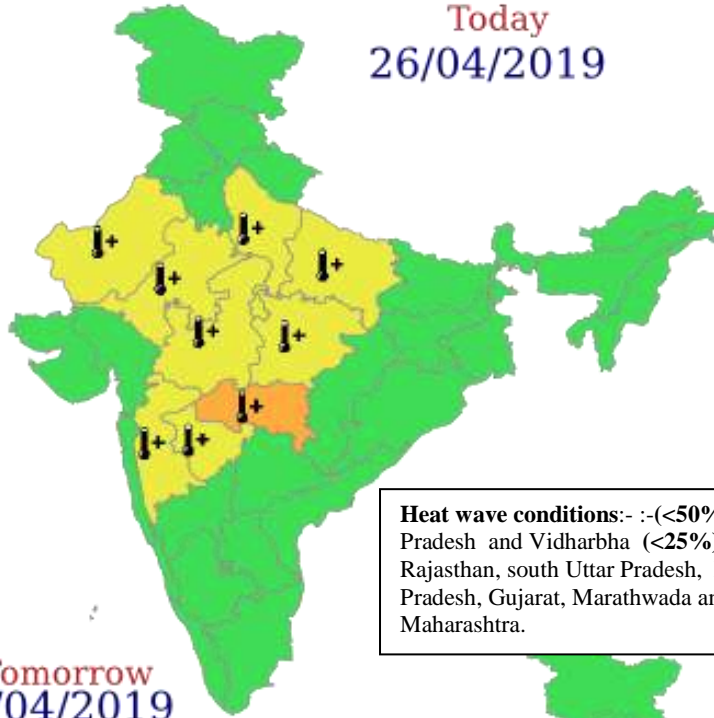
Temperatures Recorded at 1430 Hours IST of Today, the 26th April, 2019

- **Akola (Vidarbha) recorded the maximum temperature of 46.1°C each (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at most parts of Gujarat and Jharkhand; at many parts of Jammu & Kashmir and Odisha; at a few places over West Rajasthan, Uttar Pradesh, Punjab, Uttarakhand and Vidarbha and at one or two pockets of Himachal Pradesh, Gangetic West Bengal, Bihar, Chhattisgarh, Konkan & Goa, Coastal Andhra Pradesh and Tamilnadu & Puducherry (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

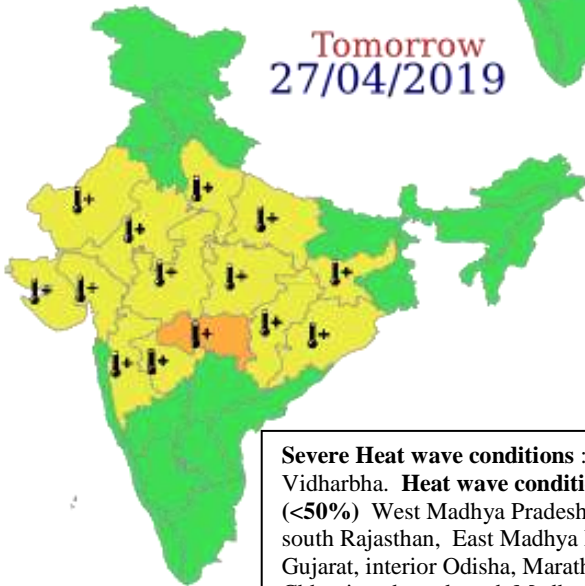
(For significance of colour code, criteria and its Impact & action suggested for Heat Wavkindly refer to Annexure-5 at end of this document)

Today
26/04/2019



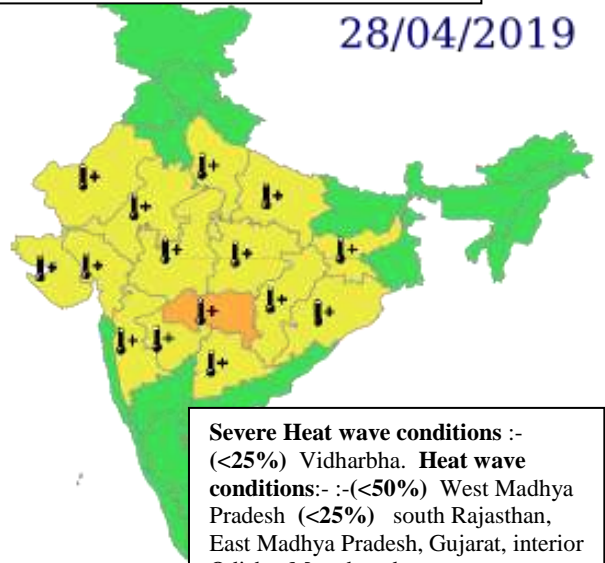
Heat wave conditions:- (<50%) West Madhya Pradesh and Vidharbha (<25%) South Rajasthan, south Uttar Pradesh, East Madhya Pradesh, Gujarat, Marathwada and north Madhya Maharashtra.

Tomorrow
27/04/2019



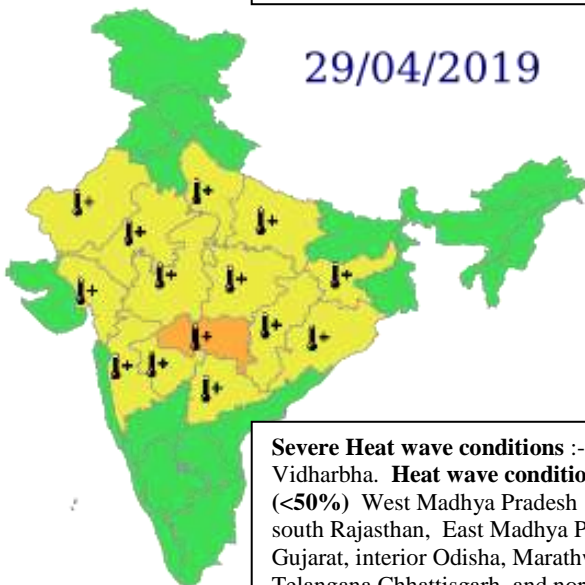
Severe Heat wave conditions :- (<25%) Vidharbha. **Heat wave conditions:-** (<50%) West Madhya Pradesh (<25%) south Rajasthan, East Madhya Pradesh, Gujarat, interior Odisha, Marathwada, Chhattisgarh and north Madhya Maharashtra.

28/04/2019



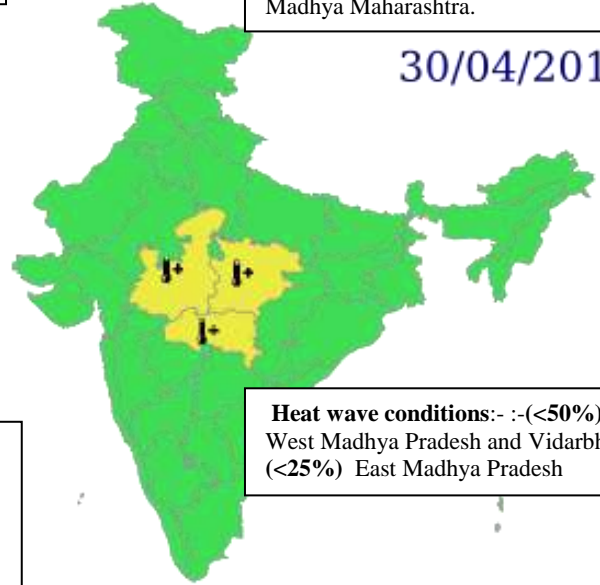
Severe Heat wave conditions :- (<25%) Vidharbha. **Heat wave conditions:-** (<50%) West Madhya Pradesh (<25%) south Rajasthan, East Madhya Pradesh, Gujarat, interior Odisha, Marathwada, Telangana, Chhattisgarh and north Madhya Maharashtra.

29/04/2019

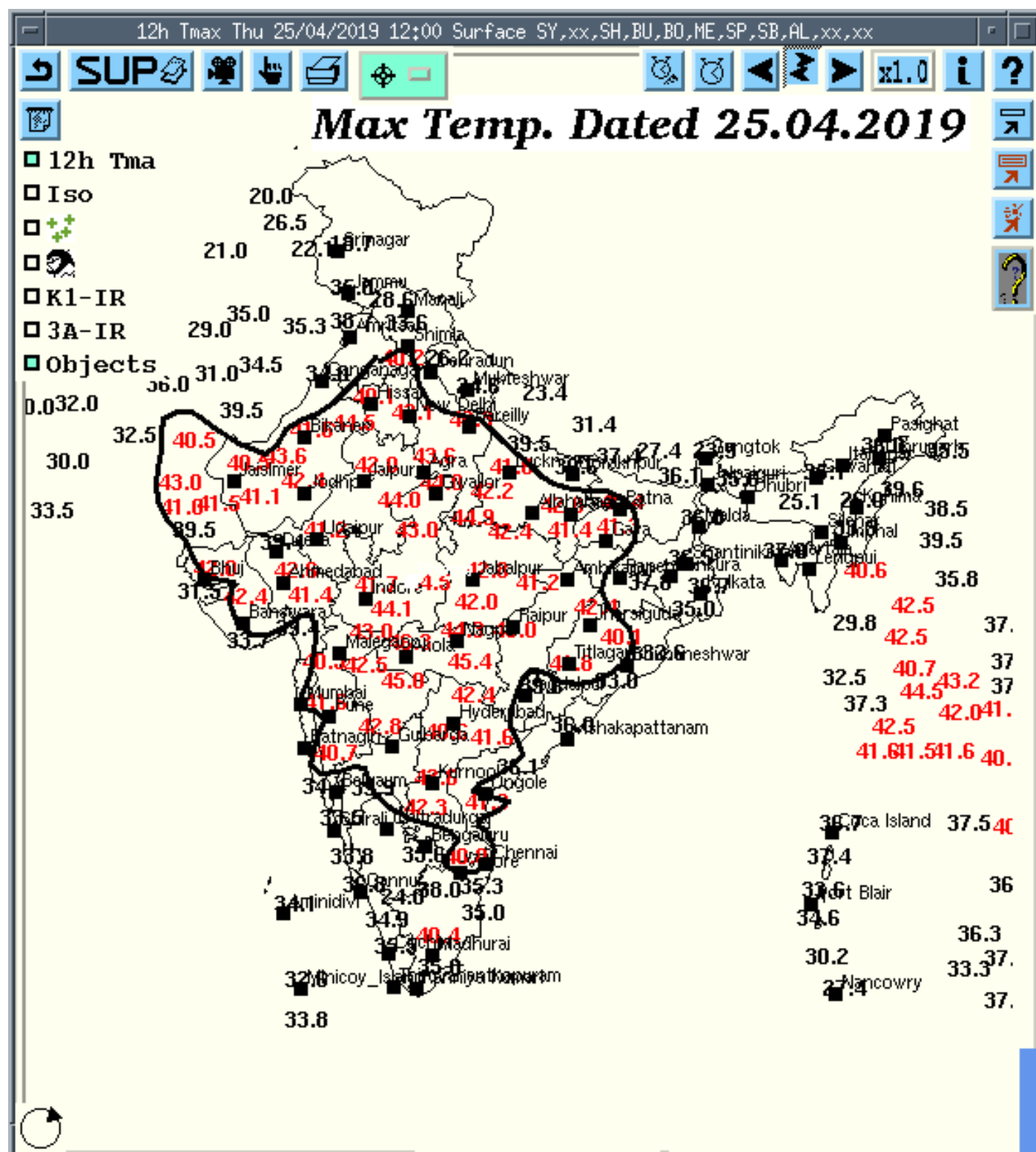


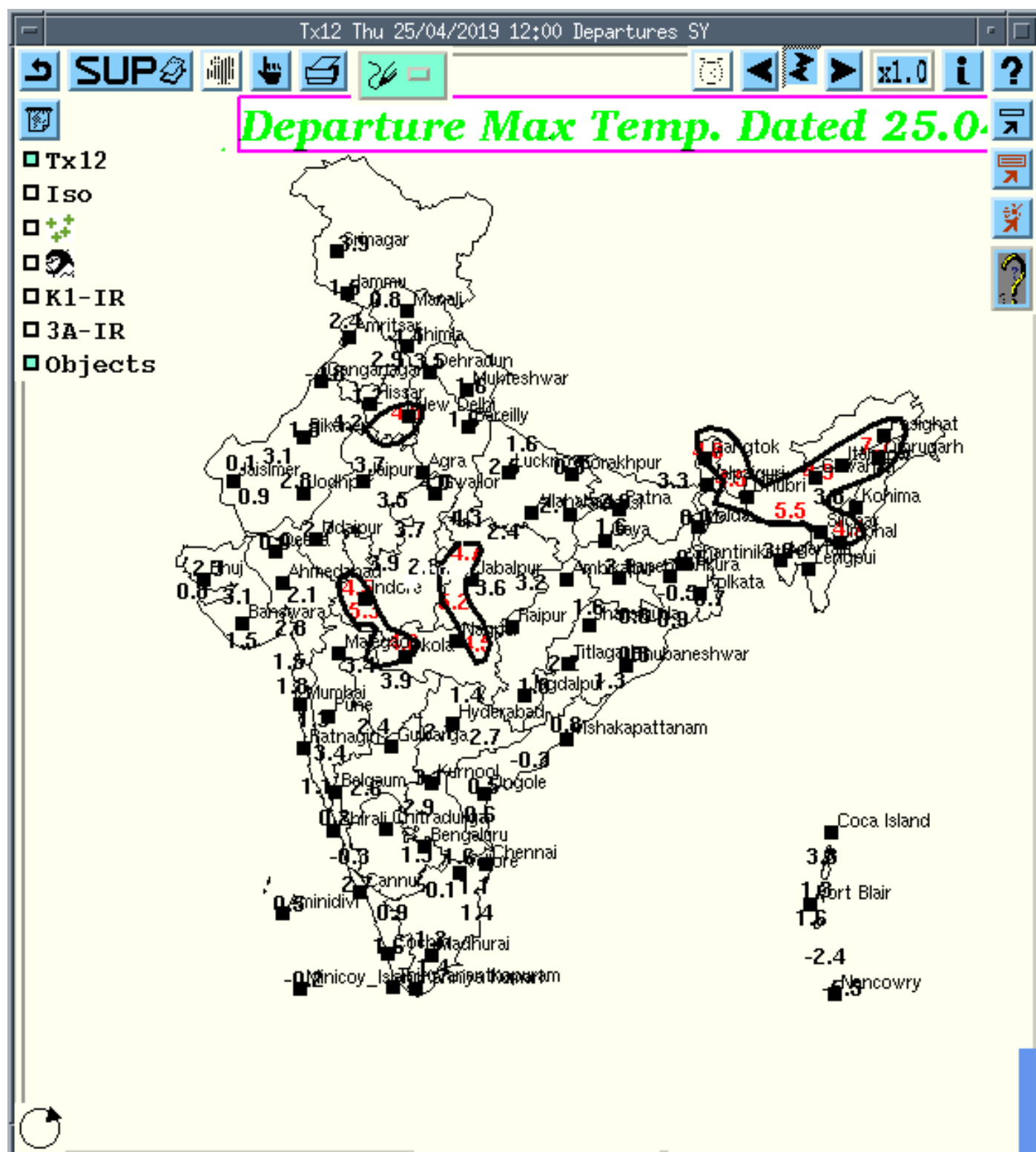
Severe Heat wave conditions :- (<25%) Vidharbha. **Heat wave conditions:-** (<50%) West Madhya Pradesh (<25%) south Rajasthan, East Madhya Pradesh, Gujarat, interior Odisha, Marathwada, Telangana, Chhattisgarh and north Madhya Maharashtra.

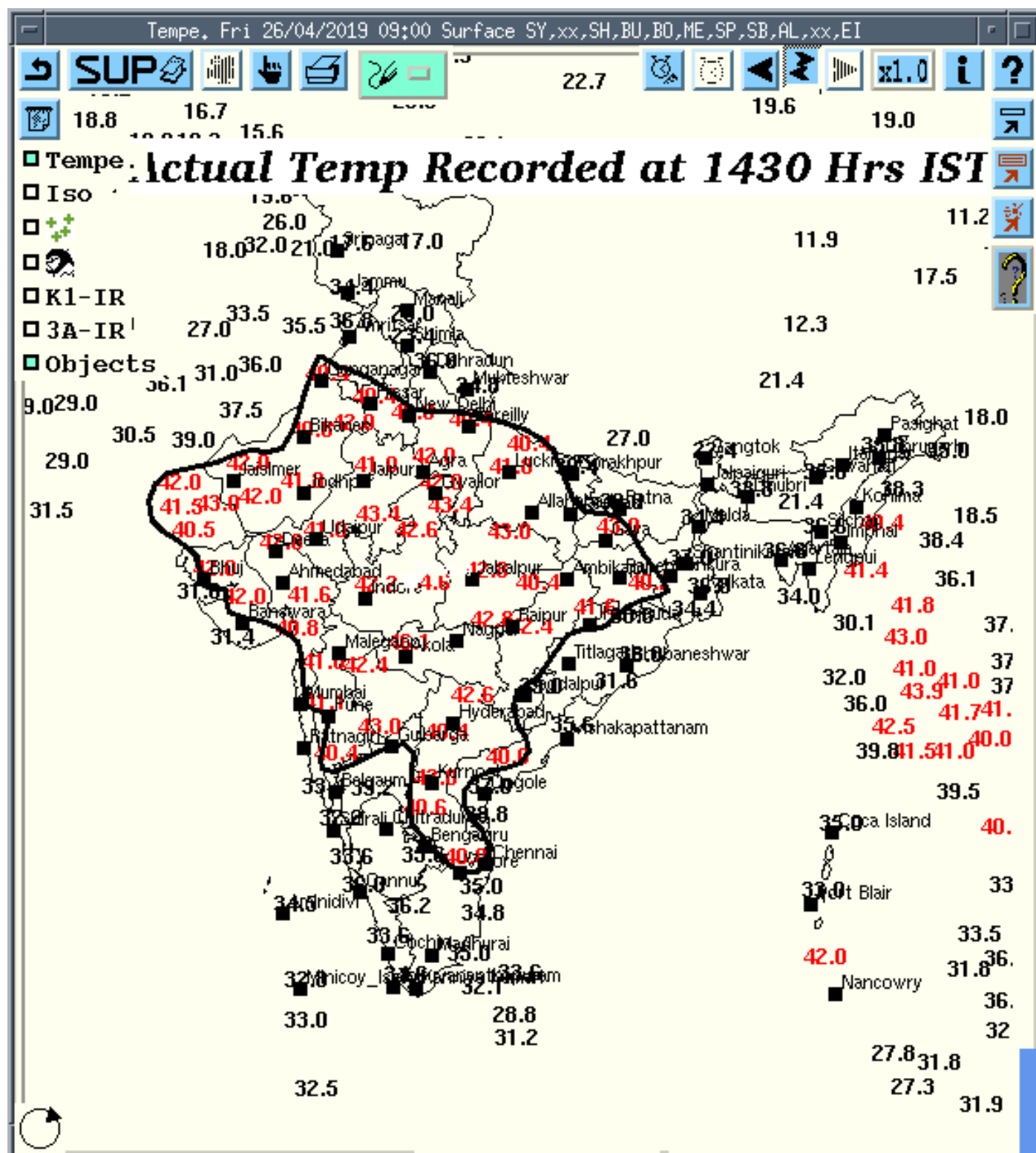
30/04/2019

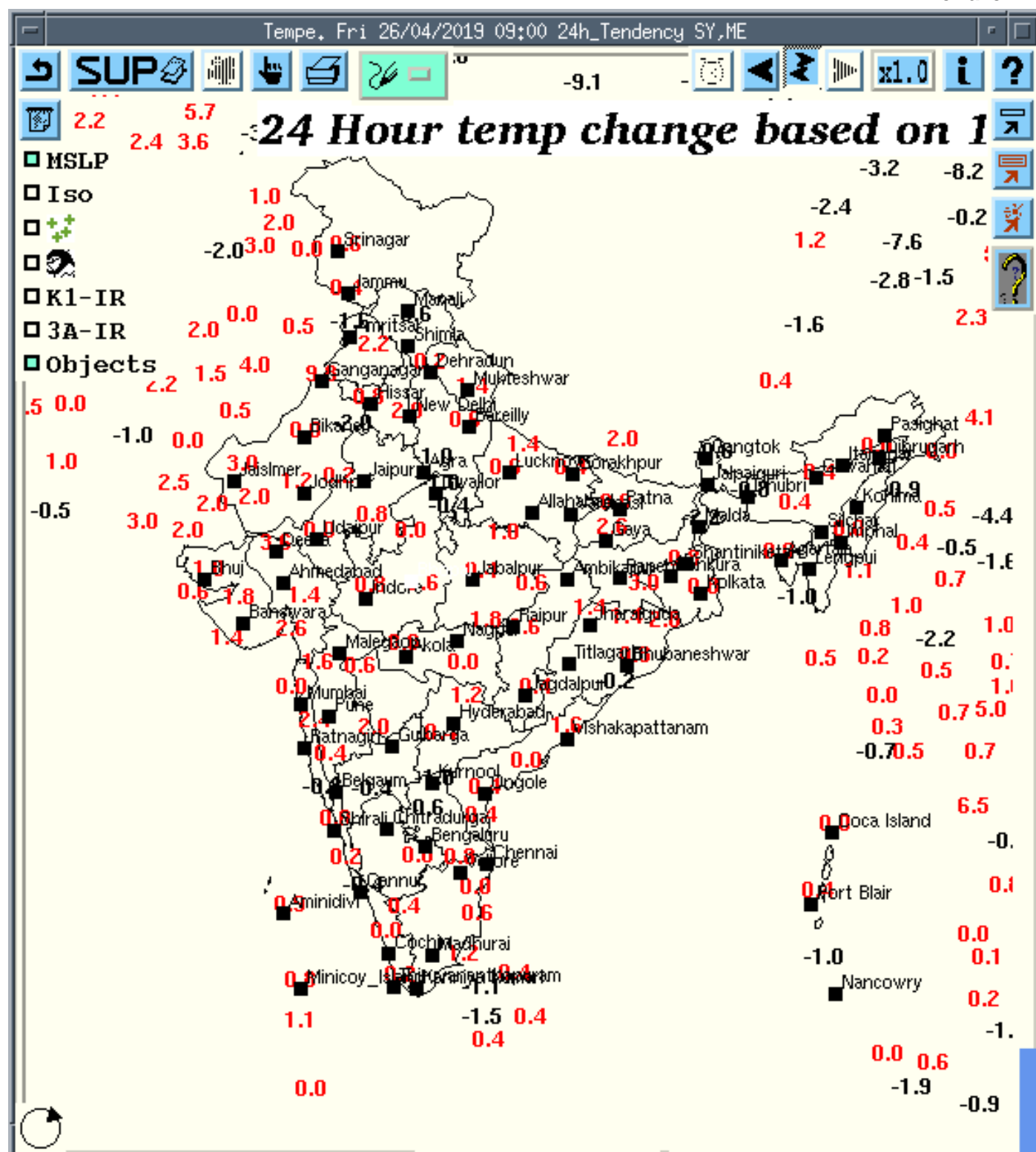


Heat wave conditions:- (<50%) West Madhya Pradesh and Vidharbha (<25%) East Madhya Pradesh









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Colour Code	Alert	Warning	Impact	Suggested Actions
Green (No action)	Normal Day	Nil	Comfortable temperatures	No cautionary action required
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
Orange Alert (Be prepared)	Severe Heat Alert for the day	i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
Red Alert (Take Action)	Extreme Heat Alert for the day	i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 27th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 26 April to 0830 hrs IST 27 April, 2019)

Heat Wave:

Yesterday, heat wave conditions were observed at few places over Vidarbha and at isolated places over West Madhya Pradesh (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at a few places over Assam & Meghalaya; at isolated places over Arunachal Pradesh and Gujarat Region; **appreciably above normal (3.1°C to 5.0°C)** at most places over Vidarbha and Marathwada; at a few places over Saurashtra & Kutch, Madhya Maharashtra, Jharkhand and North Interior Karnataka; at isolated places over West Uttar Pradesh; **above normal (1.6°C to 3.0°C)** at most places over Uttarakhand, East Uttar Pradesh, Madhya Pradesh and Chhattisgarh; at many places over Telangana and Kerala; at a few places over Rajasthan, Himachal Pradesh, Odisha, Sub-Himalayan West Bengal & Sikkim, Andaman & Nicobar Islands, Tamilnadu & Puducherry and South Interior Karnataka; at isolated places over Bihar and Gangetic West Bengal. Yesterday, the **highest maximum temperature of 46.6°C** was recorded at **Khargone (West Madhya Pradesh)** (**Annexure 1 & 2**).

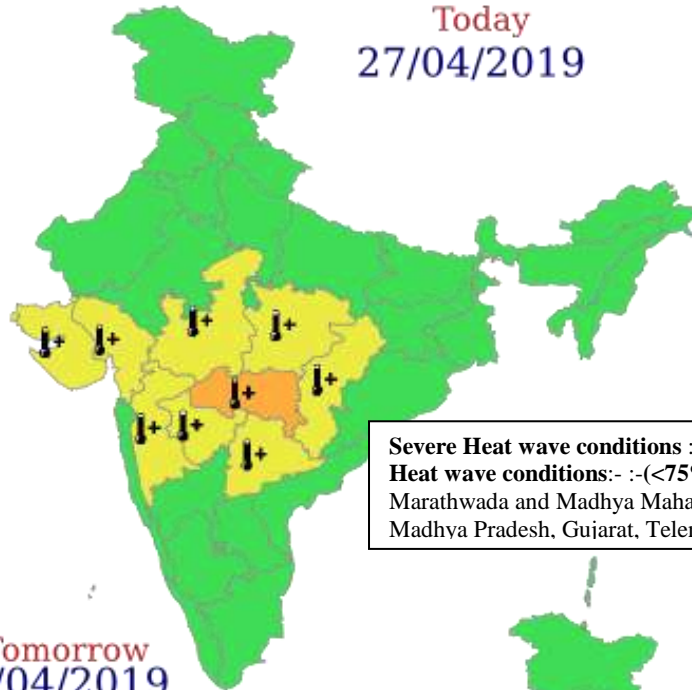
Temperatures Recorded at 1430 Hours IST of Today, the 27th April, 2019

- **Akola (Vidarbha) recorded the maximum temperature of 46.0°C each (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at most parts of Jammu & Kashmir, Himachal Pradesh and Uttarakhand; at many places over Saurashtra & Kutch; at a few places over Bihar and Gangetic West Bengal and at one or two pockets of West Rajasthan, Gujarat region, Haryana, Punjab, Jharkhand, Odisha, Chhattisgarh, Coastal Andhra Pradesh, Rayalseema, Kerala, south Interior Karnataka, Vidarbha and Madhya Maharashtra (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

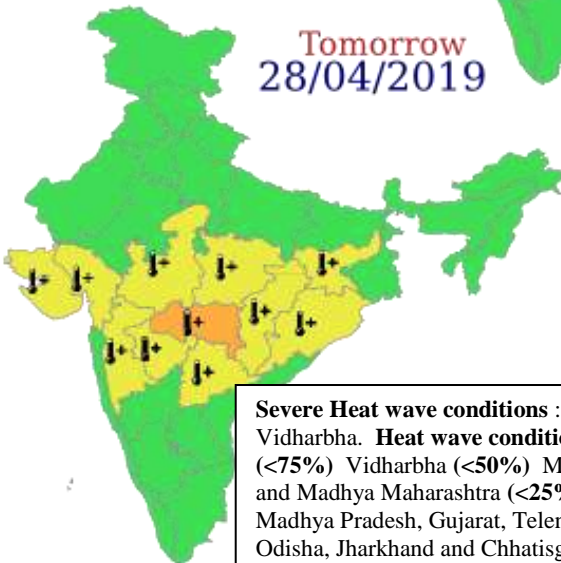
(For significance of colour code, criteria and Impact and Action suggested for Heat Wave, kindly refer to Annexure-5 at end of this document)

Today
27/04/2019



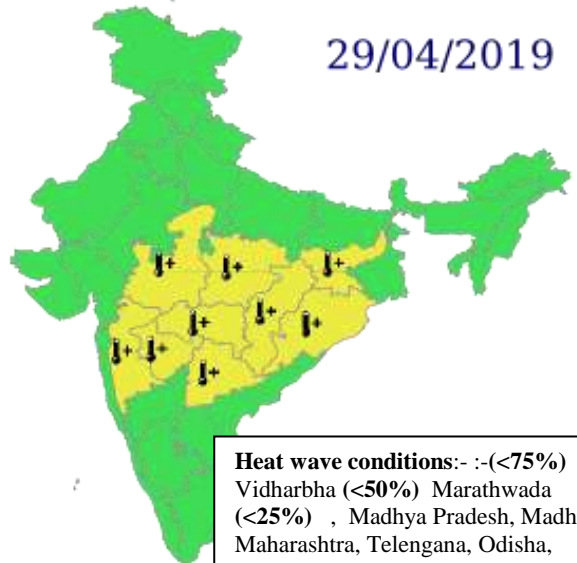
Severe Heat wave conditions :-(<25%) Vidharbha.
Heat wave conditions:- :-(<75%) Vidharbha (<50%)
Marathwada and Madhya Maharashtra (<25%) ,
Madhya Pradesh, Gujarat, Telangana and Chhatisgarh.

Tomorrow
28/04/2019



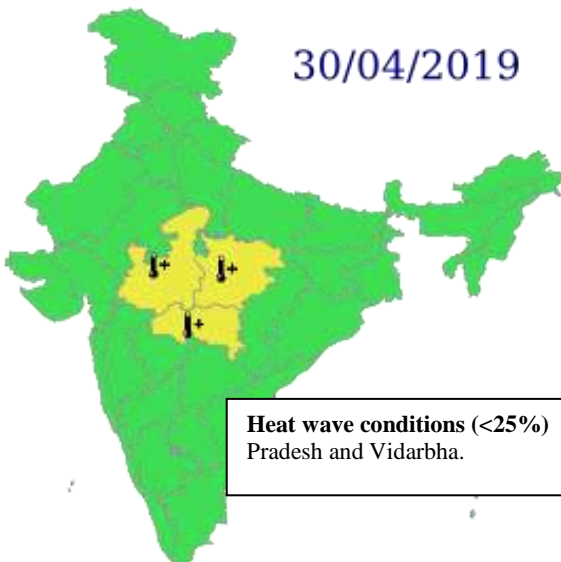
Severe Heat wave conditions :-(<25%)
Vidharbha. **Heat wave conditions:- :-(**
(<75%) Vidharbha (<50%) Marathwada
and Madhya Maharashtra (<25%) ,
Madhya Pradesh, Gujarat, Telangana,
Odisha, Jharkhand and Chhatisgarh.

29/04/2019



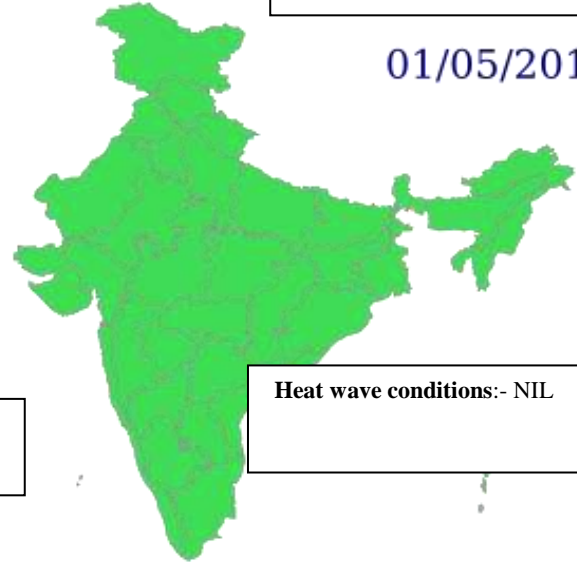
Heat wave conditions:- :-(<75%)
Vidharbha (<50%) Marathwada
(<25%) , Madhya Pradesh, Madhya
Maharashtra, Telangana, Odisha,
Jharkhand and Chhatisgarh

30/04/2019

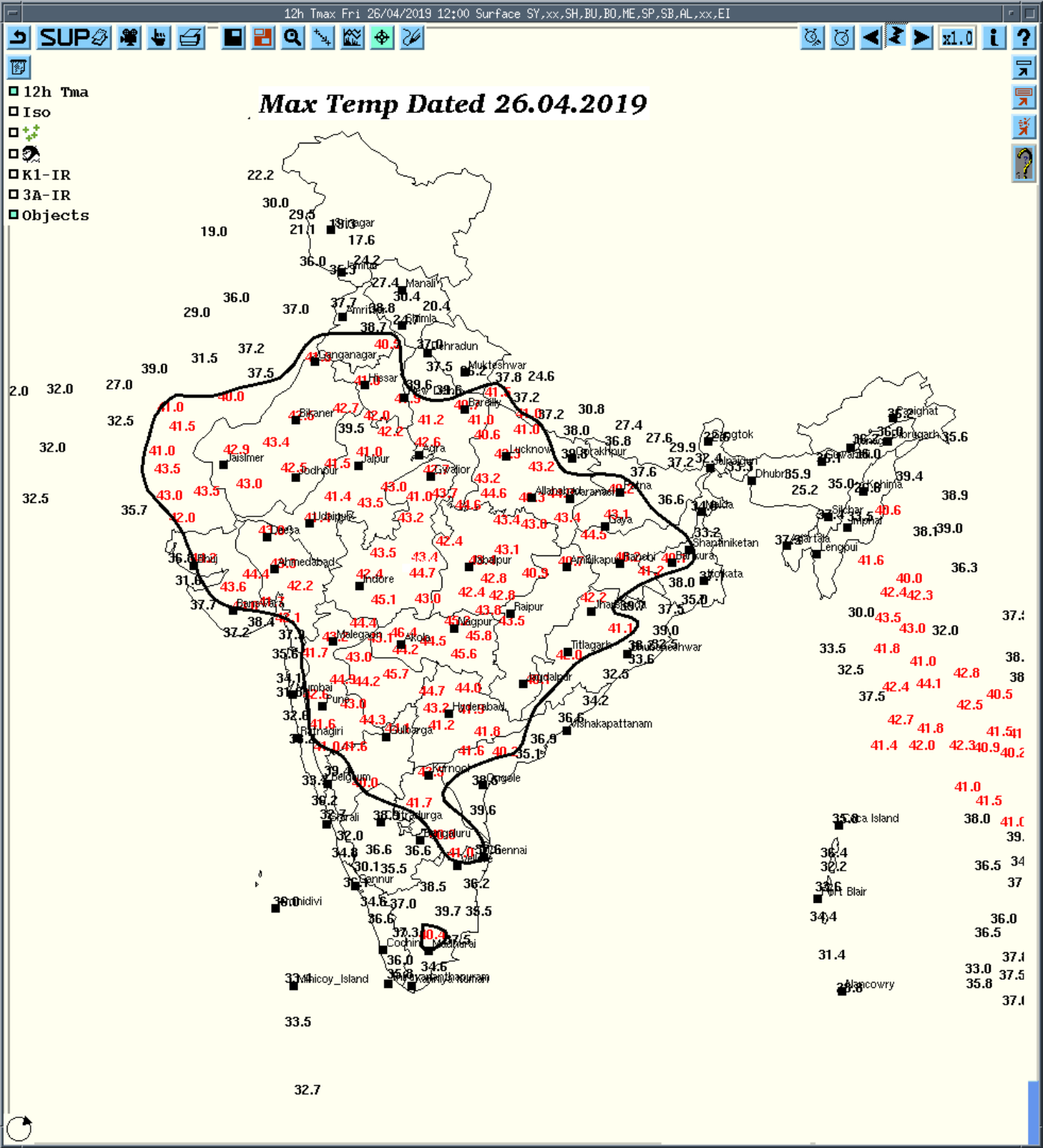


Heat wave conditions (<25%) Madhya
Pradesh and Vidharbha.

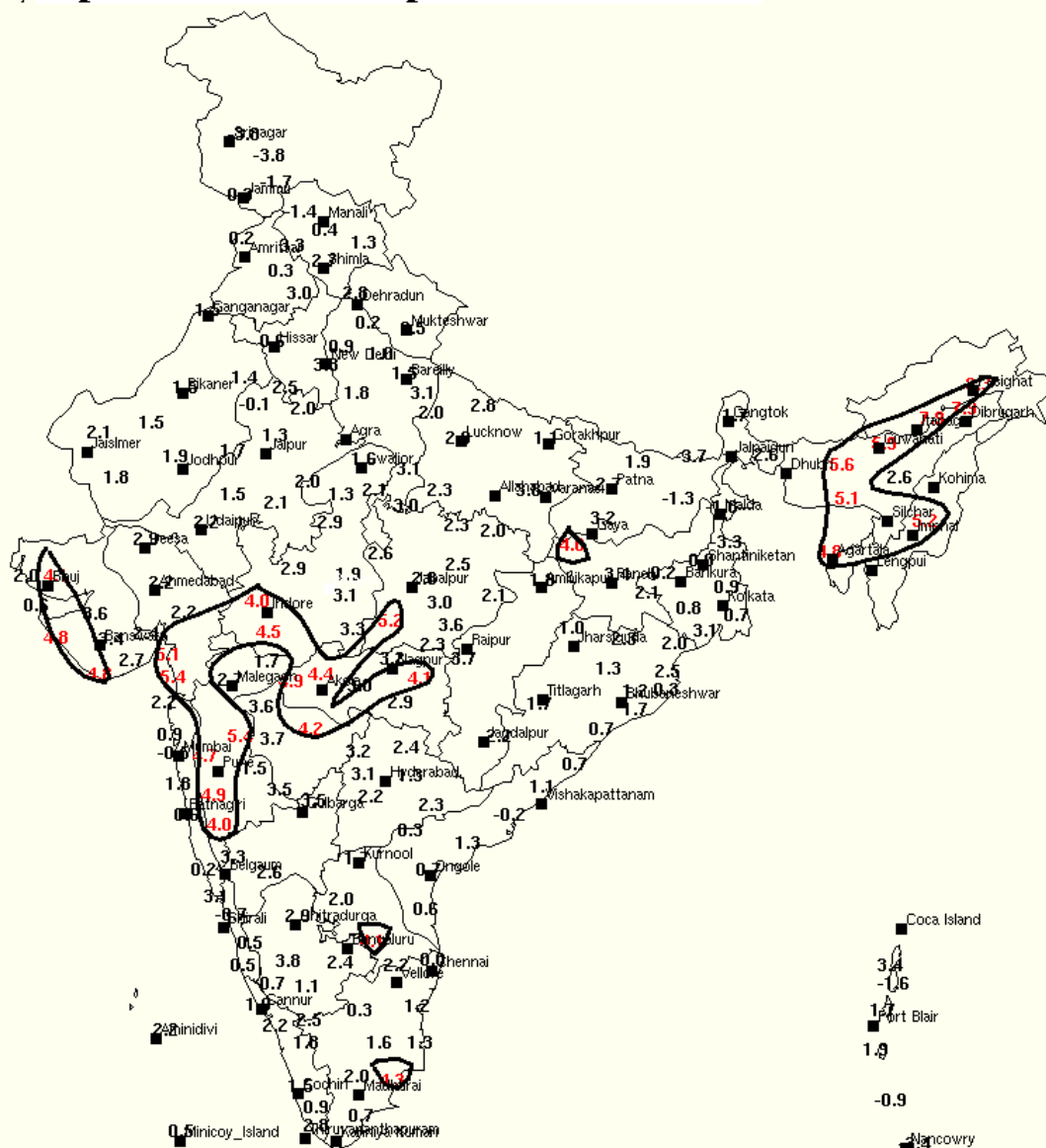
01/05/2019

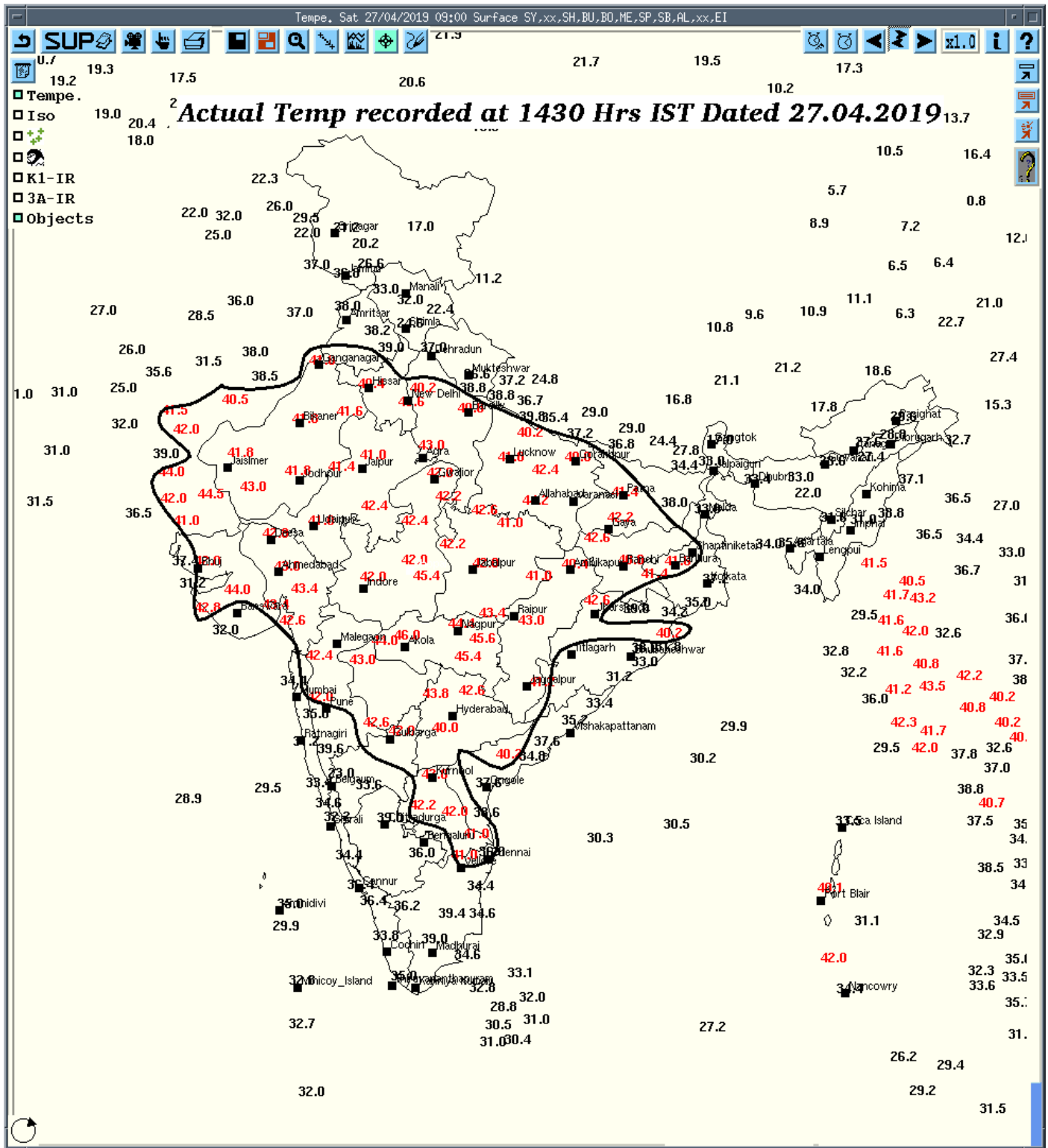


Heat wave conditions:- NIL

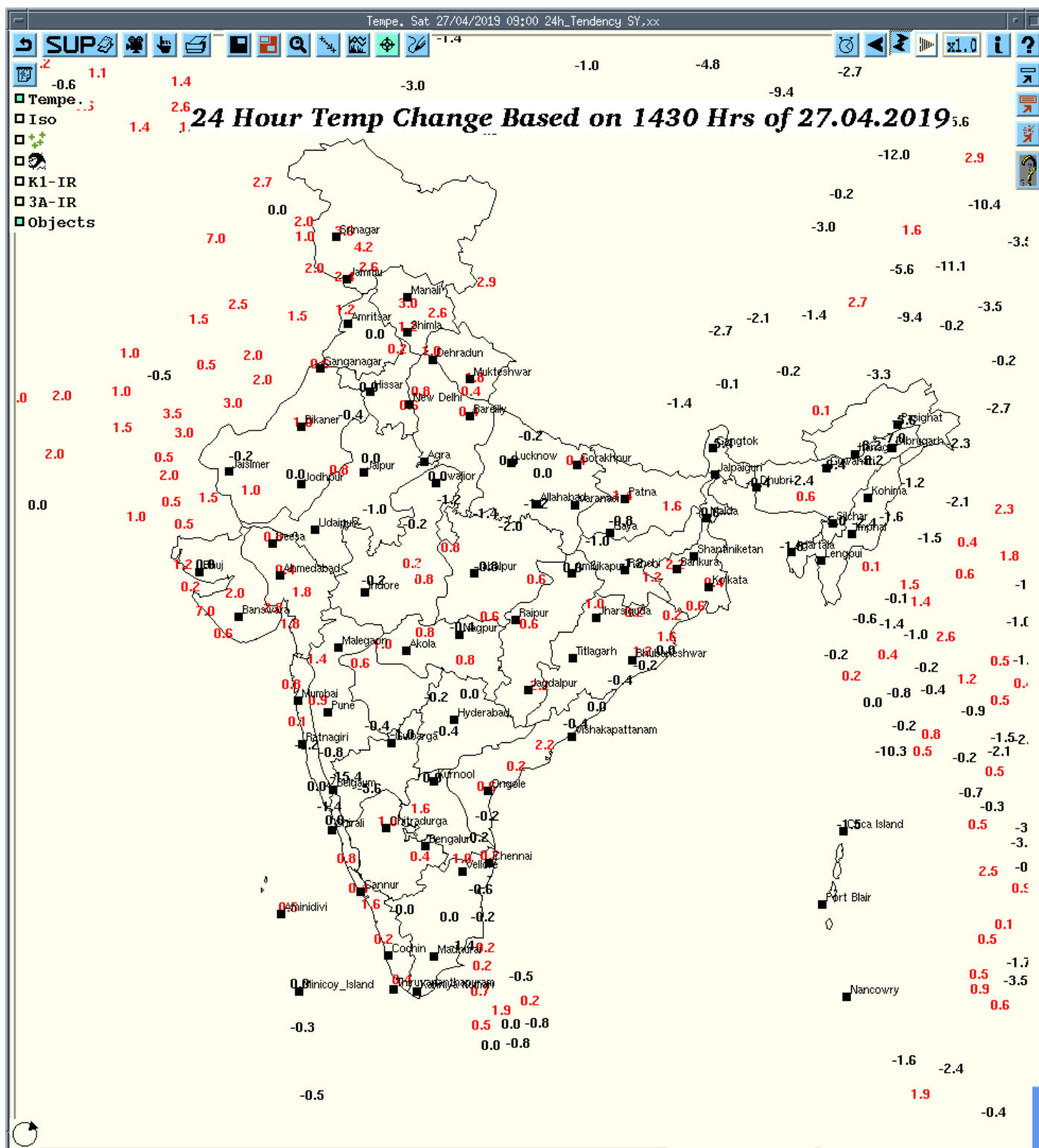


Departures Max Temp Dated 26.04.2019





Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Alert	Warning	Impact	Suggested Actions
Normal Day	Nil	Comfortable temperatures	No cautionary action required
Heat Alert	Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
Severe Heat Alert for the day	i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
Extreme Heat Alert for the day	i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 28th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 27 April to 0830 hrs IST 28 April, 2019)

Heat Wave:

Yesterday, **heat wave conditions** were observed at many places over Vidarbha; at some places over Saurashtra & Kutch and in isolated pockets over West Madhya Pradesh, Marathwada and Madhya Maharashtra (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at a few places over Gujarat state; **appreciably above normal (3.1°C to 5.0°C)** at many places over Nagaland, Manipur, Mizoram & Tripura and Vidarbha; at a few places over Himachal Pradesh, Uttarakhand, Assam & Meghalaya, Jharkhand, Odisha, Madhya Pradesh, Madhya Maharashtra and Marathwada; at isolated places over West Bengal & Sikkim, Bihar, Chhattisgarh, Telangana and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over East Uttar Pradesh; at many places over East Rajasthan, Rayalaseema, South Interior Karnataka and Andaman & Nicobar Islands; at a few places over West Uttar Pradesh, West Rajasthan, Punjab and Kerala; at isolated places over Haryana, Chandigarh & Delhi. Yesterday, the **highest maximum temperature of 46.7°C** was recorded at Akola (Vidarbha) (**Annexure 1 & 2**).

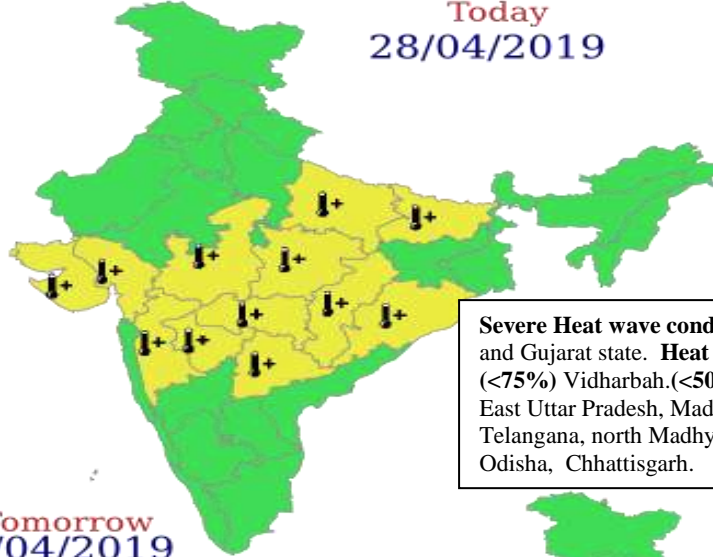
Temperatures Recorded at 1430 Hours IST of Today, the 28th April, 2019

- **Akola (Vidarbha) recorded the maximum temperature of 46.7°C each (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at many parts of Jammu & Kashmir and; at a few places over West Bengal and North Interior Karnataka and at one or two pockets of Himachal Pradesh, Uttarakhand, Madhya Pradesh, Bihar, Odisha, Bihar, Konkan & Goa and Meghalaya (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

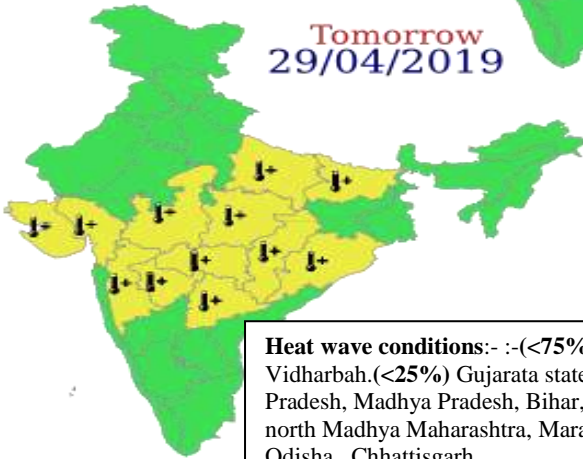
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
28/04/2019



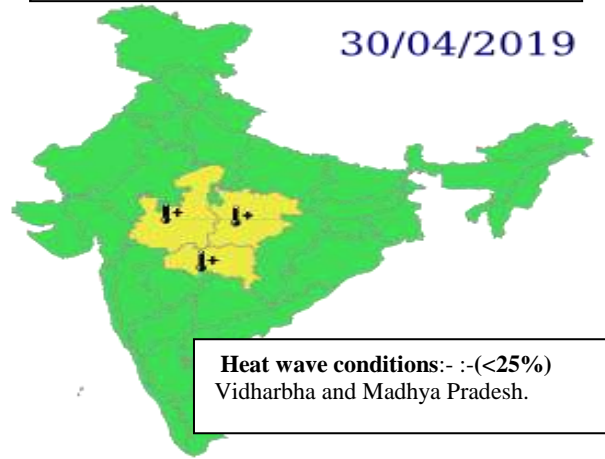
Severe Heat wave conditions :-(<25%) Vidharbha and Gujarat state. **Heat wave conditions:- :-(<75%)** Vidharbha.(<50%) Gujarata state. (<25%) East Uttar Pradesh, Madhya Pradesh, Bihar, Telangana, north Madhya Maharashtra, Marathwada, Odisha, Chhattisgarh.

Tomorrow
29/04/2019



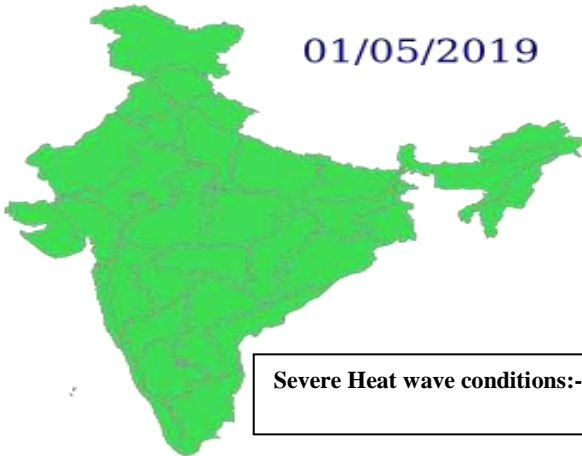
Heat wave conditions:- :-(<75%) Vidharbha.(<25%) Gujarata state, East Uttar Pradesh, Madhya Pradesh, Bihar, Telangana, north Madhya Maharashtra, Marathwada, Odisha, Chhattisgarh.

30/04/2019



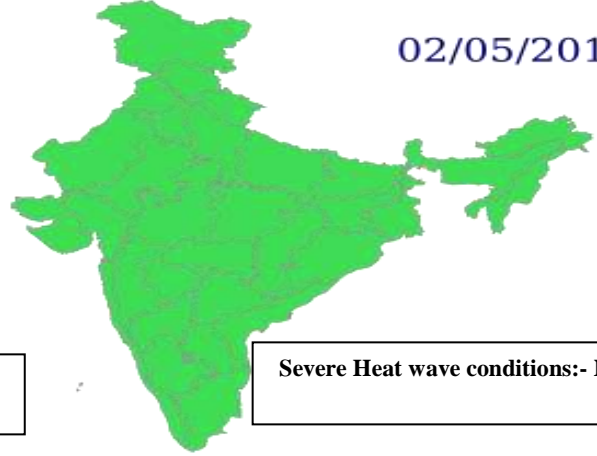
Heat wave conditions:- :-(<25%) Vidharbha and Madhya Pradesh.

01/05/2019

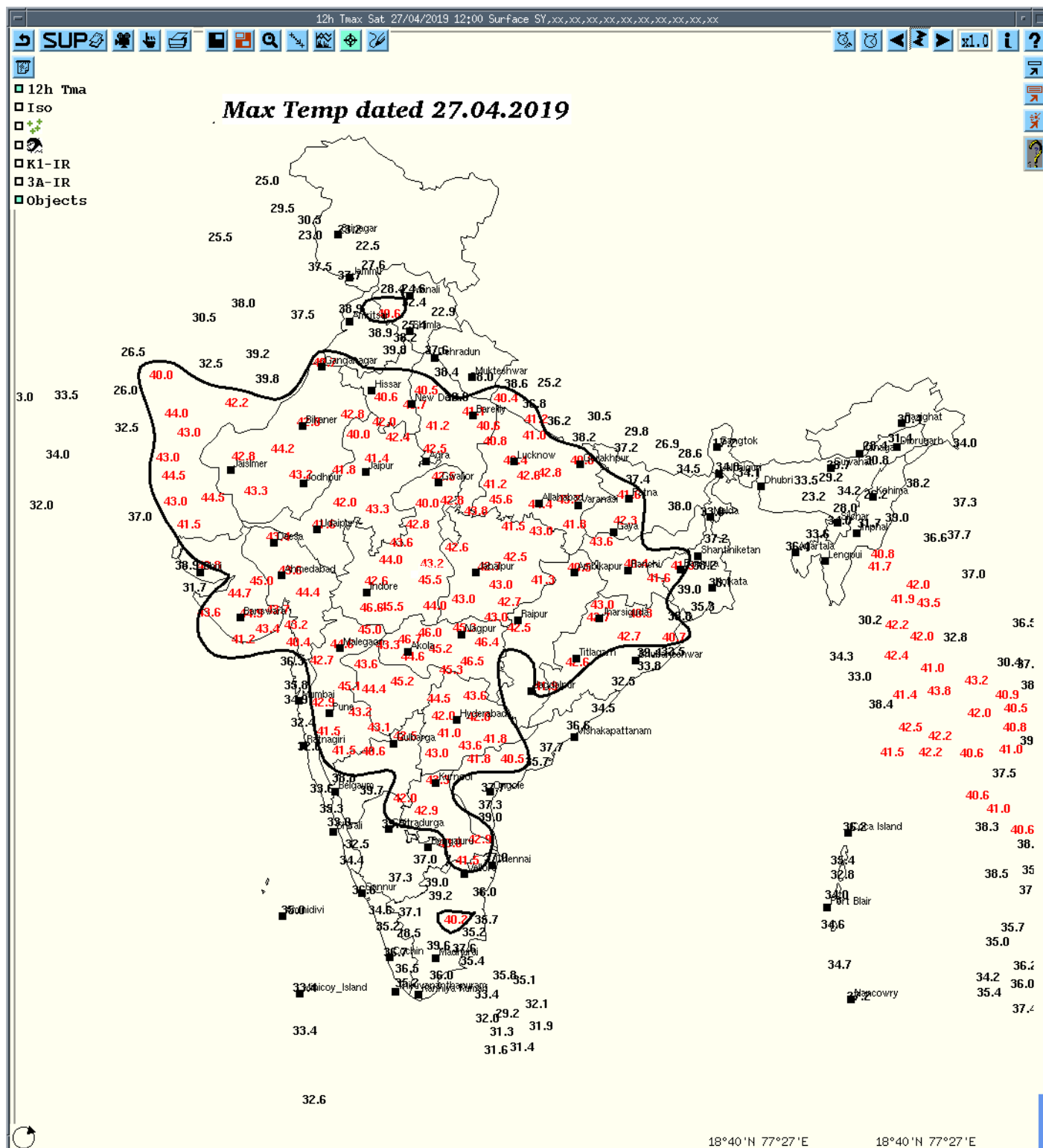


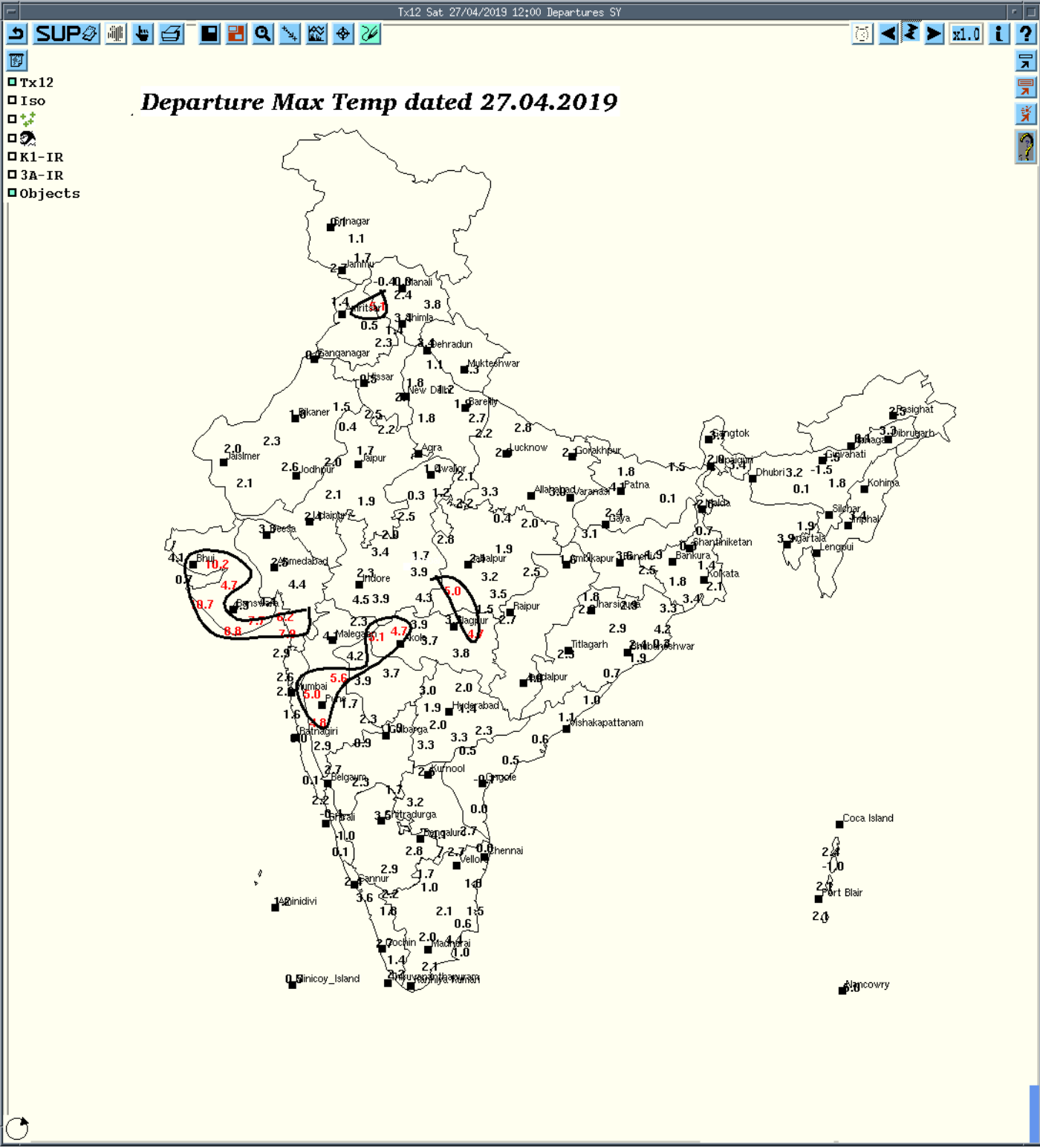
Severe Heat wave conditions:- NIL

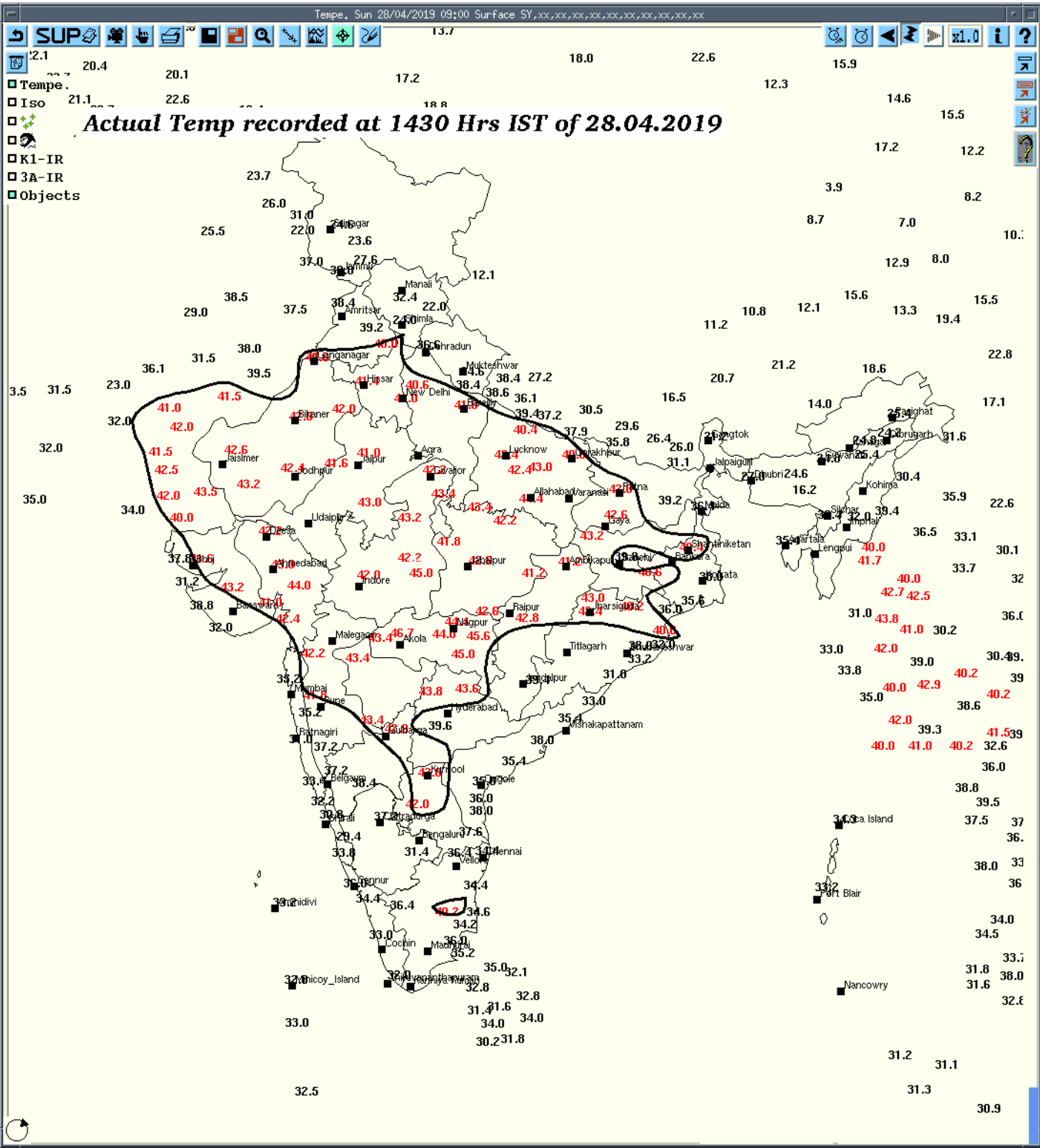
02/05/2019

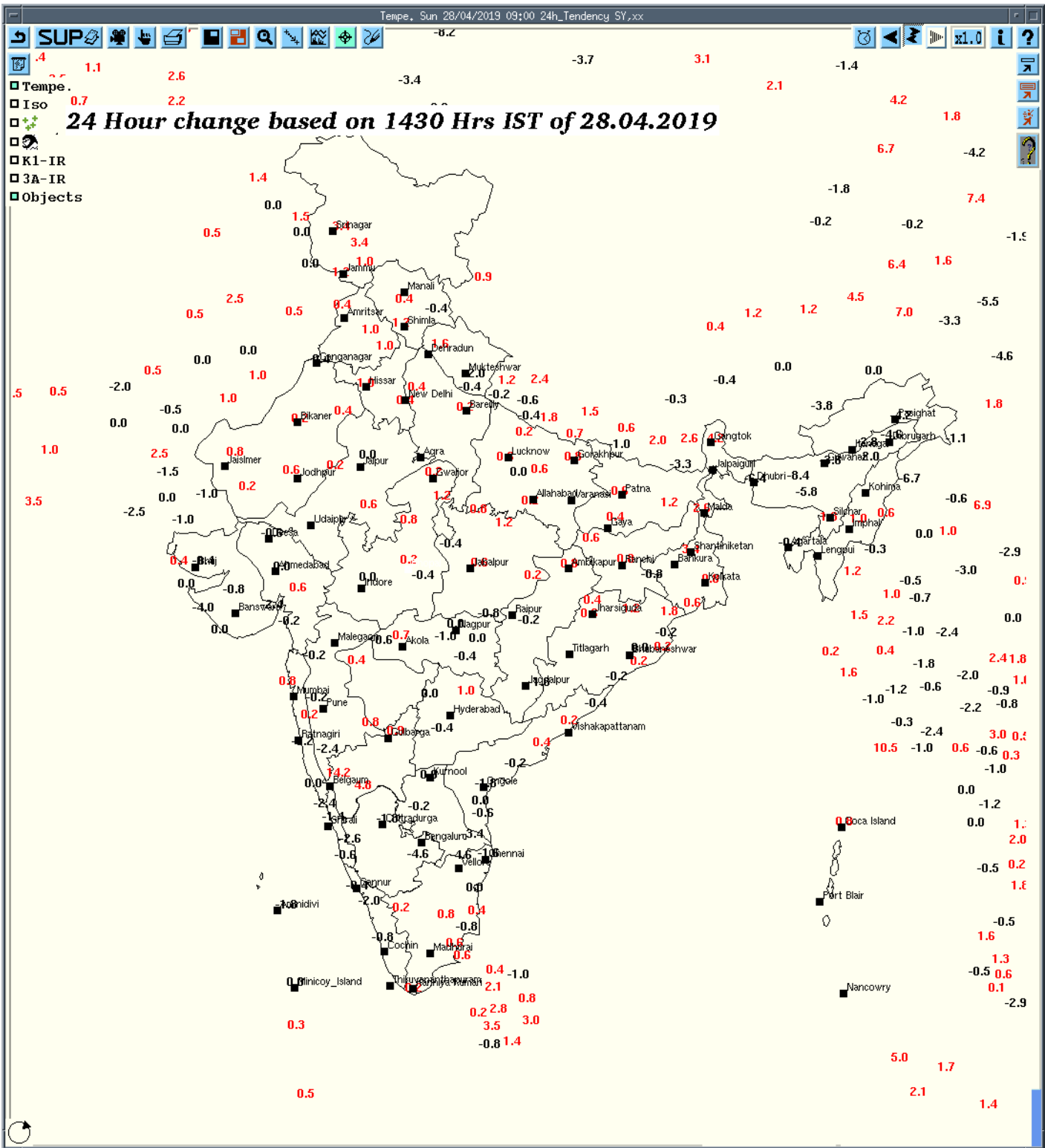


Severe Heat wave conditions:- NIL









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 29th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 28 April to 0830 hrs IST 29 April, 2019)

Heat Wave:

Yesterday, **Severe heat wave conditions** were observed at some parts over coastal Saurashtra and isolated pockets over Vidarbha. **Heat wave conditions** were observed at isolated pockets over Gujarat Region, Marathwada, Madhya Maharashtra and Madhya Pradesh (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at a few places over Gujarat state and at isolated places over Madhya Maharashtra; **appreciably above normal (3.1°C to 5.0°C)** at most places over Vidarbha; at many places over Jammu & Kashmir, Himachal Pradesh, Jharkhand, Gangetic West Bengal, West Madhya Pradesh, Marathawada and Nagaland, Manipur, Mizoram & Tripura; at a few places over East Madhya Pradesh and Bihar and at isolated places over Odisha and Telangana; **above normal (1.6°C to 3.0°C)** at most places over Uttarakhand, Punjab, Uttar Pradesh and Chhattisgarh; at many places over Rajasthan, Rayalaseema and North Interior Karnataka; at a few places over Haryana, Chandigarh & Delhi, Konkan & Goa and Kerala and at isolated places over Tamilnadu & Puducherry and Andaman & Nicobar Islands. Yesterday, the **highest maximum temperature** of **47.5°C** was recorded at **Khargone (West Madhya Pradesh)** (**Annexure 1 & 2**).

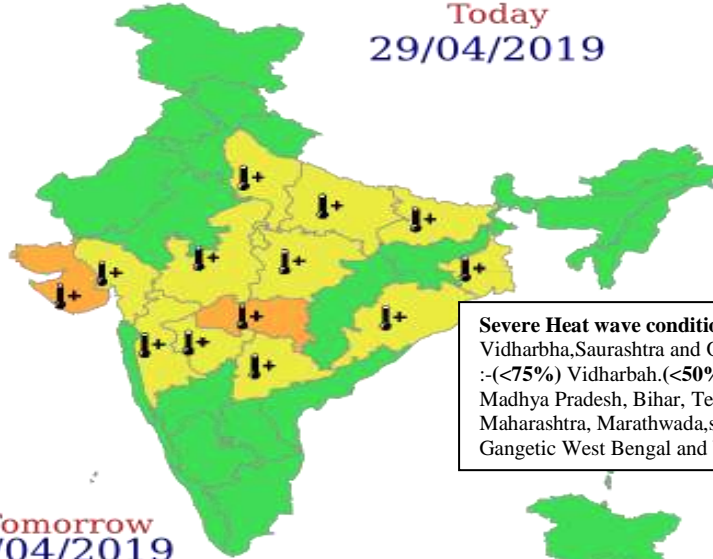
Temperatures Recorded at 1430 Hours IST of Today, the 29th April, 2019

- **Akola (Vidarbha)** recorded the maximum temperature of **46.3°C** each (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at a few places over West Rajasthan, East Madhya Pradesh and Kerala and at one or two pockets of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Bihar, Gangetic West Bengal, Coastal Andhra Pradesh, Telangana and Assam & Meghalaya (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

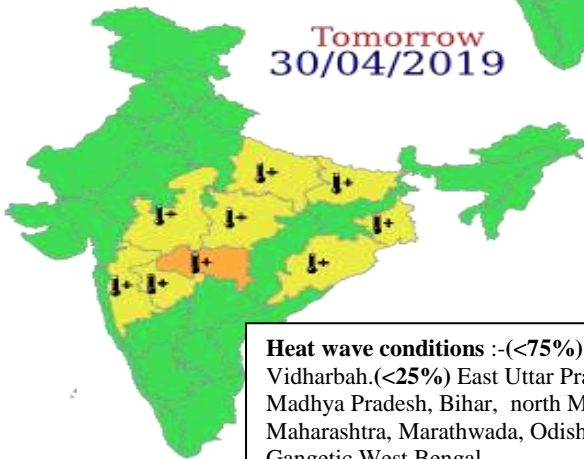
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
29/04/2019



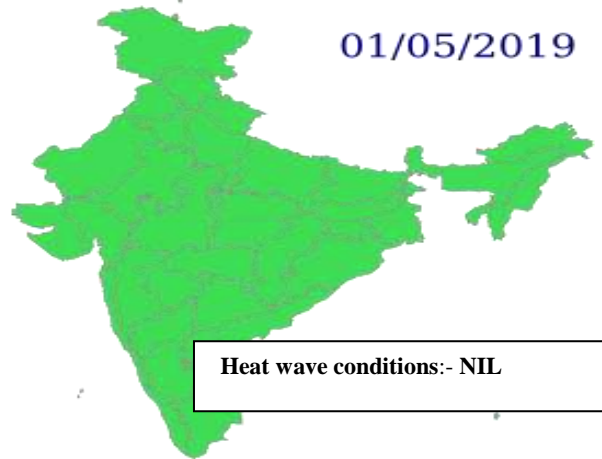
Severe Heat wave conditions :-(<25%)
Vidharbha,Saurashtra and Odisha. **Heat wave conditions:-**
:-(<75%) Vidharbha.(<50%) East Uttar Pradesh. (<25%)
Madhya Pradesh, Bihar, Telangana, north Madhya
Maharashtra, Marathwada,south Gujarat region, Bihar,
Gangetic West Bengal and West Uttar Pradesh.

Tomorrow
30/04/2019



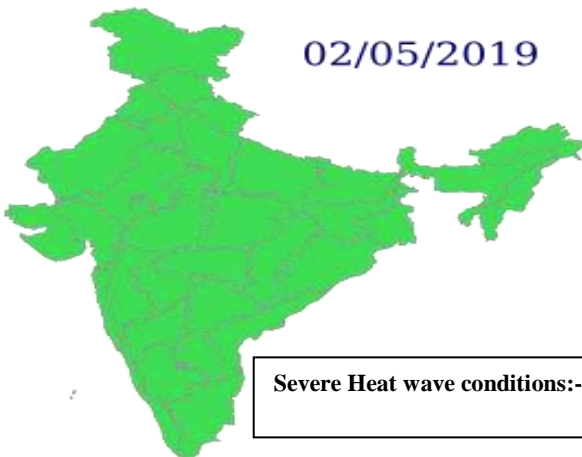
Heat wave conditions :-(<75%)
Vidharbha.(<25%) East Uttar Pradesh,
Madhya Pradesh, Bihar, north Madhya
Maharashtra, Marathwada, Odisha and
Gangetic West Bengal.

01/05/2019



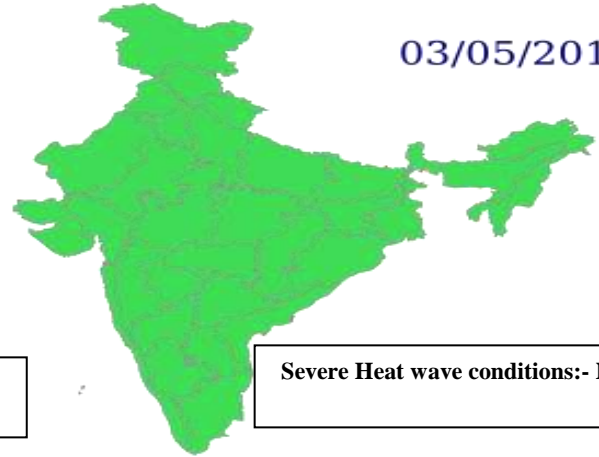
Heat wave conditions:- NIL

02/05/2019

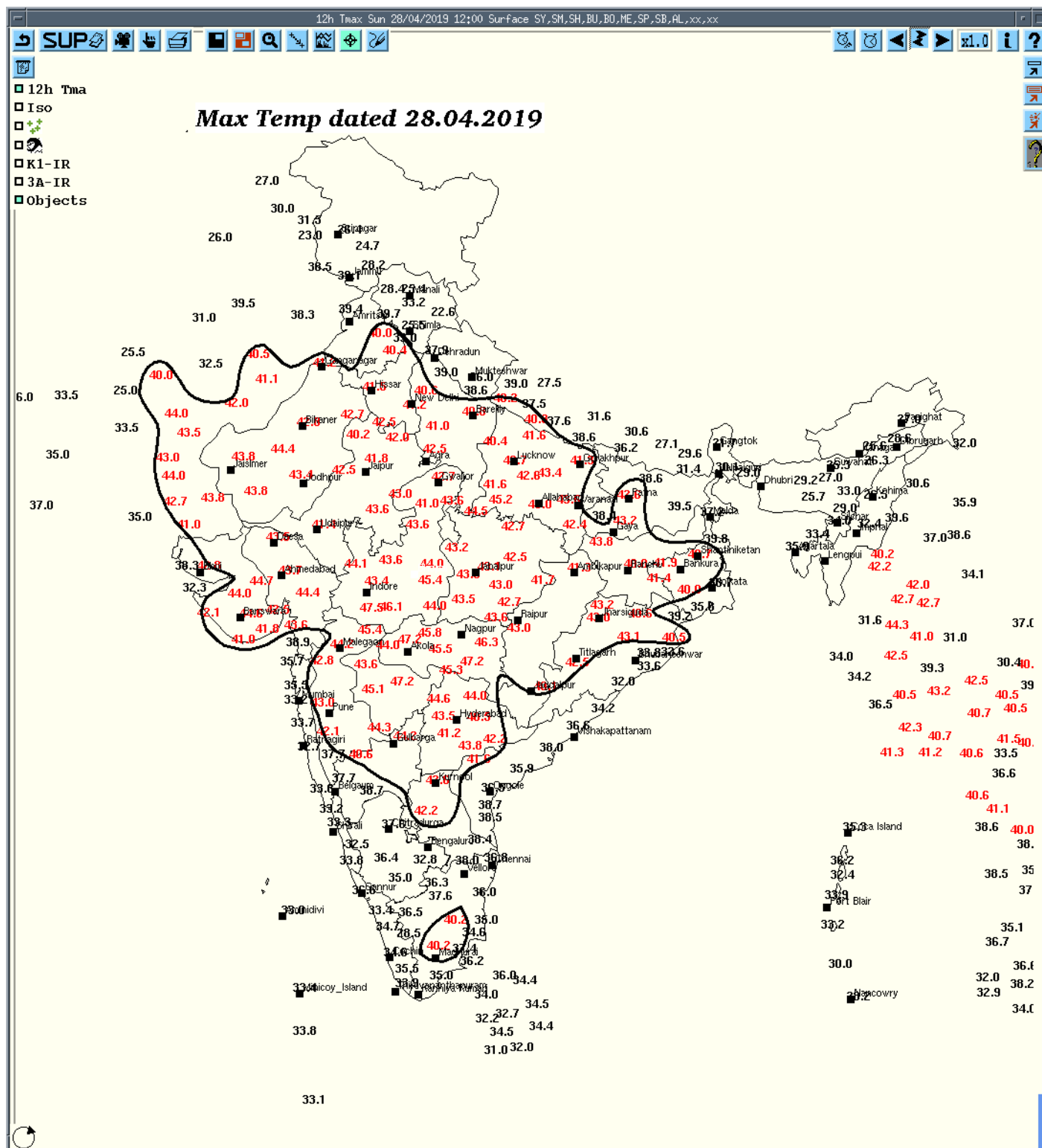


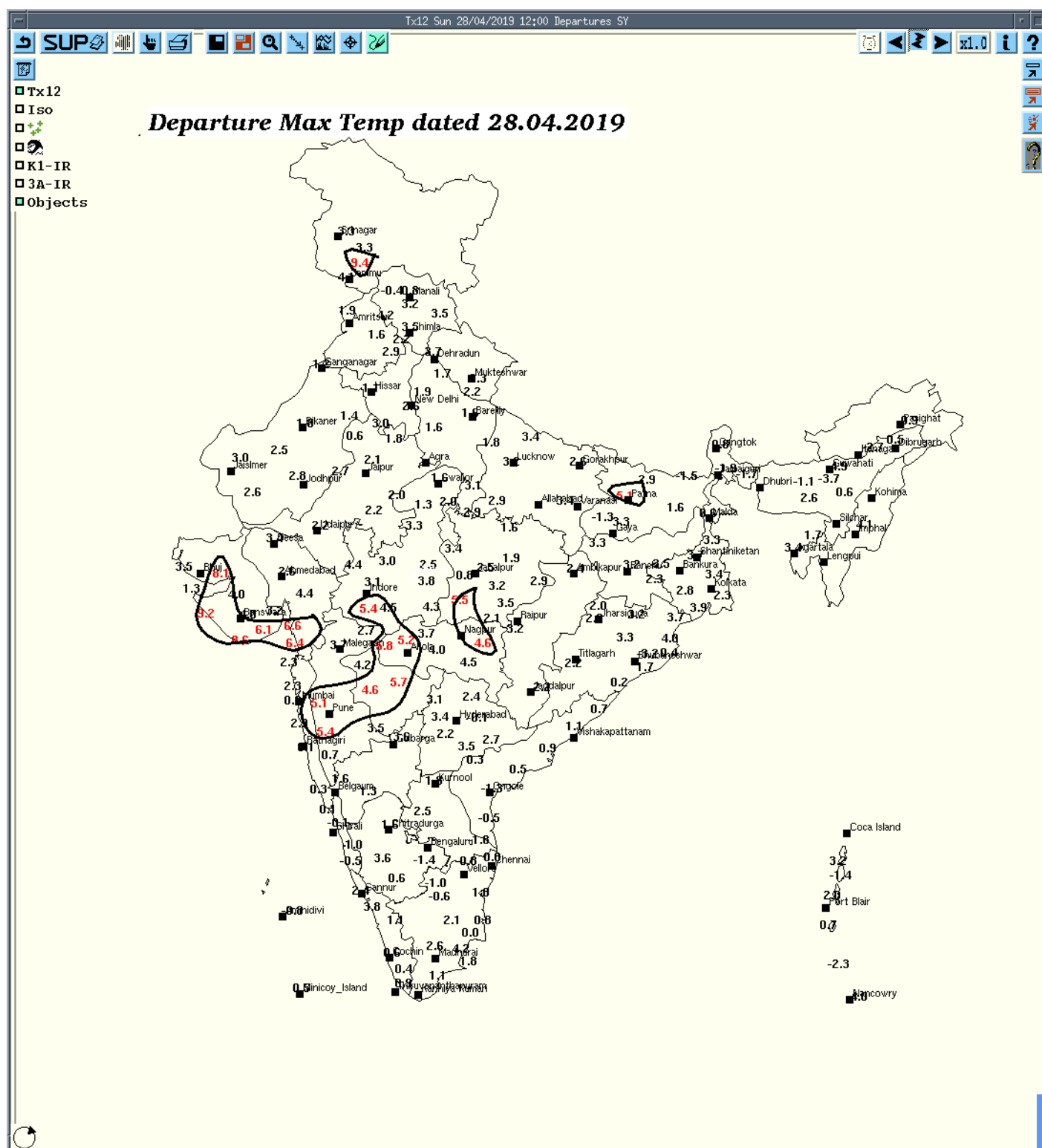
Severe Heat wave conditions:- NIL

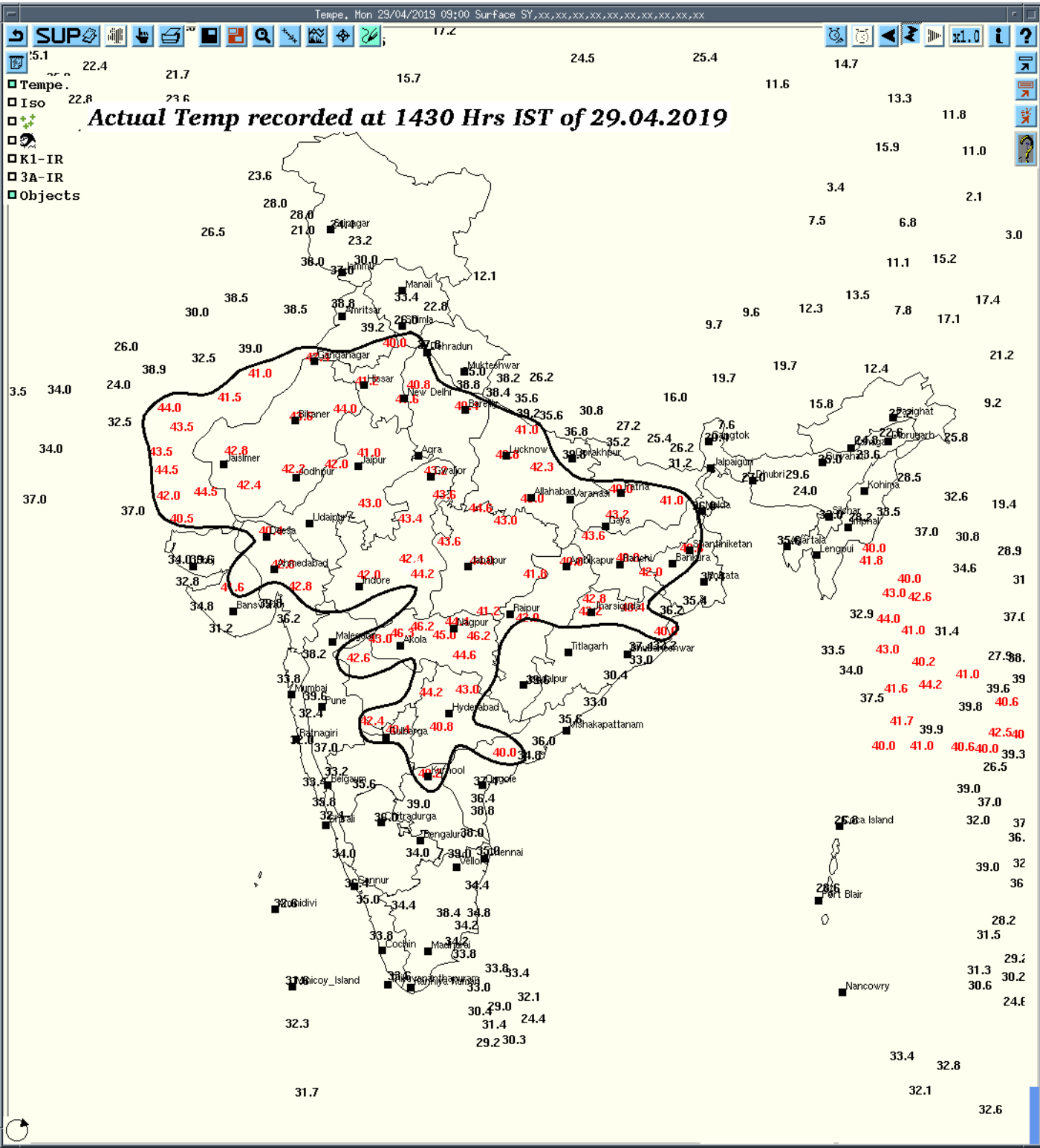
03/05/2019



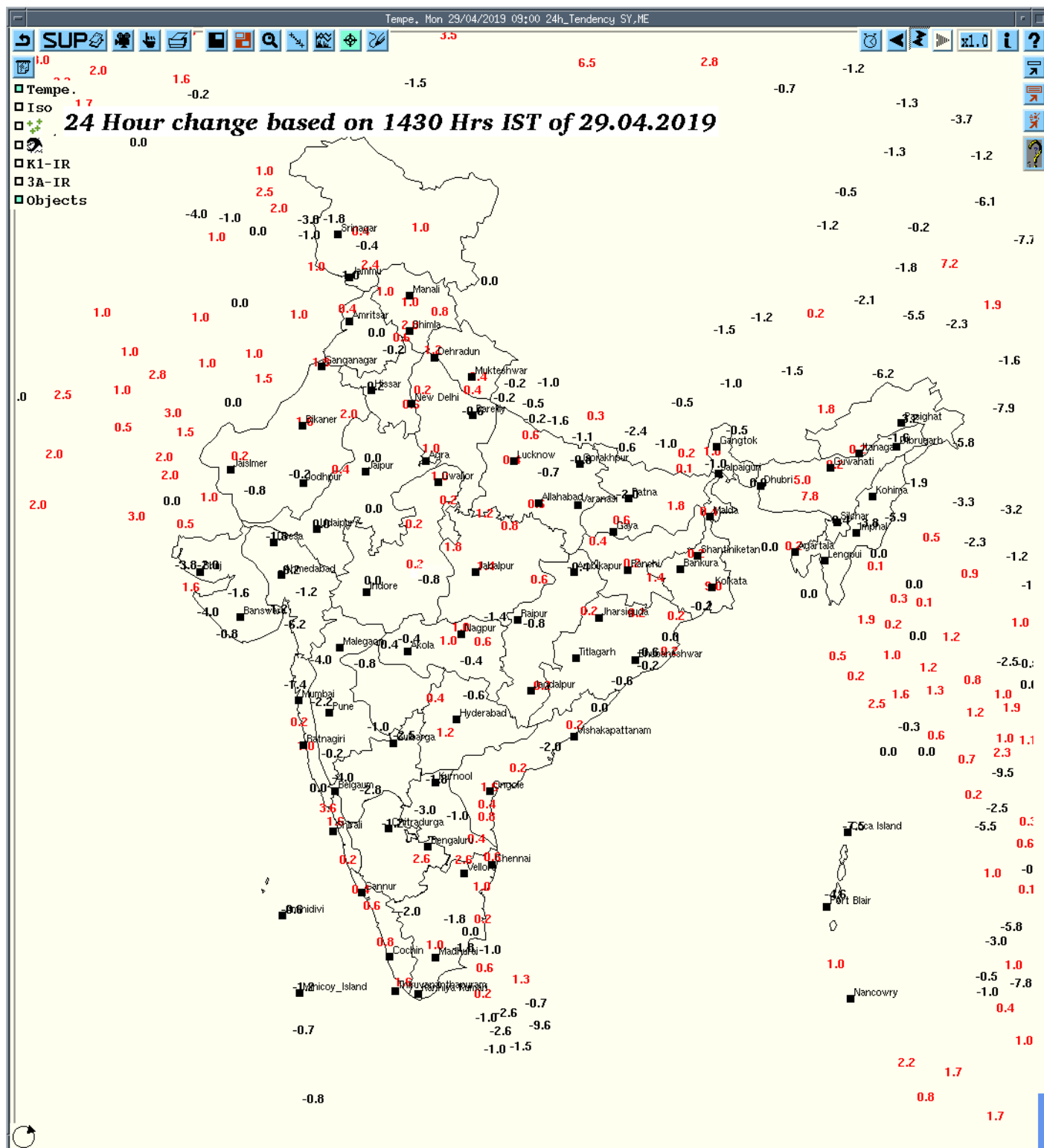
Severe Heat wave conditions:- NIL







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 30th April, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 29 April to 0830 hrs IST 30 April, 2019)

Heat Wave:

Yesterday, **Severe heat wave conditions** was observed in isolated pockets over West Madhya Pradesh. **Heat wave conditions** observed at some parts over Vidarbha and in isolated pockets over Uttar Pradesh, Saurashtra & Kutch, Marathwada, Madhya Maharashtra and East Madhya Pradesh(**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Vidarbha & Jharkhand; at many places over Himachal Pradesh, West Rajasthan, Marathwada, East Uttar Pradesh and East Madhya Pradesh; at a few places over Uttarakhand, Jammu & Kashmir, West Madhya Pradesh, Konkan & Goa, Bihar, Odisha and Gangetic West Bengal and at isolated places over Haryana, Chandigarh & Delhi, Chhattisgarh and Saurashtra & Kutch and **above normal (1.6°C to 3.0°C)** at most places over East Rajasthan, West Uttar Pradesh and Madhya Maharashtra; at many places over Punjab and Gujarat Region and at a few places over Tripura. Yesterday, the **highest maximum temperature** of **47.4°C** was recorded at **Khargone (West Madhya Pradesh)(Annexure 1 & 2)**.

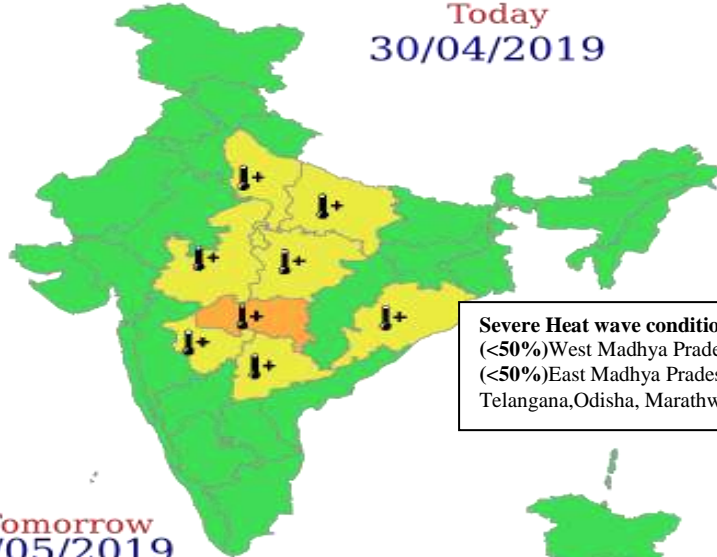
Temperatures Recorded at 1430 Hours IST of Today, the 30th April, 2019

- **Khajuraho(East Madhya Pradesh)** recorded the maximum temperature of **45.8°C (Annexure 3)**.
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at many parts of Uttar Pradesh and Haryana & Delhi and at one or two pockets of East Madhya Pradesh, Jharkhand, West Bengal, Rayalaseema, Tamilnadu, Himachal Pradesh and Manipur (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

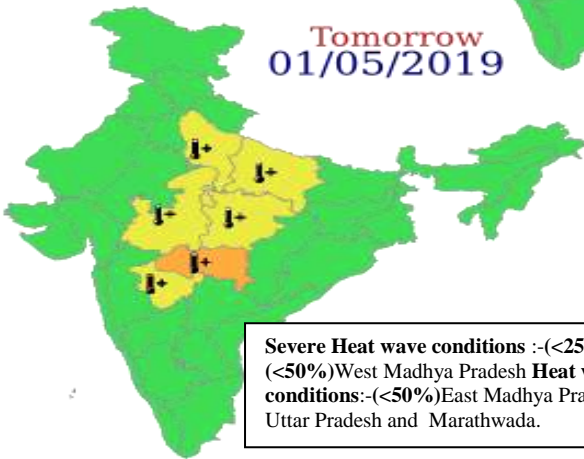
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
30/04/2019



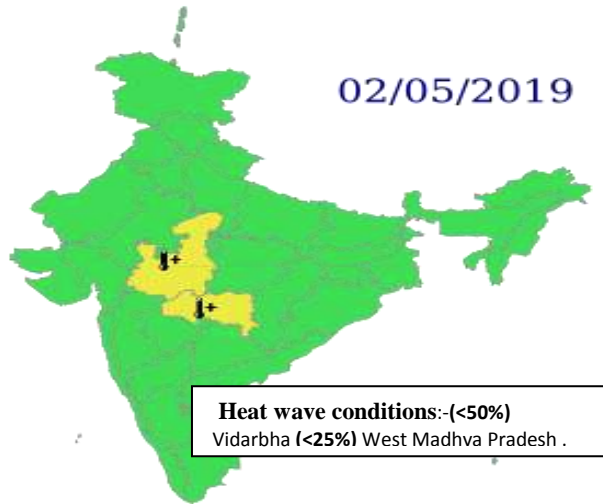
Severe Heat wave conditions :-(<25%) Vidharbha (<50%)West Madhya Pradesh **Heat wave conditions:- (<50%)**East Madhya Pradesh. (<25%) Uttar Pradesh, Telangana,Odisha, Marathwada.

Tomorrow
01/05/2019



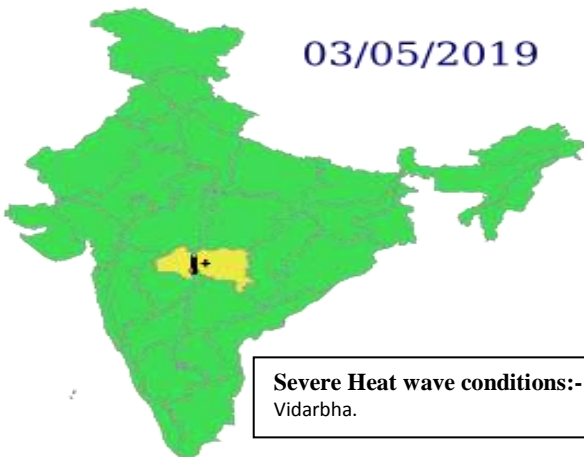
Severe Heat wave conditions :-(<25%) Vidharbha (<50%)West Madhya Pradesh **Heat wave conditions:-(<50%)**East Madhya Pradesh. (<25%) Uttar Pradesh and Marathwada.

02/05/2019



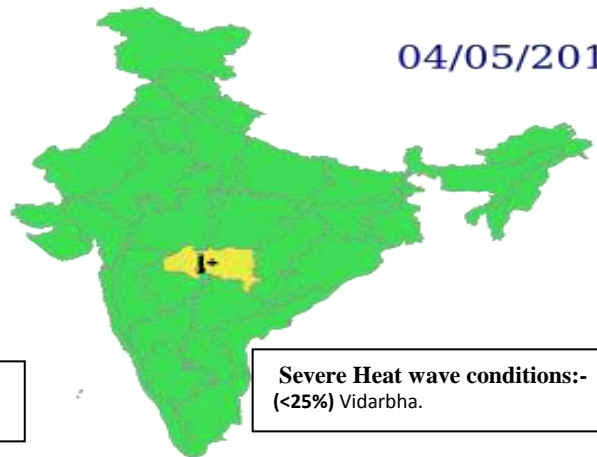
Heat wave conditions:-(<50%) Vidarbha (<25%) West Madhya Pradesh .

03/05/2019

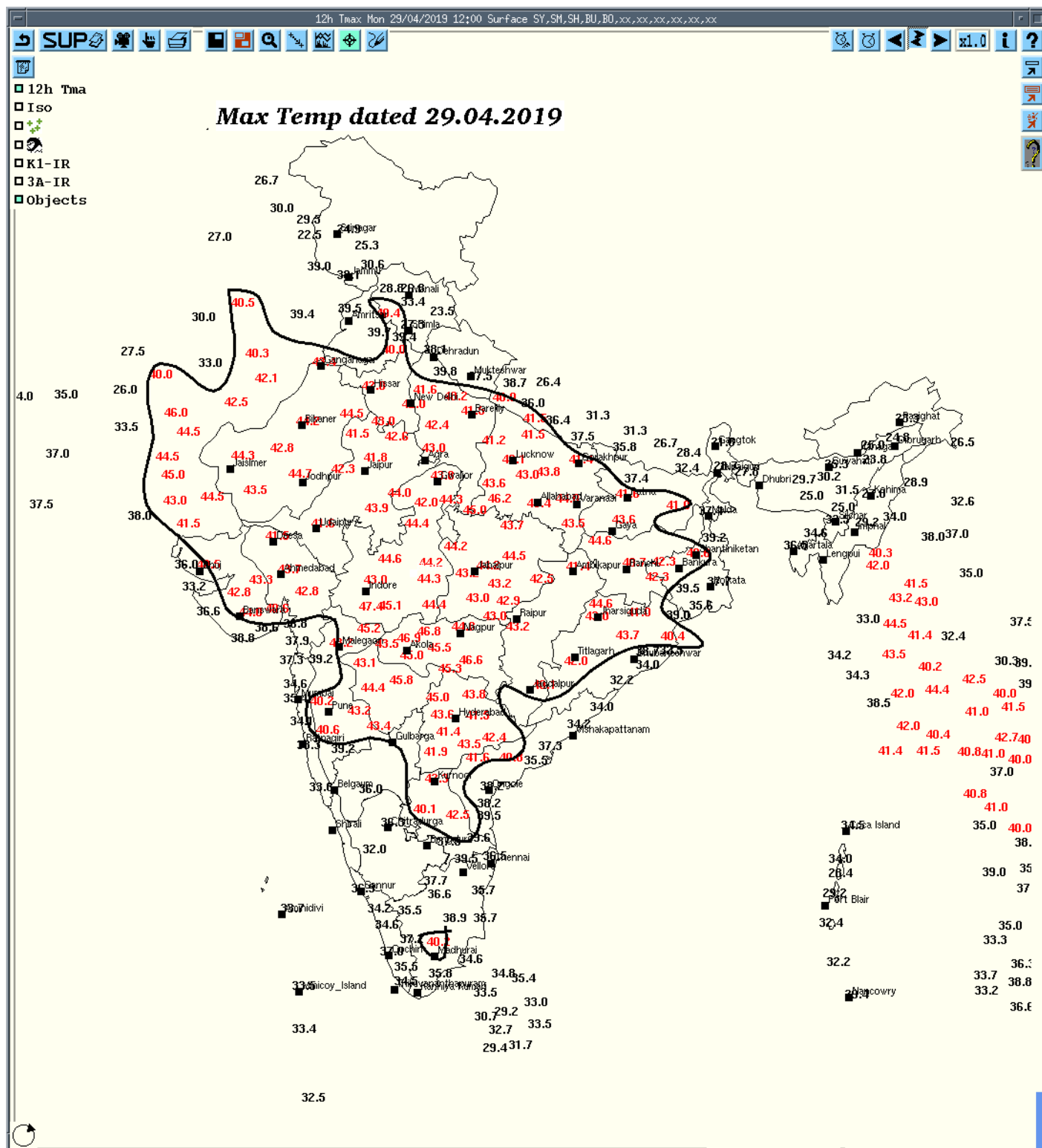


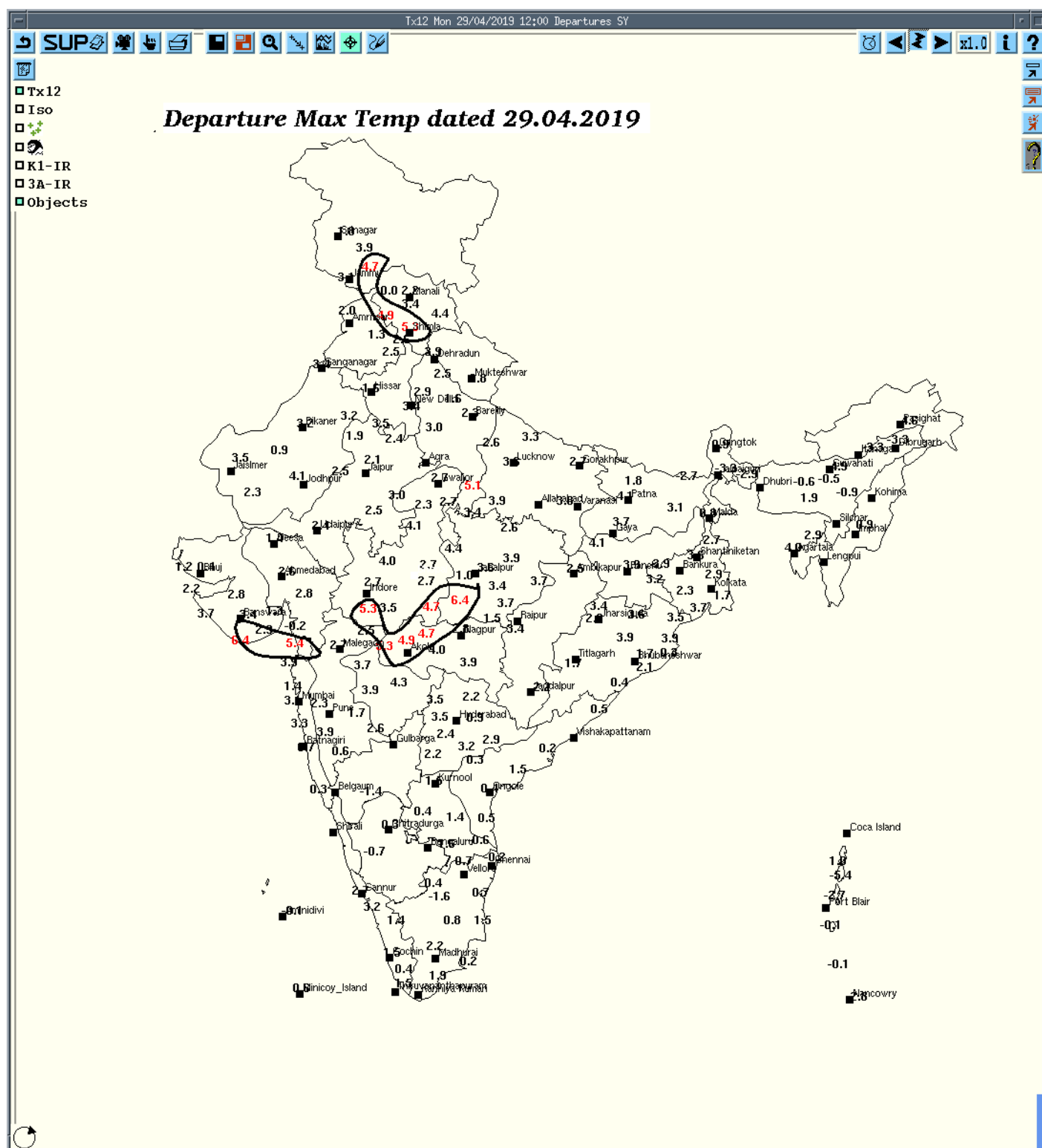
Severe Heat wave conditions:- (<25%) Vidarbha.

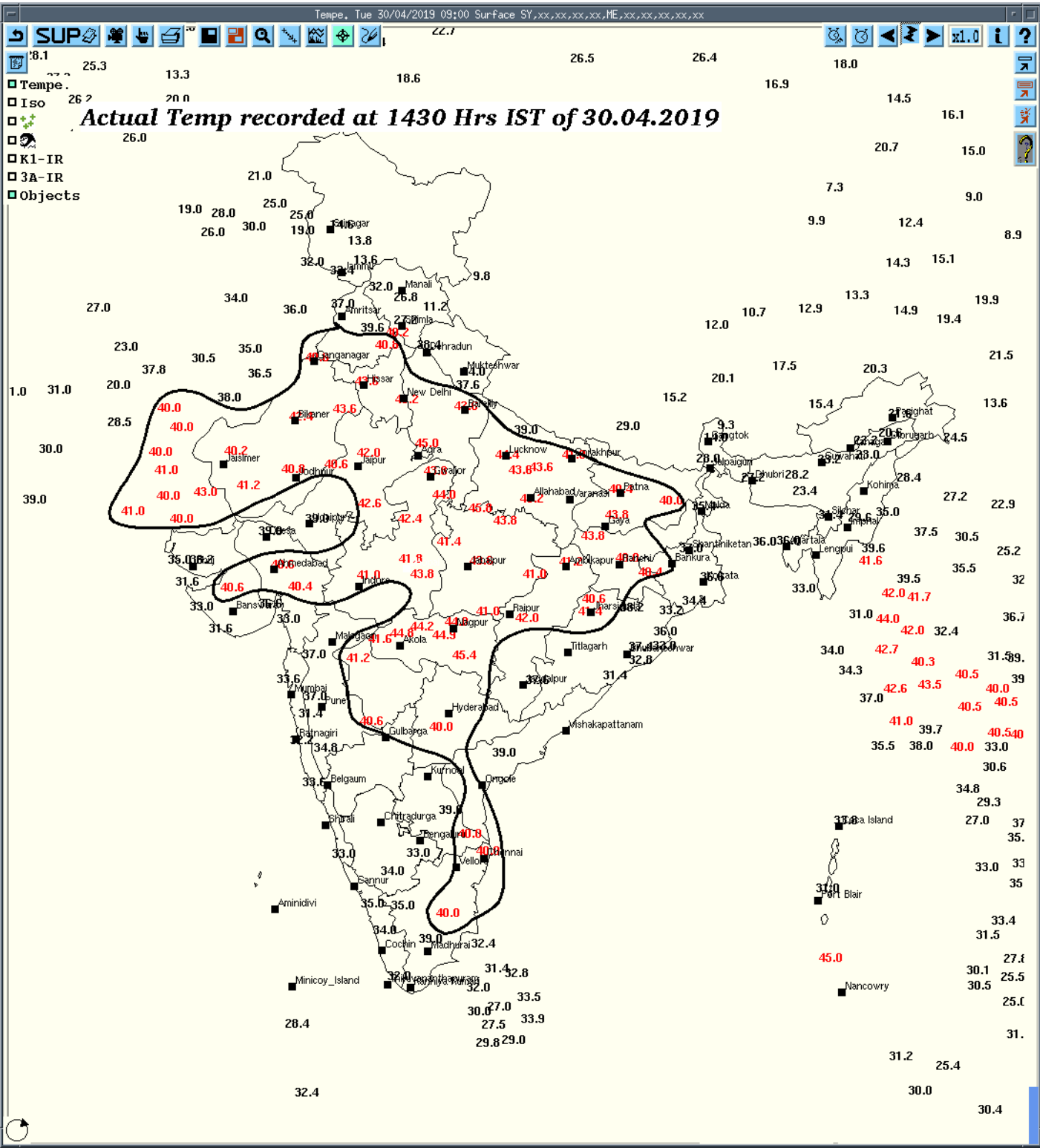
04/05/2019



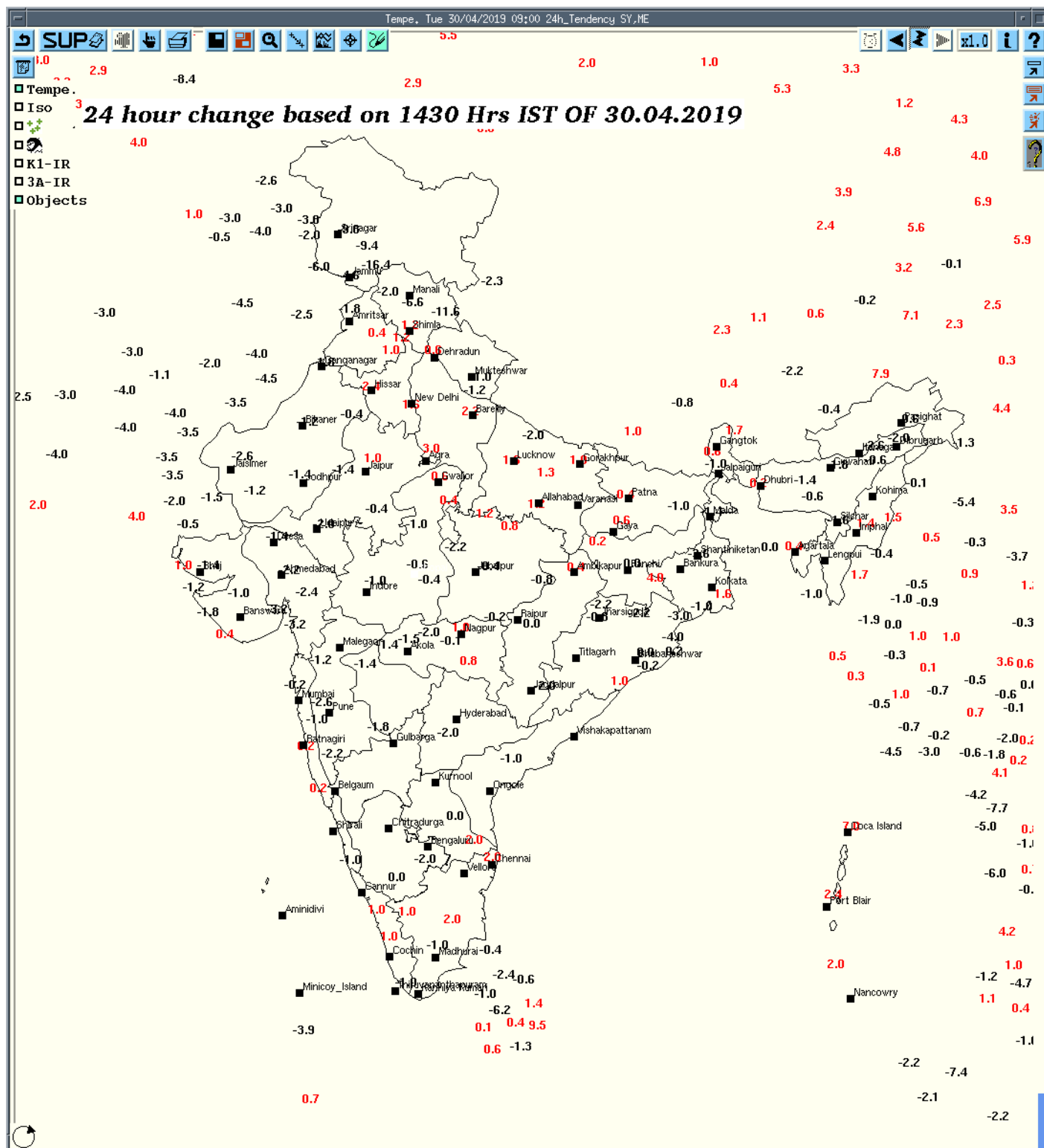
Severe Heat wave conditions:- (<25%) Vidarbha.







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 01st May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 30 April to 0830 hrs IST 01 May, 2019)

Heat Wave:

Yesterday, **Heat wave conditions** observed at many places with **Severe Heat wave** at isolated places over Vidarbha. **Heat wave to severe heat conditions** observed at isolated places over East Uttar Pradesh and **heat wave** at isolated places over East Madhya Pradesh (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at isolated places over Himachal Pradesh and East Uttar Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at most places over Vidarbha; at many places over West Uttar Pradesh and East Madhya Pradesh; at a few places over Punjab and Haryana, Chandigarh & Delhi and at isolated places over Bihar, Jharkhand, Gangetic West Bengal and Marathawada; **above normal (1.6°C to 3.0°C)** at most places over East Rajasthan and West Uttar Pradesh; at a few places over Gujarat Region and West Rajasthan and at isolated places over Telangana Yesterday, **highest maximum temperature of 47.2°C** was recorded at **Banda (East Uttar Pradesh)** (**Annexure 1 & 2**).

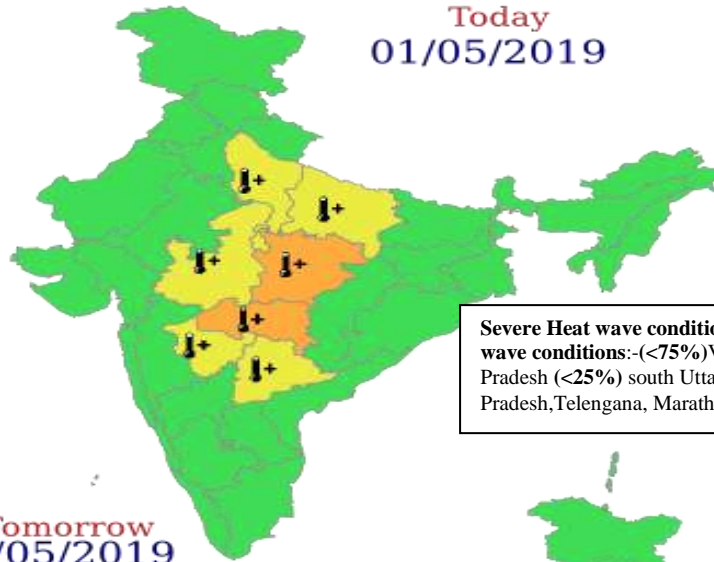
Temperatures Recorded at 1430 Hours IST of Today, the 01st May, 2019

- **Brahampuri (Vidarbha)** recorded the maximum temperature of 45.6°C each (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at many parts of Jammu & Kashmir and at one or two pockets of Uttarakhand, Gujarat, Telenagan, Vidarbha, Odisha, Gangetic West Bengal, Bihar, Kerala, Tamilnadu & Puducherry and Assam and Meghalaya (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

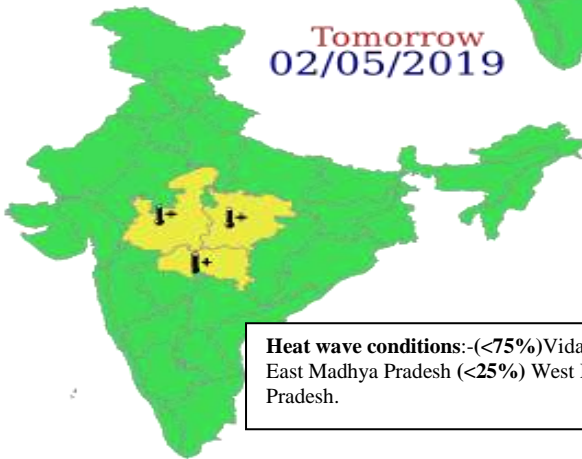
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
01/05/2019



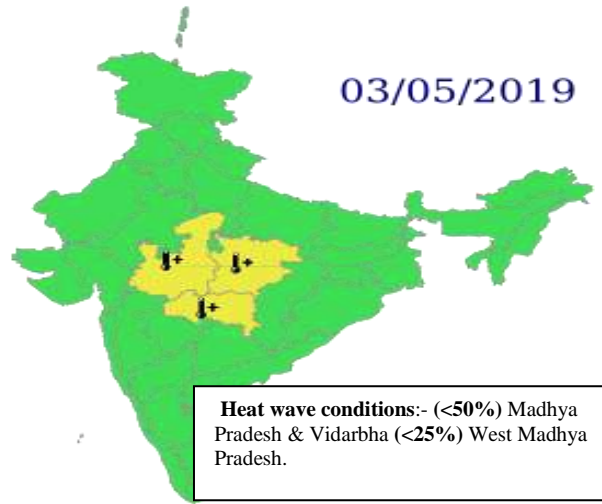
Severe Heat wave conditions :-(<25%) Vidharbha Heat wave conditions:-(<75%)Vidarbha (<50%) East Madhya Pradesh (<25%) south Uttar Pradesh, West Madhya Pradesh,Telengana, Marathwada.

Tomorrow
02/05/2019



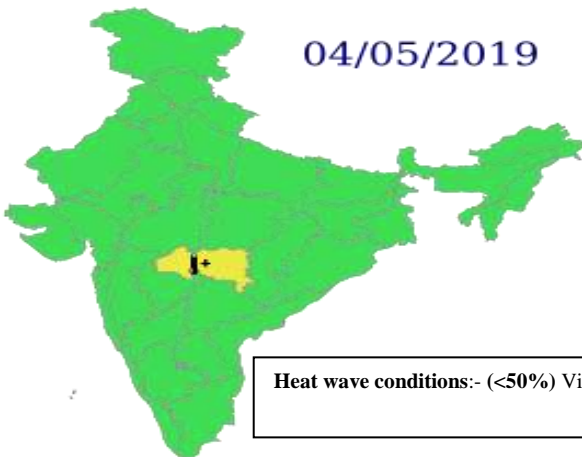
Heat wave conditions:-(<75%)Vidarbha (<50%) East Madhya Pradesh (<25%) West Madhya Pradesh.

03/05/2019



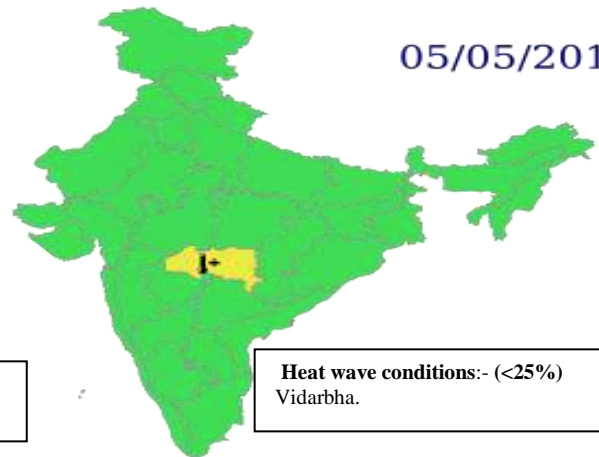
Heat wave conditions:- (<50%) Madhya Pradesh & Vidarbha (<25%) West Madhya Pradesh.

04/05/2019

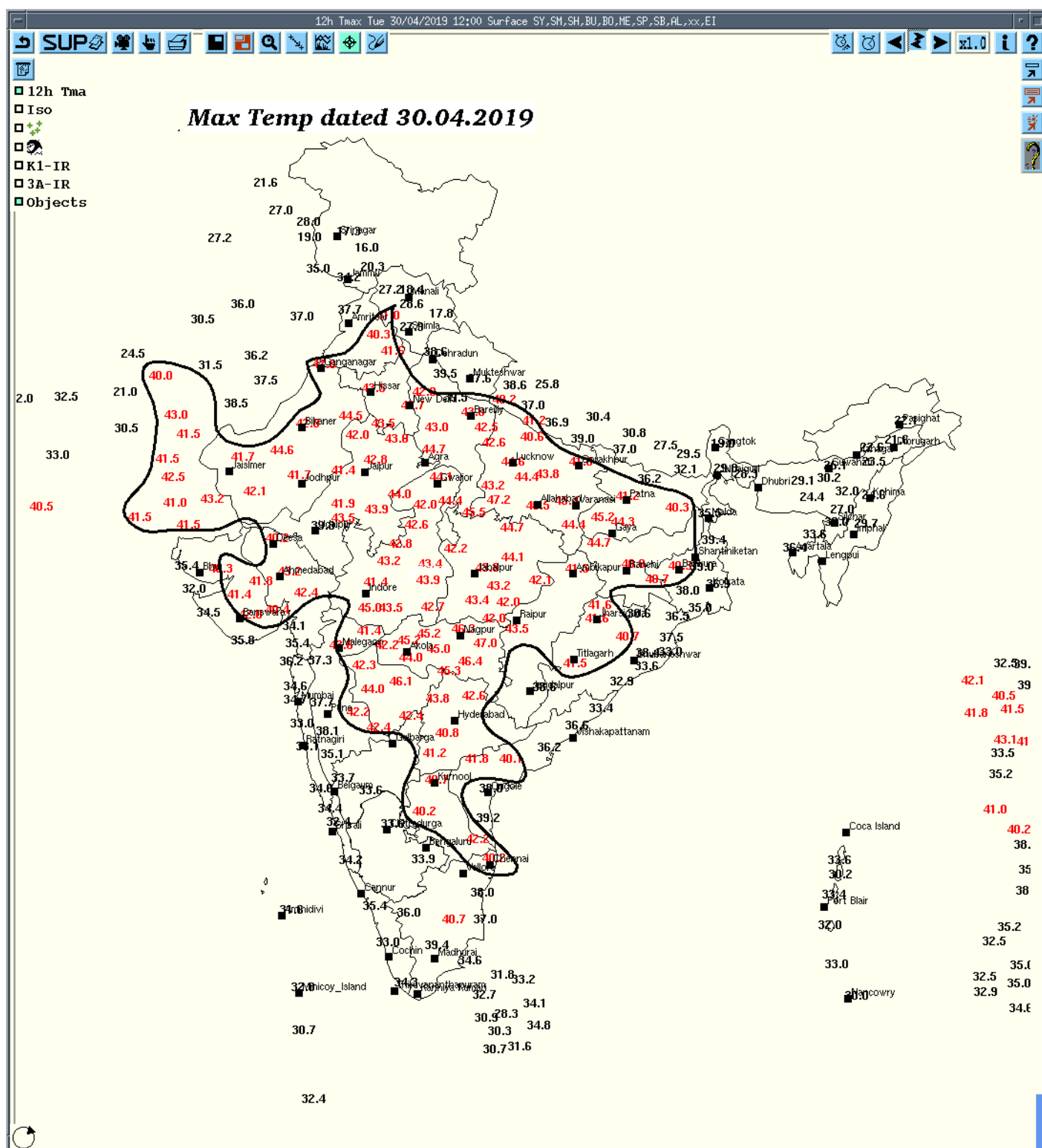


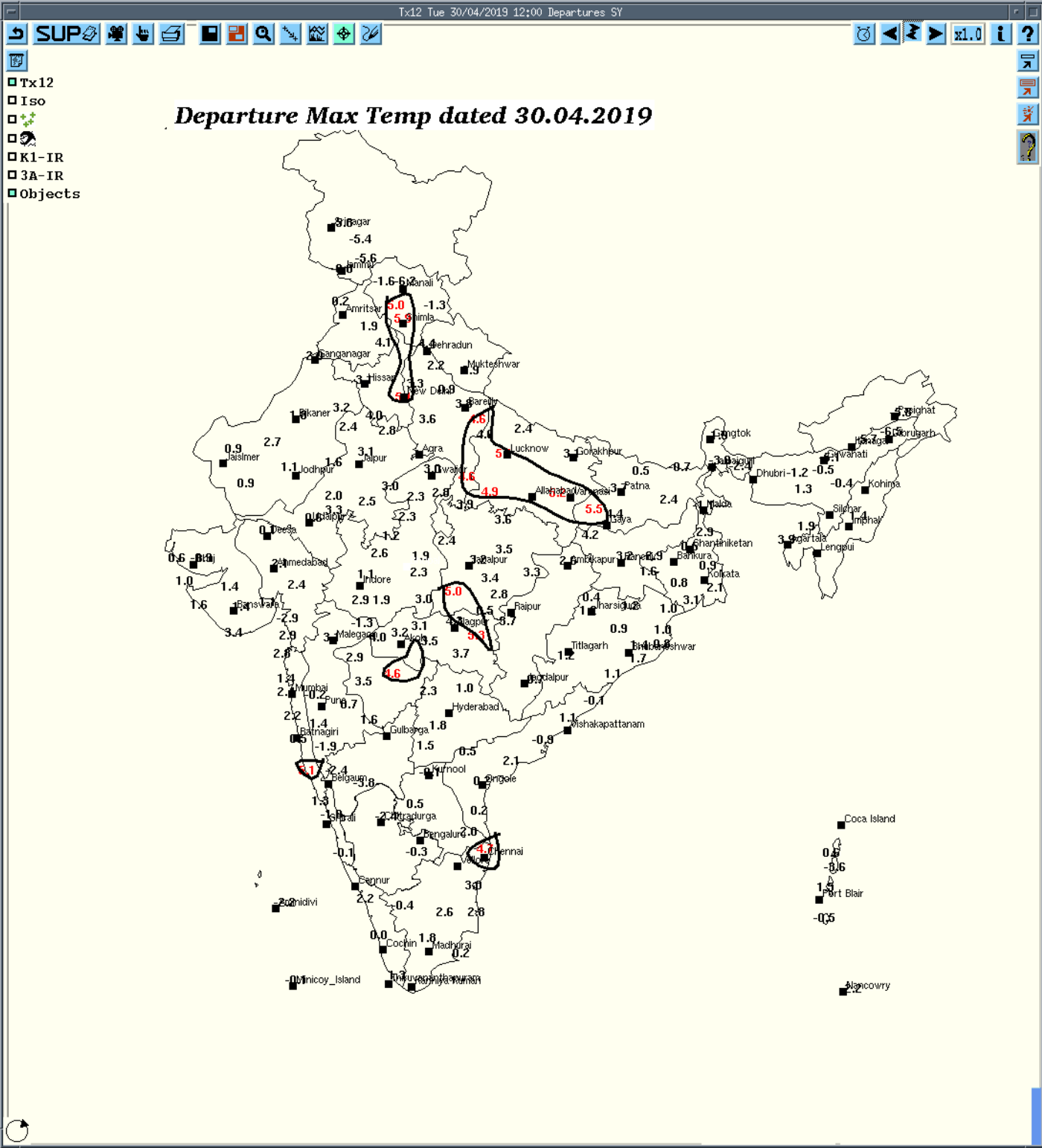
Heat wave conditions:- (<50%) Vidarbha.

05/05/2019

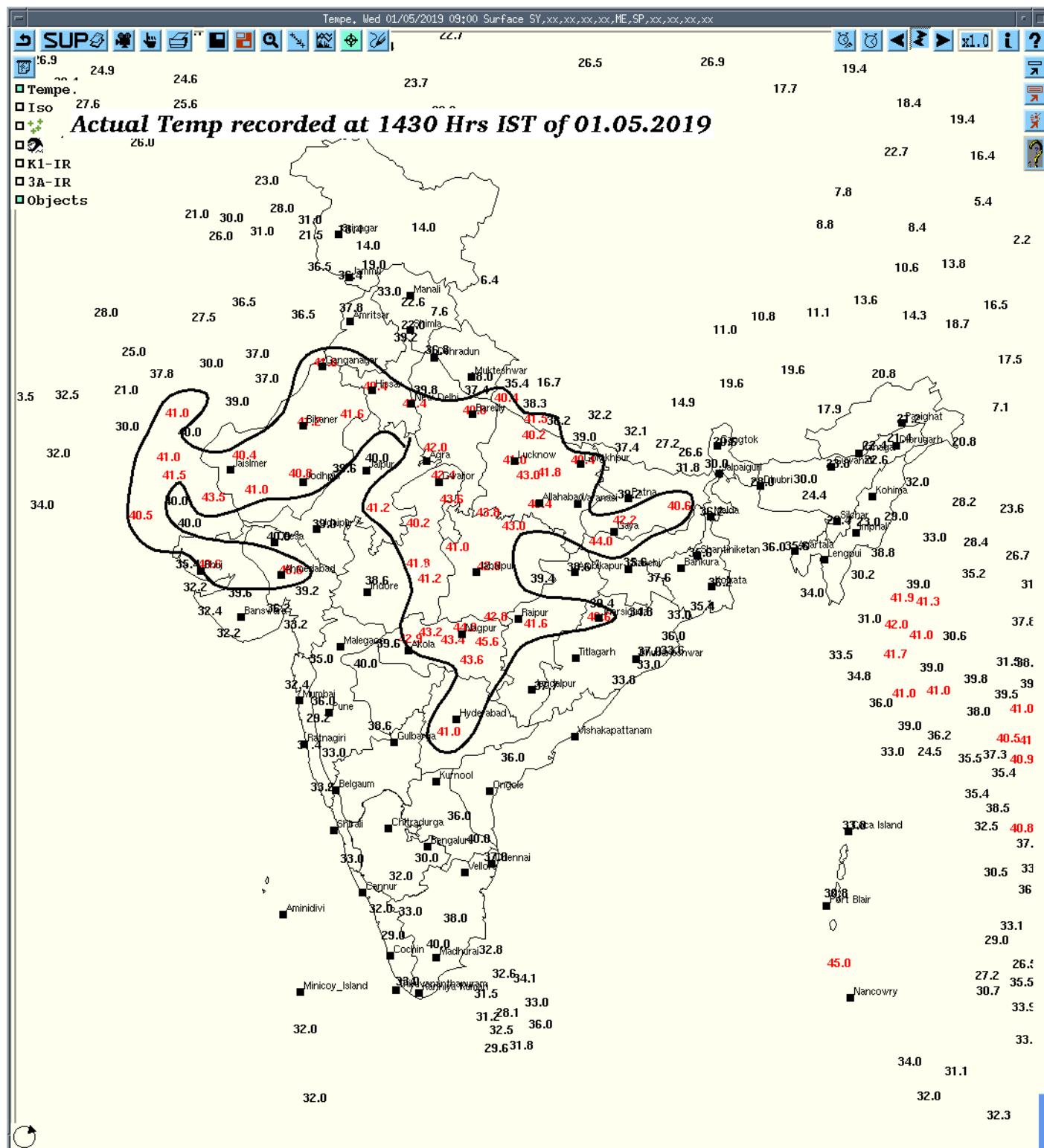


Heat wave conditions:- (<25%) Vidarbha.

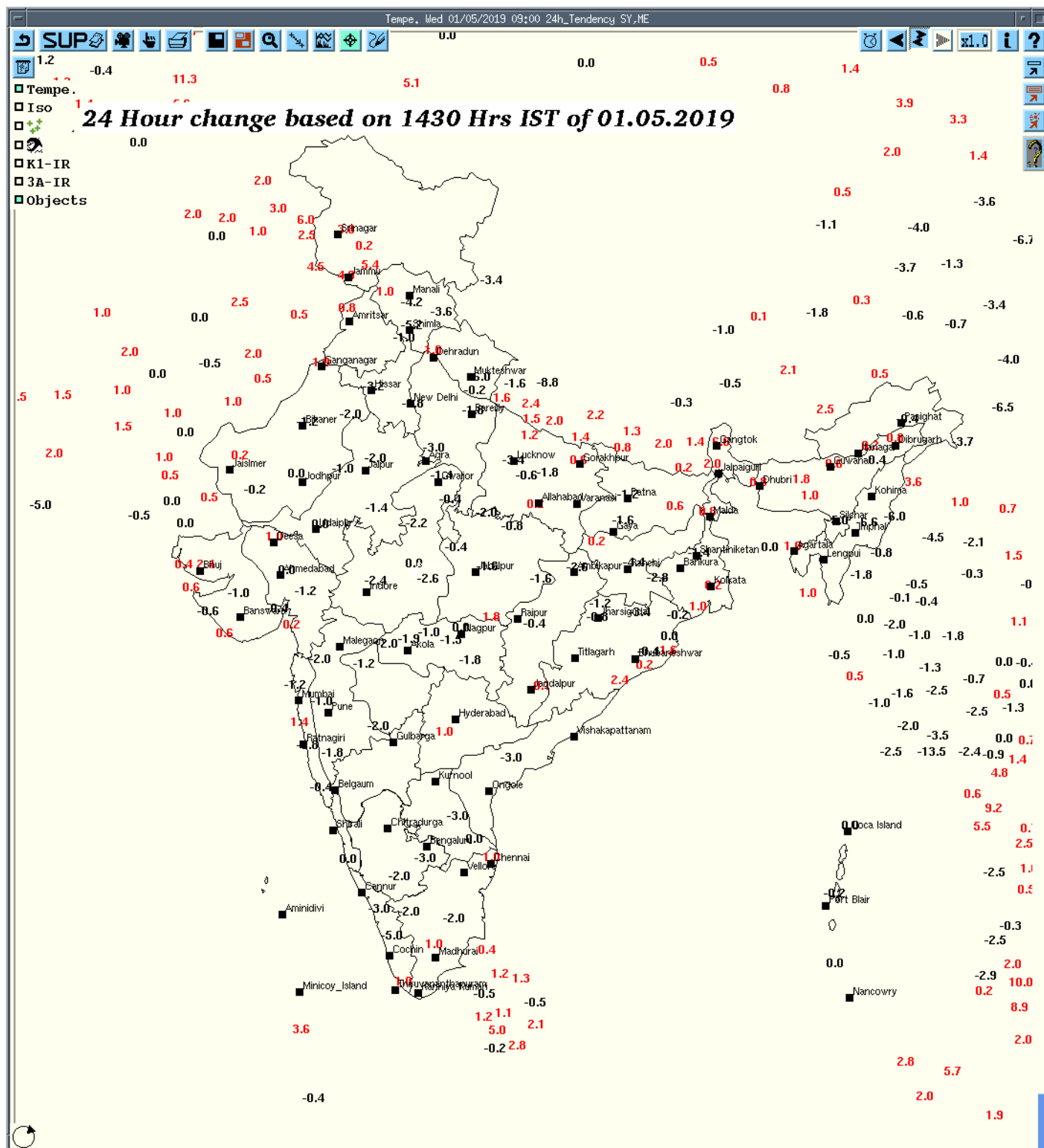




Annexure 3



Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 02nd May, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 01 May to 0830 hrs IST 02 May, 2019)

Heat Wave:

Yesterday, **heat wave conditions** were observed at a few places with **Severe Heat wave** at isolated places over Vidarbha. **Heat wave conditions** were observed at isolated places over East Uttar Pradesh (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Uttarakhand and West Bengal & Sikkim; **above normal (1.6°C to 3.0°C)** at most places over Uttar Pradesh, West Madhya Pradesh, Bihar and Vidarbha; at a few places over Saurashtra & Kutch and Konkan & Goa and at isolated places over Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Chandigarh & Delhi, Rajasthan, Nagaland, Manipur, Mizoram & Tripura, Marathwada and East Madhya Pradesh. Yesterday, the **highest maximum temperature of 47.1°C** was recorded at **Brahmapuri (Vidarbha) (Annexure 1 & 2)**.

Temperatures Recorded at 1430 Hours IST of Today, the 02nd May, 2019

- **Brahmapuri & Chandrapur (Vidarbha) recorded the maximum temperature of 45.0°C each (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at most parts of Tamilnadu & Puducherry, Assam and Meghalaya and Kerala and at one or two pockets of Jammu & Kashmir, Himachal Pradesh, Vidarbha, Sub Himalayan West Bengal, Rayalaseema, Coastal Andhra Pradesh, south Interior Karnataka and West Madhya Pradesh. (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

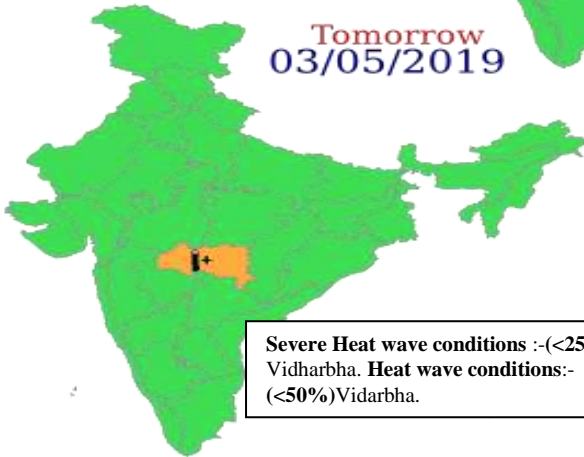
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
02/05/2019



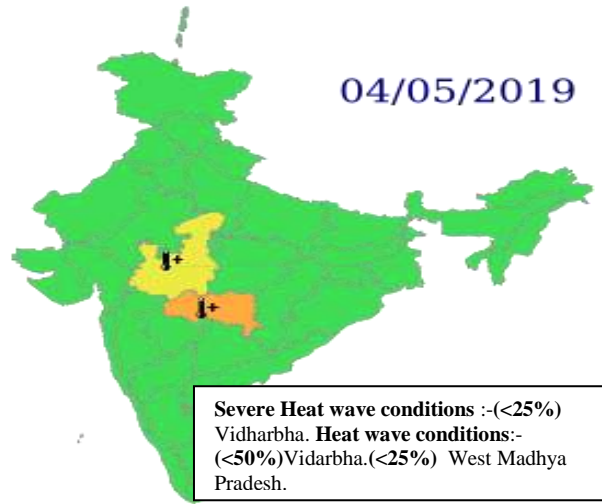
Severe Heat wave conditions :-(<25%) Vidharbha. Heat wave conditions:-(<50%)Vidarbha (<25%) southeast Uttar Pradesh.

Tomorrow
03/05/2019



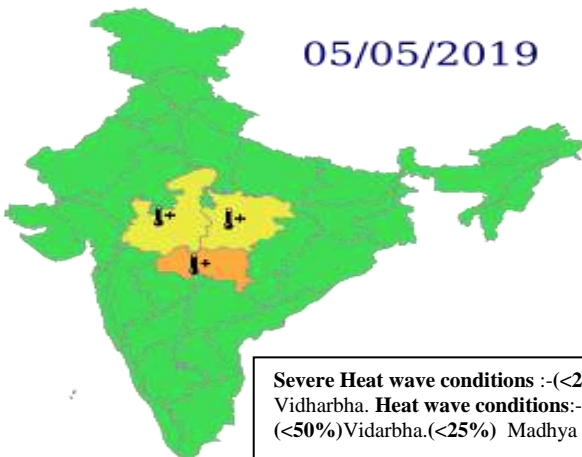
Severe Heat wave conditions :-(<25%) Vidharbha. Heat wave conditions:- (<50%)Vidarbha.

04/05/2019



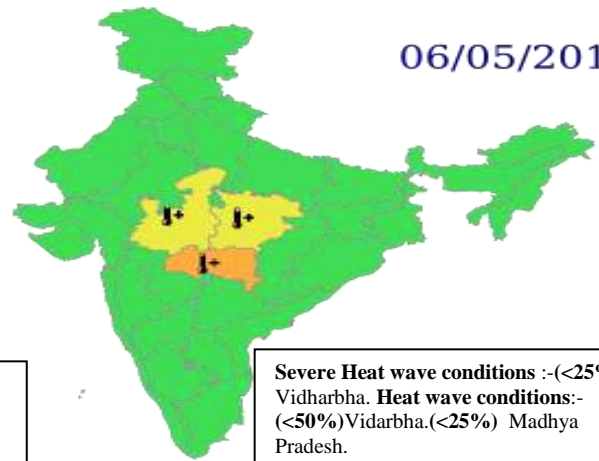
Severe Heat wave conditions :-(<25%) Vidharbha. Heat wave conditions:- (<50%)Vidarbha.(<25%) West Madhya Pradesh.

05/05/2019

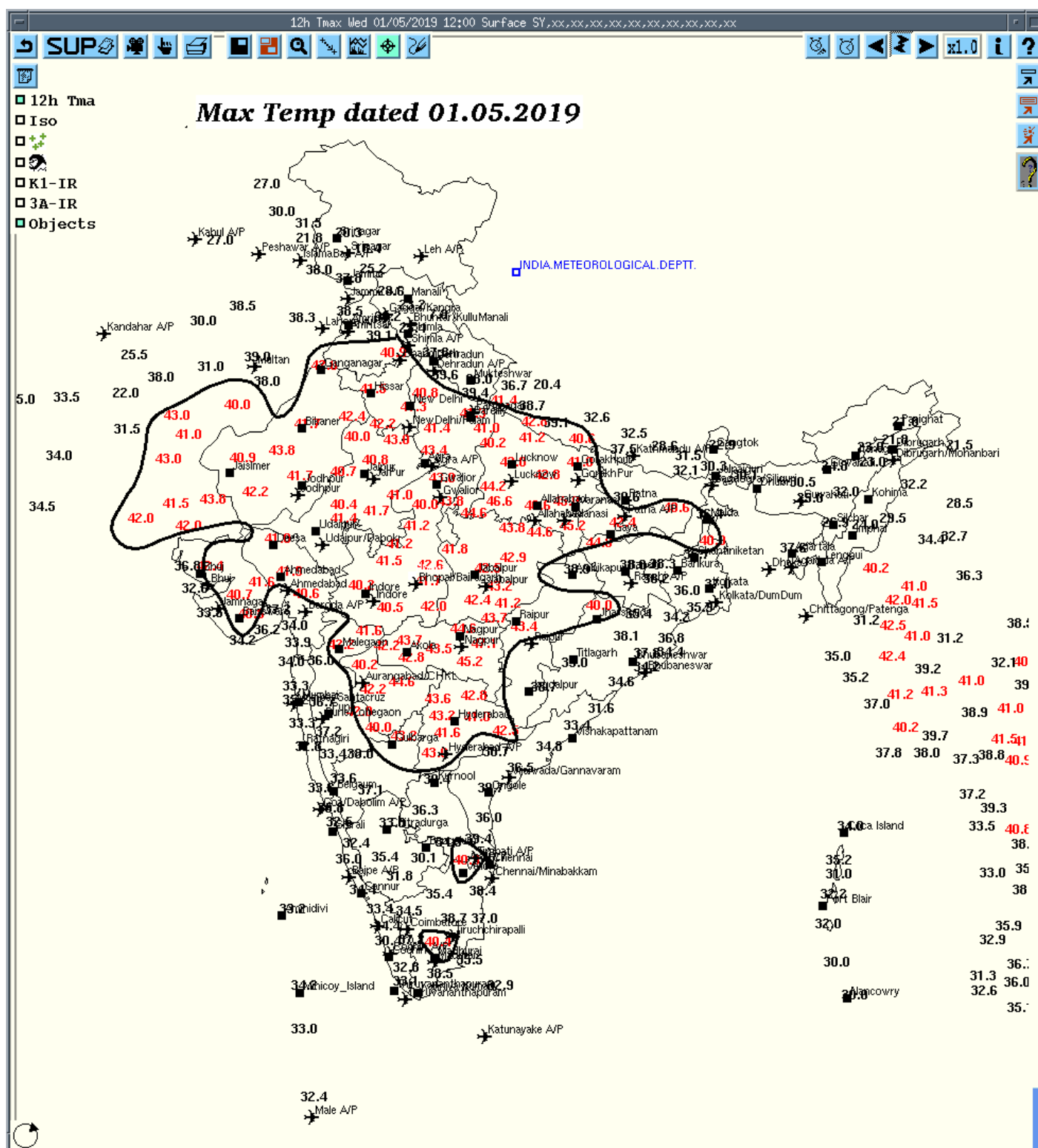


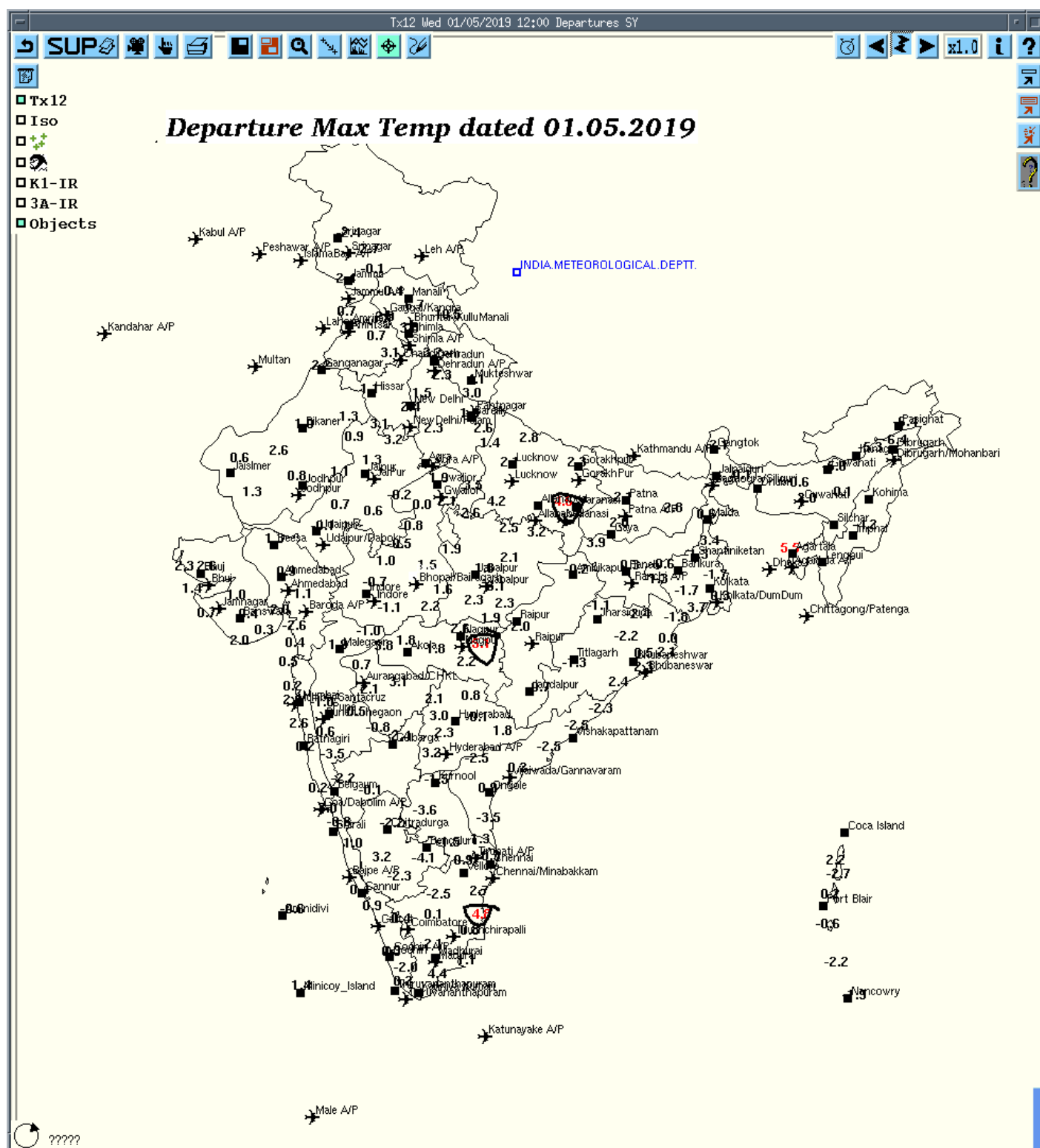
Severe Heat wave conditions :-(<25%) Vidharbha. Heat wave conditions:- (<50%)Vidarbha.(<25%) Madhya Pradesh.

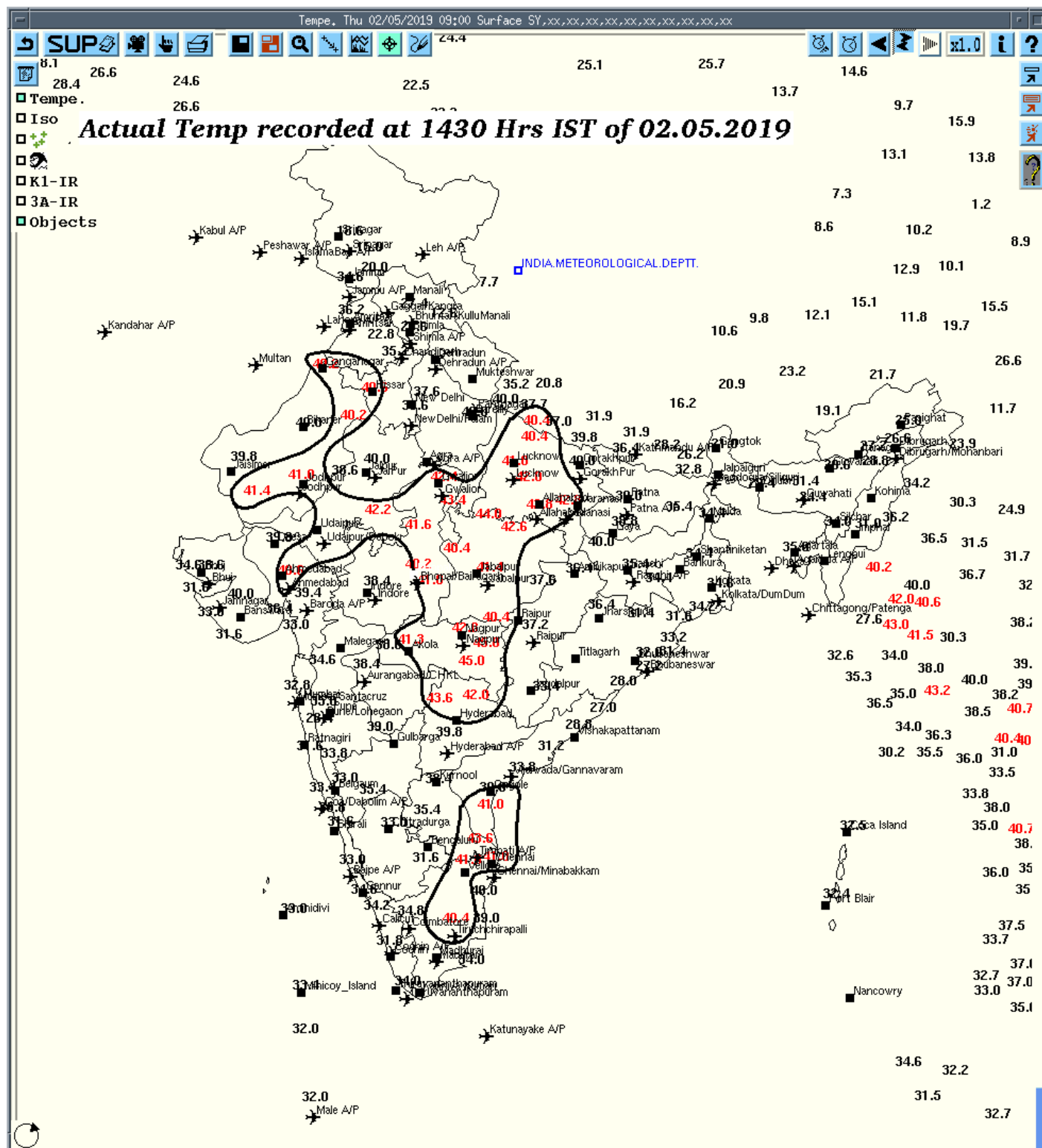
06/05/2019



Severe Heat wave conditions :-(<25%) Vidharbha. Heat wave conditions:- (<50%)Vidarbha.(<25%) Madhya Pradesh.







Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 03rd May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 02 May to 0830 hrs IST 03 May, 2019)

Heat Wave:

Yesterday, heat wave conditions were observed over isolated pockets of Vidarbha and East Uttar Pradesh (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Nagaland, Manipur, Mizoram & Tripura; at many places over Tamil Nadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over East Uttar Pradesh and Telangana; at many places over East Madhya Pradesh and Assam & Meghalaya; at a few places over Haryana, Chandigarh & Delhi, Vidarbha and Konkan & Goa; at isolated places over Uttarakhand, East Rajasthan, Saurashtra & Kutch, West Bengal & Sikkim and Andaman & Nicobar islands. Yesterday, The **highest maximum** temperature of **46.4°C** is recorded at **Brahmapuri (Vidarbha)**. (**Annexure 1 & 2**).

Temperatures Recorded at 1430 Hours IST of Today, the 03rd May, 2019

- **Brahmapuri (Vidarbha)** recorded the maximum temperature of **44.0°C** each (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at most parts of Coastal Andhra Pradesh, at many places over Himachal Pradesh and Punjab, at few places over Saurashtra & Kutch, Chhattisgarh and at one or two pockets of Rayalaseema and Kerala. (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
03/05/2019



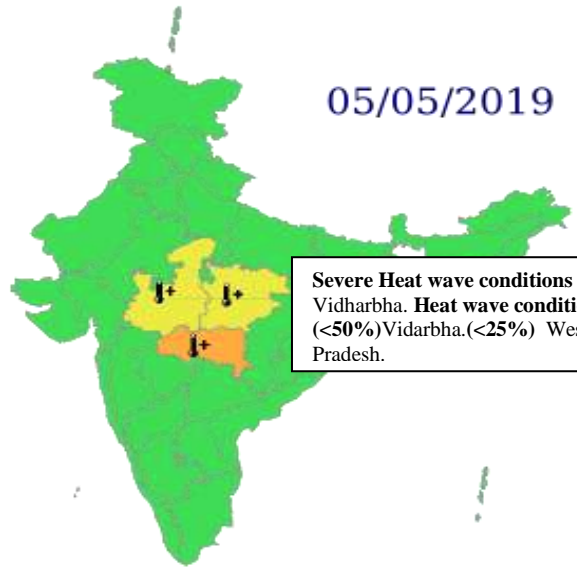
Heat wave conditions:-(<25%)Vidarbha ,coastal Andhra pradesh,Rayalaseema and Tamilnadu

Tomorrow
04/05/2019



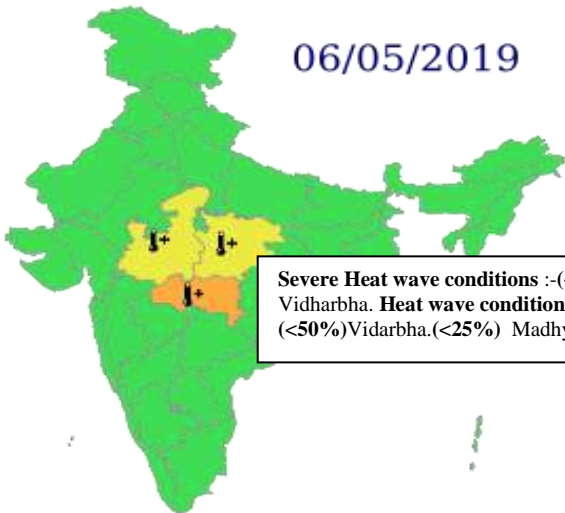
Heat wave conditions:-(<25%)Vidarbha ,coastal Andhra pradesh,Rayalaseema and Tamilnadu

05/05/2019



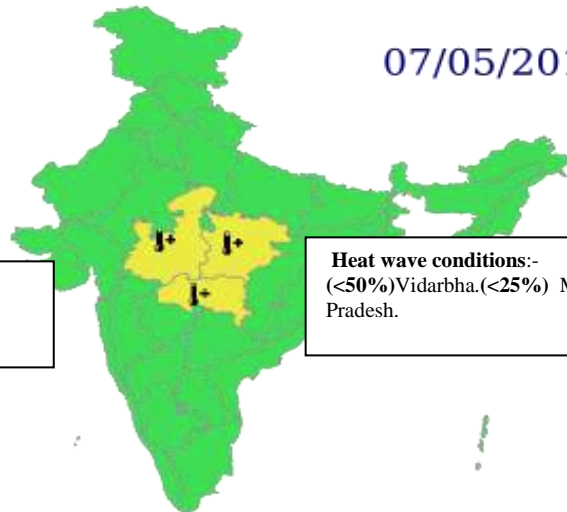
Severe Heat wave conditions :-(<50%) Vidharbha. Heat wave conditions:- (<50%)Vidarbha.(<25%) West Madhya Pradesh.

06/05/2019



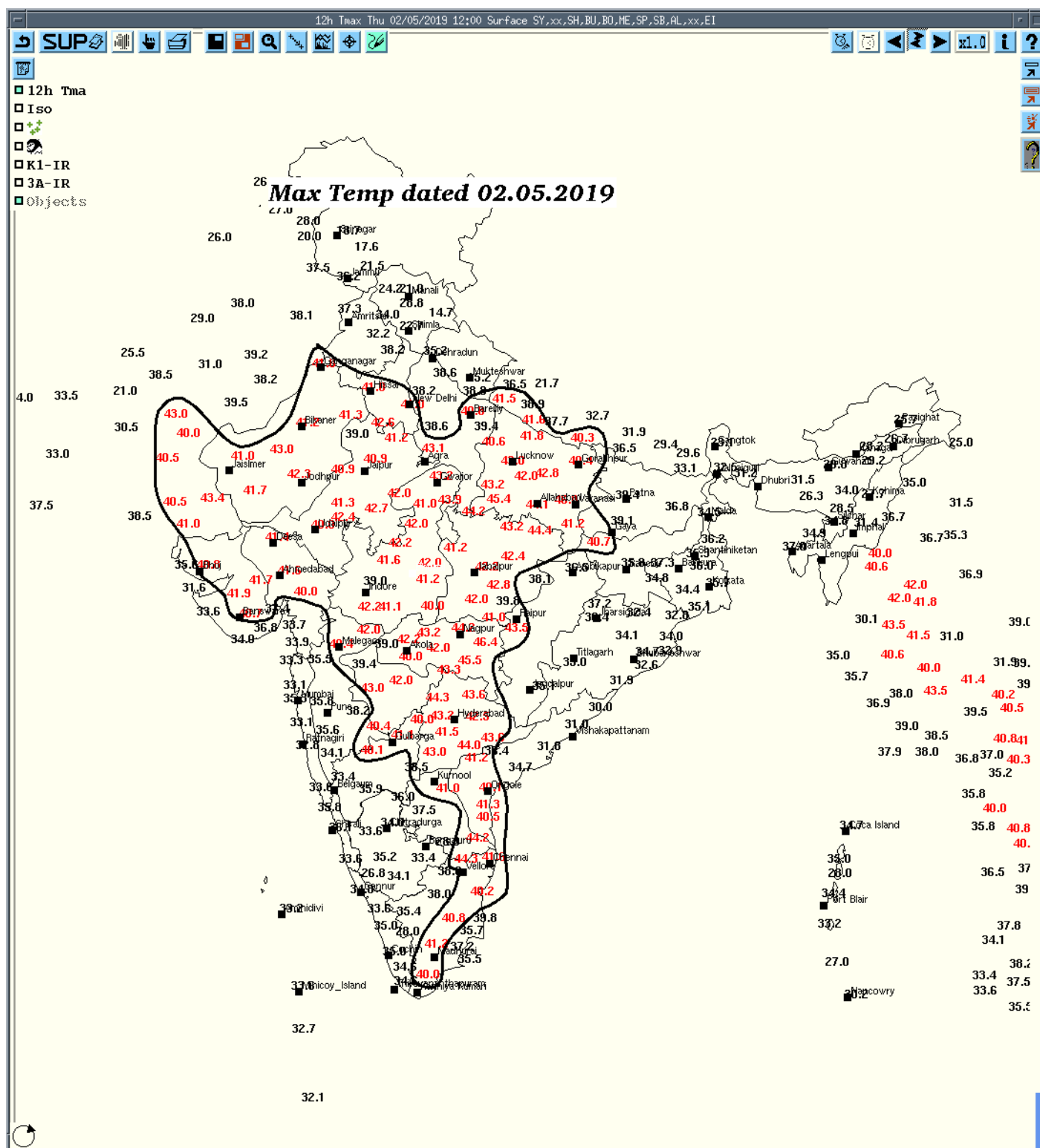
Severe Heat wave conditions :-(<50%) Vidharbha. Heat wave conditions:- (<50%)Vidarbha.(<25%) Madhya Pradesh.

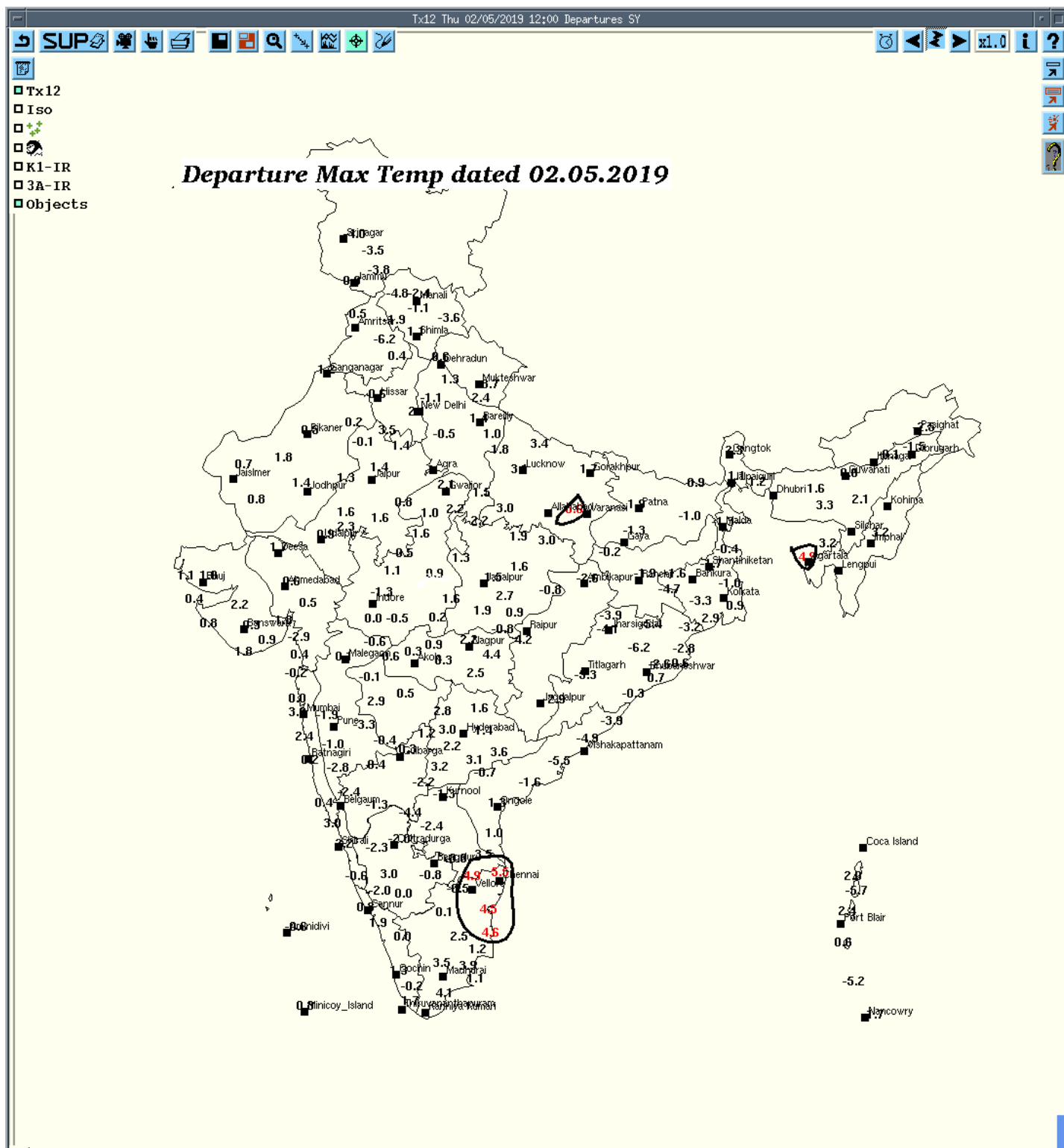
07/05/2019



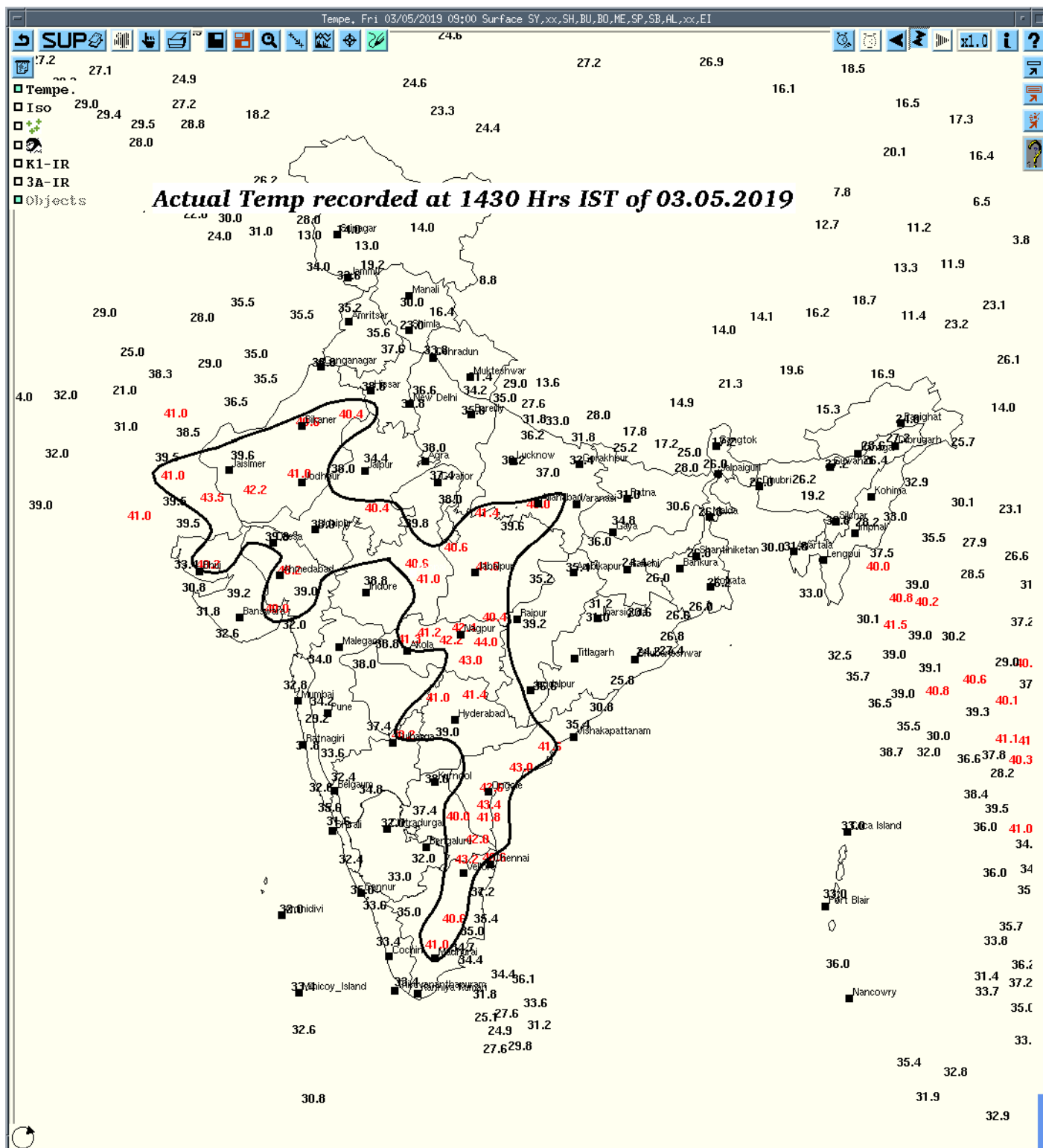
Heat wave conditions:- (<50%)Vidarbha.(<25%) Madhya Pradesh.

Annexure 1

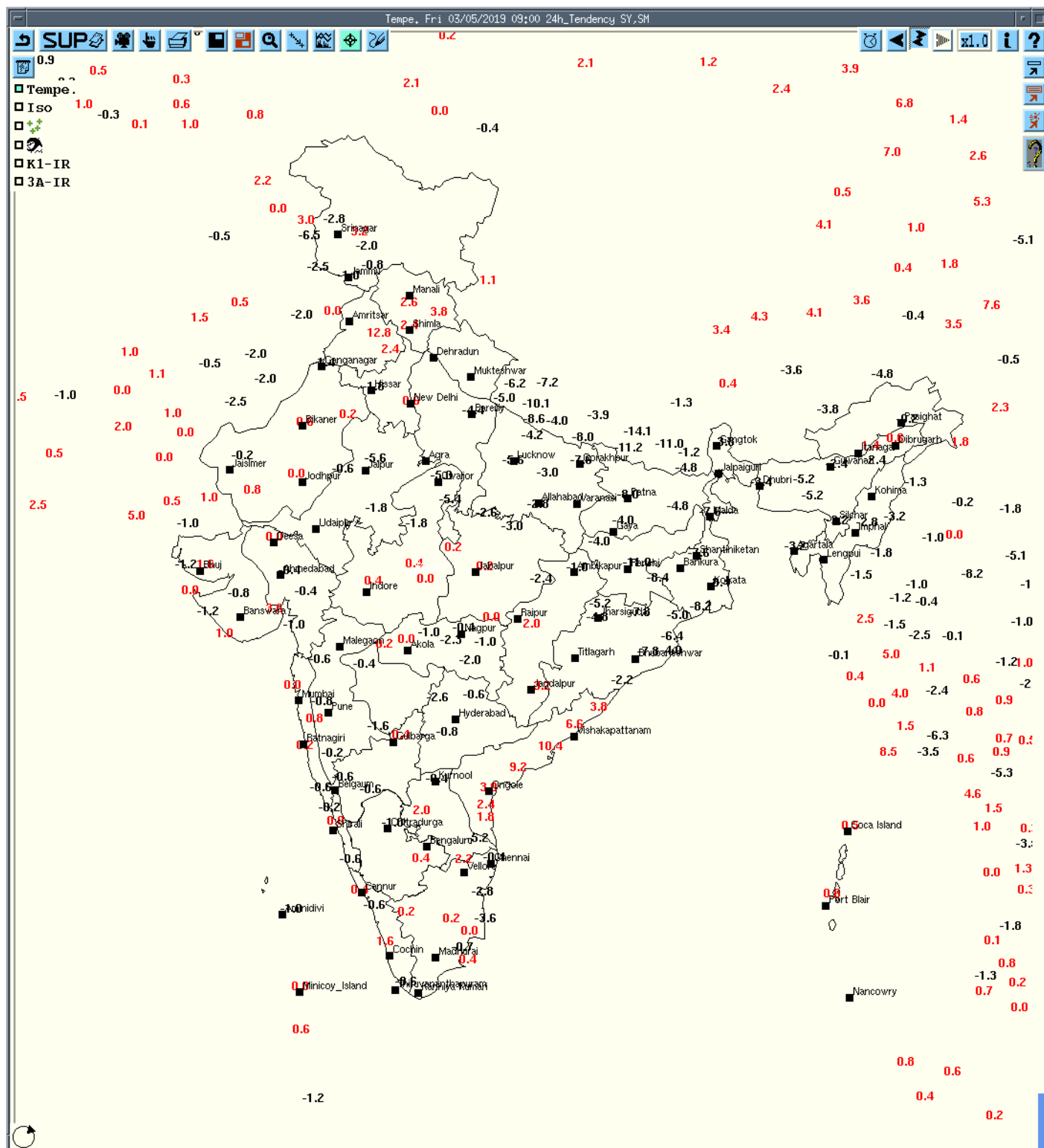




Annexure 3



Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 04th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 03 May to 0830 hrs IST 04 May, 2019)

Heat Wave:

Yesterday, heat wave conditions were observed over isolated pockets of Vidarbha (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at a few places over Coastal Andhra Pradesh and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at many places over Andaman & Nicobar Islands; at a few places over East Madhya Pradesh, Konkan & Goa and Coastal Karnataka and at isolated places over Himachal Pradesh, Saurashtra & Kutch, Vidarbha and Kerala. Yesterday, the **highest maximum temperature of 45.0°C** was recorded at **Bramhapuri (Vidarbha) (Annexure 1 & 2)**.

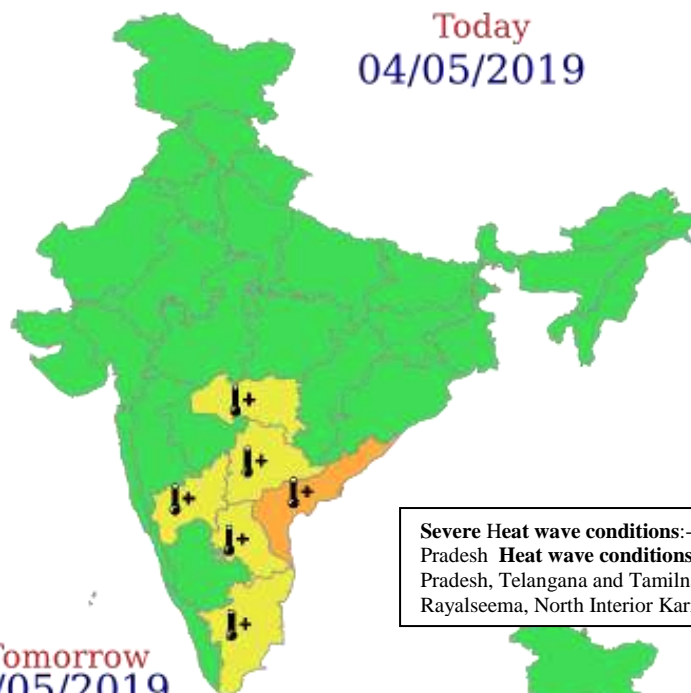
Temperatures Recorded at 1430 Hours IST of Today, the 04th May, 2019

- **Brahampuri (Vidarbha) recorded the maximum temperature of 44.6°C each (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-6°C** at most parts of Jammu & Kashmir, Odisha and Gangetic West Bengal, at many places over Jharkhand and at one or two pockets of East Rajasthan, East Uttar Pradesh and Coastal Andhra Pradesh and **risen by 1-3°C** at most places over Uttar Pradesh and Uttarakhand at few places over Telangana and South Interior Karnataka and at one or two pockets of Punjab, Vidarbha, Bihar, Chhattisgarh, Madhya Pradesh, Tamilnadu & Puducherry and Assam & Meghalaya (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

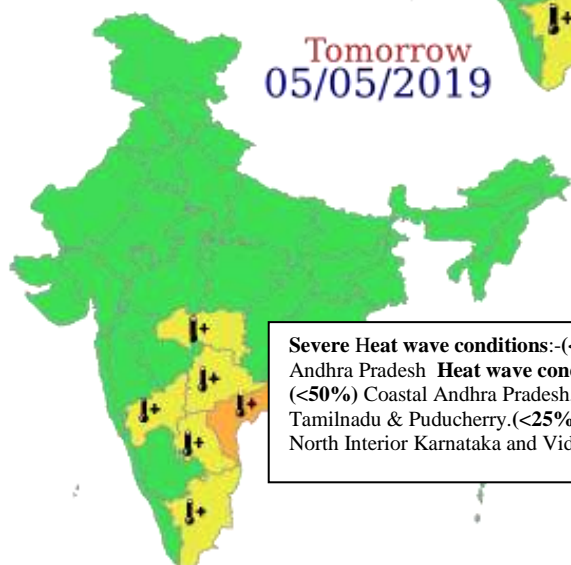
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
04/05/2019



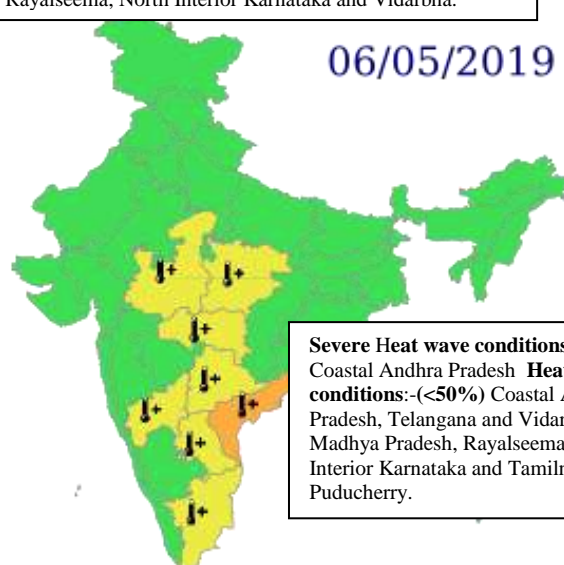
Severe Heat wave conditions:-(<25%) Coastal Andhra Pradesh **Heat wave conditions:-(<50%)** Coastal Andhra Pradesh, Telangana and Tamilnadu & Puducherry.(<25%) Rayalseema, North Interior Karnataka and Vidarbha.

Tomorrow
05/05/2019



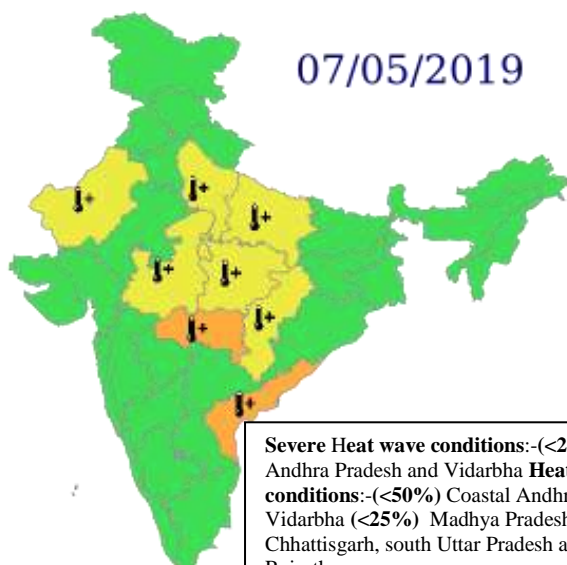
Severe Heat wave conditions:-(<25%) Coastal Andhra Pradesh **Heat wave conditions:-(<50%)** Coastal Andhra Pradesh, Telangana and Tamilnadu & Puducherry.(<25%) Rayalseema, North Interior Karnataka and Vidarbha.

06/05/2019



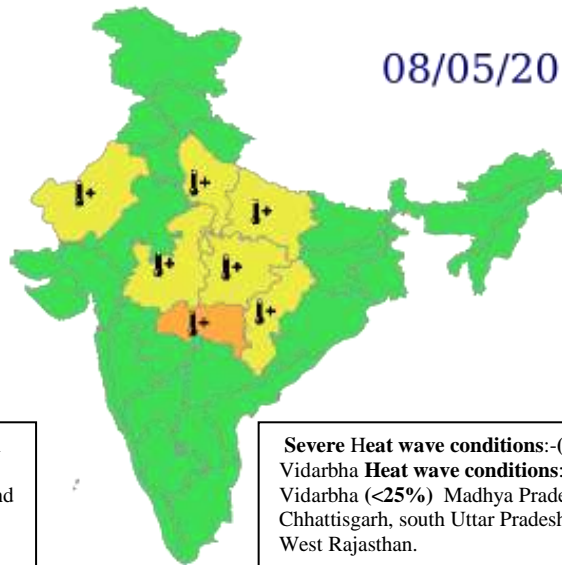
Severe Heat wave conditions:-(<25%) Coastal Andhra Pradesh **Heat wave conditions:-(<50%)** Coastal Andhra Pradesh, Telangana and Vidarbha (<25%) Madhya Pradesh, Rayalseema, North Interior Karnataka and Tamilnadu & Puducherry.

07/05/2019

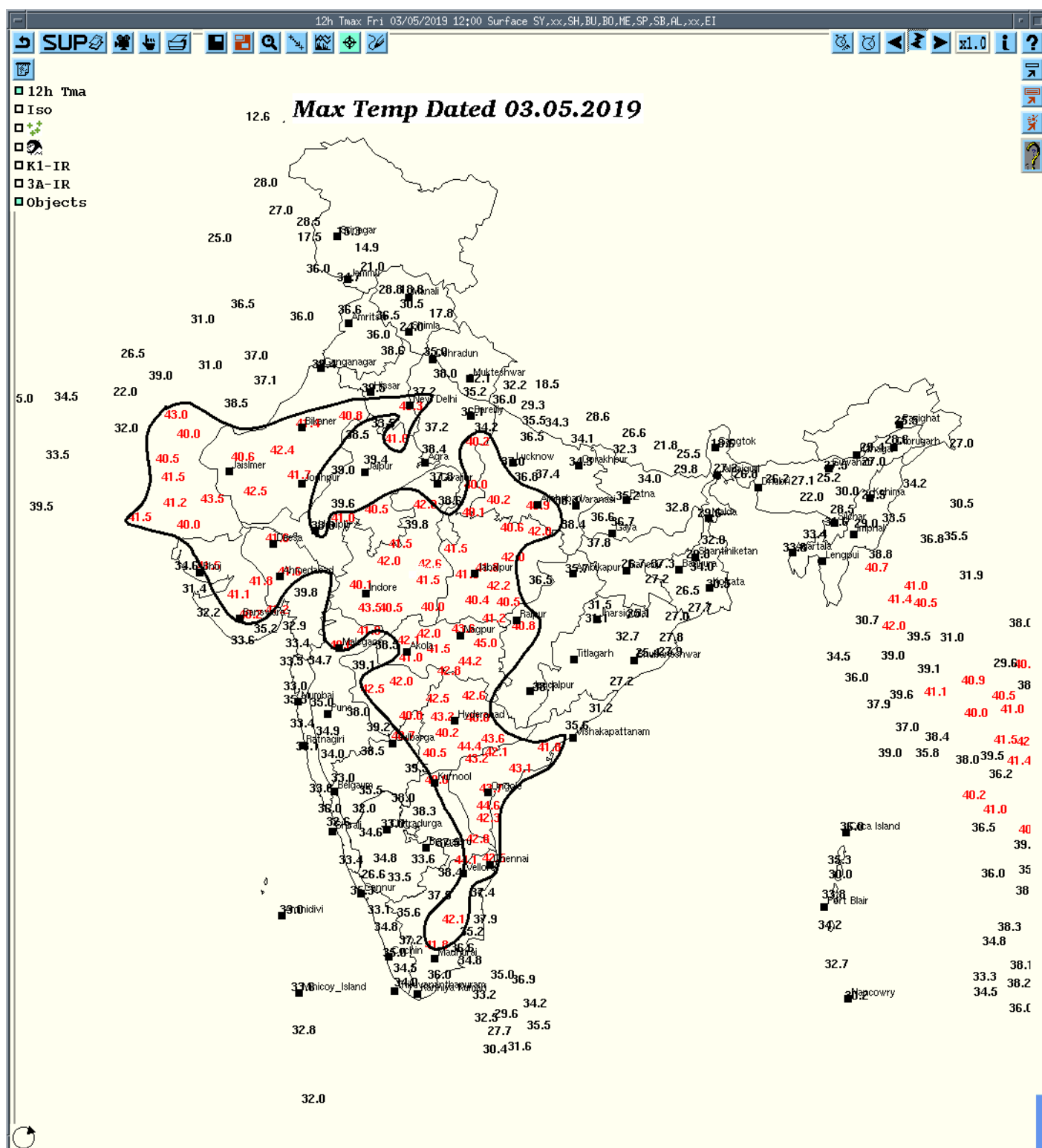


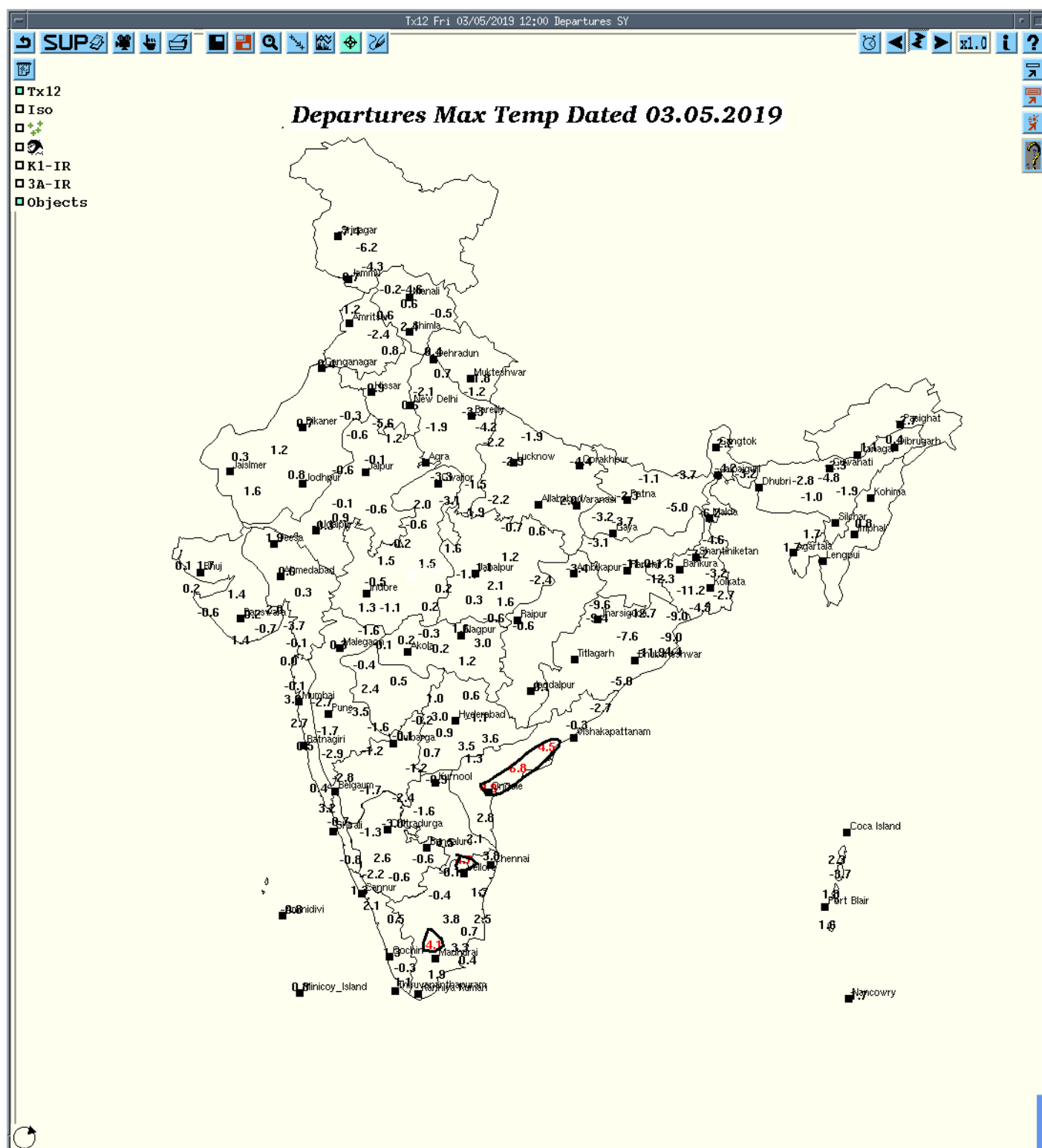
Severe Heat wave conditions:-(<25%) Coastal Andhra Pradesh and Vidarbha **Heat wave conditions:-(<50%)** Coastal Andhra Pradesh and Vidarbha (<25%) Madhya Pradesh, Chhattisgarh, south Uttar Pradesh and West Rajasthan.

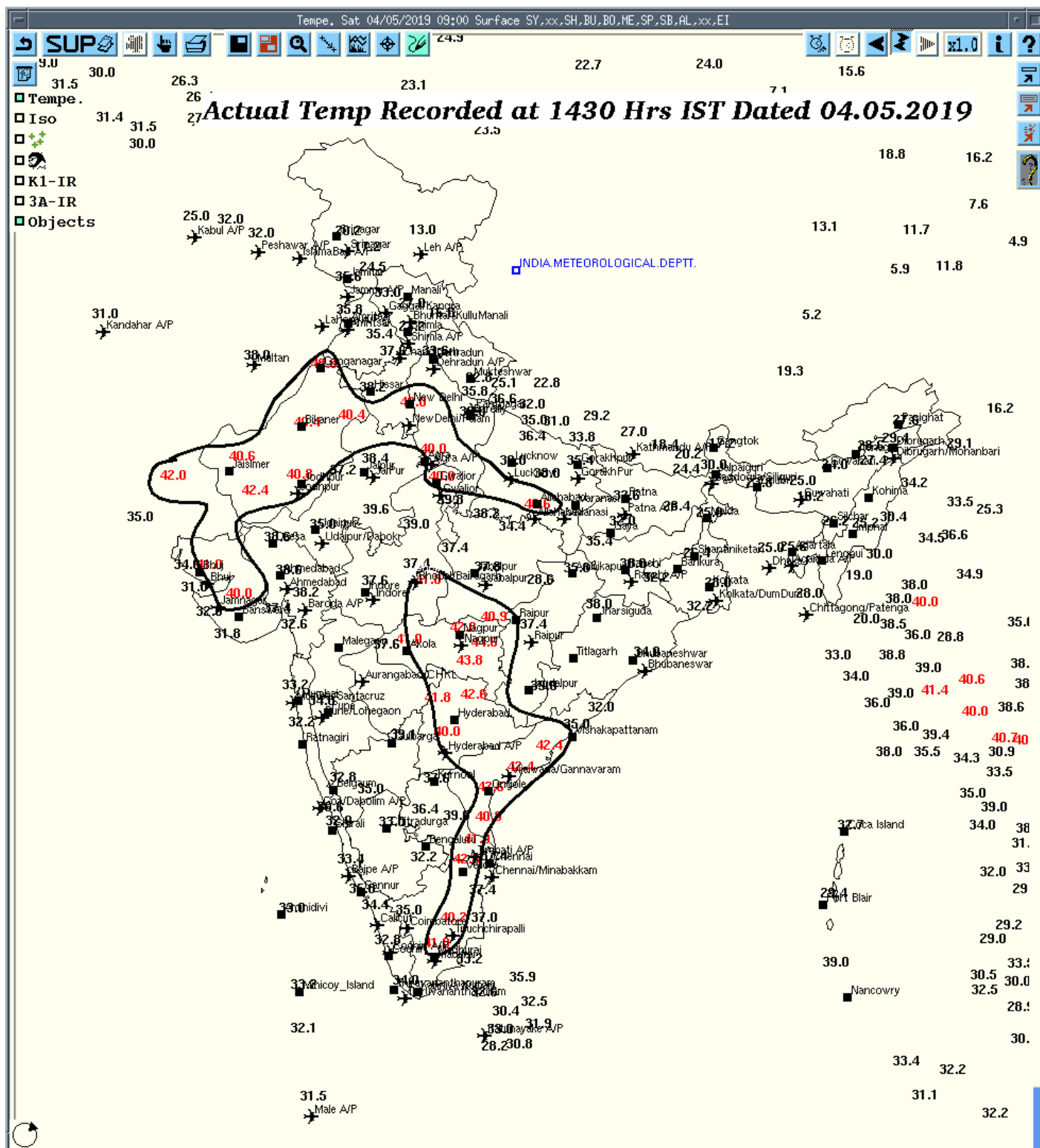
08/05/2019

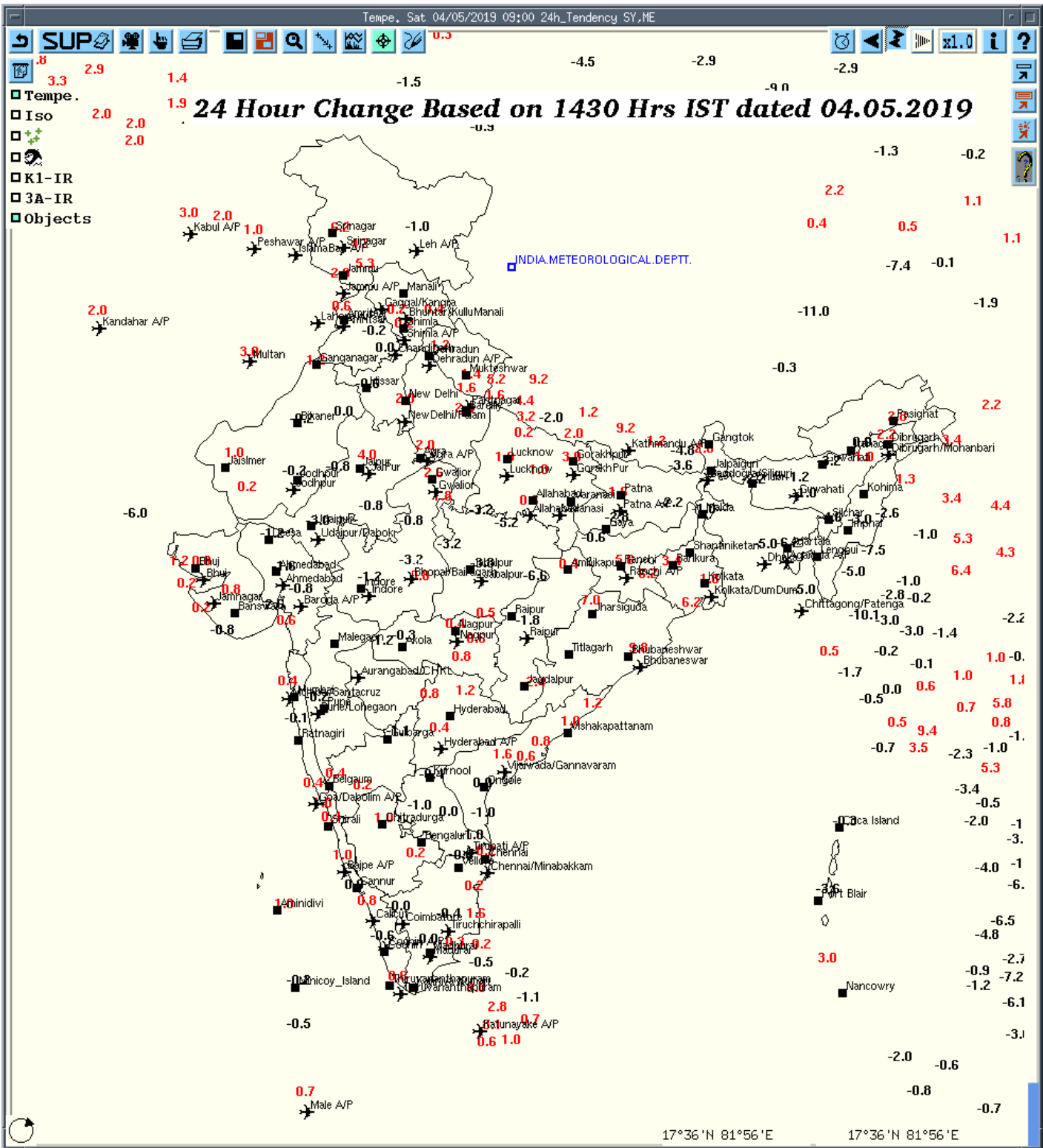


Severe Heat wave conditions:-(<25%) Vidarbha **Heat wave conditions:-(<50%)** Vidarbha (<25%) Madhya Pradesh, Chhattisgarh, south Uttar Pradesh and West Rajasthan.









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 05th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 04 May to 0830 hrs IST 05 May, 2019)

Heat Wave:

Yesterday, **heat wave conditions** were observed isolated places over Vidarbha and Coastal Andhra Pradesh (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **Markedly above normal (5.1°C and More)** at most places over coastal Andhra Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Telangana and Chhattisgarh; **above normal (1.6°C to 3.0°C)** at many places over Tamilnadu & Puducherry; at a few places over Himachal Pradesh and Saurashtra & Kutch and at isolated places over Konkan & Goa, Coastal Karnataka, Vidarbha and Kerala. Yesterday, the **highest maximum temperature** of **45.0°C** was recorded at **Chandrapur (Vidarbha)** (**Annexure 1 & 2**).

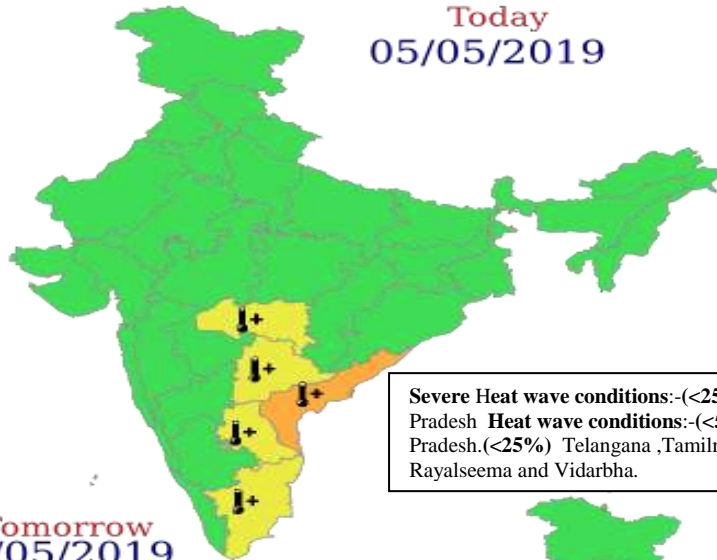
Temperatures Recorded at 1430 Hours IST of Today, the 05th May, 2019

- **Vijayawada (Coastal Andhra Pradesh)** recorded the maximum temperature of **44.8°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 3-6°C** at most parts of Bihar, Jharkhand and Gangetic; at some parts of Assam & Meghalaya and at one or two pockets of East Uttar Pradesh and Chhattisgarh and **risen by 1-3°C** at most places over Jammu & Kashmir, Punjab and East Madhya Pradesh; at few places over West Rajasthan, Himachal Pradesh, Sub Himalayan West Bengal, Interior Karnataka, Rayalaseema, Coastal Andhra Pradesh and Marathwada and at one or two pockets of Haryana, West Madhya Pradesh, West Uttar Pradesh and Tamilnadu & puducherry (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

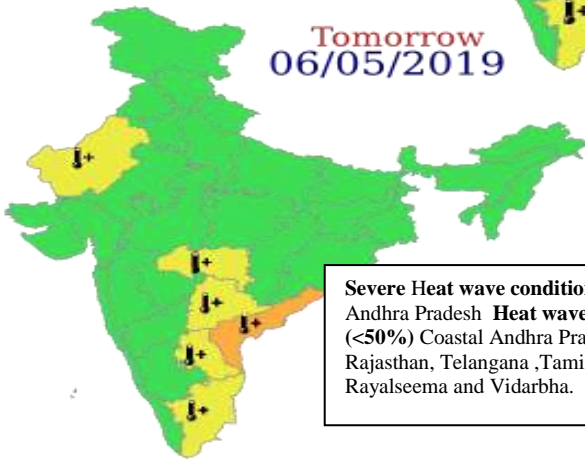
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
05/05/2019



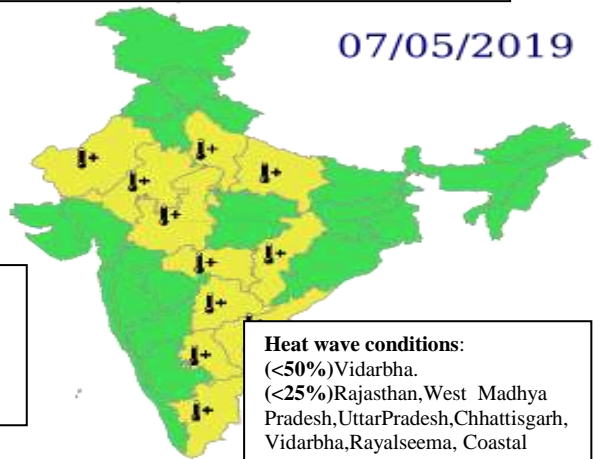
Severe Heat wave conditions:-(<25%) Coastal Andhra Pradesh **Heat wave conditions:-(<50%)** Coastal Andhra Pradesh.(**<25%**) Telangana ,Tamilnadu & Puducherry, Rayalseema and Vidarbha.

Tomorrow
06/05/2019



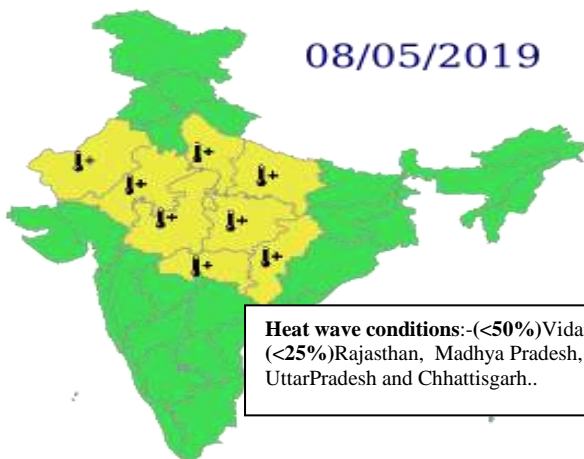
Severe Heat wave conditions:-(<25%) Coastal Andhra Pradesh **Heat wave conditions:-(<50%)** Coastal Andhra Pradesh.(**<25%**) West Rajasthan, Telangana ,Tamilnadu & Puducherry, Rayalseema and Vidarbha.

07/05/2019



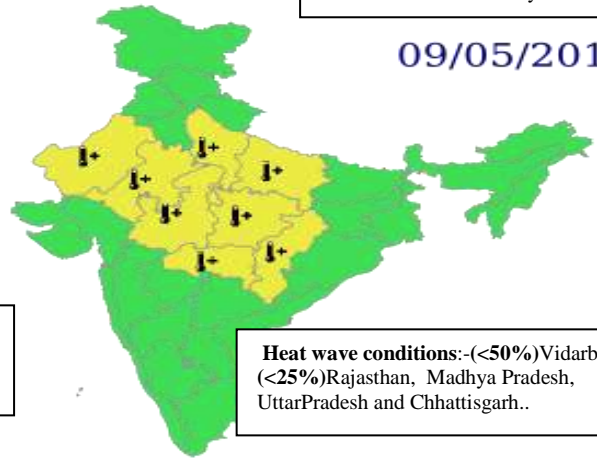
Heat wave conditions:-(<50%)Vidarbha. (**<25%**)Rajasthan,West Madhya Pradesh,UttarPradesh,Chhattisgarh, Vidarbha,Rayalseema, Coastal Andhra Pradesh, Telangana and Tamilnadu & Puducherry.

08/05/2019

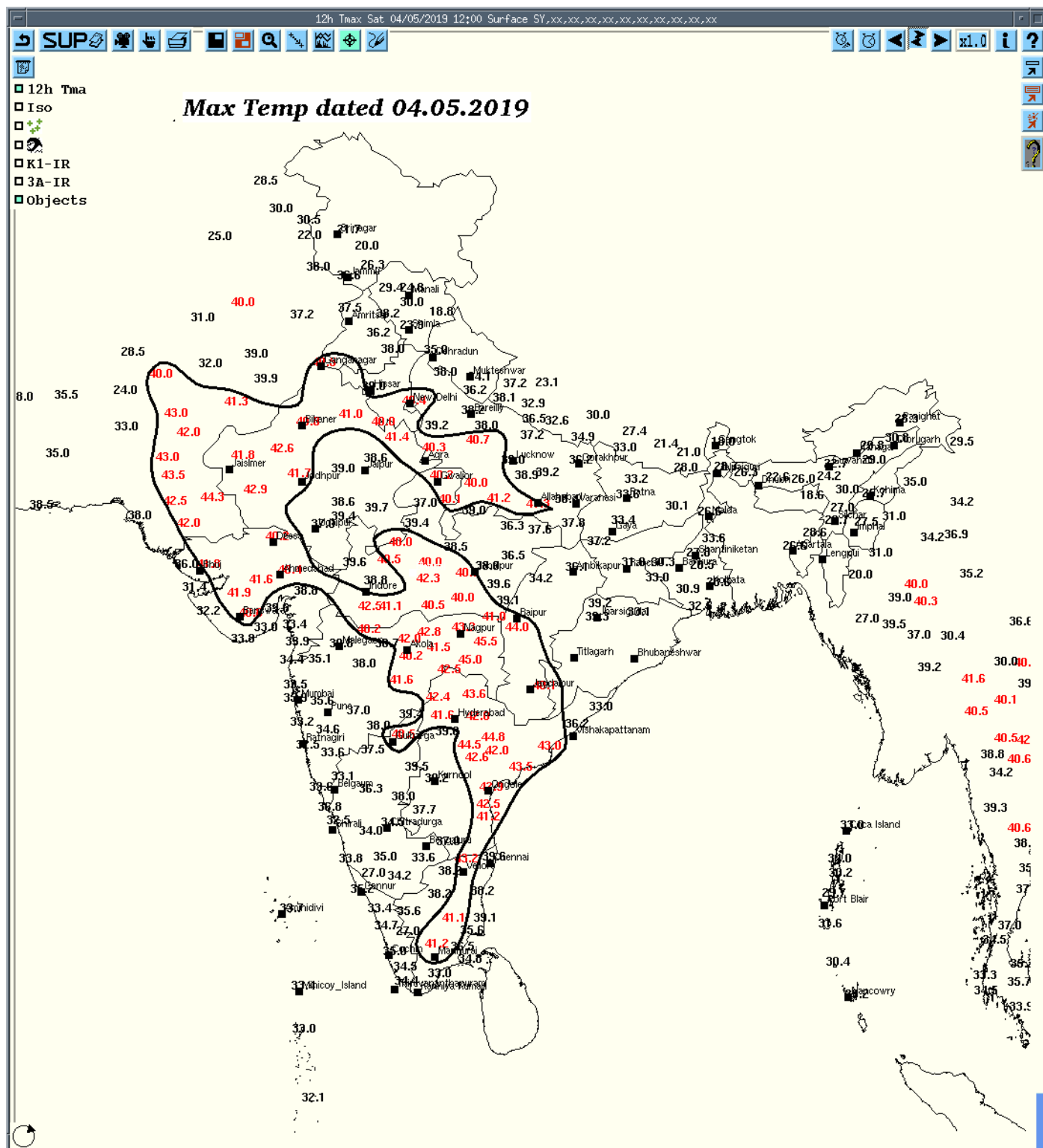


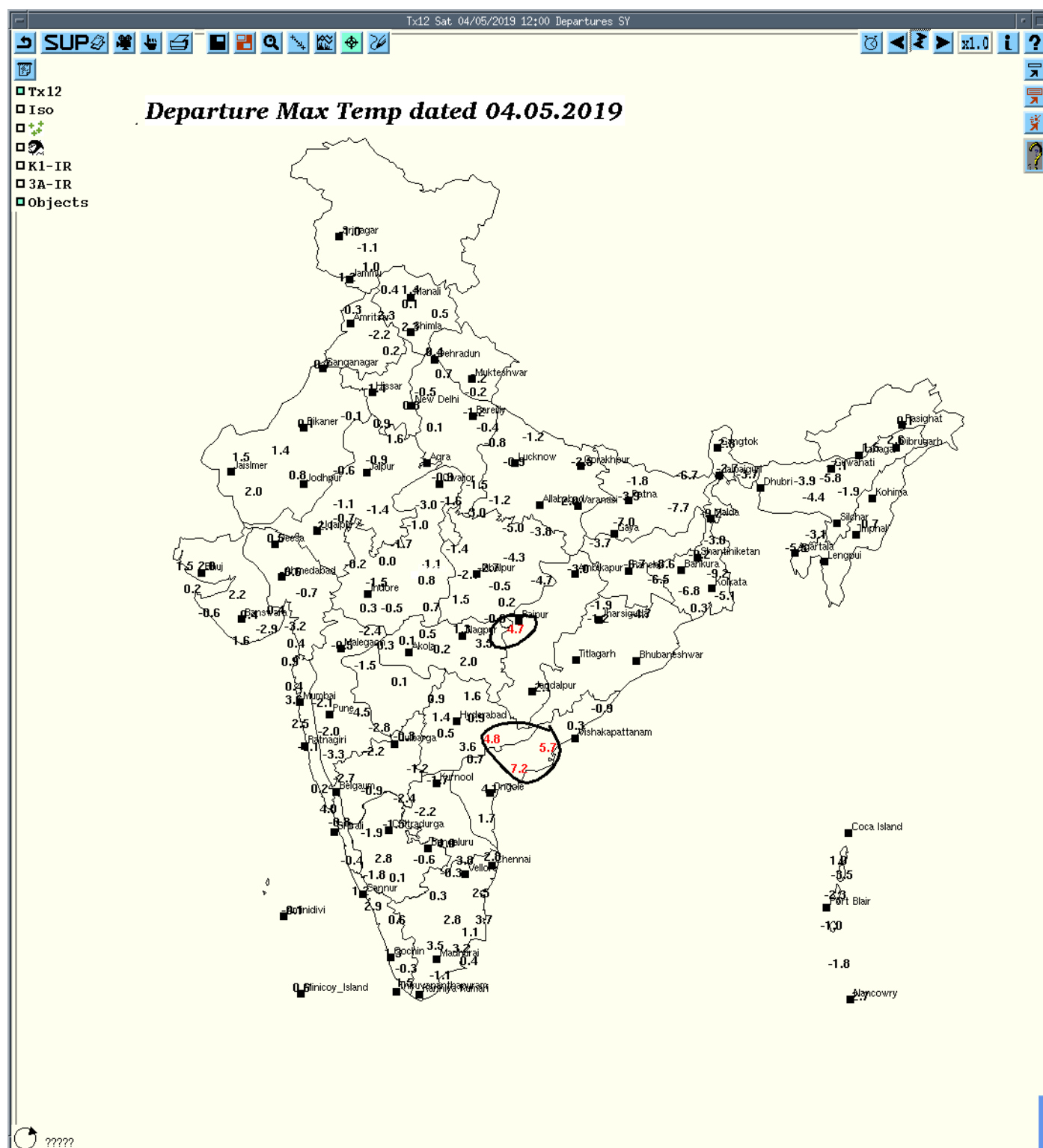
Heat wave conditions:-(<50%)Vidarbha. (**<25%**)Rajasthan, Madhya Pradesh, UttarPradesh and Chhattisgarh..

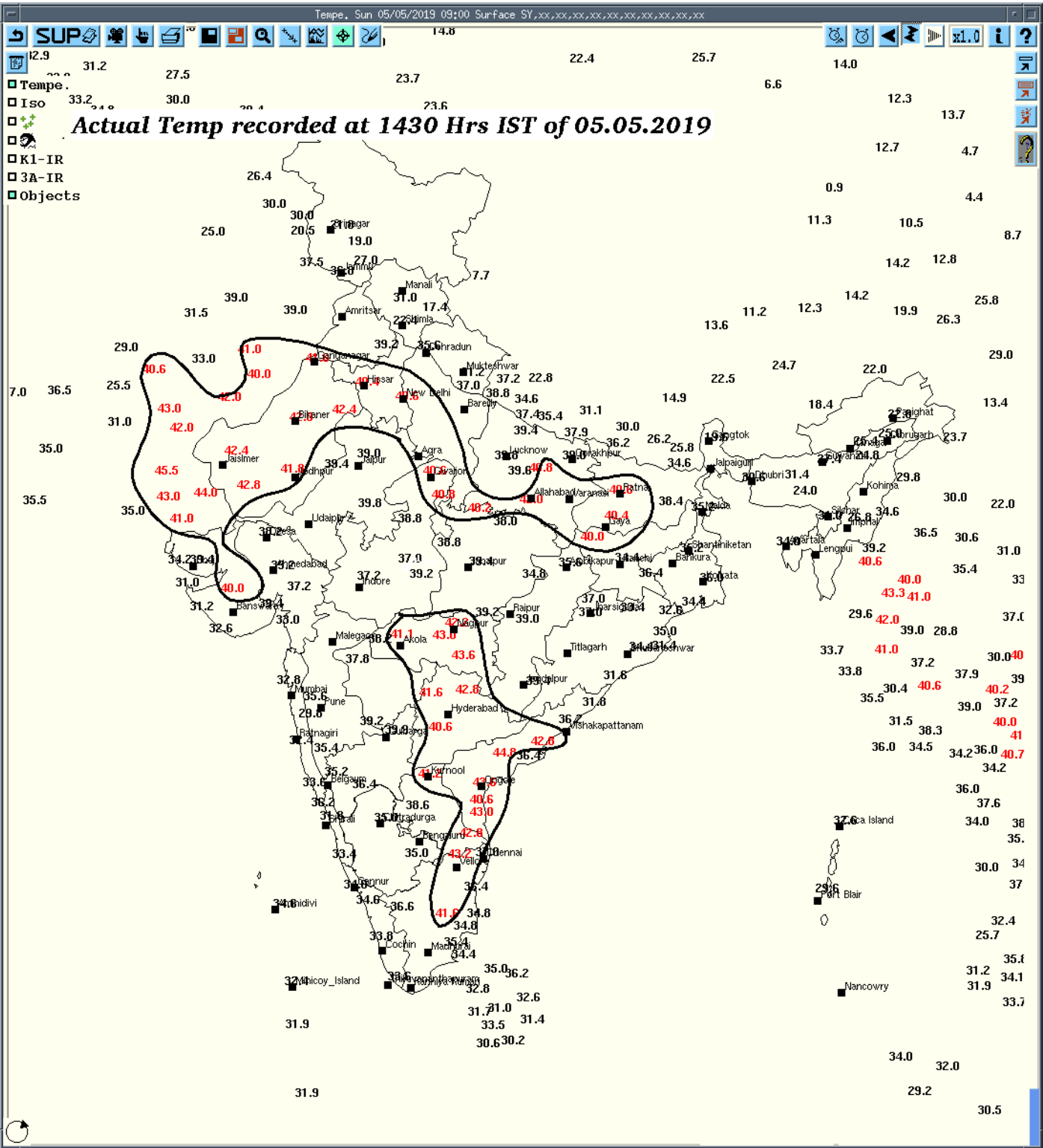
09/05/2019



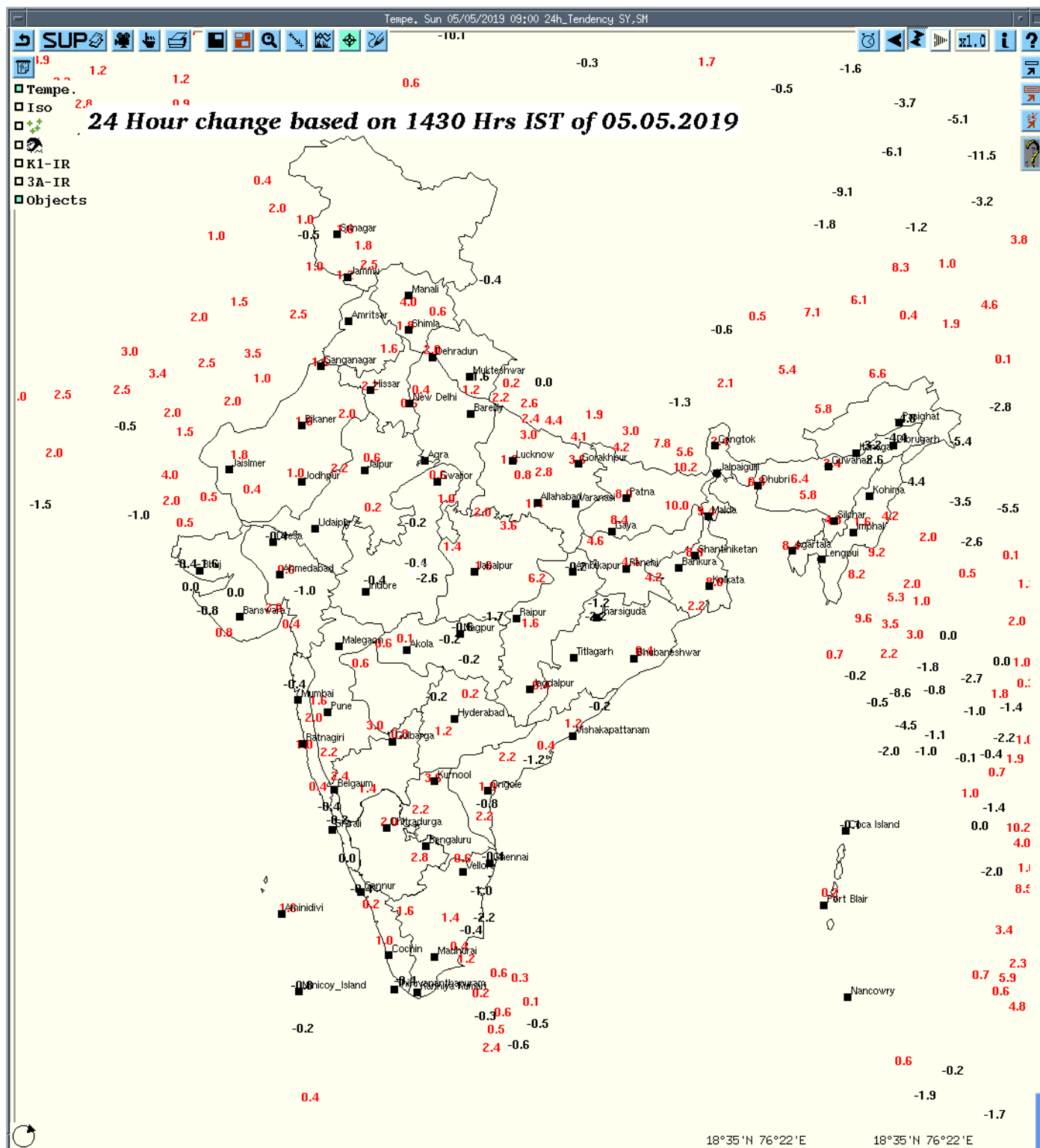
Heat wave conditions:-(<50%)Vidarbha. (**<25%**)Rajasthan, Madhya Pradesh, UttarPradesh and Chhattisgarh..







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 06th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 05 May to 0830 hrs IST 06 May, 2019)

Heat Wave:

Yesterday, **heat wave conditions** were observed in some parts over Coastal Andhra Pradesh and in isolated pockets over Telangana (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C and more)** at a few places over coastal Andhra Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at a few places over Bihar and at isolated places over Sub-Himalayan West Bengal, Chhattisgarh and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at many places over Telangana; at a few places over Coastal Karnataka and Kerala and at isolated places over Konkan & Goa. Yesterday, the **highest maximum temperature** of **45.2°C** was recorded at **Khammam (Telangana)** (**Annexure 1 & 2**).

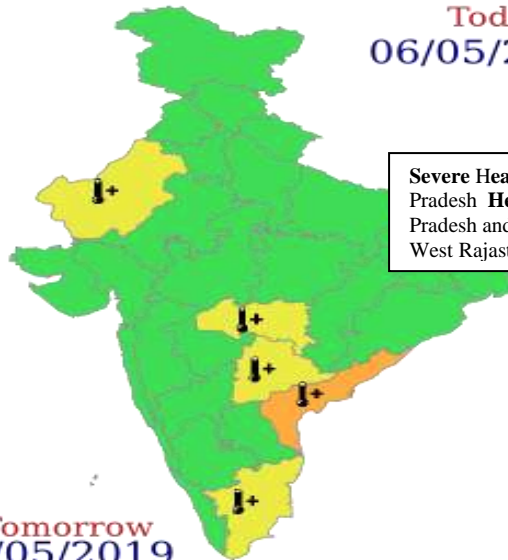
Temperatures Recorded at 1430 Hours IST of Today, the 06th May, 2019

- **Ganganagar (West Rajasthan) recorded the maximum temperature of 44.2°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-5°C** at many parts of Gangetic West Bengal; at few parts of Assam & Meghalaya and at one or two pockets of East Uttar Pradesh Madhya Maharashtra, Odisha and East Madhya Pradesh and **risen by 1-3°C** at most places over Punjab, Haryana, Uttar Pradesh, Bihar, Jharkhand, Madhya Pradesh, East Rajasthan, Marathwada, Madhya Maharashtra, Gangetic West Bengal and interior Odisha; at many parts of Gujarat region and Rayalaseema; at few parts of Himachal Pradesh, Karnataka and Chhattisgarh and at one or two pockets of Jammu & Kashmir, Saurashtra & Kutch, Telangana, Vidarbha, Kerala, Coastal Andhra Pradesh and Tamilnadu & Puducherry (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

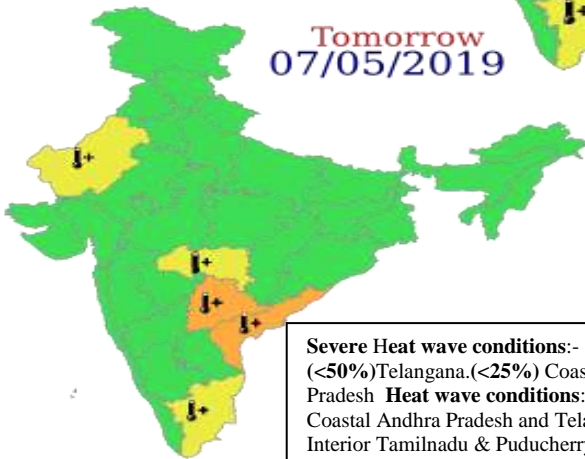
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
06/05/2019



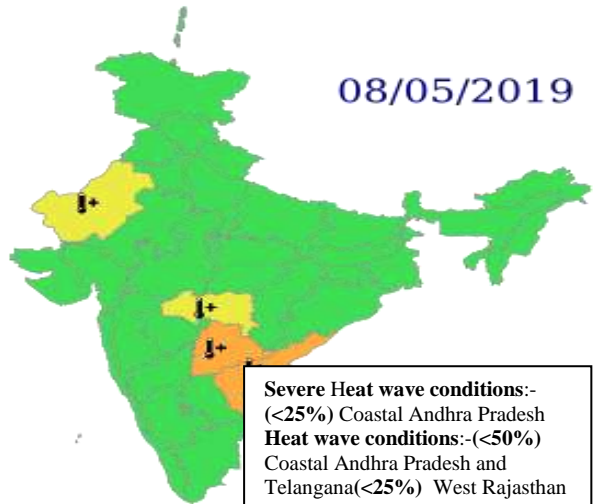
Severe Heat wave conditions:-(<25%) Coastal Andhra Pradesh **Heat wave conditions:-**(<50%) Coastal Andhra Pradesh and Telangana(<25%) Tamilnadu & Puducherry, West Rajasthan and Vidarbha.

Tomorrow
07/05/2019



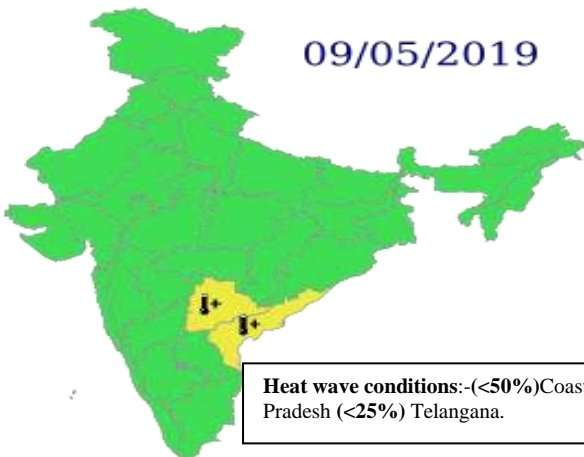
Severe Heat wave conditions:- (<50%)Telangana.(<25%) Coastal Andhra Pradesh **Heat wave conditions:-**(<50%) Coastal Andhra Pradesh and Telangana(<25%) Interior Tamilnadu & Puducherry, West Rajasthan and Vidarbha.

08/05/2019



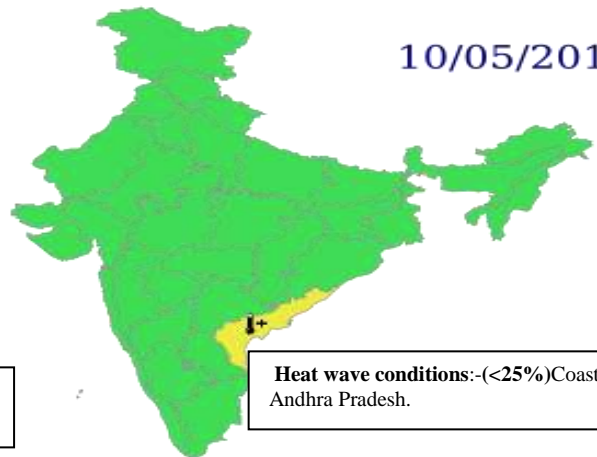
Severe Heat wave conditions:- (<25%) Coastal Andhra Pradesh **Heat wave conditions:-**(<50%) Coastal Andhra Pradesh and Telangana(<25%) West Rajasthan and Vidarbha.

09/05/2019

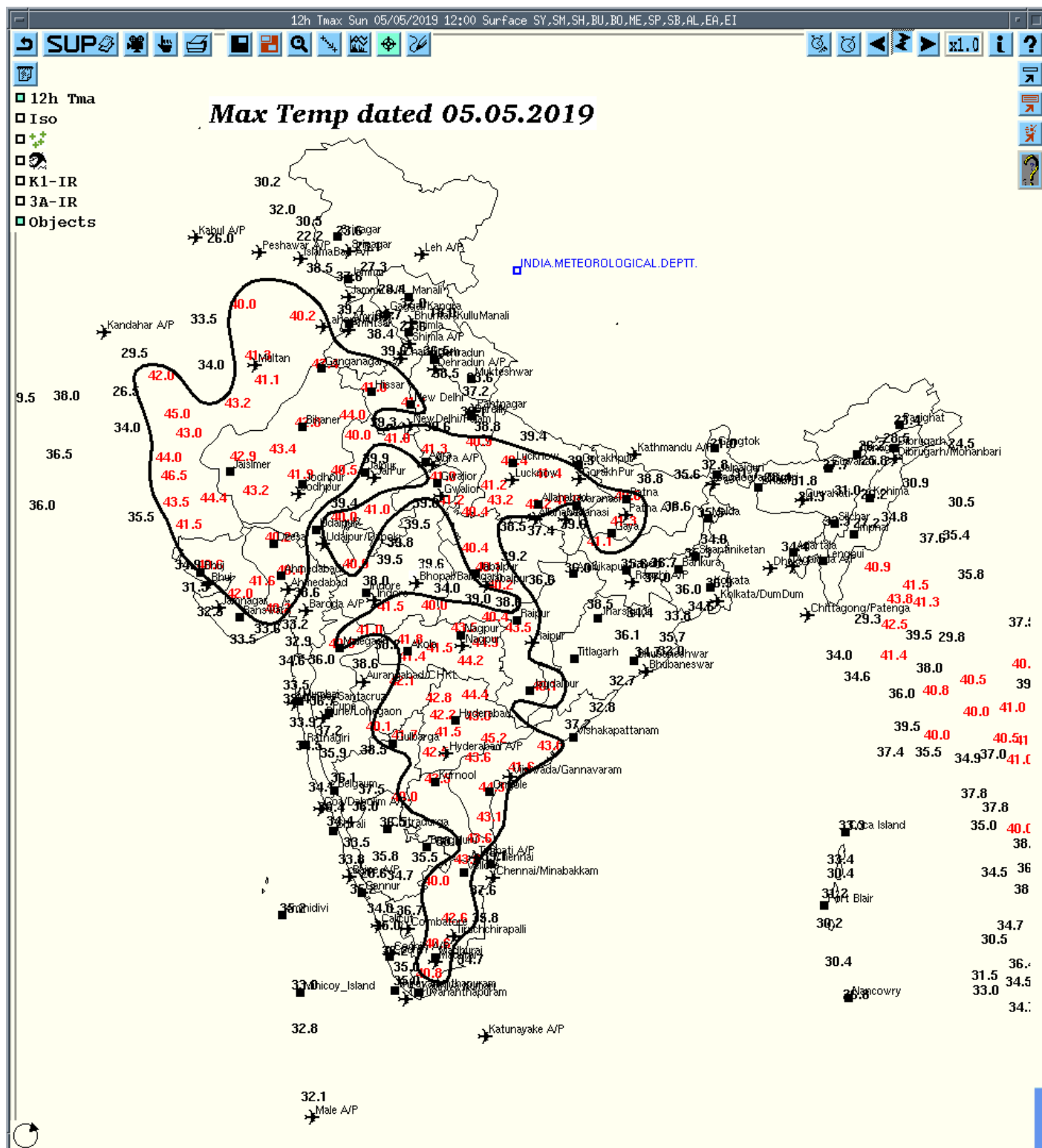


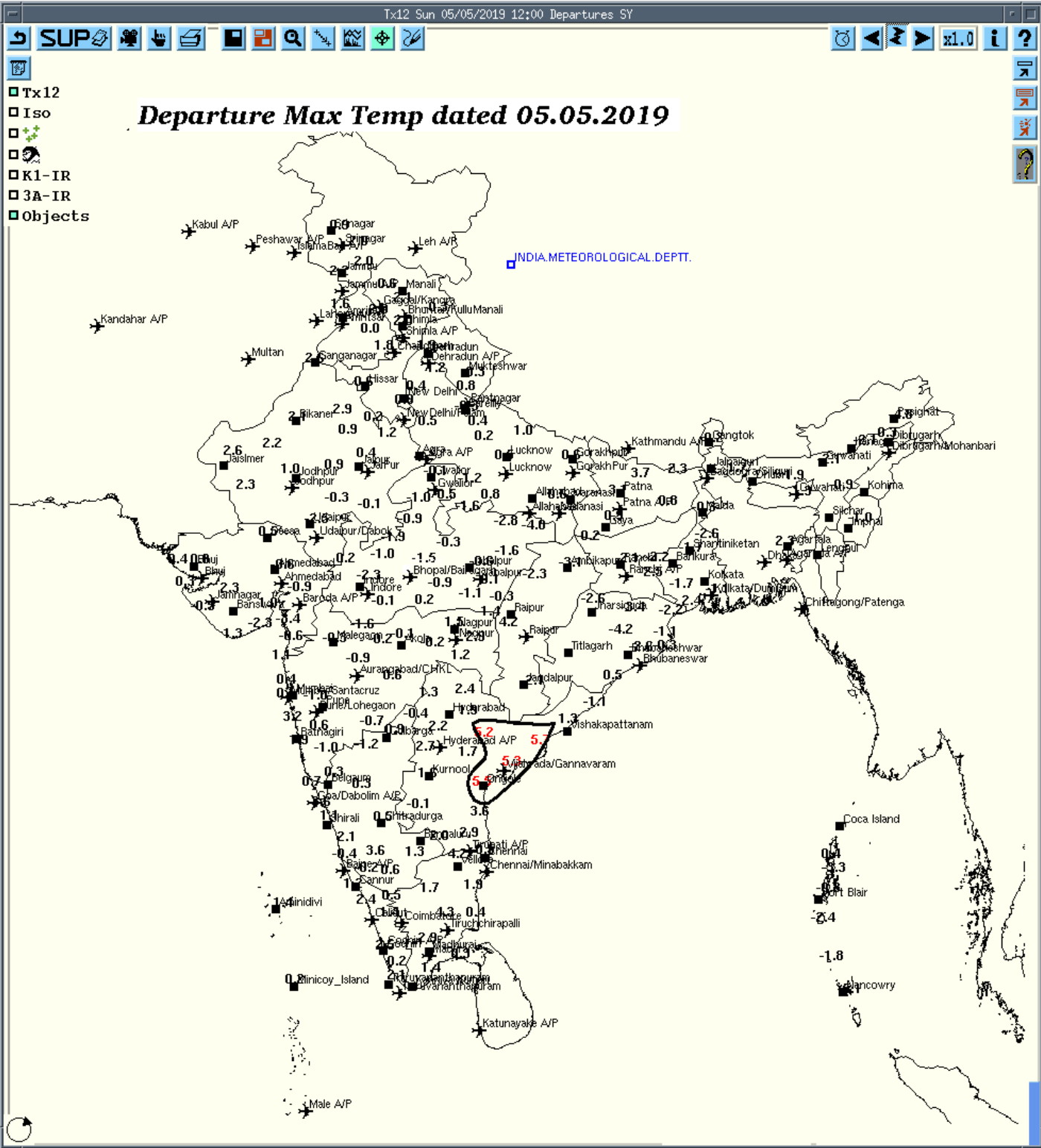
Heat wave conditions:-(<50%)Coastal Andhra Pradesh (<25%) Telangana.

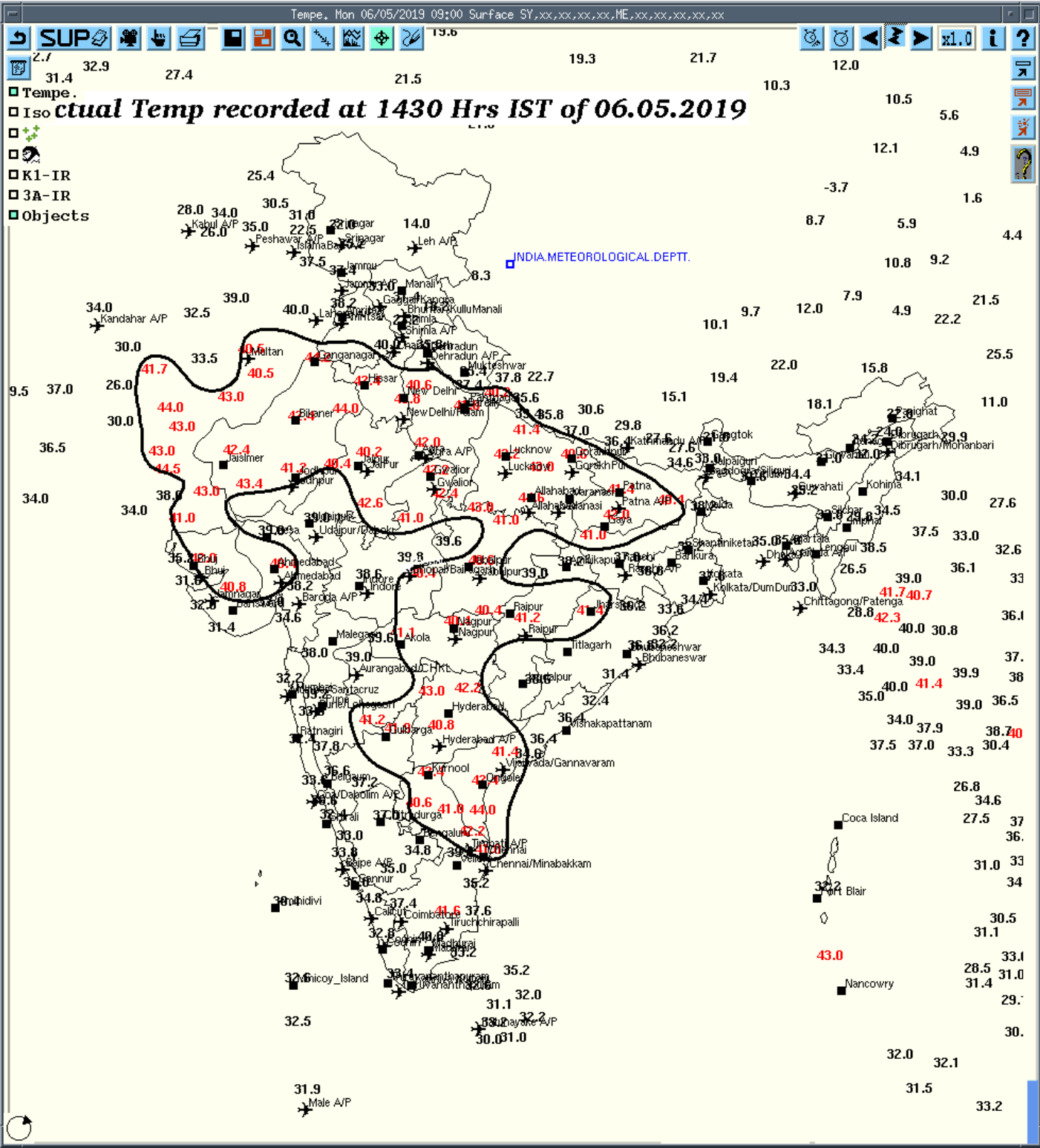
10/05/2019



Heat wave conditions:-(<25%)Coastal Andhra Pradesh.







Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 07th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 06 May to 0830 hrs IST 07 May, 2019)

Heat Wave:

Yesterday, **heat wave conditions** were observed in isolated pockets over Coastal Andhra Pradesh and Telangana(**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at many places over Sub-Himalayan West Bengal and Bihar; at a few places over Coastal Andhra Pradesh, Telangana, Rayalaseema, Tamilnadu & Puducherry; at isolated places over Coastal & South Interior Karnataka and Kerala; **above normal (1.6°C to 3.0°C)** at most places over Nagaland, Manipur, Mizoram & Tripura, Uttarakhand, East Uttar Pradesh and West Rajasthan; at many places over Gangetic West Bengal and Chhattisgarh; at a few places over Assam & Meghalaya, Punjab, Haryana, Chandigarh & Delhi, Himachal Pradesh, Jammu & Kashmir, West Uttar Pradesh, Saurashtra & Kutch and Madhya Maharashtra and at isolated places over Vidarbha. Yesterday, the **highest maximum temperature of 45.6°C** was recorded at **Bramhapuri (Vidarbha)** and **Khammam (Telangana)**. (**Annexure 1 & 2**).

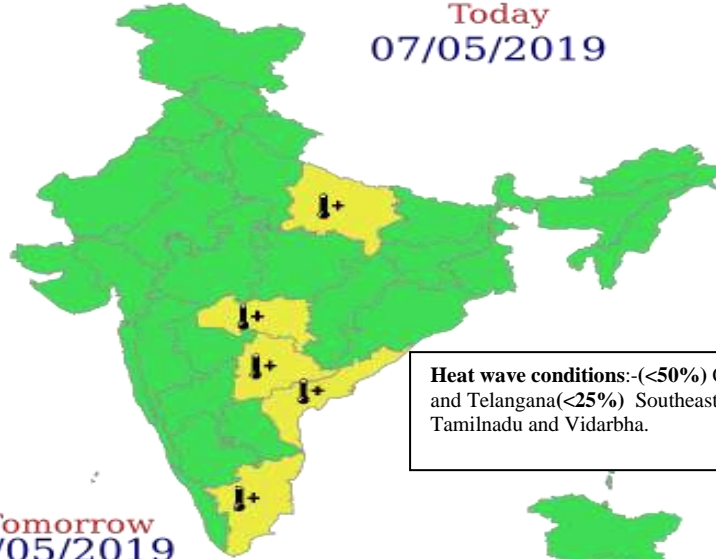
Temperatures Recorded at 1430 Hours IST of Today, the 07th May, 2019

- **Bramhapuri (Vidarbha)** recorded the maximum temperature of **45.4°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at most parts of Himachal Pradesh and Chhattisgarh; at many parts of Jharkhand and Odisha; at some parts of Uttarakhand, Bihar, Madhya Pradesh and Vidarbha and at one or two pockets of Assam & Meghalaya, Haryana, Gujarat, Konkan & Goa, Telangana and Tamilnadu & Puducherry(**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

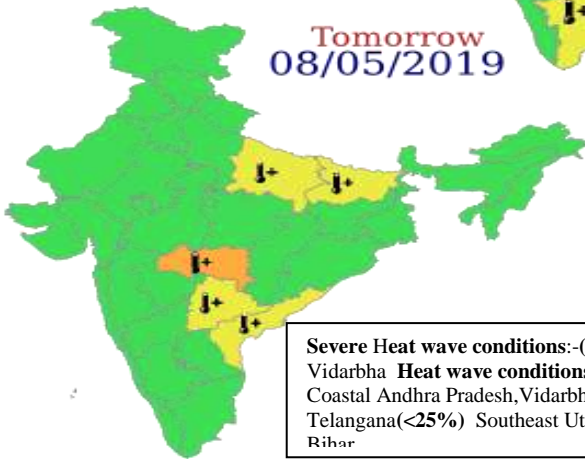
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
07/05/2019



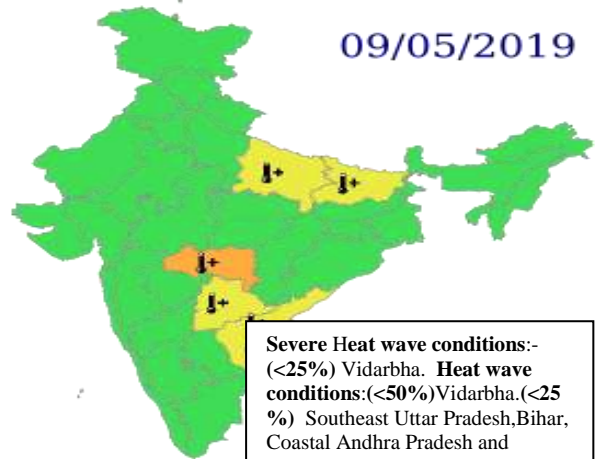
Heat wave conditions:-(<50%) Coastal Andhra Pradesh and Telangana(<25%) Southeast Uttar Pradesh,Interior Tamilnadu and Vidarbha.

Tomorrow
08/05/2019



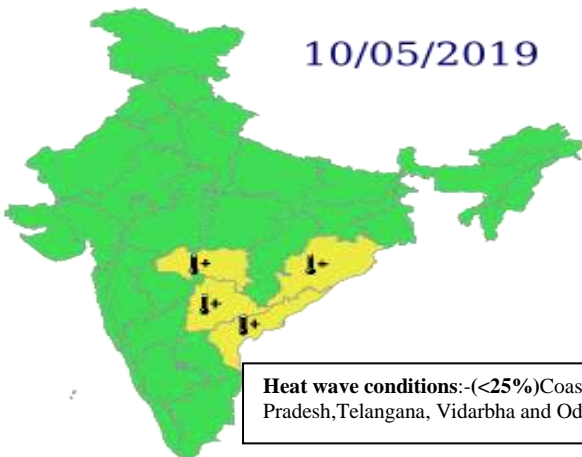
Severe Heat wave conditions:-(<25%) Vidarbha **Heat wave conditions:-(<50%)** Coastal Andhra Pradesh,Vidarbha and Telangana(<25%) Southeast Uttar Pradesh and Bihar

09/05/2019



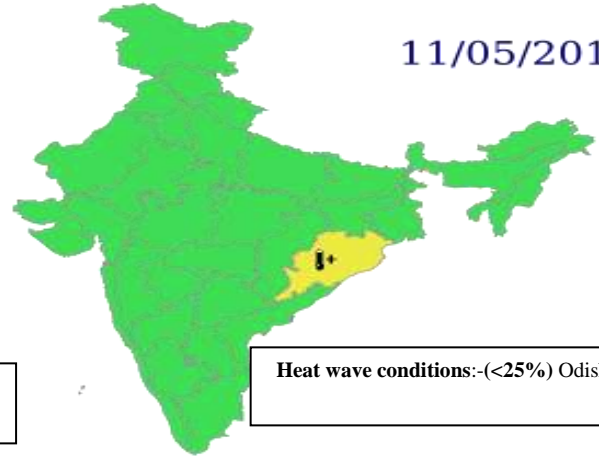
Severe Heat wave conditions:- (<25%) Vidarbha. **Heat wave conditions:-(<50%)**Vidarbha.(<25 %) Southeast Uttar Pradesh,Bihar, Coastal Andhra Pradesh and Telangana.

10/05/2019

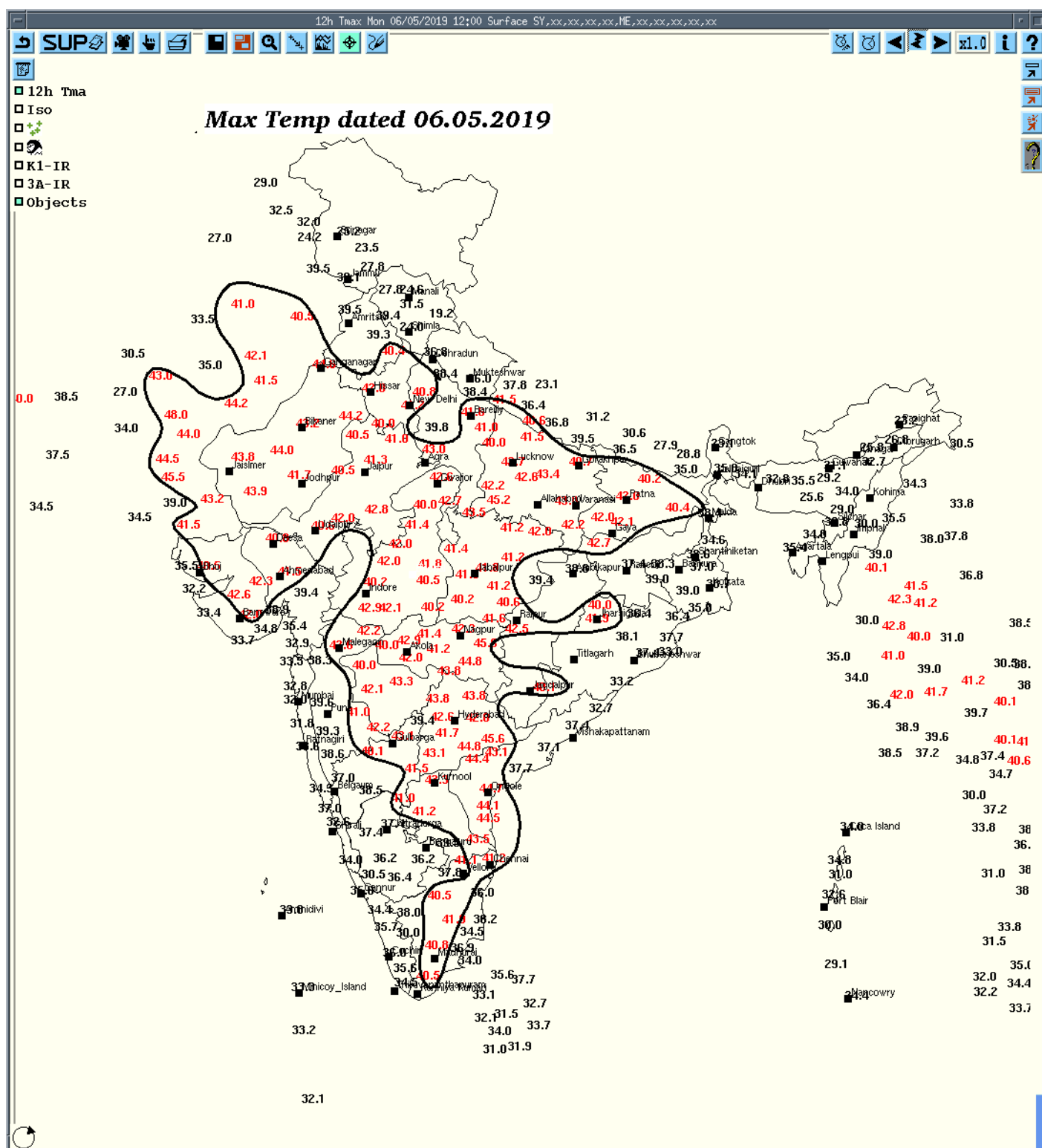


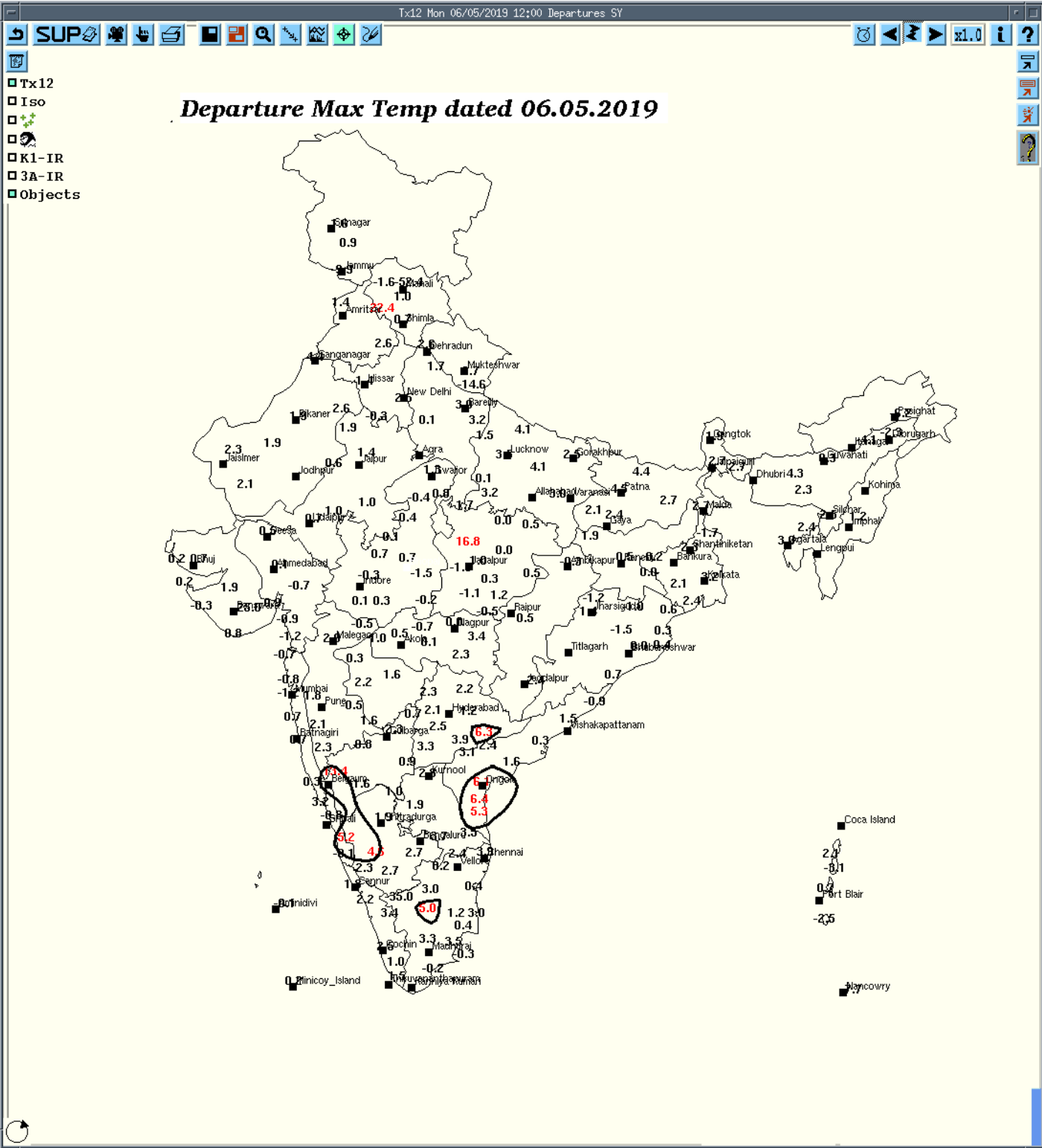
Heat wave conditions:-(<25%)Coastal Andhra Pradesh,Telangana, Vidarbha and Odisha.

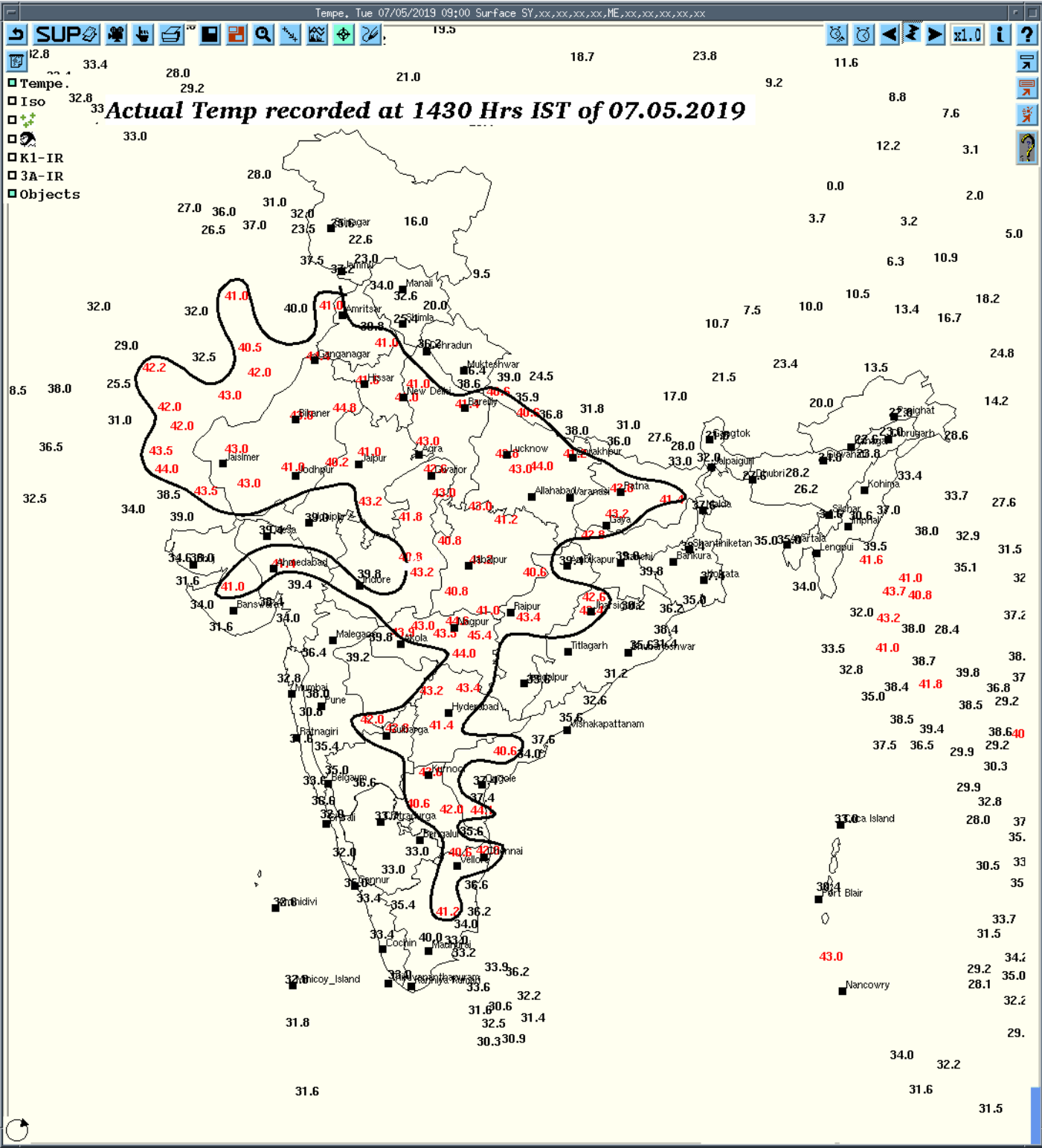
11/05/2019



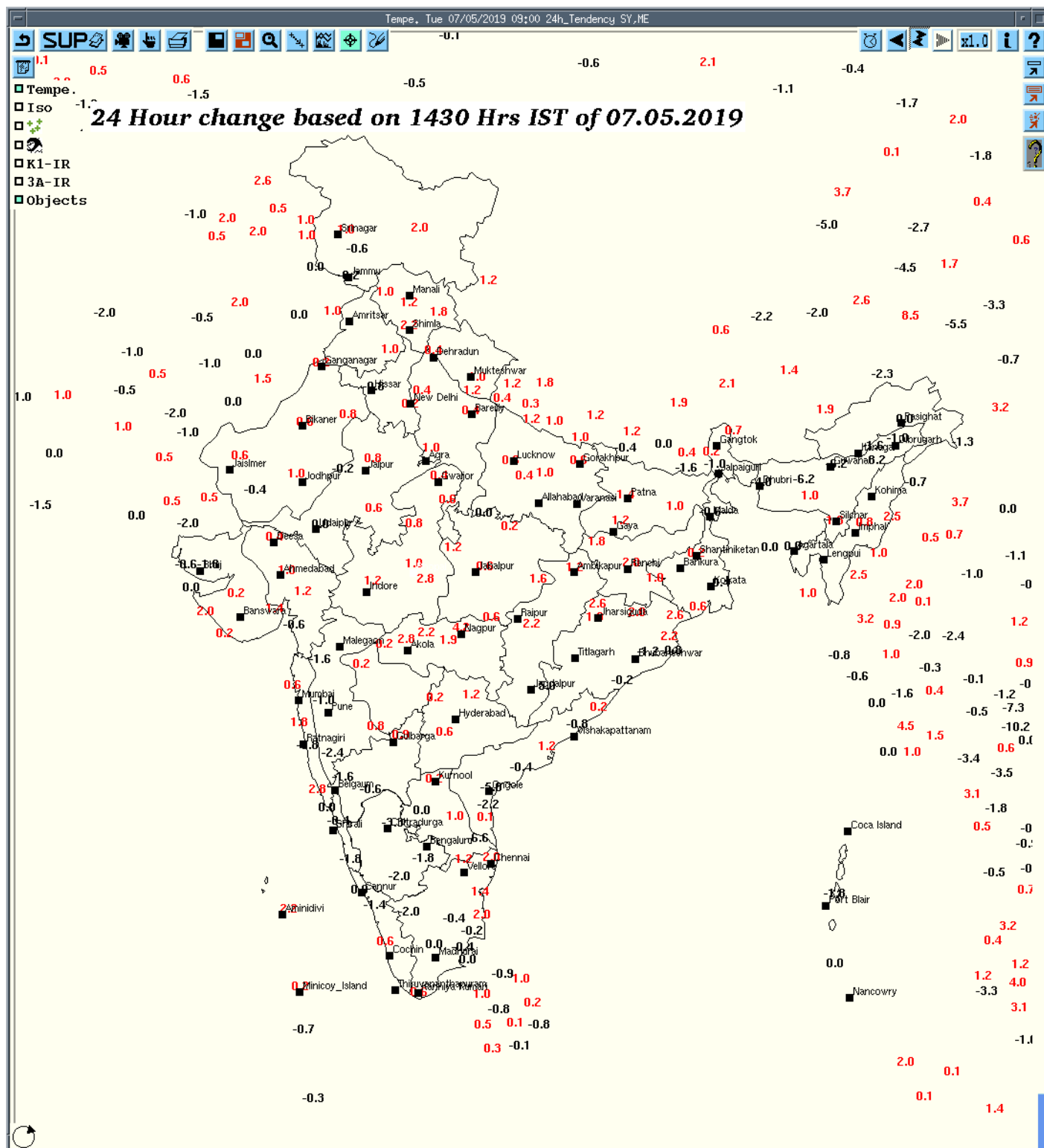
Heat wave conditions:-(<25%) Odisha.







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 09th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 08 May to 0830 hrs IST 09 May, 2019)

Heat Wave:

Heat wave to severe heat wave conditions observed in isolated pockets over Coastal Andhra Pradesh; **heat wave conditions** observed in some parts of East Uttar Pradesh, Vidarbha and in isolated pockets of Chhattisgarh(Annexure 1 & 2).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Uttarakhand, Nagaland, Manipur, Mizoram & Tripura; at many places over Himachal Pradesh, Punjab,, Haryana, Chandigarh & Delhi, East Uttar Pradesh and Jharkhand; at a few places over Jammu & Kashmir, Bihar, Chhattisgarh, Marathwada and Coastal Andhra Pradesh; at isolated places over Rayalaseema and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over West Uttar Pradesh, Gangetic West Bengal and Telangana; at many places over East Madhya Pradesh, Vidarbha and Odisha; at a few places over West Rajasthan and at isolated places over East Rajasthan, Coastal Karnataka and Kerala.Yesterday the **highest maximum temperature** of **46.2°C** was recorded at **Banda (East Uttar Pradesh)** (Annexure 1 & 2).

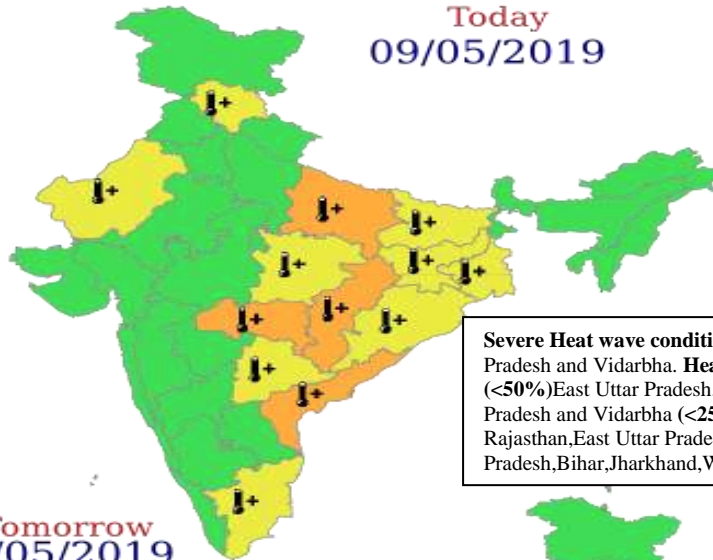
Temperatures Recorded at 1430 Hours IST of Today, the 09th May, 2019

- **Bramhapuri (Vidarbha)** recorded the maximum temperature of **45.0°C** (Annexure 3).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at many parts of Jammu & Kashmir; at some parts of Himachal Pradesh, South Interior Karnataka and Tamilnadu & Puducherry and at one or two pockets of Uttarakhand, Jharkhand, Gangetic Wet Bengal Chhattisgarh, Coastal Andhra Pradesh, Rayalaseema and Kerala(Annexure 4).

Heat Wave Warnings for Next 5 Days (on next page)

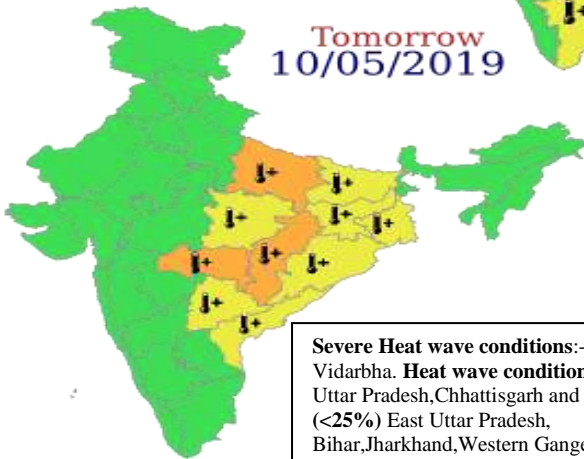
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
09/05/2019



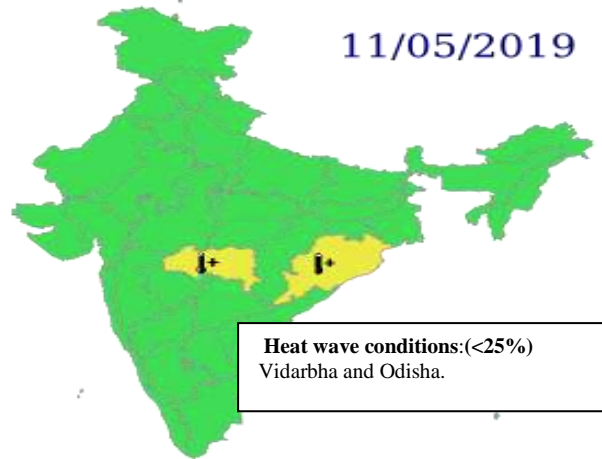
Severe Heat wave conditions:-(<25%) Coastal Andhra Pradesh and Vidarbha. **Heat wave conditions:-(<50%)** East Uttar Pradesh, Chhattisgarh, Coastal Andhra Pradesh and Vidarbha (<25%) Himachal Pradesh, West Rajasthan, East Uttar Pradesh, East Madhya Pradesh, Bihar, Jharkhand, Western Gangetic West Bengal

Tomorrow
10/05/2019



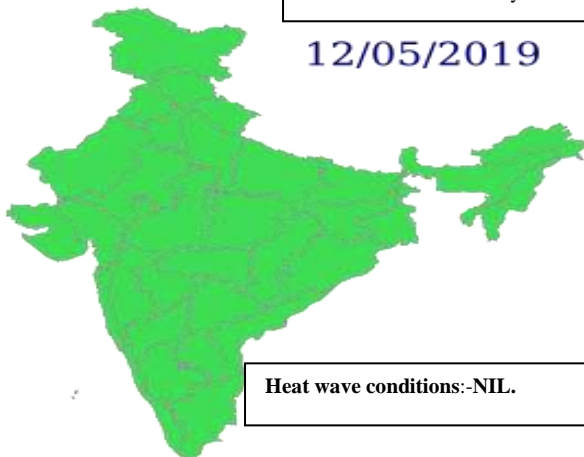
Severe Heat wave conditions:-(<25%) Vidarbha. **Heat wave conditions:-(<50%)** East Uttar Pradesh, Chhattisgarh and Vidarbha (<25%) East Uttar Pradesh, Bihar, Jharkhand, Western Gangetic West Bengal Odisha, Telangana, Coastal Andhra Pradesh and Tamilnadu & Puducherry.

11/05/2019



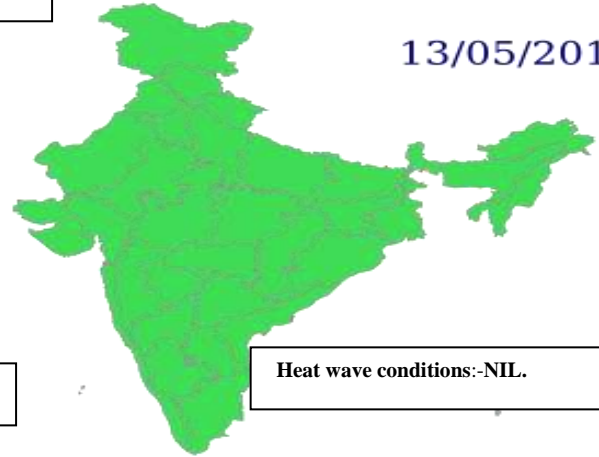
Heat wave conditions:-(<25%) Vidarbha and Odisha.

12/05/2019

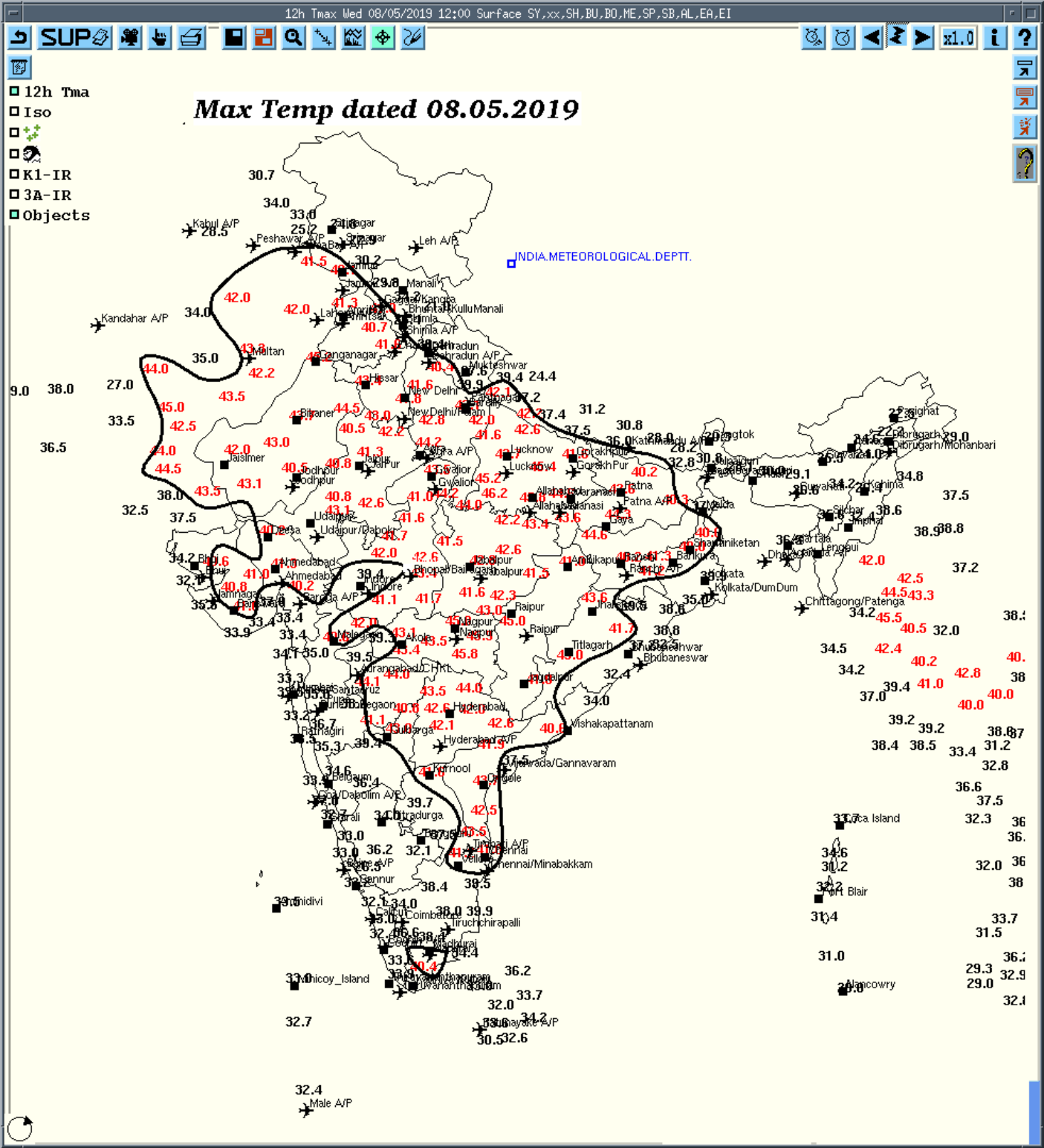


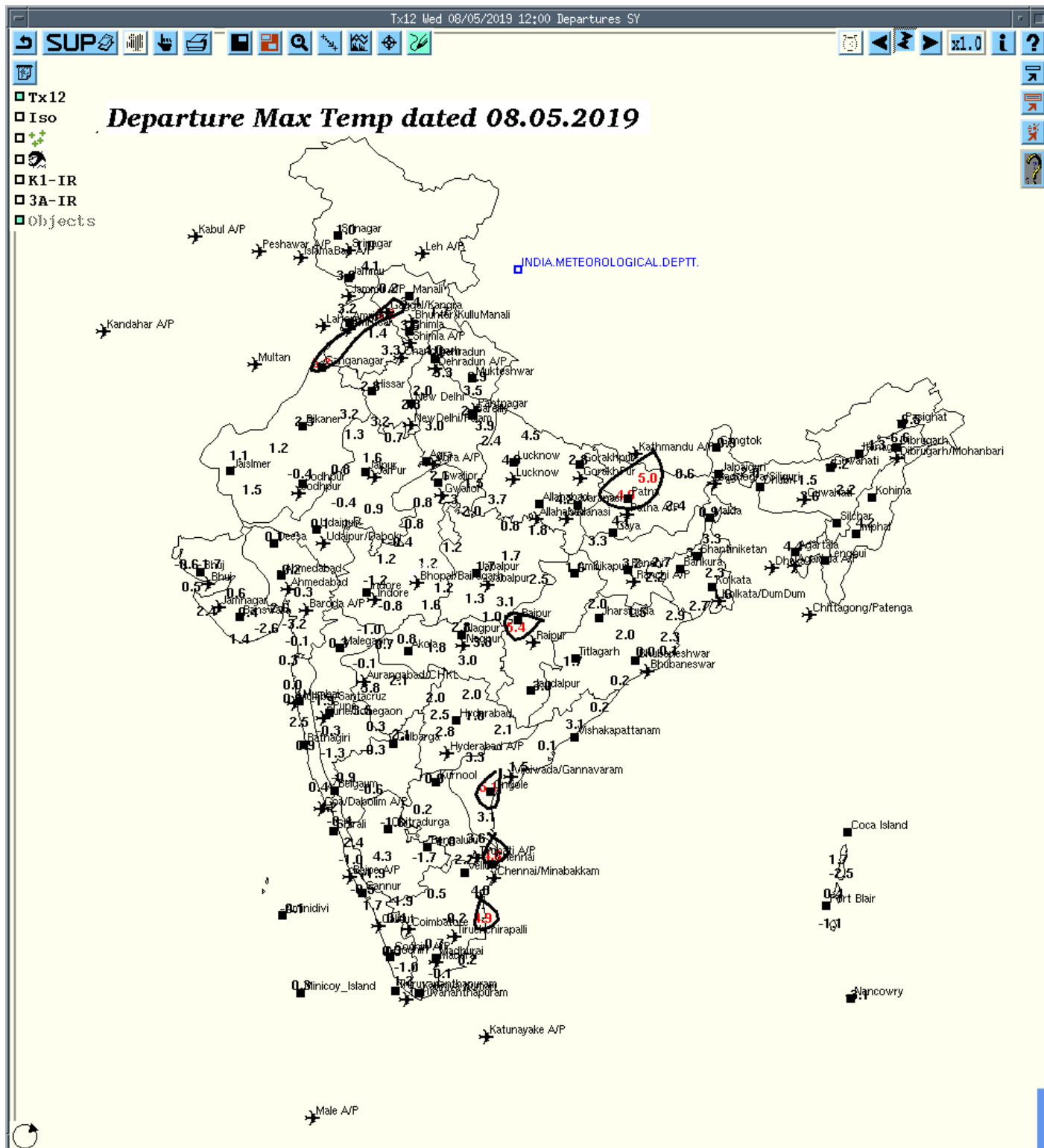
Heat wave conditions:-NIL.

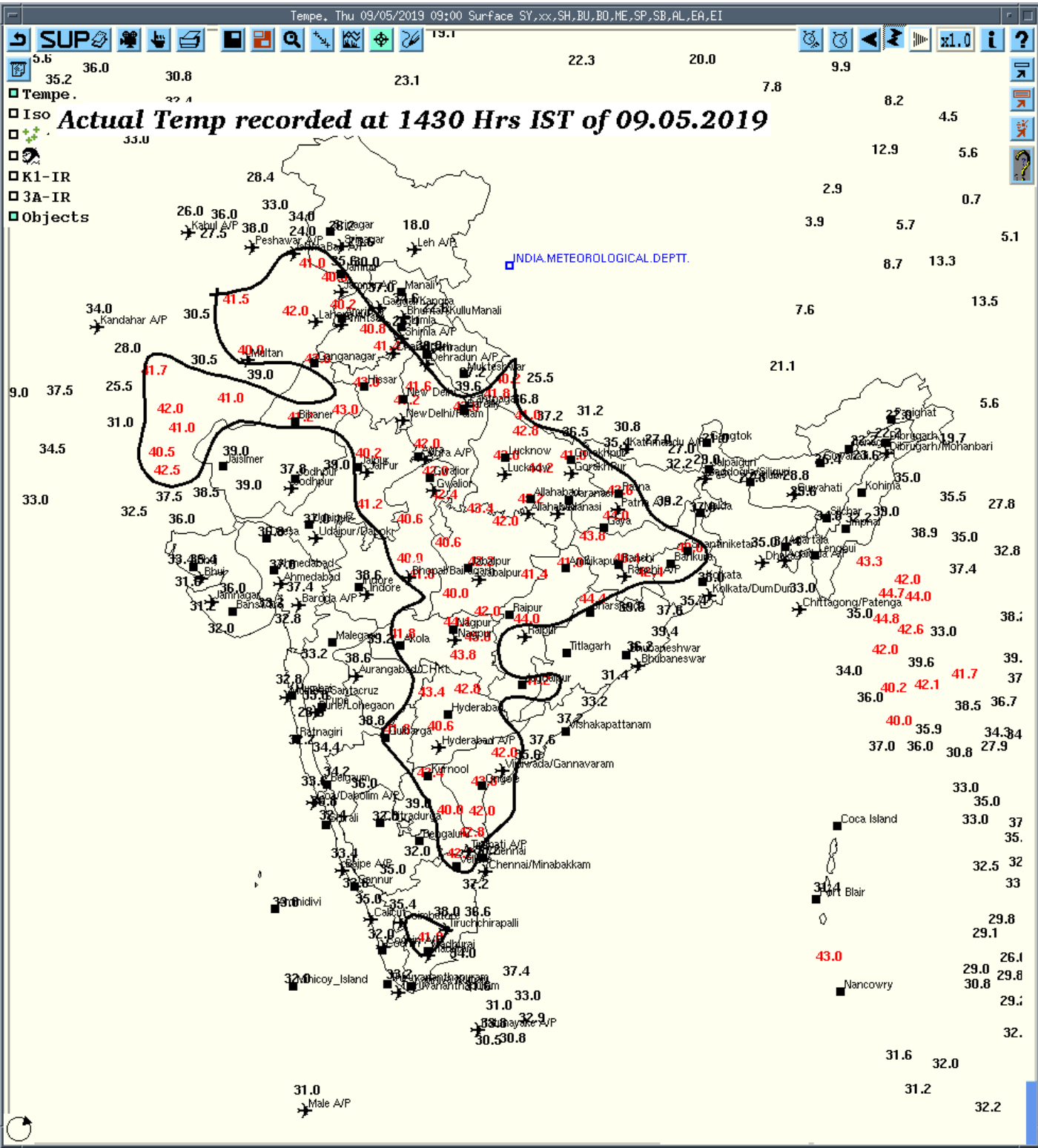
13/05/2019



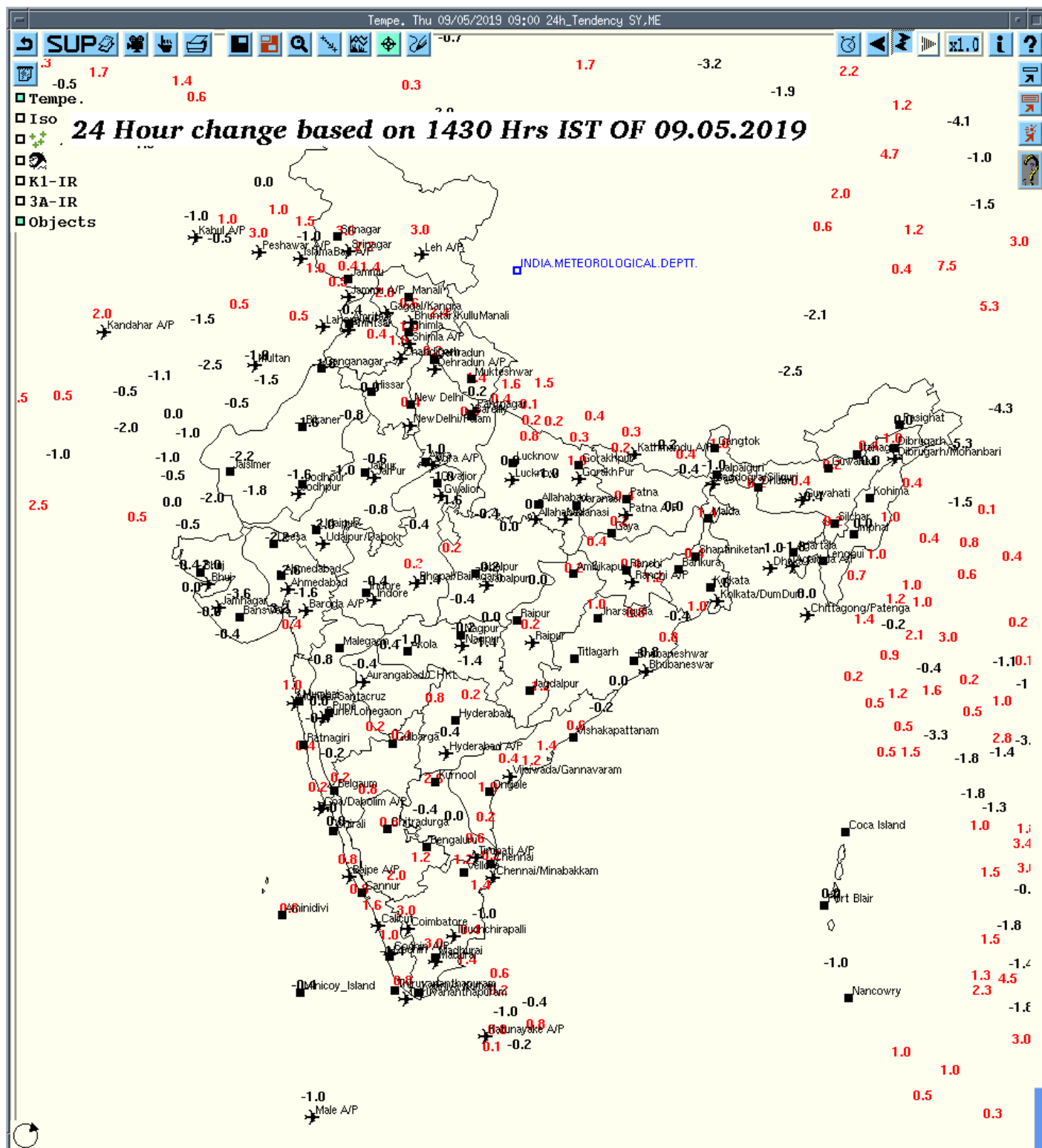
Heat wave conditions:-NIL.







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 10th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 09 May to 0830 hrs IST 10 May, 2019)

Heat Wave:

Yesterday, heat wave conditions were observed at one or two pockets over East Uttar Pradesh, Chhattisgarh, Vidarbha and Telangana (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Jammu & Kashmir, Himachal Pradesh and Uttarakhand; at many places over Nagaland, Manipur, Mizoram & Tripura and Jharkhand; at a few places over Punjab, Uttar Pradesh, Gangetic West Bengal, Odisha and Coastal Andhra Pradesh; at isolated places over Bihar and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over Haryana, Chandigarh & Delhi and Telangana; at many places over Rayalseema; at a few places over Sub-Himalayan West Bengal & Sikkim, East Madhya Pradesh and Coastal Karnataka and at isolated places over Assam & Meghalaya. Yesterday, the highest maximum temperature of 45.8°C was recorded at Brahmapuri (Vidarbha) (**Annexure 1 & 2**).

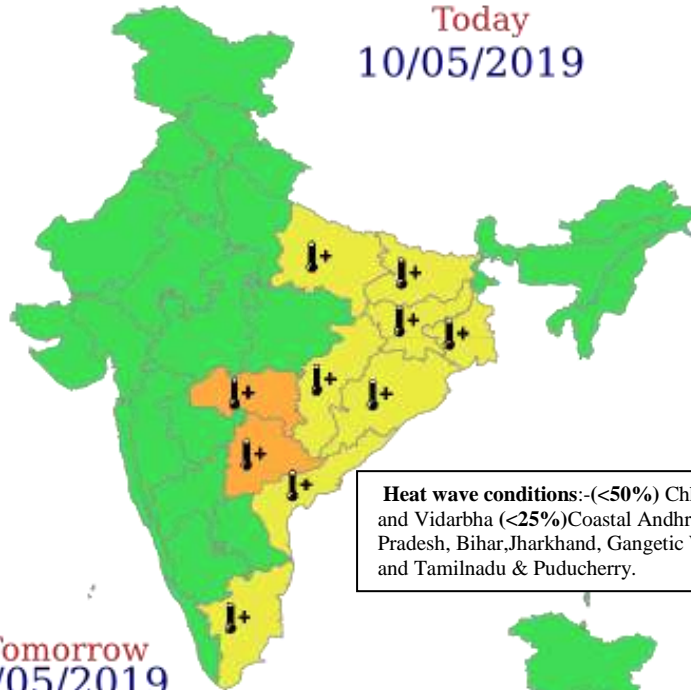
Temperatures Recorded at 1430 Hours IST of Today, the 10th May, 2019

- **Bramhapuri (Vidarbha) recorded the maximum temperature of 45.6°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C at many parts of South Interior Karnataka; at some parts of North Interior Karnataka and Kerala and at one or two pockets of Jammu & Kashmir, Uttarakhand, Bihar, Gangetic West Bengal, Odisha, Coastal andhra Pradesh, Saurashtra & Kutch, Madhya Maharashtra, Rayalaseema and Tamilnadu & Puducherry (Annexure 4).**

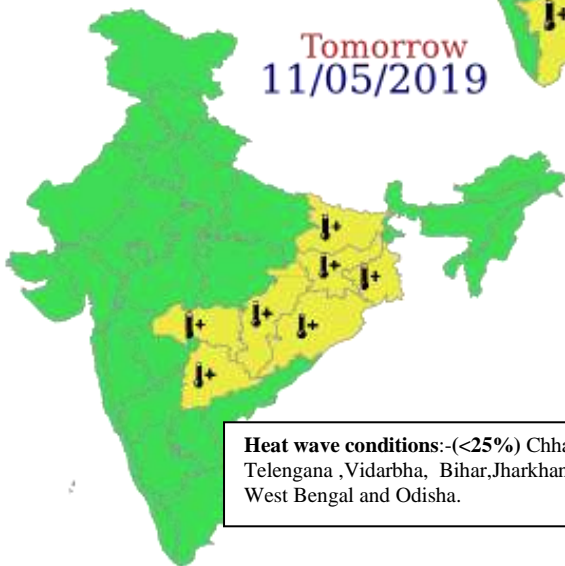
Heat Wave Warnings for Next 5 Days (on next page)

(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

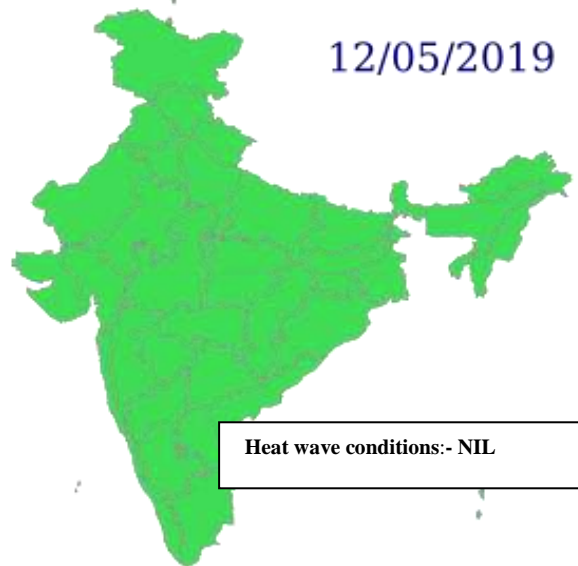
Today
10/05/2019



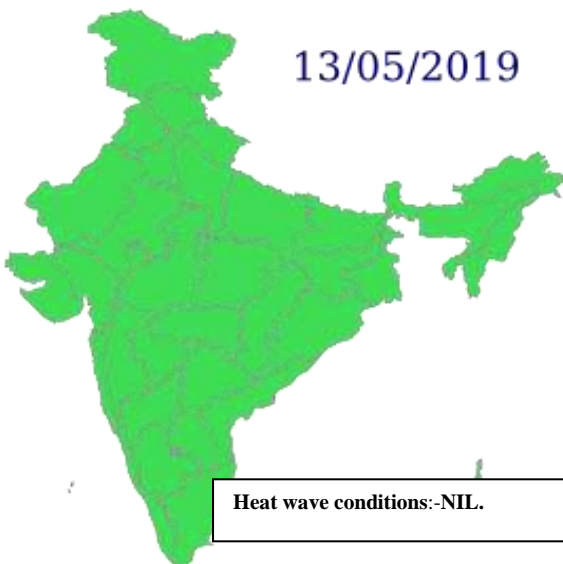
Tomorrow
11/05/2019



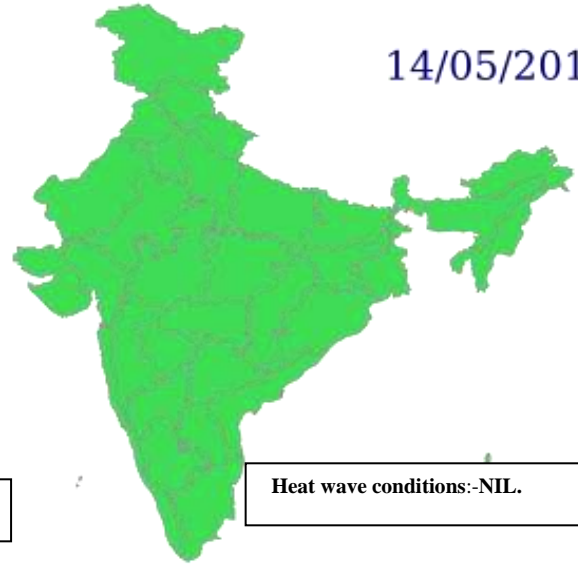
12/05/2019

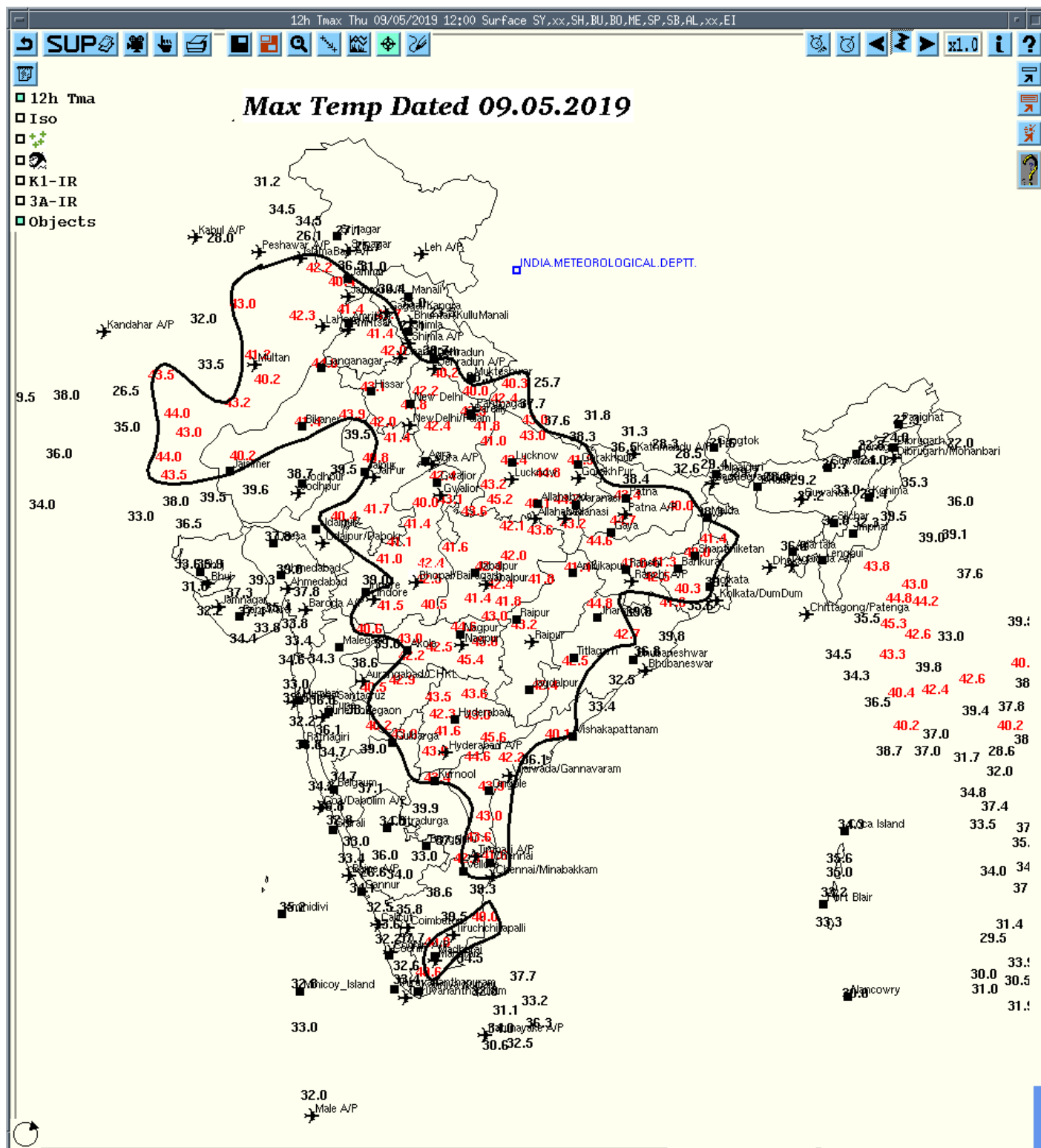


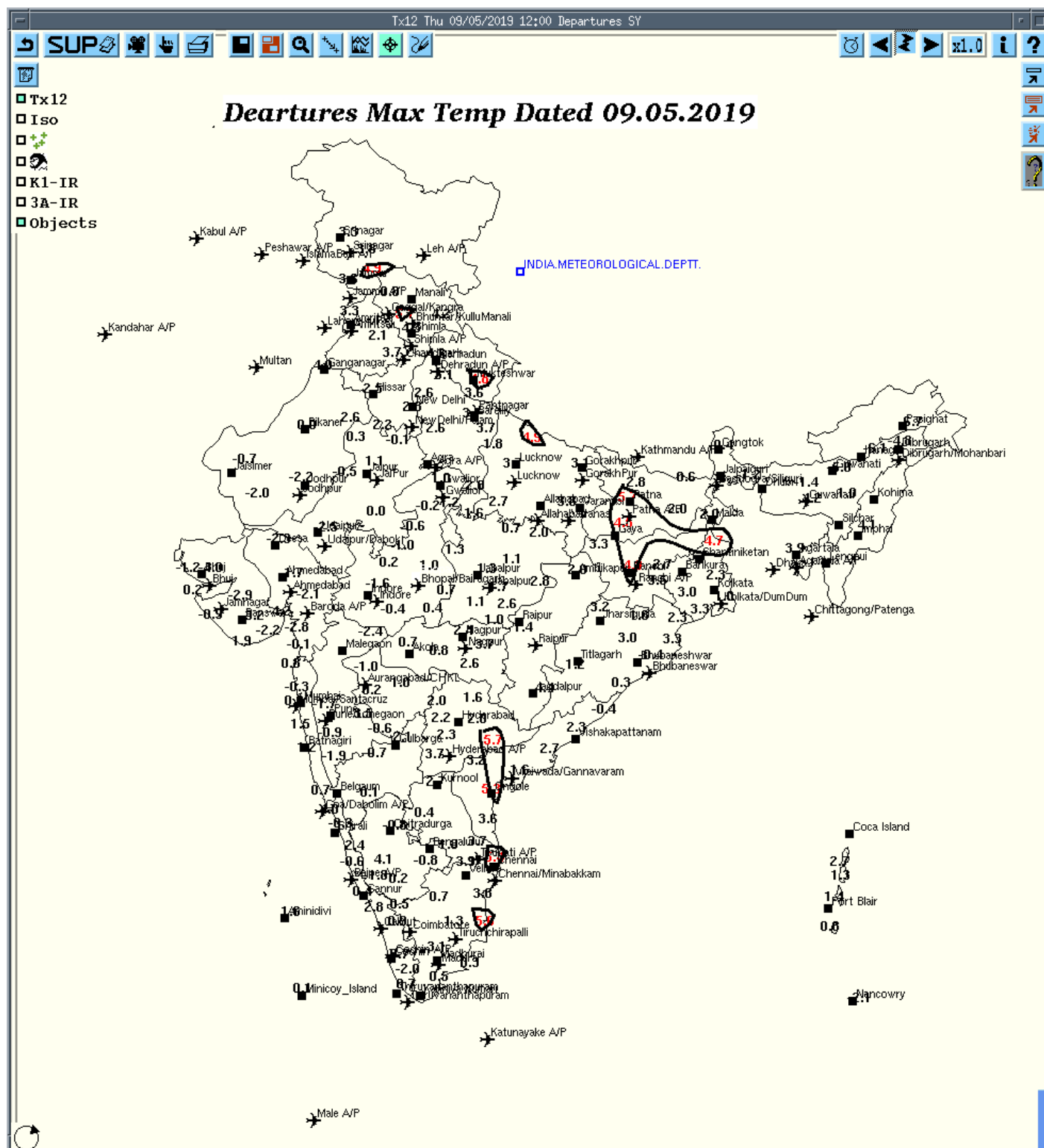
13/05/2019

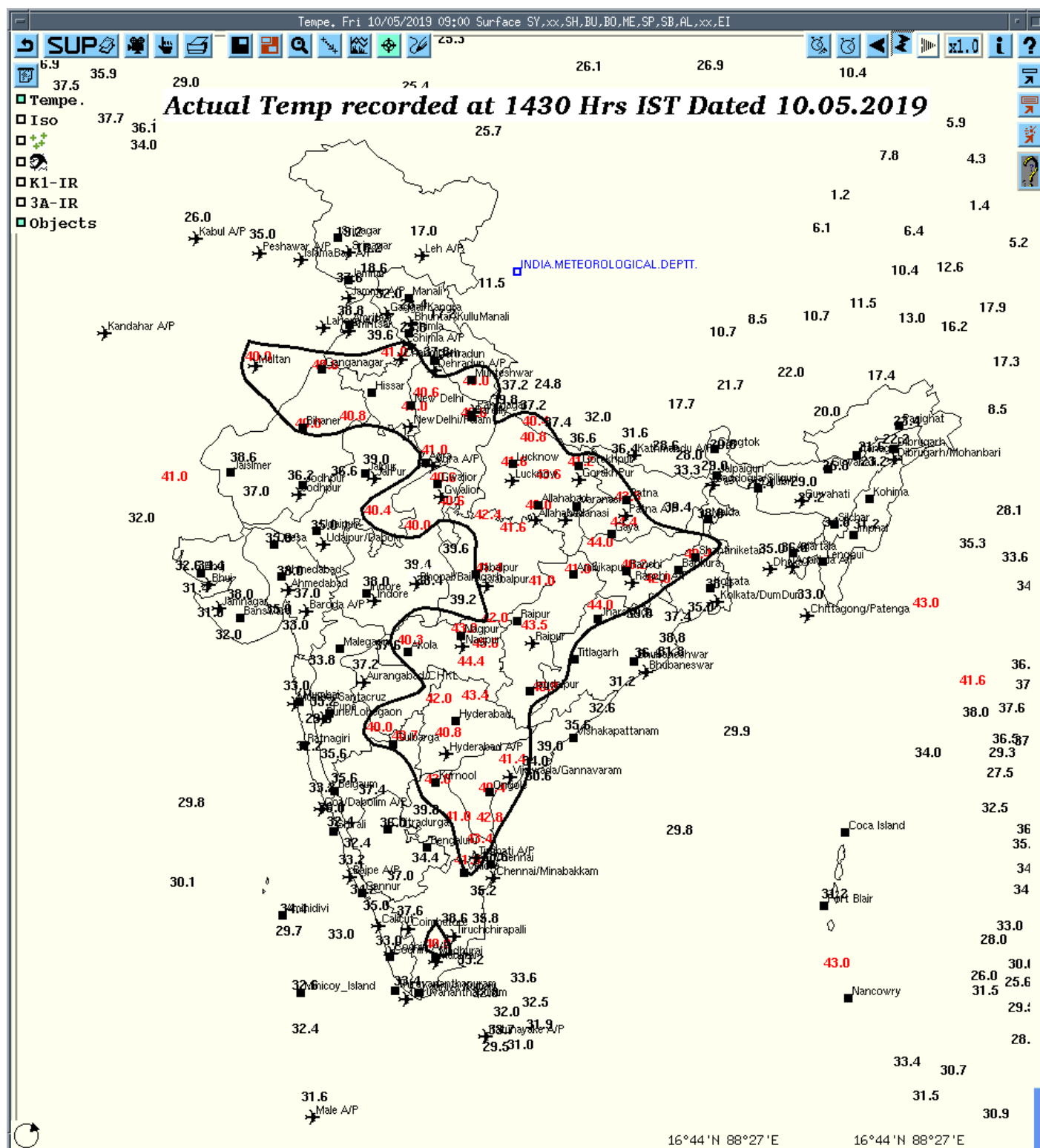


14/05/2019









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 11th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 10 May to 0830 hrs IST 11 May, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions were observed at isolated pockets over East Uttar Pradesh, Vidarbha, Bihar, Chhattisgarh, Odisha, Telangana, Coastal Andhra Pradesh and Gangetic West Bengal (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Uttarakhand, Jharkhand and Nagaland, Manipur, Mizoram & Tripura; at many places over Gangetic West Bengal and Rayalaseema; at a few places over Bihar, Chhattisgarh and Coastal Andhra Pradesh; at isolated places over Punjab, Sub-Himalayan West Bengal & Sikkim and Tamil Nadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over Telangana and South Interior Karnataka; at many places over Himachal Pradesh, Haryana, Chandigarh & Delhi, Uttar Pradesh, Odisha and Tamil Nadu & Puducherry; at a few places over East Madhya Pradesh, Vidarbha, Coastal & North Interior Karnataka and Kerala; at isolated places over Konkan & Goa. Yesterday, the **highest maximum temperature of 46.2°C** recorded at **Banda (East Uttar Pradesh)** (**Annexure 1 & 2**).

Temperatures Recorded at 1430 Hours IST of Today, the 11th May, 2019

- **Chandrapur (Vidarbha)** recorded the maximum temperature of **44°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at many parts of Gujarat state, Madhya Maharashtra and Nagaland, Manipur, Mizoram & Tripura; at some parts of West Rajasthan and Assam & Meghalaya and at one or two pockets of East Rajasthan, Vidarbha and Tamilnadu & Puducherry (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
11/05/2019



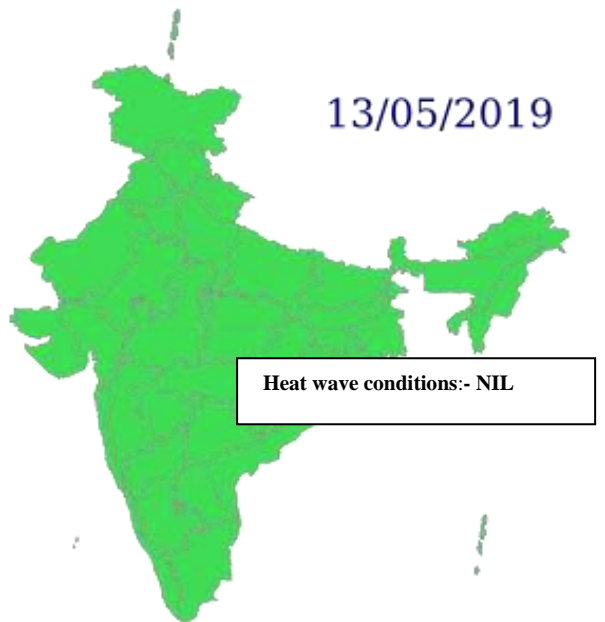
Heat wave conditions:- (<25%) Vidarbha, Chhattisgarh, Bihar, Jharkhand, Gangetic West Bengal, Odisha, Telangana and Rayalseema.

Tomorrow
12/05/2019



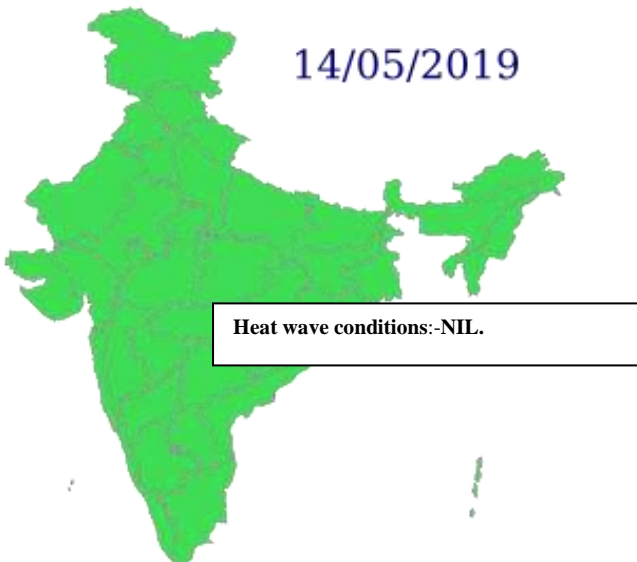
Heat wave conditions:-NIL

13/05/2019



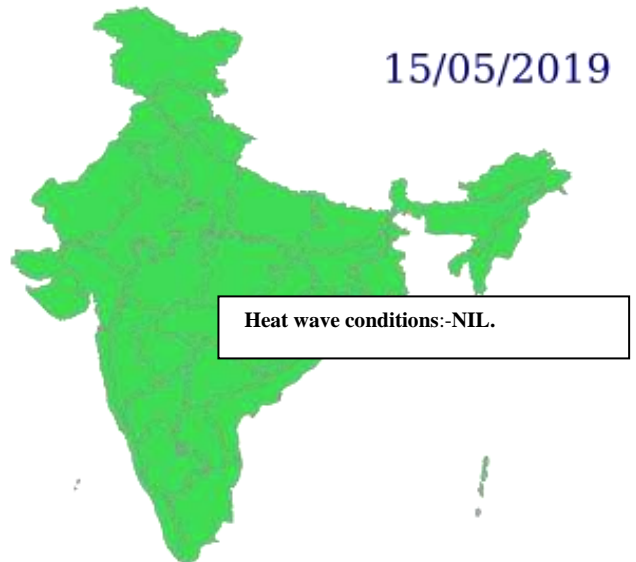
Heat wave conditions:- NIL

14/05/2019



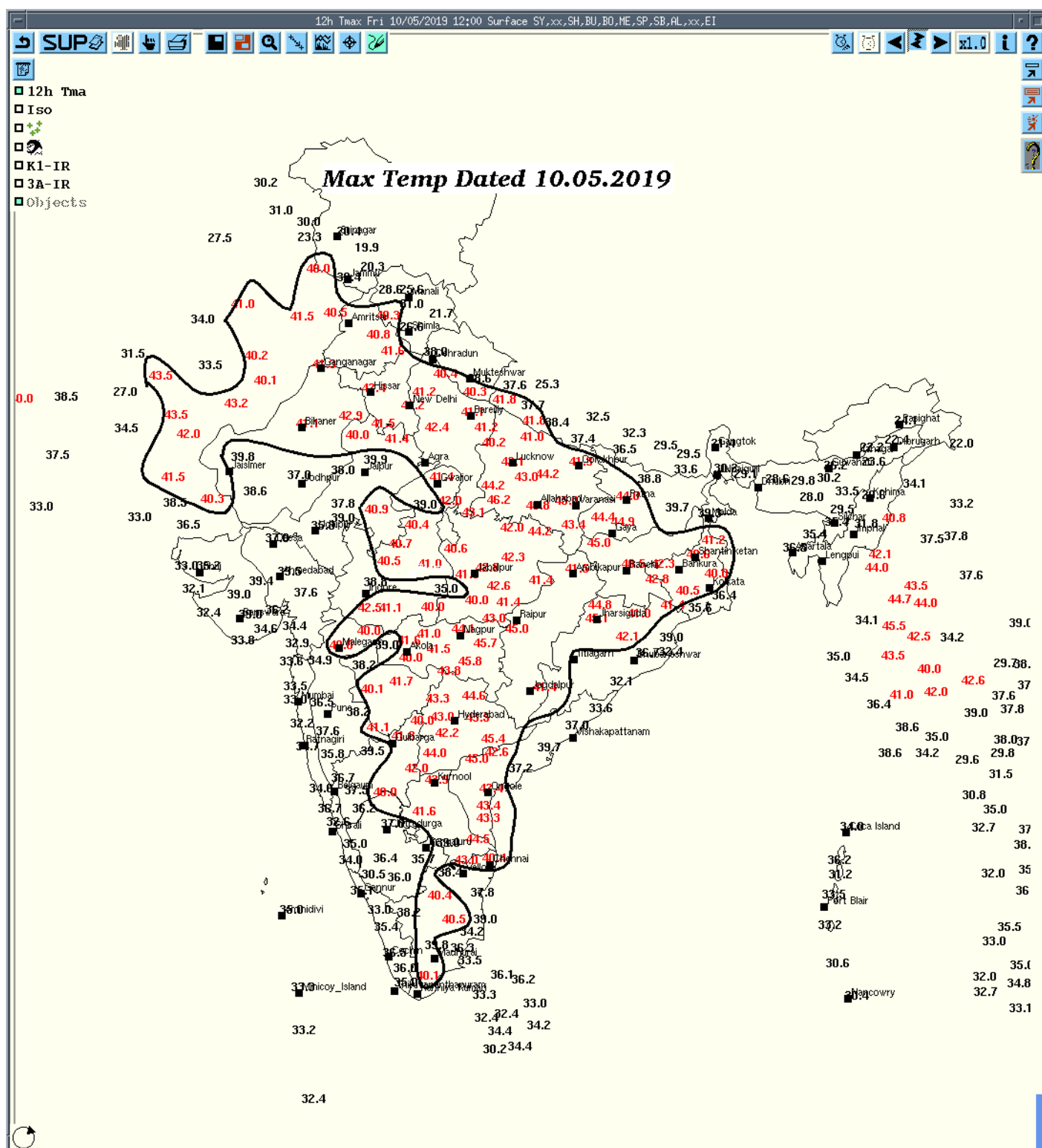
Heat wave conditions:-NIL.

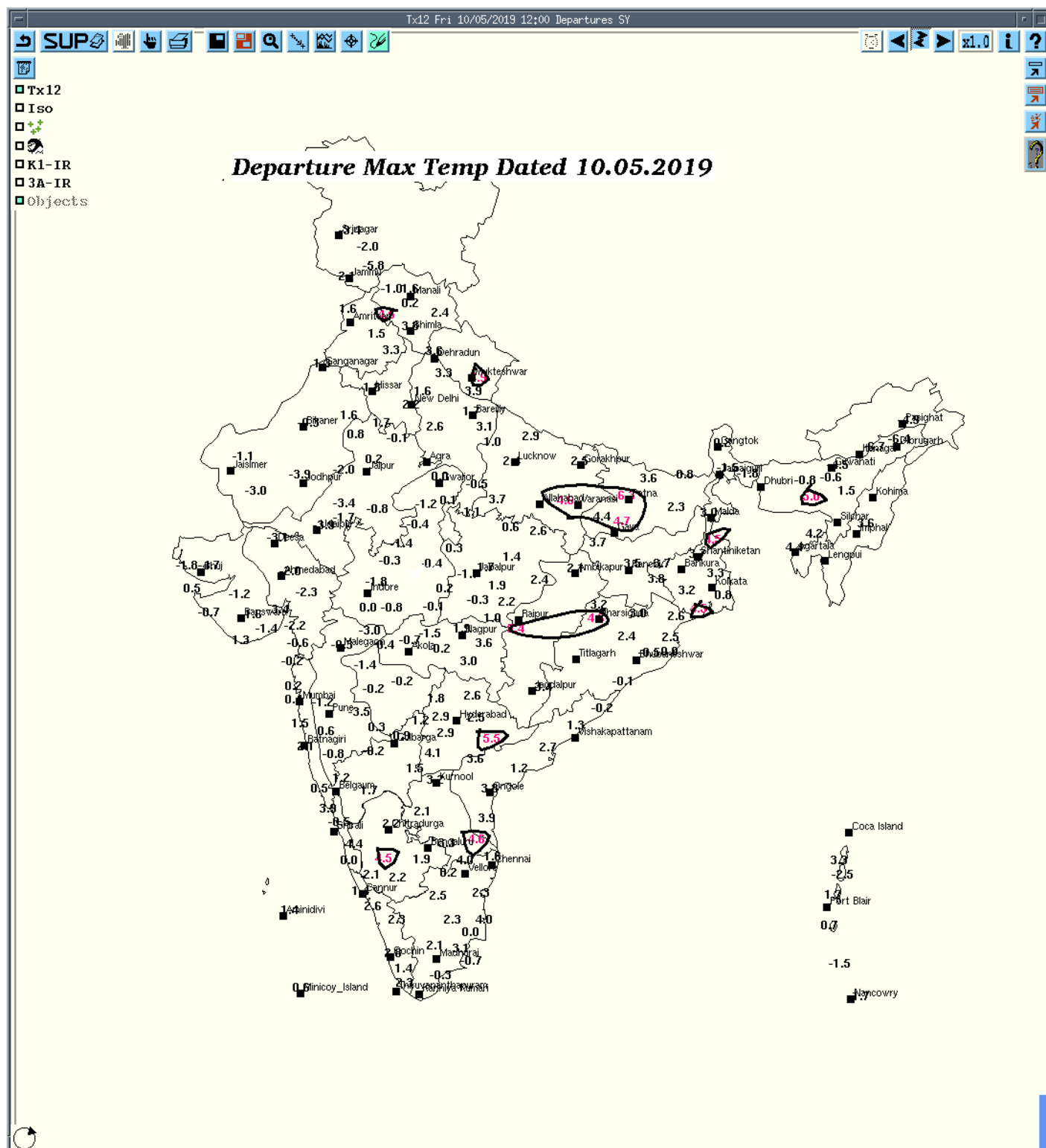
15/05/2019



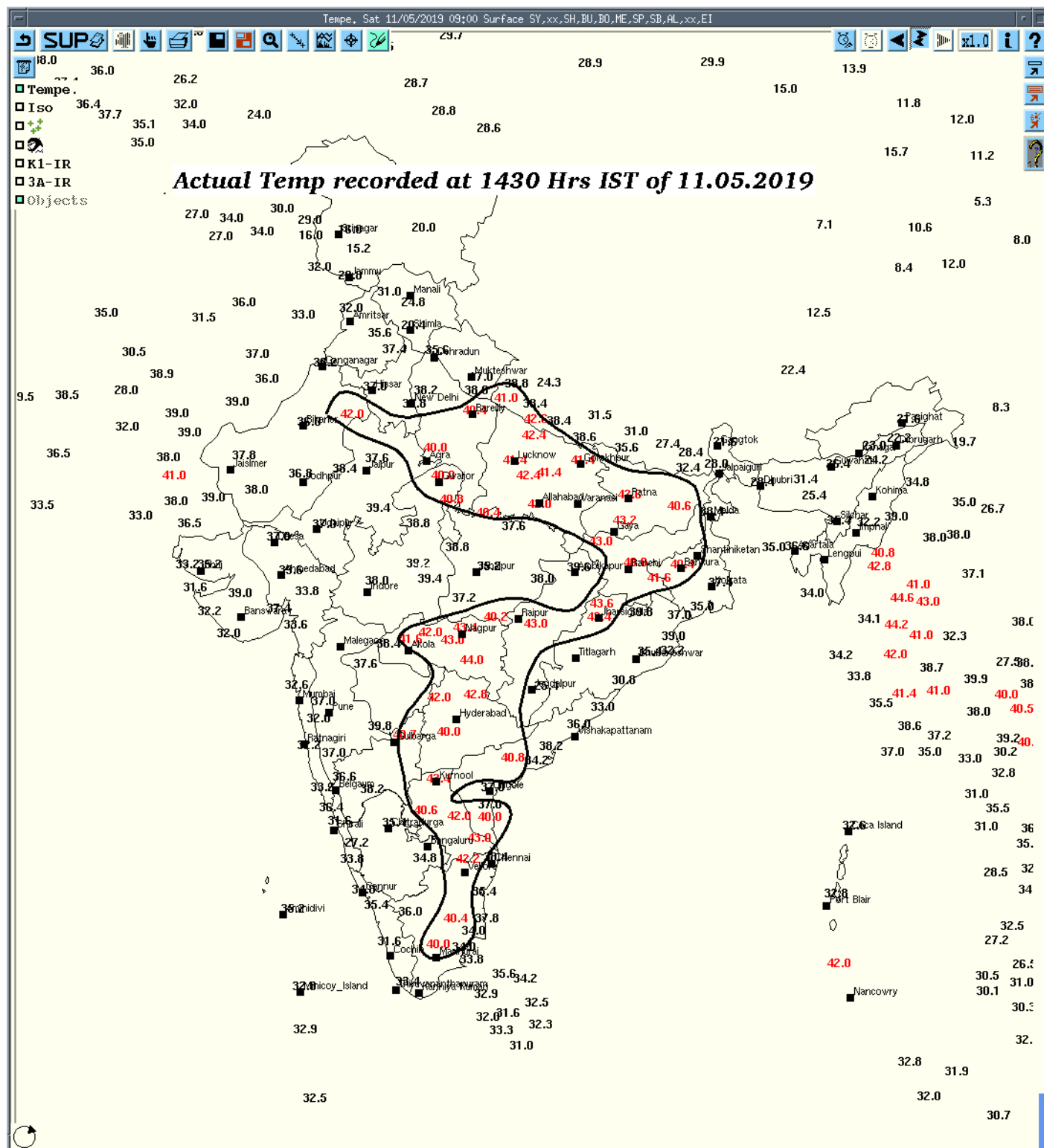
Heat wave conditions:-NIL.

Annexure 1

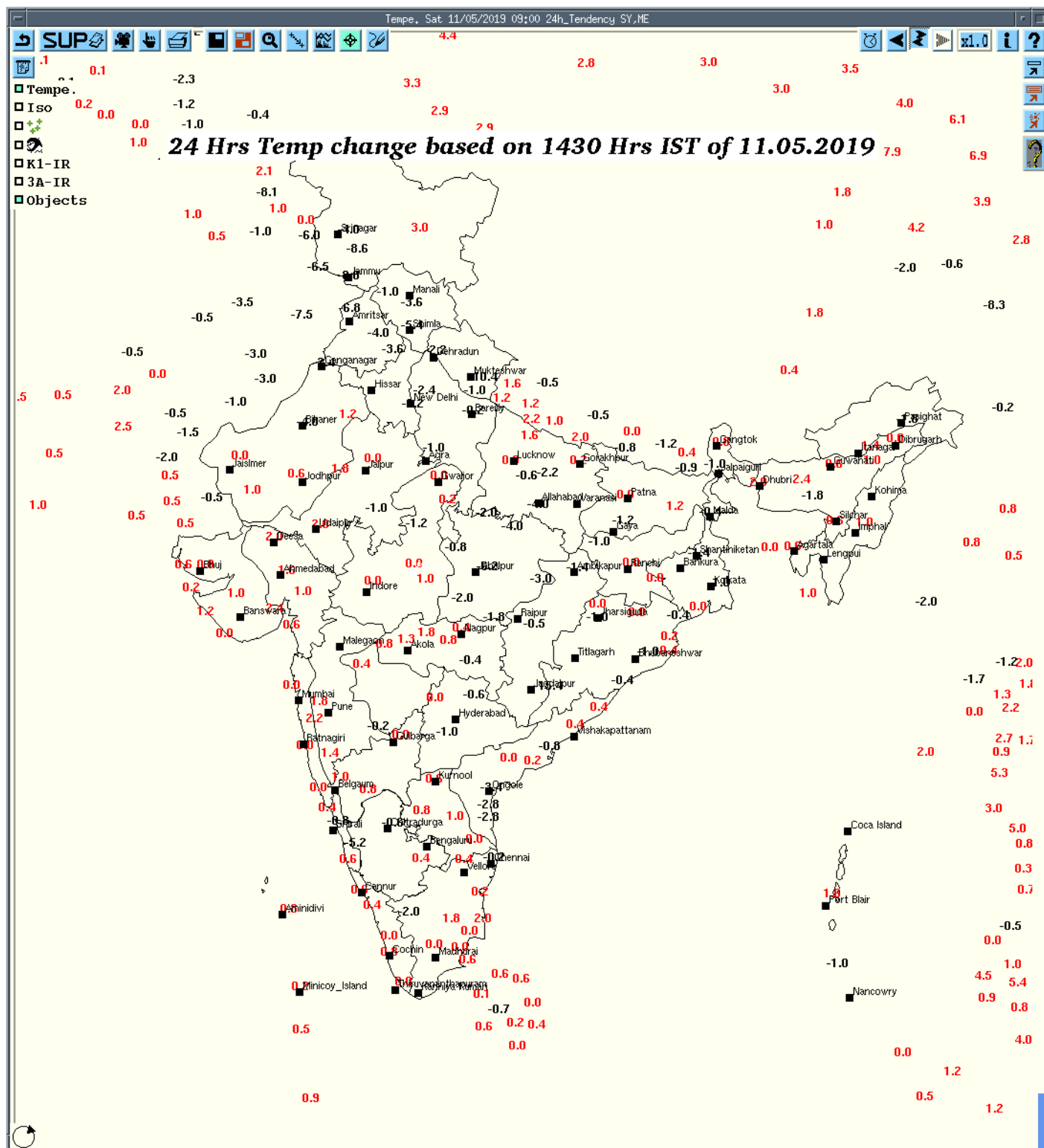




Annexure 3



Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 12th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 11 May to 0830 hrs IST 12 May, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions were observed at isolated pockets over East Uttar Pradesh, Vidarbha, Bihar, Odisha, Telangana and Gangetic West Bengal (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Bihar, Rayalaseema and Nagaland, Manipur, Mizoram & Tripura; at many places over Jharkhand; at a few places over Gangetic West Bengal and Odisha; at isolated places over Sub-Himalayan West Bengal & Sikkim, Telangana, Kerala and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over South Interior Karnataka; at many places over Uttarakhand and North Interior Karnataka; at a few places over East Uttar Pradesh, Vidarbha, Madhya Maharashtra and Andaman & Nicobar Islands and at isolated places over West Uttar Pradesh and Coastal Karnataka. Yesterday, **the highest maximum temperature of 45.6°C** was recorded at **Khammam (Telangana)**. (**Annexure 1 & 2**).

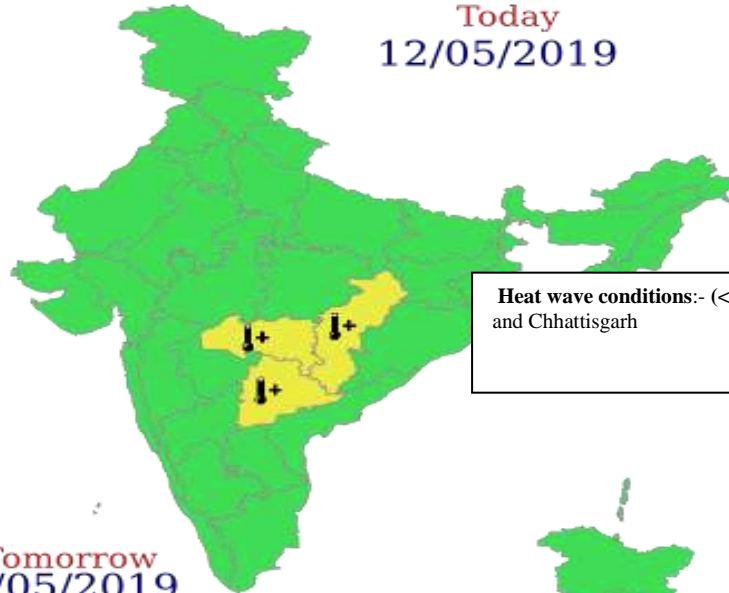
Temperatures Recorded at 1430 Hours IST of Today, the 12th May, 2019

- **Chandrapur (Vidarbha) recorded the maximum temperature of 44.2°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 4-6°C at many parts of Jammu & Kashmir and Arunachal Pradesh, at few parts of Assam, by 1-3°C at some parts of Punjab, West Rajasthan, East Madhyapradesh and Madhya Maharashtra and one or two pockets of Gujarat state and West Madhya Pradesh. (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

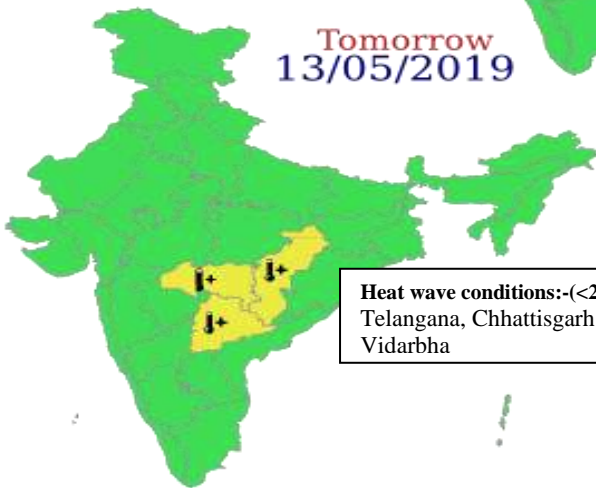
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
12/05/2019



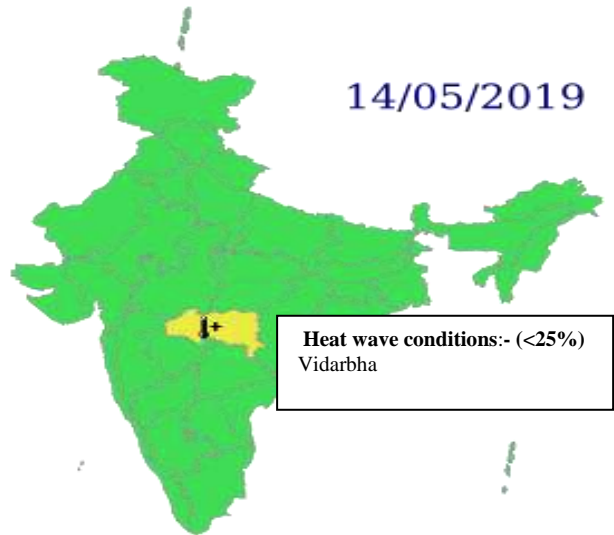
Heat wave conditions:- (<25%) Telangana, Vidarbha and Chhattisgarh

Tomorrow
13/05/2019



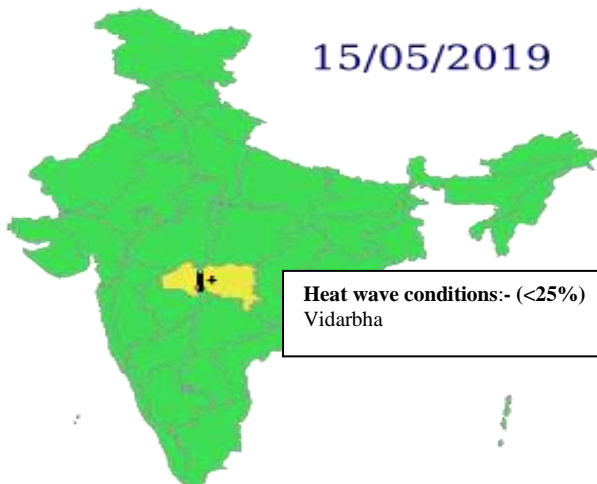
Heat wave conditions:- (<25%)
Telangana, Chhattisgarh and
Vidarbha

14/05/2019



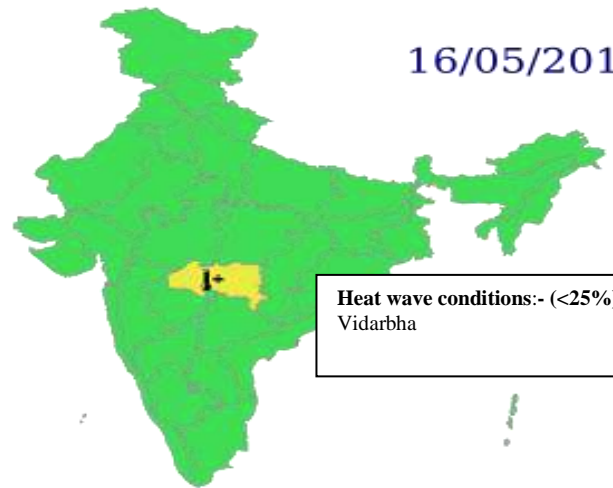
Heat wave conditions:- (<25%)
Vidarbha

15/05/2019

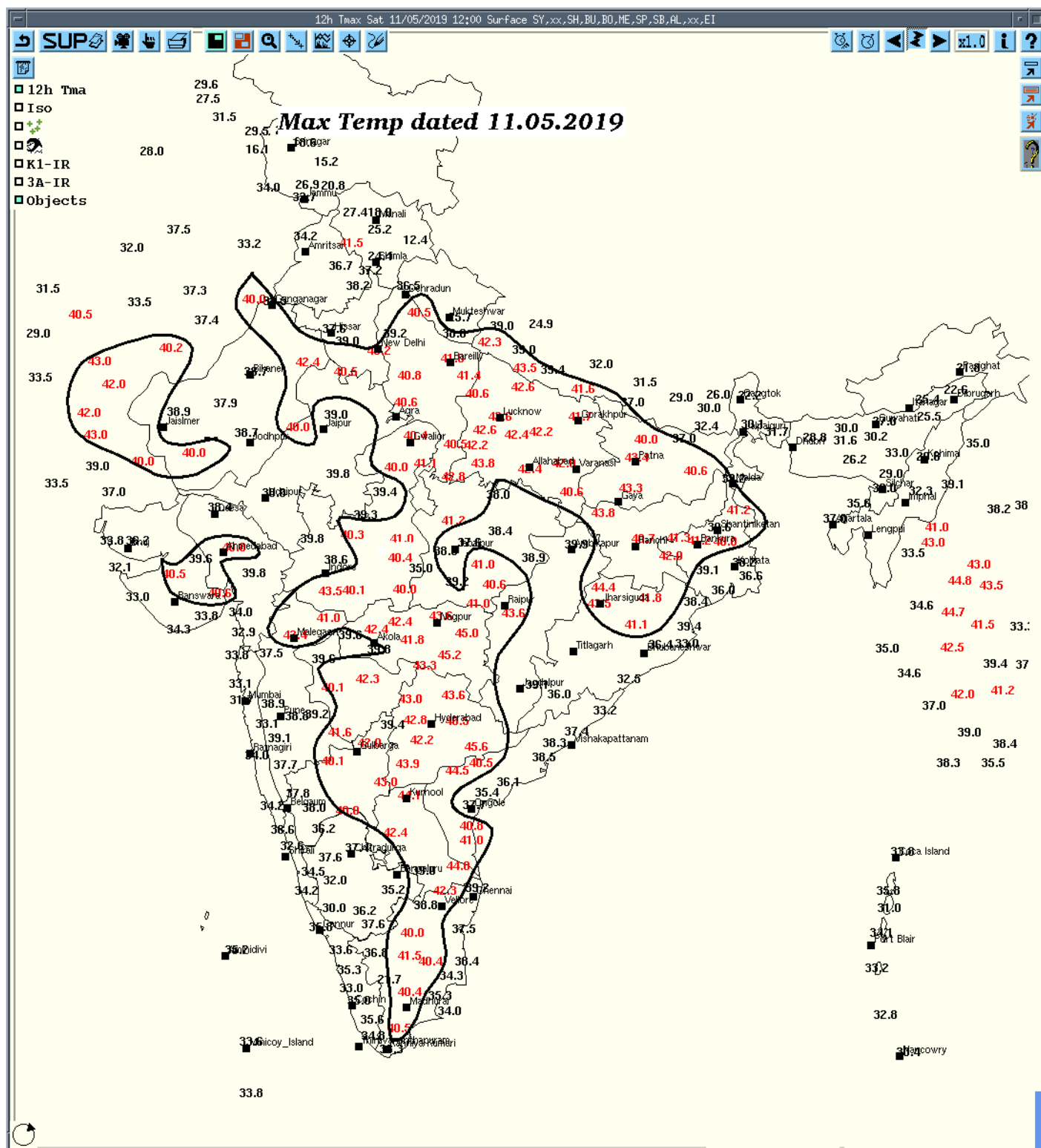


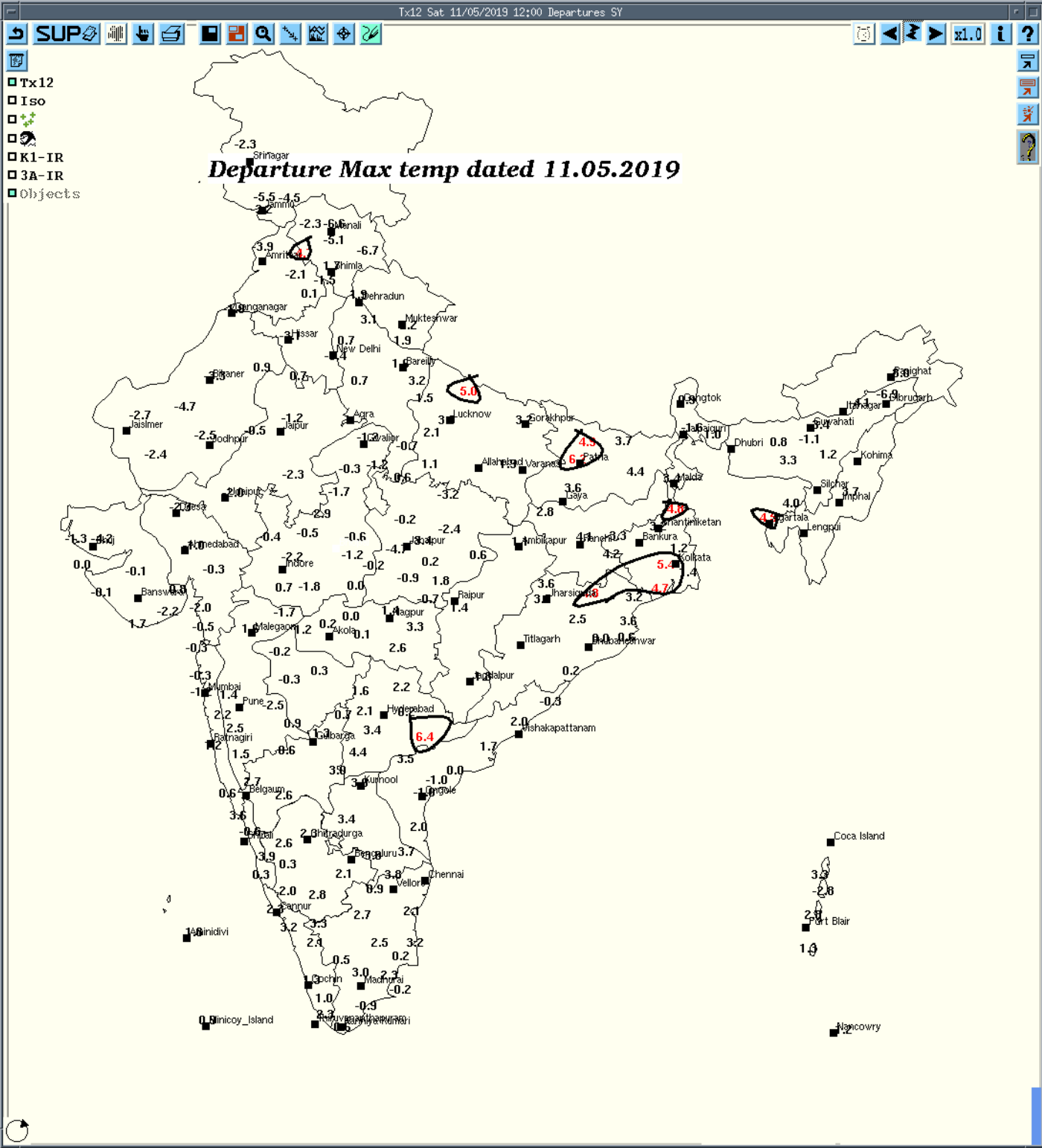
Heat wave conditions:- (<25%)
Vidarbha

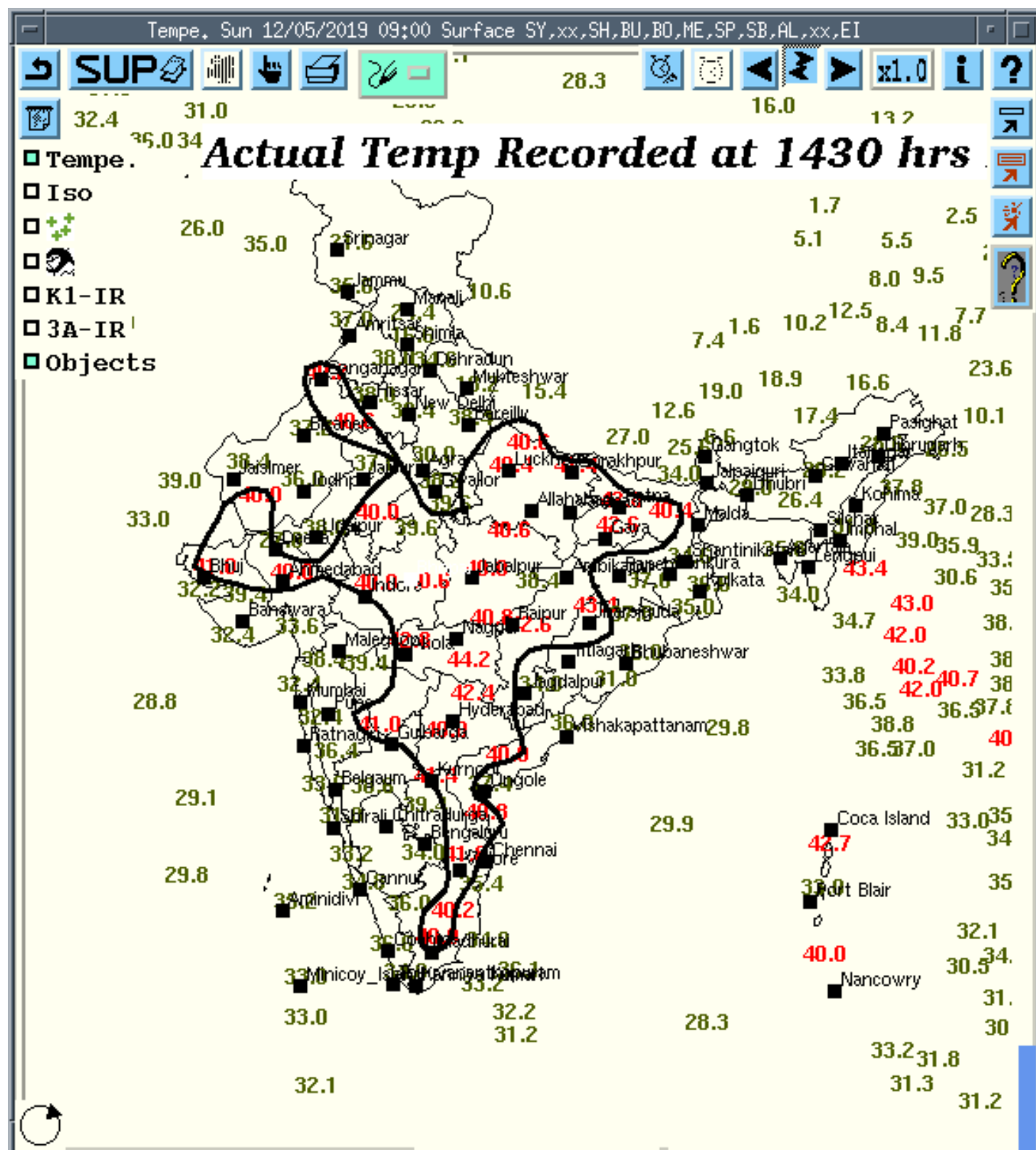
16/05/2019



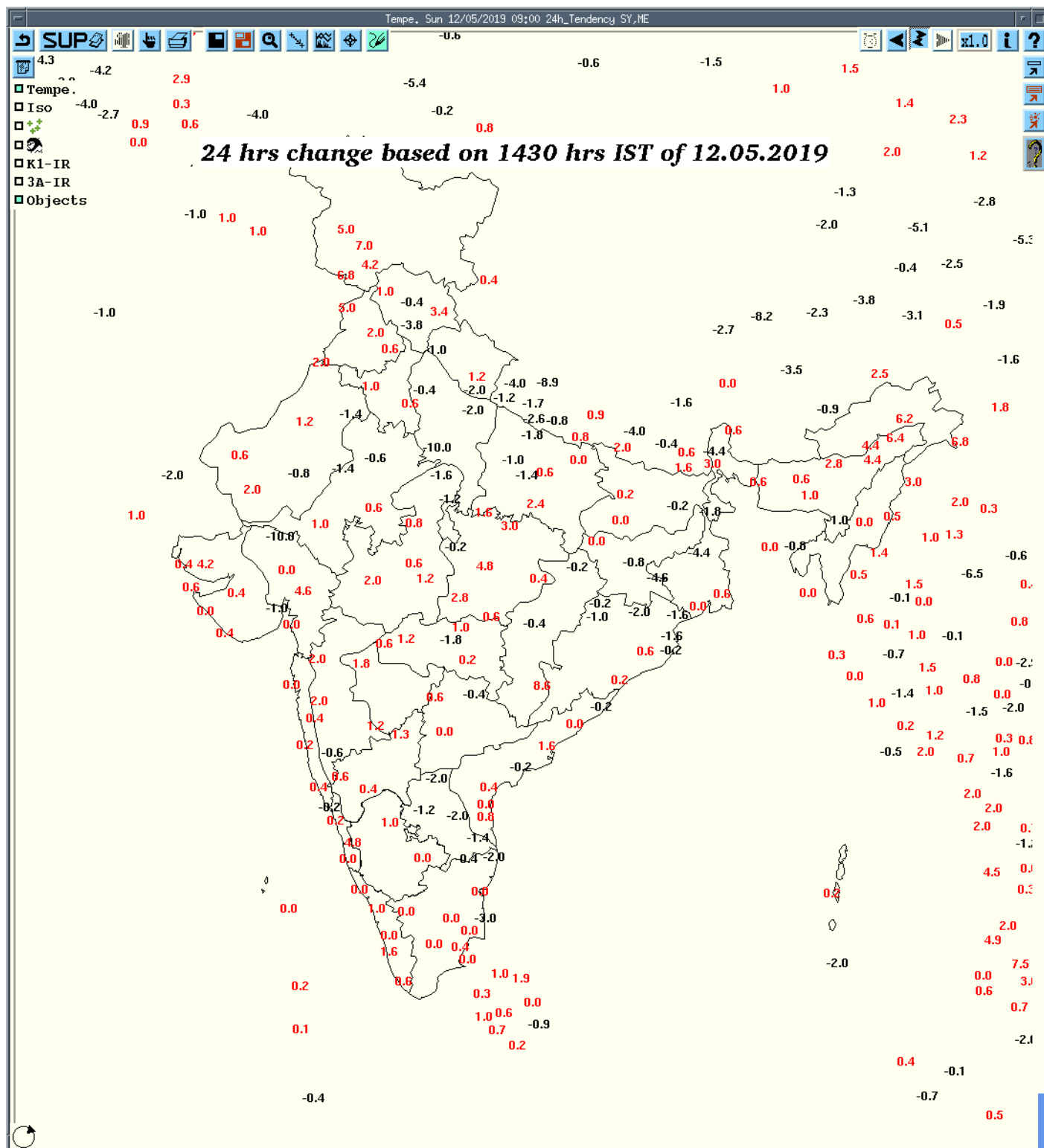
Heat wave conditions:- (<25%)
Vidarbha







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 13th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 12 May to 0830 hrs IST 13 May, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions were observed at a few places over Bihar and in isolated pockets over Vidarbha, Bihar and Gangetic West Bengal (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were appreciably above normal (3.1°C to 5.0°C) at most places over Bihar; at many places over Nagaland, Manipur, Mizoram & Tripura; at isolated places over East Uttar Pradesh, Odisha and Tamilnadu & Puducherry; above normal (1.6°C to 3.0°C) at most places over South Interior Karnataka; at many places over Kerala, Madhya Maharashtra, Vidarbha, Rayalaseema and Jharkhand; at a few places over Coastal Karnataka, Marathwada, West Bengal & Sikkim, Assam & Meghalaya and Andaman & Nicobar Islands and at isolated places over Telangana, East Madhya Pradesh, Jammu & Kashmir and Lakshadweep. The **highest maximum temperature** of **45.6°C** was recorded at **Bramhapuri (Vidarbha)**. (**Annexure 1 & 2**).

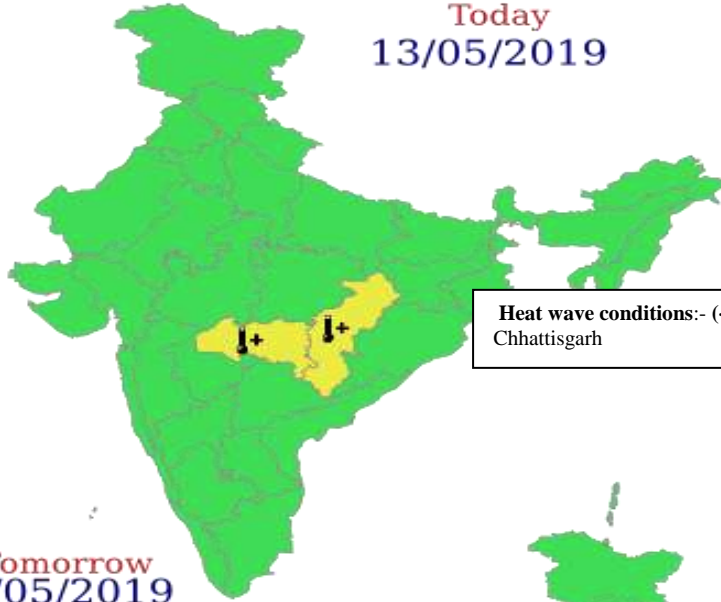
Temperatures Recorded at 1430 Hours IST of Today, the 13th May, 2019

- **Bramhapuri (Vidarbha)** recorded the maximum temperature of **44.4°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by by 1-3°C** at many parts of Jammu & kashmir and Himachal Pradesh, at few parts of Rajasthan , Haryana, Uttarakhand and East Madhya Pradesh and one or two pockets of Gujrat state, Vidarbha and West madhya pradesh. (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

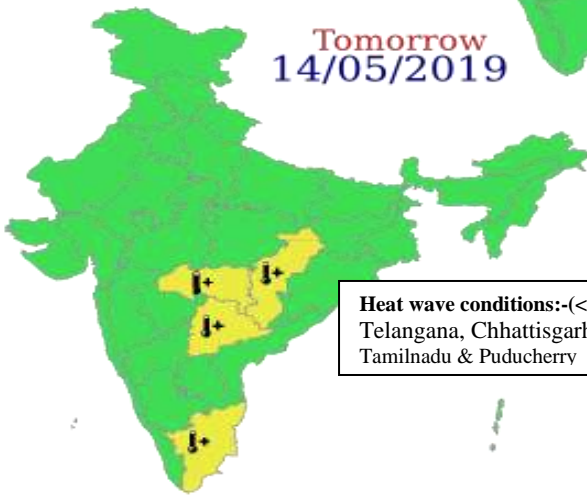
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
13/05/2019



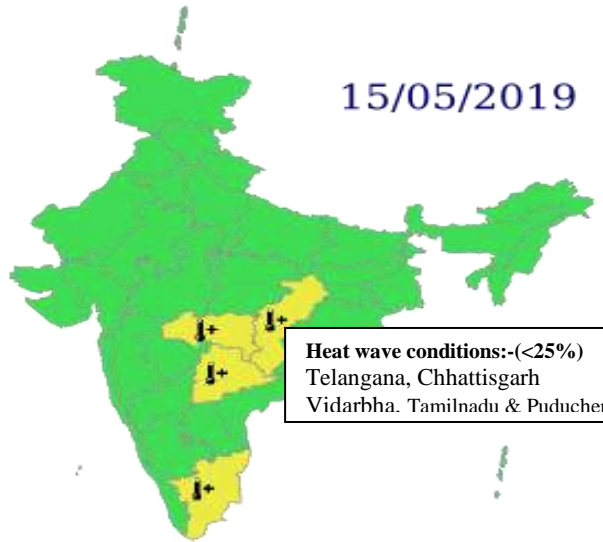
Heat wave conditions:- (<25%) Vidarbha, Chhattisgarh

Tomorrow
14/05/2019



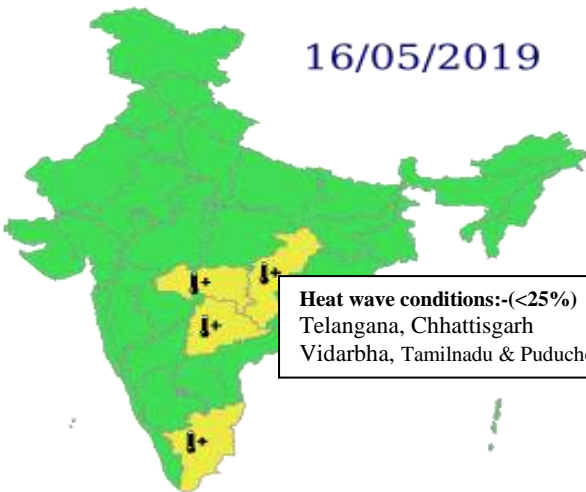
Heat wave conditions:-(<25%)
Telangana, Chhattisgarh Vidarbha,
Tamilnadu & Puducherry

15/05/2019



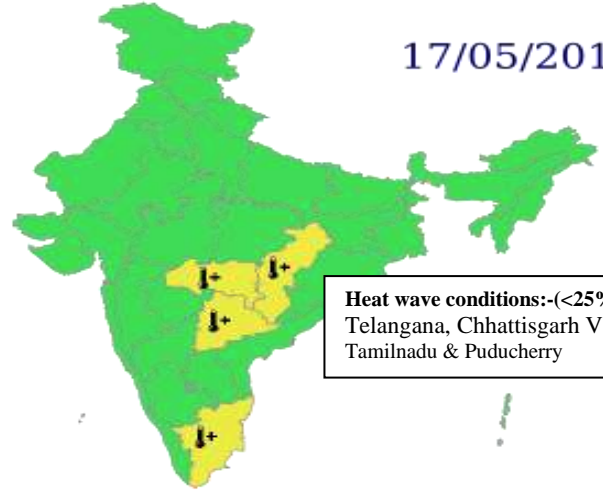
Heat wave conditions:-(<25%)
Telangana, Chhattisgarh
Vidarbha. Tamilnadu & Puducherry

16/05/2019

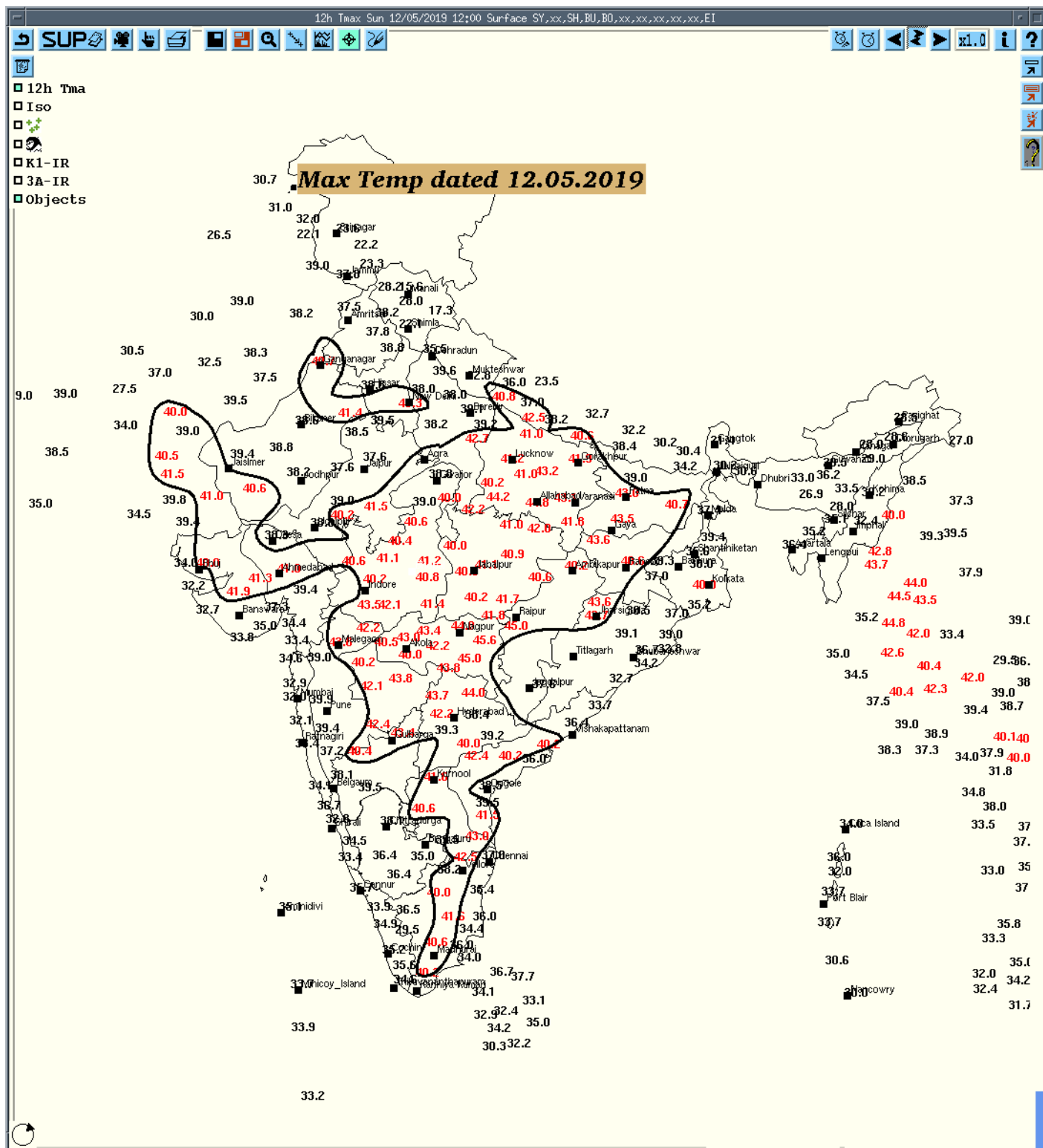


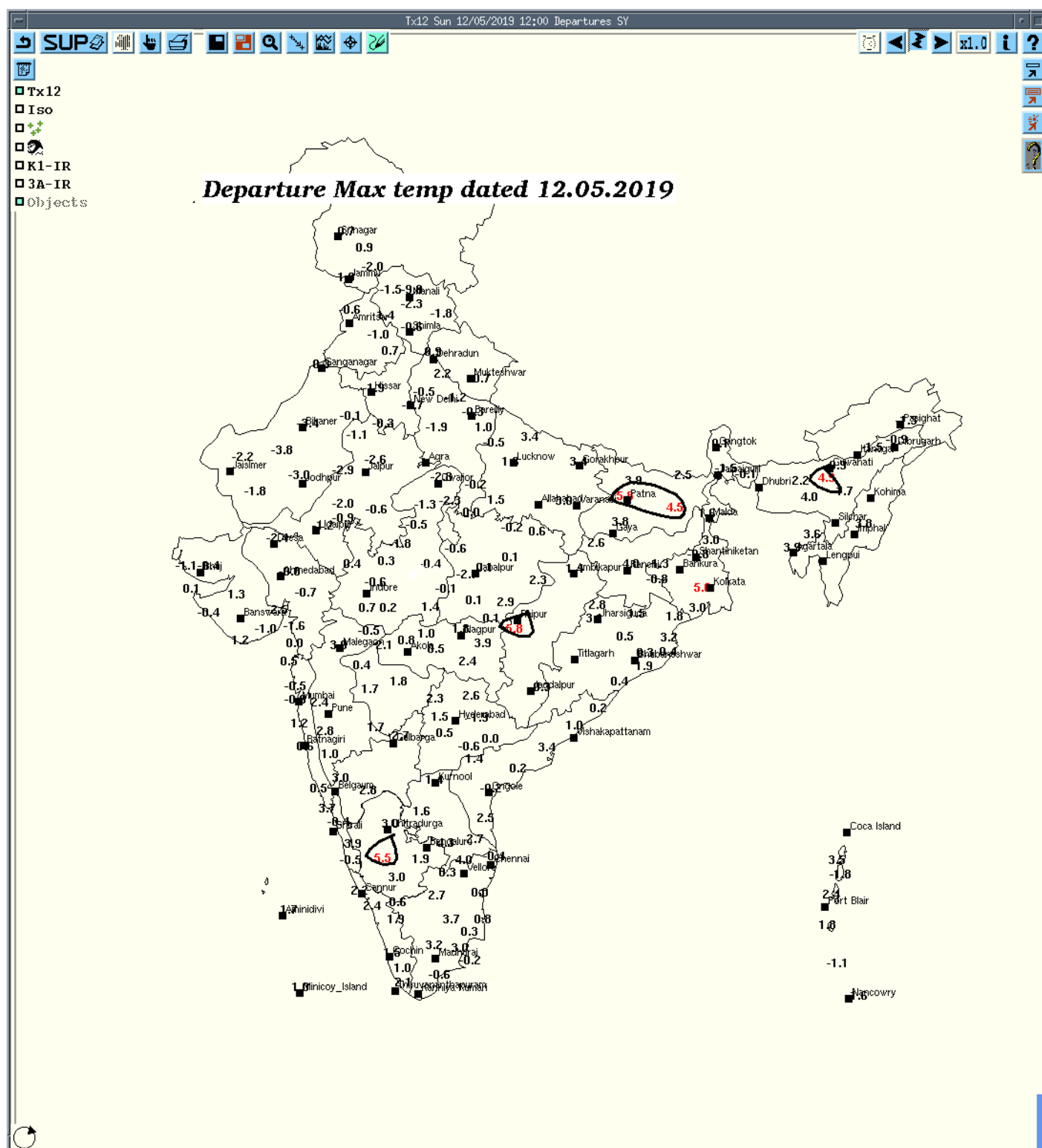
Heat wave conditions:-(<25%)
Telangana, Chhattisgarh
Vidarbha, Tamilnadu & Puducherry

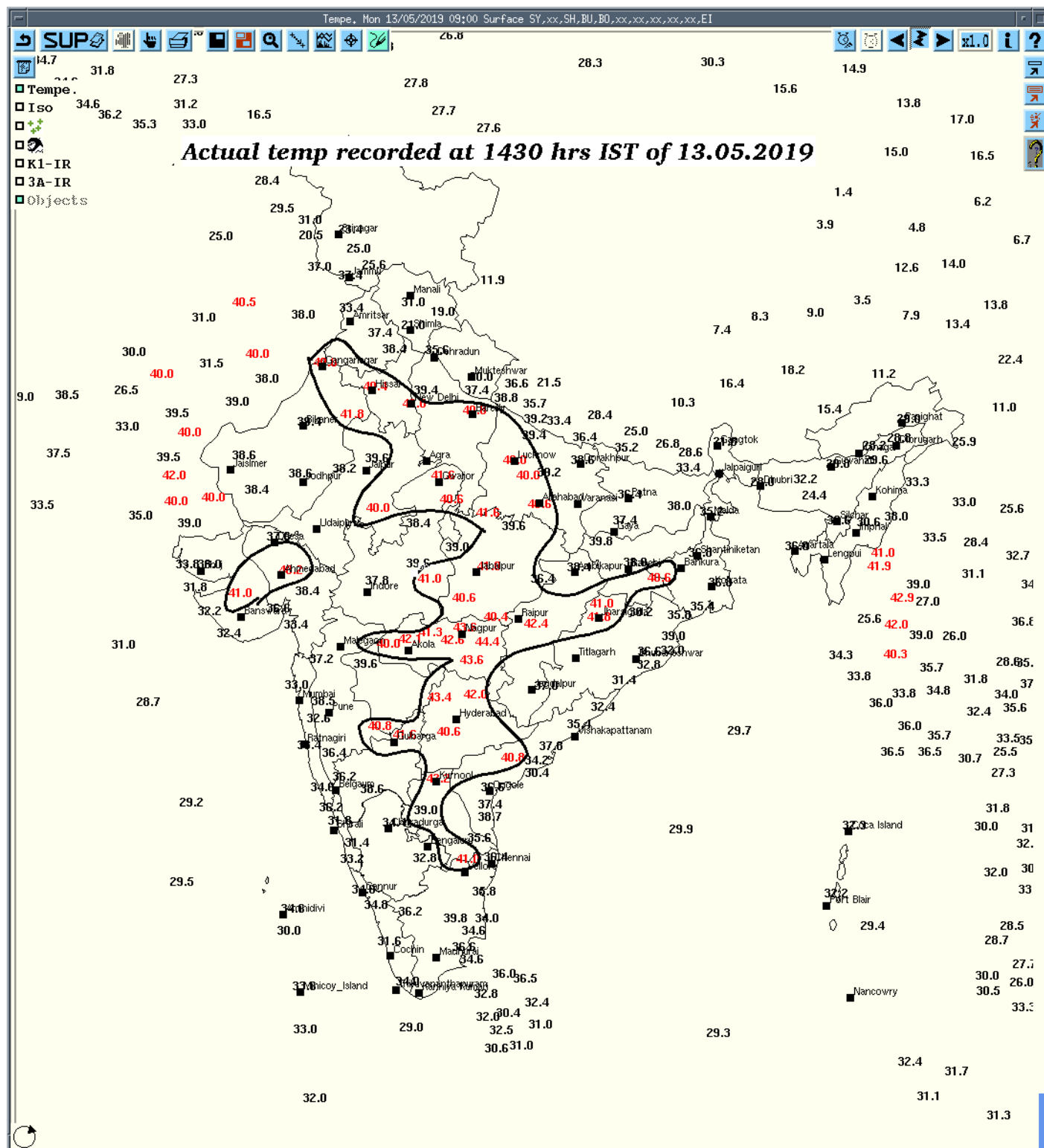
17/05/2019



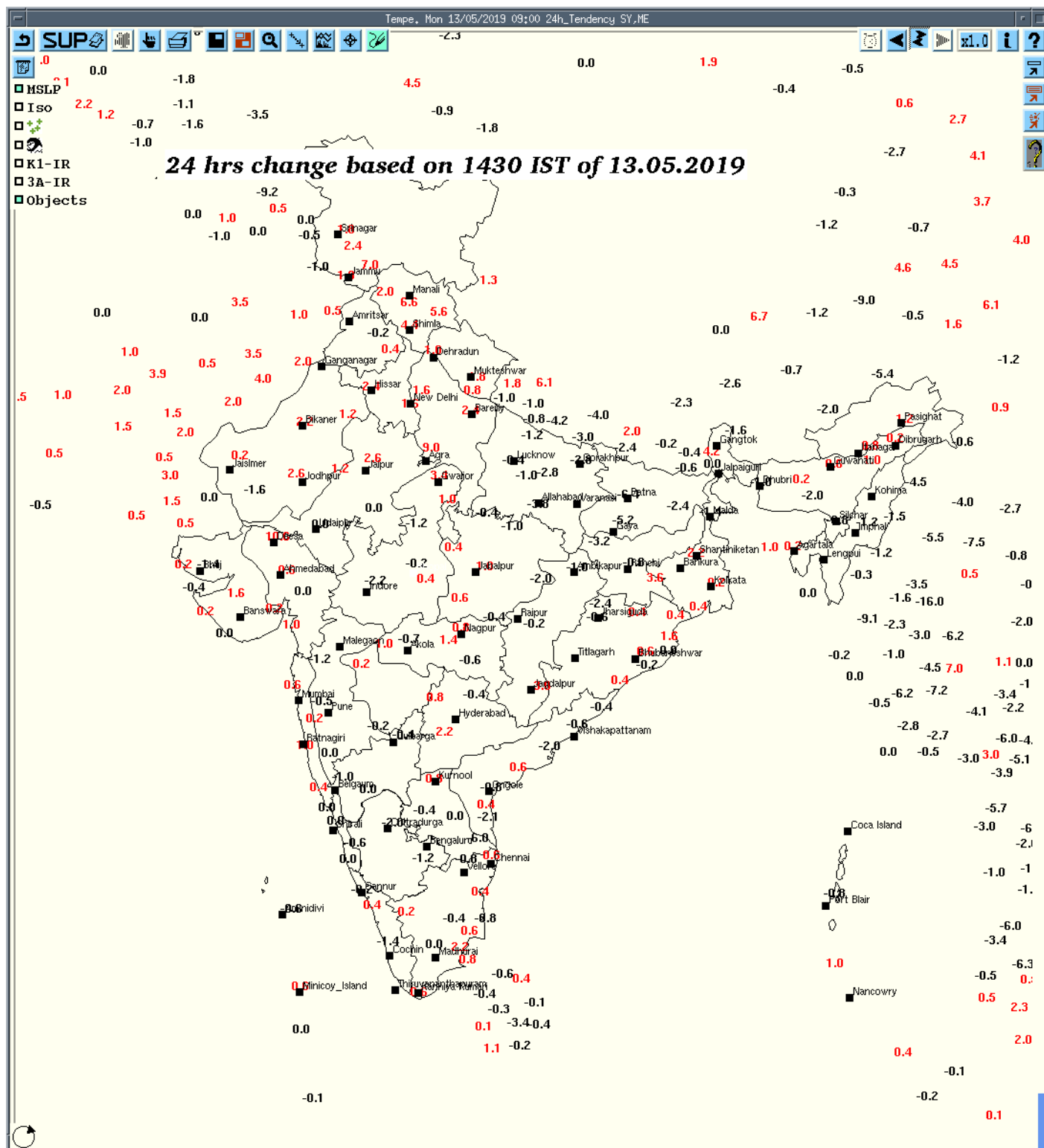
Heat wave conditions:-(<25%)
Telangana, Chhattisgarh Vidarbha,
Tamilnadu & Puducherry







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 14th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 13 May to 0830 hrs IST 14 May, 2019)

Heat Wave:

Yesterday, **heat Wave Conditions** were observed in isolated pockets over Vidarbha and Tamilnadu (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Gangetic West Bengal, Vidarbha, Rayalaseema, Tamilnadu & Puducherry and Andaman & Nicobar Islands; **above normal (1.6°C to 3.0°C)** at most places over Jammu & Kashmir, Telangana, North Interior Karnataka and Nagaland, Manipur, Mizoram & Tripura; a many places over Assam & Meghalaya, Odisha and Kerala; at a few places over Madhya Mtaharashtra and at isolated places over Himachal Pradesh, West Uttar Pradesh, Sub-Himalayan West Bengal & Sikkim, Bihar, Jharkhand, East Madhya Pradesh, Saurashtra & Kutch, Coastal Karnataka and South Interior Karnataka. Yesterday, the **highest maximum temperature of 45.8°C** was recorded at **Chandrapur (Vidarbha)** (**Annexure 1 & 2**).

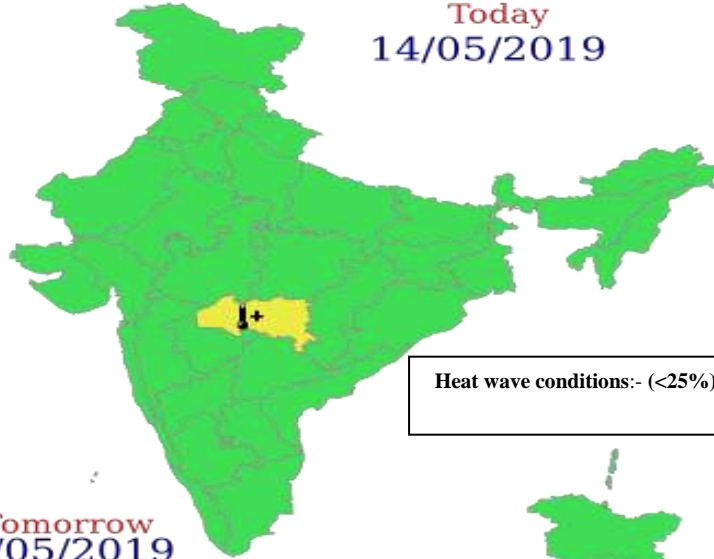
Temperatures Recorded at 1430 Hours IST of Today, the 14th May, 2019

- **Bramhapuri (Vidarbha)** recorded the maximum temperature of **44.2°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by by 1-3°C** at few parts of Coastal Andhra Pradesh, Bihar and South Interior Karnataka and one or two pockets of Assam & Meghalaya, West Madhya pradesh, Odisha, Marathwada and Kerala. (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

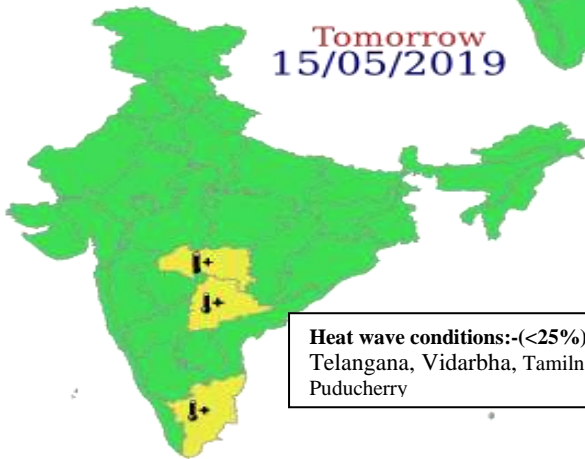
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
14/05/2019



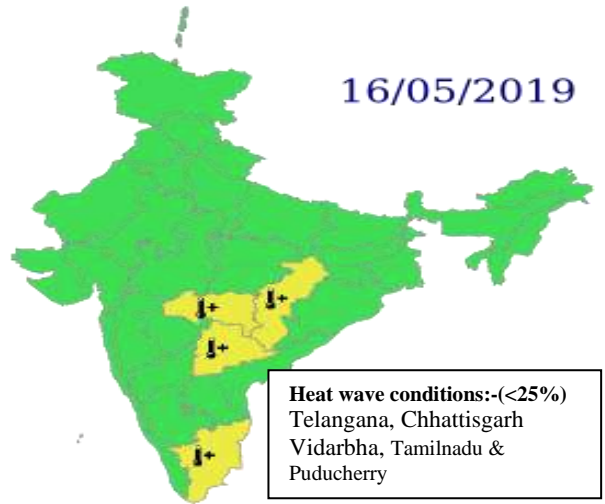
Heat wave conditions:- (<25%) Vidarbha.

Tomorrow
15/05/2019



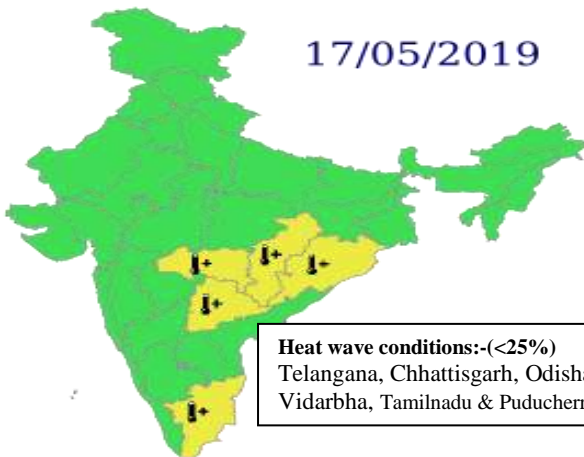
Heat wave conditions:-(<25%)
Telangana, Vidarbha, Tamilnadu &
Puducherry

16/05/2019



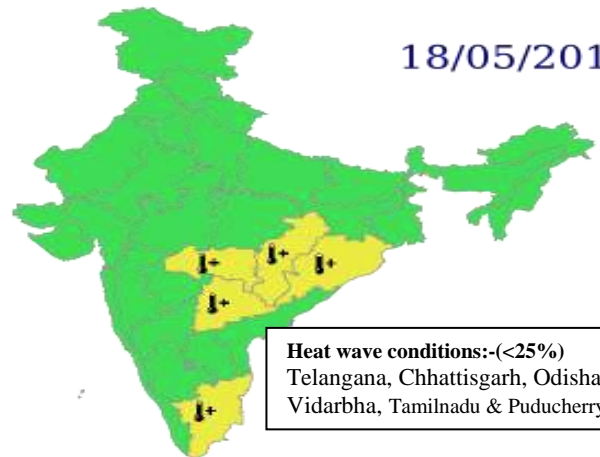
Heat wave conditions:-(<25%)
Telangana, Chhattisgarh
Vidarbha, Tamilnadu &
Puducherry

17/05/2019

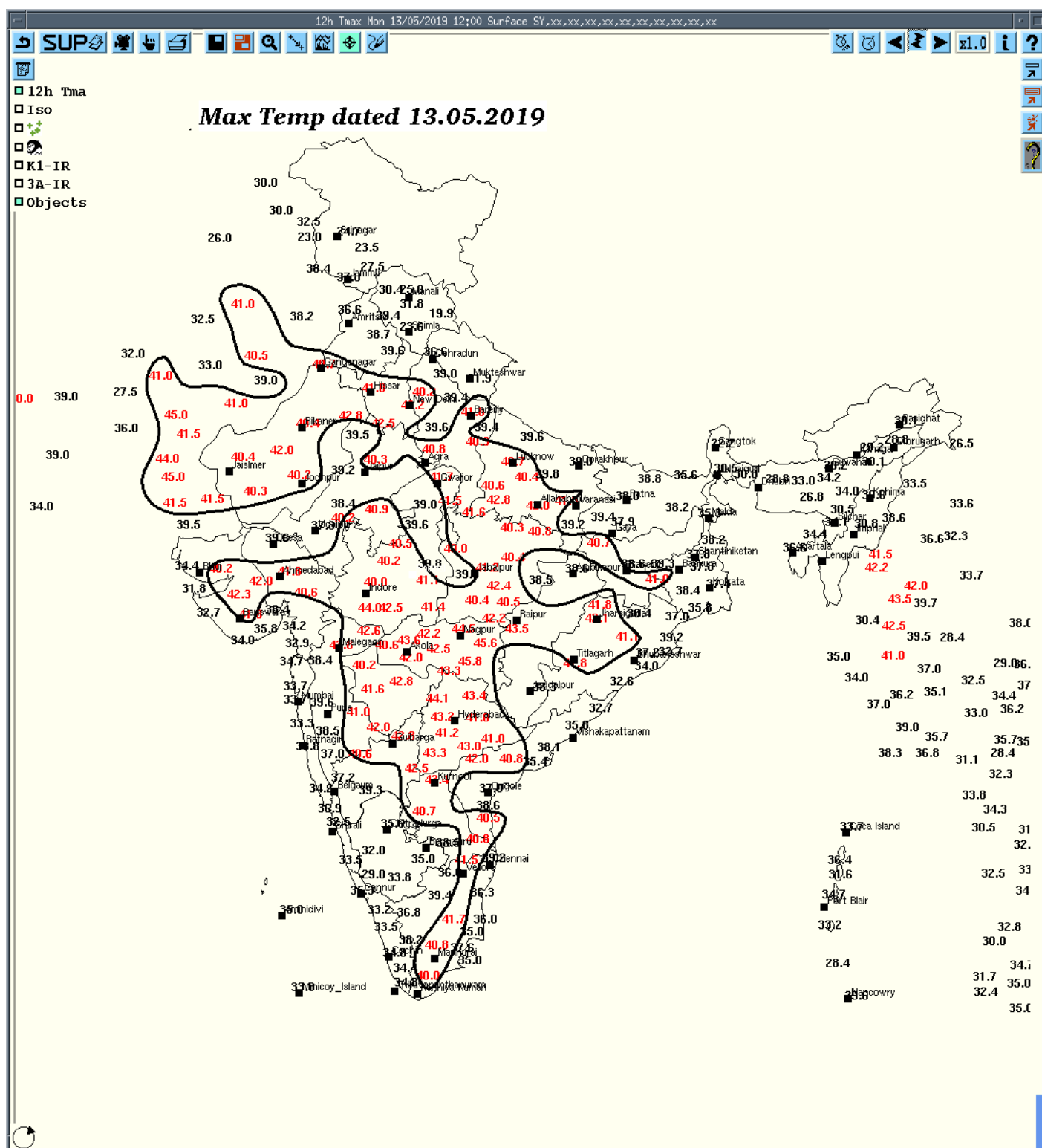


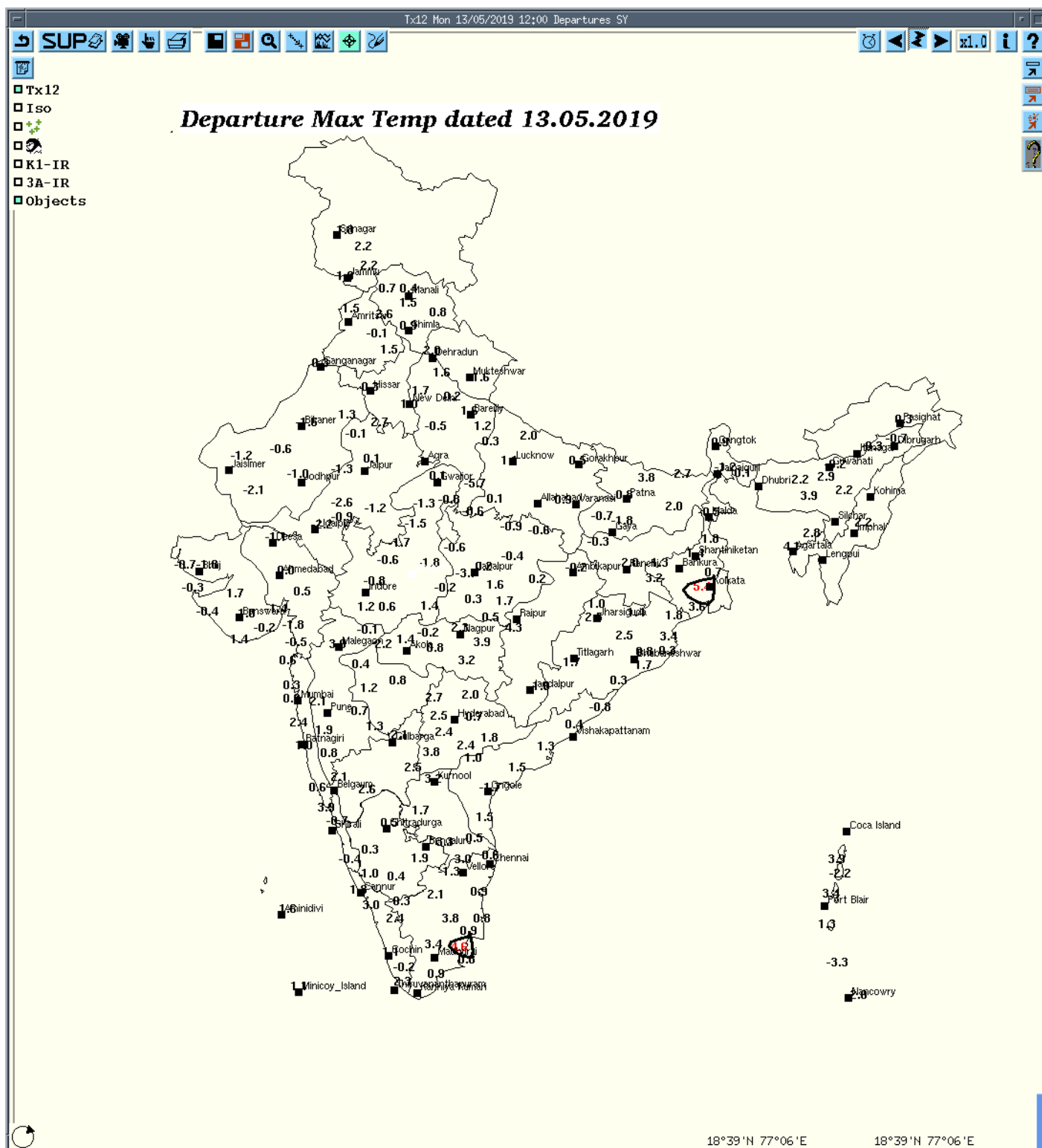
Heat wave conditions:-(<25%)
Telangana, Chhattisgarh, Odisha
Vidarbha, Tamilnadu & Puducherry

18/05/2019

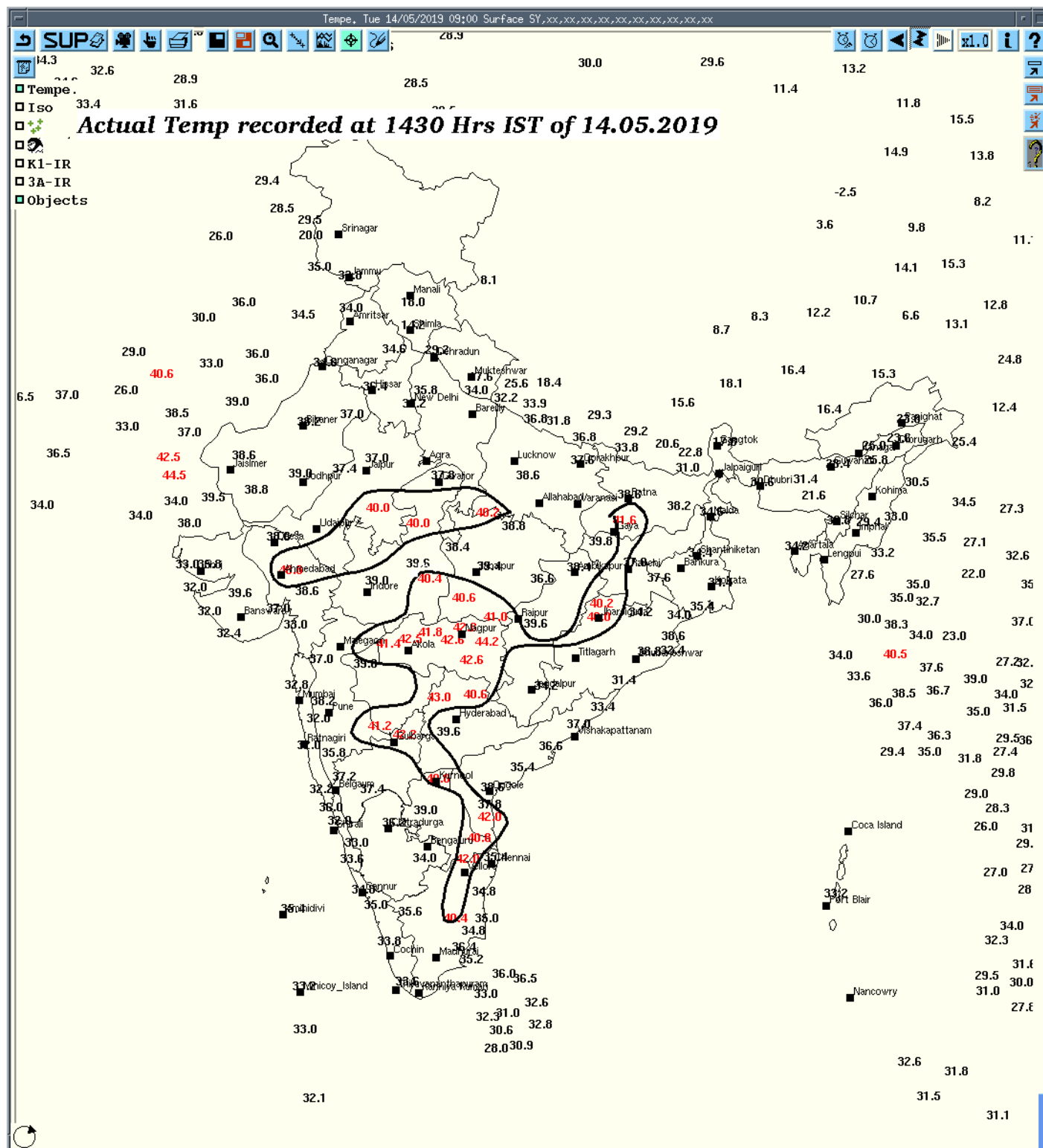


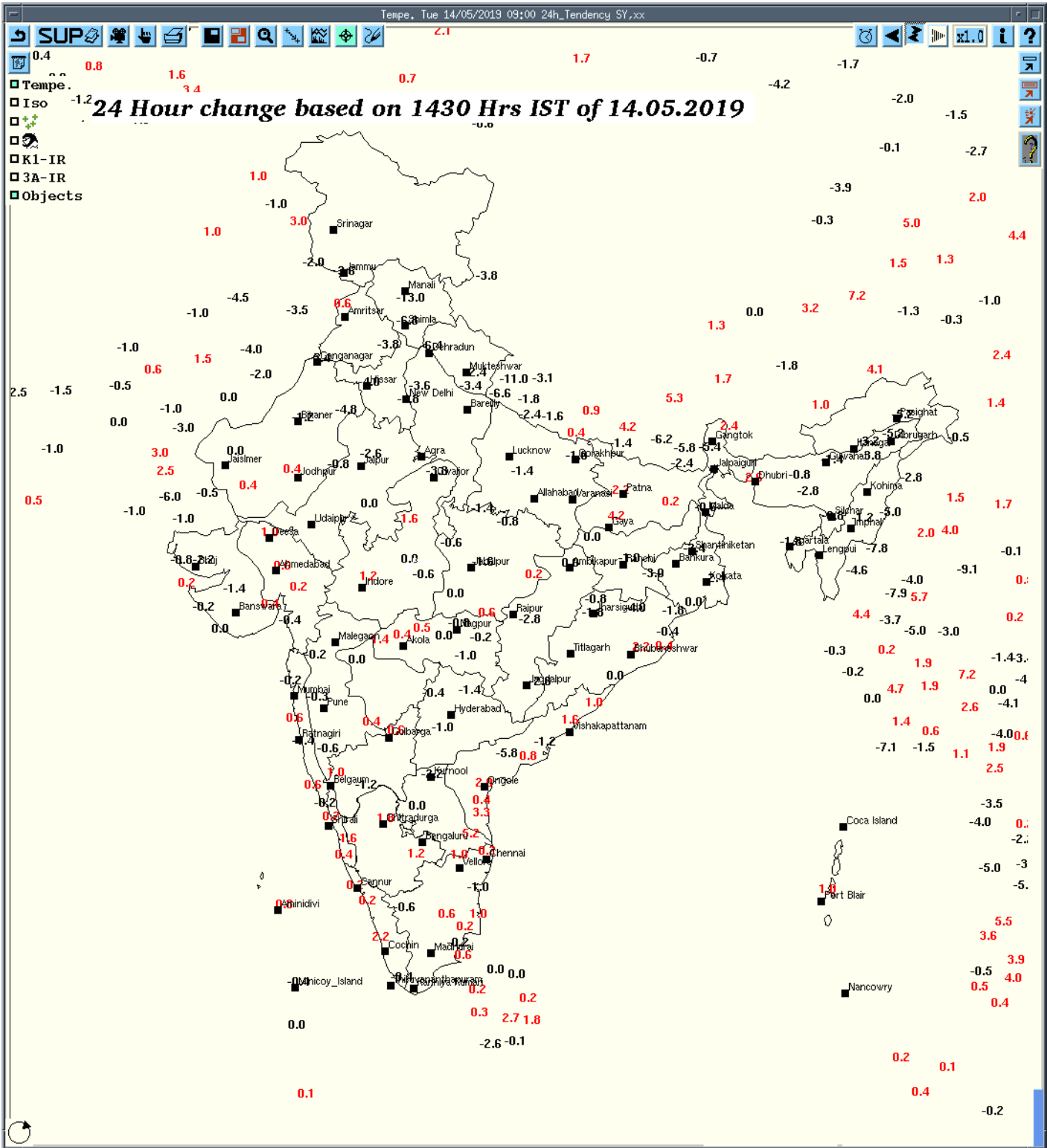
Heat wave conditions:-(<25%)
Telangana, Chhattisgarh, Odisha
Vidarbha, Tamilnadu & Puducherry.





Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 15th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 14 May to 0830 hrs IST 15 May, 2019)

Heat Wave:

Yesterday, **Heat Wave Conditions** observed in isolated pockets over Vidarbha(Annexure 1 & 2).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Gangetic West Bengal, Coastal Andhra Pradesh and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over Rayalaseema and North Interior Karnataka; at many places over Nagaland, Manipur, Mizoram & Tripura, Bihar, South Interior Karnataka, Kerala, Lakshadweep and Andaman & Nicobar Islands; at a few places over Jammu & Kashmir, Vidarbha, Telangana and Coastal Karnataka and at isolated places over Odisha, Madhya Maharashtra and Marathawada. Yesterday, the **highest maximum temperature of 45.2°C** was recorded at **Chandrapur (Vidarbha)(Annexure 1 & 2).**

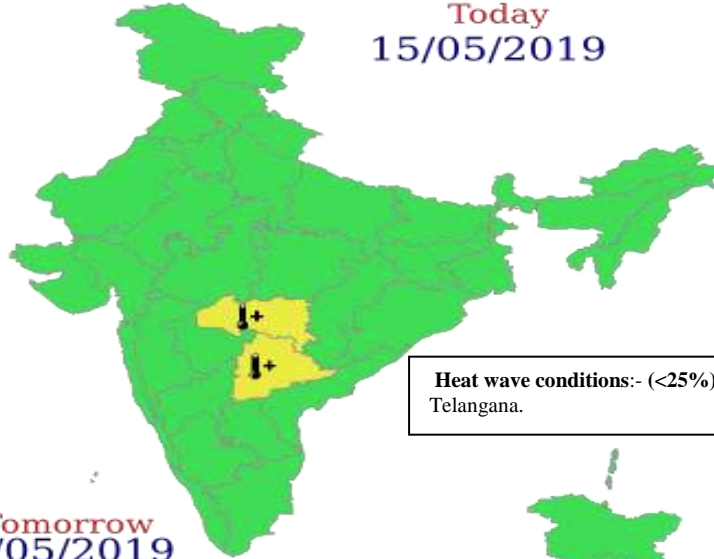
Temperatures Recorded at 1430 Hours IST of Today, the 15th May, 2019

- **Chandrapur (Vidarbha)** recorded the maximum temperature of **45.6°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by by 1-3°C** at many parts of Himachal Pradesh, East Madhya Pradesh and Jharkhand; at some parts of Vidharbha, Telangana, Chhattisgarh, Gangetic West Bengal and Odisha and one or two pockets of Coastal Andhra Pradesh, Bihar, Assam & Meghalaya, West Madhya pradesh, Gujarat, Rayalaseema and Kerala (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

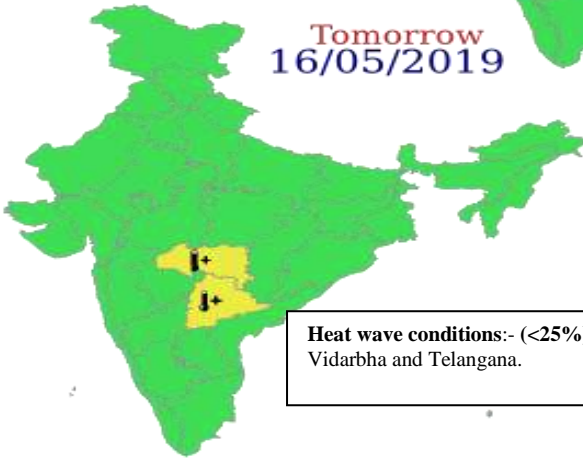
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
15/05/2019



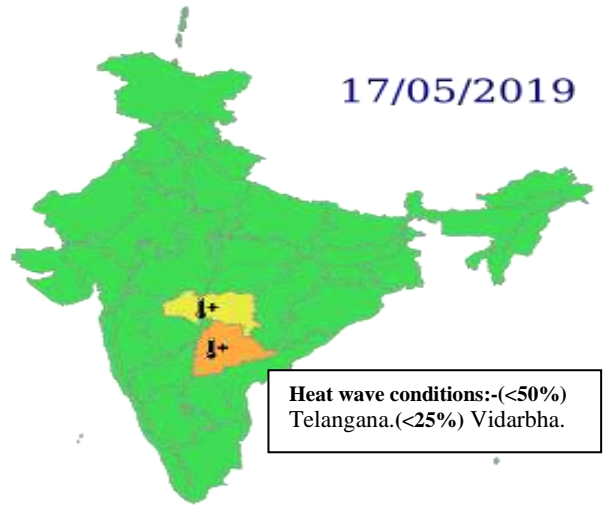
Heat wave conditions:- (<25%) Vidarbha and Telangana.

Tomorrow
16/05/2019



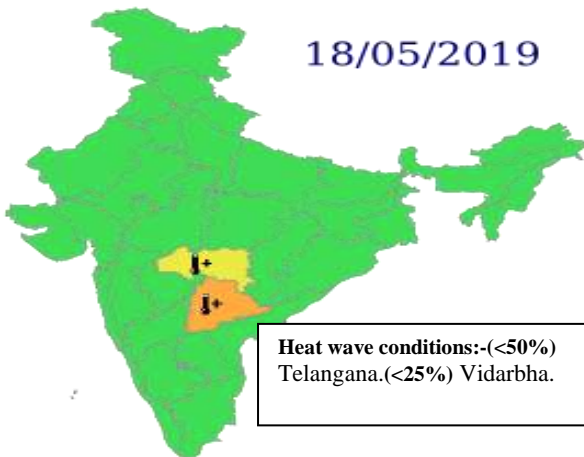
Heat wave conditions:- (<25%) Vidarbha and Telangana.

17/05/2019



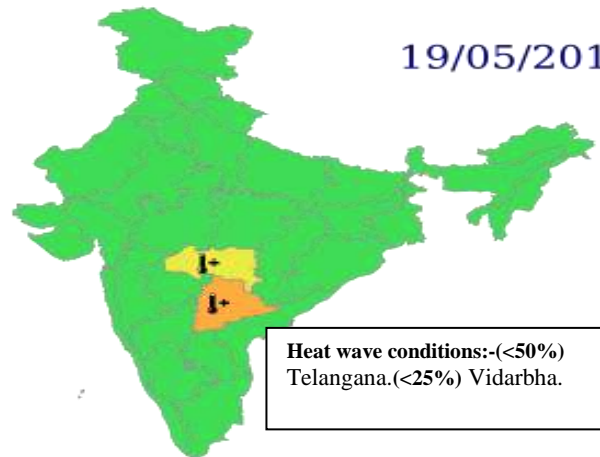
Heat wave conditions:-(<50%) Telangana.(<25%) Vidarbha.

18/05/2019

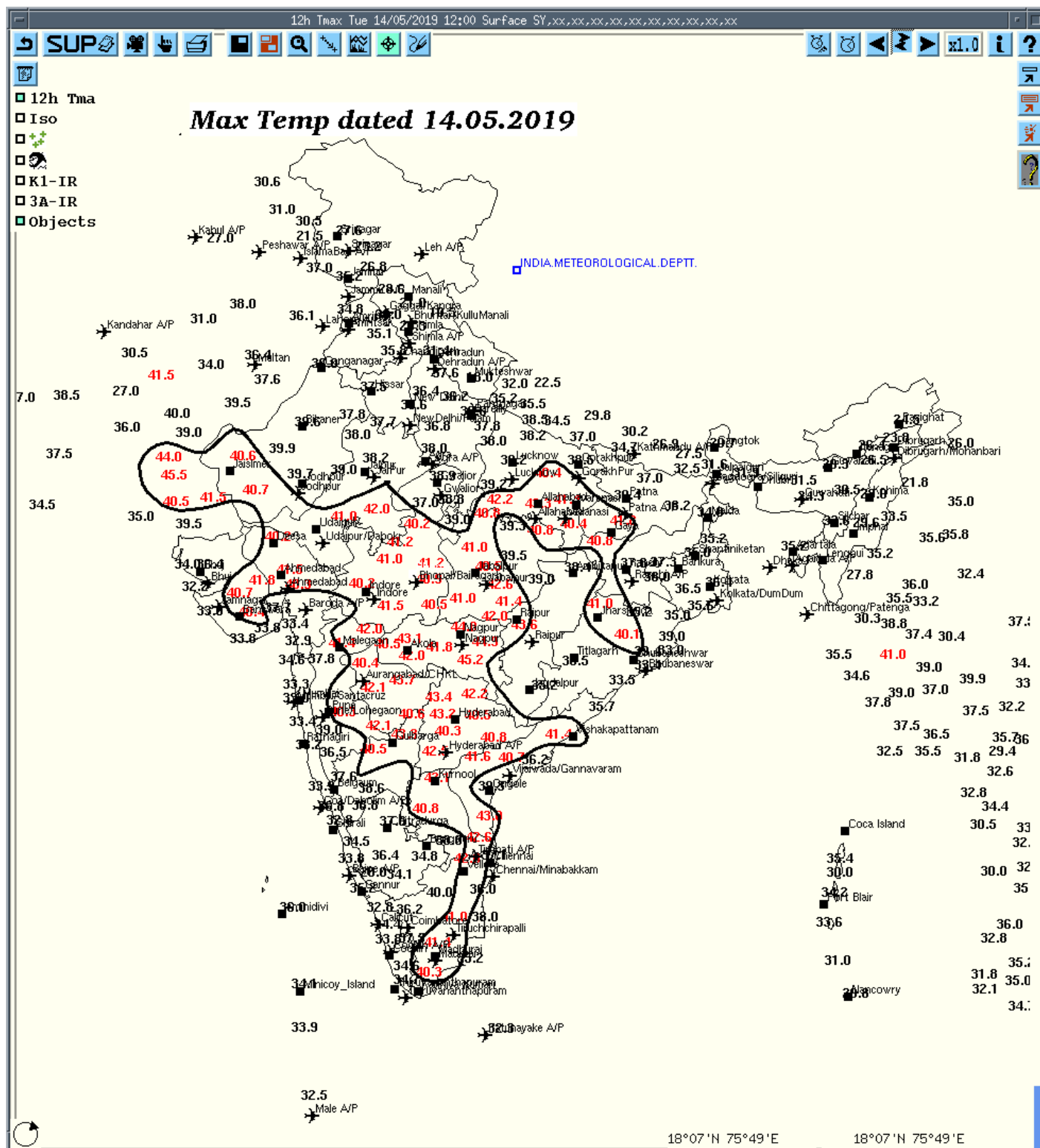


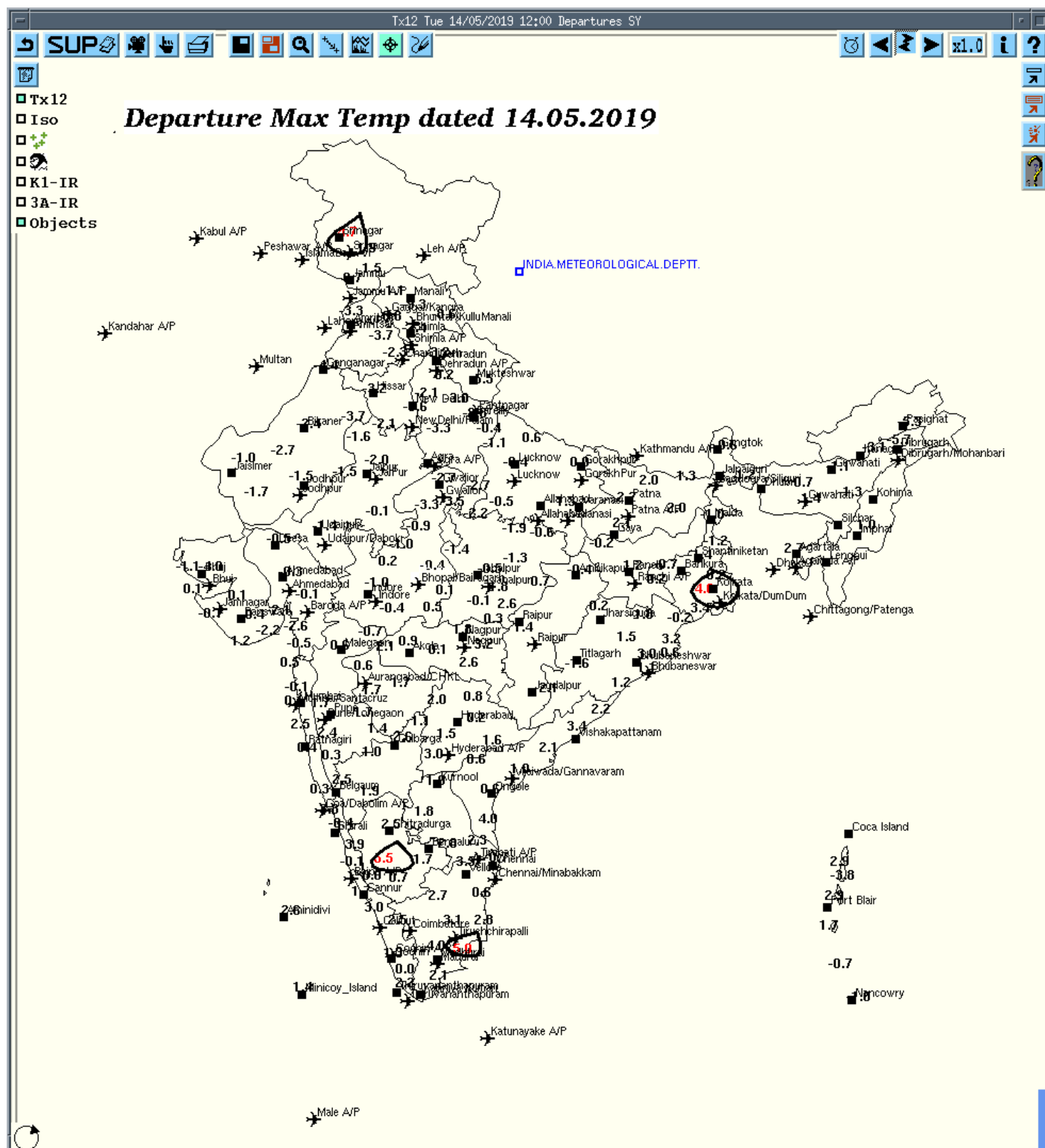
Heat wave conditions:-(<50%) Telangana.(<25%) Vidarbha.

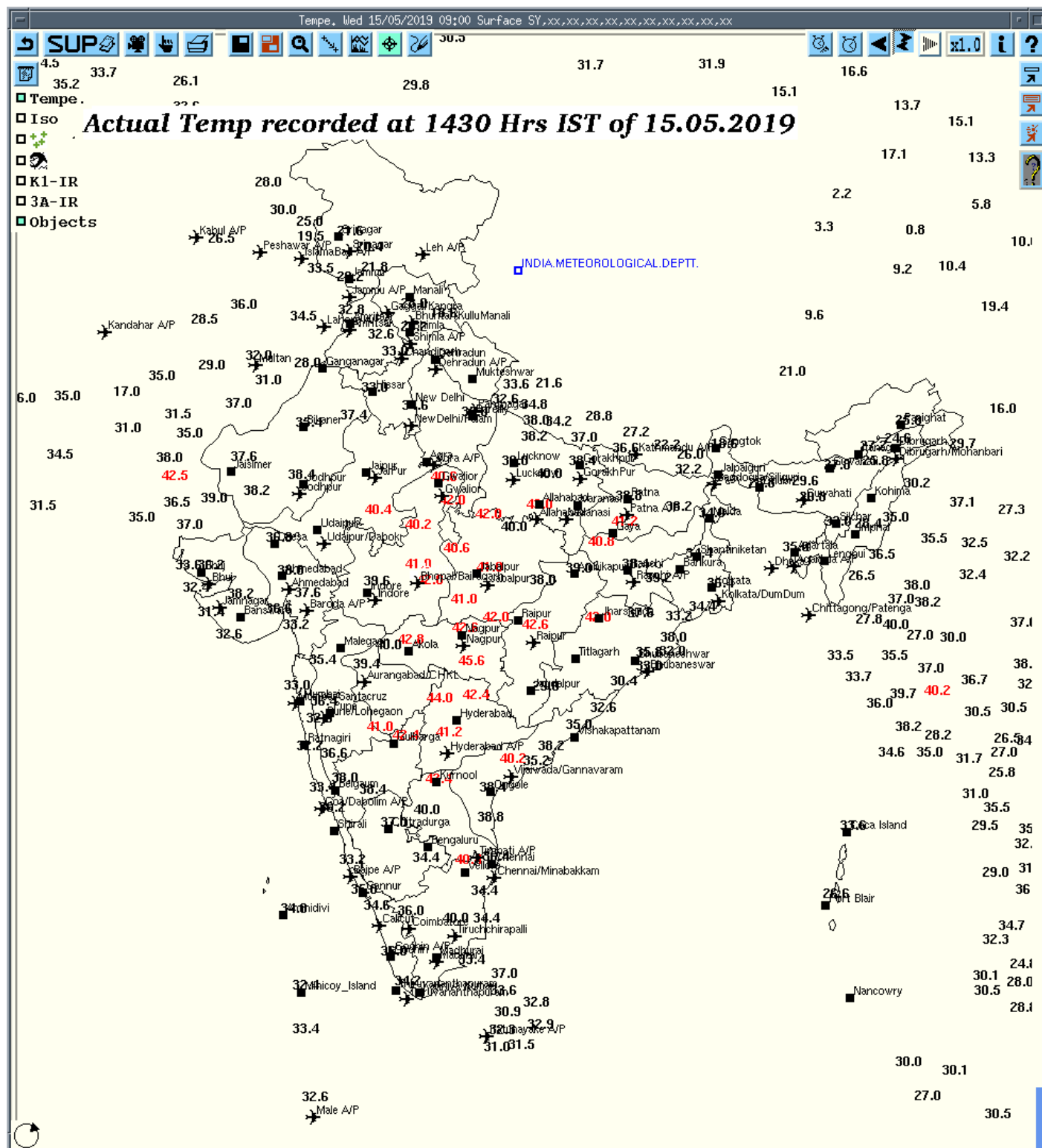
19/05/2019



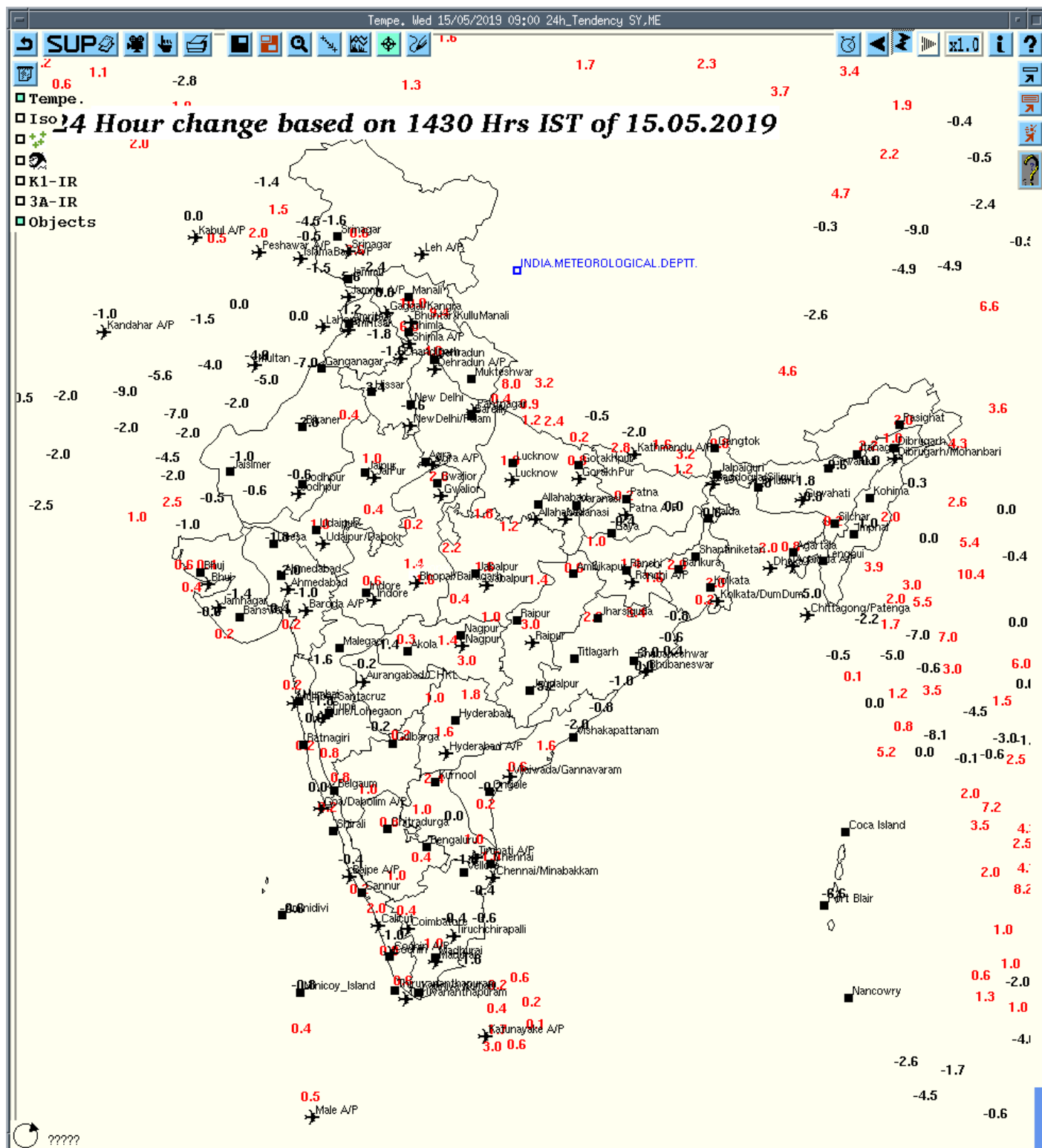
Heat wave conditions:-(<50%) Telangana.(<25%) Vidarbha.







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 16th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 15 May to 0830 hrs IST 16 May, 2019)

Heat Wave:

Yesterday, **Heat Wave Conditions** observed in a pockets over Vidarbha (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over South Interior Karnataka, Kerala and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over Bihar, Vidarbha, Rayalaseema and North Interior Karnataka; at many places over Tripura, Telangana and Coastal Karnataka; at a few places over Madhya Maharashtra and Marathwada and at isolated places over Gangetic West Bengal, Odisha, Jharkhand, East Madhya Pradesh, Chhattisgarh and Coastal Andhra Pradesh. Yesterday, the **highest maximum temperature** of **46.4°C** was recorded at **Bramhapuri (Vidarbha) (Annexure 1 & 2)**.

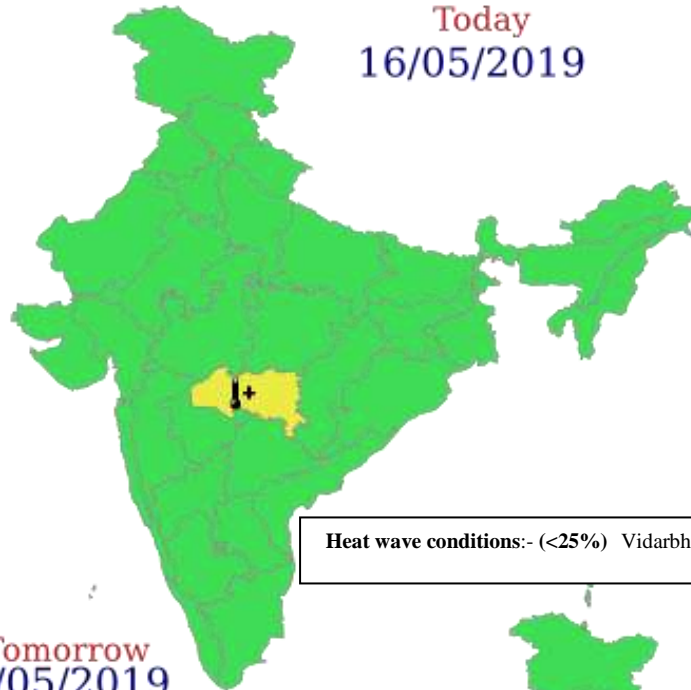
Temperatures Recorded at 1430 Hours IST of Today, the 16th May, 2019

- **Nagpur Sonegaon (Vidarbha)** recorded the maximum temperature of **44.6°C (Annexure 3)**.
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at most parts of East Uttar Pradesh and Assam & Meghalaya; at many parts of Punjab and Delhi; at a few parts of Odisha, Kerala and Tamilnadu & Puducherry and at one or two pockets of Jammu & Kashmir, Himachal Pradesh, West Rajasthan, West Uttar Pradesh, Bihar, West Bengal, Jharkhand, Vidarbha, Gujarat, Chhattisgarh, Madhya Maharashtra, Rayalaseema, Telangana and South Interior Karnataka (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

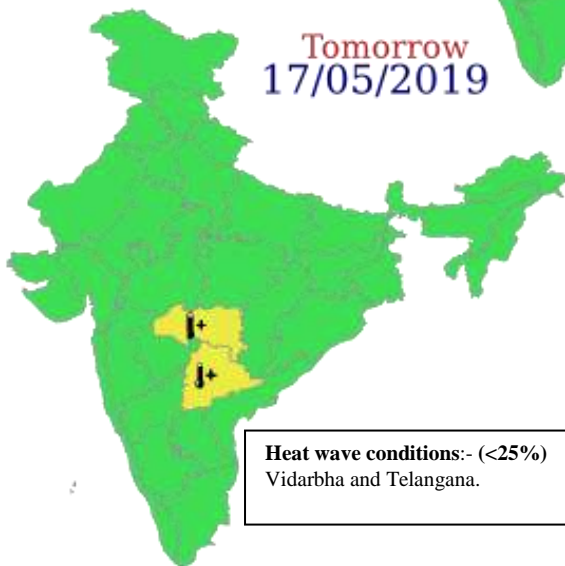
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
16/05/2019



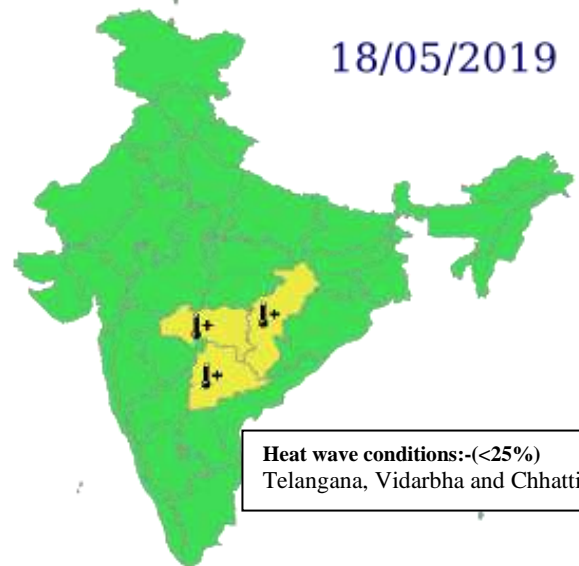
Heat wave conditions:- (<25%) Vidarbha.

Tomorrow
17/05/2019



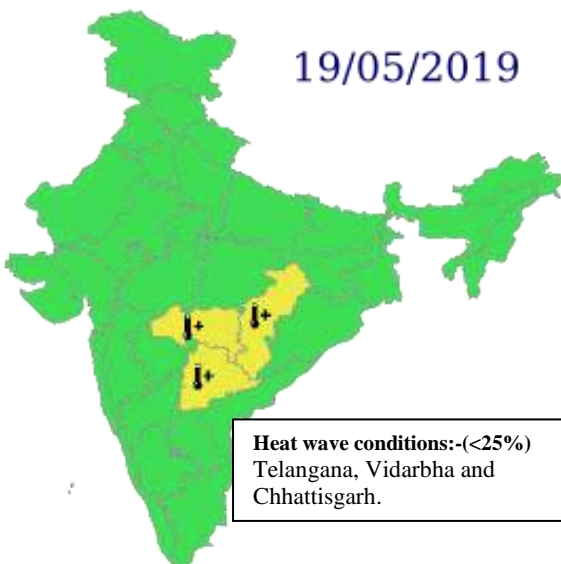
Heat wave conditions:- (<25%)
Vidarbha and Telangana.

18/05/2019



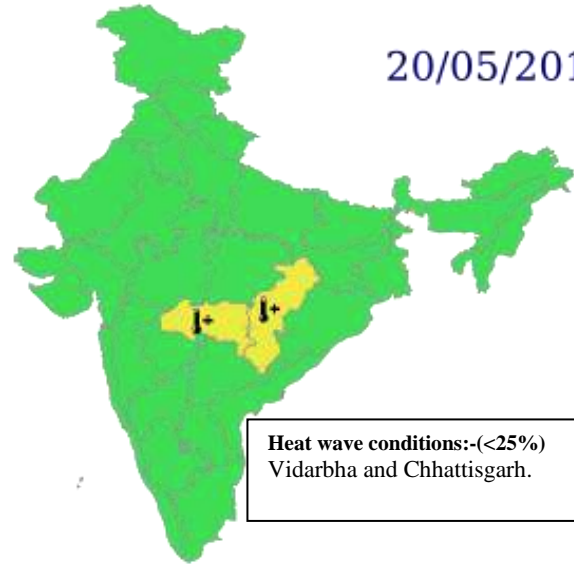
Heat wave conditions:-(<25%)
Telangana, Vidarbha and Chhattisgarh.

19/05/2019

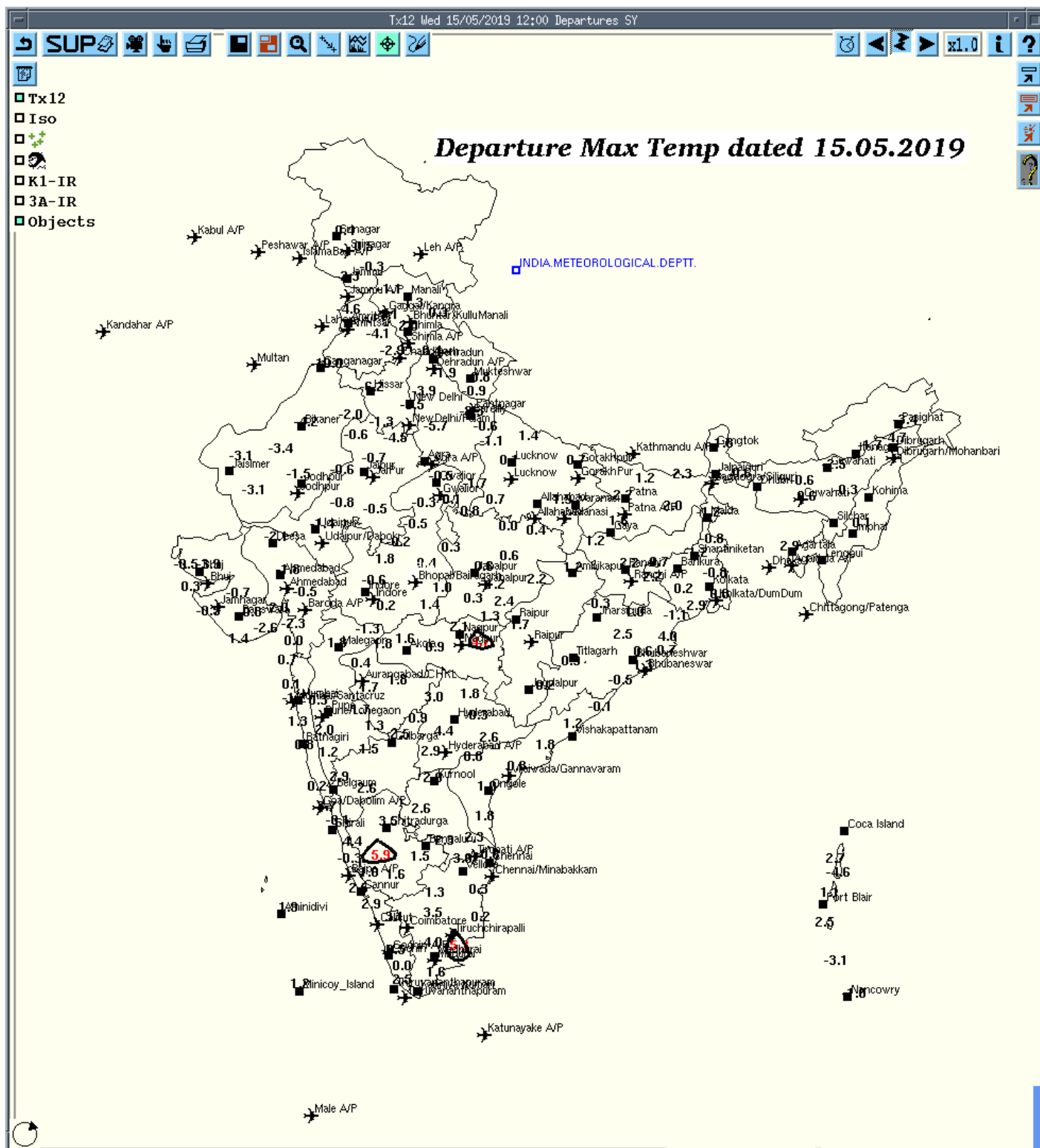


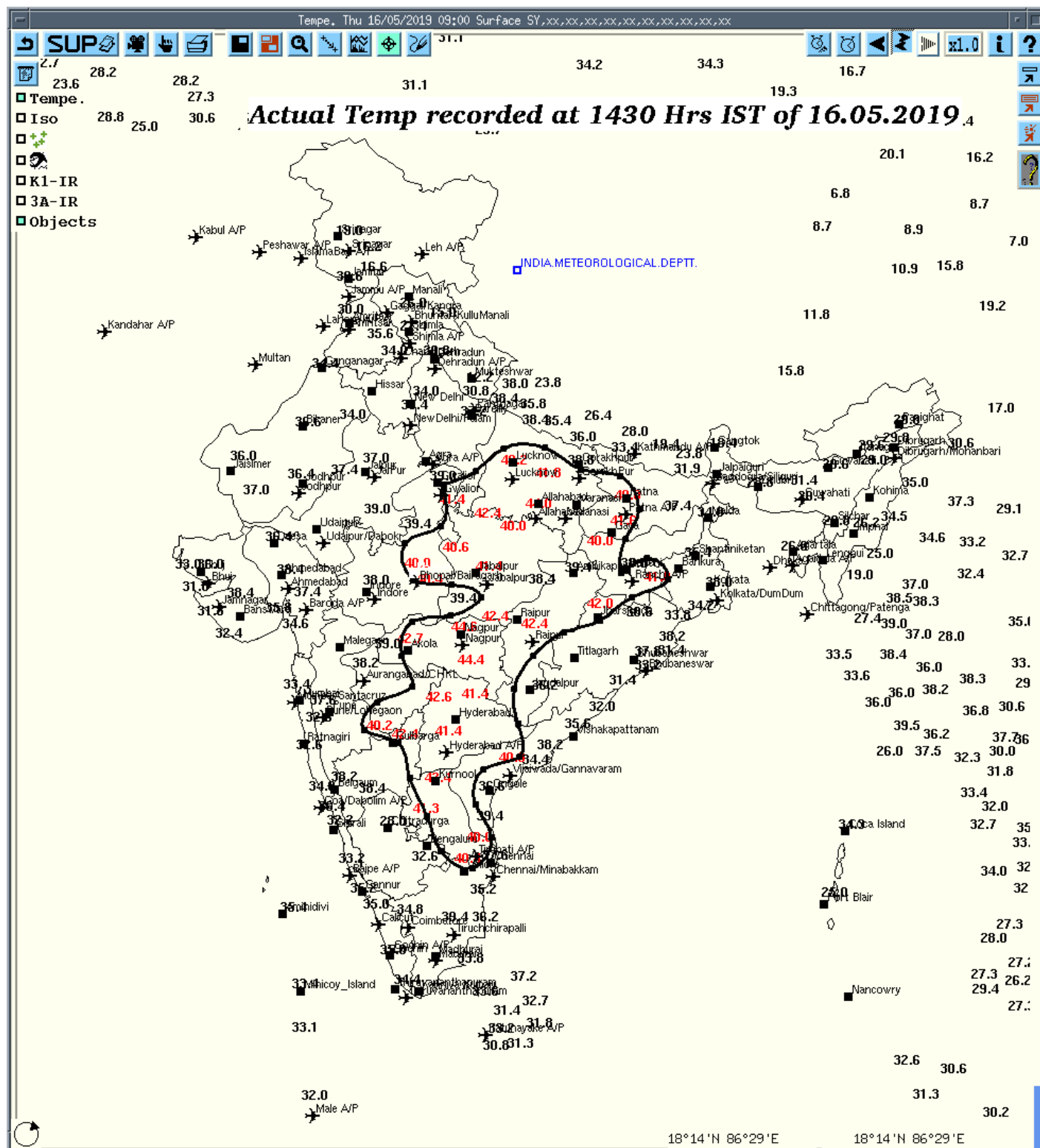
Heat wave conditions:-(<25%)
Telangana, Vidarbha and
Chhattisgarh.

20/05/2019



Heat wave conditions:-(<25%)
Vidarbha and Chhattisgarh.





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department

Dated: 17th May, 2019
Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 16 May to 0830 hrs IST 17 May, 2019)

Heat Wave:

Yesterday, **Heat Wave Conditions** observed in a pockets over Vidarbha (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over North Interior Karnataka, Madhya Maharashtra; at a few places over South Interior Karnataka, Rayalaseema and at isolated places over Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over Kerala; at many places over Gangetic West Bengal and Jharkhand; at a few places over East Uttar Pradesh, Bihar, Vidarbha, Odisha, Telengana, and Coastal Karnataka and at isolated places over East Madhya Pradesh. Yesterday, the **highest maximum temperature** of **46.0°C** was recorded at **Chandrapur (Vidarbha)** (**Annexure 1 & 2**).

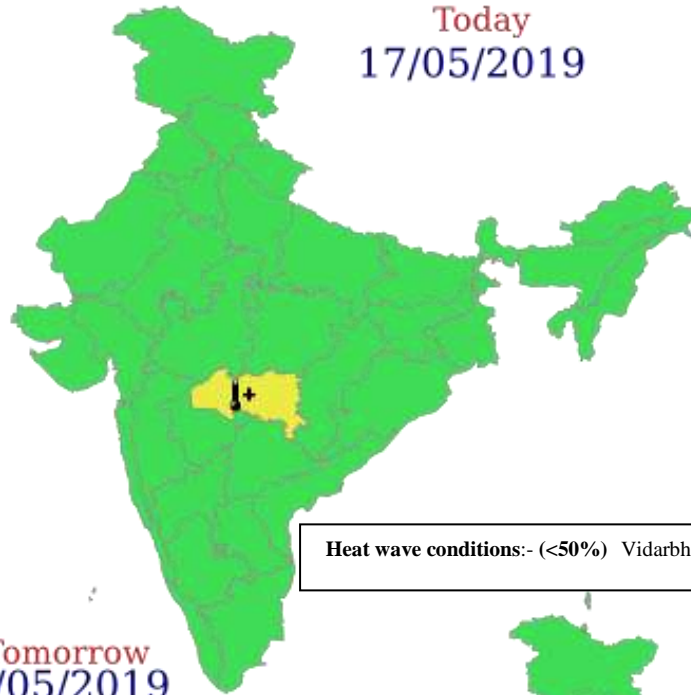
Temperatures Recorded at 1430 Hours IST of Today, the 17th May, 2019

- **Nagpur Sonegaon & Chandrapur (Vidarbha)** recorded the maximum temperature of **44.8°C** each (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by by 1-3°C** at most parts of Bihar and Jharkhand; at many parts of Gangetic West Bengal; at a few parts of Coastal Andhra Pradesh, Uttarakhand and Madhya Maharashtra and at one or two pockets of Jammu & Kashmir, Himachal Pradesh, Delhi, West Uttar Pradesh, Madhya Pradesh, Vidarbha, Marathwada, Chhattisgarh, Saurashtra & Kutch, Rayalaseema, Telengana, Kerala and South Interior Karnataka (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

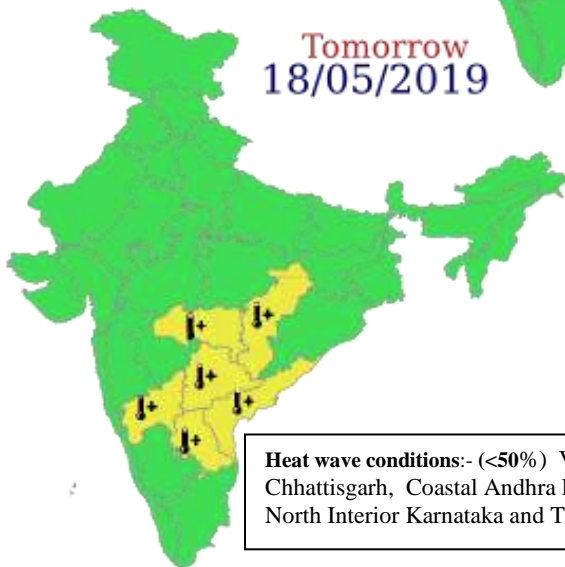
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
17/05/2019



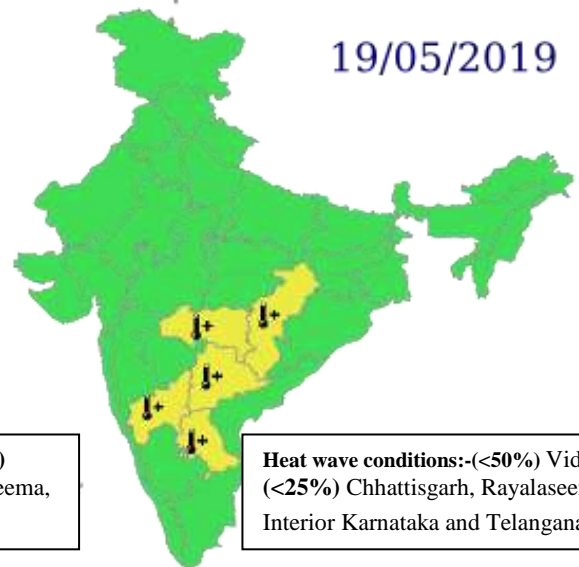
Heat wave conditions:- (<50%) Vidarbha.

Tomorrow
18/05/2019



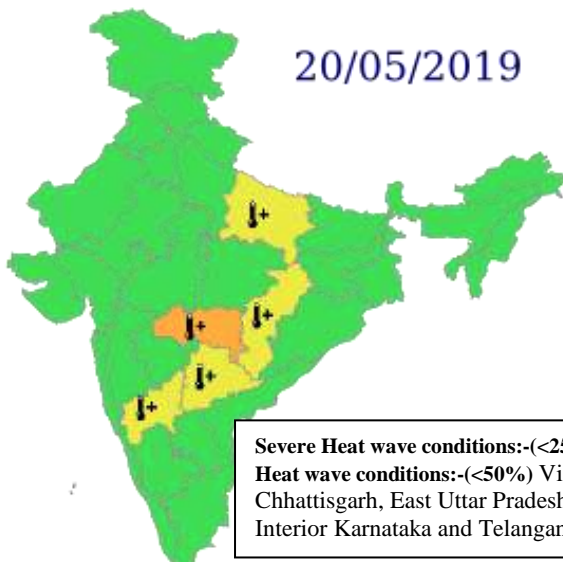
Heat wave conditions:- (<50%) Vidarbha (<25%) Chhattisgarh, Coastal Andhra Pradesh, Rayalaseema, North Interior Karnataka and Telangana.

19/05/2019



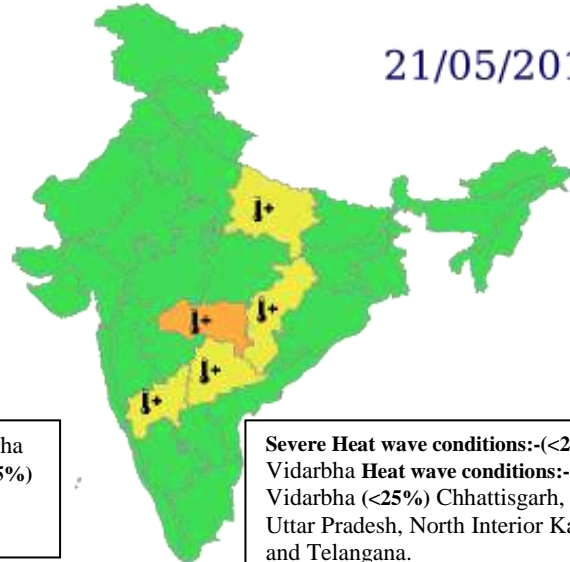
Heat wave conditions:-(<50%) Vidarbha (<25%) Chhattisgarh, Rayalaseema, North Interior Karnataka and Telangana.

20/05/2019

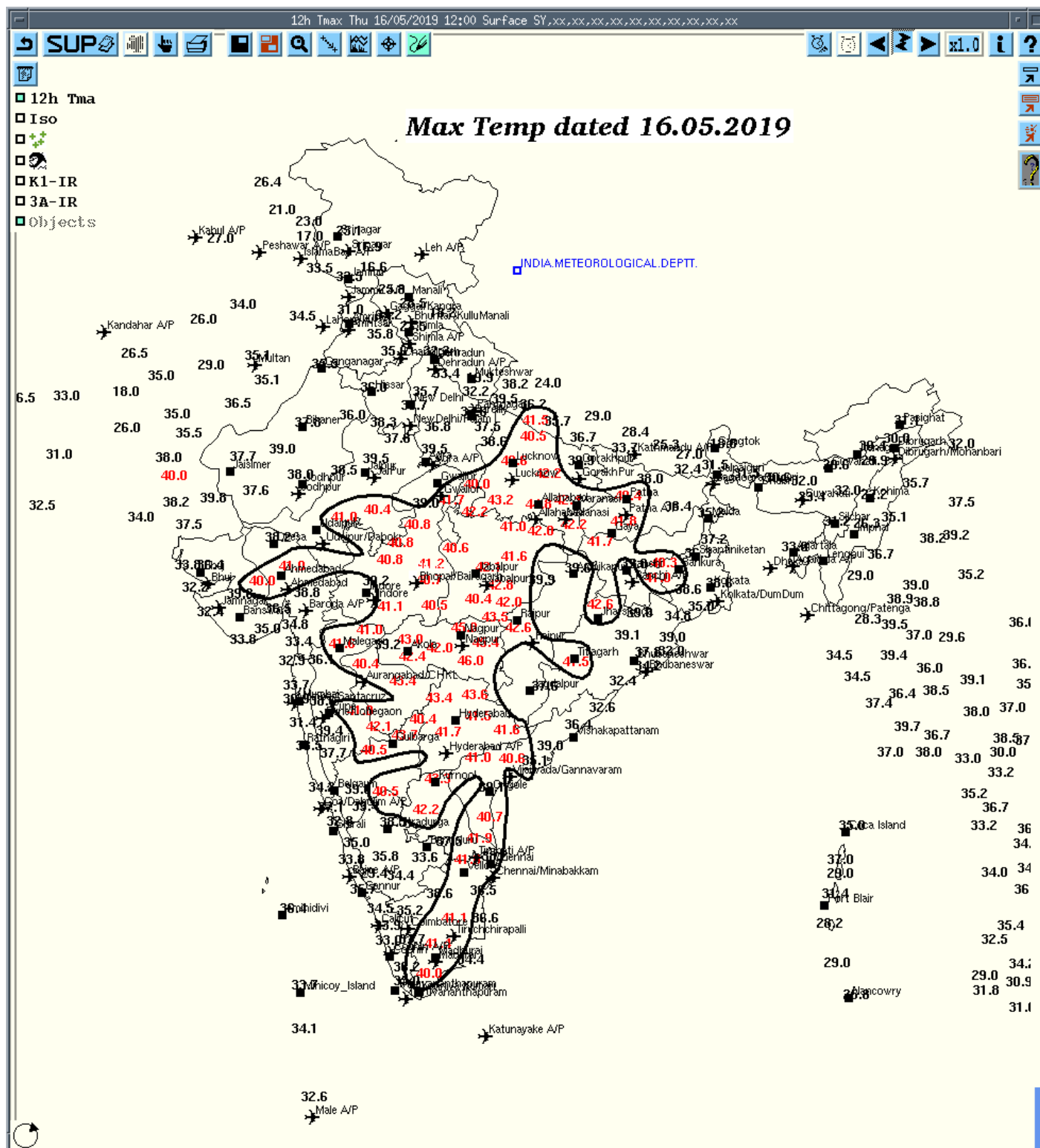


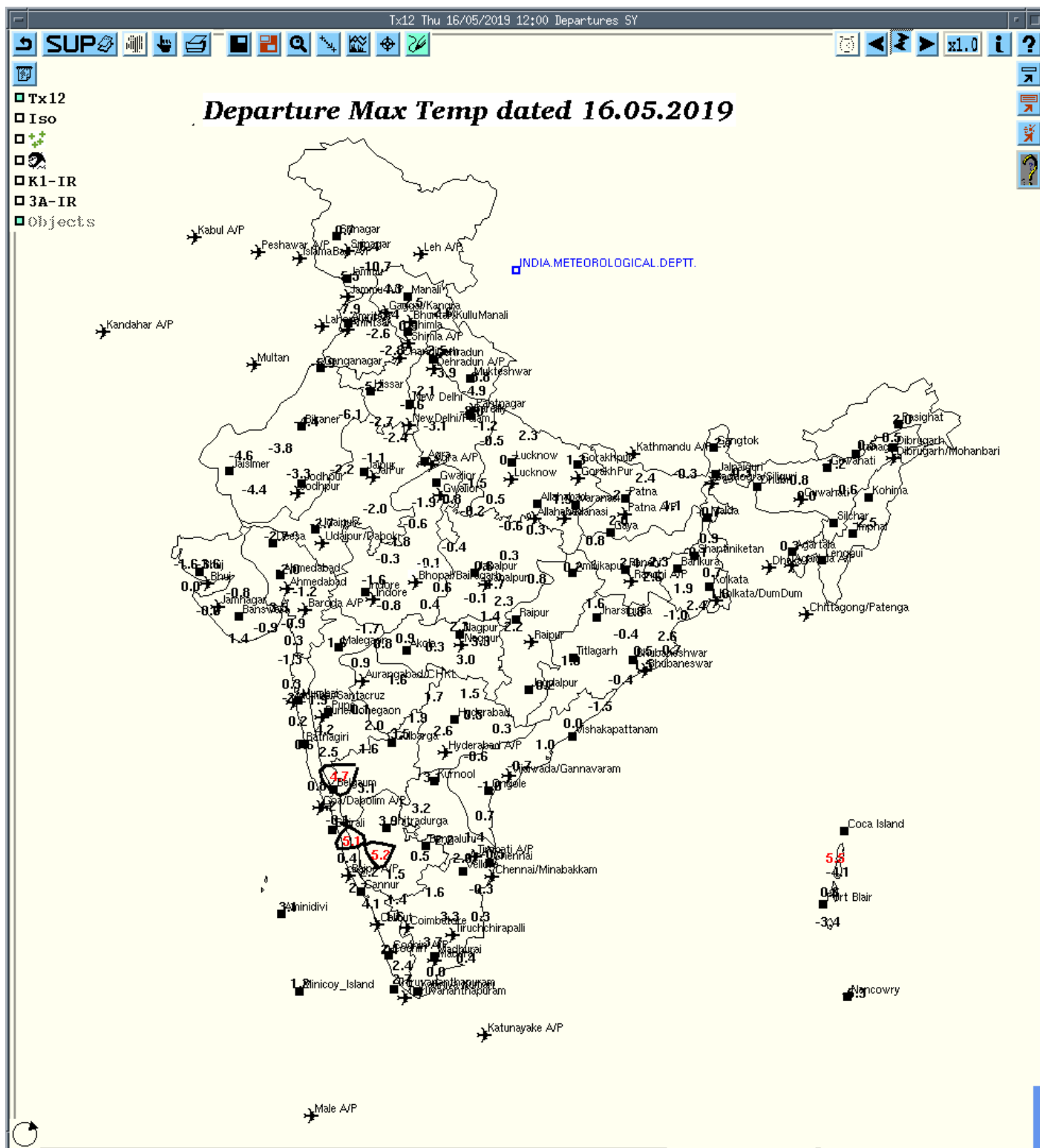
Severe Heat wave conditions:-(<25%) Vidarbha
Heat wave conditions:-(<50%) Vidarbha (<25%) Chhattisgarh, East Uttar Pradesh, North Interior Karnataka and Telangana.

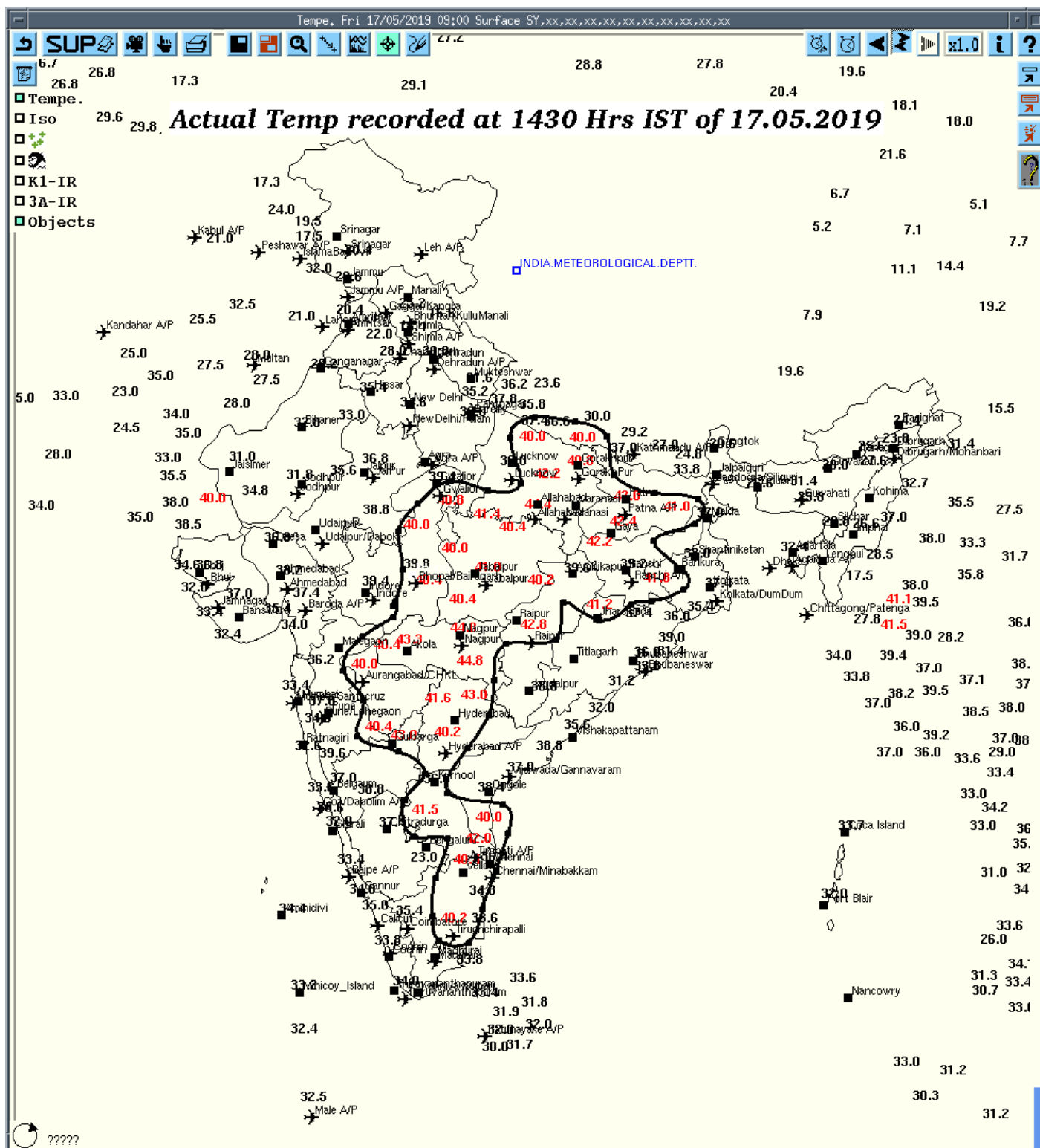
21/05/2019



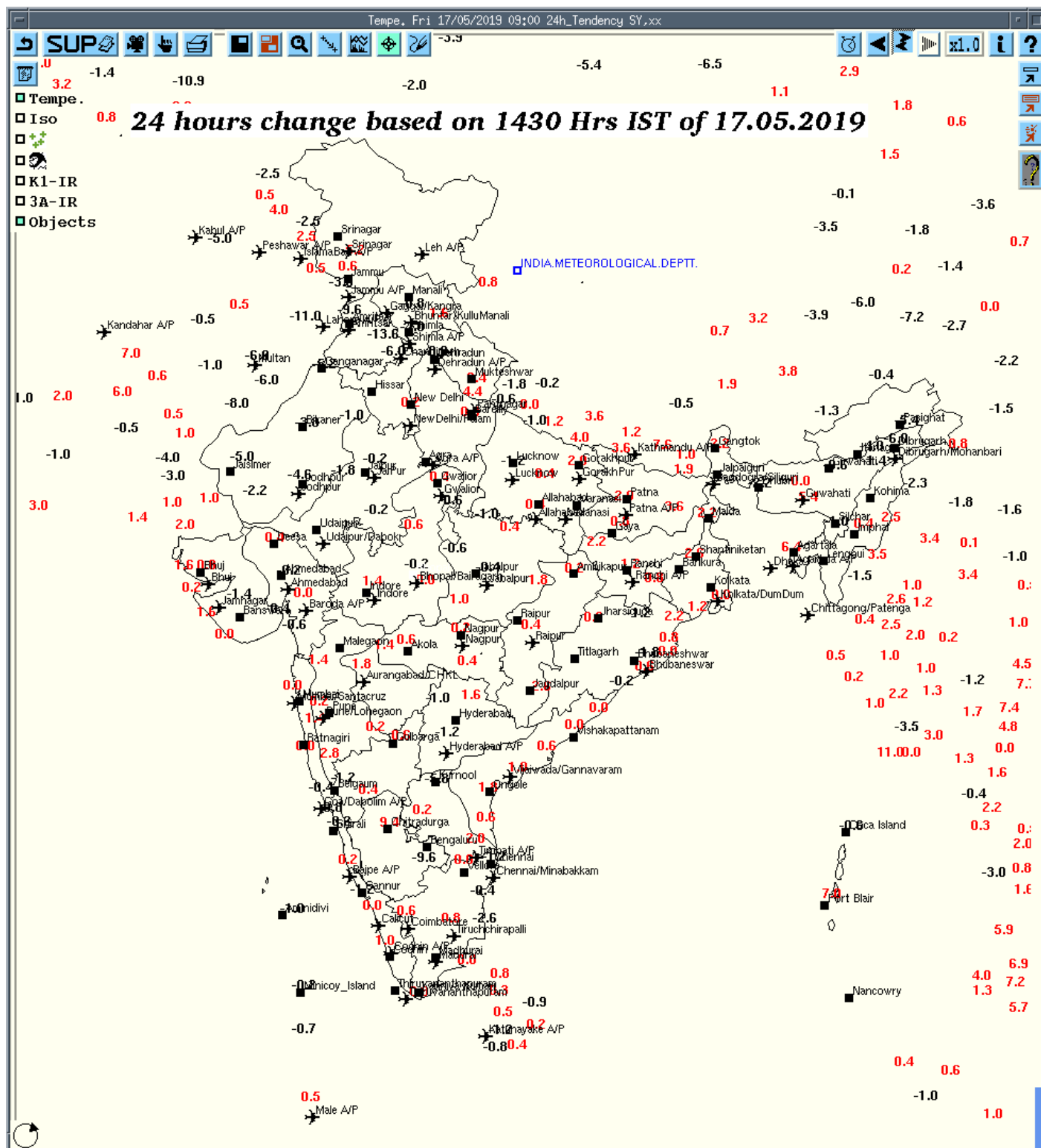
Severe Heat wave conditions:-(<25%) Vidarbha
Heat wave conditions:-(<50%) Vidarbha (<25%) Chhattisgarh, East Uttar Pradesh, North Interior Karnataka and Telangana.







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 18th May, 2019
Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 17 May to 0830 hrs IST 18 May, 2019)

Heat Wave:

Yesterday, heat Wave Conditions were observed in some parts over Vidarbha. (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over North Interior Karnataka; at a few places over Bihar, Madhya Maharashtra, and Kerala and at isolated places over Telangana, South Interior Karnataka and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over Jharkhand, Gangetic West Bengal and Vidarbha; at a few places over East Uttar Pradesh, Odisha, Coastal Karnataka and Andaman & Nicobar Islands. Yesterday, the **highest maximum temperature** of **45.8°C** was recorded at **Chandrapur (Vidarbha) (Annexure 1 & 2)**.

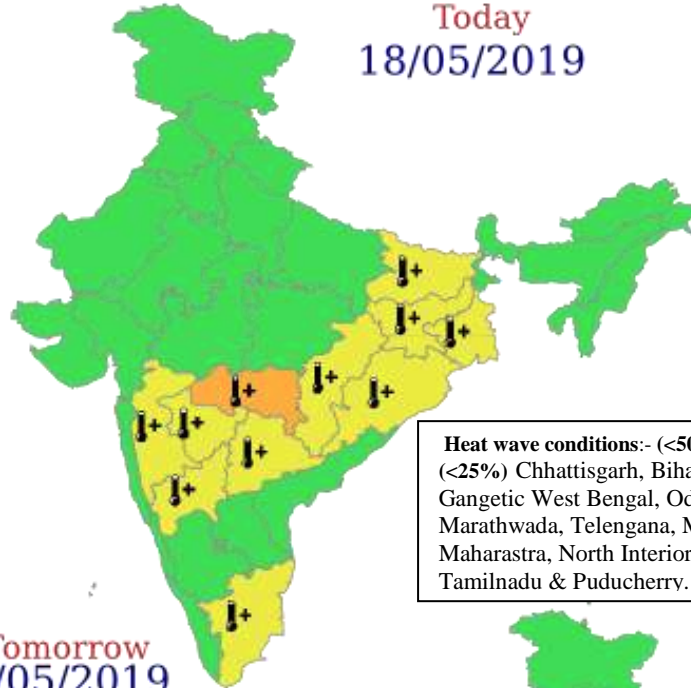
Temperatures Recorded at 1430 Hours IST of Today, the 18th May, 2019

- **Sambalpur (Odisha) & Chandrapur (Vidarbha)** recorded the maximum temperature of **44.4°C (Annexure 3)**.
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at most parts of West Rajasthan and Punjab; at many parts of Himachal Pradesh, Jammu & Kashmir and Gangetic West Bengal; at few parts of ortheastern states and at one or two pockets of Uttarakhand, Gujarat, Mahdya Maharastra, Telengana, Rayalseema, Coastal Andhra Pradesh, Odisha, Karnataka, Kerala and Tamilnadu & Puducherry (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

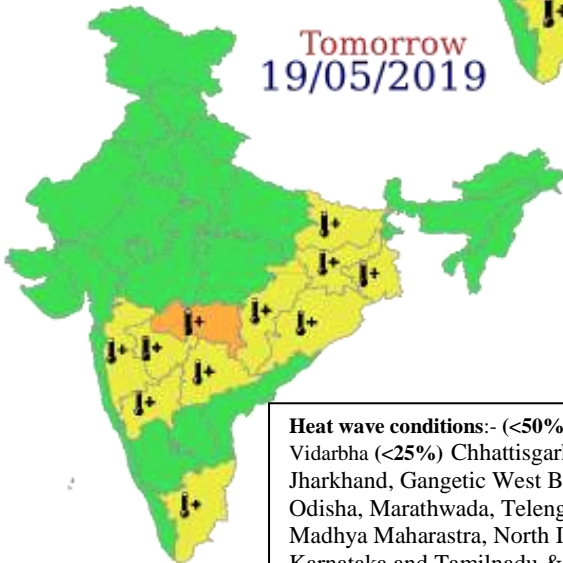
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
18/05/2019



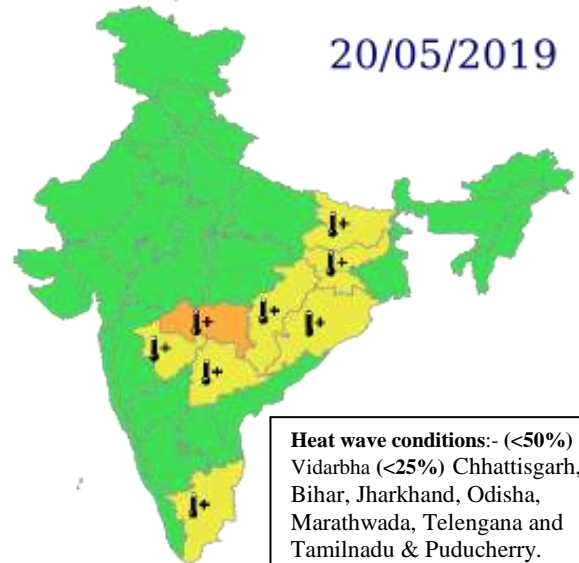
Heat wave conditions:- (<50%) Vidarbha (<25%) Chhattisgarh, Bihar, Jharkhand, Gangetic West Bengal, Odisha, Marathwada, Telangana, Madhya Maharashtra, North Interior Karnataka and Tamilnadu & Puducherry.

Tomorrow
19/05/2019



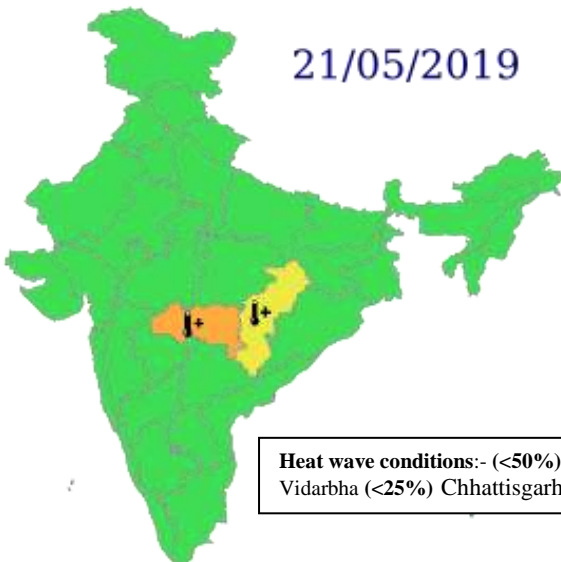
Heat wave conditions:- (<50%) Vidarbha (<25%) Chhattisgarh, Bihar, Jharkhand, Gangetic West Bengal, Odisha, Marathwada, Telangana, Madhya Maharashtra, North Interior Karnataka and Tamilnadu & Puducherry.

20/05/2019



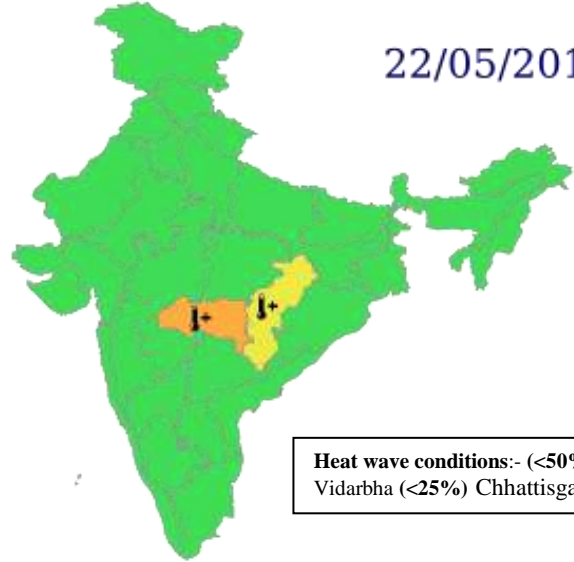
Heat wave conditions:- (<50%) Vidarbha (<25%) Chhattisgarh, Bihar, Jharkhand, Odisha, Marathwada, Telangana and Tamilnadu & Puducherry.

21/05/2019

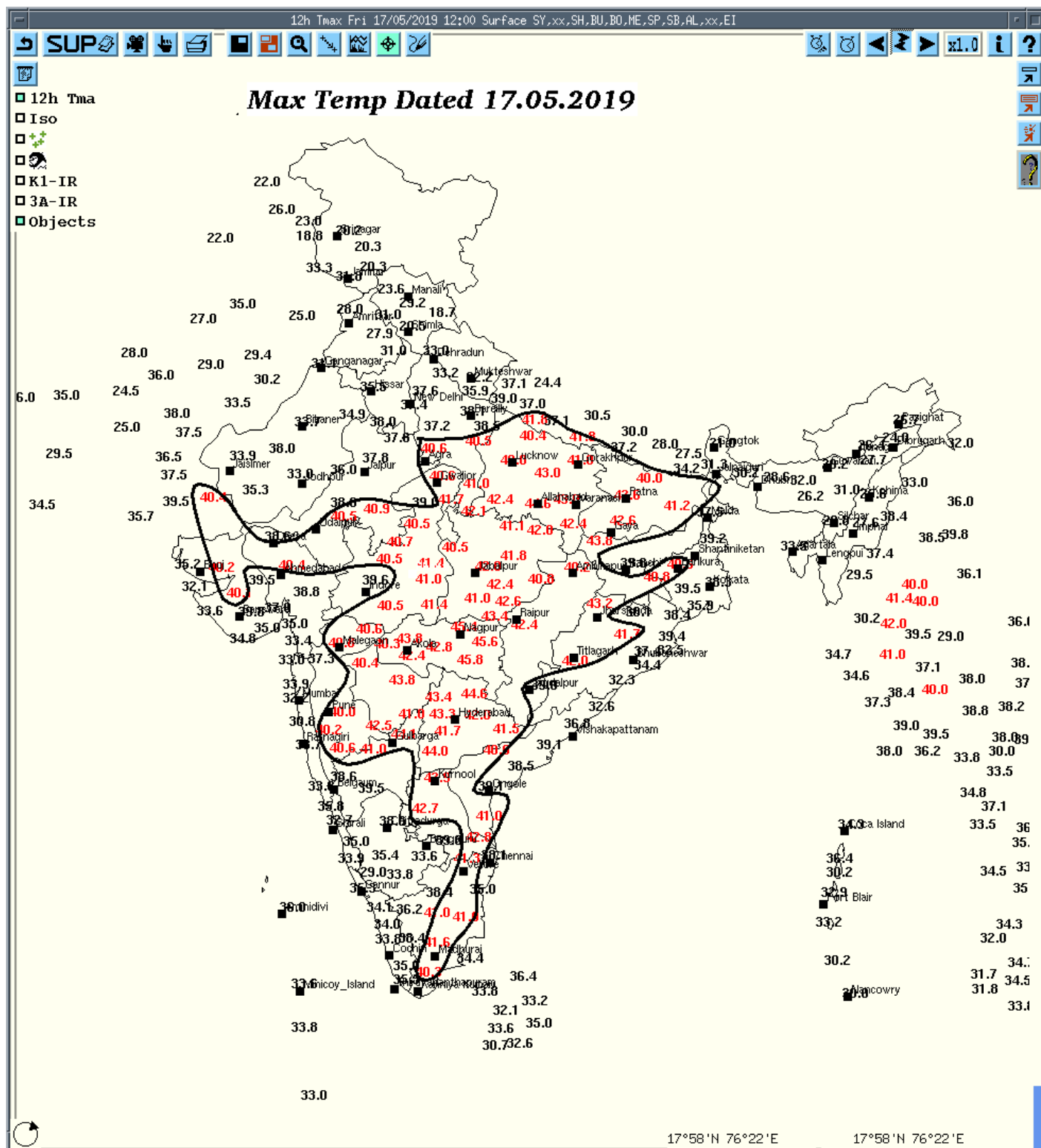


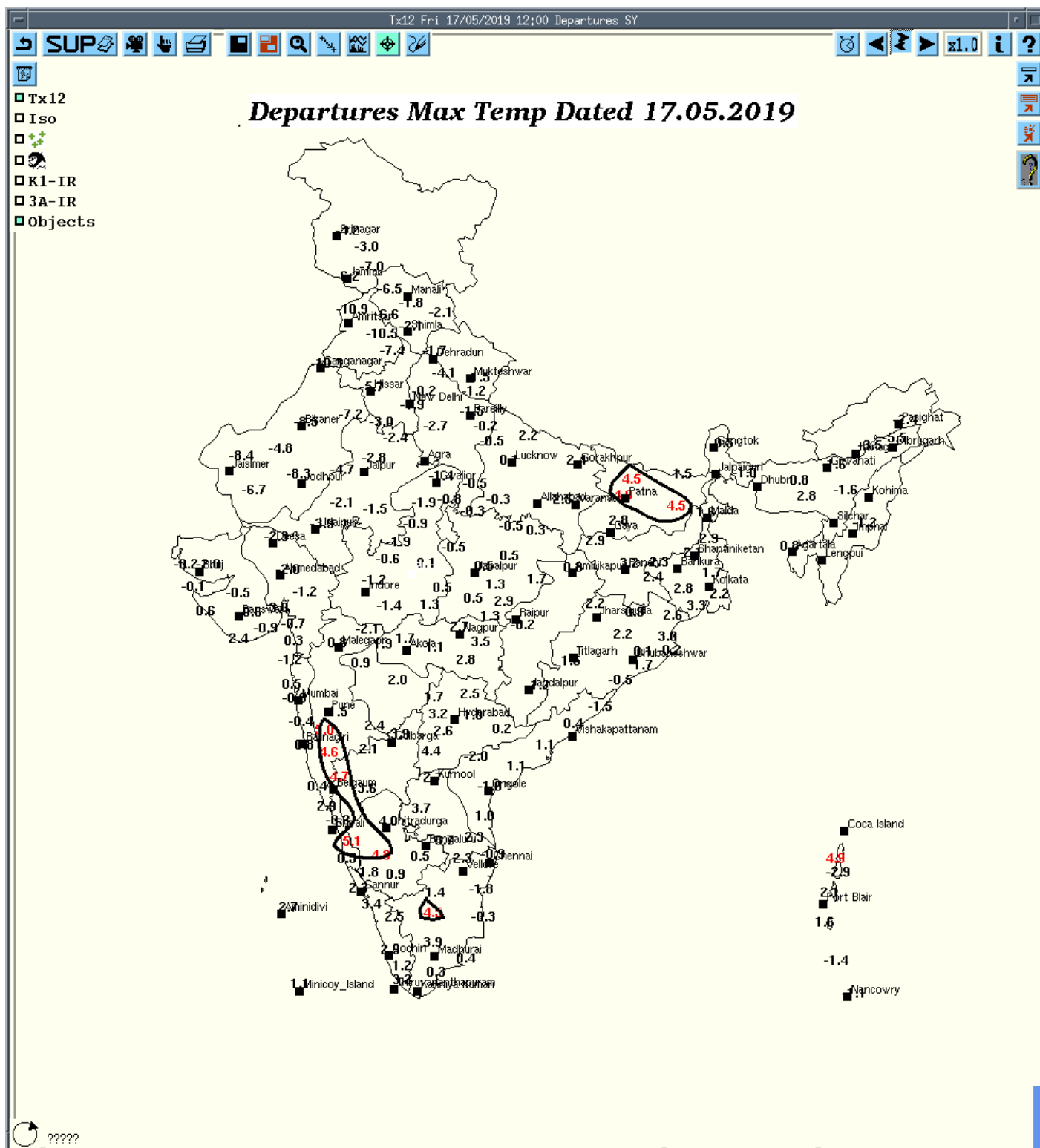
Heat wave conditions:- (<50%) Vidarbha (<25%) Chhattisgarh.

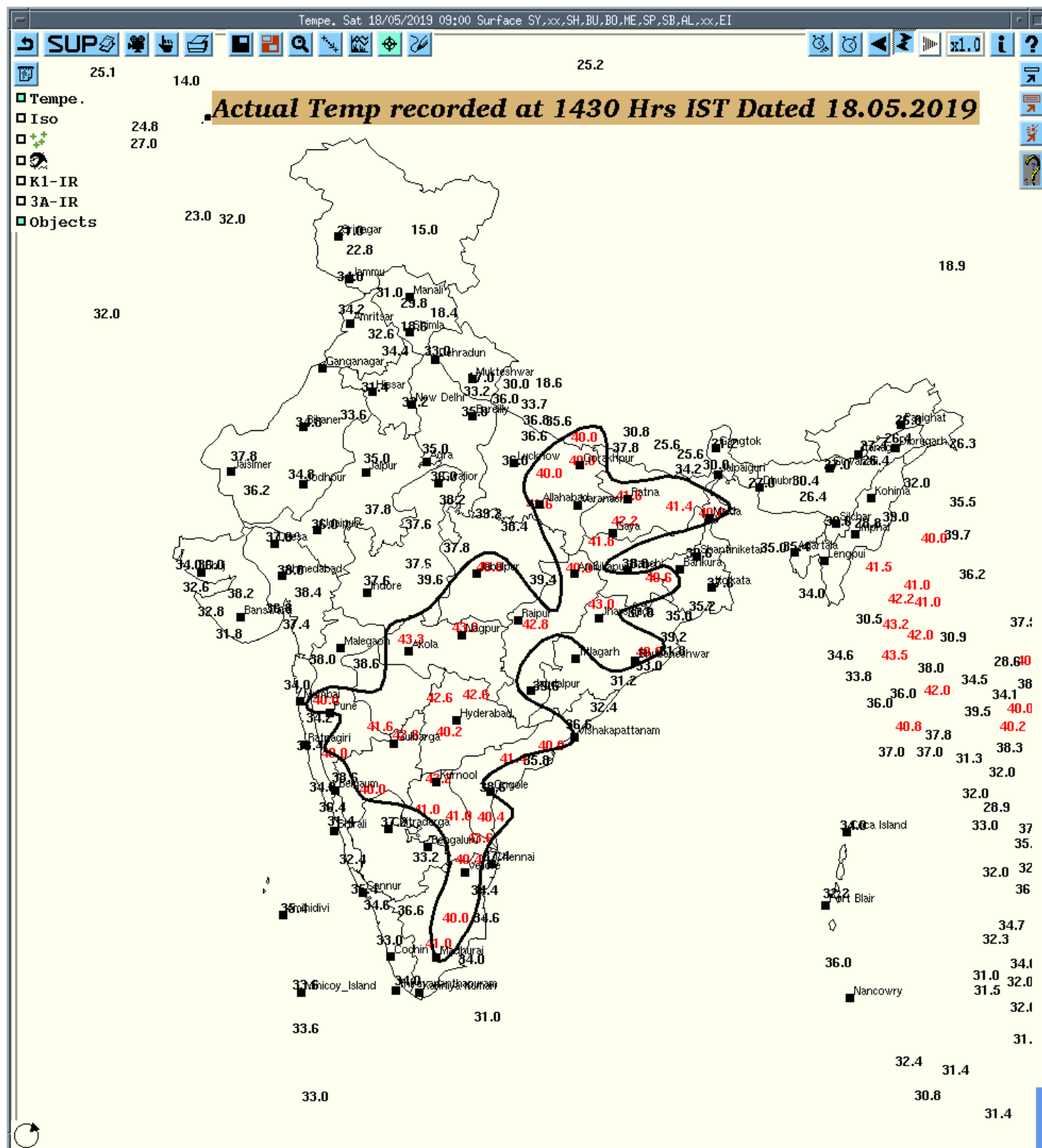
22/05/2019

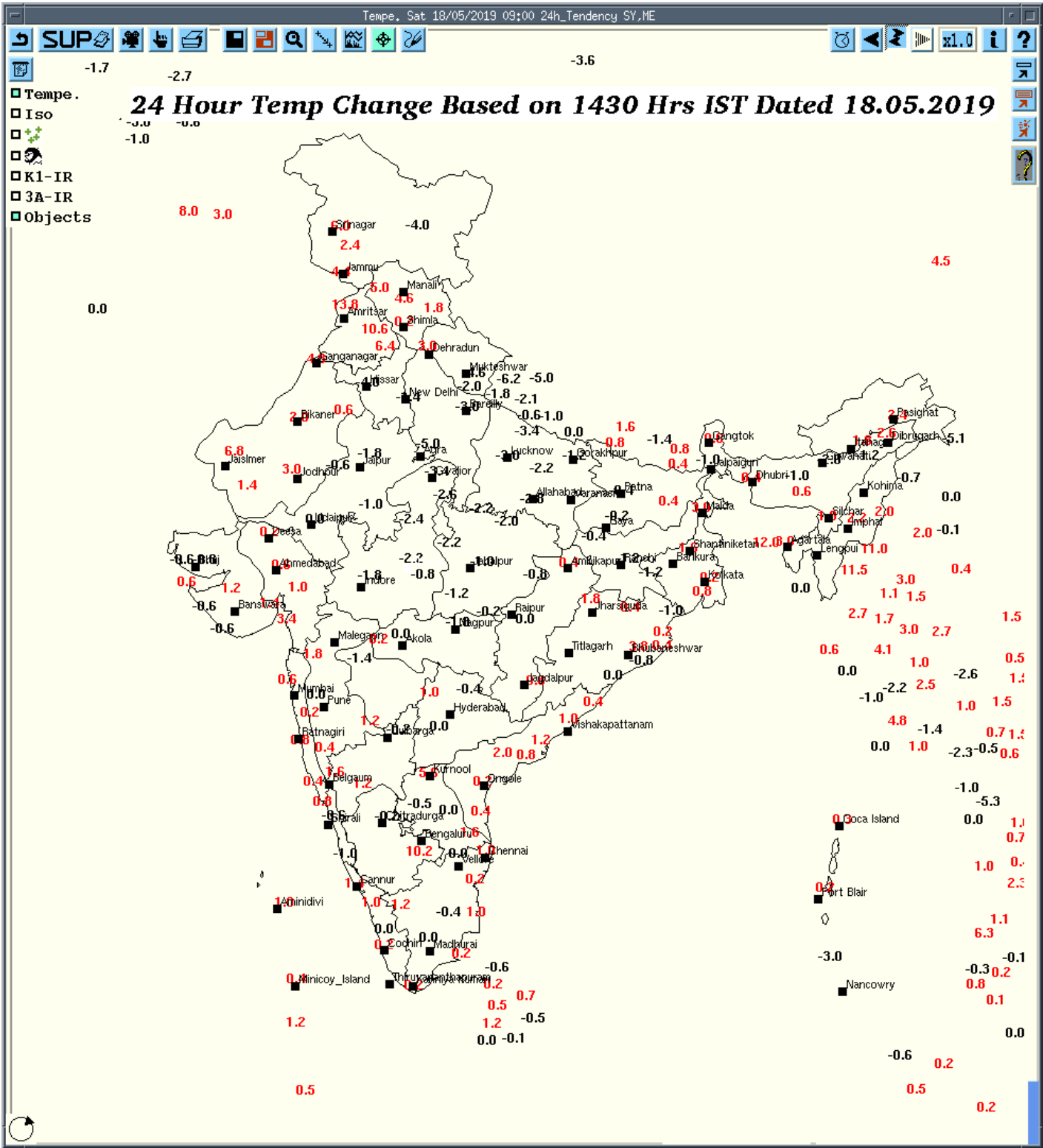


Heat wave conditions:- (<50%) Vidarbha (<25%) Chhattisgarh.









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 19th May, 2019
Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 18 May to 0830 hrs IST 19 May, 2019)

Heat Wave:

Yesterday, **Heat Wave Conditions** were observed in isolated pockets over Vidarbha and Madhya Maharashtra (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Rayalaseema and North Interior Karnataka; at many places over Bihar, Gangetic West Bengal, Kerala and Madhya Maharashtra; at a few places over Chhattisgarh, Sub-Himalayan West Bengal & Sikkim and South Interior Karnataka; **above normal (1.6°C to 3.0°C)** at most places over Jharkhand; at many places over Odisha, Telangana, Marathwada and Tamil Nadu & Puducherry; at a few places over Nagaland, Manipur, Mizoram & Tripura, Vidarbha, Lakshadweep and Coastal Karnataka and at isolated places over Coastal Andhra Pradesh. Yesterday, the **highest maximum temperature of 45.8°C** was recorded at **Chandrapur (Vidarbha)** (**Annexure 1 & 2**).

Temperatures Recorded at 1430 Hours IST of Today, the 19th May, 2019

- **Brahmapuri & Chandrapur (Vidarbha)** recorded the maximum temperature of **45.0°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** at most parts of Jammu & Kashmir, Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh and Assam & Meghalaya; at many parts of Uttarakhand and Rajasthan and; at few parts of Himachal Pradesh, East Uttar Pradesh, Saurashtra & Kutch and West Madhya Pradesh and at one or two pockets of Madhya Maharashtra, Telangana, Rayalaseema, Coastal Andhra Pradesh, Gangetic West Bengal Karnataka and Tamilnadu & Puducherry (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

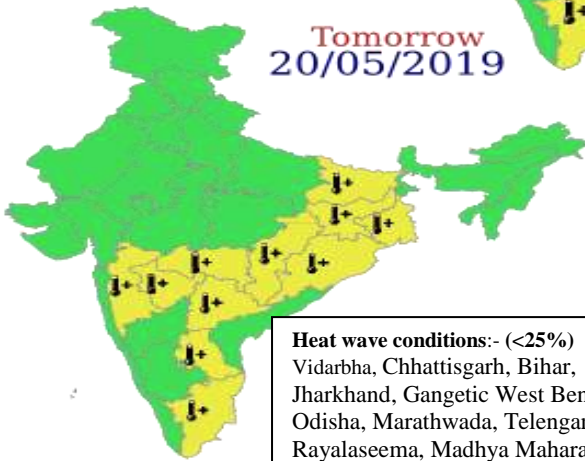
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
19/05/2019



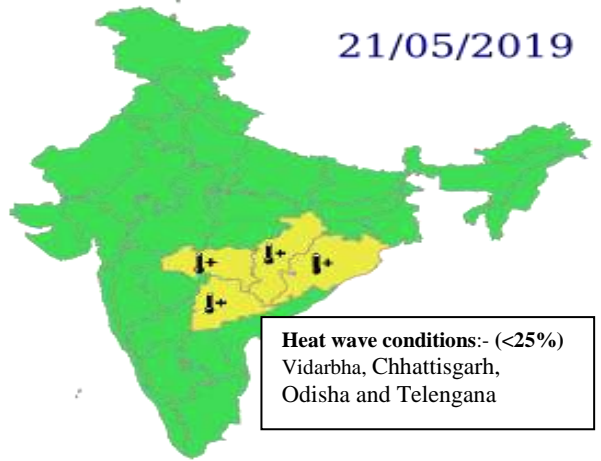
Heat wave conditions:- (<25%) Vidarbha, Chhattisgarh, Bihar, Jharkhand, Gangetic West Bengal, Odisha, Marathwada, Telengana, Rayalaseema, Madhya Maharashtra and Tamilnadu & Puducherry.

Tomorrow
20/05/2019



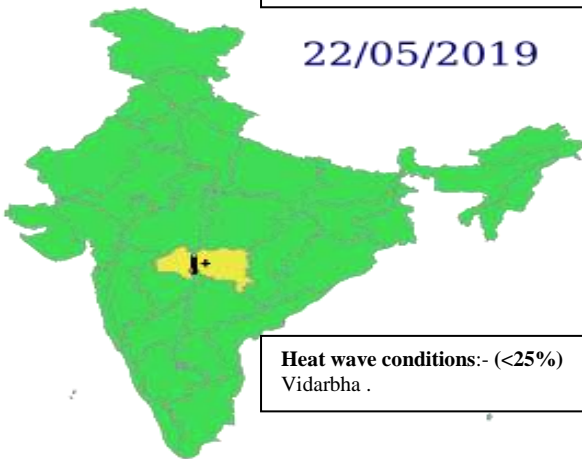
Heat wave conditions:- (<25%) Vidarbha, Chhattisgarh, Bihar, Jharkhand, Gangetic West Bengal, Odisha, Marathwada, Telengana, Rayalaseema, Madhya Maharashtra and Tamilnadu & Puducherry.

21/05/2019



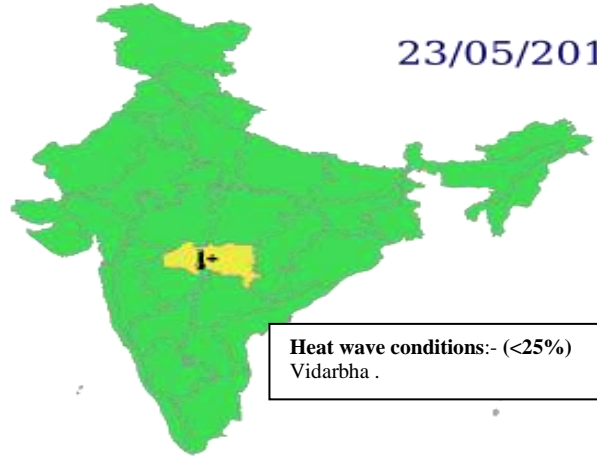
Heat wave conditions:- (<25%) Vidarbha, Chhattisgarh, Odisha and Telengana

22/05/2019

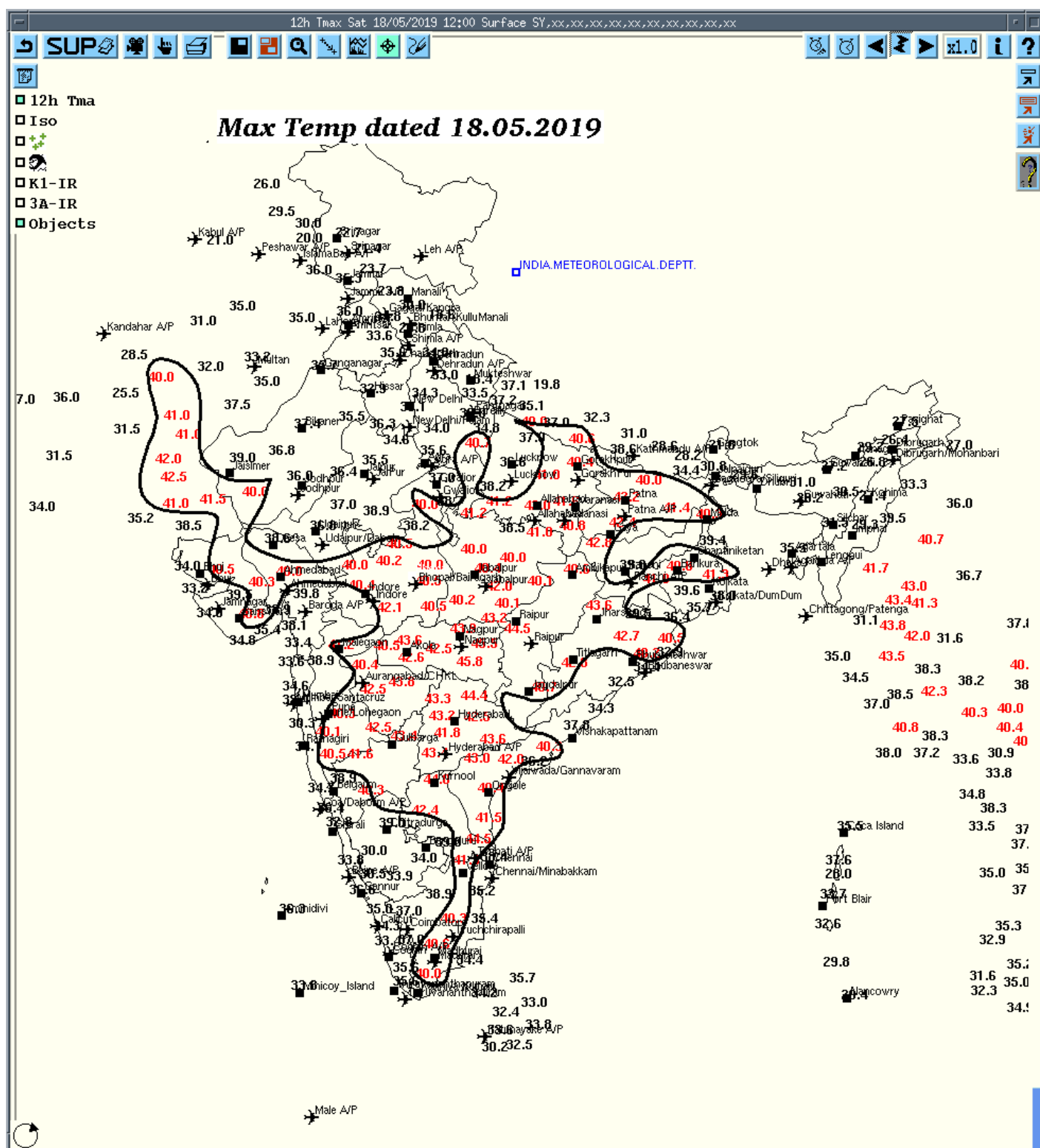


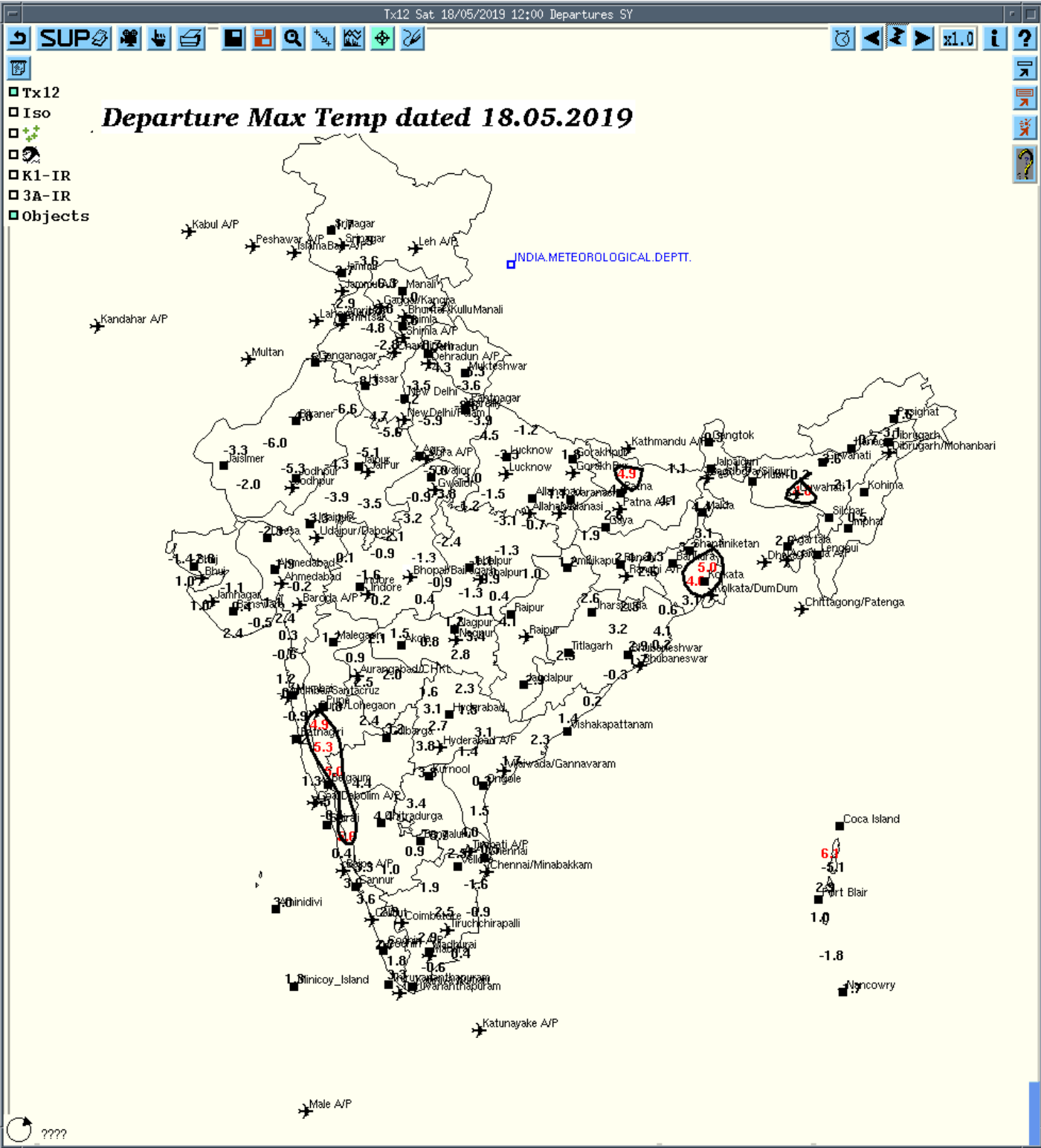
Heat wave conditions:- (<25%) Vidarbha .

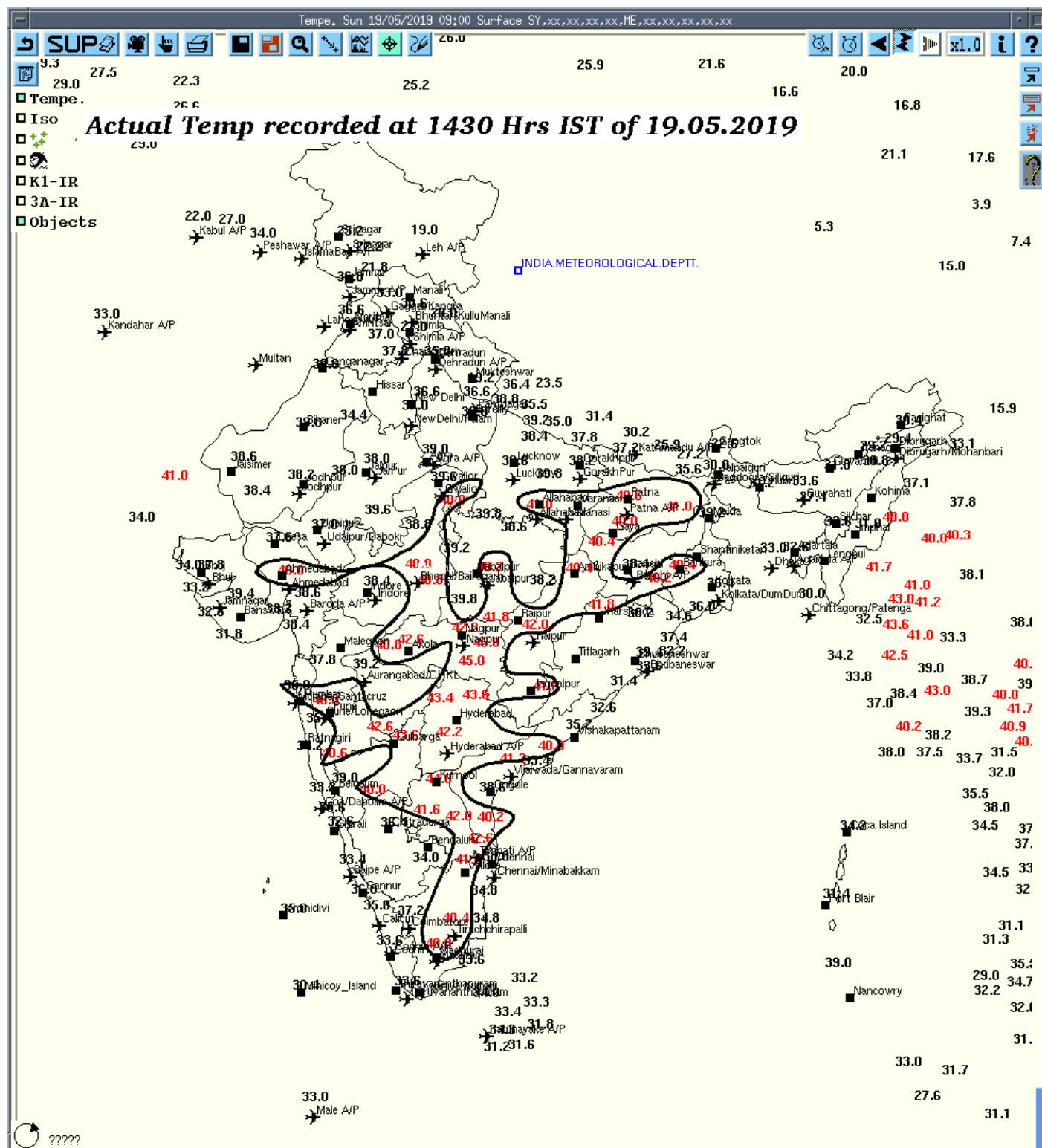
23/05/2019



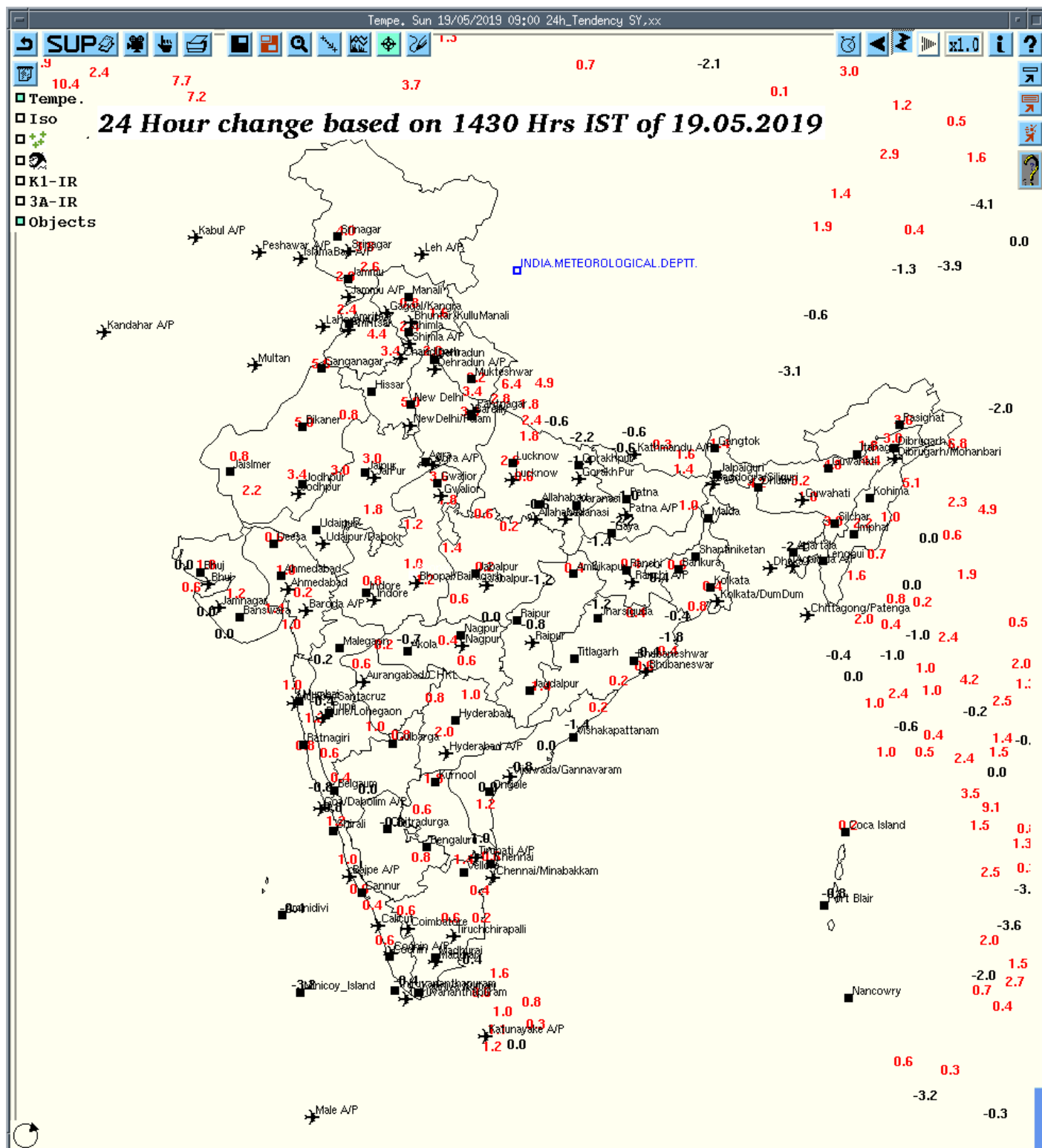
Heat wave conditions:- (<25%) Vidarbha .







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 20th May, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 19 May to 0830 hrs IST 20 May, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions was observed at one or two pockets over Bihar, Gangetic West Bengal, Vidarbha, Madhya Maharashtra and North Interior Karnataka (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at a few places over Madhya Maharashtra; **appreciably above normal (3.1°C to 5.0°C)** at most places over Rayalaseema and North Interior Karnataka; at many places over Bihar, South Interior Karnataka and Kerala; at a few places over West Bengal & Sikkim and Tamilnadu & Puducherry; at isolated places over Assam & Meghalaya, Chhattisgarh, Telangana and Coastal Karnataka; **above normal (1.6°C to 3.0°C)** at many places over Nagaland, Manipur, Mizoram & Tripura, Arunachal Pradesh, Jharkhand, Odisha and Vidarbha and at isolated places over Jammu & Kashmir, Gujarat region, Konkan & Goa, Marathawada, Coastal Andhra Pradesh and Lakshadweep. Yesterday, the **highest maximum temperature** of **45.6°C** was recorded at **Chandrapur (Vidarbha)** (**Annexure 1 & 2**).

Temperatures Recorded at 1430 Hours IST of Today, the 20th May, 2019

- **Chandrapur (Vidarbha)** recorded the maximum temperature of **45.2°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by by 1-4°C** at most parts of Uttarakhand, Uttar Pradesh, Madhya Pradesh, Nagaland, Manipur, Mizoram, Tripura and Punjab; at many parts of Himachal Pradesh and East Rajasthan; at few places over Harayna and Delhi and at one or two pockets of Jammu & Kashmir, Gujarat, Bihar, Jharkhand, Sikkim, Marathwada, Telengana, Madhya Maharastra and West Rajasthan(**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

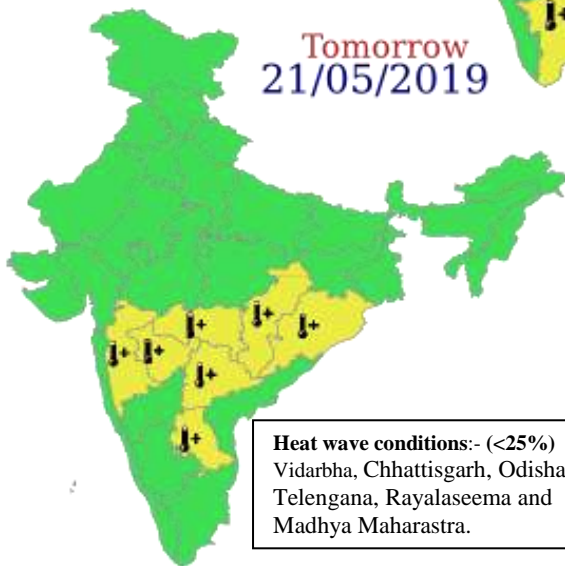
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
20/05/2019



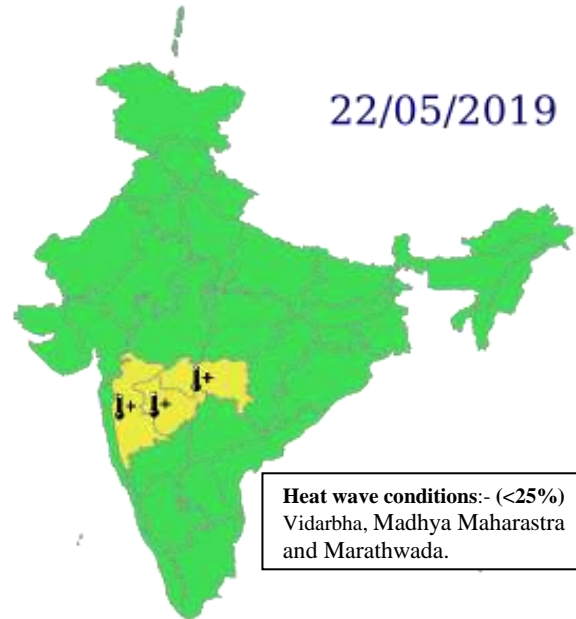
Heat wave conditions:- (<25%) Vidarbha, Chhattisgarh, Bihar, Gangetic West Bengal, Odisha, Telengana, Rayalaseema, Madhya Maharashtra, North Interior Karnataka and interior Tamilnadu.

Tomorrow
21/05/2019



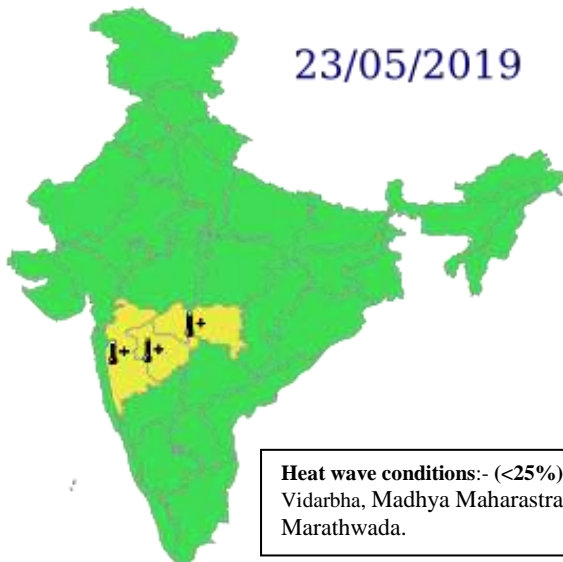
Heat wave conditions:- (<25%) Vidarbha, Chhattisgarh, Odisha, Telengana, Rayalaseema and Madhya Maharashtra.

22/05/2019



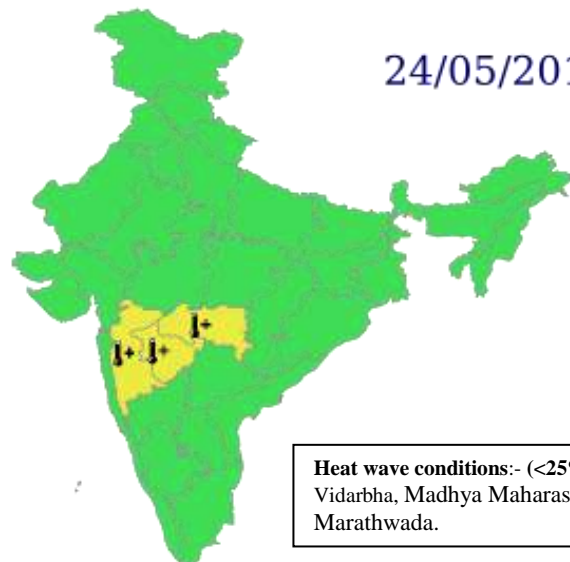
Heat wave conditions:- (<25%) Vidarbha, Madhya Maharashtra and Marathwada.

23/05/2019

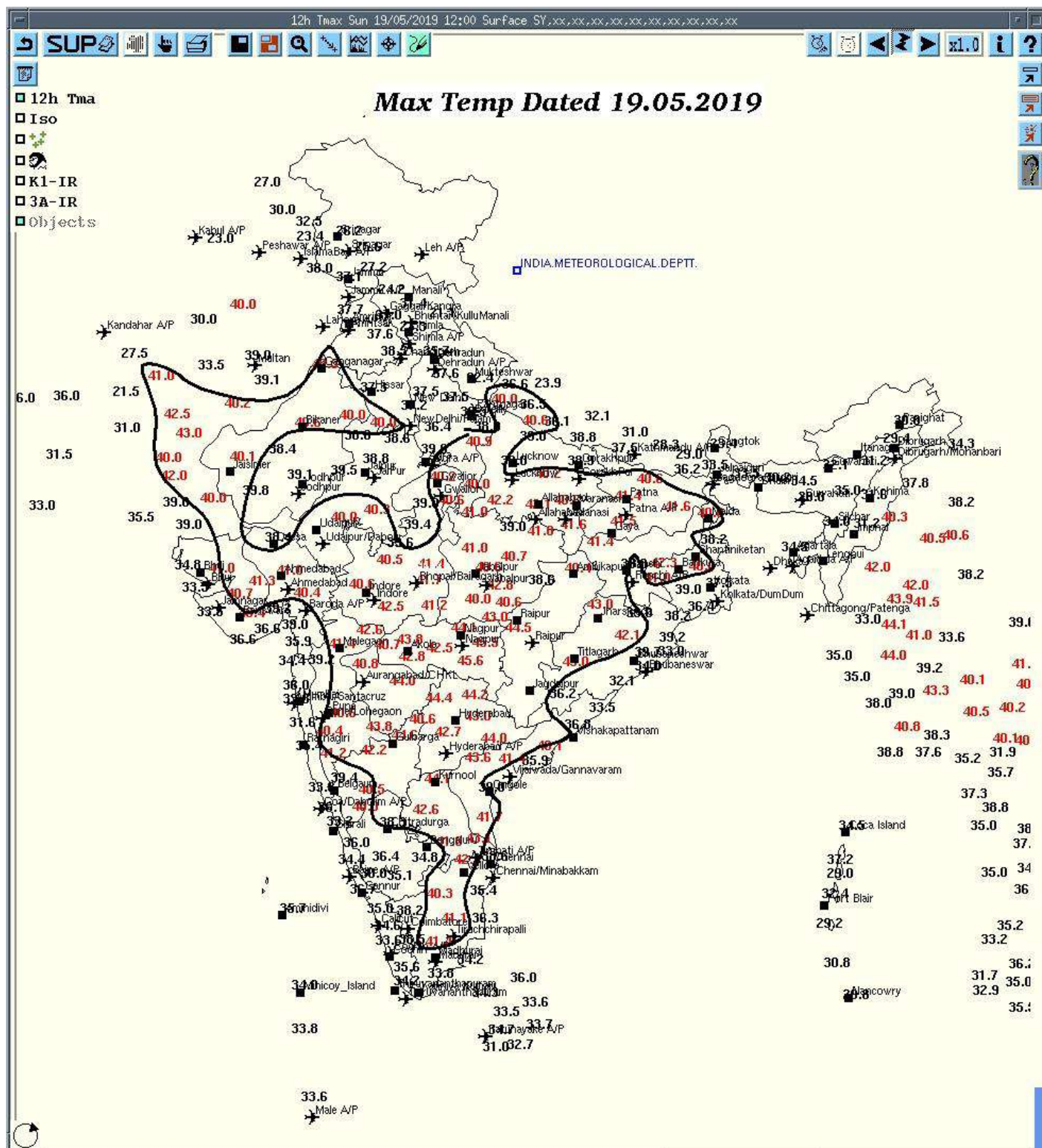


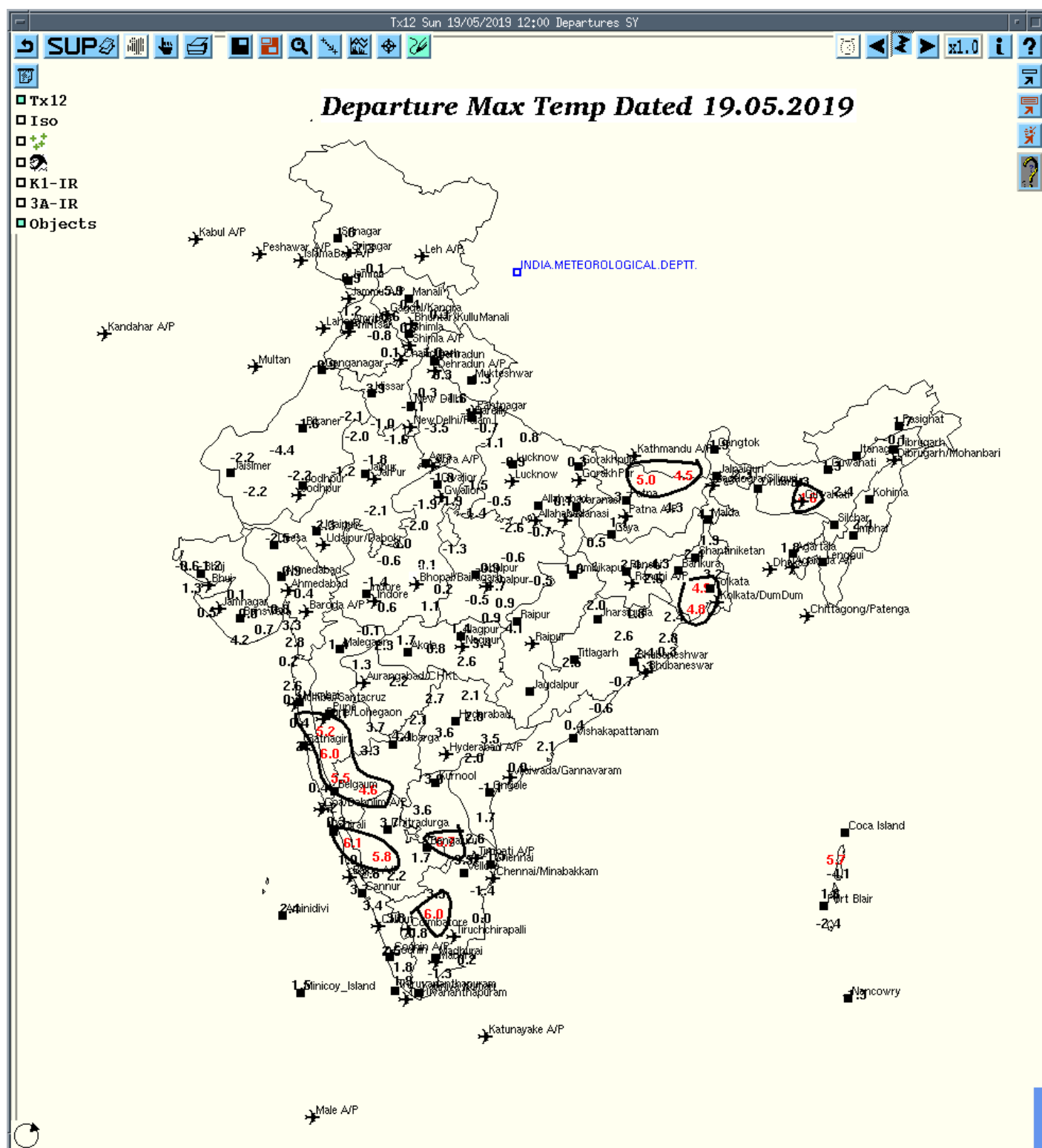
Heat wave conditions:- (<25%) Vidarbha, Madhya Maharashtra and Marathwada.

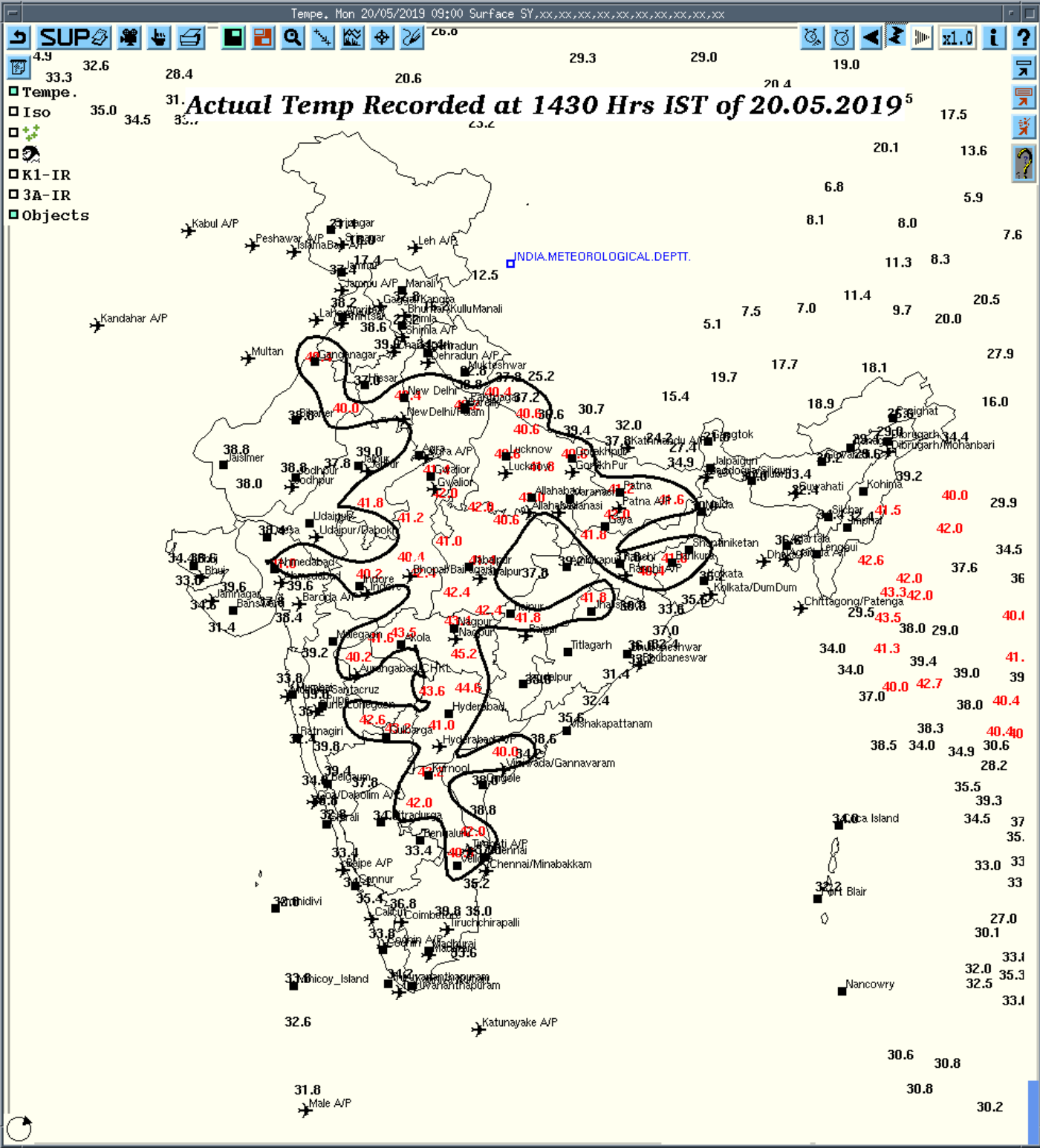
24/05/2019



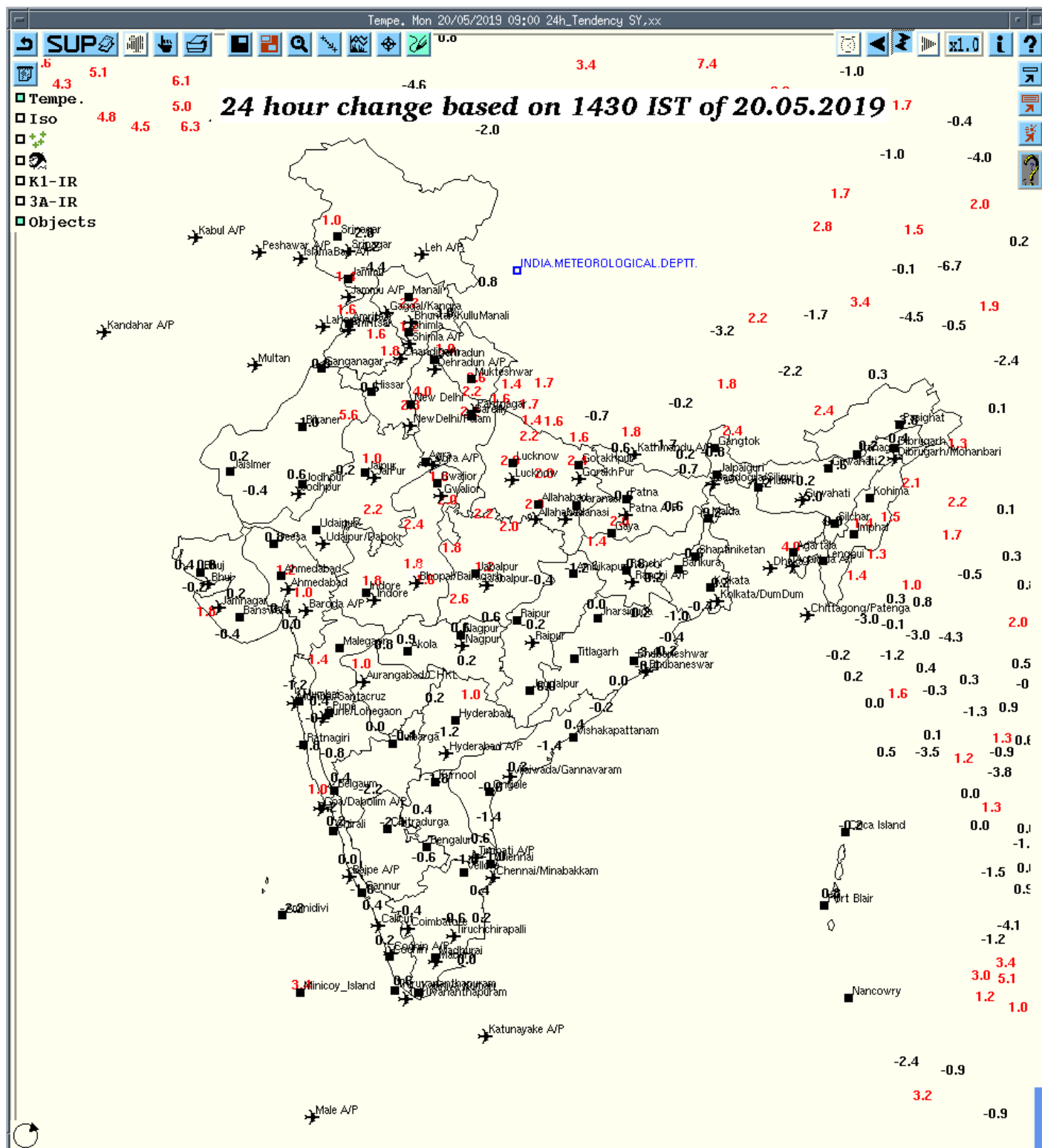
Heat wave conditions:- (<25%) Vidarbha, Madhya Maharashtra and Marathwada.







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 21th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 20 May to 0830 hrs IST 21 May, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions were observed in some part of Madhya Maharashtra and in isolated pockets over Vidarbha and Telangana. (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at a few places over Madhya Maharashtra; **appreciably above normal (3.1°C to 5.0°C)** at many places over North Interior Karnataka, Rayalaseema and Jharkhand; at a few places over Telengana, Tamilnadu & Puducherry and Gangetic West Bengal and at isolated places over Vidarbha and East Madhya Pradesh; **above normal (1.6°C to 3.0°C)** at most places over Kerala and Bihar; at many places over Uttarakhand, Sub-Himalayan West Bengal & Sikkim, Chhattisgarh and South Interior Karnataka; at a few places over Saurashtra & Kutch, Assam & Meghalaya, West Madhya Pradesh and Odisha and Gujarat Region, Himachal Pradesh, Uttar Pradesh and Andaman & Nicobar. Yesterday, the **highest maximum** temperature of **45.9°C** recorded at **Bramhapuri (Vidarbha)**. (**Annexure 1 & 2**).

Temperatures Recorded at 1430 Hours IST of Today, the 20th May, 2019

- **Bramhapuri (Vidarbha)** recorded the maximum temperature of **45.6°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** at most parts of Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Chandigarh & Delhi, West Rajasthan, East Madhya Pradesh, Chhattisgarh and Jharkhand; at many parts of Assam & Meghalaya, Uttar Pradesh and West Madhya Pradesh; at few places over Vidarbha, South Interior Karnataka and Marathwada and at one or two pockets of Gujarat, Bihar, Uttarakhand, East Rajasthan, Rayalseema, Telengana, Kerala, Odisha and Coastal Andhra Pradesh (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

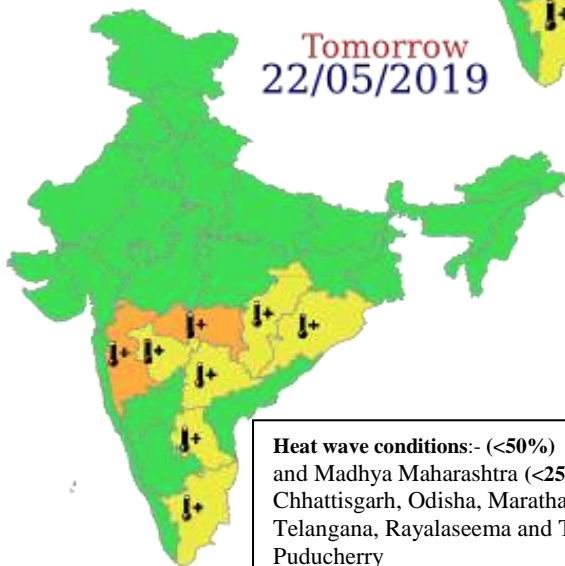
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
21/05/2019



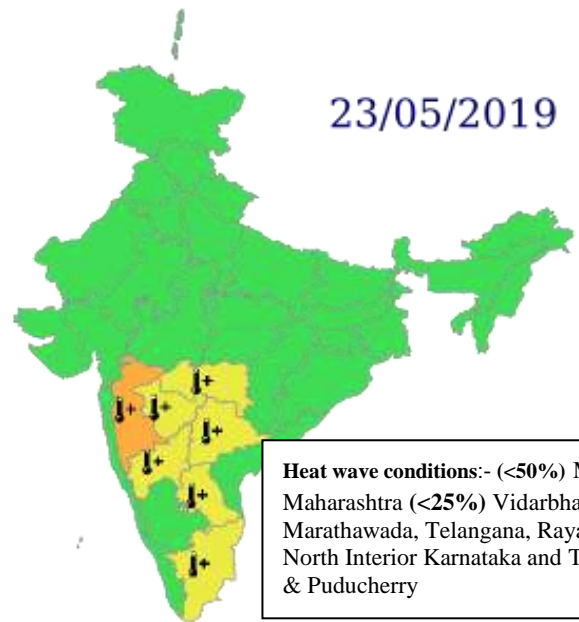
Heat wave conditions:- (<50%) Vidarbha and Madhya Maharashtra (<25%) Chhattisgarh, Odisha, Marathawada, Telangana, Rayalaseema and Tamil Nadu & Puducherry

Tomorrow
22/05/2019



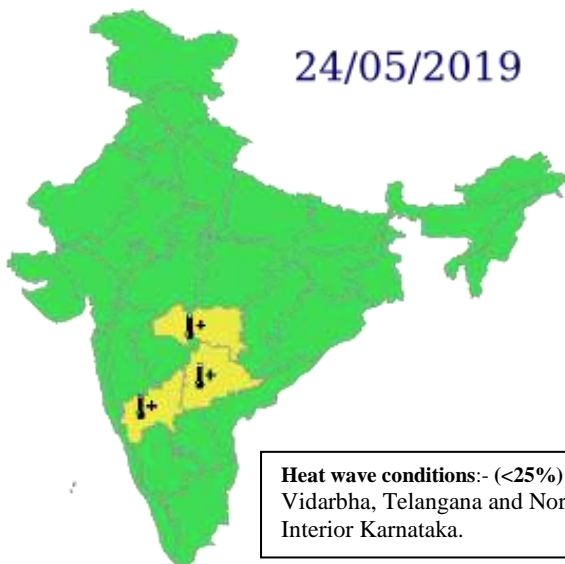
Heat wave conditions:- (<50%) Vidarbha and Madhya Maharashtra (<25%) Chhattisgarh, Odisha, Marathawada, Telangana, Rayalaseema and Tamil Nadu & Puducherry

23/05/2019



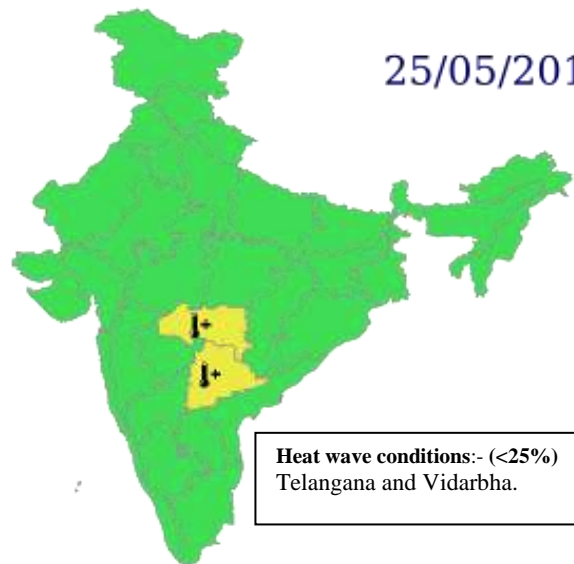
Heat wave conditions:- (<50%) Madhya Maharashtra (<25%) Vidarbha, Marathawada, Telangana, Rayalaseema, North Interior Karnataka and Tamil Nadu & Puducherry

24/05/2019

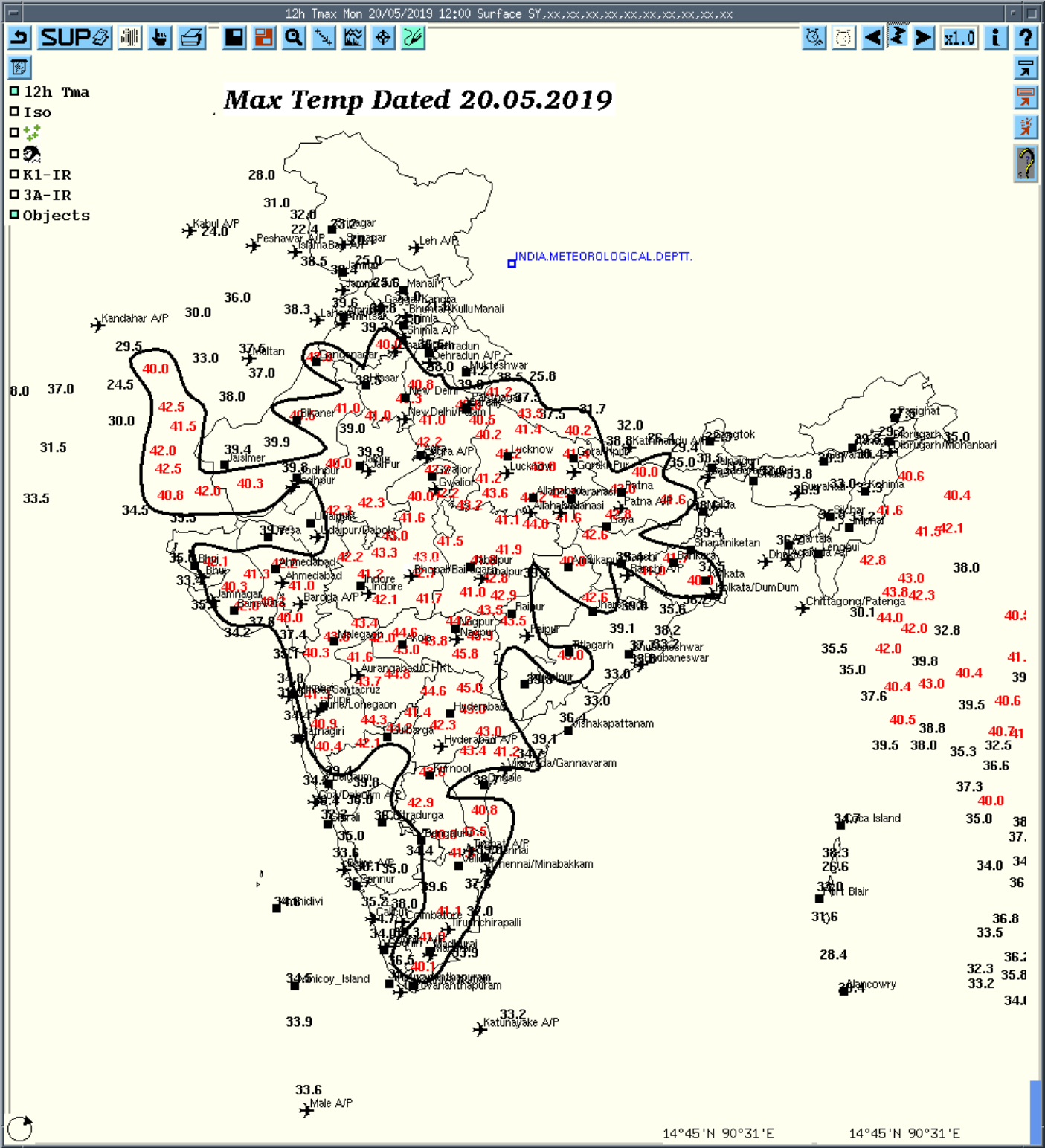


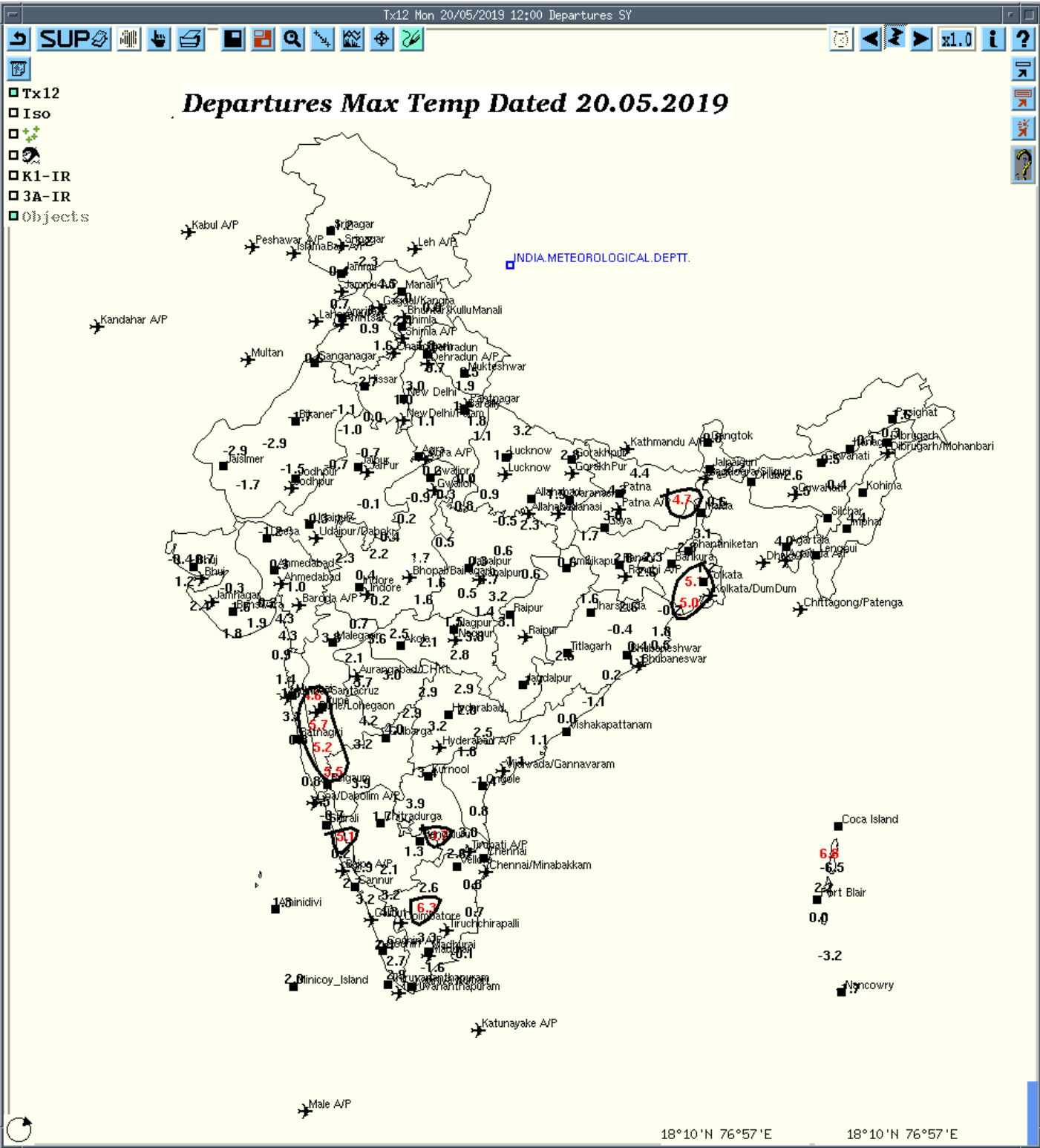
Heat wave conditions:- (<25%) Vidarbha, Telangana and North Interior Karnataka.

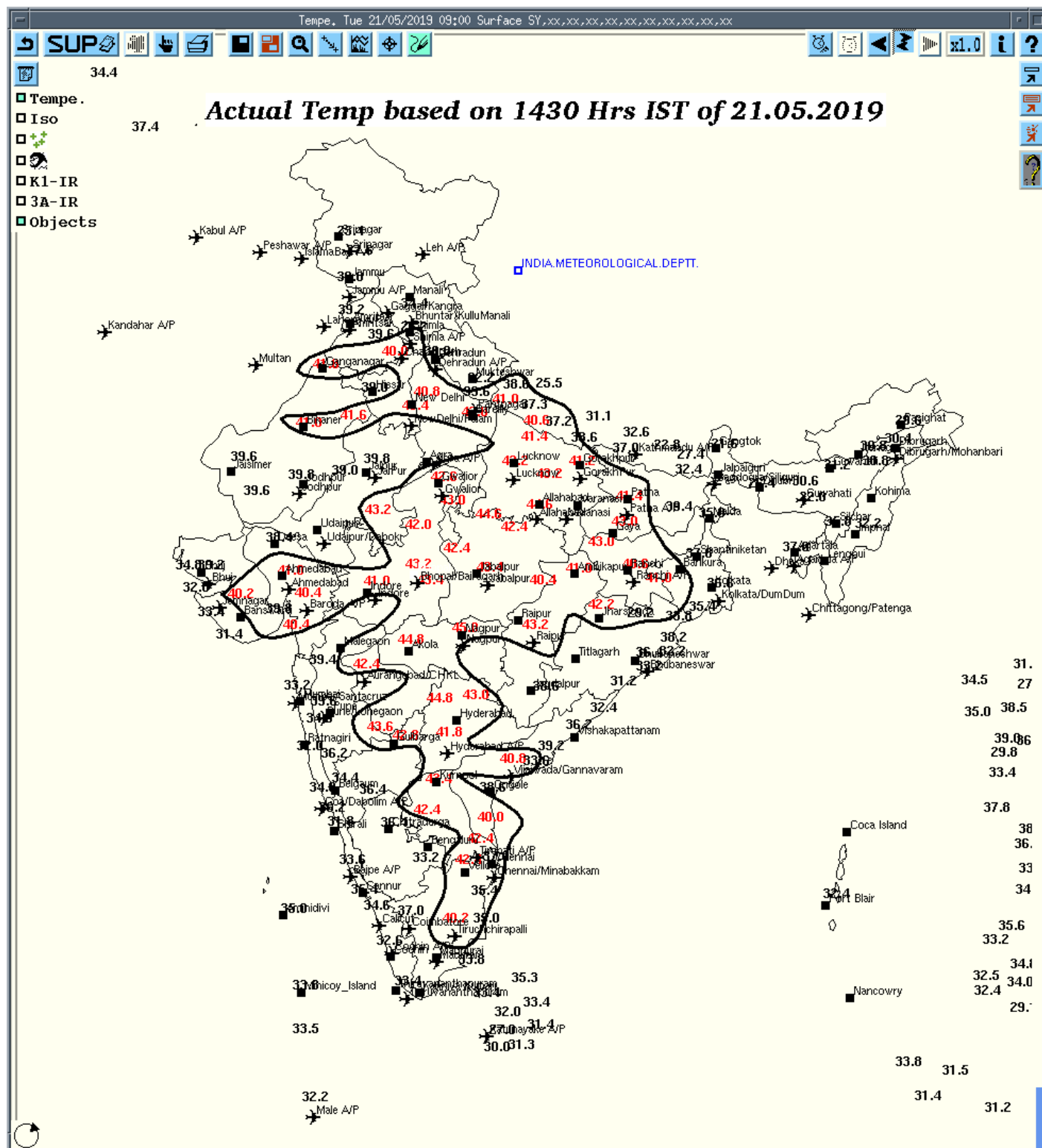
25/05/2019



Heat wave conditions:- (<25%) Telangana and Vidarbha.







Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 22th May, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 21 May to 0830 hrs IST 22 May, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions were observed in some part of Madhya Maharashtra and Vidarbha and in isolated pockets over Bihar, Rayalaseema and Tamilnadu & Puducherry (Annexure 1 & 2).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Madhya Maharashtra, at many places over Marathwada and Rayalaseema; at a few places over Himachal Pradesh, West Madhya Pradesh, Vidarbha, North Interior Karnataka and Kerala and at isolated places over Andaman & Nicobar Islands and Gangetic West Bengal; **above normal (1.6°C to 3.0°C)** at most places over Uttarakhand, Jharkhand, Nagaland, Manipur, Mizoram & Tripura, Interior Karnataka and Lakshadweep; at many places over Haryana, Chandigarh & Delhi, East Uttar Pradesh and Madhya Pradesh; at a few places over Jammu & Kashmir, Bihar, Odisha, Coastal Karnataka, Gujarat state and Tamilnadu & Puducherry and at isolated places over Assam & Meghalaya and Konkan & Goa. Yesterday, the **highest maximum** temperature of **46.6°C** was recorded at **Chandrapur (Vidarbha)**. (Annexure 1 & 2).

Temperatures Recorded at 1430 Hours IST of Today, the 22th May, 2019

- **Bramhapuri and Chandrapur (Vidarbha)** recorded the maximum temperature of **45.6°C** (Annexure 3).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at few places over Punjab, Assam & Meghalaya, Odisha and North Interior Karnataka and at one or two pockets of Jammu & Kashmir, Rajasthan, Madhya Pradesh, Jharkhand, Bihar, Vidarbha, Telangana, South Interior Karnataka and Kerala (Annexure 4).

Heat Wave Warnings for Next 5 Days (on next page)

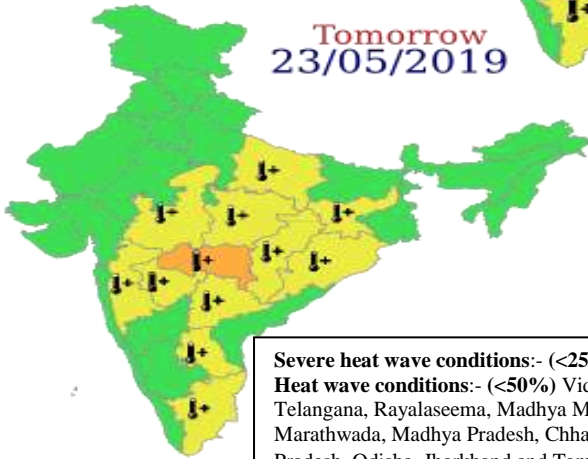
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
22/05/2019



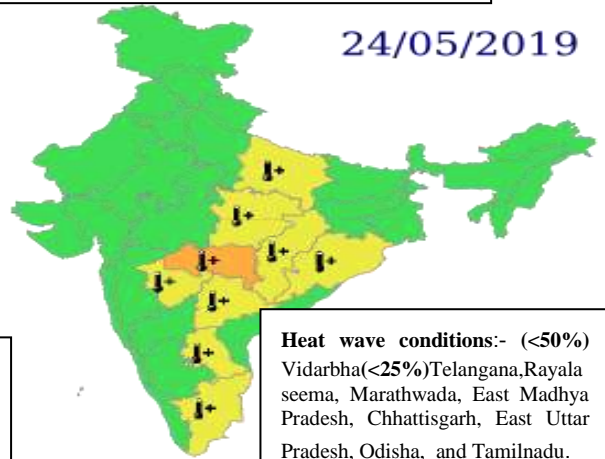
Severe heat wave conditions:- (<25%) Vidarbha
Heat wave conditions:- (<50%) Madhya
Maharashtra and Vidarbha (<25%) Telangana,
Rayalaseema, Marathwada, Madhya Pradesh,
Chhattisgarh, East Uttar Pradesh, Odisha, Bihar,
Jharkhand and Tamilnadu.

Tomorrow
23/05/2019



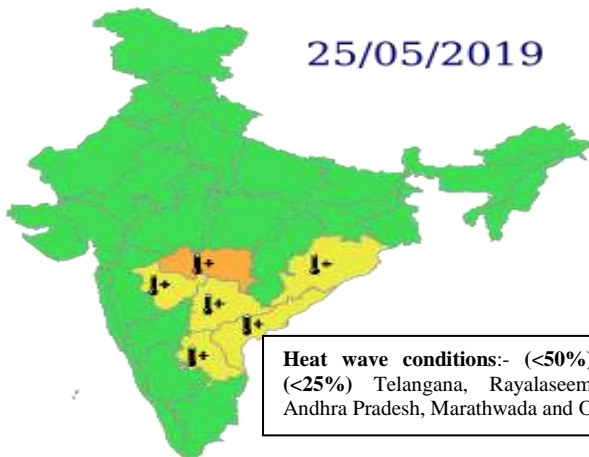
Severe heat wave conditions:- (<25%) Vidarbha
Heat wave conditions:- (<50%) Vidarbha (<25%)
Telangana, Rayalaseema, Madhya Maharashtra,
Marathwada, Madhya Pradesh, Chhattisgarh, East Uttar
Pradesh, Odisha, Jharkhand and Tamilnadu.

24/05/2019



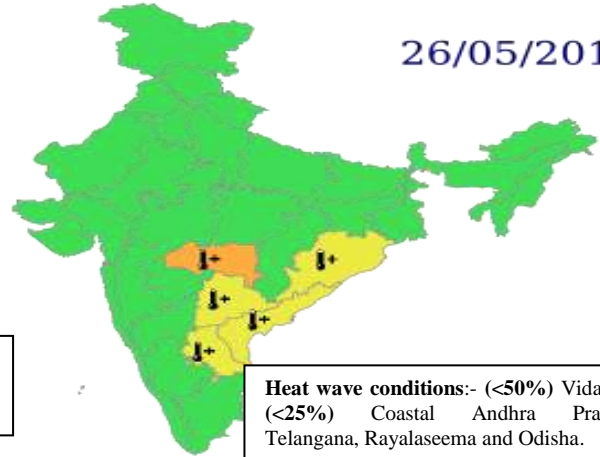
Heat wave conditions:- (<50%)
Vidarbha(<25%)Telangana,Rayala
seema, Marathwada, East Madhya
Pradesh, Chhattisgarh, East Uttar
Pradesh, Odisha. and Tamilnadu.

25/05/2019

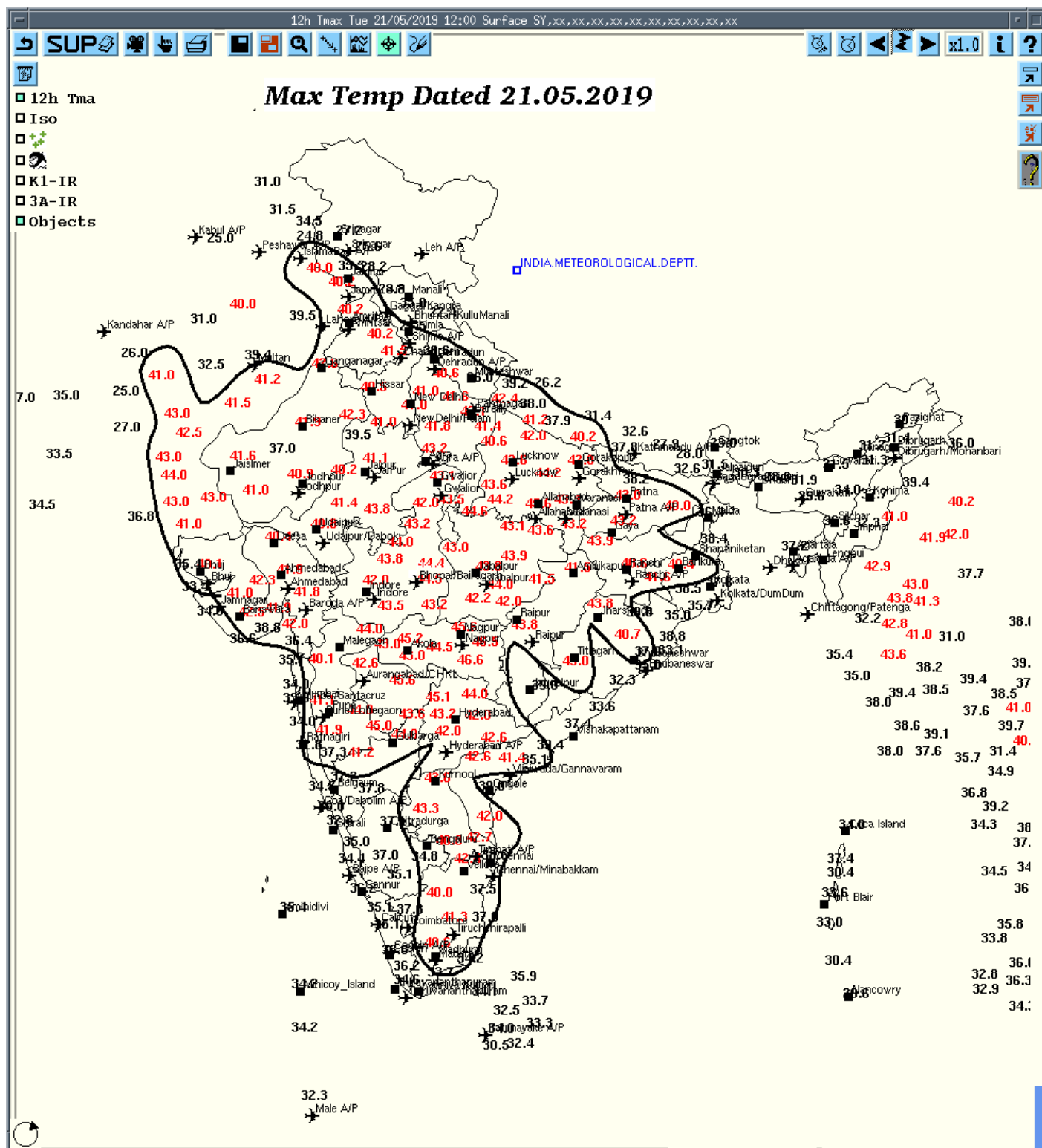


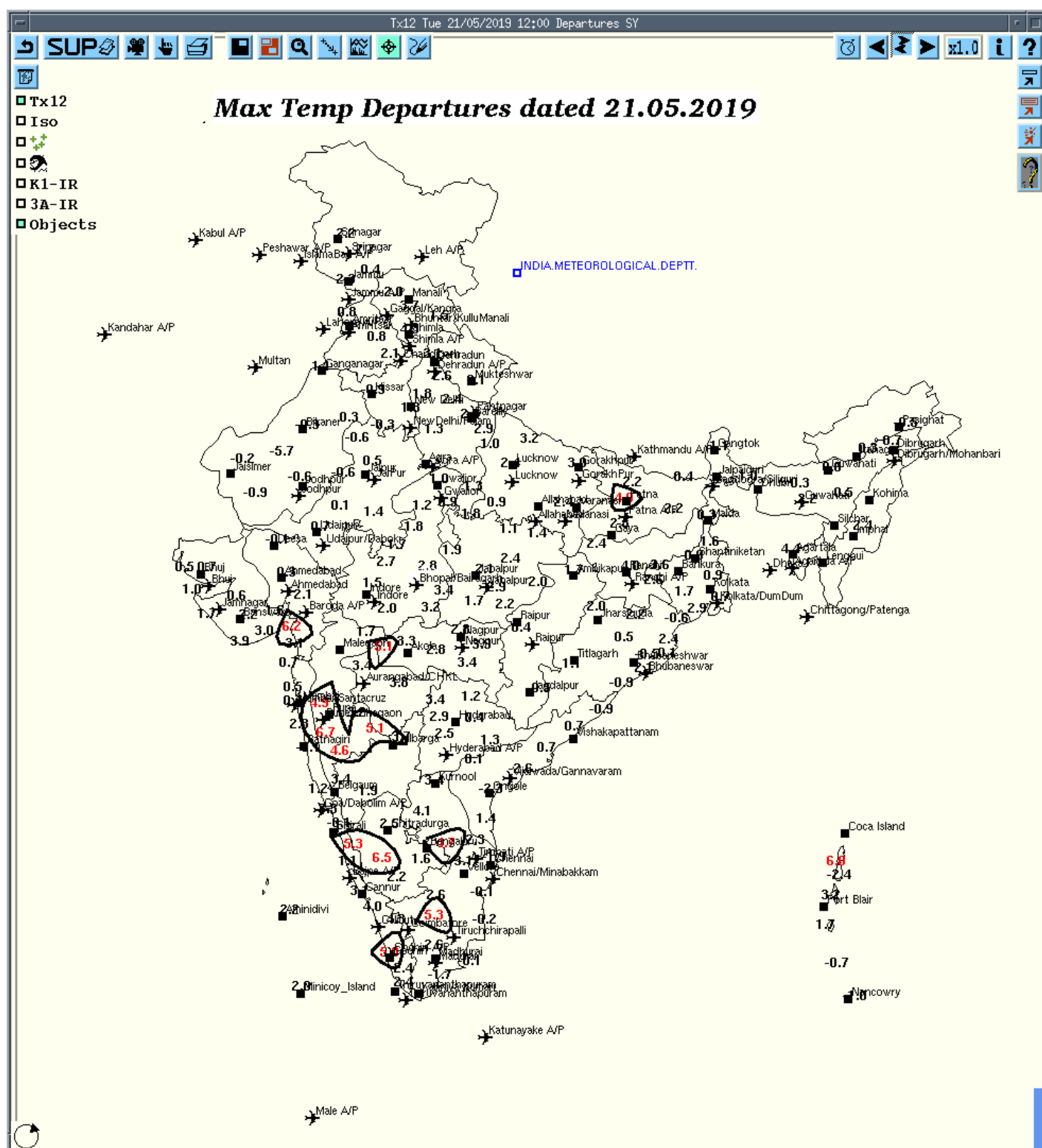
Heat wave conditions:- (<50%) Vidarbha,
(<25%) Telangana, Rayalaseema, Coastal
Andhra Pradesh, Marathwada and Odisha.

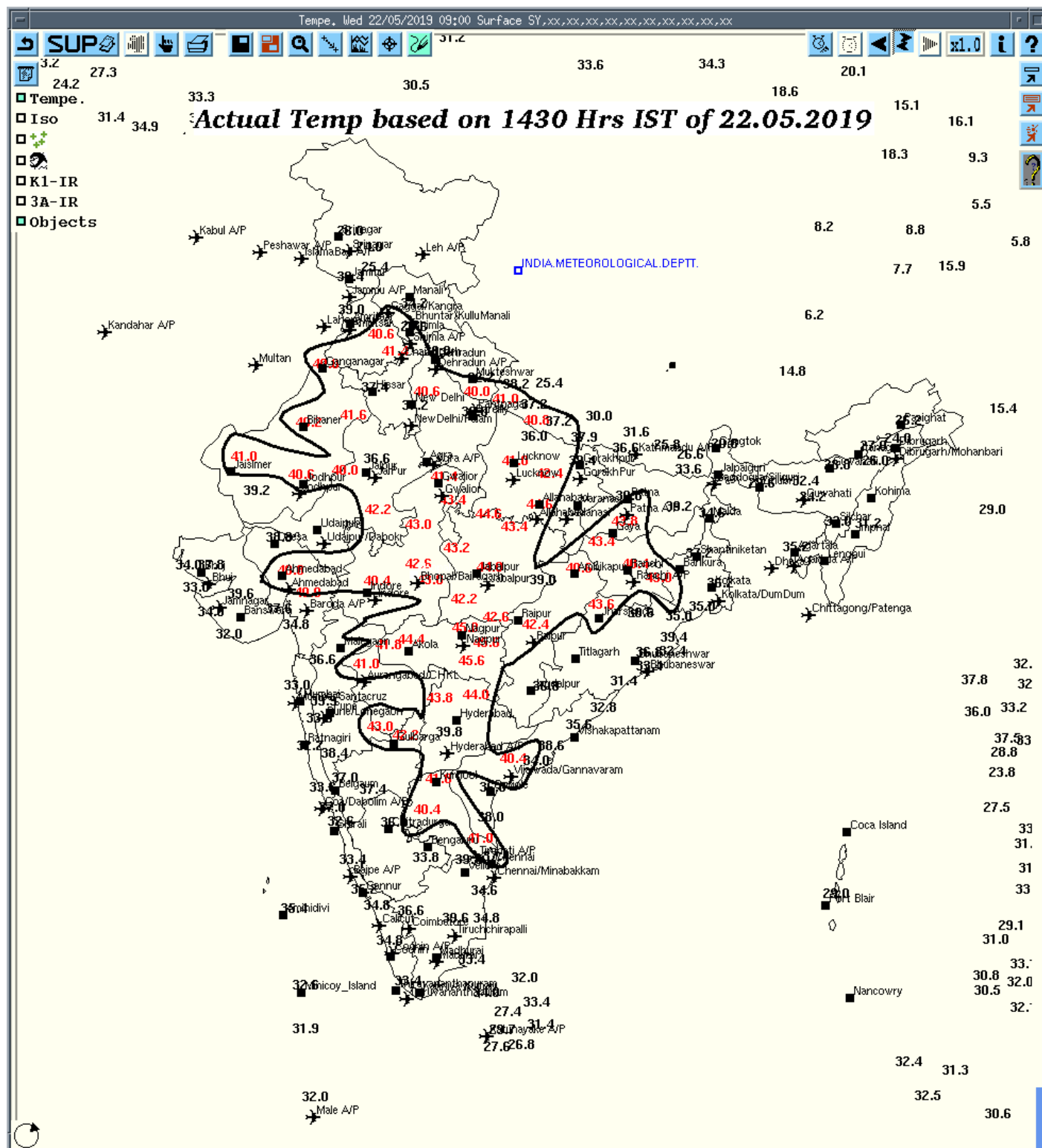
26/05/2019



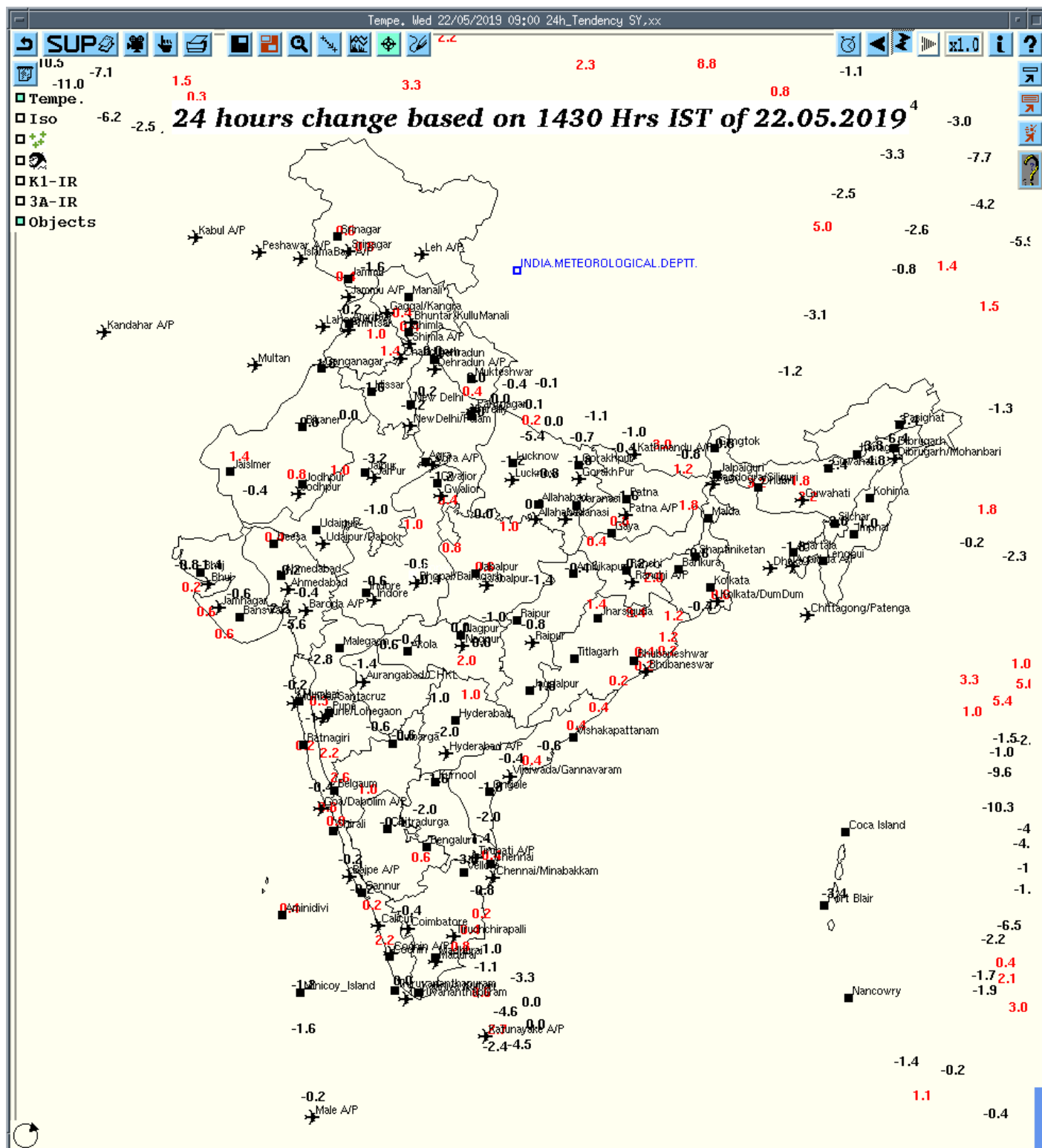
Heat wave conditions:- (<50%) Vidarbha,
(<25%) Coastal Andhra Pradesh,
Telangana, Rayalaseema and Odisha.







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 23th May, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 22 May to 0830 hrs IST 23 May, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions were observed in some part of Vidarbha and in isolated pockets over East Uttar Pradesh, East Madhya Pradesh, Marathwada and Madhya Maharashtra (Annexure 1 & 2).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Madhya Maharashtra, Vidarbha, Kerala and Jharkhand; at a few places over Himachal Pradesh and Uttarakhand; **above normal (1.6°C to 3.0°C)** at most places over Madhya Pradesh, Marathwada and Rayalaseema; at many places over Punjab, Tamilnadu & Puducherry, Coastal & Interior Karnataka, Telangana, Chhattisgarh, Bihar and Nagaland, Manipur, Mizoram & Tripura; at a few places over East Uttar Pradesh, Lakshadweep, Gangetic West Bengal and Odisha and at isolated places over Andaman & Nicobar Islands, Gujarat, Sub- Himalayan west Bengal & Sikkim and West Uttar Pradesh. Yesterday, the **highest maximum temperature** of **46.5°C** was recorded at **Bramhapuri (Vidarbha) (Annexure 1 & 2).**

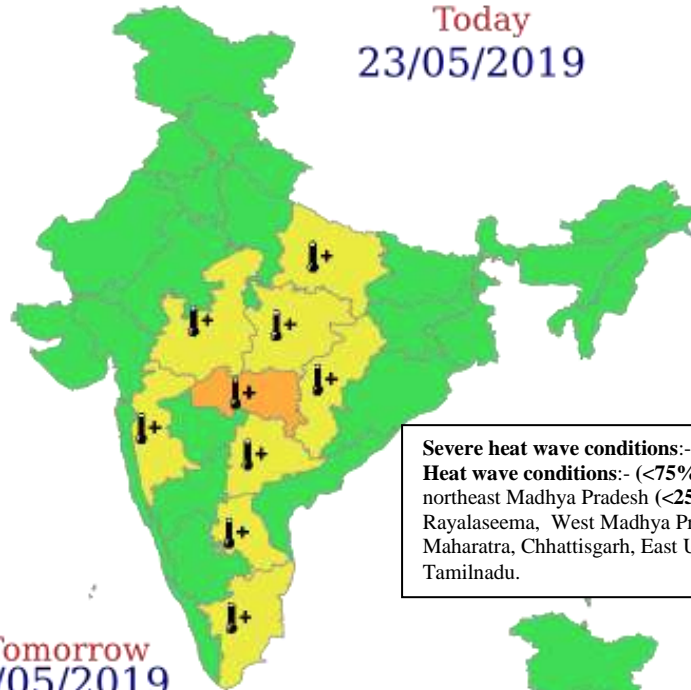
Temperatures Recorded at 1430 Hours IST of Today, the 23rd May, 2019

- **Chandrapur (Vidarbha)** recorded the maximum temperature of **45.8°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by by 1-3°C** at one or two pockets of Haryana, Delhi, Uttar Pradesh, Gujarat, Coastal Andhara Pradesh, Chhattisgarh, East Madhya Pradesh and Kerala (Annexure 4).

Heat Wave Warnings for Next 5 Days (on next page)

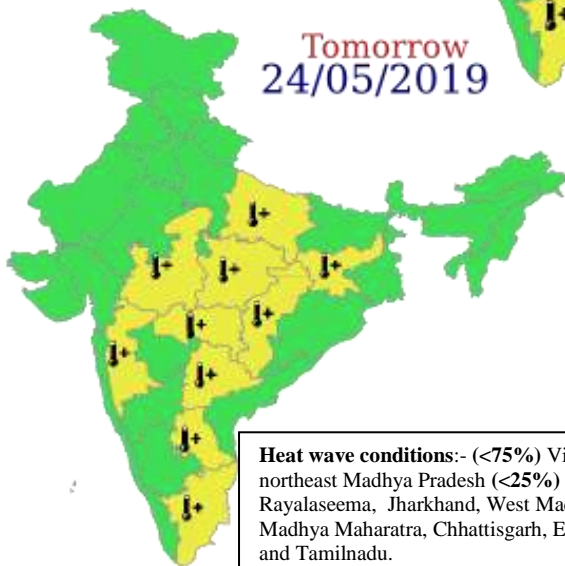
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
23/05/2019



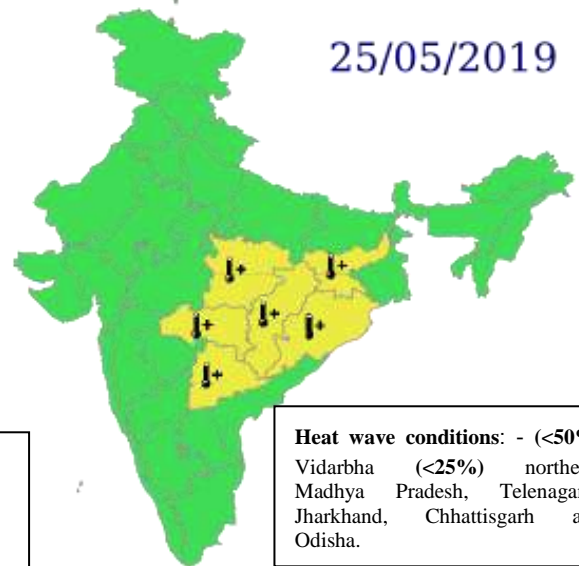
Severe heat wave conditions:- (<25%) Vidarbha
Heat wave conditions:- (<75%) Vidarbha (<50%)
northeast Madhya Pradesh (<25%) Telangana,
Rayalaseema, West Madhya Pradesh, Madhya
Maharashtra, Chhattisgarh, East Uttar Pradesh and
Tamilnadu.

Tomorrow
24/05/2019



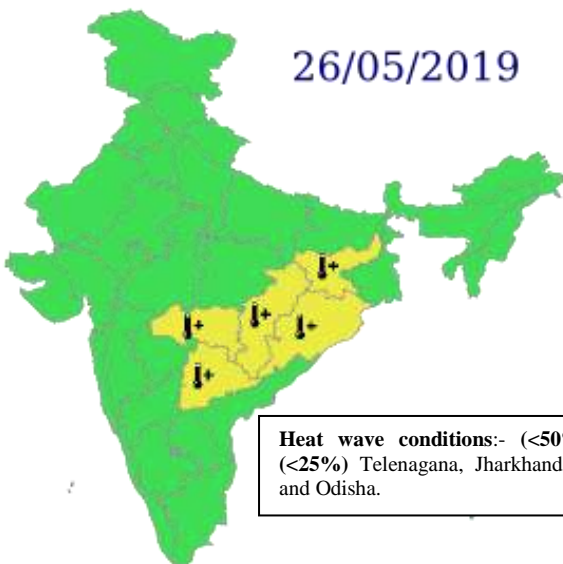
Heat wave conditions:- (<75%) Vidarbha (<50%)
northeast Madhya Pradesh (<25%) Telangana,
Rayalaseema, Jharkhand, West Madhya Pradesh,
Madhya Maharashtra, Chhattisgarh, East Uttar Pradesh
and Tamilnadu.

25/05/2019



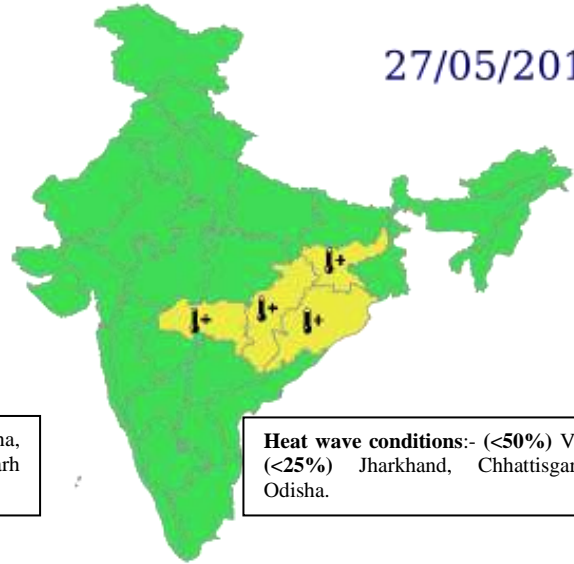
Heat wave conditions:- (<50%)
Vidarbha (<25%) northeast
Madhya Pradesh, Telangana,
Jharkhand, Chhattisgarh and
Odisha.

26/05/2019

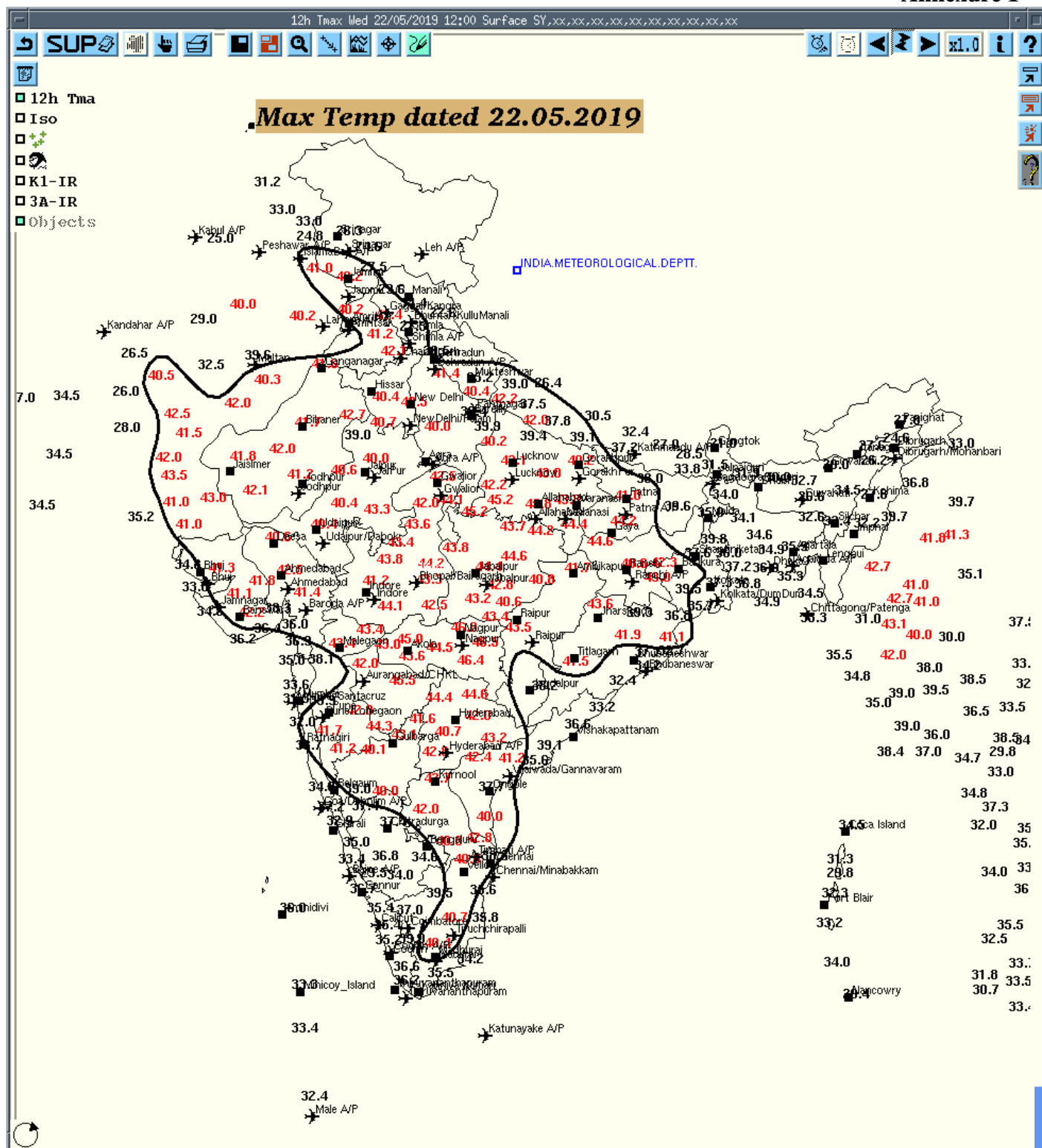


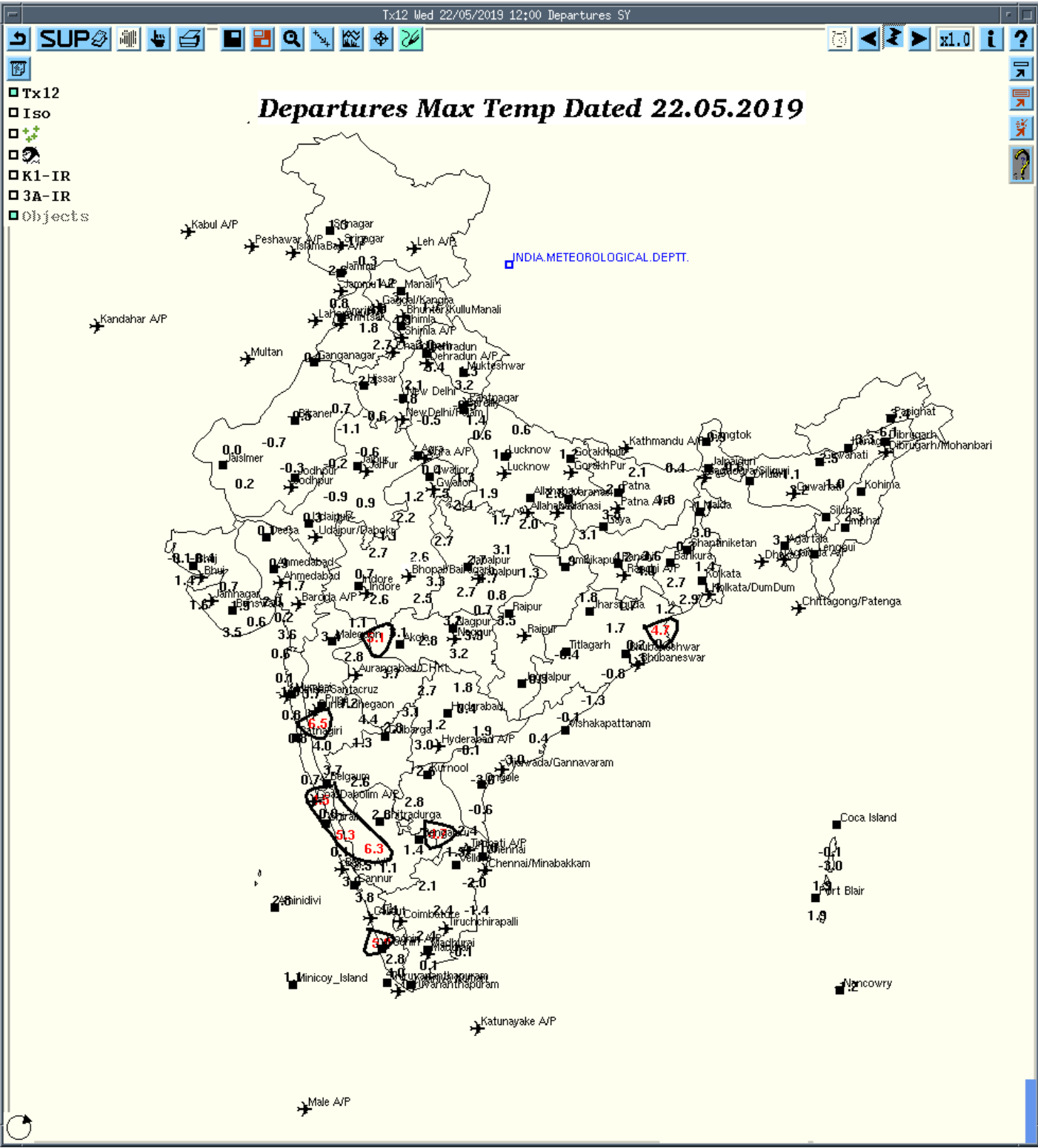
Heat wave conditions:- (<50%) Vidarbha,
(<25%) Telangana, Jharkhand, Chhattisgarh
and Odisha.

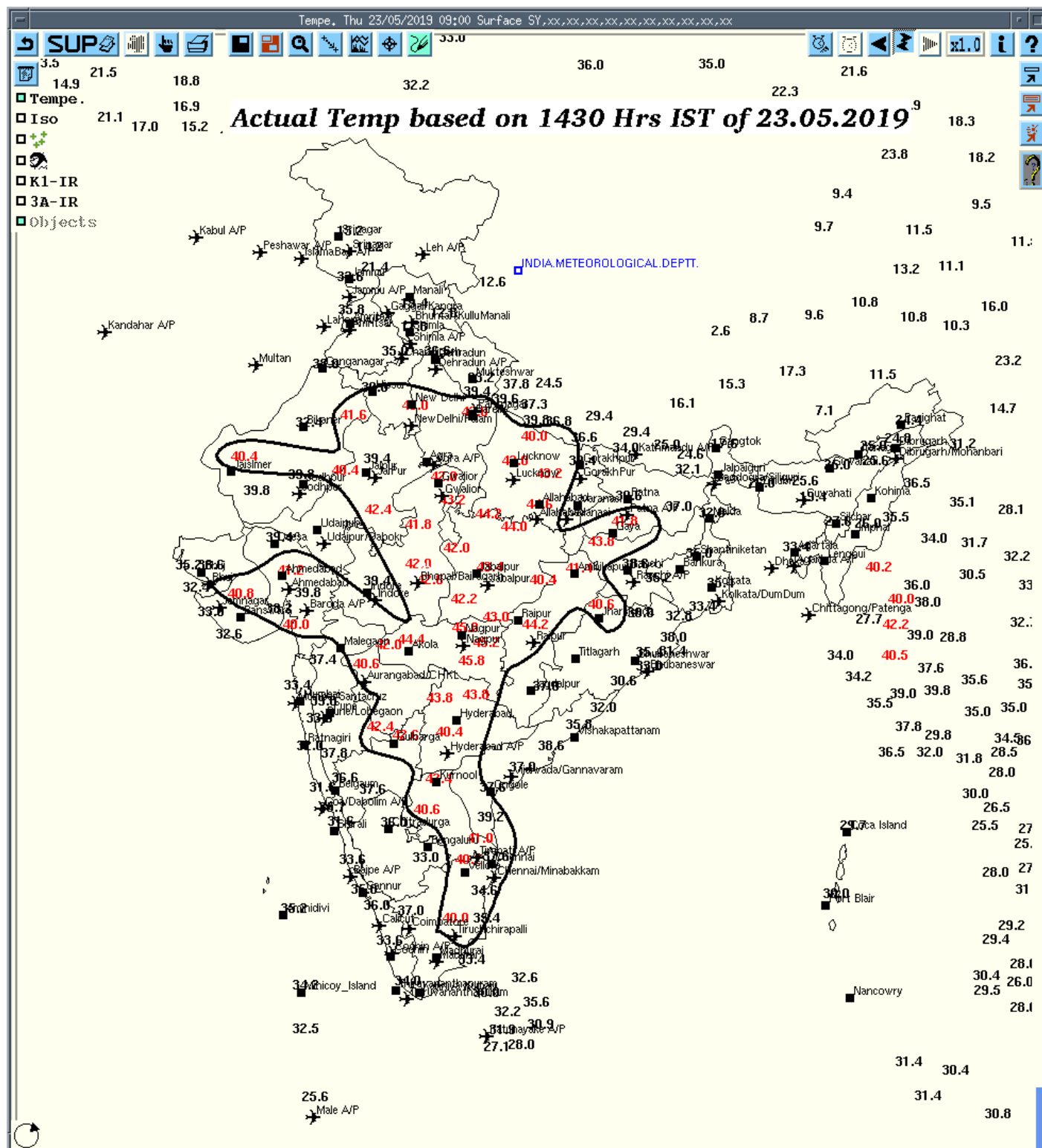
27/05/2019

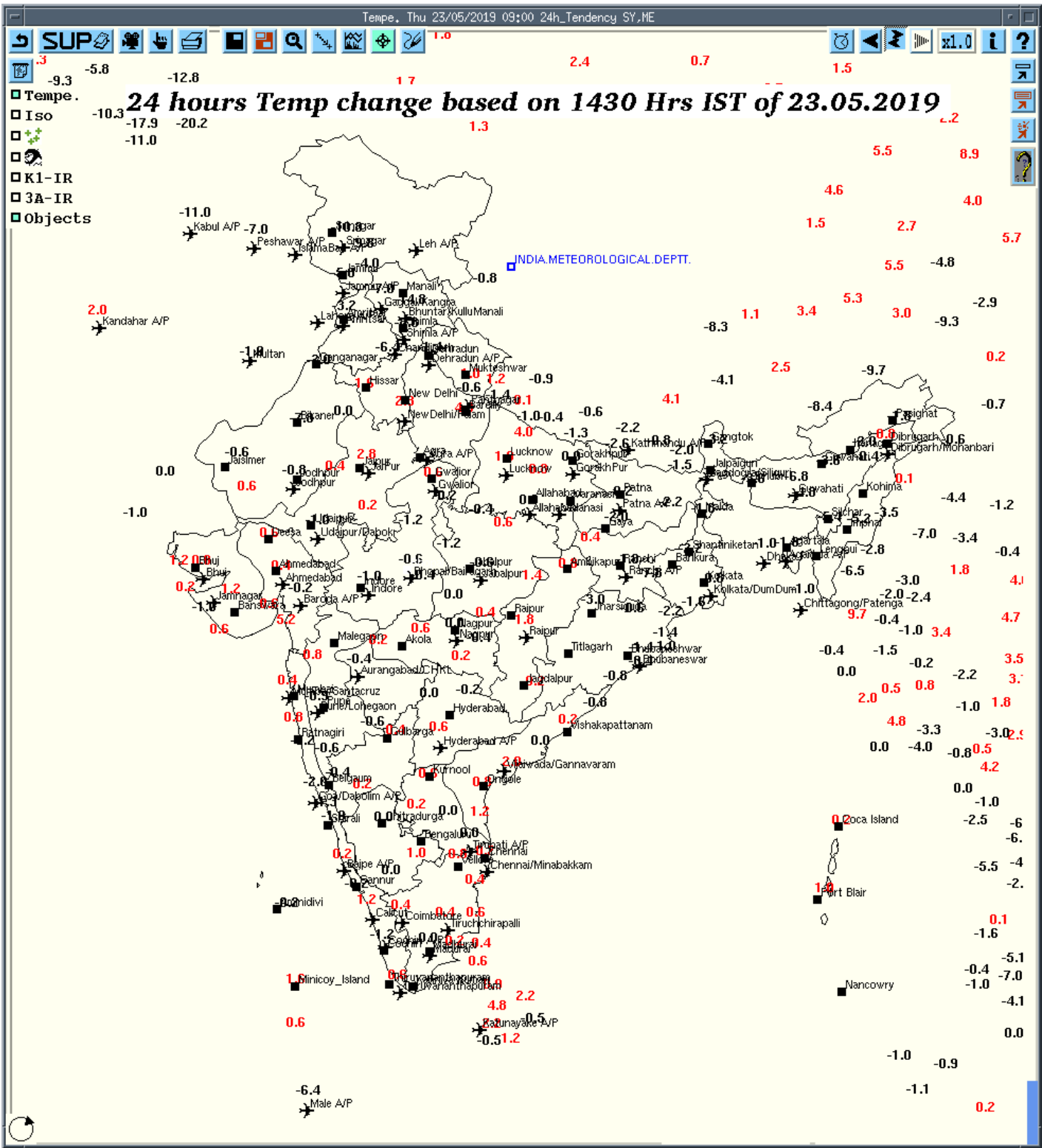


Heat wave conditions:- (<50%) Vidarbha,
(<25%) Jharkhand, Chhattisgarh and
Odisha.









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 24th May, 2019
Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 23 May to 0830 hrs IST 24 May, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions were observed in some part of Vidarbha and at one or two pockets over East Uttar Pradesh, East Madhya Pradesh, Marathwada and Madhya Maharashtra (Annexure 1 & 2).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at many places over Vidarbha, Madhya Maharashtra and Kerala; at isolated places over East Madhya Pradesh and North Interior Karnataka; **above normal (1.6°C to 3.0°C)** at most places over East Uttar Pradesh, Marathawada and Lakshadweep; at many places over West Uttar Pradesh, Rayalaseema and Telangana; at a few places over West Madhya Pradesh, Gujarat region and Coastal Karnataka and at isolated places over Saurashtra & Kutch, Tamilnadu & Puducherry and Andaman & Nicobar Islands. Yesterday, the **highest maximum temperature of 46.3°C** was recorded at **Bramhapuri (Vidarbha)** and **Adilabad (Telangana)** (Annexure 1 & 2).

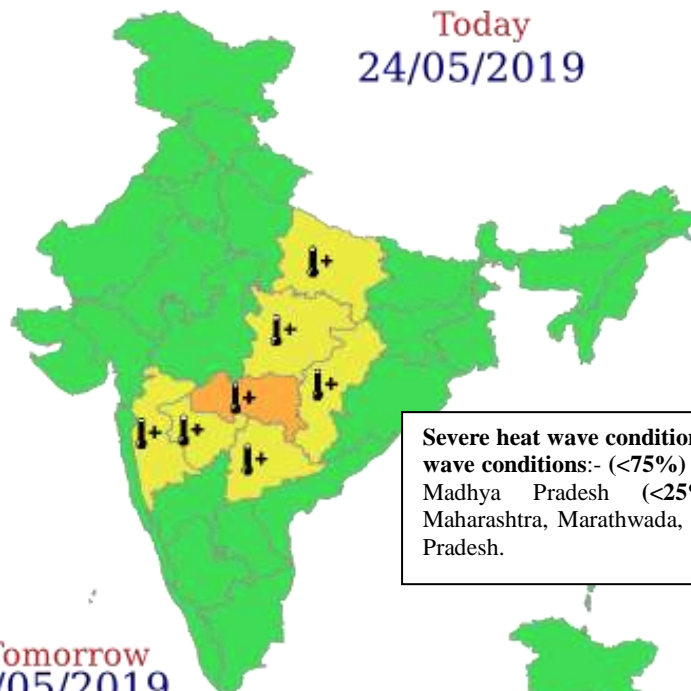
Temperatures Recorded at 1430 Hours IST of Today, the 24th May, 2019

- **Nagpur Sonegaon (Vidarbha)** recorded the maximum temperature of 45.4°C (Annexure 3).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at most places over Gangetic West Bengal; at many places over Jharkhand and Arunachal Pradesh and at one or two pockets of Haryana, Chandigarh & Delhi, West Rajasthan, Saurashtra & Kutch, Odisha, Chhattisgarh, West Madhya Pradesh, Sub-Himalayan West Bengal, Assam & Meghalaya, Coastal Andhara Pradesh, Konkan & Goa, Madhya Maharashtra, Rayalaseema, South Interior Karnataka, Tamilnadu and Kerala (Annexure 4).

Heat Wave Warnings for Next 5 Days (on next page)

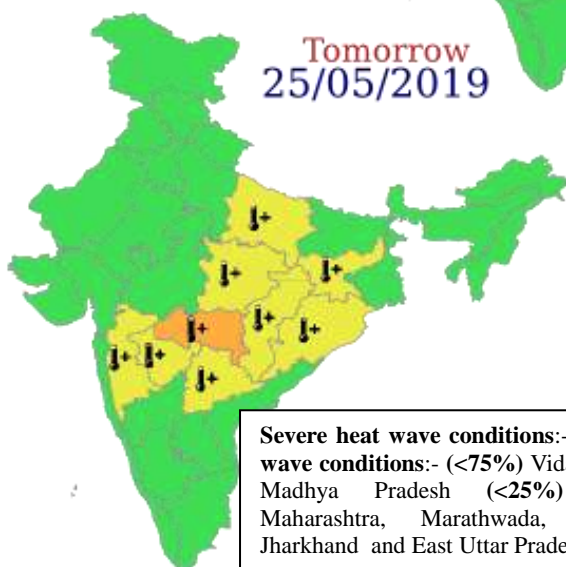
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
24/05/2019



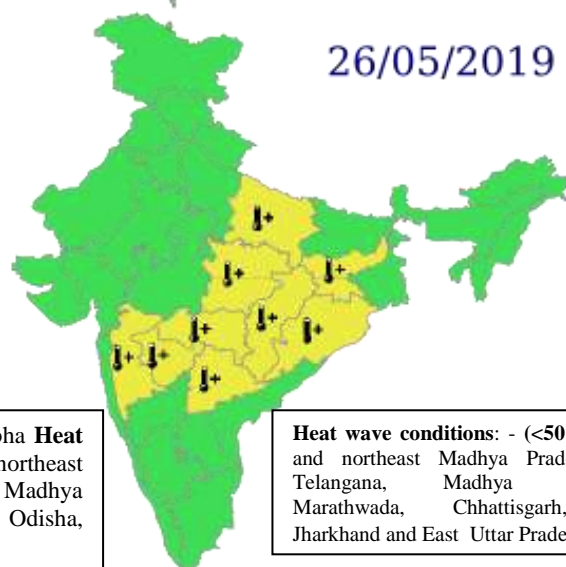
Severe heat wave conditions:- (<25%) Vidarbha **Heat wave conditions:-** (<75%) Vidarbha, (<50%) northeast Madhya Pradesh (<25%) Telangana, Madhya Maharashtra, Marathwada, Chhattisgarh and East Uttar Pradesh.

Tomorrow
25/05/2019



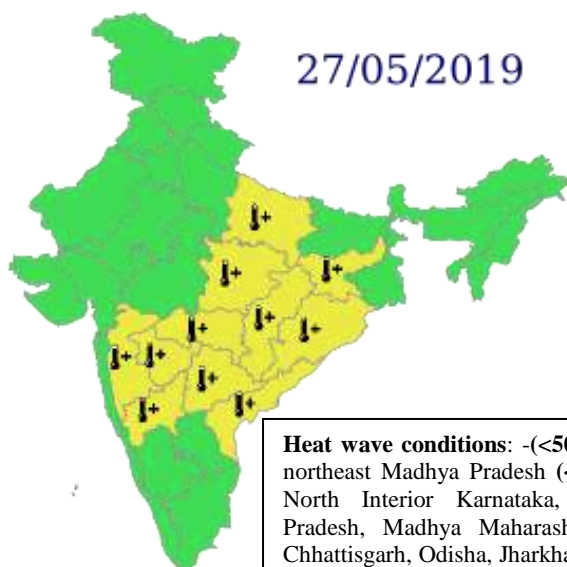
Severe heat wave conditions:- (<25%) Vidarbha **Heat wave conditions:-** (<75%) Vidarbha, (<50%) northeast Madhya Pradesh (<25%) Telangana, Madhya Maharashtra, Marathwada, Chhattisgarh, Odisha, Jharkhand and East Uttar Pradesh.

26/05/2019



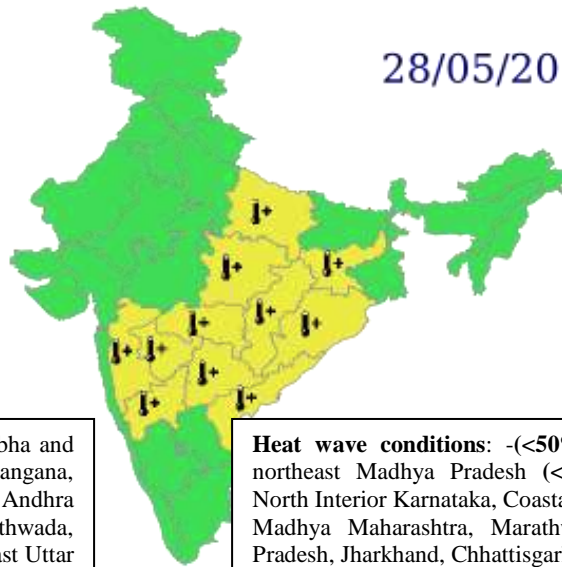
Heat wave conditions:- (<50%) Vidarbha and northeast Madhya Pradesh (<25%) Telangana, Madhya Maharashtra, Marathwada, Chhattisgarh, Odisha, Jharkhand and East Uttar Pradesh.

27/05/2019

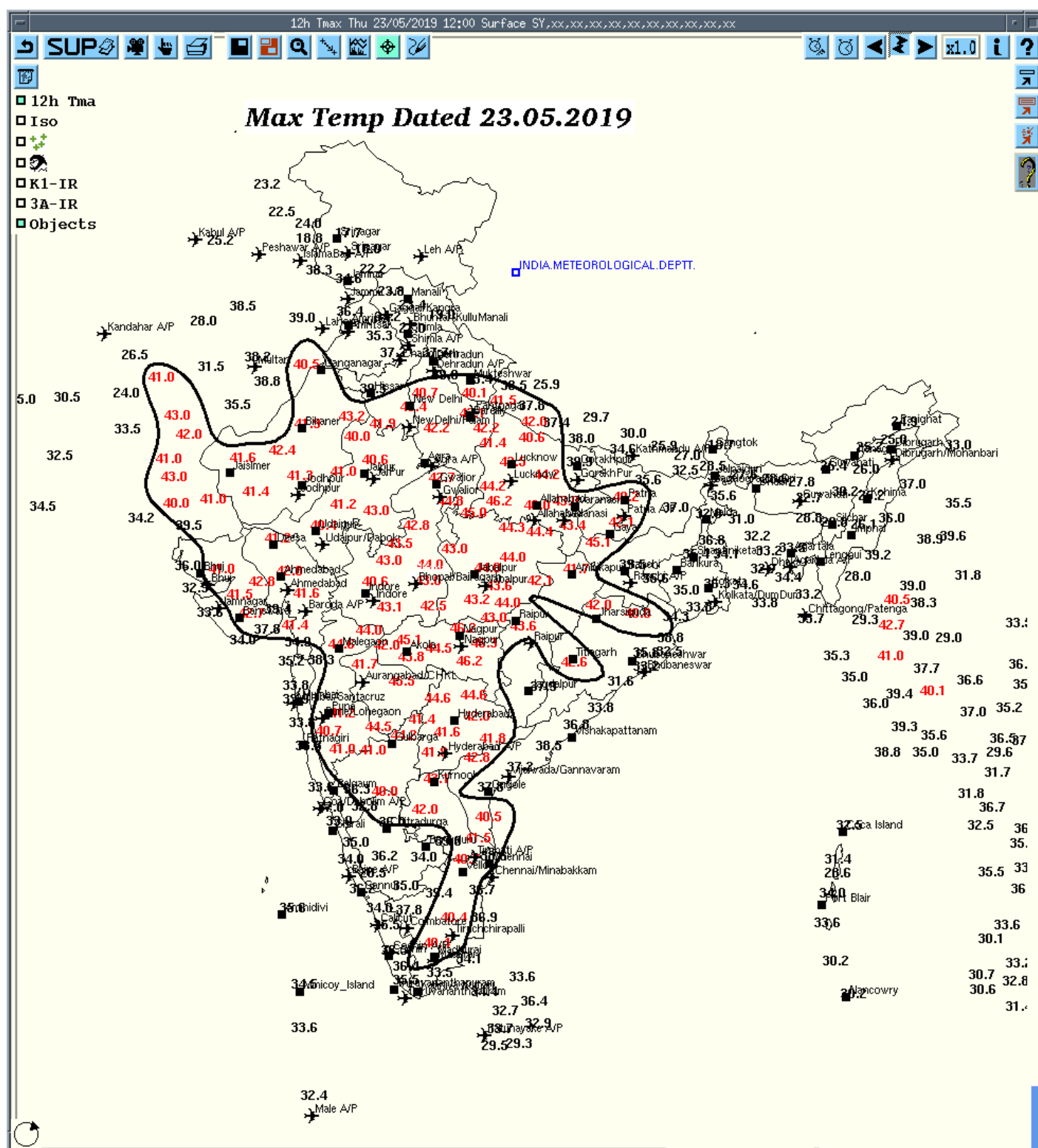


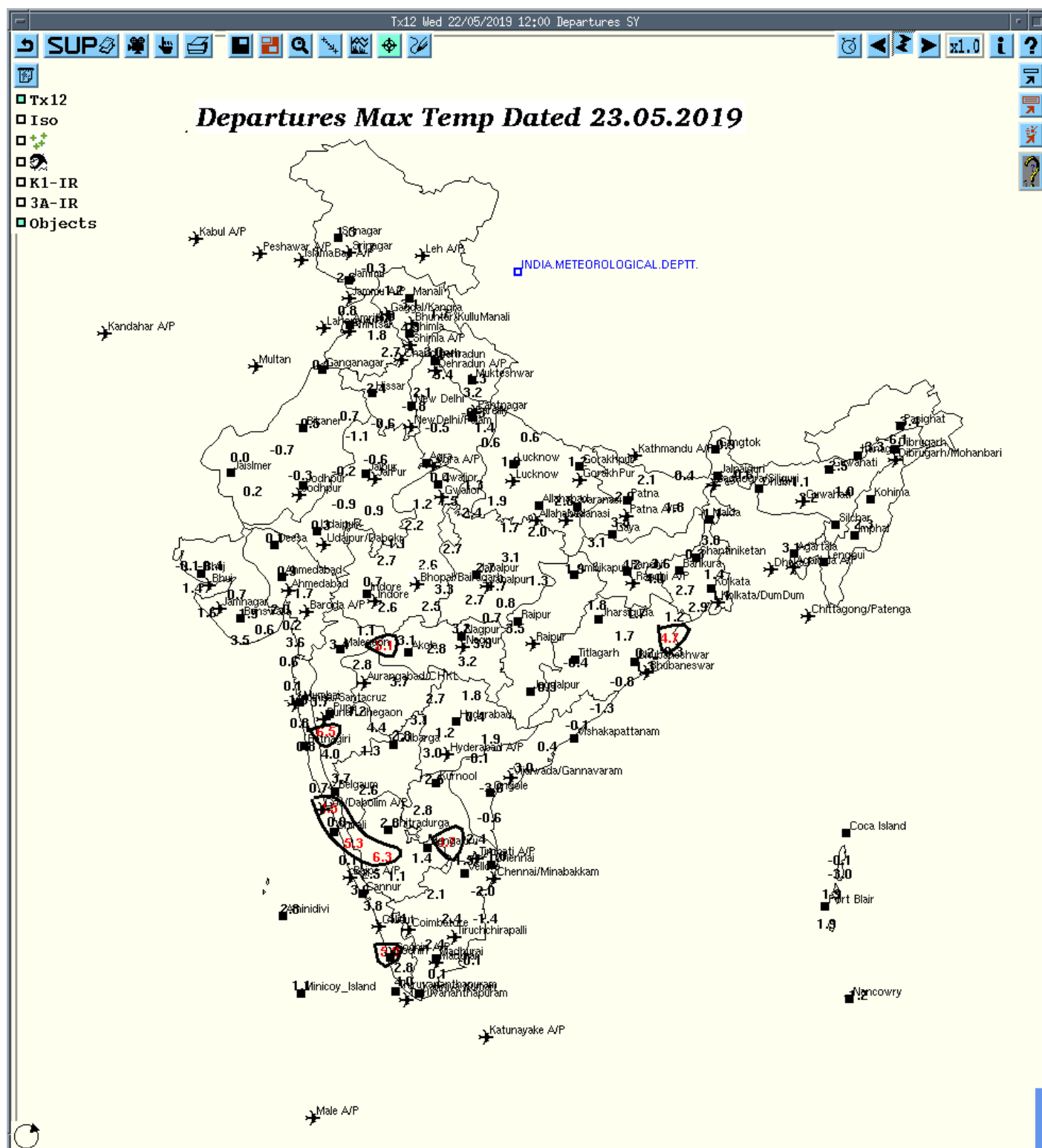
Heat wave conditions:- (<50%) Vidarbha and northeast Madhya Pradesh (<25%) Telangana, North Interior Karnataka, Coastal Andhra Pradesh, Madhya Maharashtra, Marathwada, Chhattisgarh, Odisha, Jharkhand and East Uttar Pradesh

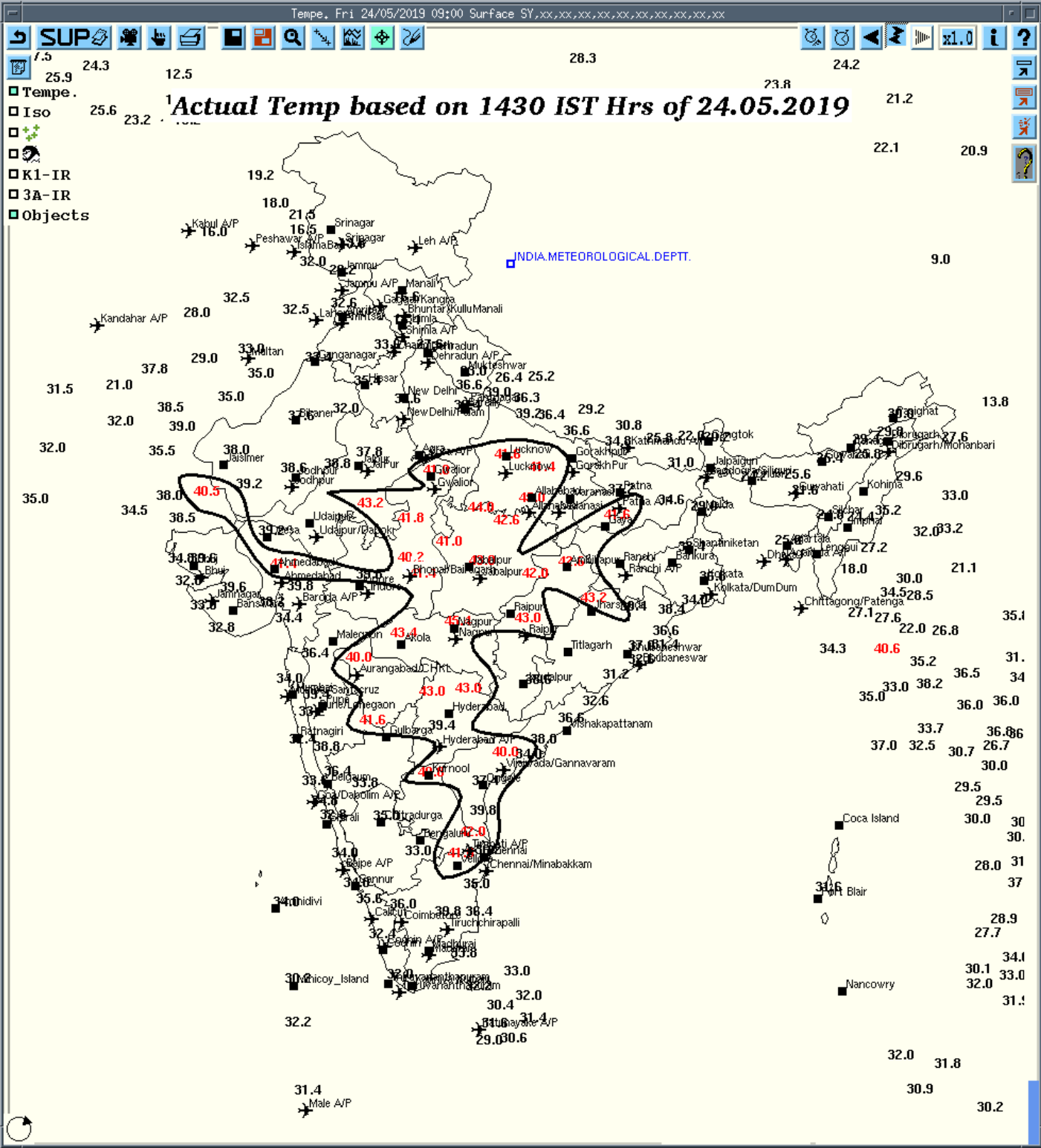
28/05/2019



Heat wave conditions:- (<50%) Vidarbha and northeast Madhya Pradesh (<25%) Telangana, North Interior Karnataka, Coastal Andhra Pradesh, Madhya Maharashtra, Marathwada, East Uttar Pradesh, Jharkhand, Chhattisgarh and Odisha.







Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 25th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 24 May to 0830 hrs IST 25 May, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions were observed in some parts of Vidarbha and in isolated pockets over south Madhya Maharashtra (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at many places over Jharkhand and Madhya Maharashtra; at a few places over Vidarbha, Chhattisgarh and Marathwada; at isolated places over Gangetic West Bengal; **above normal (1.6°C to 3.0°C)** at most places over Rayalaseema; at many places over East Madhya Pradesh, Konkan & Goa and Kerala; at a few places over Odisha, Telangana, Coastal Karnataka and Tamilnadu & Puducherry and at isolated places over West Madhya Pradesh. Yesterday, the **highest maximum temperature of 46.6°C** recorded at **Chandrapur (Vidarbha)** (**Annexure 1 & 2**).

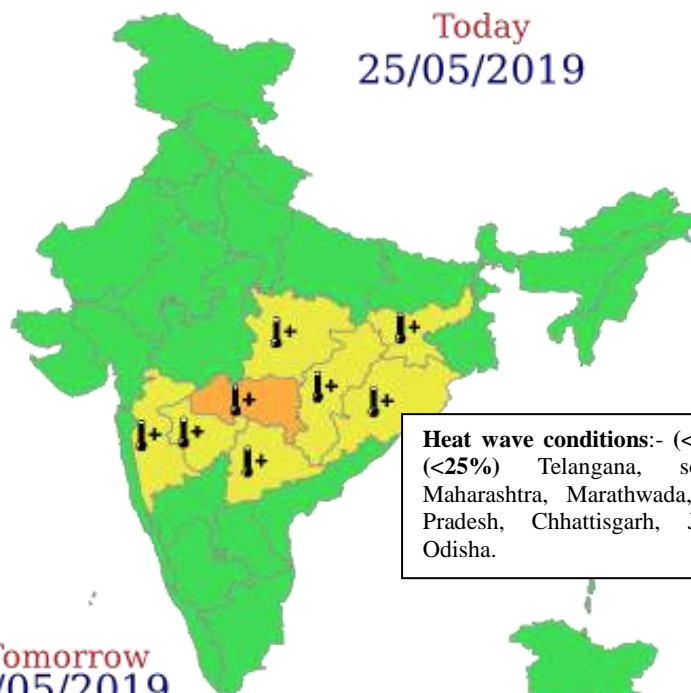
Temperatures Recorded at 1430 Hours IST of Today, the 25th May, 2019

- **Nagpur Sonegaon (Vidarbha)** recorded the maximum temperature of **45.8°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 3-6°C** at most places over Jammu & Kashmir and Himachal Pradesh; at few places over Assam & Meghalaya and West Rajasthan and at one or two pockets of Punjab, Delhi and Coastal Andhra Pradesh; **risen by 1-3°C** at most places over rest Punjab, rest Assam & Meghalaya, rest West Rajasthan and Konkan & Goa; at few places over Telangana and Chhattisgarh and at one or two pockets of East Rajasthan, Uttar Pradesh, Gujarat region, Vidarbha, Karnataka, Kerala, Rayalaseema, Tamilnadu & Puducherry and northeastern states (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

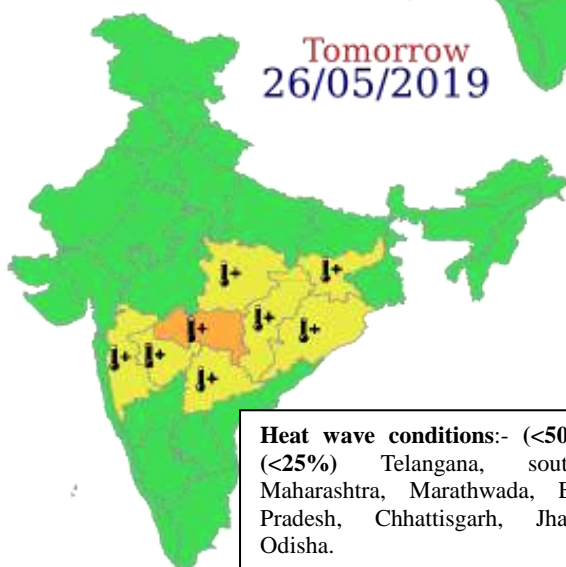
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
25/05/2019



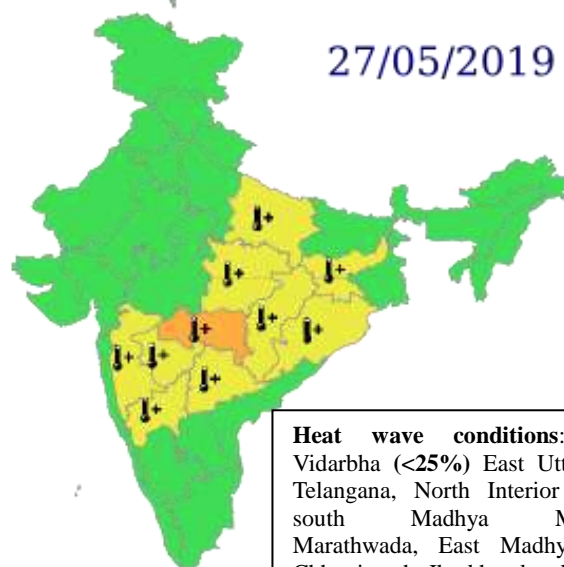
Heat wave conditions:- (<50%) Vidarbha (<25%) Telangana, south Madhya Pradesh, Maharashtra, Marathwada, East Madhya Pradesh, Chhattisgarh, Jharkhand and Odisha.

Tomorrow
26/05/2019



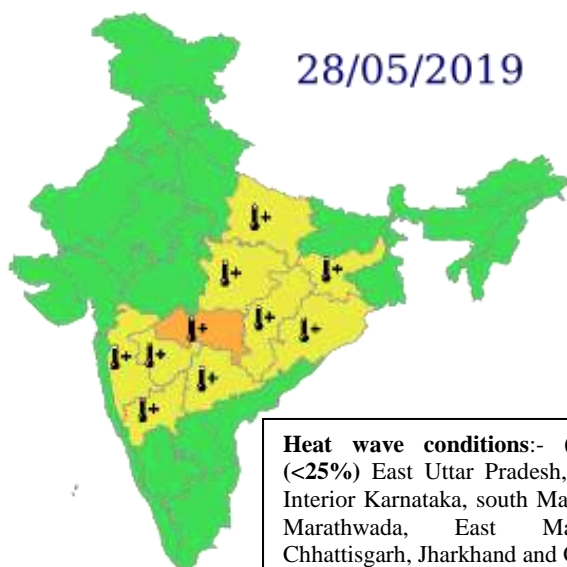
Heat wave conditions:- (<50%) Vidarbha (<25%) Telangana, south Madhya Pradesh, Maharashtra, Marathwada, East Madhya Pradesh, Chhattisgarh, Jharkhand and Odisha.

27/05/2019



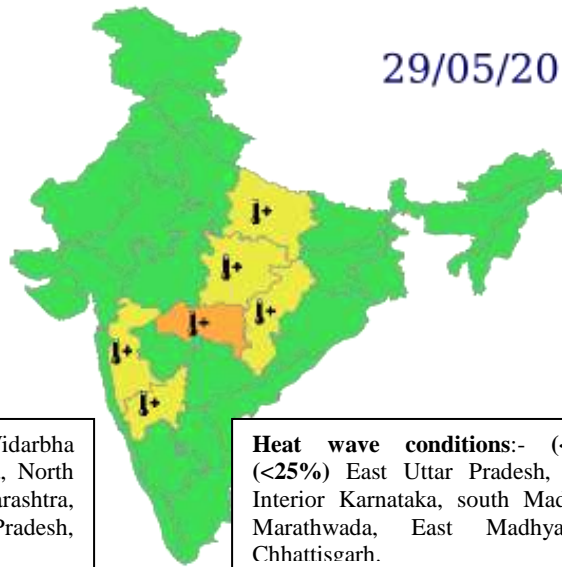
Heat wave conditions:- (<50%) Vidarbha (<25%) East Uttar Pradesh, Telangana, North Interior Karnataka, south Madhya Pradesh, Maharashtra, Marathwada, East Madhya Pradesh, Chhattisgarh, Jharkhand and Odisha

28/05/2019

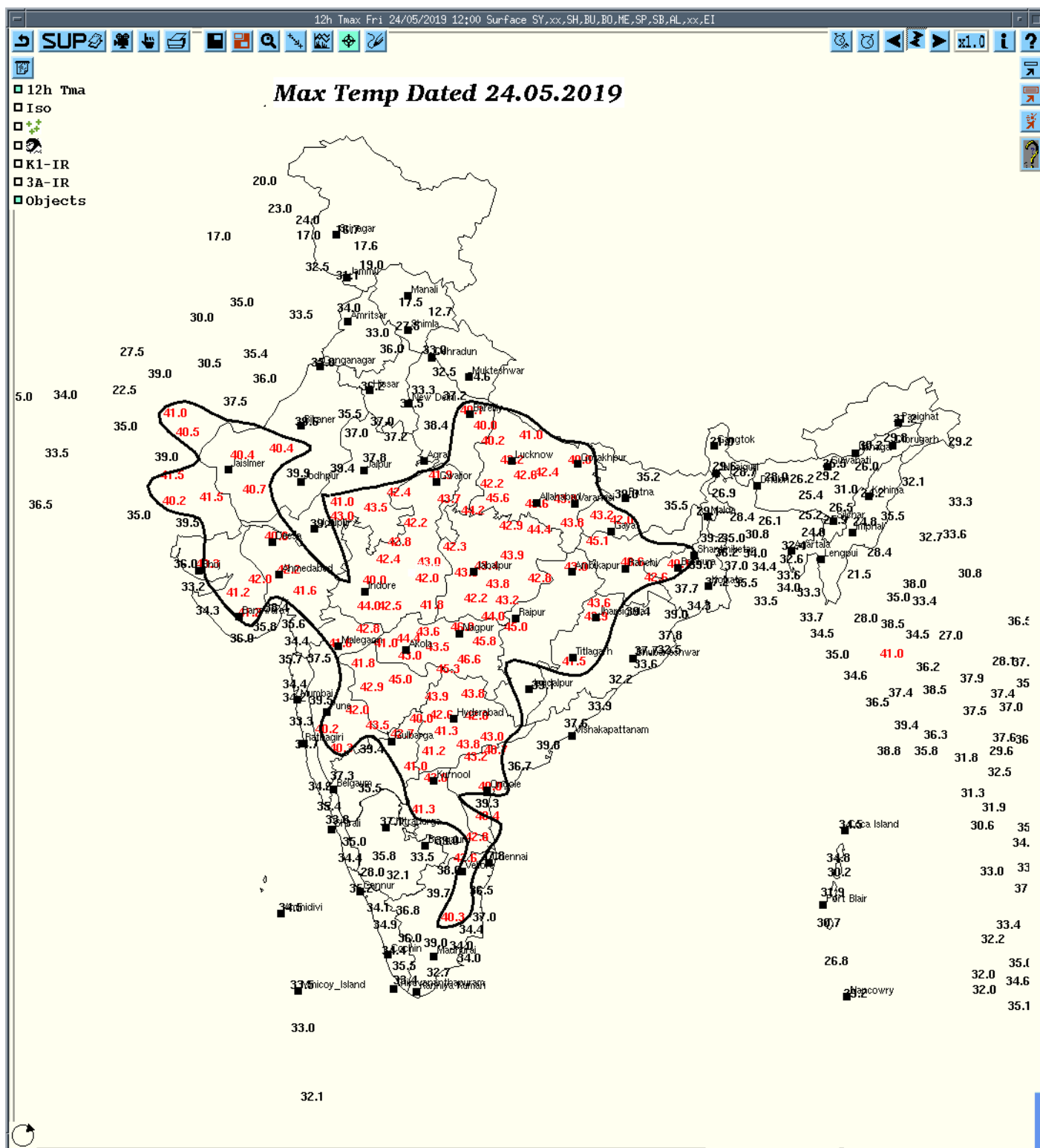


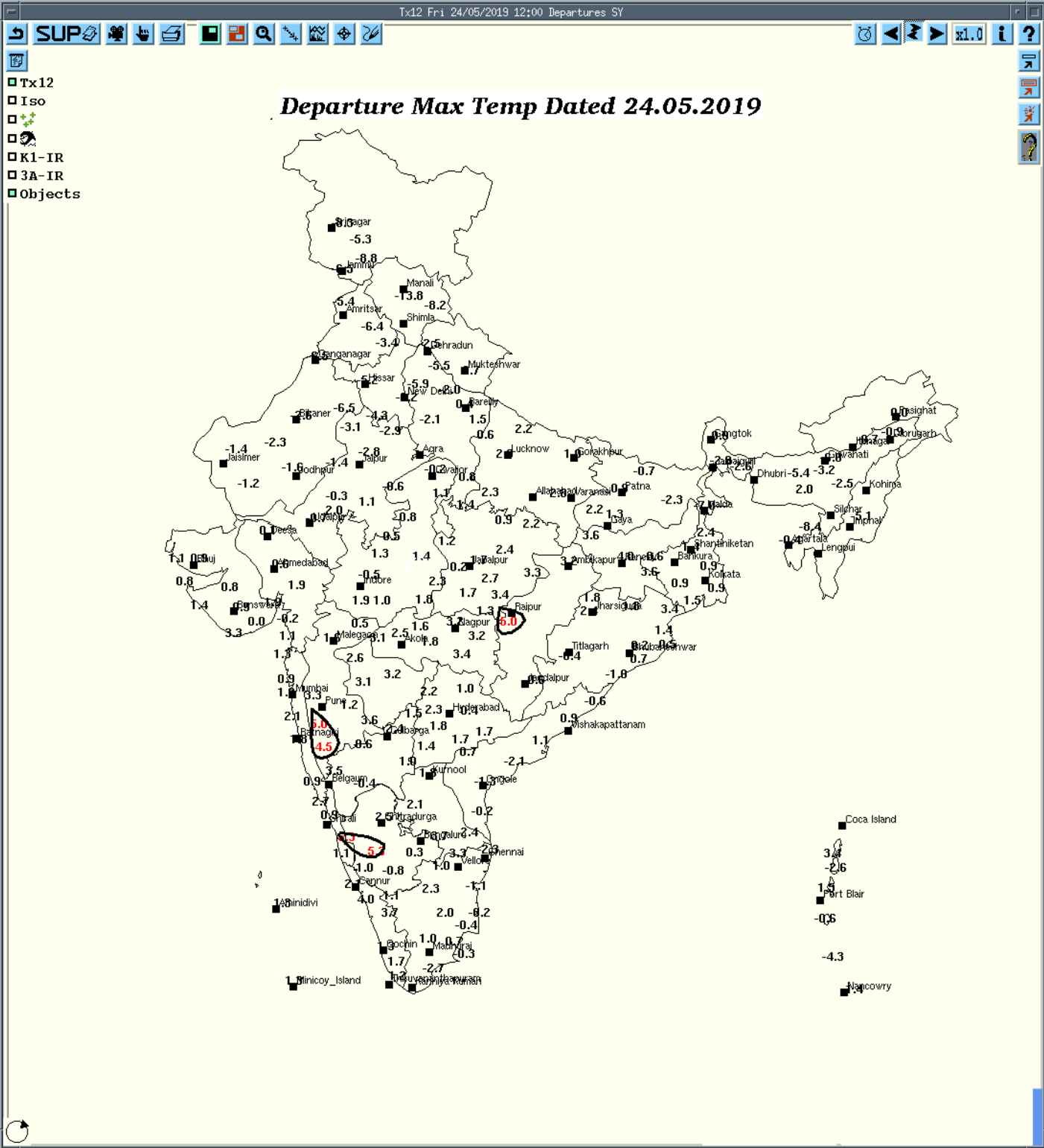
Heat wave conditions:- (<50%) Vidarbha (<25%) East Uttar Pradesh, Telangana, North Interior Karnataka, south Madhya Pradesh, Maharashtra, Marathwada, East Madhya Pradesh, Chhattisgarh, Jharkhand and Odisha

29/05/2019

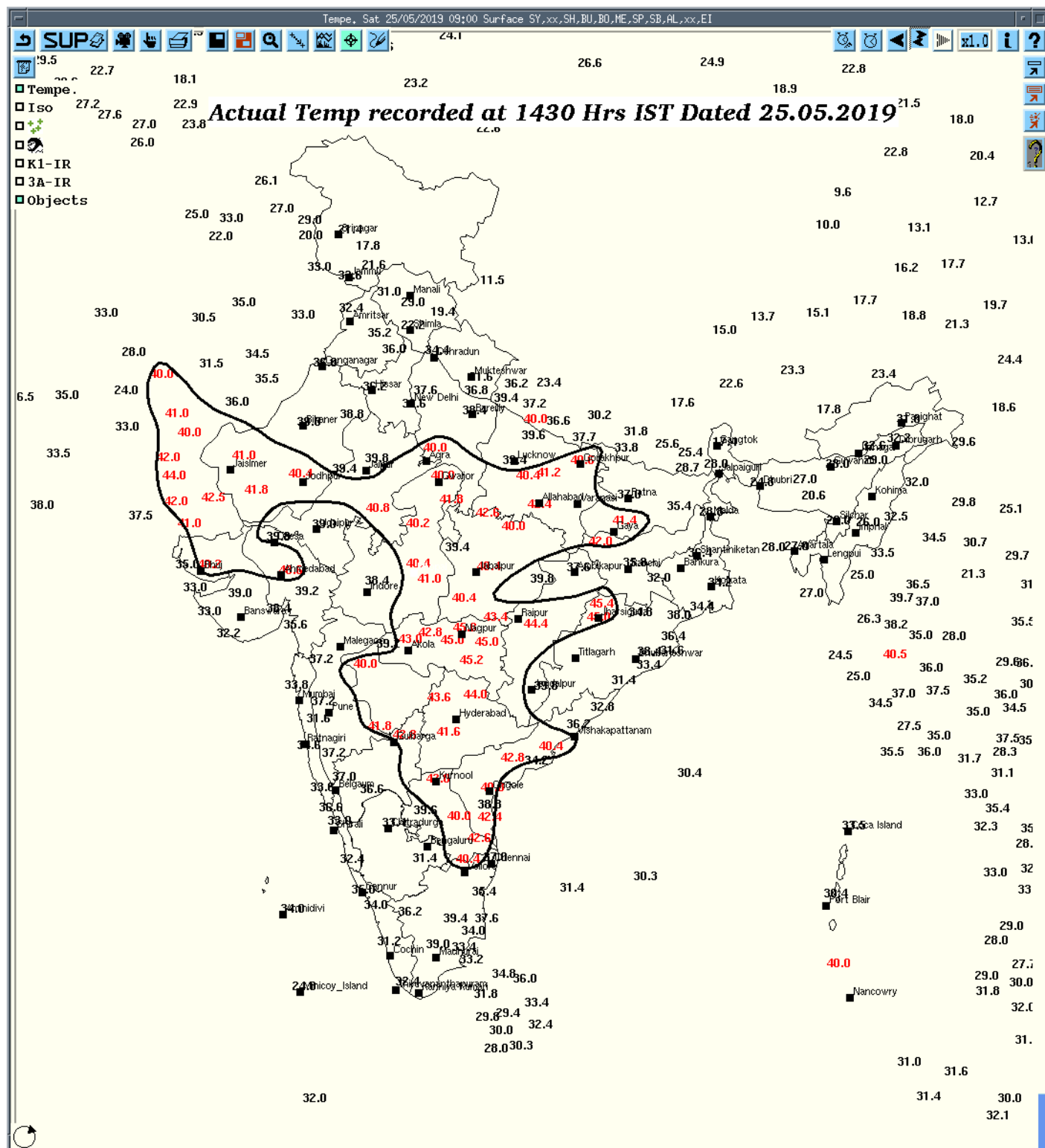


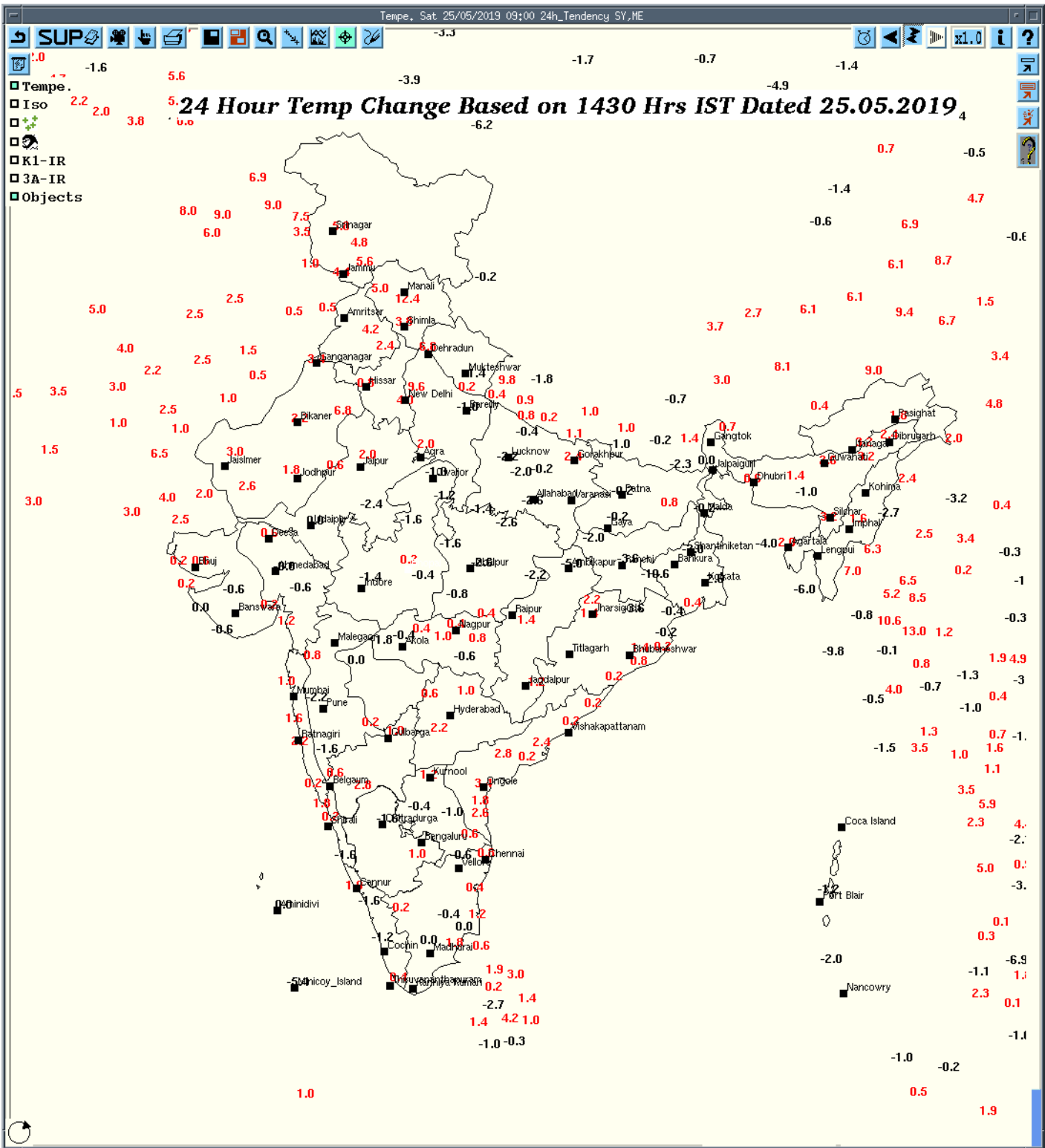
Heat wave conditions:- (<50%) Vidarbha (<25%) East Uttar Pradesh, Telangana, North Interior Karnataka, south Madhya Pradesh, Maharashtra, Marathwada, East Madhya Pradesh and Chhattisgarh.





Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 26th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 25 May to 0830 hrs IST 26 May, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions were observed in some parts of Vidarbha and in isolated pockets over Telangana, Marathwada, Odisha and Madhya Maharashtra. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at a few places over Vidarbha, Madhya Maharashtra and Odisha; at isolated places over Marathwada, Coastal Karnataka, Rayalseema and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over North Interior Karnataka; at many places over East Madhya Pradesh, Konkan & Goa and Kerala; at a few places over Saurashtra & Kutch, Coastal Andhra Pradesh, Lakshadweep, Kerala, South Interior Karnataka and Telangana and at isolated places over Andaman & Nicobar Islands, Jharkhand, Konkan & Goa. Yesterday, the **highest maximum** temperature of **46.8°C** was recorded at **Chandrapur (Vidarbha)** **(Annexure 1 & 2).**

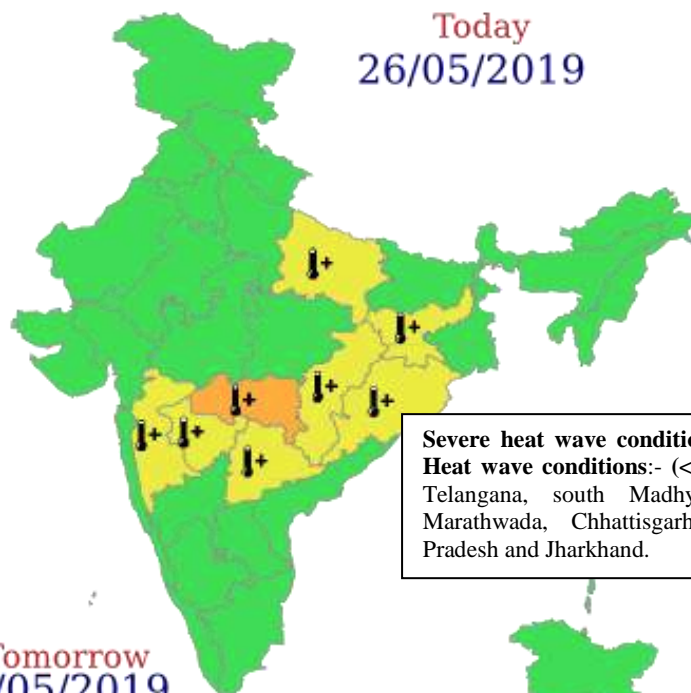
Temperatures Recorded at 1430 Hours IST of Today, the 26th May, 2019

- **Nagpur Sonegaon (Vidarbha)** recorded the maximum temperature of **45.8°C** **(Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-6°C** at most places over Nagaland, Manipur, Mizoram & Tripura; at many places over Jammu & Kashmir and at one or two pockets of Punjab, West Rajasthan, Bihar, Jharkhand, Assam & Meghalaya, West Bengal and West Madhya Pradesh; **risen by 1-3°C** at most places over Uttarakhand, Himachal Pradesh, rest Madhya Pradesh, rest West Bengal and Sikkim and at one or two pockets of Haryana, Chandigarh & Delhi, Rajasthan, Uttar Pradesh, Gujarat region, Vidarbha, Telangana, Coastal Andhra Pradesh, Kerala and Tamilnadu & Puducherry **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

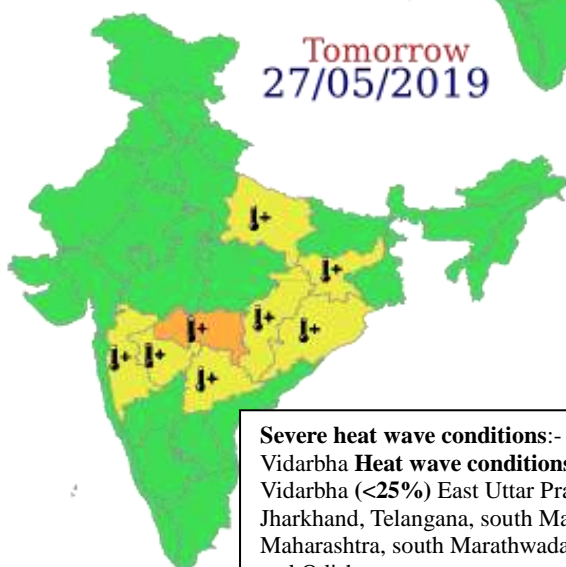
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
26/05/2019



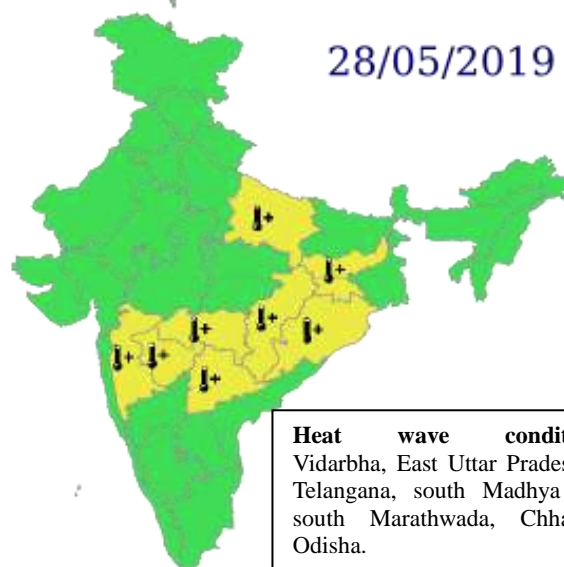
Severe heat wave conditions:- (<25%) Vidarbha
Heat wave conditions:- (<50%) Vidarbha (<25%)
Telangana, south Madhya Maharashtra, south
Marathwada, Chhattisgarh, Odisha, East Uttar
Pradesh and Jharkhand.

Tomorrow
27/05/2019



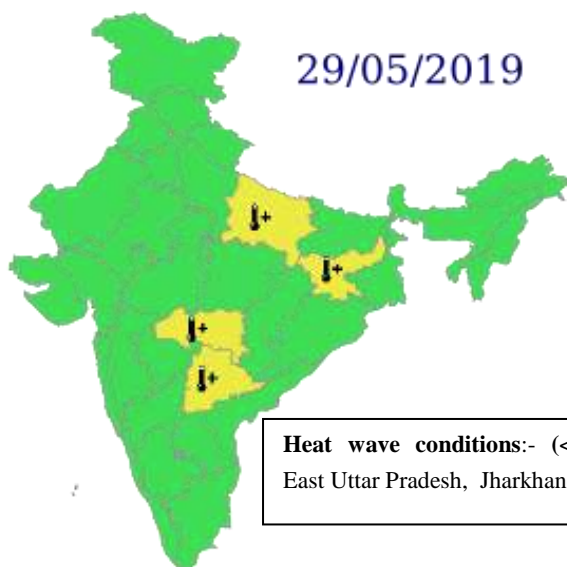
Severe heat wave conditions:- (<25%)
Vidarbha **Heat wave conditions:- (<50%)**
Vidarbha (<25%) East Uttar Pradesh,
Jharkhand, Telangana, south Madhya
Maharashtra, south Marathwada, Chhattisgarh
and Odisha.

28/05/2019



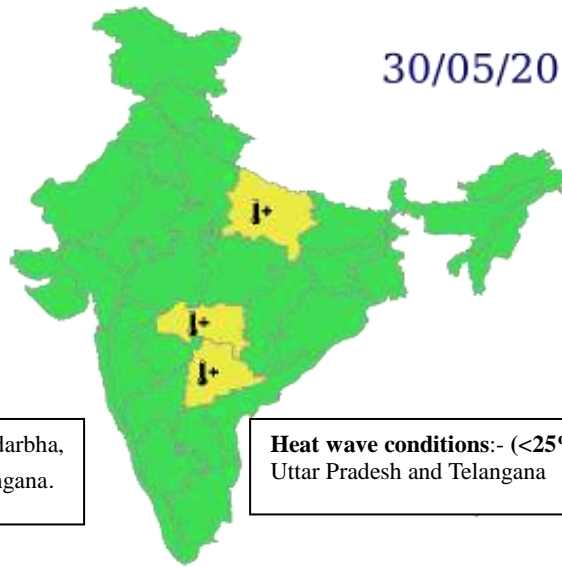
Heat wave conditions:-(<25%)
Vidarbha, East Uttar Pradesh, Jharkhand,
Telangana, south Madhya Maharashtra,
south Marathwada, Chhattisgarh and
Odisha.

29/05/2019

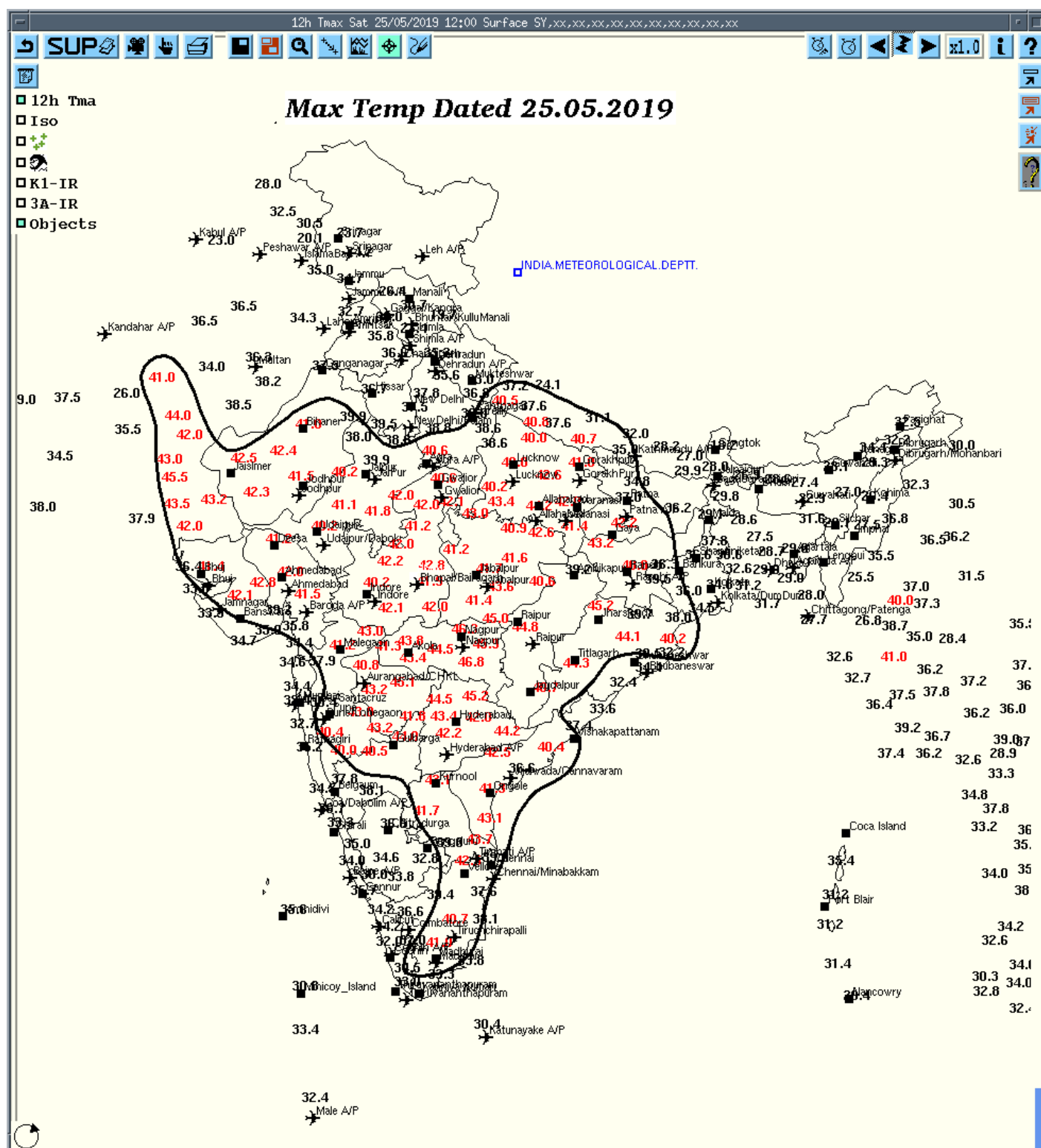


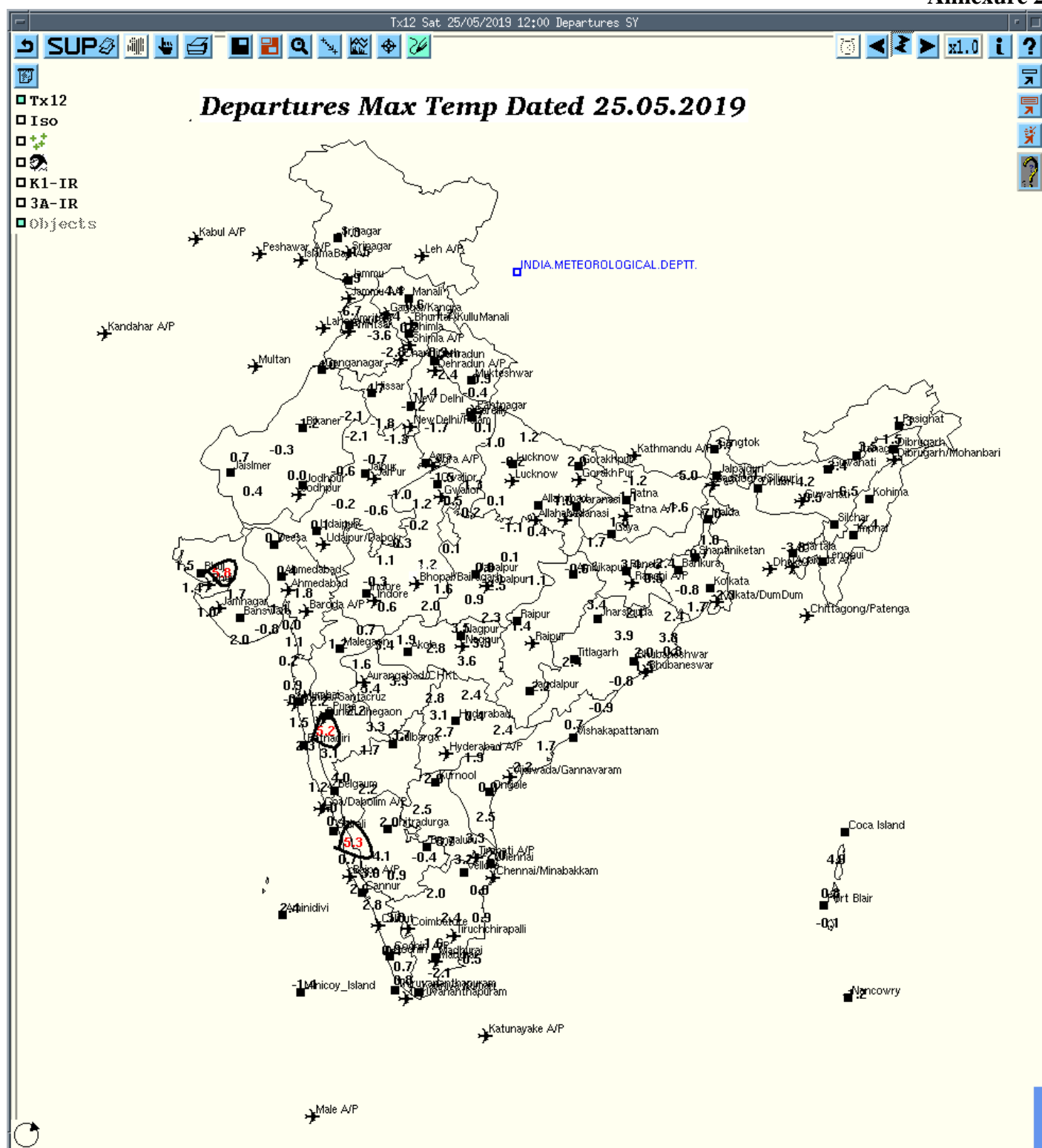
Heat wave conditions:- (<25%) Vidarbha,
East Uttar Pradesh, Jharkhand and Telangana.

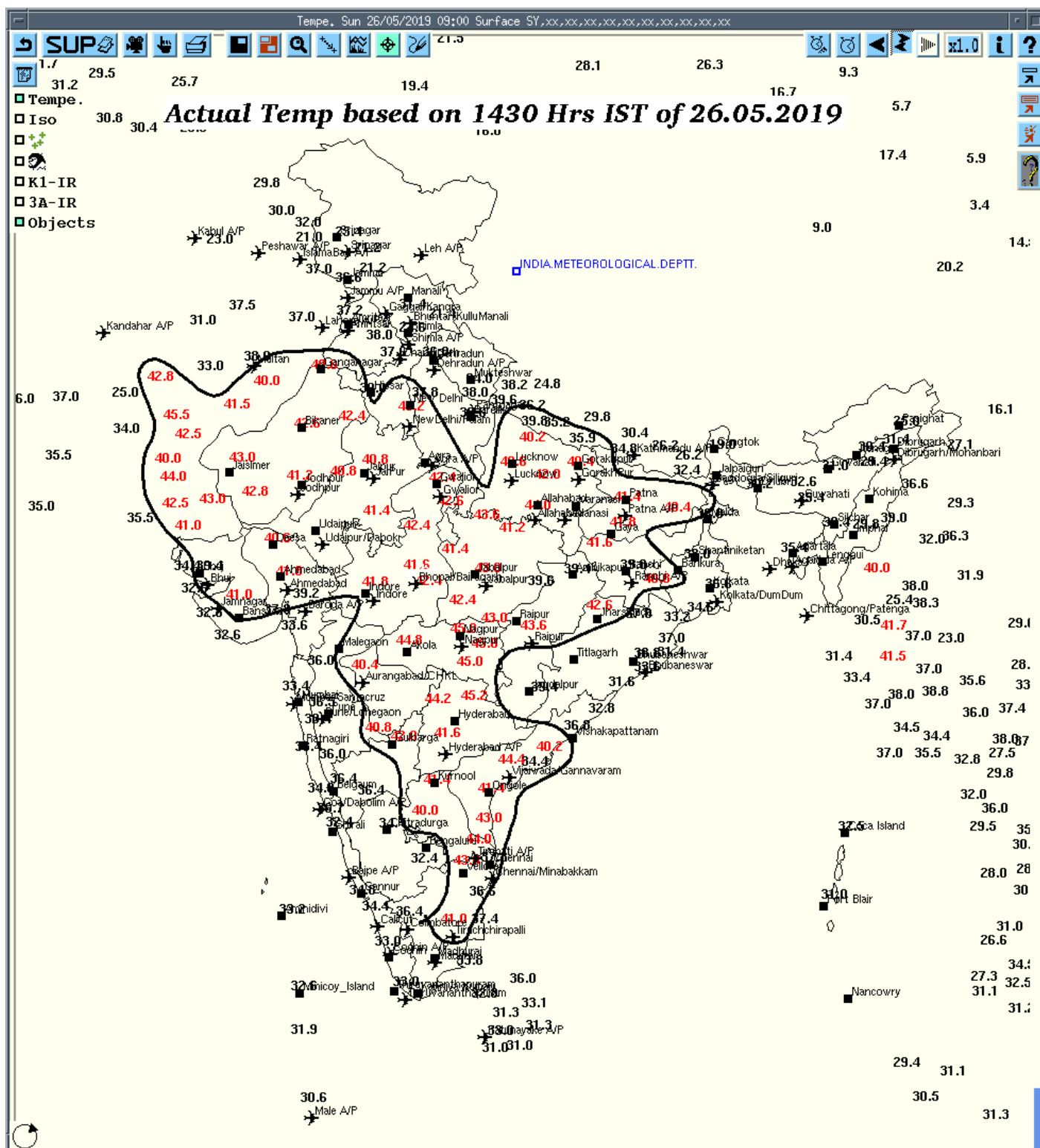
30/05/2019

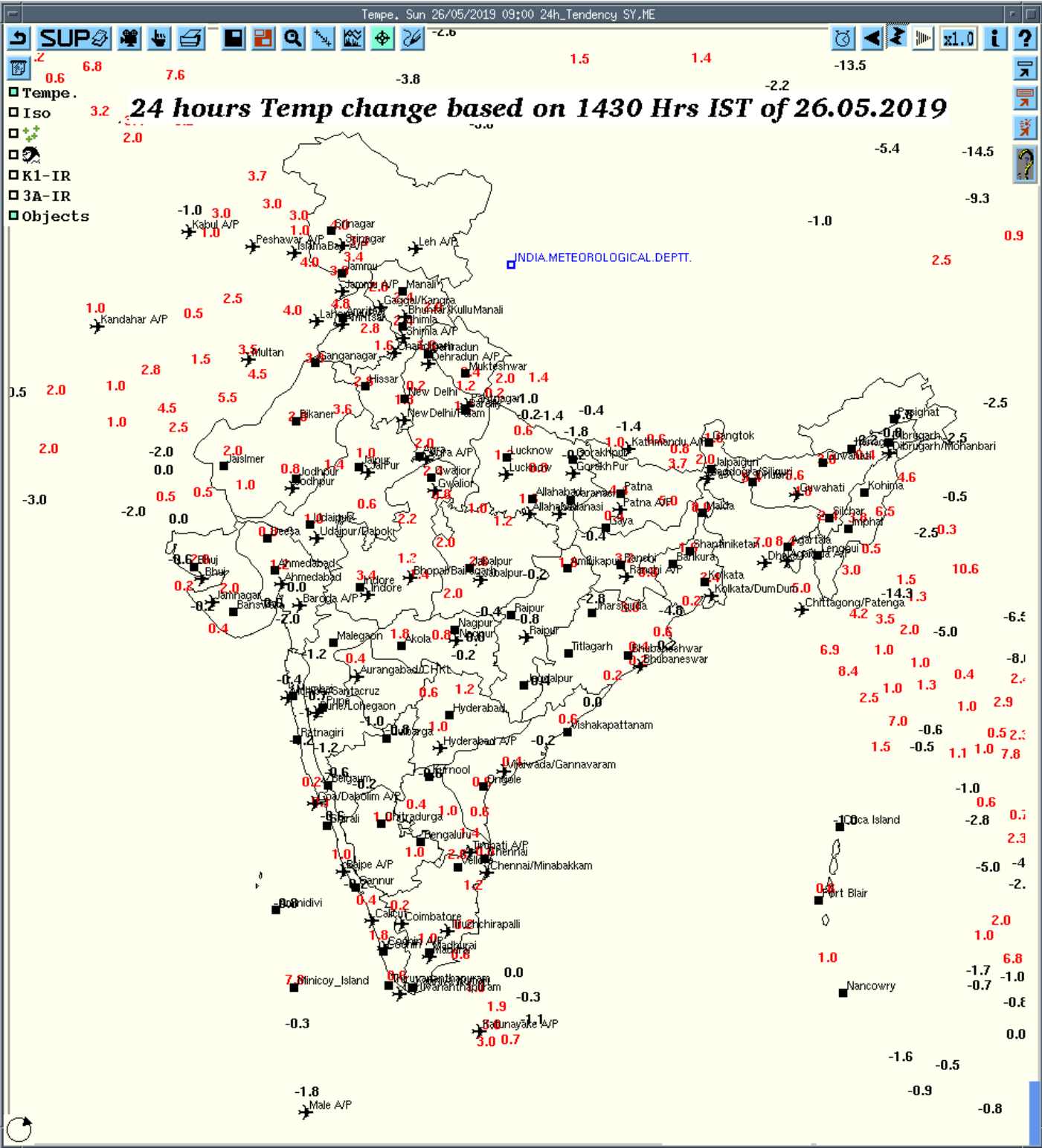


Heat wave conditions:- (<25%) Vidarbha, East
Uttar Pradesh and Telangana









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 27th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 26 May to 0830 hrs IST 27 May, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions were observed in some parts of Vidarbha, Telangana and Rayalaseema and in one or two pockets over Marathwada and Tamilnadu & Puducherry (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Rayalaseema; at many places over Vidarbha, Marathwada, Telangana and North Interior Karnataka; at a few places over Coastal Andhra Pradesh and Nagaland, Manipur, Mizoram & Tripura; at isolated places over Bihar, West Madhya Pradesh, Madhya Maharashtra and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at many places over Jharkhand, Chhattisgarh and Kerala; at a few places over East Uttar Pradesh, Gangetic West Bengal, West Rajasthan, Odisha, Gujarat State, Konkan & Goa, Coastal Karnataka and Andaman & Nicobar Islands; at isolated places East Rajasthan and South Interior Karnataka. Yesterday, the **highest maximum** temperature of **46.5°C** was recorded at **Nagpur Sonegaon and Wardha (Vidarbha)** (**Annexure 1 & 2**).

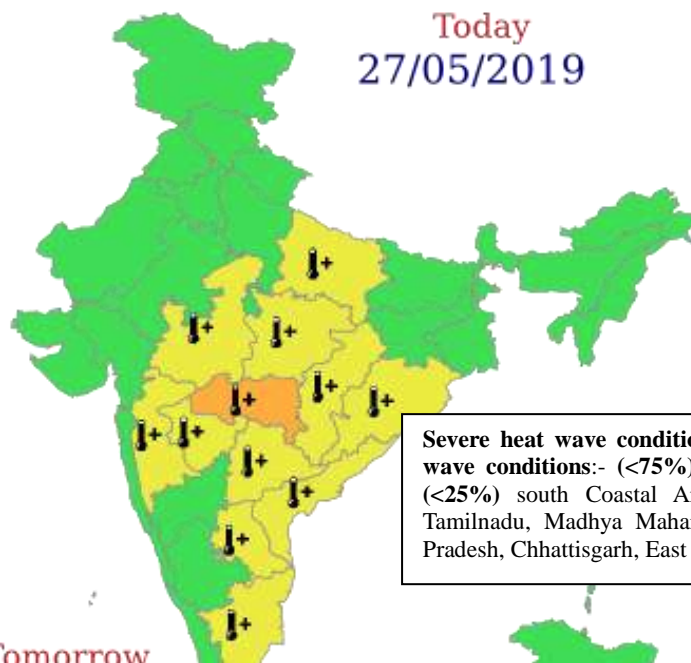
Temperatures Recorded at 1430 Hours IST of Today, the 27th May, 2019

- **Nagpur Sonegaon (Vidarbha) and Ramgundam (Telangana)** recorded the maximum temperature of **46.0°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 3-6** at one or two pockets of Delhi, Jammu & Kashmir and West Uttar Pradesh; **risen by 1-3°C** at most places over Punjab, Haryana, Delhi, Uttar Pradesh, Uttarakhand, Bihar, East Rajasthan, East Madhya Pradesh, Chhattisgarh, Jharkhand and Madhya Maharashtra; at many places over Himachal Pradesh, West Rajasthan and West Madhya Pradesh; at few places over rest Jammu & Kashmir, Gujarat, Kerala and Tamilnadu & Puducherry and at one or two pockets of Vidarbha, Karnataka, Odisha, West Bengal and North Eastern States (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

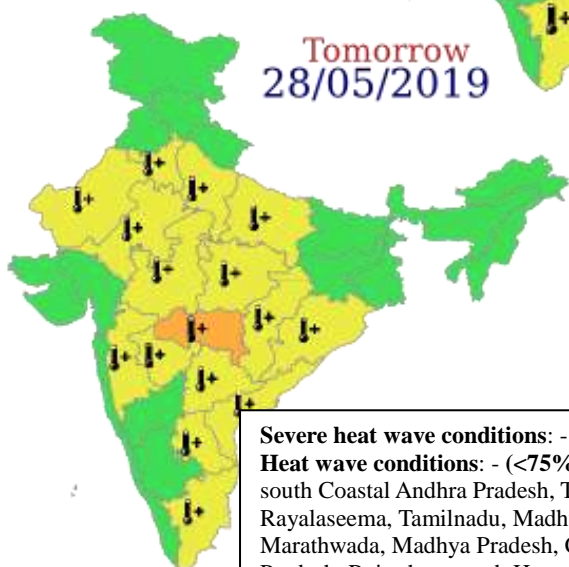
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
27/05/2019



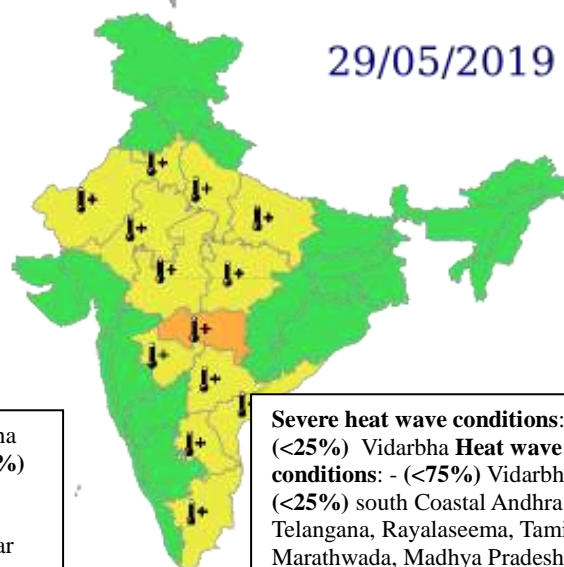
Severe heat wave conditions:- (<25%) Vidarbha Heat wave conditions:- (<75%) Vidarbha (<50%) Telangana (<25%) south Coastal Andhra Pradesh, Rayalaseema, Tamilnadu, Madhya Maharashtra, Marathwada, Madhya Pradesh, Chhattisgarh, East Uttar Pradesh and Odisha.

Tomorrow
28/05/2019



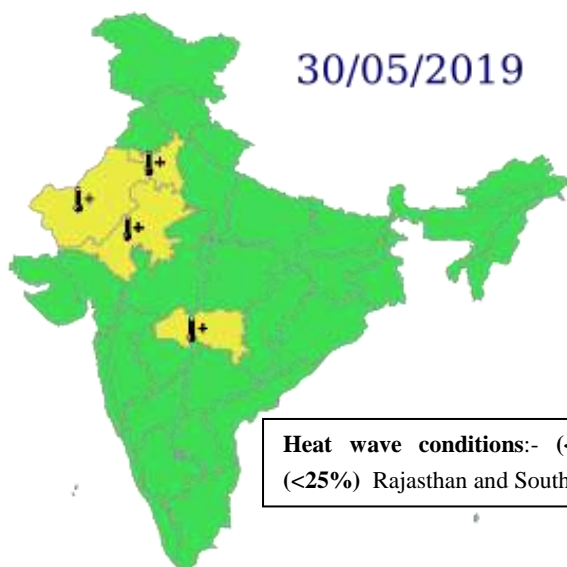
Severe heat wave conditions: - (<25%) Vidarbha Heat wave conditions: - (<75%) Vidarbha (<25%) south Coastal Andhra Pradesh, Telangana, Rayalaseema, Tamilnadu, Madhya Maharashtra, Marathwada, Madhya Pradesh, Chhattisgarh, Uttar Pradesh, Rajasthan, south Haryana and Odisha.

29/05/2019



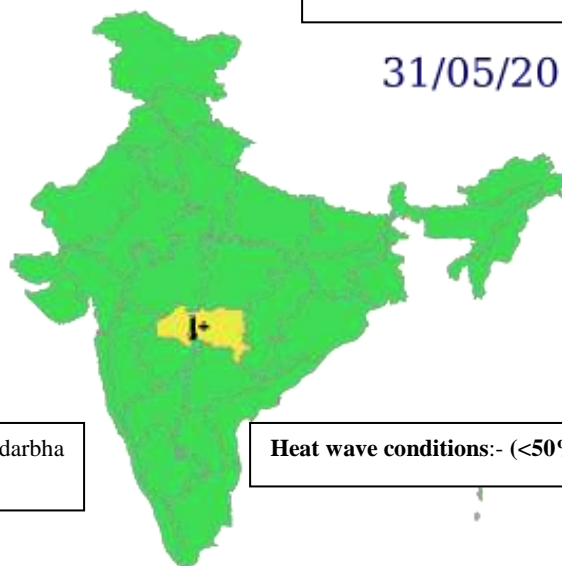
Severe heat wave conditions: - (<25%) Vidarbha Heat wave conditions: - (<75%) Vidarbha (<25%) south Coastal Andhra Pradesh, Telangana, Rayalaseema, Tamilnadu, Marathwada, Madhya Pradesh, Uttar Pradesh, Rajasthan and south Haryana

30/05/2019

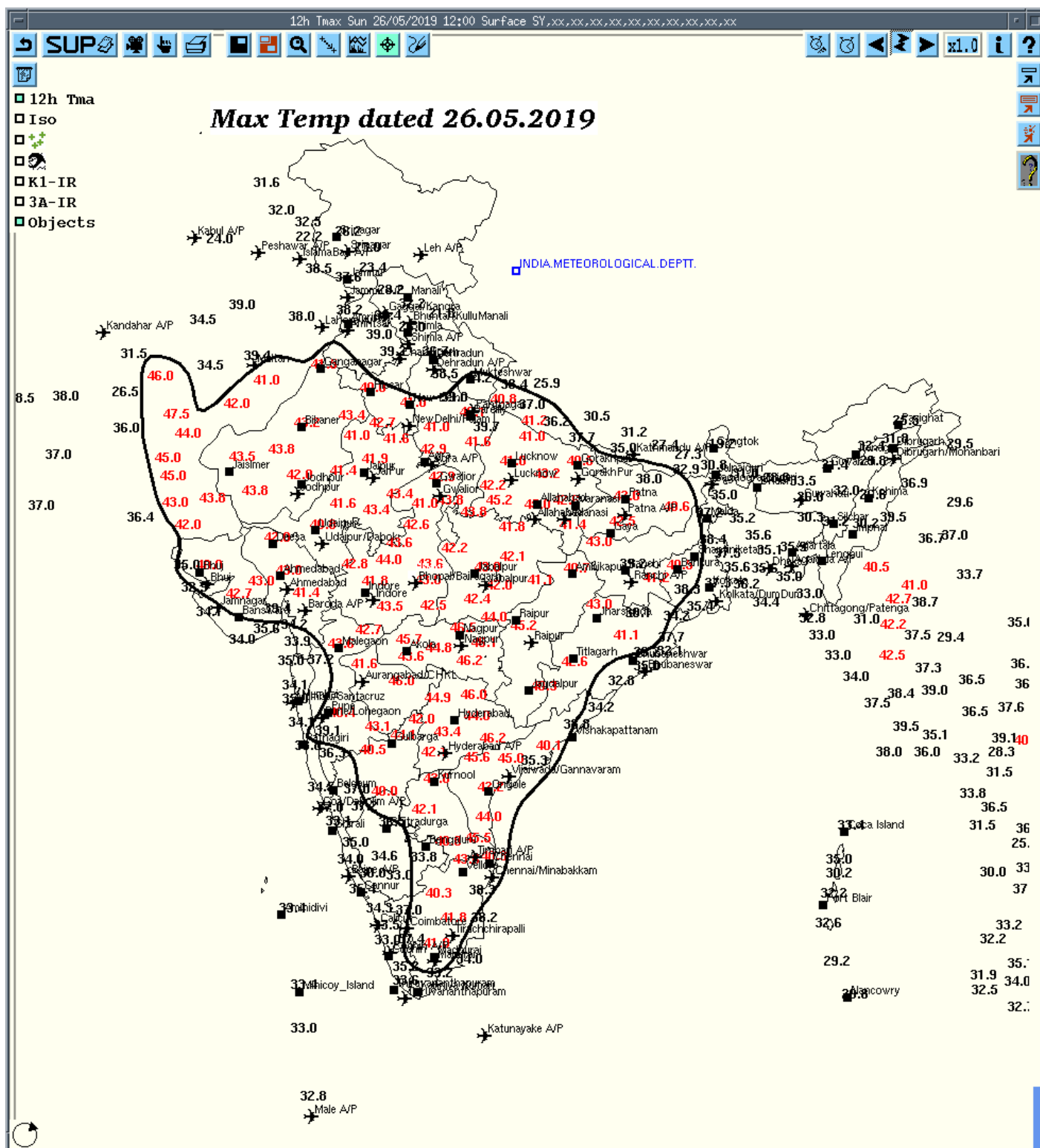


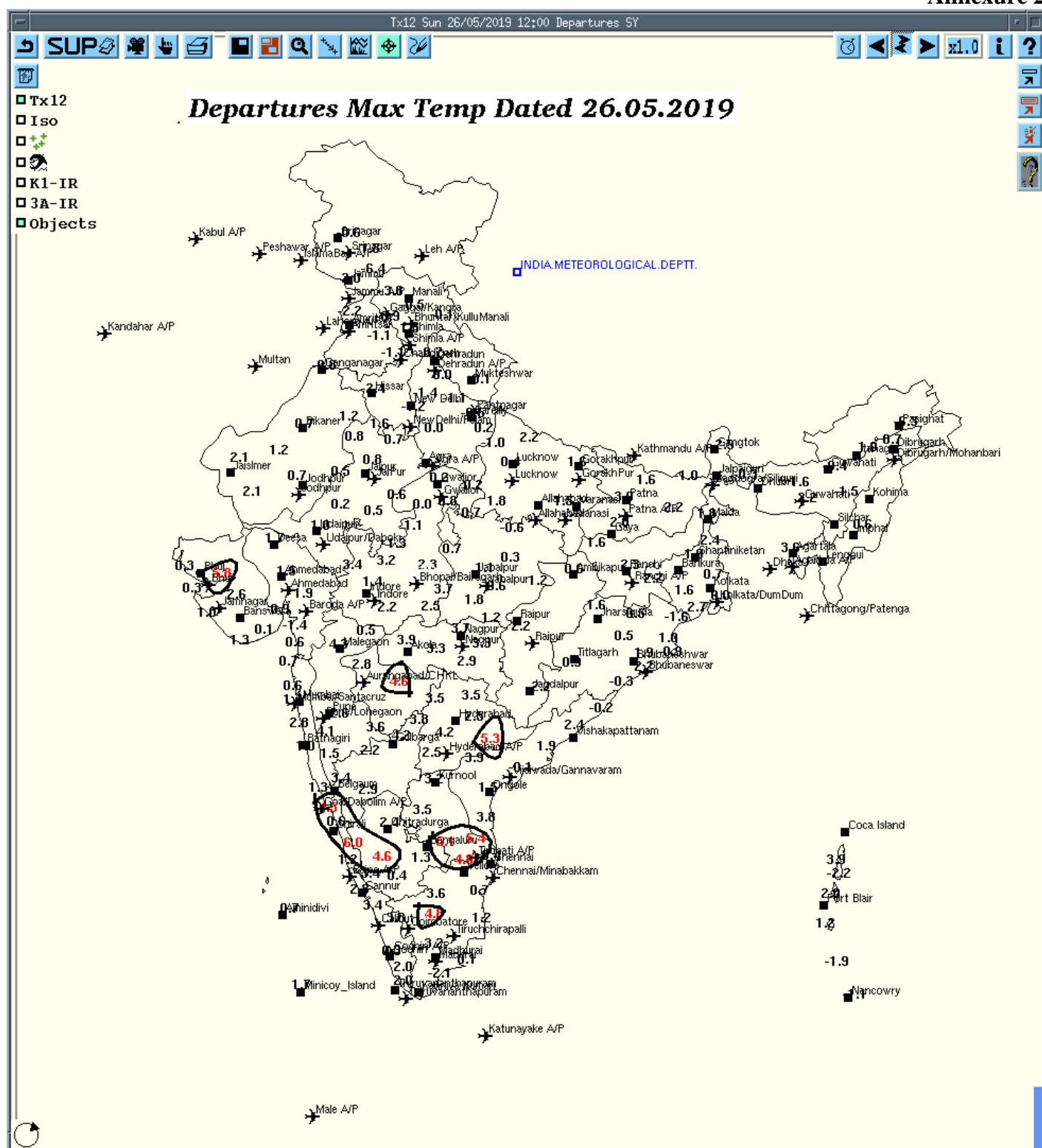
Heat wave conditions:- (<50%) Vidarbha (<25%) Rajasthan and South Haryana.

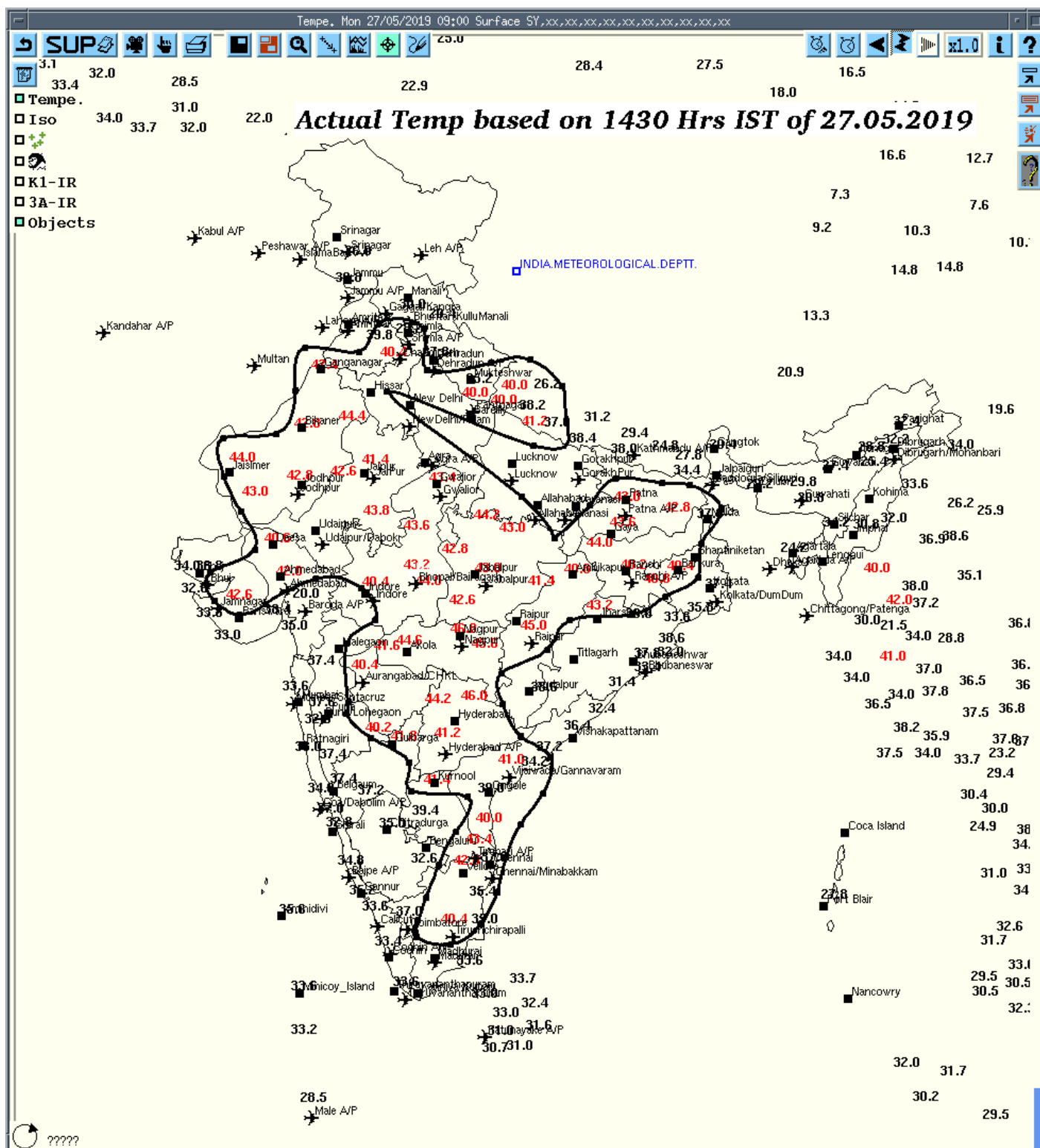
31/05/2019

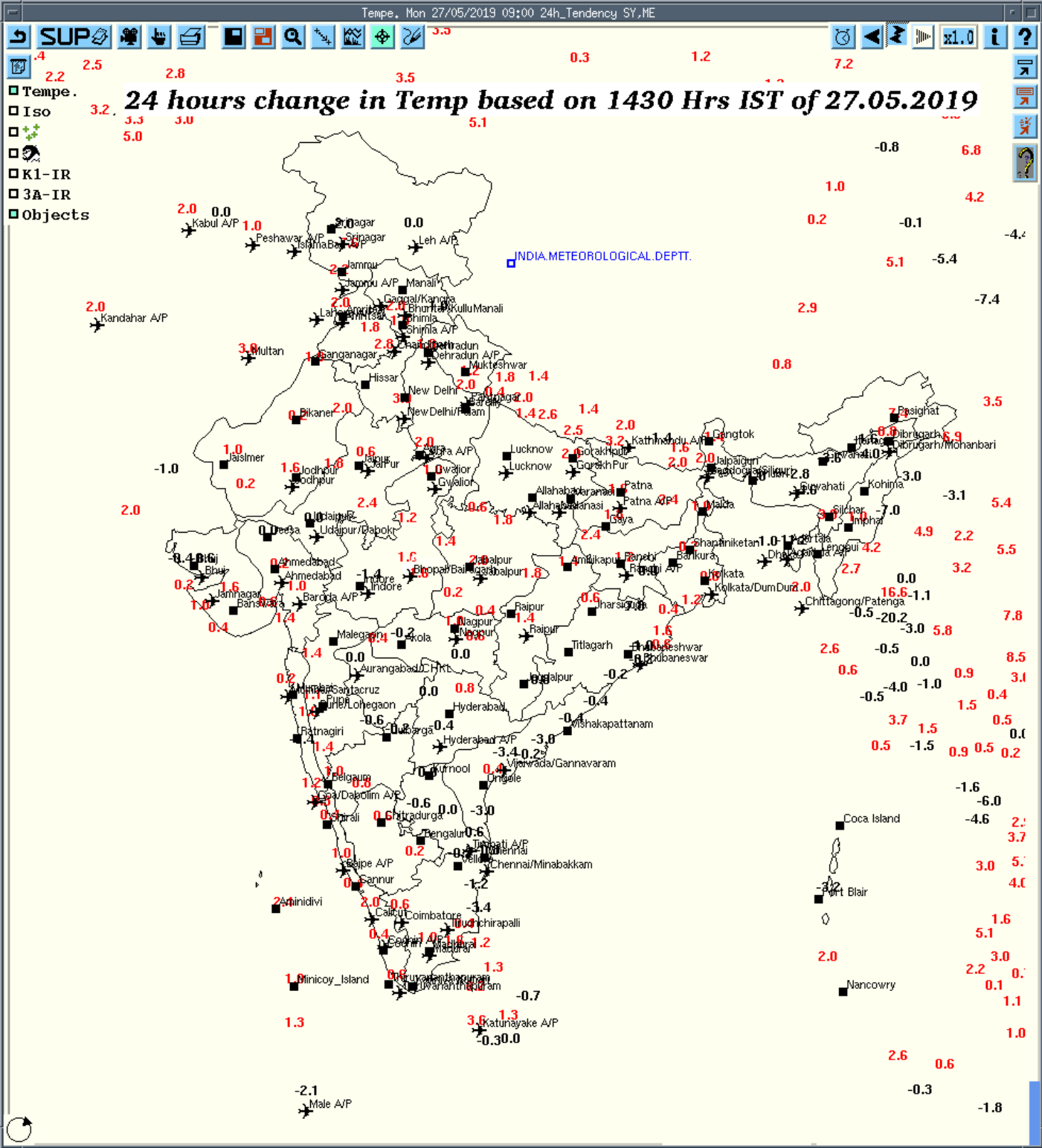


Heat wave conditions:- (<50%) Vidarbha









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department

Dated: 28th May, 2019
Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 27 May to 0830 hrs IST 28 May, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions were observed in many parts of Vidarbha, in a few parts of Chhattisgarh and in isolated pockets over East Uttar Pradesh, East Madhya Pradesh, Madhya Maharashtra, Telangana, Marathwada and Tamilnadu & Puducherry (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Vidarbha and Marathawada; at many places over Telangana, Rayalaseema, Bihar, Jharkhand, Kerala and North Interior Karnataka; at a few places over Madhya Maharashtra and Tamilnadu & Puducherry; at isolated places over East Uttar Pradesh, West Madhya Pradesh, Saurashtra & Kutch and Gangetic West Bengal; **above normal (1.6°C to 3.0°C)** at most places over West Rajasthan, West Uttar Pradesh, Coastal & South Interior Karnataka, Lakshadweep and Uttarakhand; at many places over East Rajasthan and Nagaland, Manipur, Mizoram & Tripura; at a few places over Gujarat region, Konkan & Goa and Haryana, Chandigarh & Delhi and at isolated places over Odisha and Andaman & Nicobar Islands. Yesterday, the **highest maximum temperature of 47.2°C** was recorded at **Ramgundam (Telangana)** (**Annexure 1 & 2**).

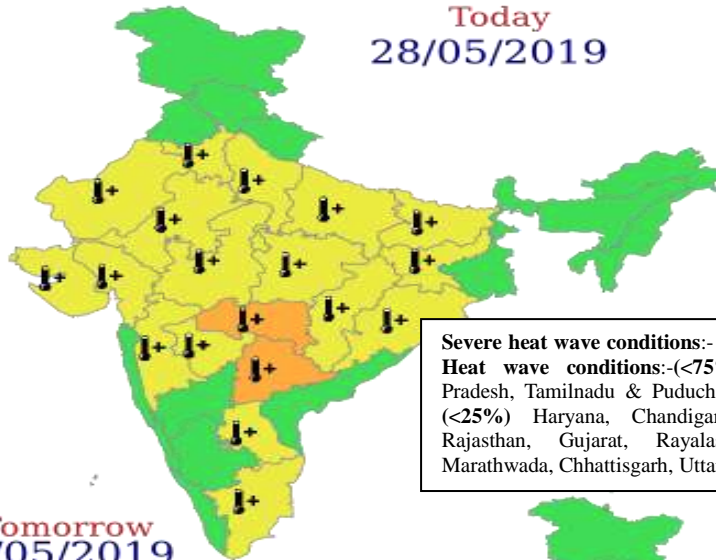
Temperatures Recorded at 1430 Hours IST of Today, the 28th May, 2019

- **Nagpur Sonegaon (Vidarbha)** recorded the maximum temperature of 47.0°C (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C** at most places over Jammu & Kashmir; at many places over Assam & Meghalaya; at few places over West Rajasthan, Gujarat, Madhya Maharashtra and East Madhya Pradesh and at one or two pockets of Punjab, Haryana, Delhi, East Rajasthan, Vidarbha, Telangana, Rayalaseema, North Interior Karnataka, Tamilnadu & Puducherry and Kerala. (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

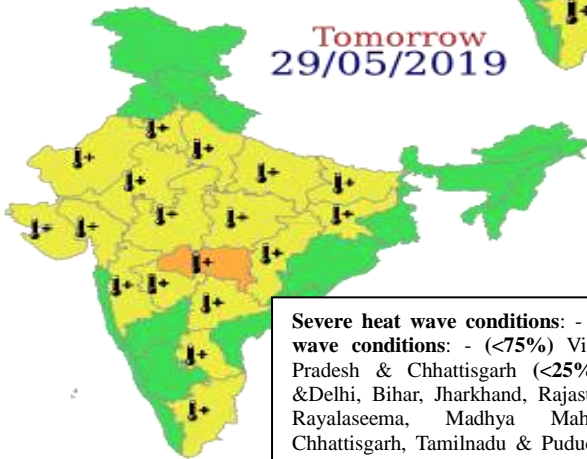
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
28/05/2019



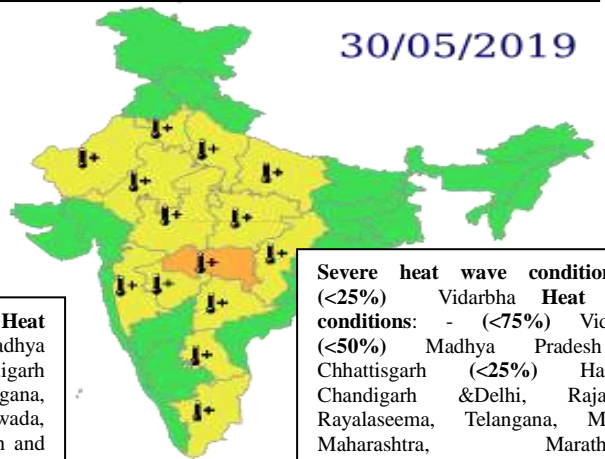
Severe heat wave conditions:- (<25%) Vidarbha and Telangana
Heat wave conditions:-(<75%) Vidarbha (<50%) Madhya Pradesh, Tamilnadu & Puducherry, Chhattisgarh and Telangana (<25%) Haryana, Chandigarh & Delhi, Bihar, Jharkhand, Rajasthan, Gujarat, Rayalaseema, Madhya Maharashtra, Marathwada, Chhattisgarh, Uttar Pradesh and Odisha.

Tomorrow
29/05/2019



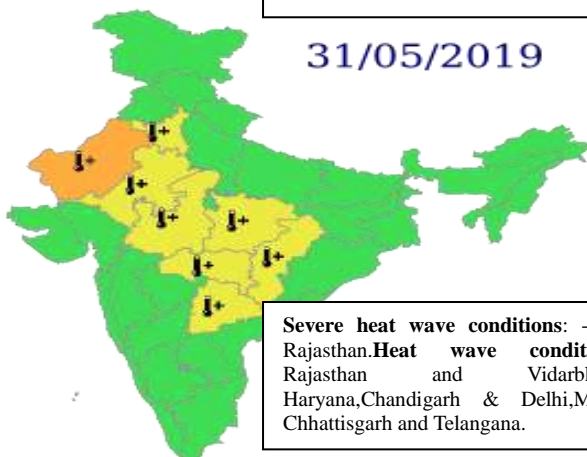
Severe heat wave conditions:- (<25%) Vidarbha **Heat wave conditions:-** (<75%) Vidarbha (<50%) Madhya Pradesh & Chhattisgarh (<25%) Haryana, Chandigarh & Delhi, Bihar, Jharkhand, Rajasthan, Gujarat, Telangana, Rayalaseema, Madhya Maharashtra, Marathwada, Chhattisgarh, Tamilnadu & Puducherry Uttar Pradesh and Odisha.

30/05/2019



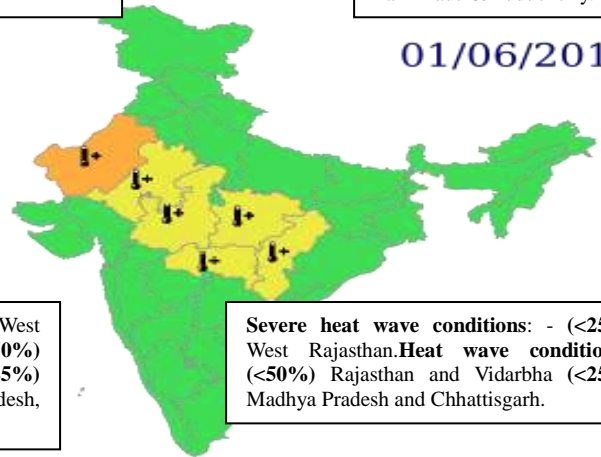
Severe heat wave conditions:- (<25%) Vidarbha **Heat wave conditions:-** (<75%) Vidarbha (<50%) Madhya Pradesh & Chhattisgarh (<25%) Haryana, Chandigarh & Delhi, Rajasthan, Rayalaseema, Telangana, Madhya Maharashtra, Marathwada, Chhattisgarh, Uttar Pradesh and Tamilnadu & Puducherry.

31/05/2019

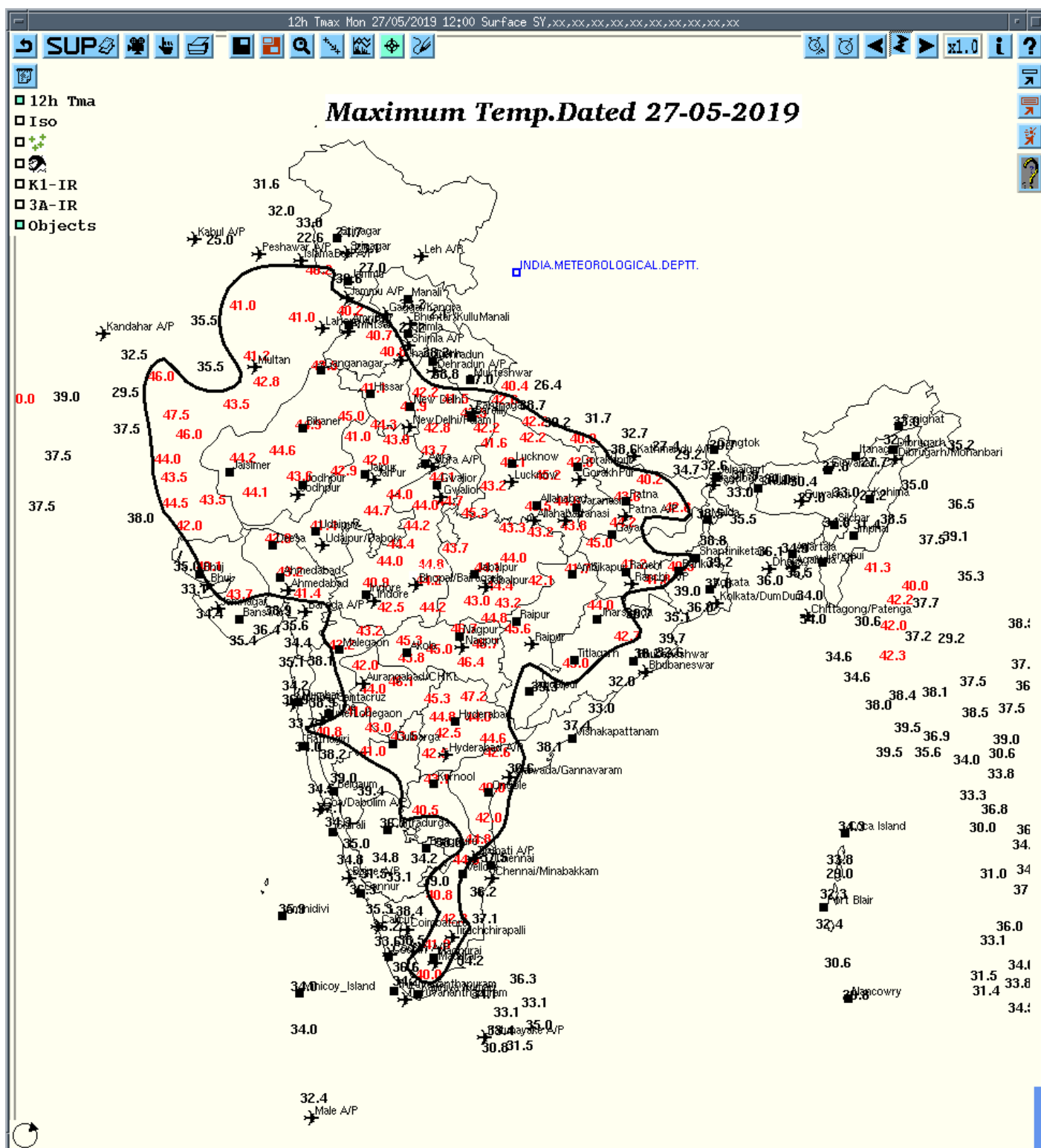


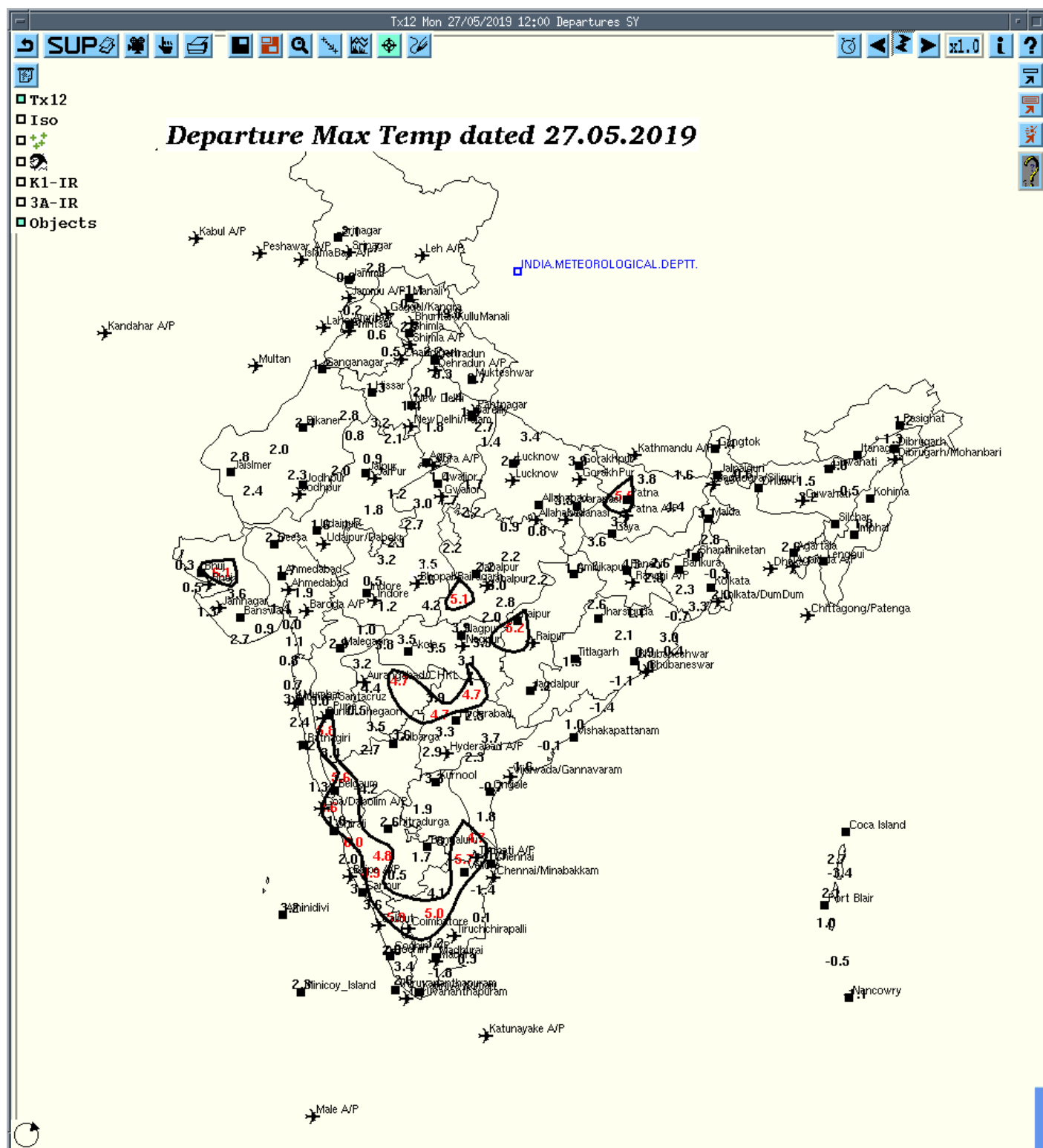
Severe heat wave conditions:- (<25%) West Rajasthan. **Heat wave conditions:-** (<50%) Rajasthan and Vidarbha (<25%) Haryana, Chandigarh & Delhi, Madhya Pradesh, Chhattisgarh and Telangana.

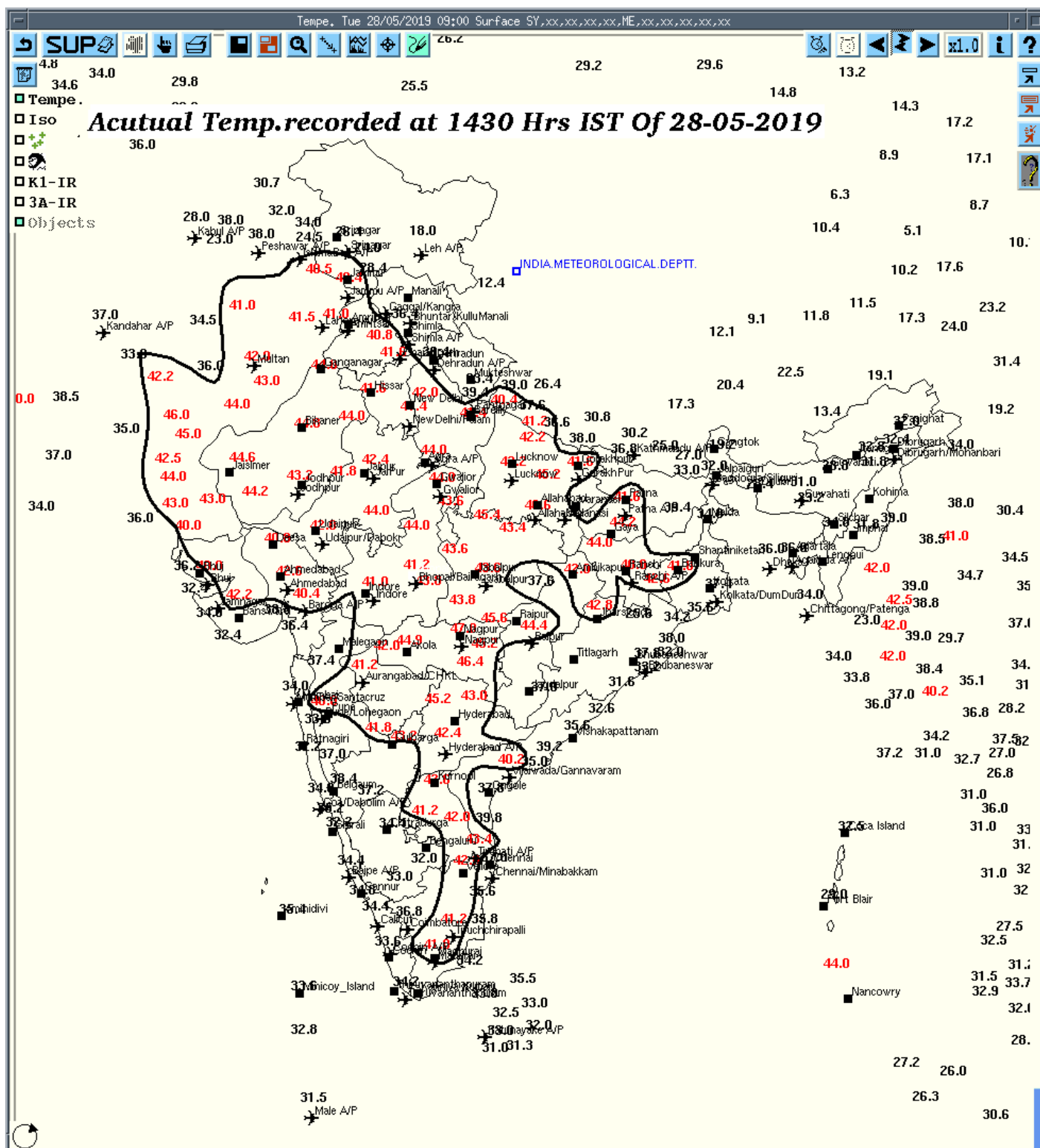
01/06/2019

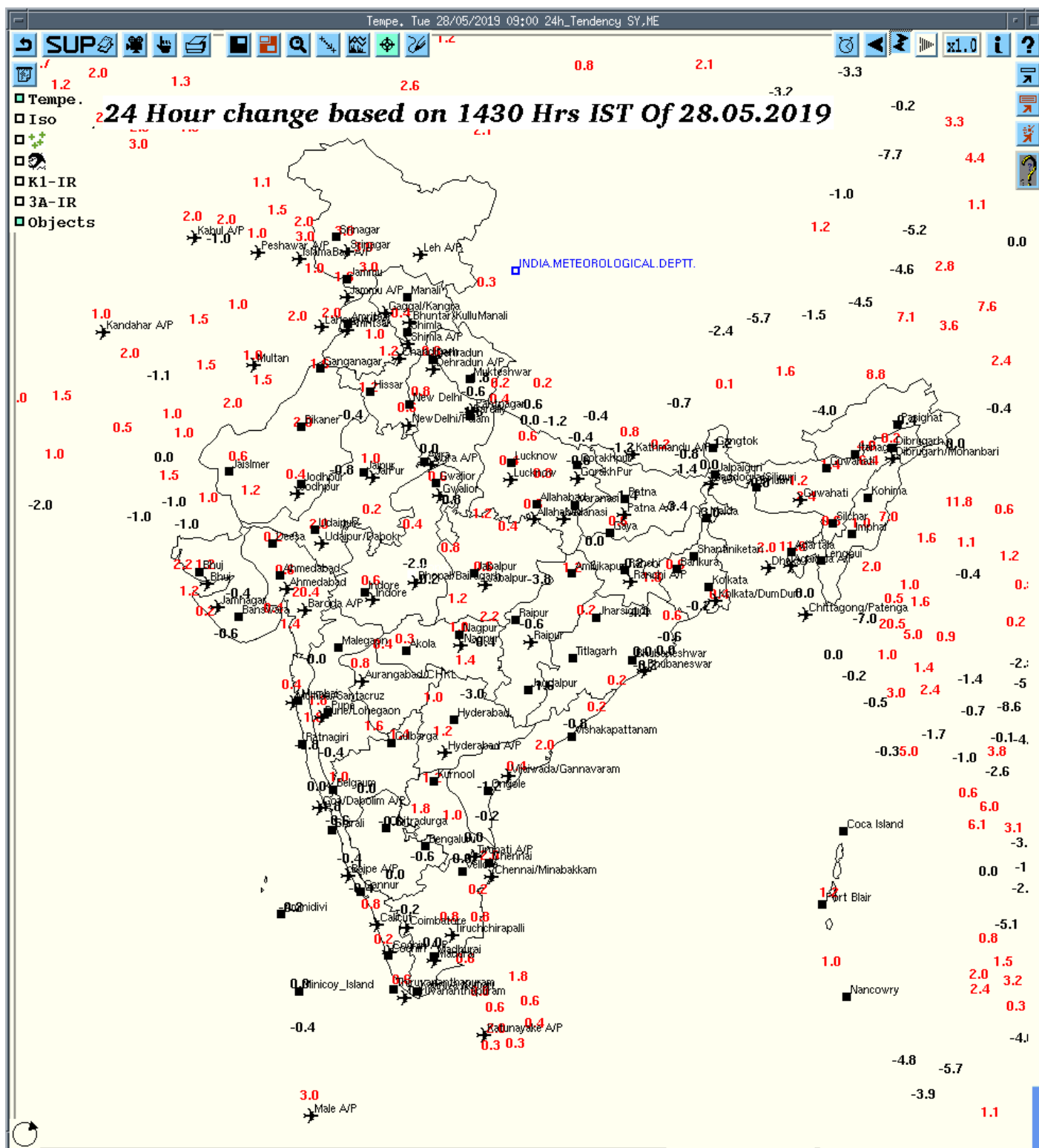


Severe heat wave conditions:- (<25%) West Rajasthan. **Heat wave conditions:-** (<50%) Rajasthan and Vidarbha (<25%) Madhya Pradesh and Chhattisgarh.









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 29th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 28 May to 0830 hrs IST 29 May, 2019)

Heat Wave:

Yesterday, **Heat Wave Conditions** were observed in many parts with **severe heat wave** in one or two pockets over Vidarbha; in some parts over West Rajasthan and southeast Uttar Pradesh and in isolated pockets over Madhya Pradesh and Telangana (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at isolated places over Madhya Maharashtra and Kerala; **appreciably above normal (3.1°C to 5.0°C)** at most places over Vidarbha, Marathwada, Rayalaseema and Jharkhand; at many places over North Interior Karnataka, Tamilnadu & Puducherry and Telangana; at a few places over Coastal Karnataka, Madhya Pradesh, East Uttar Pradesh and Bihar and at isolated places over South Interior Karnataka, Coastal Andhra Pradesh, Rajasthan, Gangetic West Bengal and Saurashtra & Kutch; **above normal (1.6°C to 3.0°C)** at most places over Punjab and Nagaland, Manipur, Mizoram & Tripura; at many places over Gujarat Region and West Uttar Pradesh and at isolated places over Haryana, Chandigarh & Delhi; Yesterday, the **highest maximum** temperature of **47.2°C** was recorded at Ramgundam (Telangana) (**Annexure 1 & 2**).

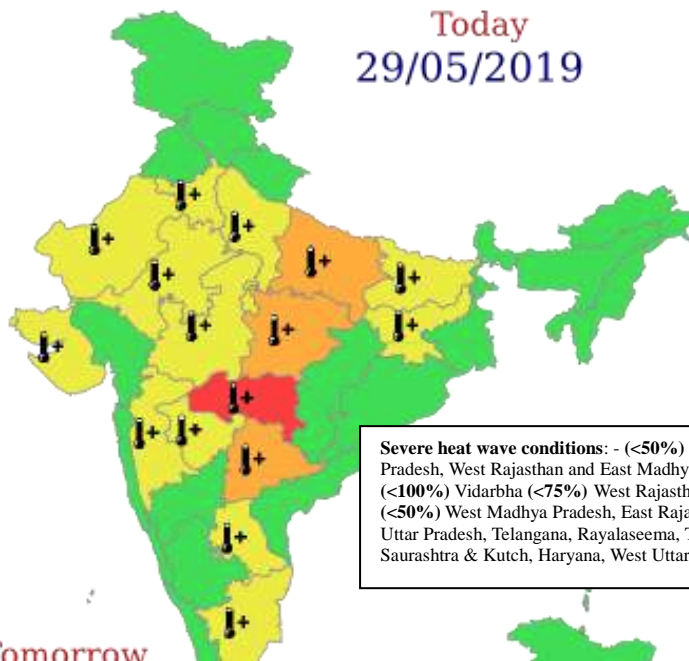
Temperatures Recorded at 1430 Hours IST of Today, the 29th May, 2019

- **Churu (West Rajasthan)** recorded the maximum temperature of **46.6°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-2°C** at most places over Jammu & Kashmir, Punjab, East Rajasthan, Assam & Meghalaya, Haryana and Delhi; at few places over West Madhya Pradesh and at one or two pockets of West Rajasthan, East Madhya Pradesh, Jharkhand, Odisha, Konkan & Goa, South Interior Karnataka, Coastal Andhra Pradesh, Tamilnadu & Pudducherry and North Eastern States. (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

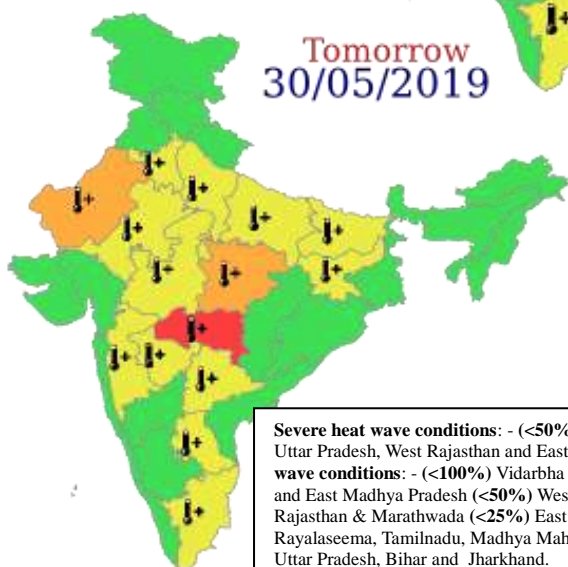
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
29/05/2019



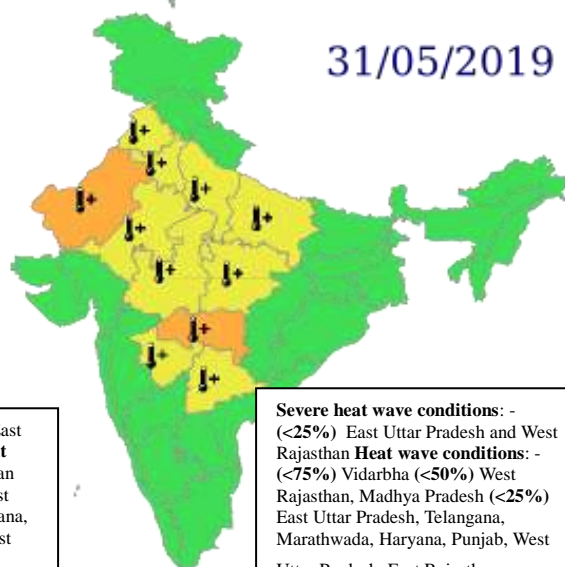
Severe heat wave conditions: - (<50%) Vidarbha (<25%) East Uttar Pradesh, West Rajasthan and East Madhya Pradesh **Heat wave conditions:** - (<100%) Vidarbha (<75%) West Rajasthan and East Madhya Pradesh (<50%) West Madhya Pradesh, East Rajasthan & Marathwada (<25%) East Uttar Pradesh, Telangana, Rayalaseema, Tamilnadu, Madhya Maharashtra, Saurashtra & Kutch, Haryana, West Uttar Pradesh, Bihar and Jharkhand.

Tomorrow
30/05/2019



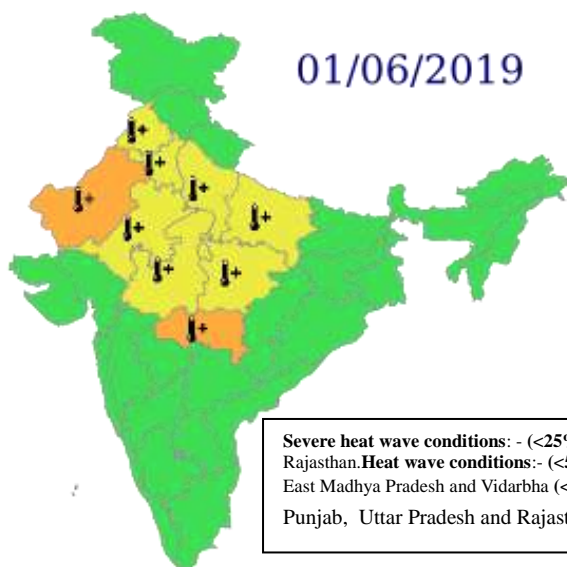
Severe heat wave conditions: - (<50%) Vidarbha (<25%) East Uttar Pradesh, West Rajasthan and East Madhya Pradesh **Heat wave conditions:** - (<100%) Vidarbha (<75%) West Rajasthan and East Madhya Pradesh (<50%) West Madhya Pradesh, East Rajasthan & Marathwada (<25%) East Uttar Pradesh, Telangana, Rayalaseema, Tamilnadu, Madhya Maharashtra, Haryana, West Uttar Pradesh, Bihar and Jharkhand.

31/05/2019



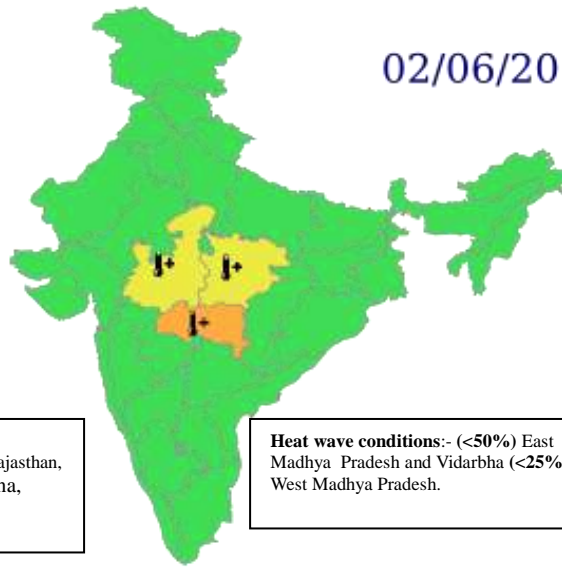
Severe heat wave conditions: - (<25%) East Uttar Pradesh and West Rajasthan **Heat wave conditions:** - (<75%) Vidarbha (<50%) West Rajasthan, Madhya Pradesh (<25%) East Uttar Pradesh, Telangana, Marathwada, Haryana, Punjab, West Uttar Pradesh, East Rajasthan.

01/06/2019



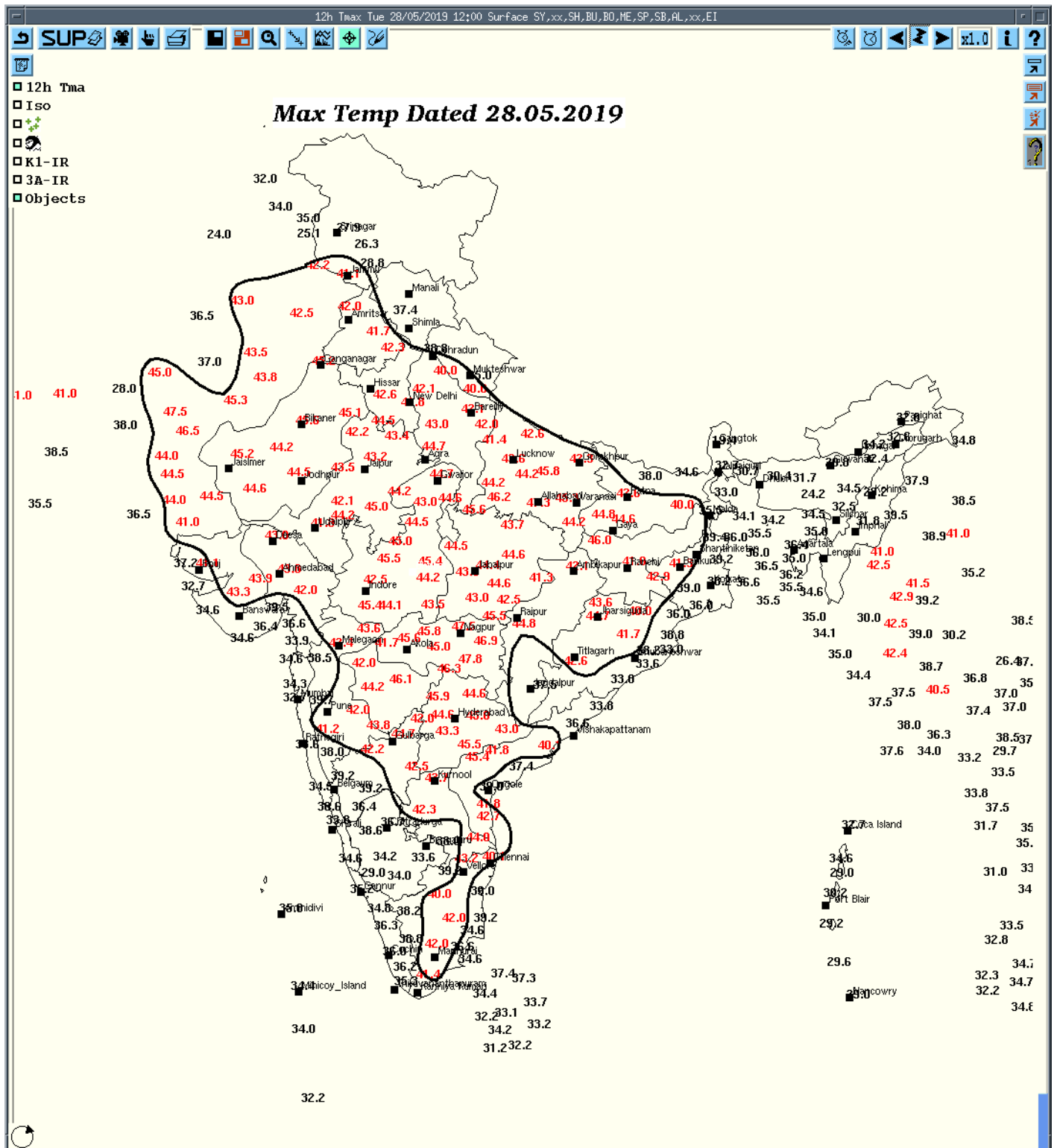
Severe heat wave conditions: - (<25%) West Rajasthan. **Heat wave conditions:** - (<50%) West Rajasthan, East Madhya Pradesh and Vidarbha (<25%) Haryana, Punjab, Uttar Pradesh and Rajasthan.

02/06/2019

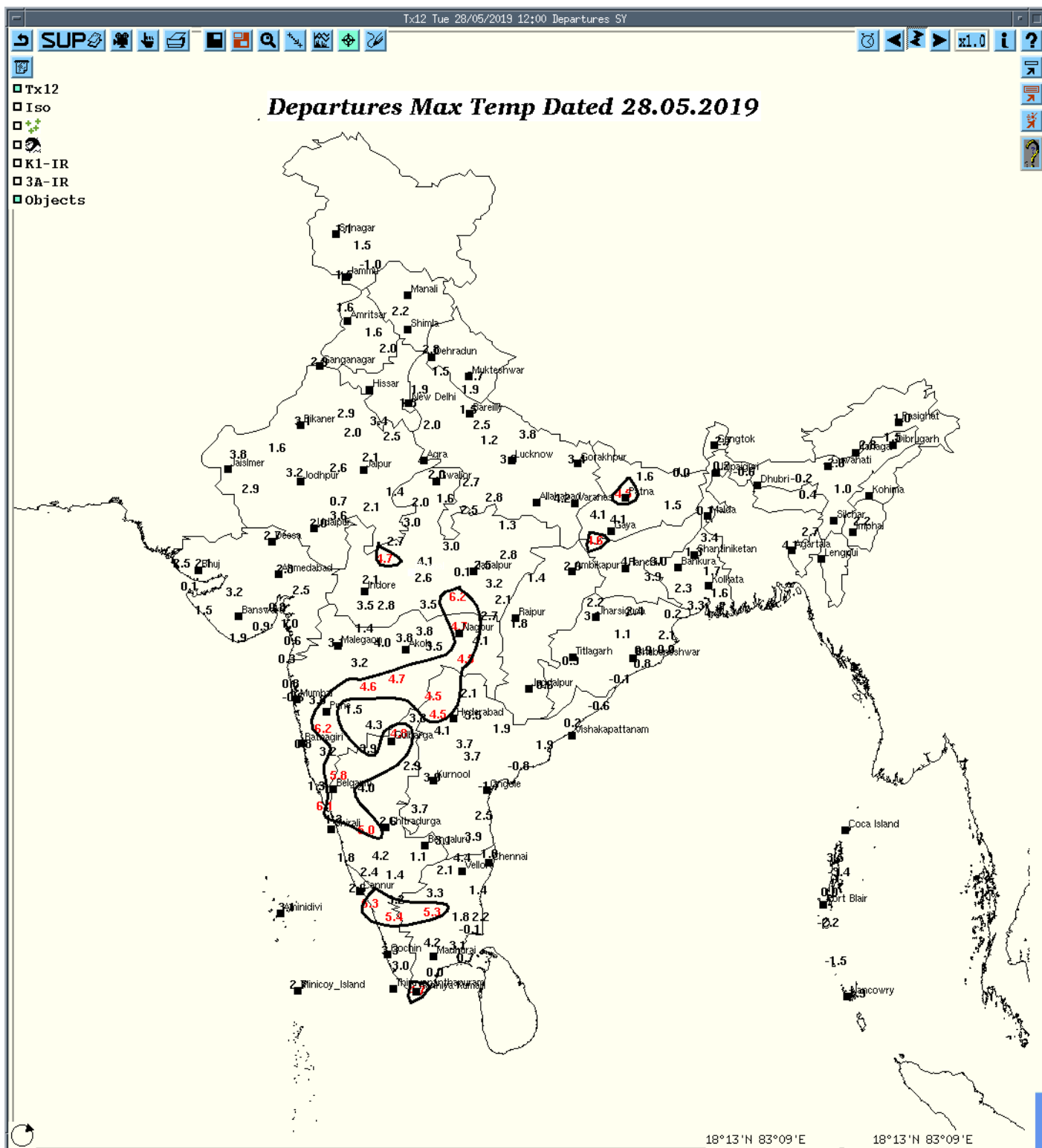


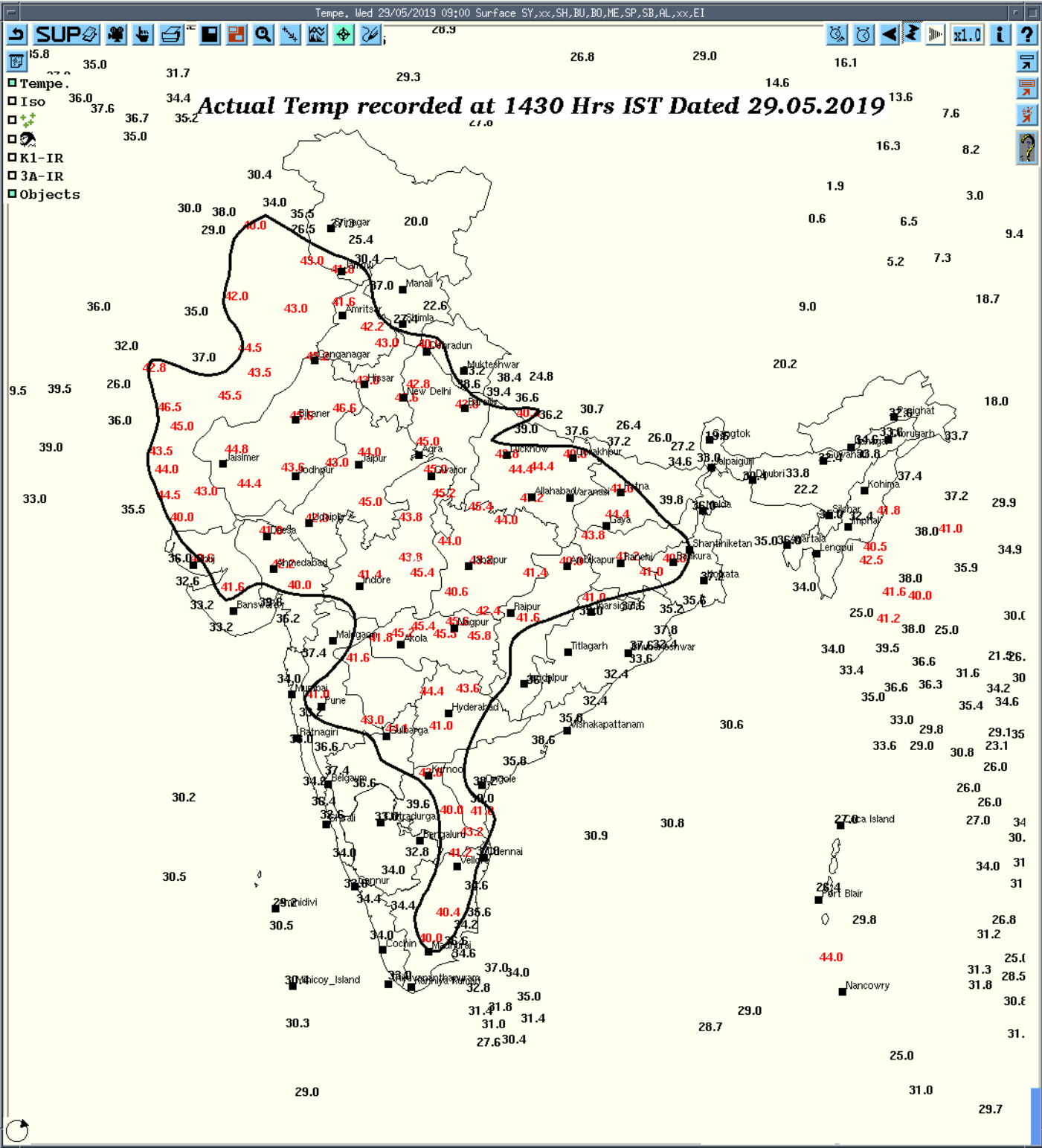
Heat wave conditions: - (<50%) East Madhya Pradesh and Vidarbha (<25%) West Madhya Pradesh.

Annexure 1

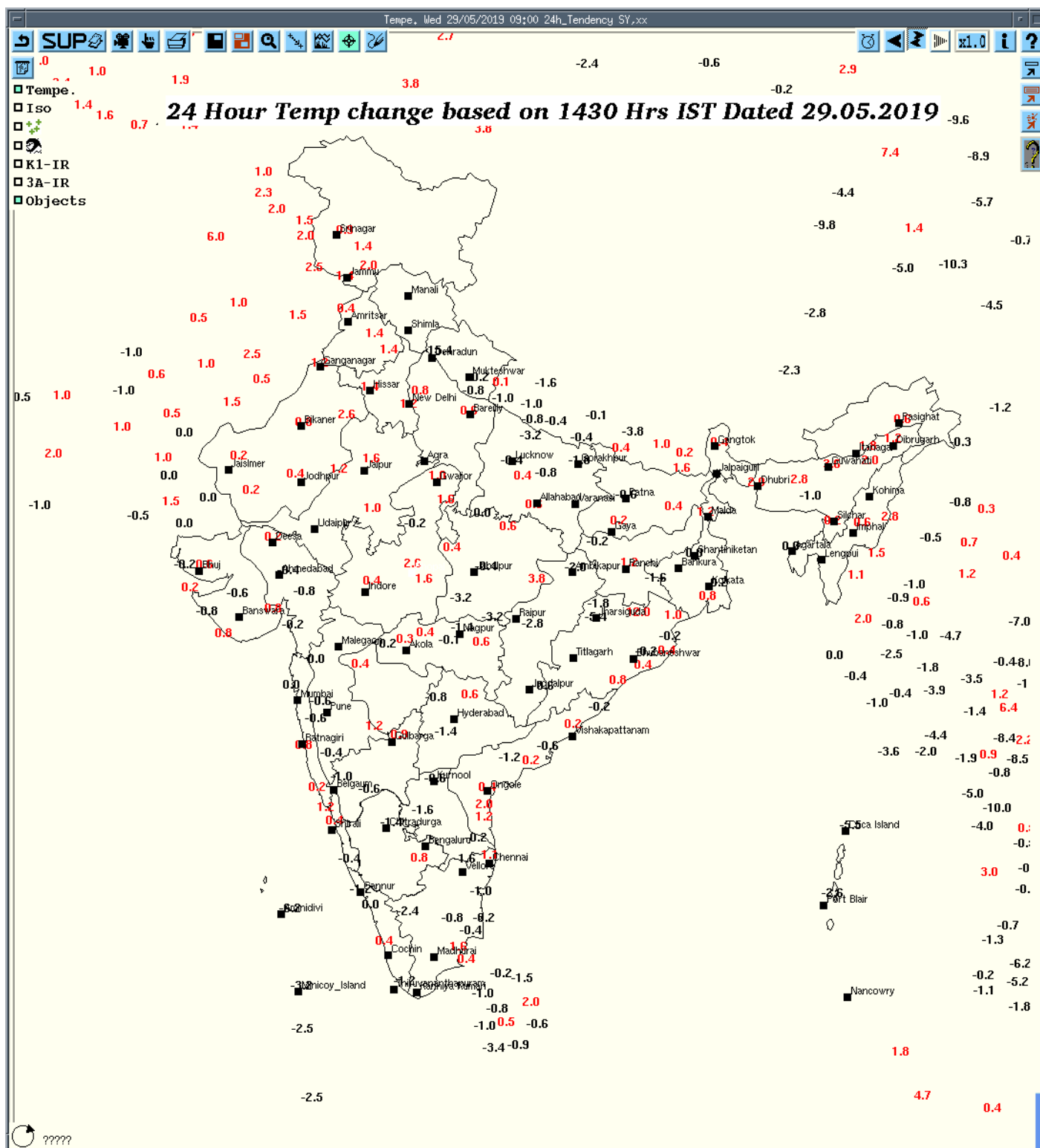


Annexure 2





Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 30th May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 29 May to 0830 hrs IST 30 May, 2019)

Heat Wave:

Yesterday, **heat wave conditions** were in most parts with **Severe Heat wave** in isolated pockets over Vidarbha; **heat wave** in many parts with **severe heat wave** in isolated pockets over West Rajasthan; **Heat Wave to Severe Heat Wave** in isolated pockets over East Uttar Pradesh; **Heat wave** conditions in some parts over Marathwada, Telangana and Madhya Pradesh and in isolated pockets over northern parts of North Interior Karnataka, Madhya Maharashtra, East Rajasthan and Haryana, Chandigarh & Delhi (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at most places over Vidarbha, Marathwada and North Interior Karnataka; at many places over West Rajasthan, Rayalseema and Jharkhand; at a few places over Himachal Pradesh, Punjab, West Madhya Pradesh, Madhya Maharashtra, Telangana, Nagaland, Manipur, Mizoram & Tripura and at isolated places over Jammu & Kashmir, Bihar, Uttar Pradesh, East Rajasthan, East Madhya Pradesh, Gangetic West Bengal, Assam & Meghalaya and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over Kerala; at a few places over Gujarat Region, Odisha, Coastal Andhra Pradesh and Lakshadweep and at isolated places over Sub-Himalayan West Bengal & Sikkim, Chhattisgarh and Haryana, Chandigarh & Delhi; Yesterday, the **highest maximum temperature of 48°C** was recorded at **Chandrapur (Vidarbha)**(**Annexure 1 & 2**).

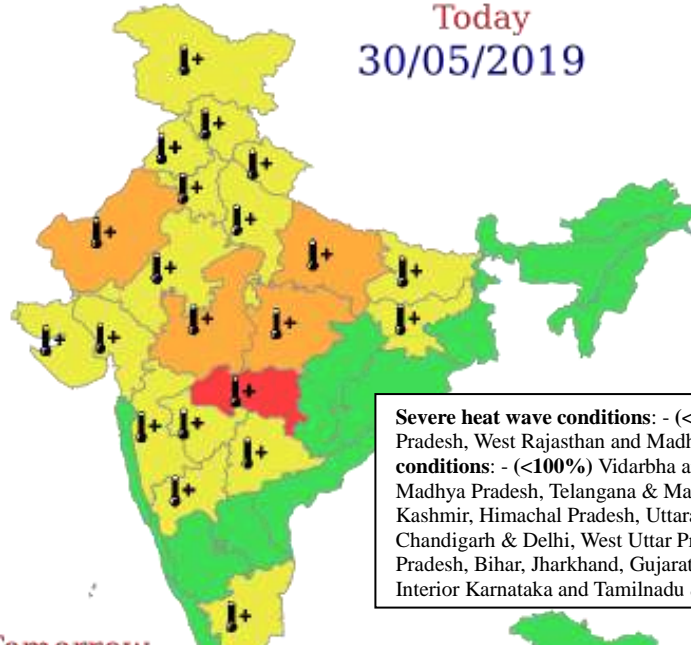
Temperatures Recorded at 1430 Hours IST of Today, the 30th May, 2019

- **Ganganagar (West Rajasthan) & Khujraho (East Madhya Pradesh)** recorded the maximum temperature of **47.2°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-2°C** at most places over Jammu & Kashmir, Punjab, Himachal Pradesh, Haryana, Delhi and Kerala; at many places over Uttar Pradesh and East Madhya Pradesh; at a few places over Uttarakhand and at one or two pockets of West Rajasthan, Gujarat region, Karnataka, Coastal Andhra Pradesh, Odisha, Chhattisgarh, Jharkhand and Tamilnadu & Puducherry (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

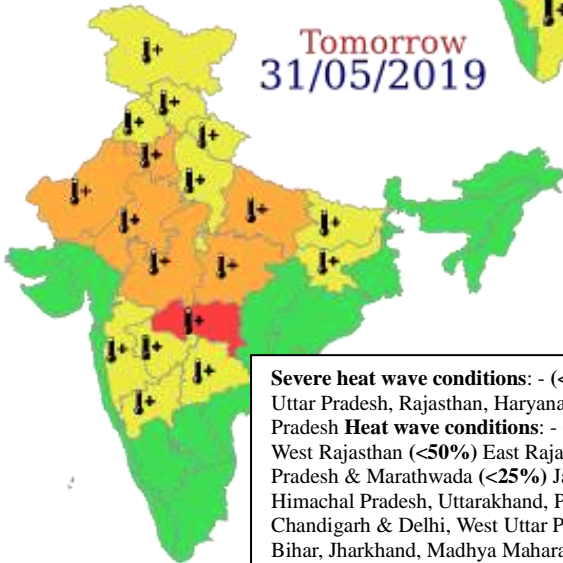
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
30/05/2019



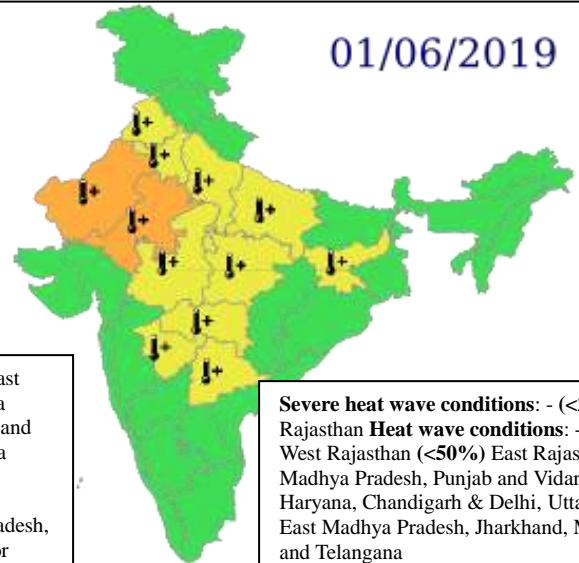
Severe heat wave conditions: - (<25%) Vidarbha, East Uttar Pradesh, West Rajasthan and Madhya Pradesh **Heat wave conditions:** - (<100%) Vidarbha and West Rajasthan (<50%) West Madhya Pradesh, Telangana & Marathwada (<25%) Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh, East Rajasthan, Madhya Pradesh, Bihar, Jharkhand, Gujarat, Madhya Maharashtra, North Interior Karnataka and Tamilnadu & Puducherry.

Tomorrow
31/05/2019



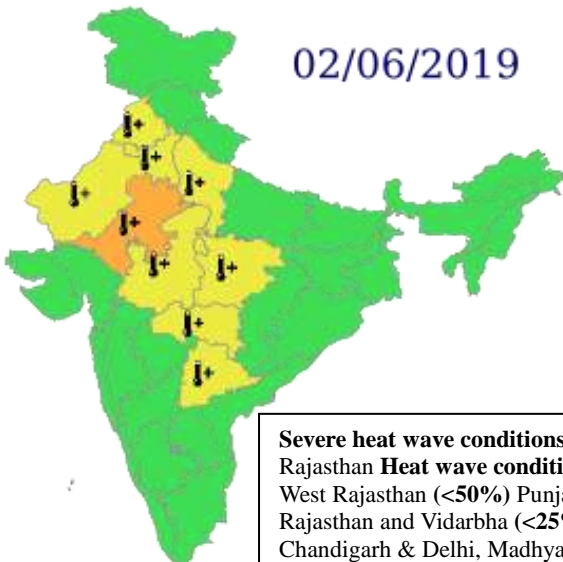
Severe heat wave conditions: - (<25%) Vidarbha, East Uttar Pradesh, Rajasthan, Haryana, Delhi and Madhya Pradesh **Heat wave conditions:** - (<100%) Vidarbha and West Rajasthan (<50%) East Rajasthan, West Madhya Pradesh & Marathwada (<25%) Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh, Madhya Pradesh, Bihar, Jharkhand, Madhya Maharashtra, North Interior Karnataka and Telangana.

01/06/2019



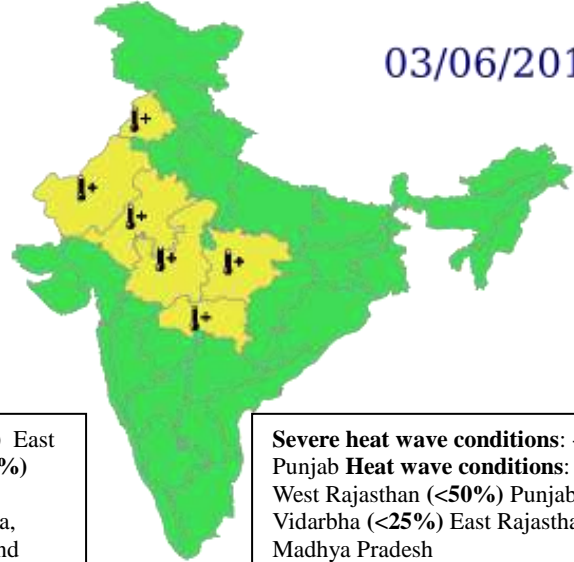
Severe heat wave conditions: - (<25%) Rajasthan **Heat wave conditions:** - (<100%) West Rajasthan (<50%) East Rajasthan, West Madhya Pradesh, Punjab and Vidarbha (<25%) Haryana, Chandigarh & Delhi, Uttar Pradesh, East Madhya Pradesh, Jharkhand, Marathwada and Telangana

02/06/2019



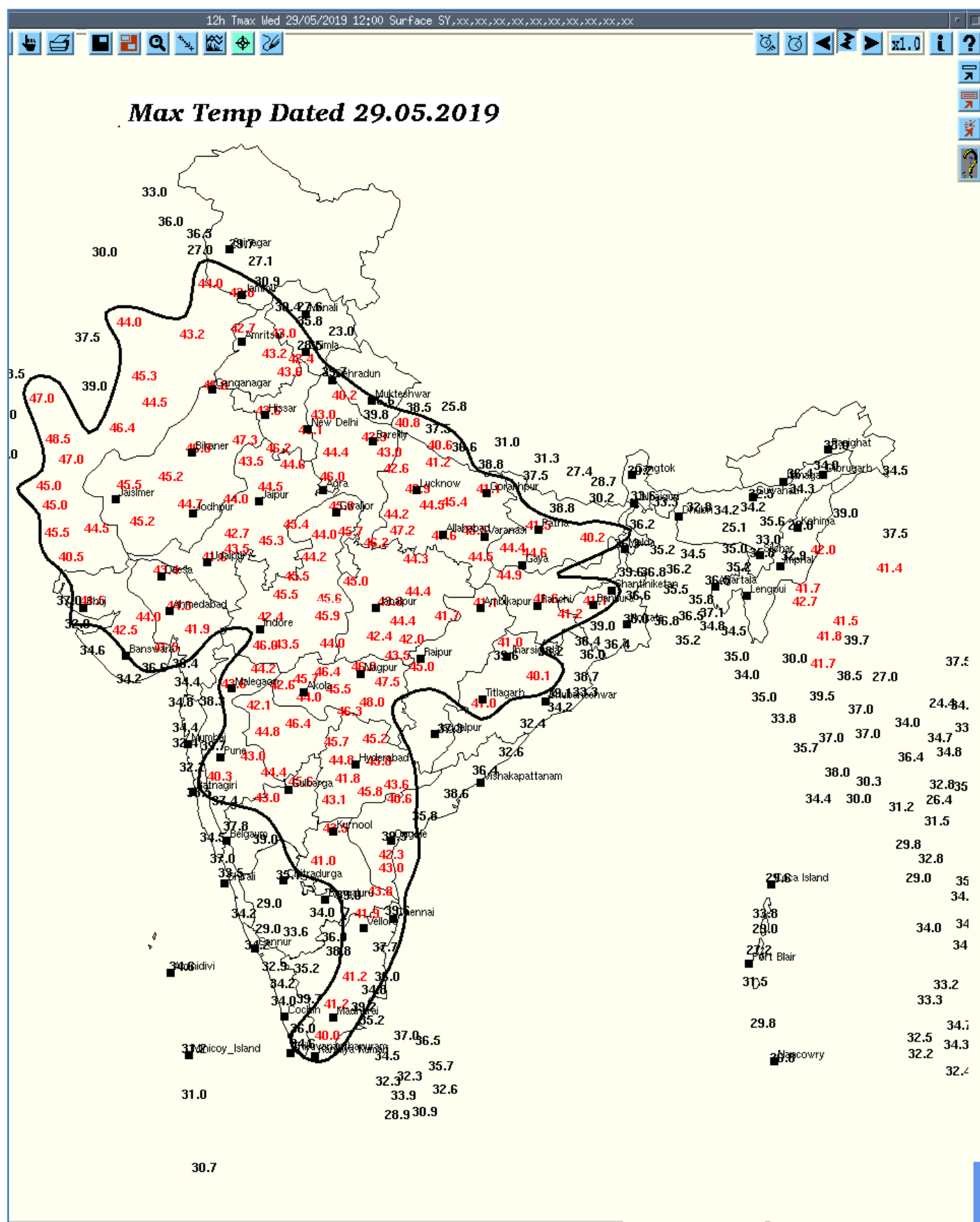
Severe heat wave conditions: - (<25%) East Rajasthan **Heat wave conditions:** - (<75%) West Rajasthan (<50%) Punjab, East Rajasthan and Vidarbha (<25%) Haryana, Chandigarh & Delhi, Madhya Pradesh and Telangana

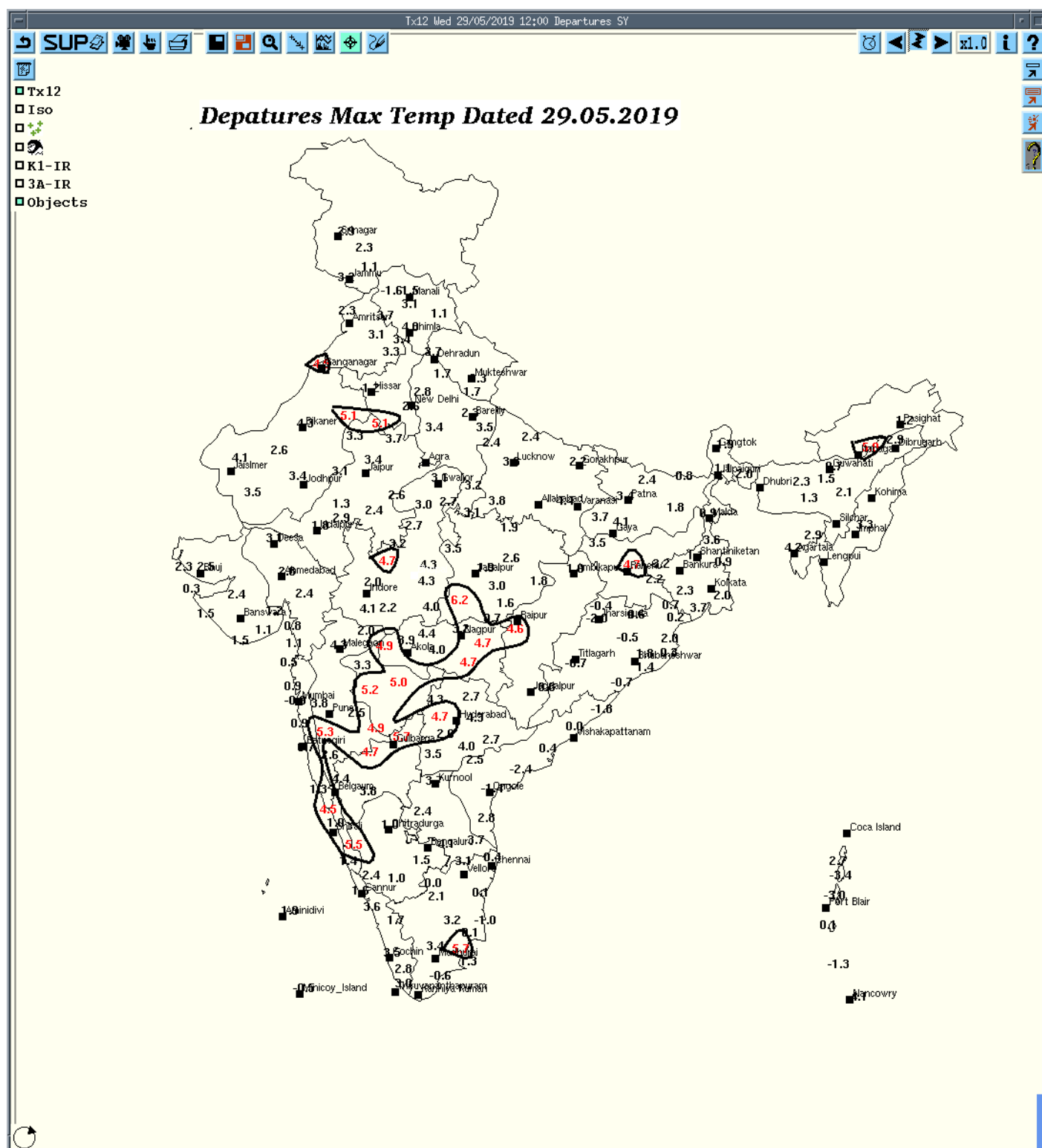
03/06/2019



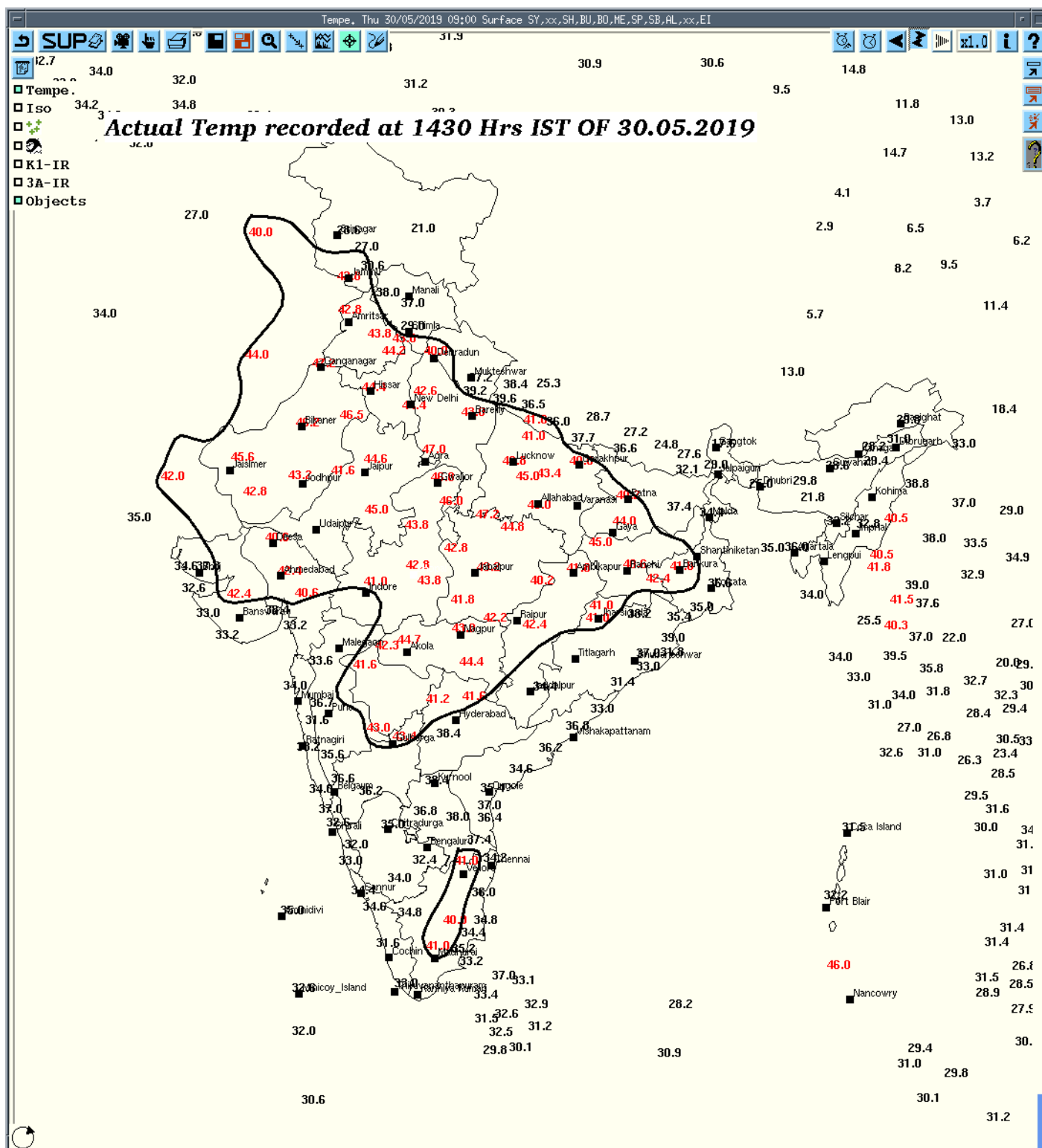
Severe heat wave conditions: - (<25%) Punjab **Heat wave conditions:** - (<75%) West Rajasthan (<50%) Punjab and Vidarbha (<25%) East Rajasthan and Madhya Pradesh

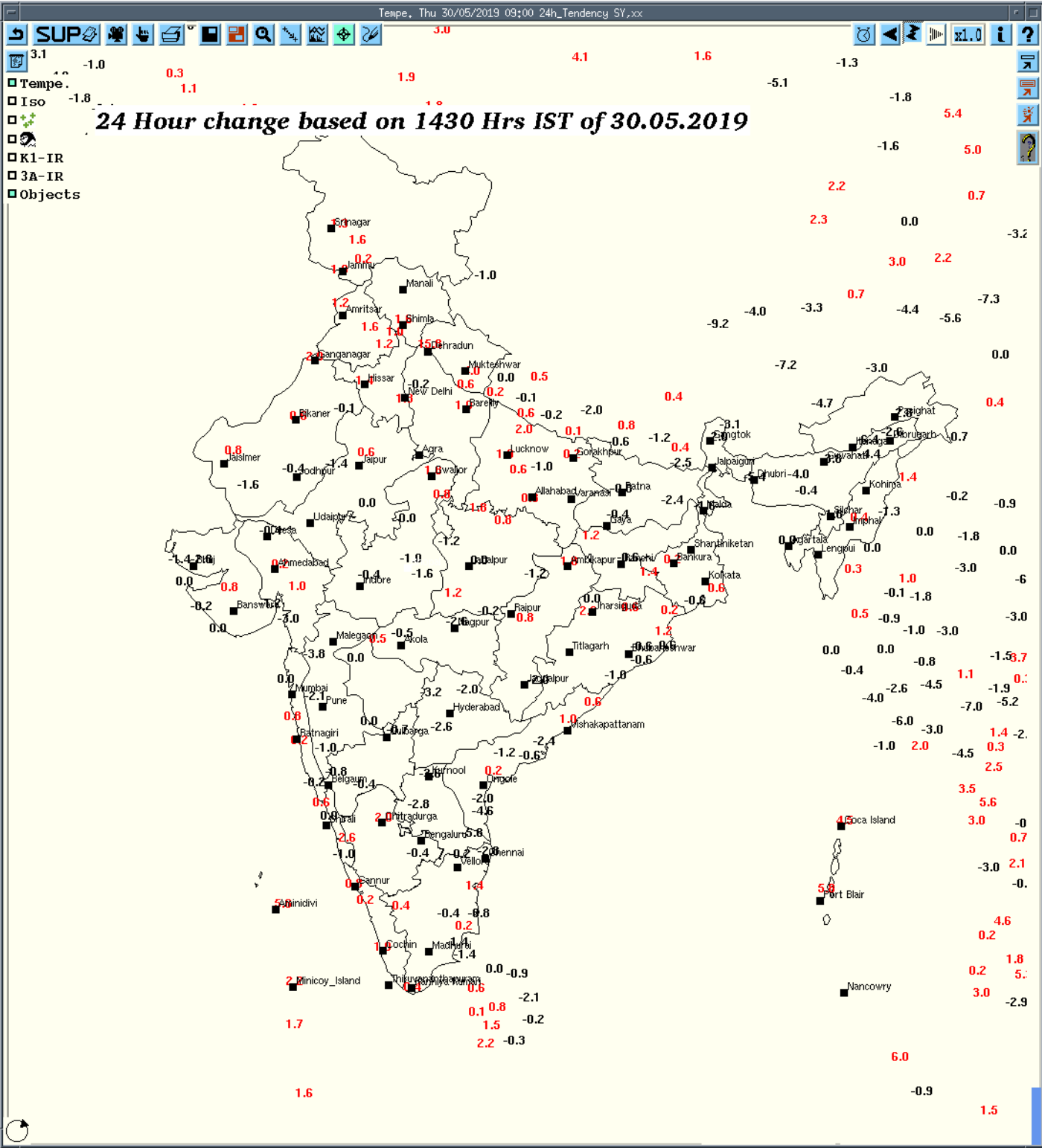
Annexure 1





Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 31st May, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 30 May to 0830 hrs IST 31 May, 2019)

Heat Wave:

Yesterday, **Heat Wave Conditions** were observed in some parts with **Severe Heat wave** in isolated pockets over East Uttar Pradesh and West Rajasthan; **Heat wave conditions** in many parts over Vidarbha; in some parts over West Madhya Pradesh and in isolated pockets over Haryana, Chandigarh & Delhi, East Rajasthan, West Uttar Pradesh and East Madhya Pradesh (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at a few places over Haryana, Chandigarh & Delhi, West Rajasthan, Uttarakhand and North Interior Karnataka; at isolated places over Rayalaseema and South Interior Karnataka; **appreciably above normal (3.1°C to 5.0°C)** at most places over Punjab, West Uttar Pradesh and Jharkhand; at many places over Jammu & Kashmir, Himachal Pradesh, East Uttar Pradesh, West Madhya Pradesh, Marathwada, Vidarbha and Nagaland, Manipur, Mizoram & Tripura; at a few places over Bihar, Madhya Maharashtra, Coastal Karnataka and Lakshadweep; at isolated places over Gangetic West Bengal, Gujarat Region, Telangana, Kerala and Tamil Nadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over East Madhya Pradesh; at a few places over Chhattisgarh and Rayalaseema and at isolated places over Odisha; Yesterday, the **highest maximum temperature of 48.2°C** was recorded at **Banda (East Uttar Pradesh)** (**Annexure 1 & 2**).

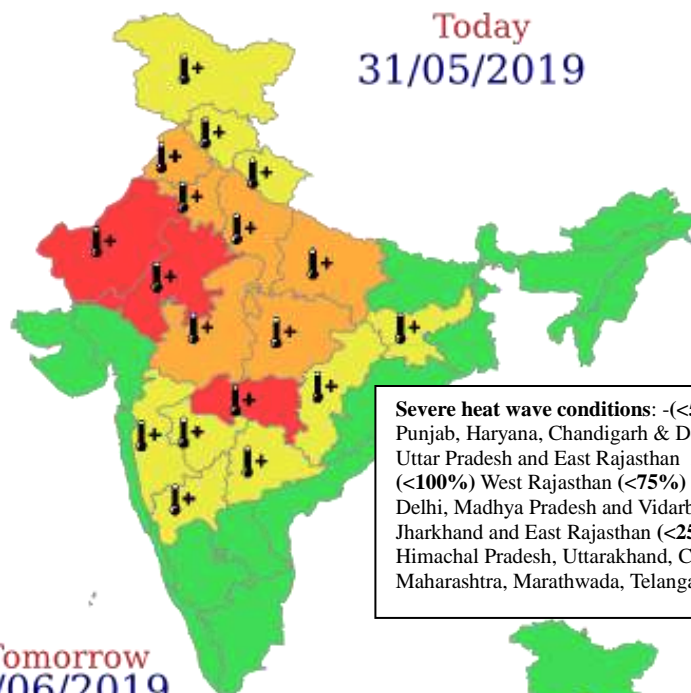
Temperatures Recorded at 1430 Hours IST of Today, the 31st May, 2019

- **Ganganagar (West Rajasthan)** recorded the maximum temperature of **48.8°C** (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-2°C** at most places over Telangana; at many places over Coastal Andhra Pradesh; at a few places over Uttarakhand and Tamilnadu & Puducherry and at one or two pockets of Jammu & Kashmir, West Rajasthan, Madhya Pradesh, Madhya Maharashtra, Karnataka, Vidarbha, North Interior Karnataka, Odisha, Jharkhand and northeastern states (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

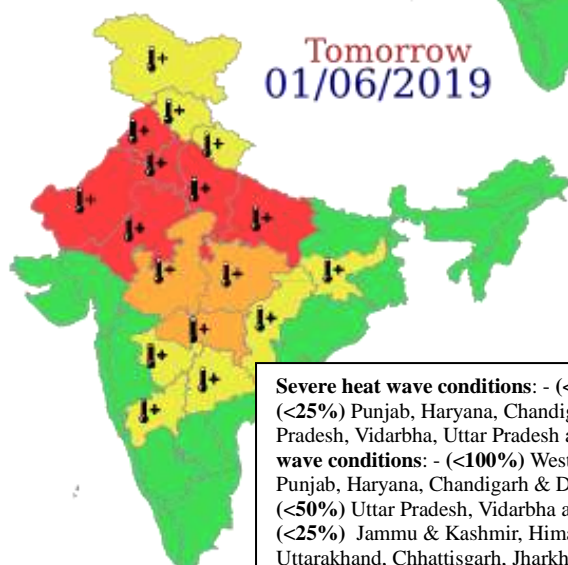
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
31/05/2019



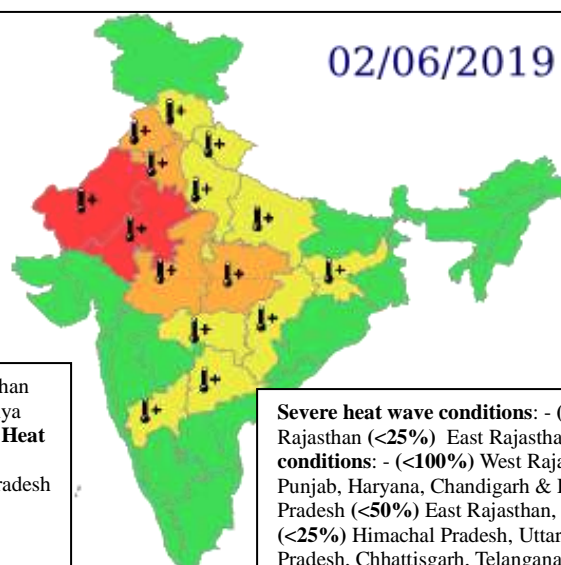
Severe heat wave conditions: - (<50%) West Rajasthan (<25%) Punjab, Haryana, Chandigarh & Delhi, Madhya Pradesh, Vidarbha, Uttar Pradesh and East Rajasthan **Heat wave conditions:** - (<100%) West Rajasthan (<75%) Punjab, Haryana, Chandigarh & Delhi, Madhya Pradesh and Vidarbha (<50%) Uttar Pradesh, Jharkhand and East Rajasthan (<25%) Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Chhattisgarh, Madhya Maharashtra, Marathwada, Telangana and North Interior Karnataka

Tomorrow
01/06/2019



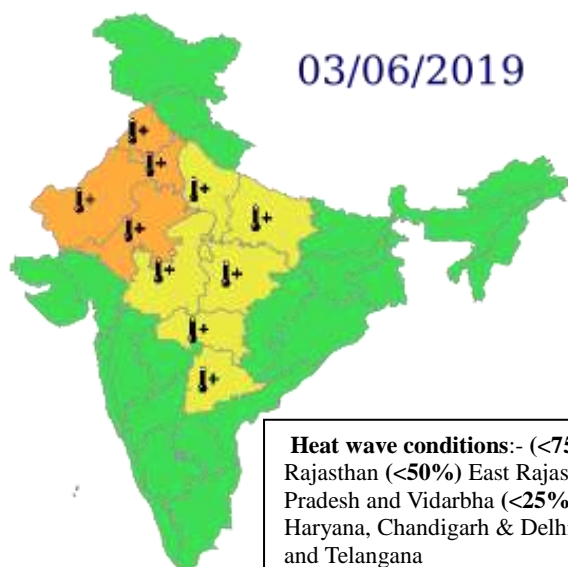
Severe heat wave conditions: - (<50%) West Rajasthan (<25%) Punjab, Haryana, Chandigarh & Delhi, Madhya Pradesh, Vidarbha, Uttar Pradesh and East Rajasthan **Heat wave conditions:** - (<100%) West Rajasthan (<75%) Punjab, Haryana, Chandigarh & Delhi and Madhya Pradesh (<50%) Uttar Pradesh, Vidarbha and East Rajasthan (<25%) Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Chhattisgarh, Jharkhand, Marathwada, Telangana and North Interior Karnataka

02/06/2019



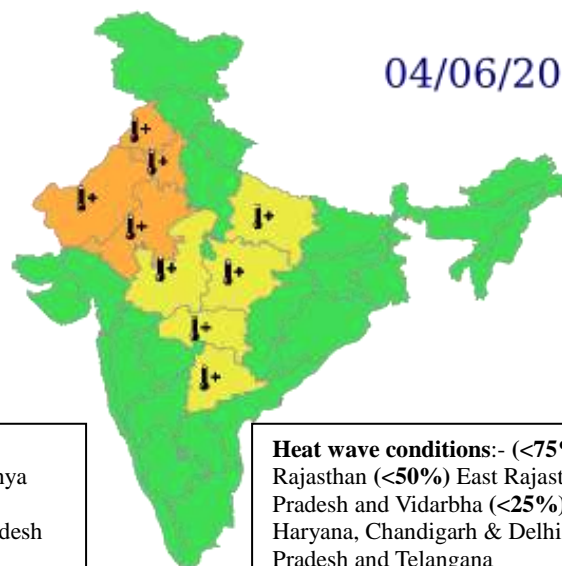
Severe heat wave conditions: - (<50%) West Rajasthan (<25%) East Rajasthan **Heat wave conditions:** - (<100%) West Rajasthan (<75%) Punjab, Haryana, Chandigarh & Delhi, Madhya Pradesh (<50%) East Rajasthan, Vidarbha (<25%) Himachal Pradesh, Uttarakhand, Uttar Pradesh, Chhattisgarh, Telangana, Jharkhand and North Interior Karnataka

03/06/2019



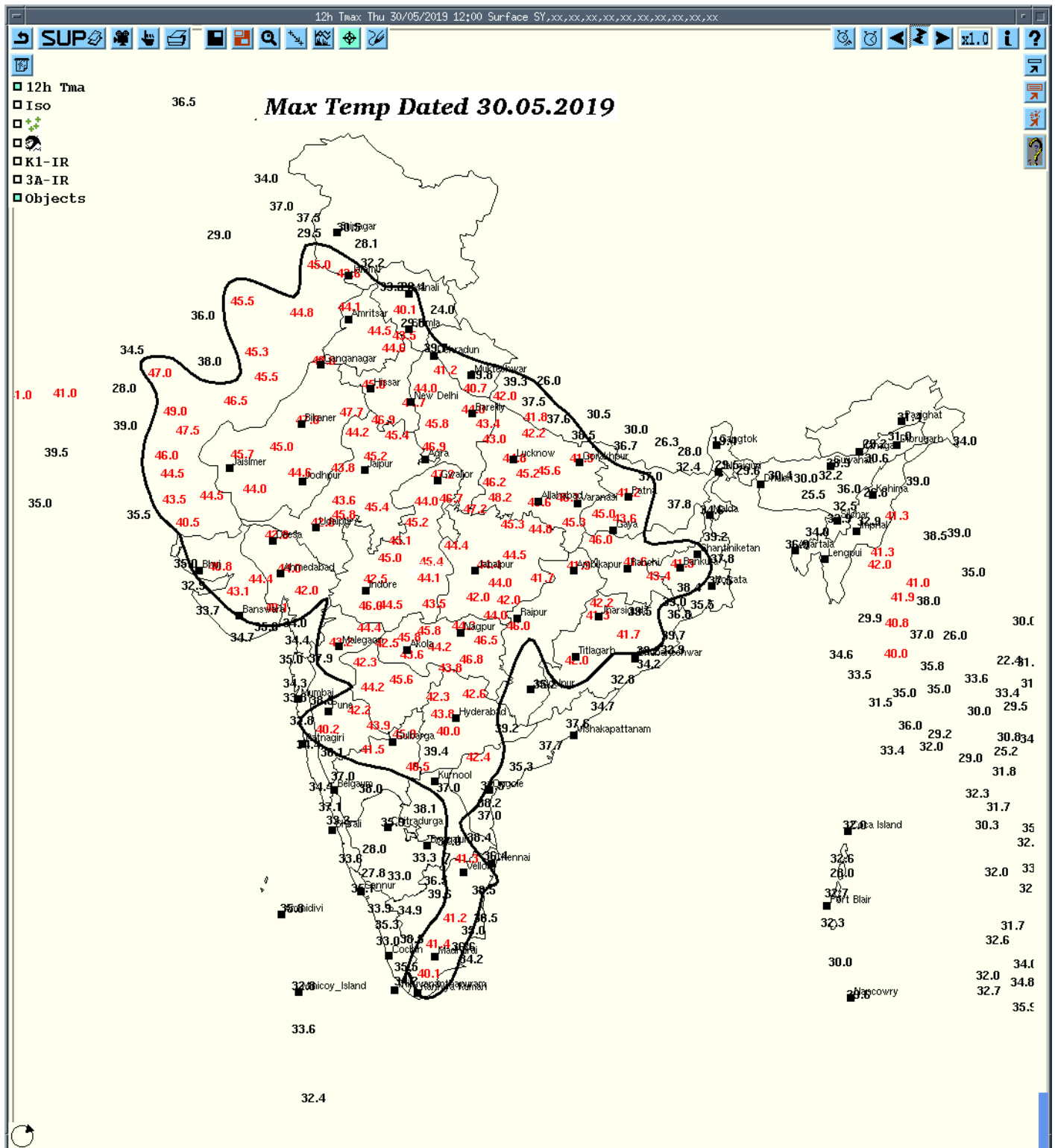
Heat wave conditions:- (<75%) West Rajasthan (<50%) East Rajasthan, Madhya Pradesh and Vidarbha (<25%) Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh and Telangana

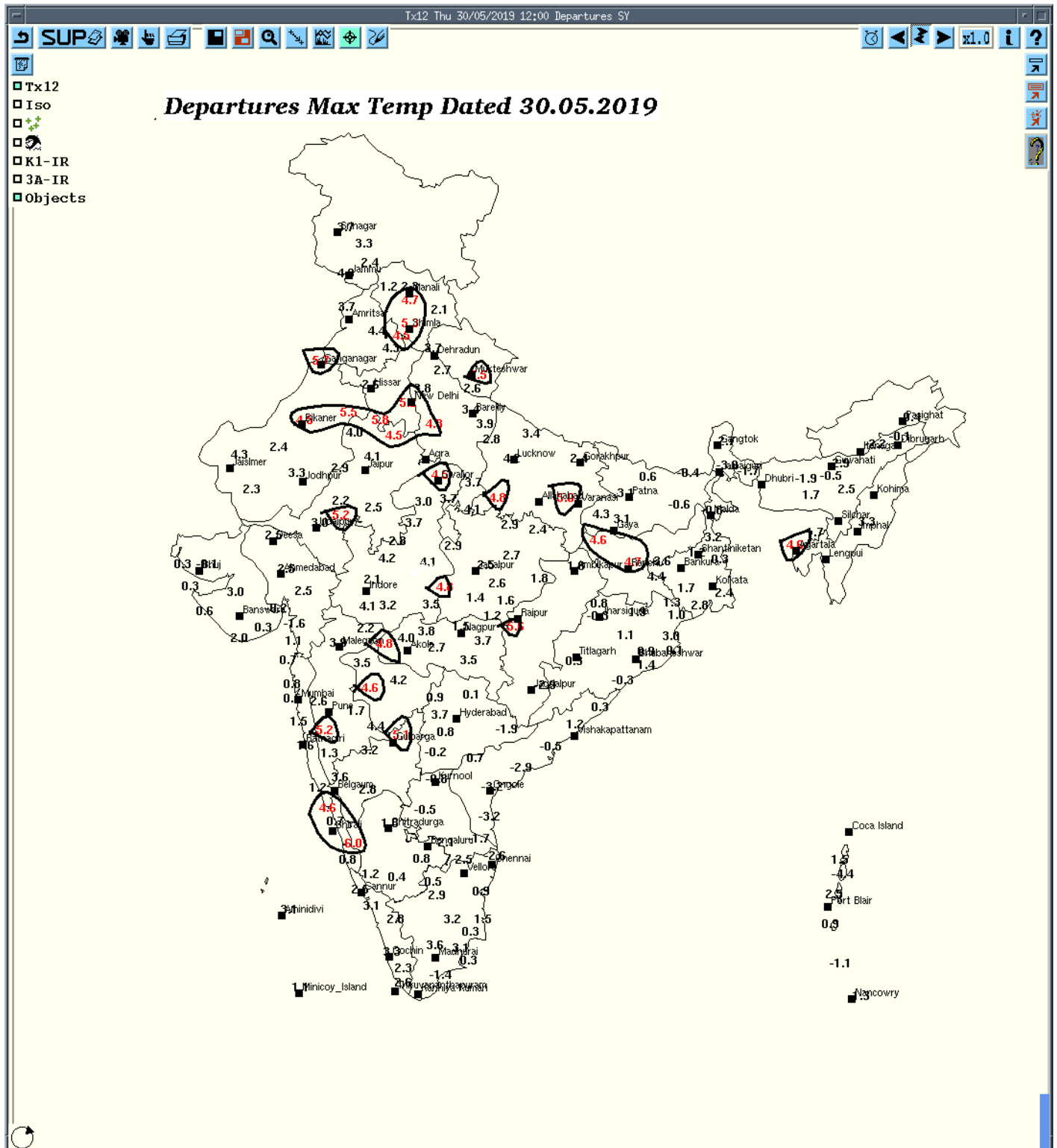
04/06/2019



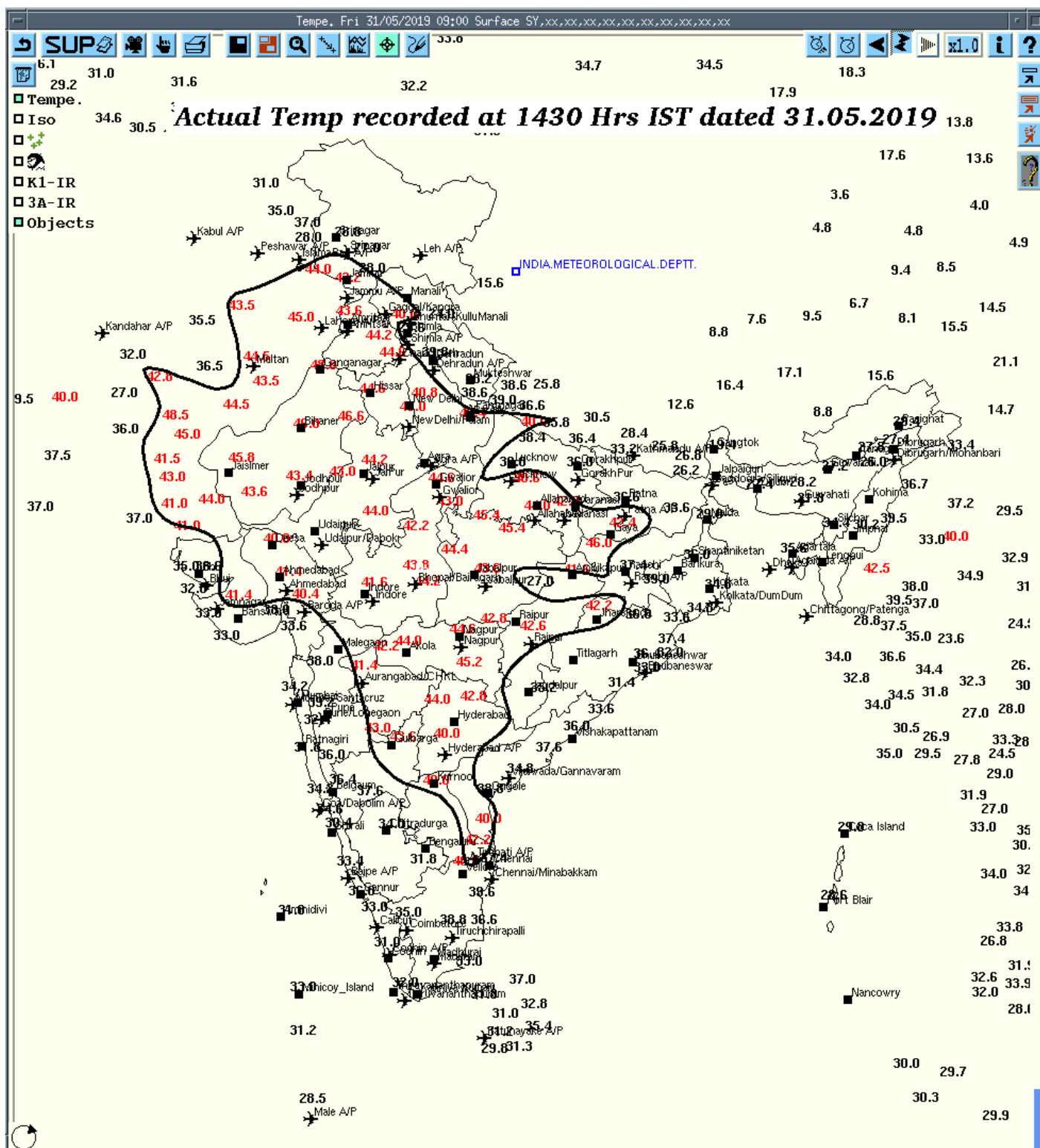
Heat wave conditions:- (<75%) West Rajasthan (<50%) East Rajasthan, Madhya Pradesh and Vidarbha (<25%) Punjab, Haryana, Chandigarh & Delhi, East Uttar Pradesh and Telangana

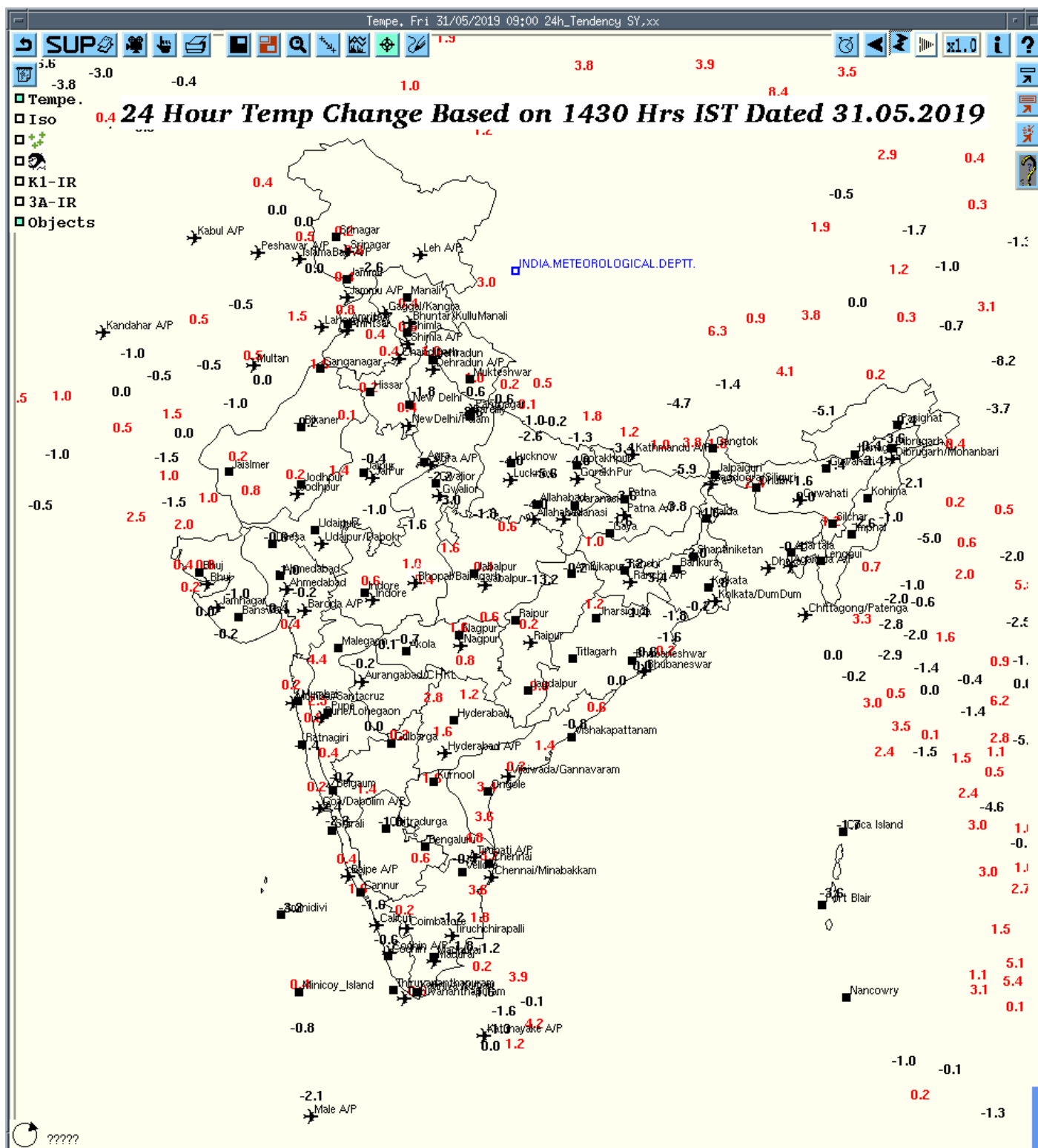
Annexure 1





Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 03rd June, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 02 June, 2019 to 0830 hrs IST 03 June, 2019)

Heat Wave:

Yesterday, **severe Heat Wave conditions** observed in most parts over West Rajasthan. Heat wave conditions in many parts with severe Heat wave in isolated pockets over East Madhya Pradesh and Vidarbha. Heat wave conditions to severe heat wave in isolated pockets over south Uttar Pradesh. Heat Wave conditions observed in some parts over East Rajasthan, West Madhya Pradesh, Haryana and Marathwada and in isolated pockets over Gujarat state and Telangana **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over West Rajasthan; at a few places over East Rajasthan and at isolated places over Madhya Maharashtra and Marathwada; **appreciably above normal (3.1°C to 5.0°C)** at most places over Madhya Pradesh and Vidarbha; at many places over Telangana; at a few places over Konkan & Goa, Coastal & North Interior Karnataka, Kerala & Mahe, Rayalseema, Gujarat and Andaman & Nicobar Islands; **above normal (1.6°C to 3.0°C)** at most places over Punjab, Himachal Pradesh, Jammu & Kashmir and Haryana, Chandigarh & Delhi; at many places over Tamilnadu, Puducherry & Karaikal. **Yesterday, the highest maximum temperature of 48.9°C** was recorded at Churu **(West Rajasthan).**

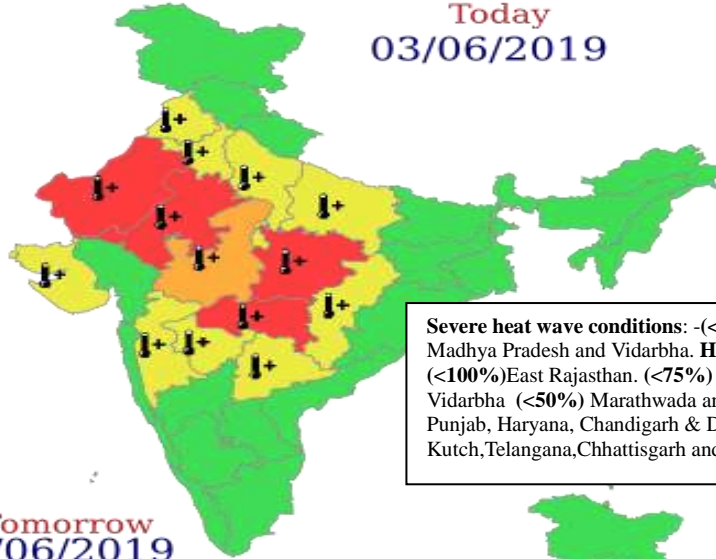
Temperatures Recorded at 1430 Hours IST of Today, the 03rd June, 2019

- **Churu (West Rajasthan)** recorded the maximum temperature of **49.8°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-6°C** at many places over West Bengal; **risen by 1-3°C** at a few places over East Madhya Pradesh and at one or two pockets of West Rajasthan, West Madhya Pradesh, Bihar, Chhattisgarh, Vidarbha and Tamilnadu & Puducherry **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

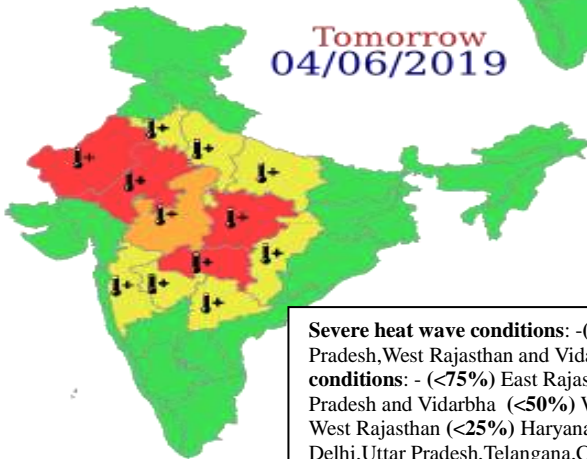
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
03/06/2019



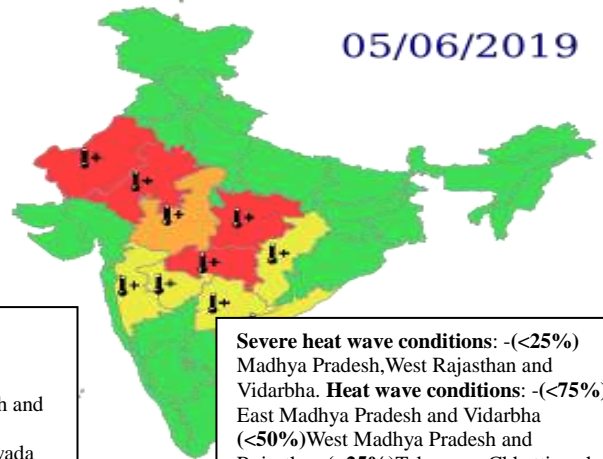
Severe heat wave conditions: -(<75%) West Rajasthan. (<25%) Madhya Pradesh and Vidarbha. **Heat wave conditions:** - (<100%) East Rajasthan. (<75%) East Madhya Pradesh and Vidarbha (<50%) Marathwada and West Madhya Pradesh. (<25%) Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh, Saurashtra & Kutch, Telangana, Chhattisgarh and Madhya Maharashtra.

Tomorrow
04/06/2019



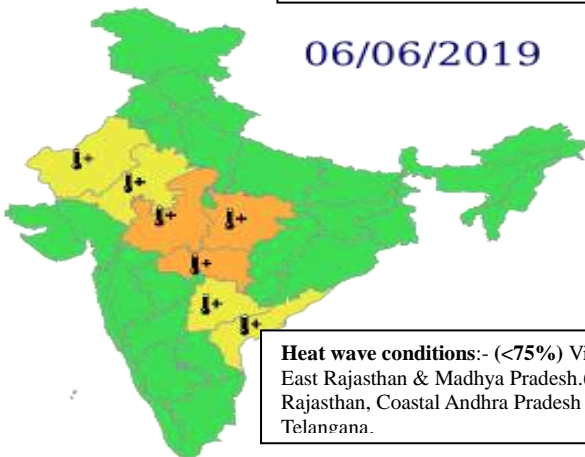
Severe heat wave conditions: -(<25%) Madhya Pradesh, West Rajasthan and Vidarbha. **Heat wave conditions:** - (<75%) East Rajasthan, East Madhya Pradesh and Vidarbha (<50%) West Madhya Pradesh and West Rajasthan (<25%) Haryana, Chandigarh & Delhi, Uttar Pradesh, Telangana, Chhattisgarh, Marathwada and Madhya Maharashtra.

05/06/2019



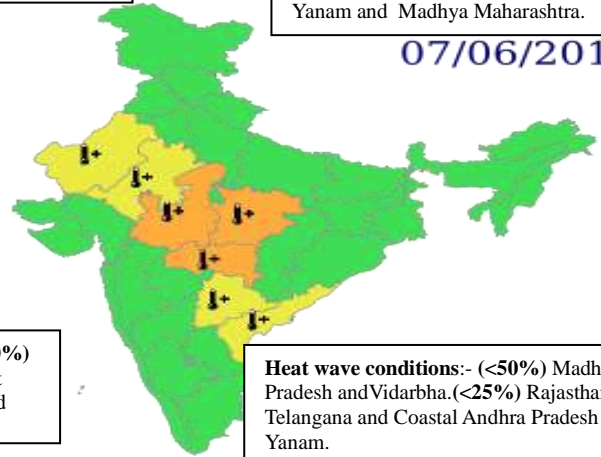
Severe heat wave conditions: -(<25%) Madhya Pradesh, West Rajasthan and Vidarbha. **Heat wave conditions:** -(<75%) East Madhya Pradesh and Vidarbha (<50%) West Madhya Pradesh and Rajasthan. (<25%) Telangana, Chhattisgarh, Marathwada, Coastal Andhra Pradesh & Yanam and Madhya Maharashtra.

06/06/2019



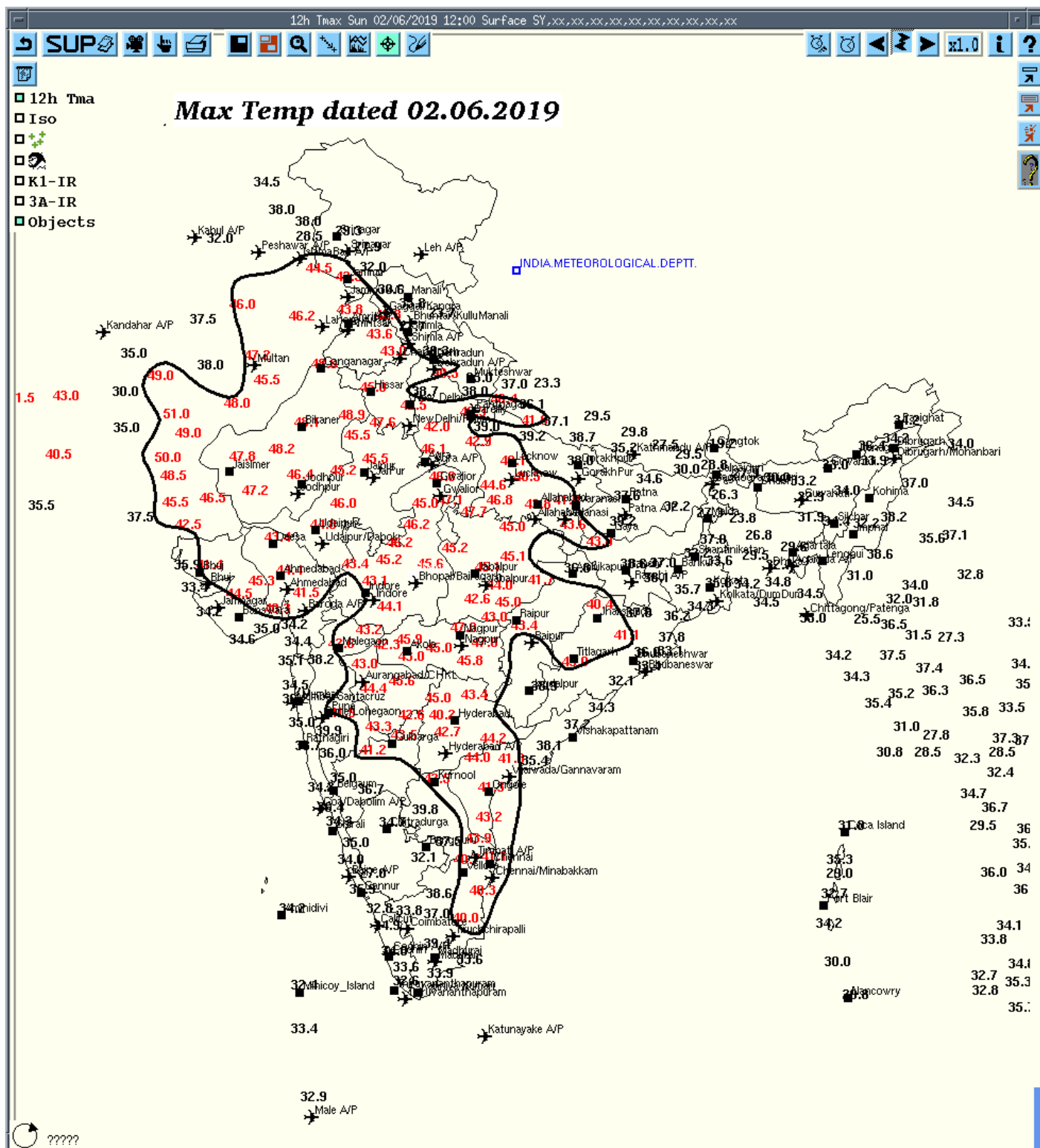
Heat wave conditions:- (<75%) Vidarbha (<50%) East Rajasthan & Madhya Pradesh. (<25%) West Rajasthan, Coastal Andhra Pradesh & Yanam and Telangana.

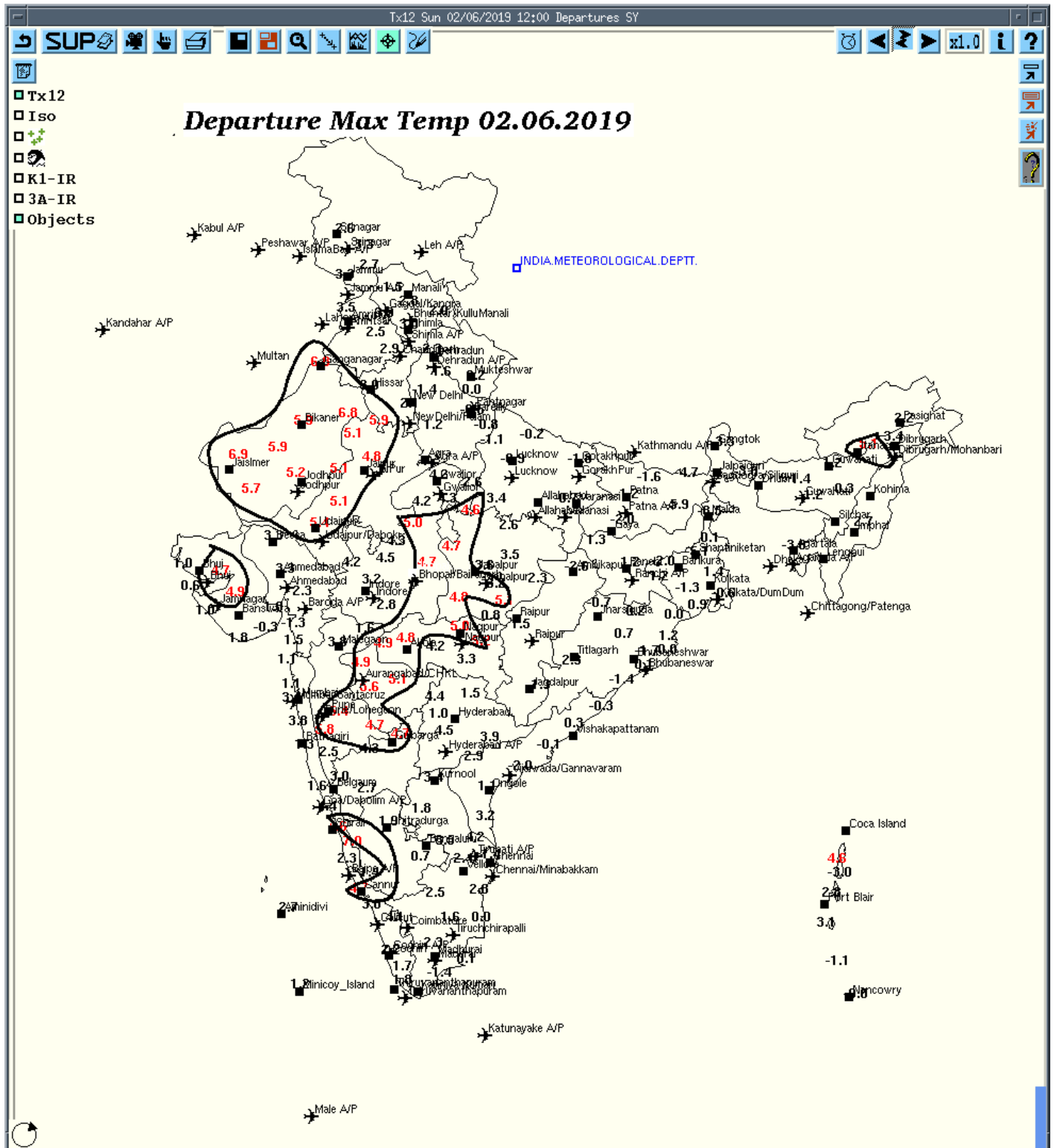
07/06/2019

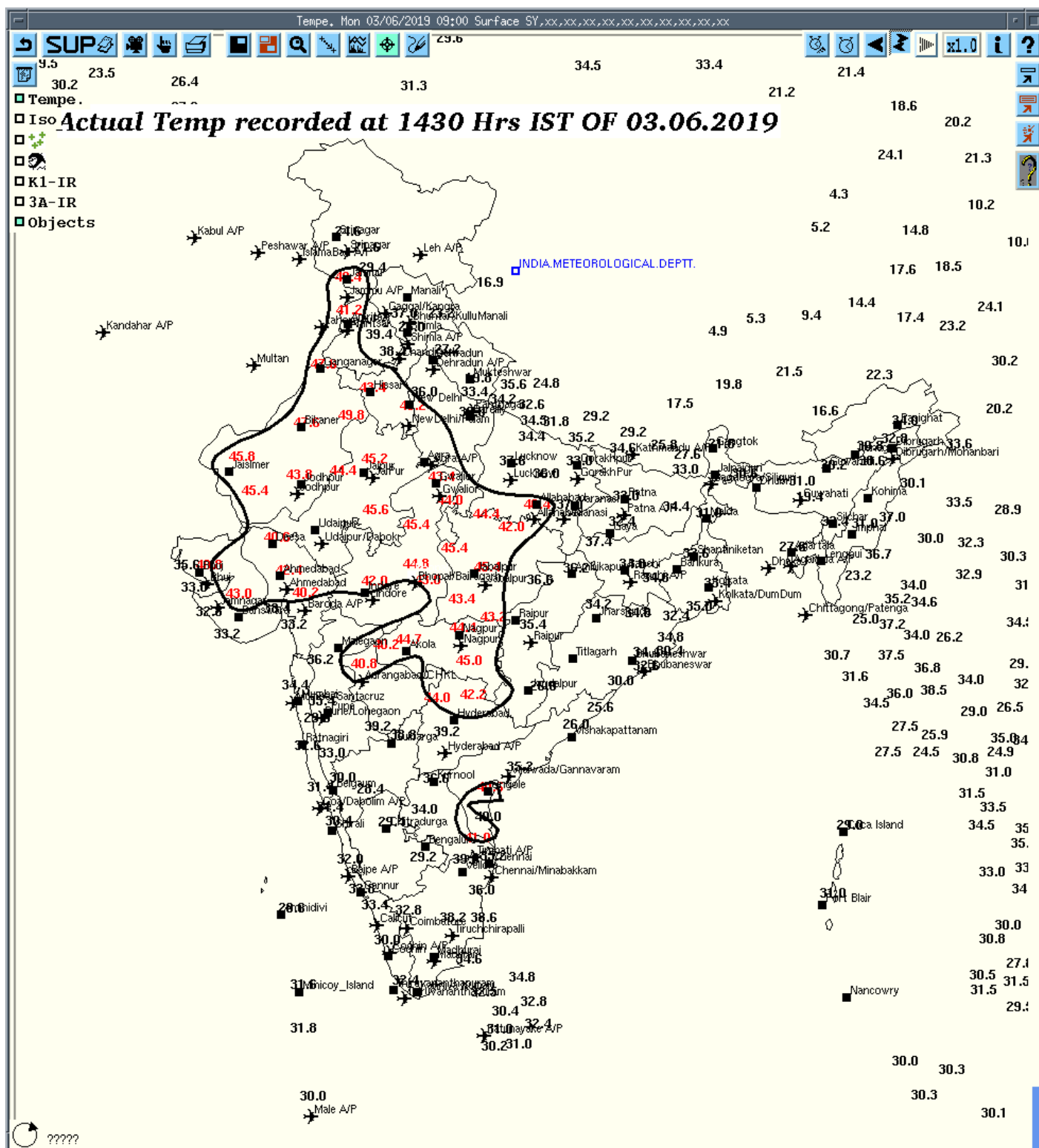


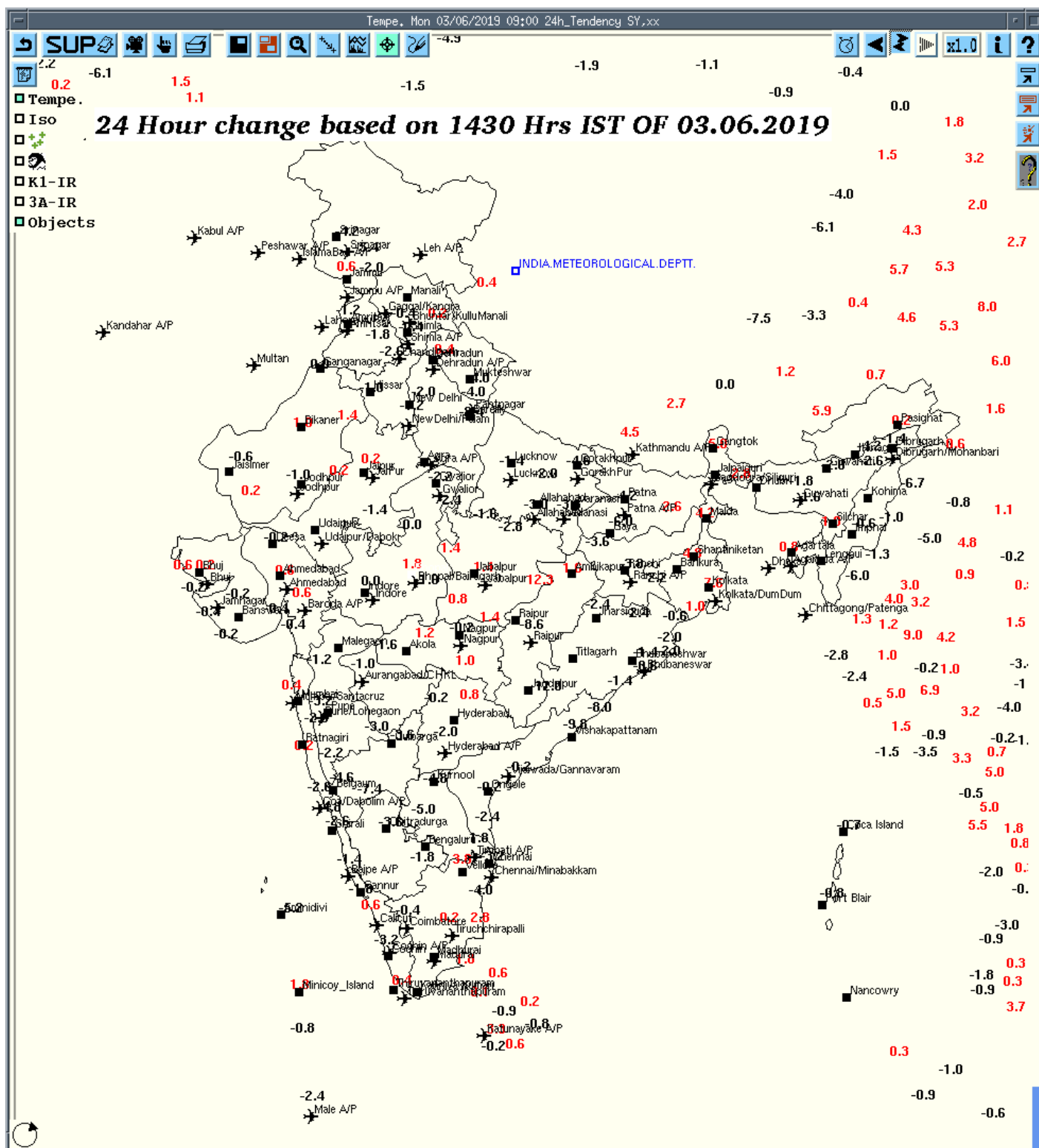
Heat wave conditions:- (<50%) Madhya Pradesh and Vidarbha. (<25%) Rajasthan, Telangana and Coastal Andhra Pradesh & Yanam.

Annexure 1









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 01st June, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 31 May to 0830 hrs IST 01 June, 2019)

Heat Wave:

Yesterday, **Heat wave conditions** with severe heat wave in some parts over Madhya Maharashtra. Heat wave conditions in some parts with severe heat wave at isolated pockets over West Rajasthan. Heat wave conditions with severe heat wave at isolated pockets over Uttar Pradesh. Heat wave conditions in many parts over Punjab, Haryana, Chandigarh & Delhi and Vidarbha; in some parts over East Madhya Pradesh and Marathwada and at isolated pockets over East Rajasthan, West Madhya Pradesh, North Interior Karnataka and Jharkhand (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Madhya Maharashtra; at isolated places over Himachal Pradesh, West Rajasthan, East Madhya Pradesh and North Interior Karnataka; **appreciably above normal (3.1°C to 5.0°C)** at most places over Punjab, Haryana, Chandigarh & Delhi, Vidarbha and Marathwada; at many places over Jammu & Kashmir, Uttarakhand, East Rajasthan, West Madhya Pradesh, Coastal Karnataka and Jharkhand; at a few places over Rayalaseema and Kerala; at isolated places over Saurashtra & Kutch and Telangana; **above normal (1.6°C to 3.0°C)** at many places over West Uttar Pradesh, Gujarat region, Konkan & Goa, Chhattisgarh, South Interior Karnataka and Tamilnadu & Puducherry and at isolated places over Odisha and Lakshadweep. Yesterday, the **highest maximum temperature of 49.6°C** was recorded at **Ganganagar (West Rajasthan) (Annexure 1 & 2)**.

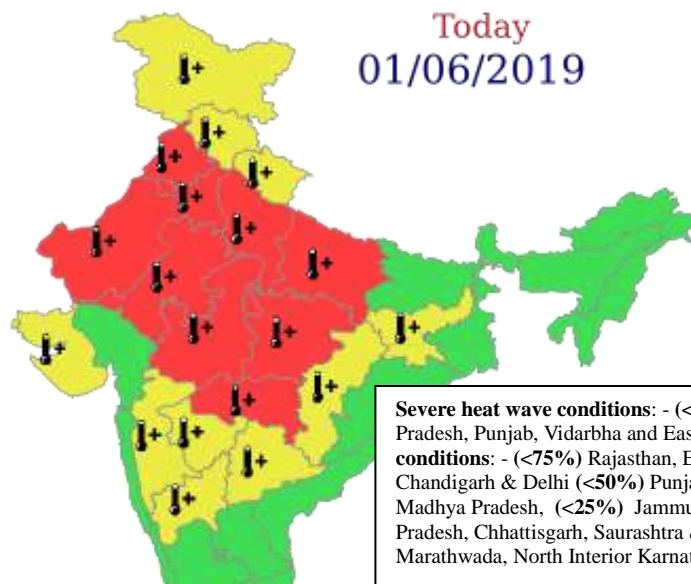
Temperatures Recorded at 1430 Hours IST of Today, the 01st June, 2019

- **Churu (West Rajasthan)** recorded the maximum temperature of **48.8°C (Annexure 3)**.
- **Temperatures recorded at 1430 hours IST of today have risen by 3-6°C** at most places over Assam & Meghalaya and at one or two pockets over Coastal Andhra Pradesh and Sikkim; **risen by 1-3°C** at most places over Gangetic West Bengal and Kerala; at many places over Bihar and Saurashtra & Kutch; at a few places over Coastal Andhra Pradesh, East Rajasthan and West Madhya Pradesh and at one or two pockets of Jammu & Kashmir, West Rajasthan, Gujarat region, Vidarbha, Jharkhand, Odisha and Tamilnadu & Puducherry (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

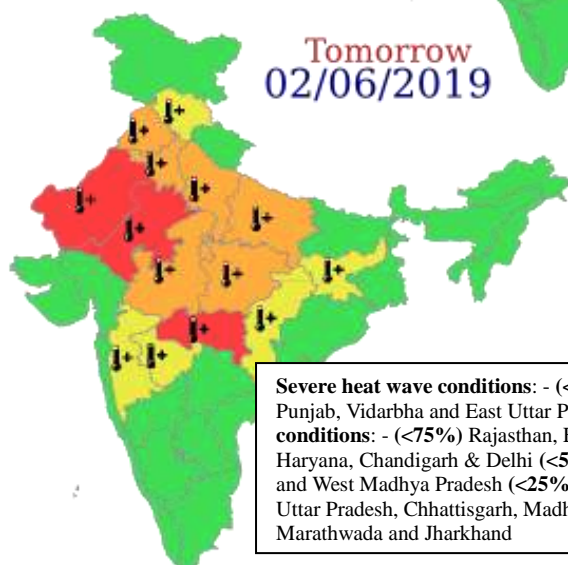
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
01/06/2019



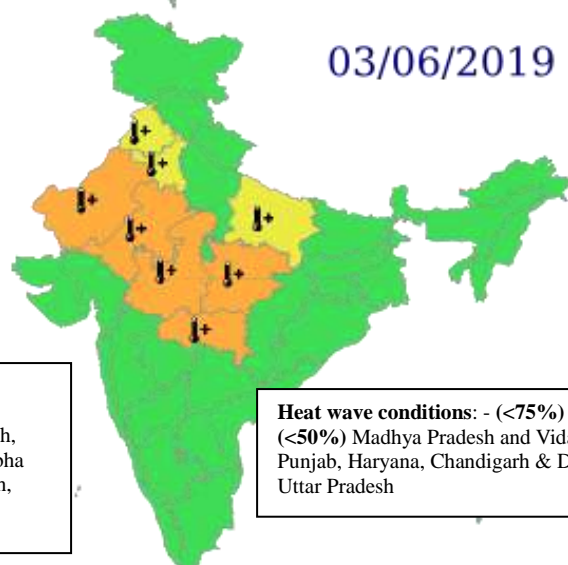
Severe heat wave conditions: - (<25%) Rajasthan, East Madhya Pradesh, Punjab, Vidarbha and East Uttar Pradesh **Heat wave conditions:** - (<75%) Rajasthan, East Madhya Pradesh, Haryana, Chandigarh & Delhi (<50%) Punjab, Vidarbha, Himachal Pradesh, Madhya Pradesh, (<25%) Jammu & Kashmir, Uttarakhand, Uttar Pradesh, Chhattisgarh, Saurashtra & Kutch, Madhya Maharashtra, Marathwada, North Interior Karnataka, Telangana and Jharkhand

Tomorrow
02/06/2019



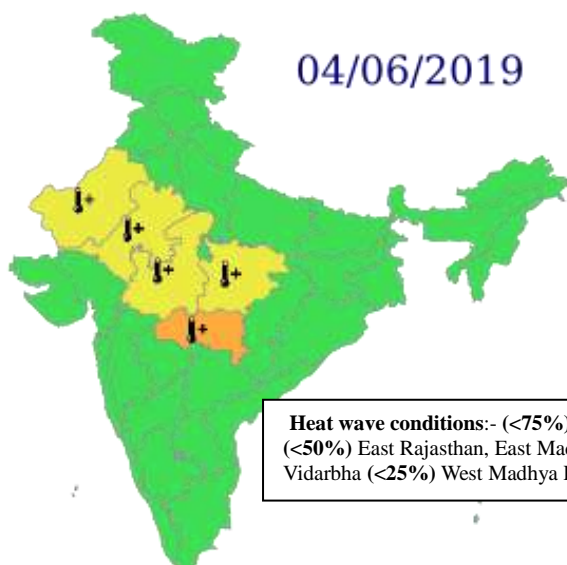
Severe heat wave conditions: - (<25%) Rajasthan, Punjab, Vidarbha and East Uttar Pradesh **Heat wave conditions:** - (<75%) Rajasthan, East Madhya Pradesh, Haryana, Chandigarh & Delhi (<50%) Punjab, Vidarbha and West Madhya Pradesh (<25%) Himachal Pradesh, Uttar Pradesh, Chhattisgarh, Madhya Maharashtra, Marathwada and Jharkhand

03/06/2019



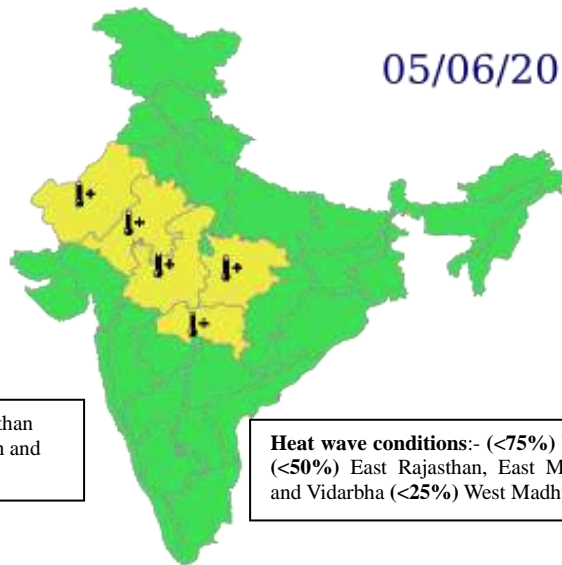
Heat wave conditions: - (<75%) Rajasthan, (<50%) Madhya Pradesh and Vidarbha (<25%) Punjab, Haryana, Chandigarh & Delhi and East Uttar Pradesh

04/06/2019



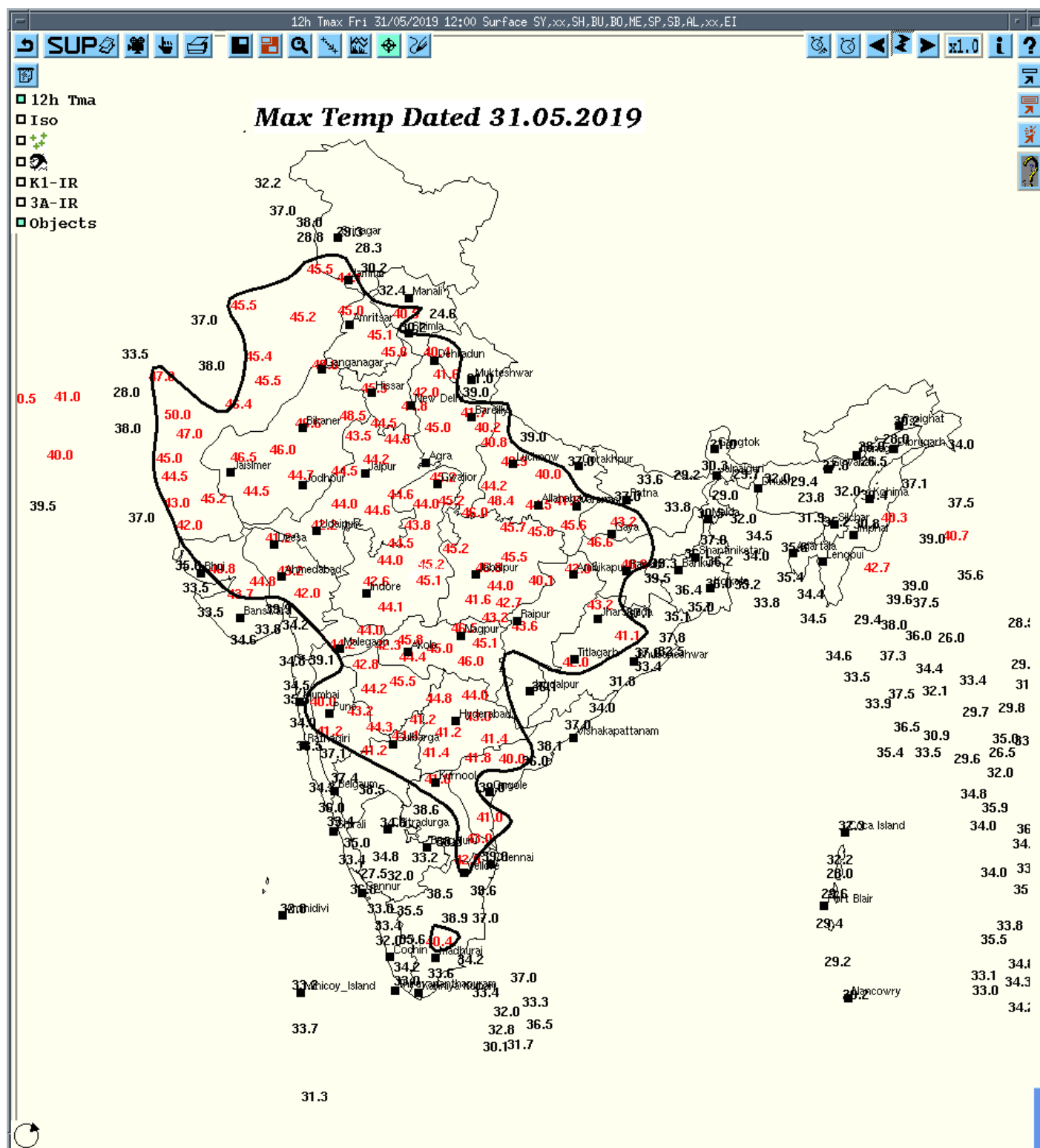
Heat wave conditions:- (<75%) West Rajasthan (<50%) East Rajasthan, East Madhya Pradesh and Vidarbha (<25%) West Madhya Pradesh

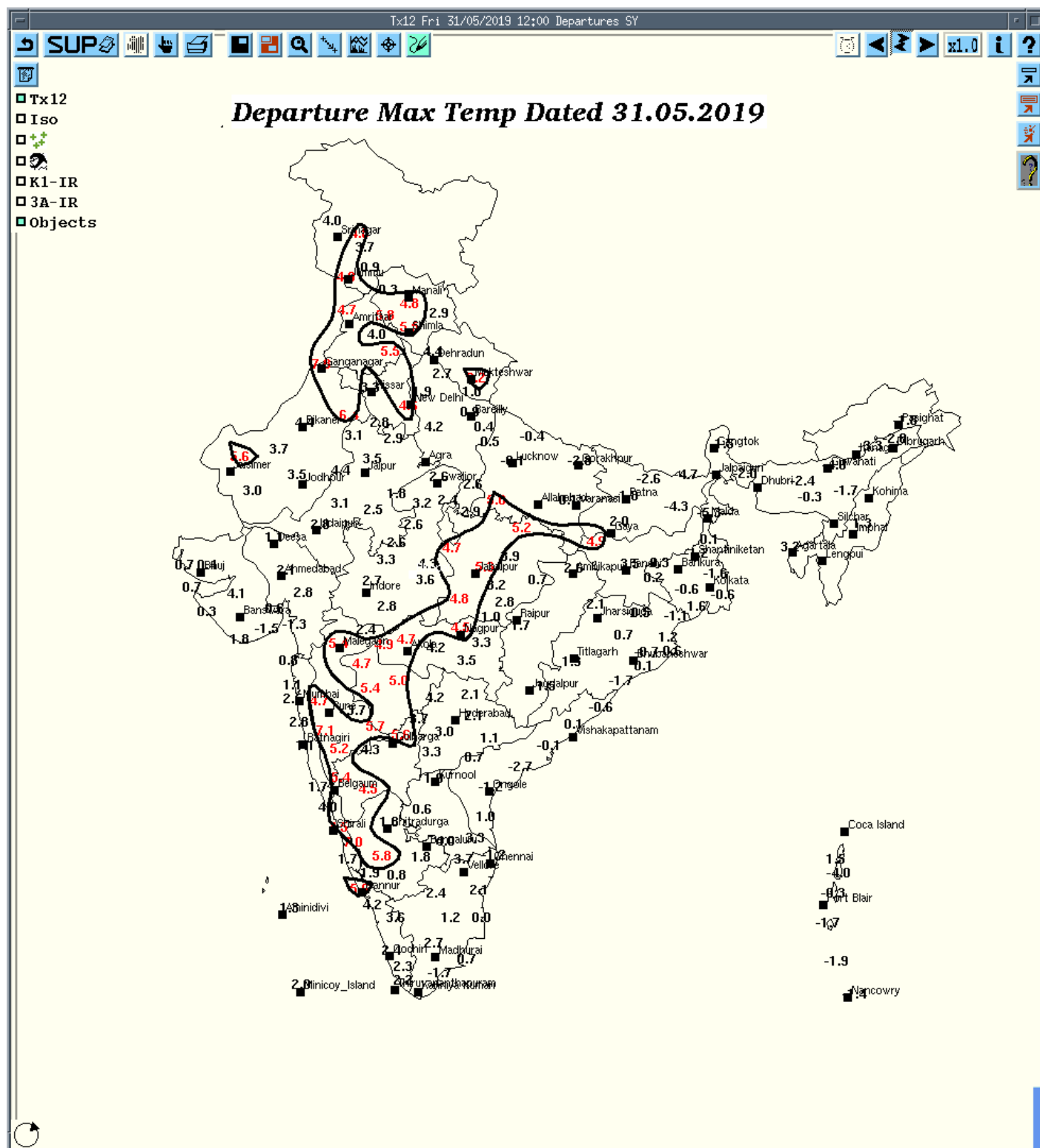
05/06/2019

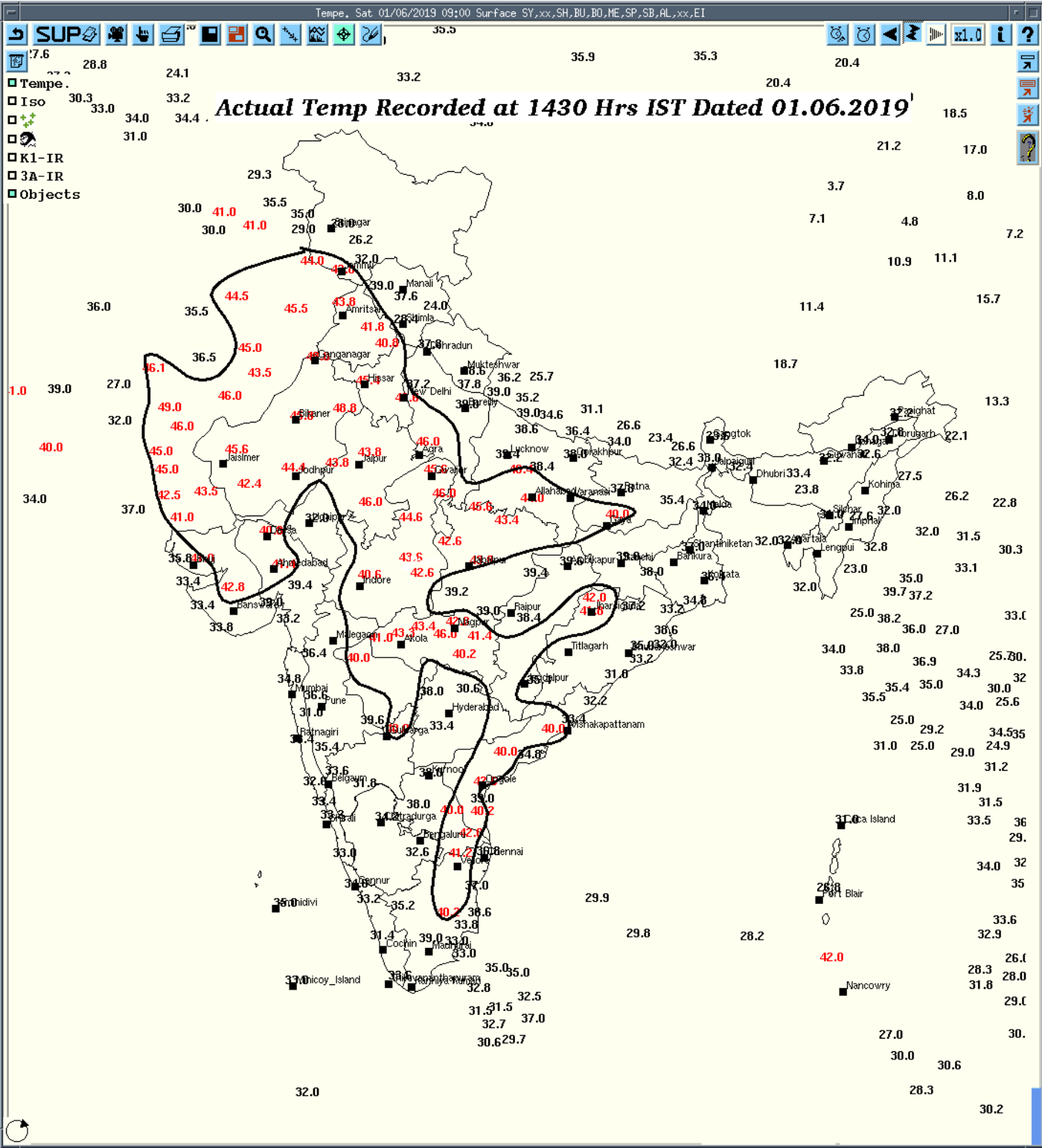


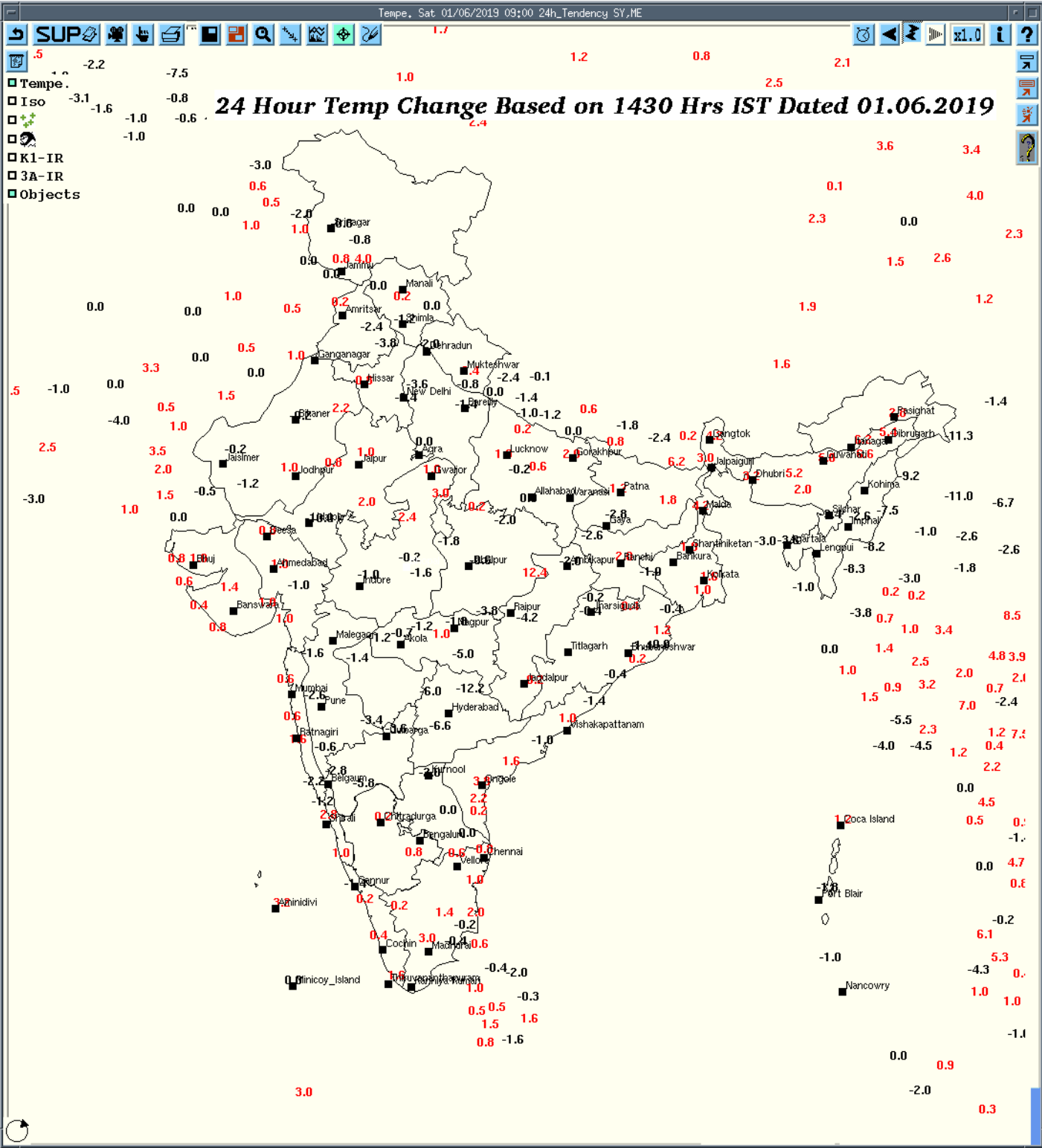
Heat wave conditions:- (<75%) West Rajasthan (<50%) East Rajasthan, East Madhya Pradesh and Vidarbha (<25%) West Madhya Pradesh

Annexure 1









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department

Dated: 02nd June, 2019
Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 01 June, 2019 to 0830 hrs IST 02 June, 2019)

Heat Wave:

Yesterday, **Severe Heat Wave conditions** were observed in some parts over West Rajasthan and at isolated pockets over East Rajasthan and East Uttar Pradesh; **Heat Wave conditions** were observed in many parts over Punjab, Haryana, Chandigarh & Delhi; in some parts over East Rajasthan & Madhya Pradesh and in isolated pockets over West Rajasthan, south Uttar Pradesh, Vidarbha, Jharkhand, Himachal Pradesh and Jammu & Kashmir (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over West Rajasthan and at isolated places over Himachal Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at most places over Haryana, Chandigarh & Delhi; at many places over Jammu & Kashmir, West Rajasthan and Kerala; at a few places over Punjab, Madhya Pradesh, Vidarbha, Madhya Madhya Maharashtra, Konkan & Goa, South Interior Karnataka and West Uttar Pradesh and at isolated places over Saurashtra & Kutch, Assam & Meghalaya and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over Marathwada and Lakshadweep; at many places over Uttarakhand, Jharkhand and Coastal Karnataka and at isolated places over North Interior Karnataka, Gangetic West Bengal and Odisha. **Yesterday, the highest maximum temperature of 50.8°C** was recorded at Churu (**West Rajasthan**) (**Annexure 1 & 2**).

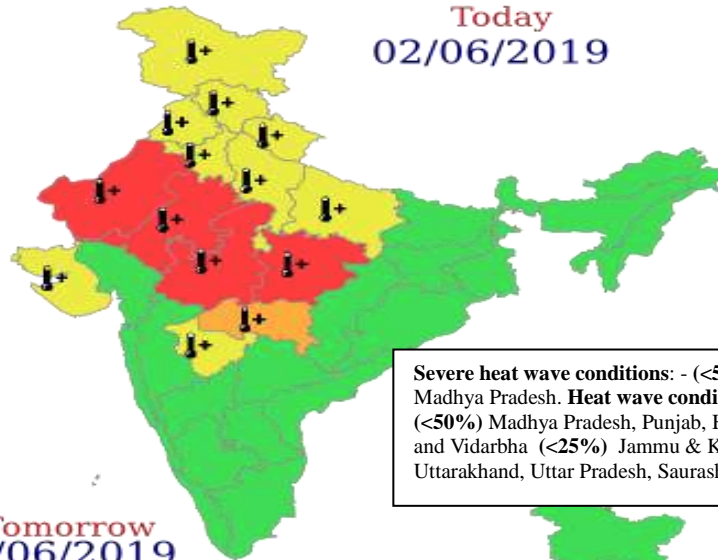
Temperatures Recorded at 1430 Hours IST of Today, the 02nd June, 2019

- **Churu (West Rajasthan)** recorded the maximum temperature of 48.4°C (**Annexure 3**).
- **Temperatures recorded at 1430 hours IST of today have risen by 3-6°C** at most places over Telangana and at one or two pockets over Vidarbha, East Madhya Pradesh, Chhattisgarh, Mizoram, Manipur & Nagaland and Rayalaseema; **risen by 1-3°C** at most places over Coastal Andhra Pradesh; at many places over Jammu & Kashmir, Madhya Maharashtra and Marathwada; at a few places over West Madhya Pradesh and North Interior Karnataka and at one or two pockets of Rajasthan, Konkan & Goa, South Interior Karnataka, Tamilnadu & Puducherry and Kerala Vidarbha, Jharkhand, Odisha and Tamilnadu & Puducherry (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

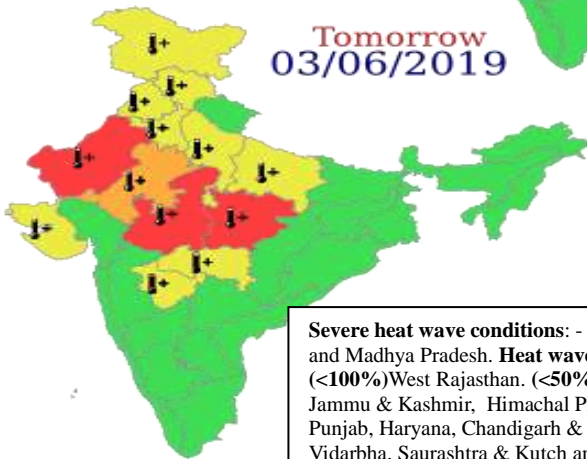
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
02/06/2019



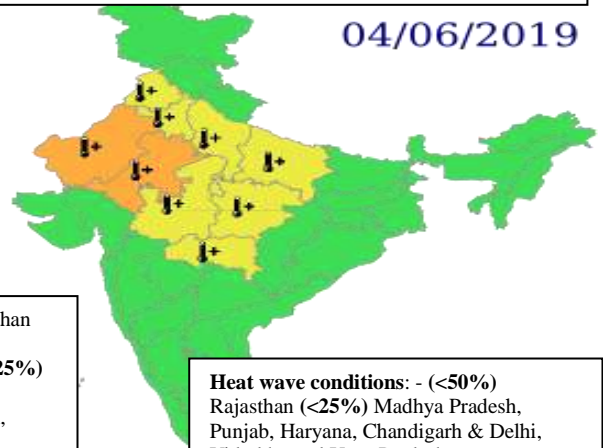
Severe heat wave conditions: - (<50%) Rajasthan. (<25%) Madhya Pradesh. **Heat wave conditions:** - (<100%) Rajasthan. (<50%) Madhya Pradesh, Punjab, Haryana, Chandigarh & Delhi and Vidarbha (<25%) Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Saurashtra & Kutch and Marathwada.

Tomorrow
03/06/2019



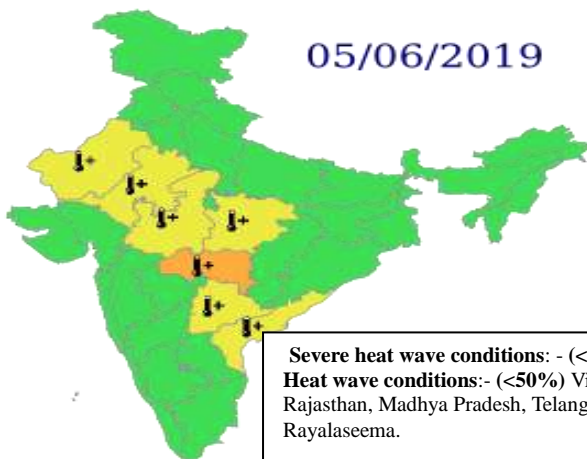
Severe heat wave conditions: - (<25%) West Rajasthan and Madhya Pradesh. **Heat wave conditions:** - (<100%) West Rajasthan. (<50%) East Rajasthan (<25%) Jammu & Kashmir, Himachal Pradesh, Uttarakhand Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh, Vidarbha, Saurashtra & Kutch and Marathwada.

04/06/2019



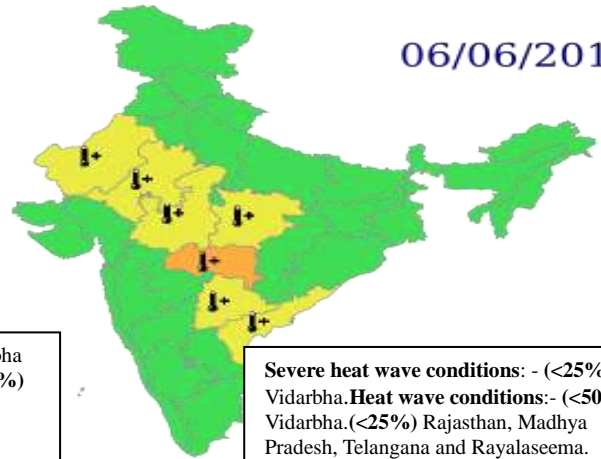
Heat wave conditions: - (<50%) Rajasthan (<25%) Madhya Pradesh, Punjab, Haryana, Chandigarh & Delhi, Vidarbha and Uttar Pradesh.

05/06/2019



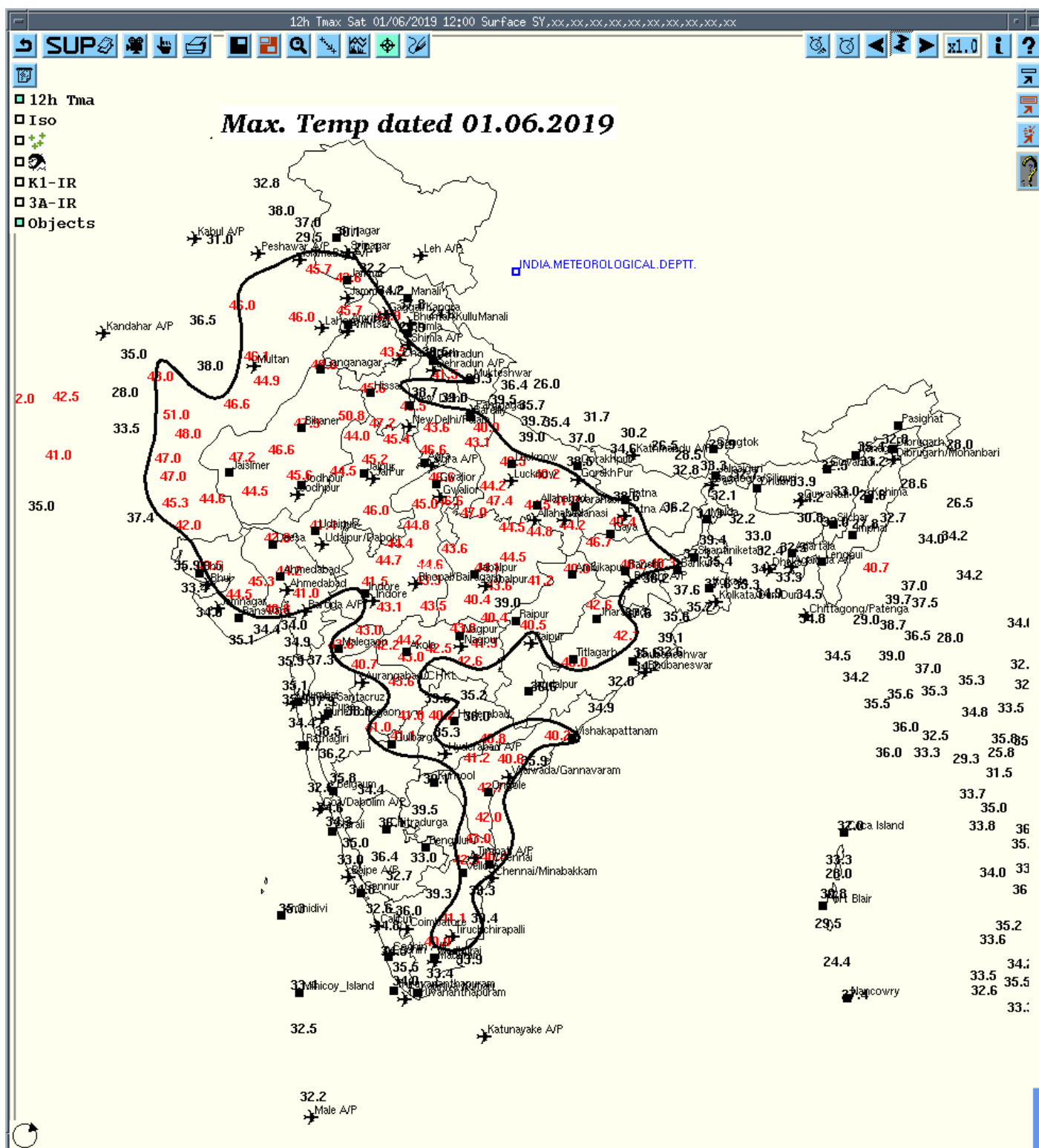
Severe heat wave conditions: - (<25%) Vidarbha **Heat wave conditions:-** (<50%) Vidarbha. (<25%) Rajasthan, Madhya Pradesh, Telangana and Rayalaseema.

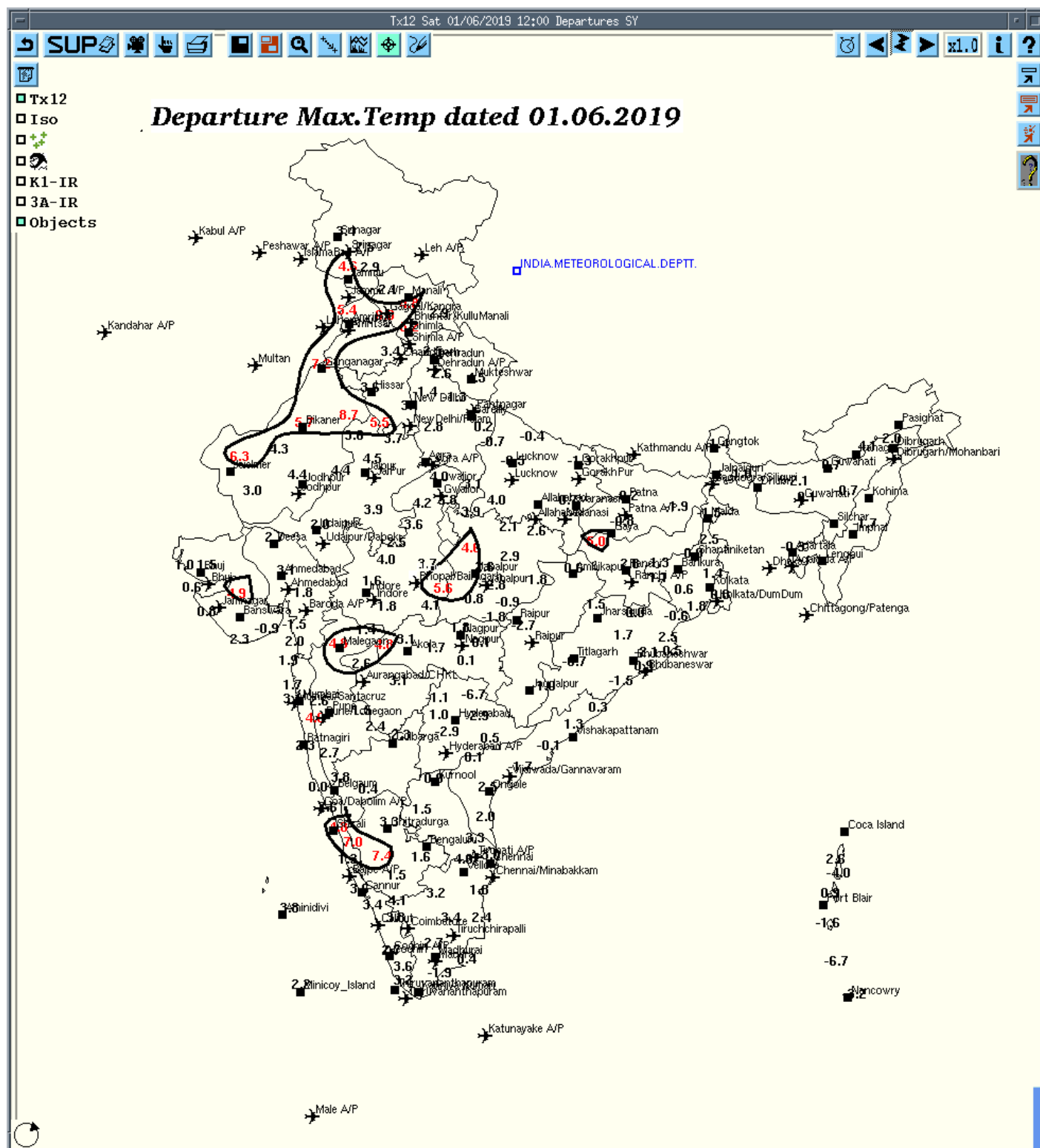
06/06/2019



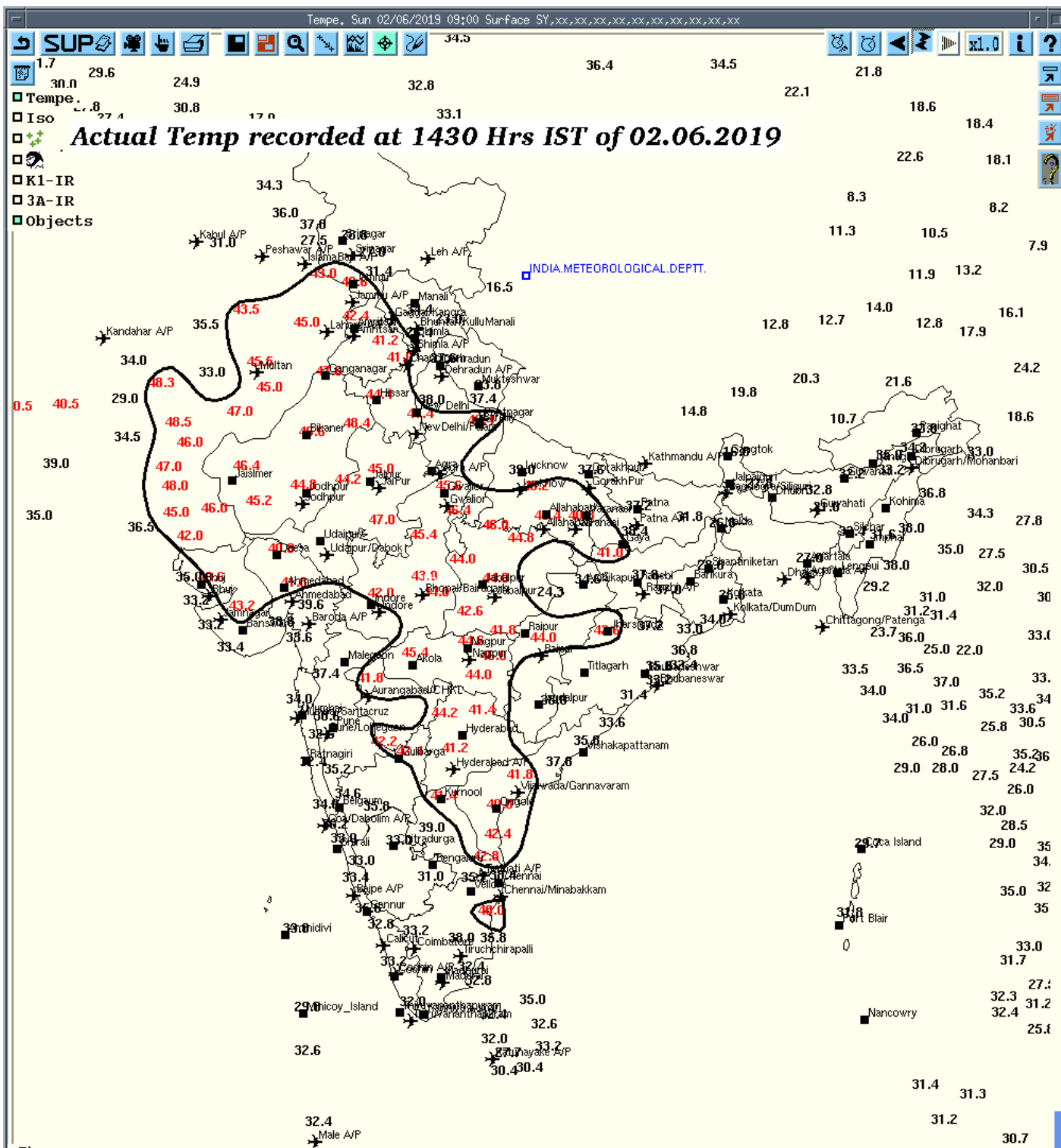
Severe heat wave conditions: - (<25%) Vidarbha. **Heat wave conditions:-** (<50%) Vidarbha. (<25%) Rajasthan, Madhya Pradesh, Telangana and Rayalaseema.

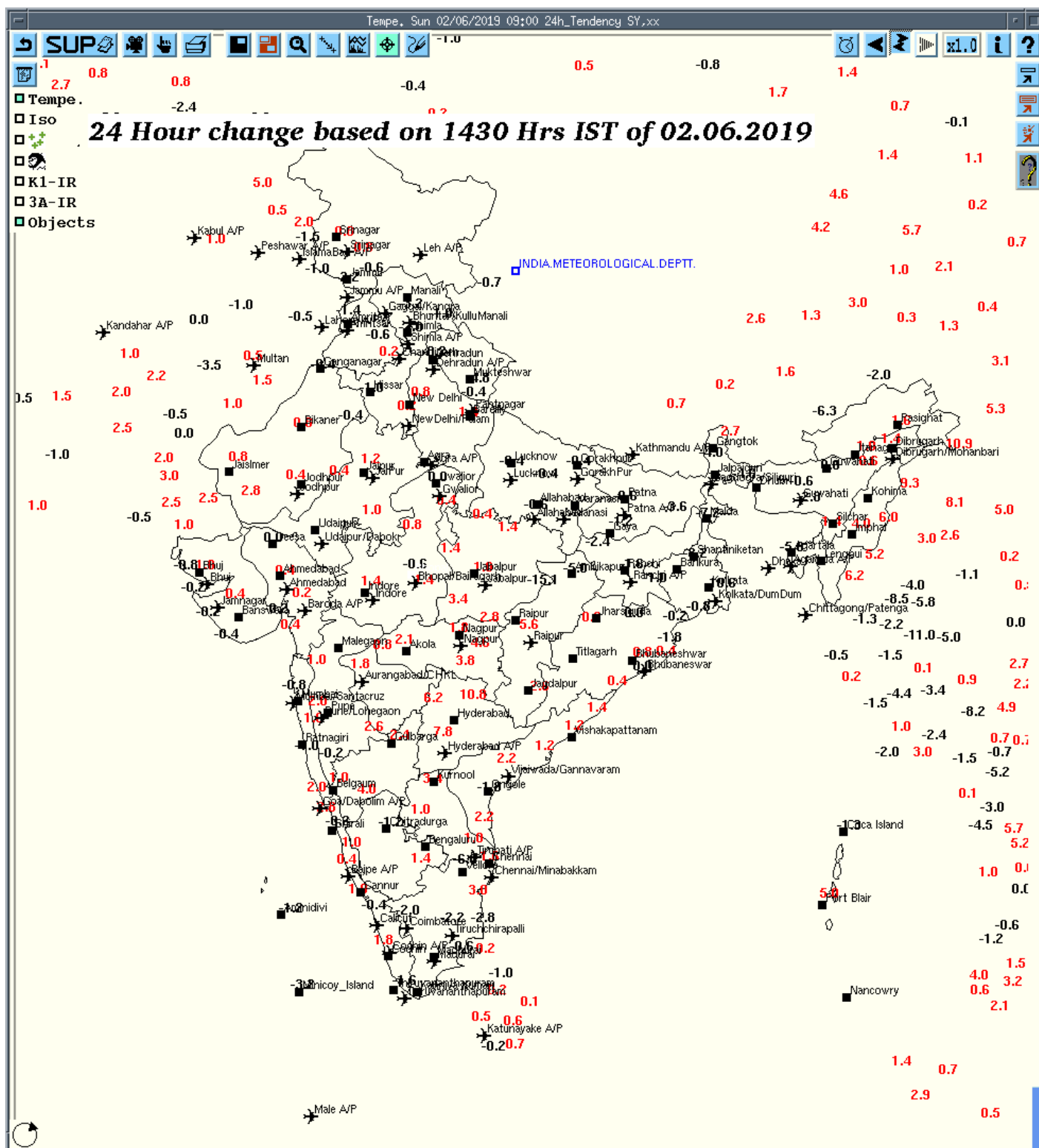
Annexure 1





Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 05th June, 2019

Time of Issue: 1630 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 04 June, 2019 to 0830 hrs IST 05 June, 2019)

Heat Wave:

Yesterday, Heat wave conditions were observed in many parts with severe heat wave in isolated pockets over East Madhya Pradesh; in some parts with severe heat wave in isolated pockets over Rajasthan. Heat wave conditions were also observed in many parts over Vidarbha and in isolated pockets over West Madhya Pradesh. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were markedly **above normal (5.1°C or more)** at isolated places over Madhya Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at most places over Rajasthan & Vidarbha; at many places over Marathwada; at a few places over Coastal Karnataka and Kerala & Mahe; at isolated places over Saurashtra & Kutch and Tamilnadu, Puducherry & Karaikal; **above normal (1.6°C to 3.0°C)** at many places over Haryana, Chandigarh & Delhi and Lakshadweep; at many places over Himachal Pradesh and Uttarakhand; at a few places over Konkan & Goa and at isolated places over Gujarat region, South Interior Karnataka and Andaman & Nicobar Islands. **Yesterday, the highest maximum temperature of 48.0°C recorded at Churu (West Rajasthan).**

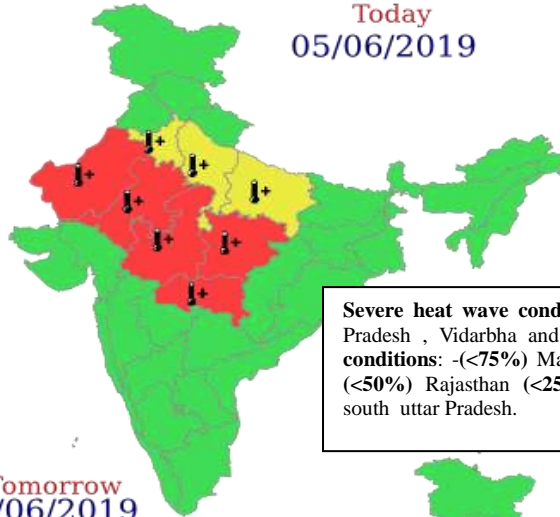
Temperatures Recorded at 1430 Hours IST of Today, the 05th June, 2019

- **Nagpur sonegoan(vidarbha) and Jhansi(Uttar pradesh) recorded the maximum temperature of 46.6°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C in most parts over Jammu & Kashmir, Uttar pradesh, Punjab, Uttarakhand, Haryana, Northeastern states, Telangana, Rayalaseema and Coastal Andhra Pradesh, in many parts over Madhya Pradesh, Chhattisgarh, Madhya Maharashtra, North Interior Karnataka and Konkan & Goa and in some parts of Vidarbha. (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

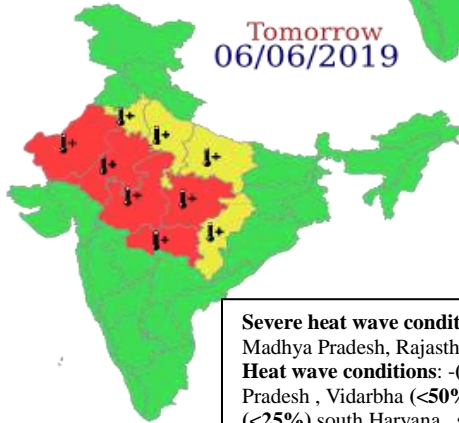
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
05/06/2019



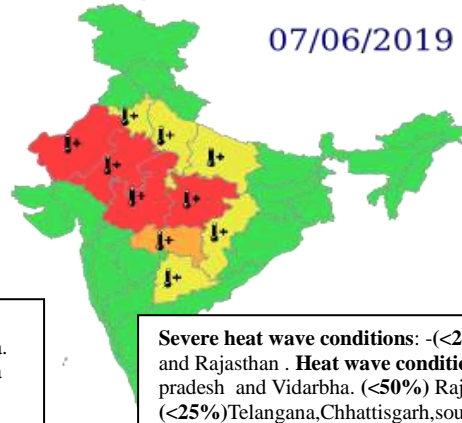
Severe heat wave conditions: -(<25%) Madhya Pradesh , Vidarbha and Rajasthan. **Heat wave conditions:** -(<75%) Madhya Pradesh , Vidarbha (<50%) Rajasthan (<25%) South Haryana and south Uttar Pradesh.

Tomorrow
06/06/2019



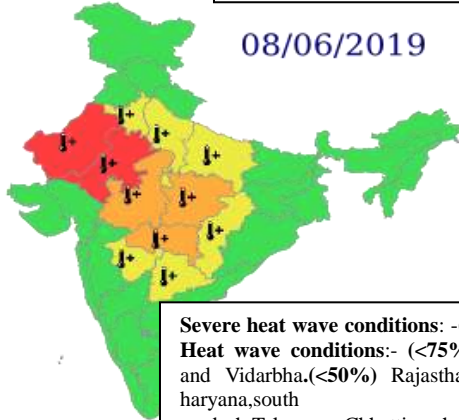
Severe heat wave conditions: -(<25%) Madhya Pradesh, Rajasthan and Vidarbha. **Heat wave conditions:** -(<75%) Madhya Pradesh , Vidarbha (<50%) Rajasthan (<25%) south Haryana , south Uttar Pradesh and Chhattisgarh

07/06/2019



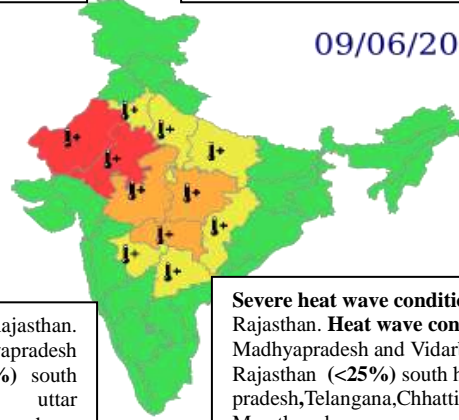
Severe heat wave conditions: -(<25%) Madhya Pradesh and Rajasthan . **Heat wave conditions:** -(<75%) Madhya Pradesh and Vidarbha. (<50%) Rajasthan (<25%)Telangana,Chhattisgarh,south Haryana and south Uttar Pradesh.

08/06/2019



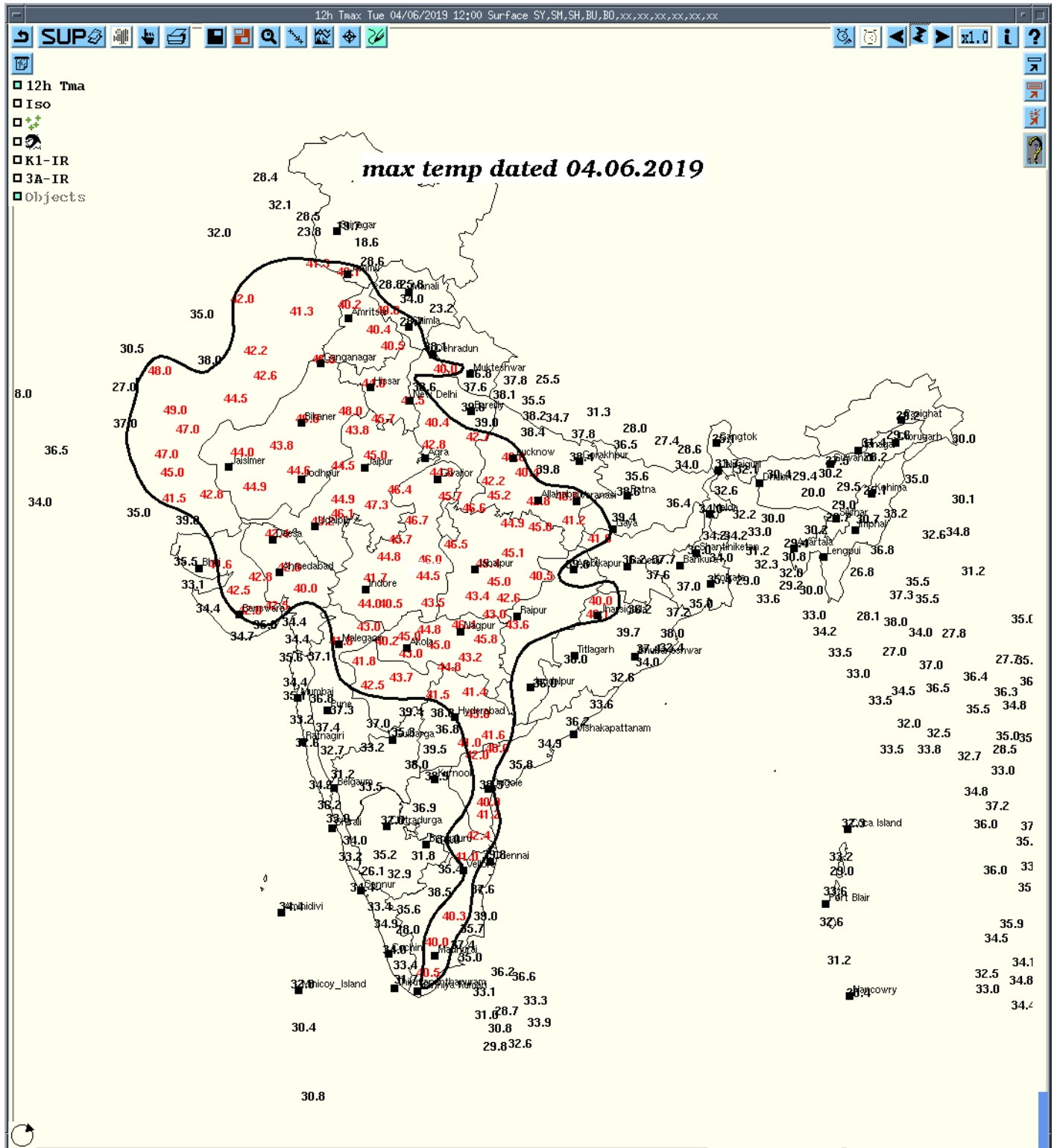
Severe heat wave conditions: -(<25%) Rajasthan. **Heat wave conditions:-** (<75%) Madhyapradesh and Vidarbha.(<50%) Rajasthan .(<25%) south haryana,south Uttar pradesh,Telangana,Chhattisgarhand Marathwada

09/06/2019

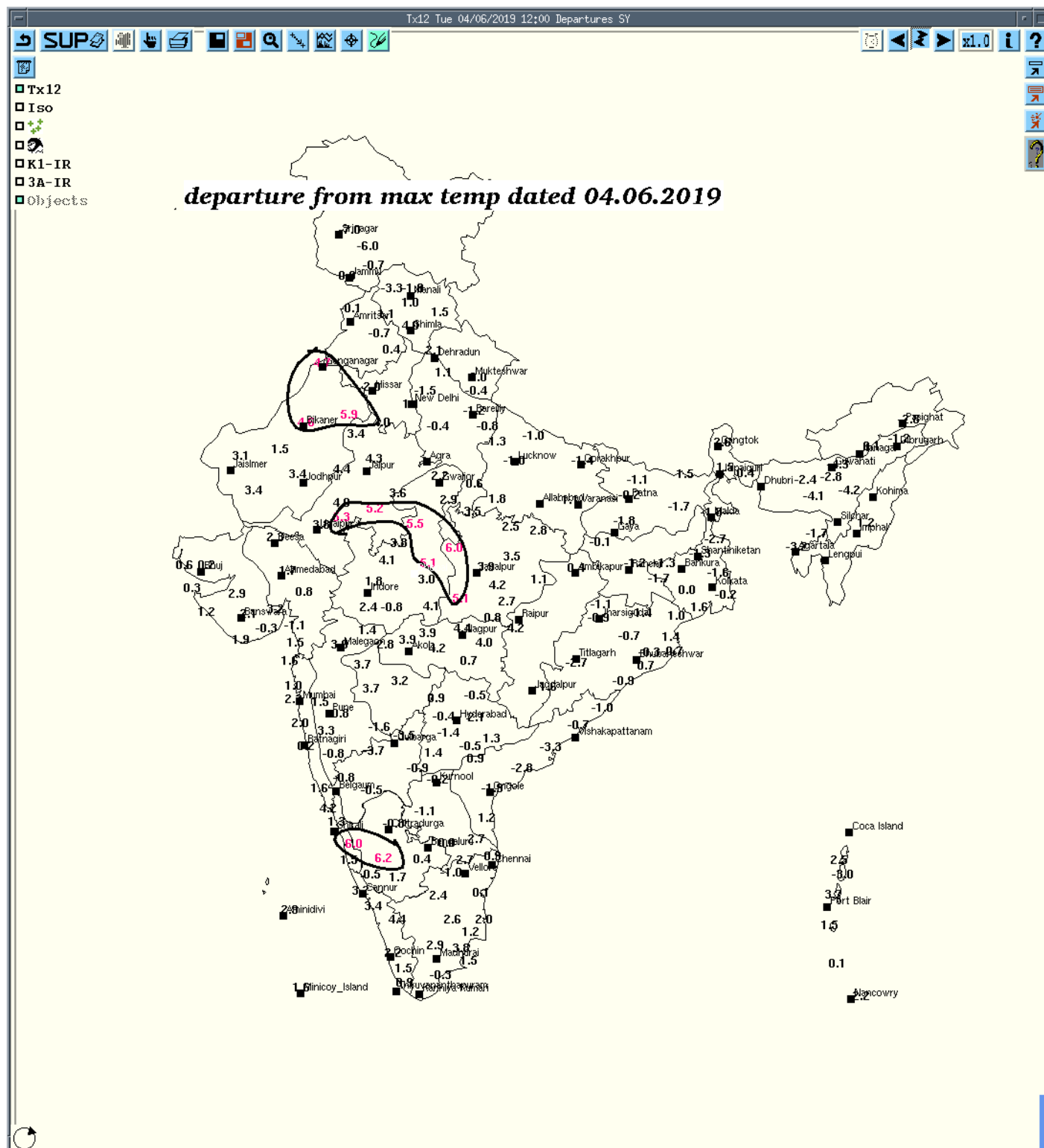


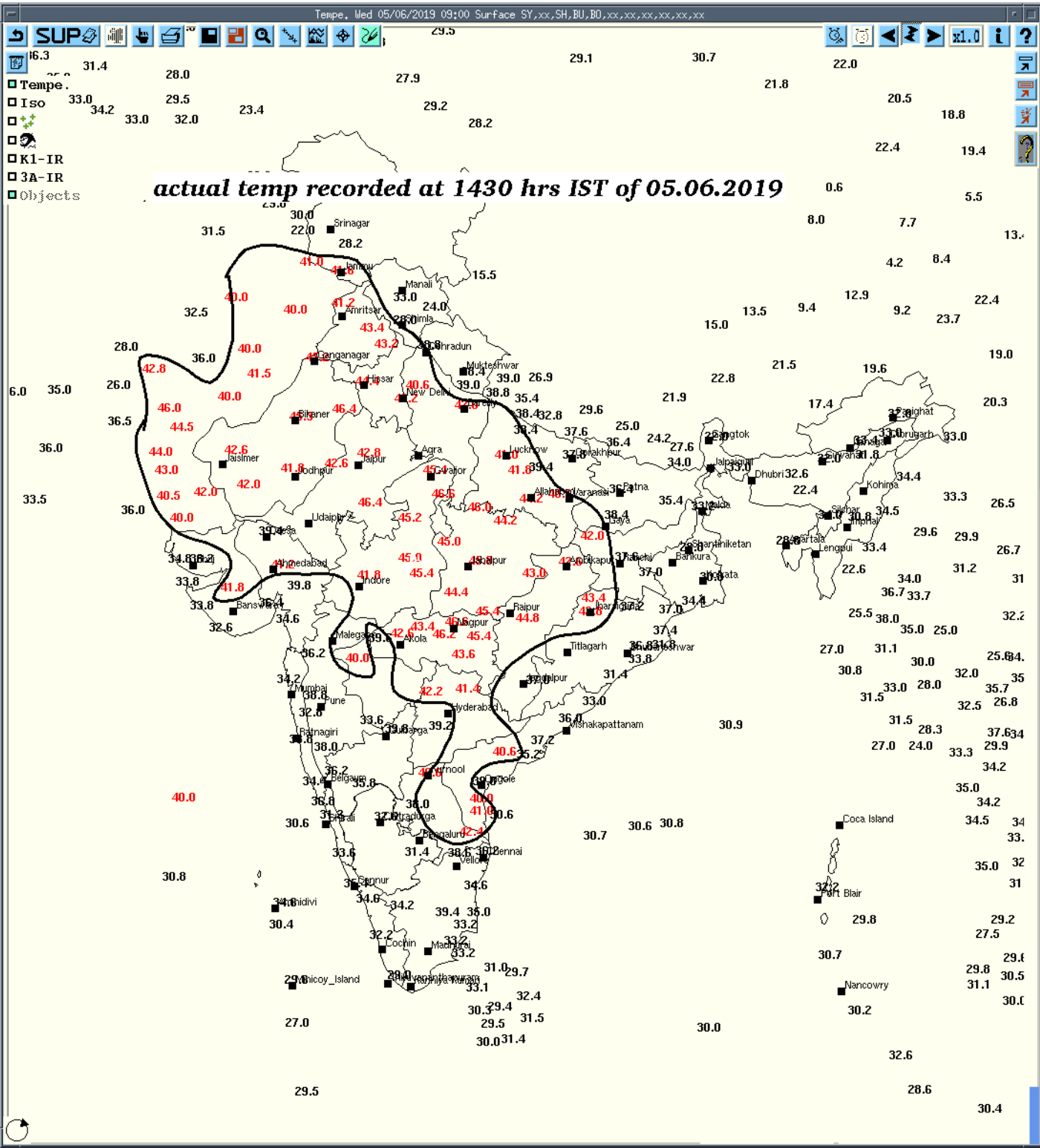
Severe heat wave conditions: -(<25%) Rajasthan. **Heat wave conditions:-** (<75%) Madhyapradesh and Vidarbha (<50%) Rajasthan (<25%) south haryana,south Uttar pradesh,Telangana,Chhattisgarh and Marathwada

Annexure 1

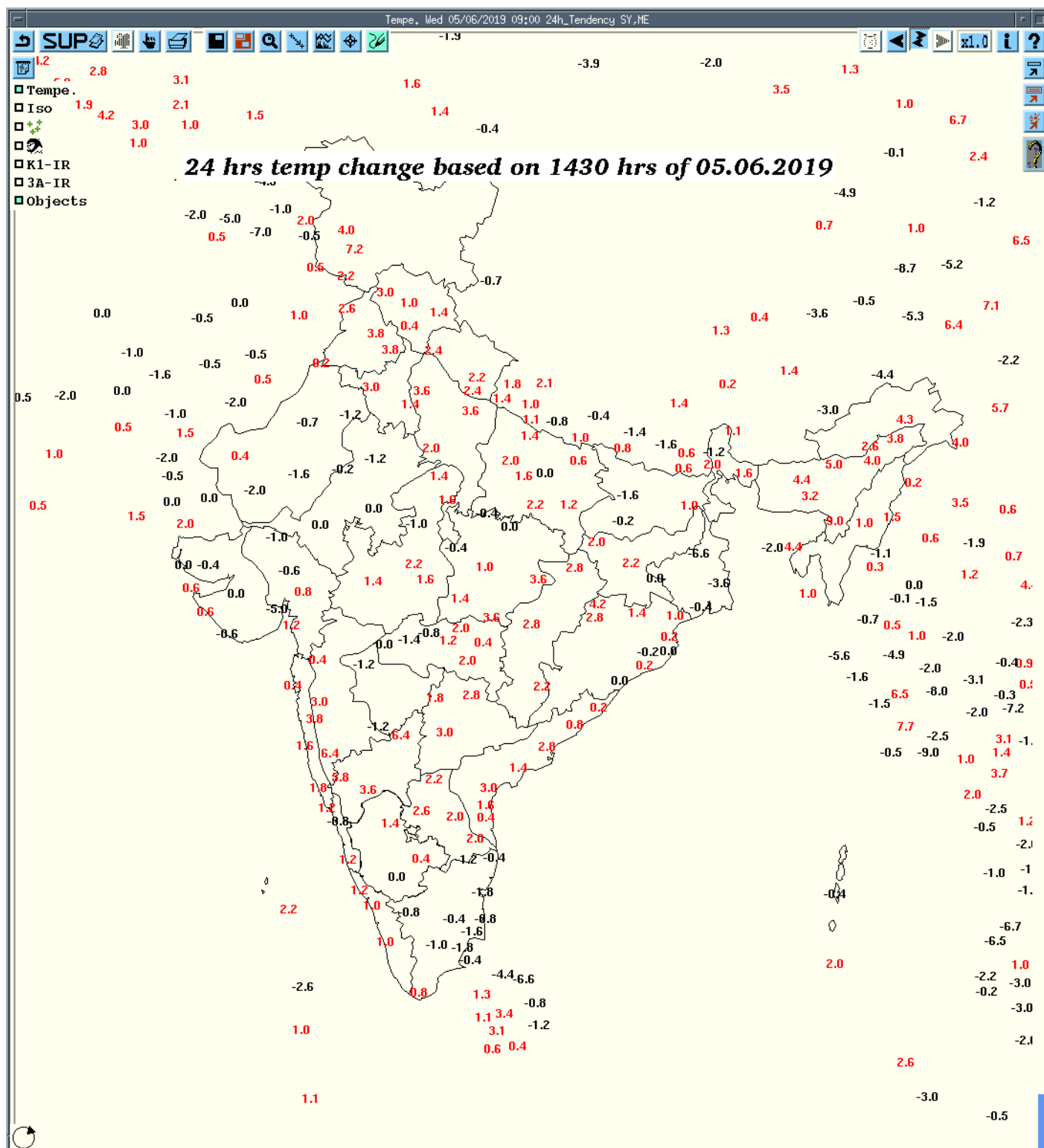


Annexure 2





Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 04th June, 2019
Time of Issue: 1700 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 03 June, 2019 to 0830 hrs IST 04 June, 2019)

Heat Wave:

Yesterday, Severe Heat Wave conditions observed in many parts over West Rajasthan and at isolated pockets over Madhya Pradesh & East Rajasthan. Heat wave conditions observed at many places over Vidarbha and East Rajasthan; over some parts of Madhya Pradesh and at isolated pockets over West Rajasthan. **(Annexure 1 & 2).**

Maximum Temperature

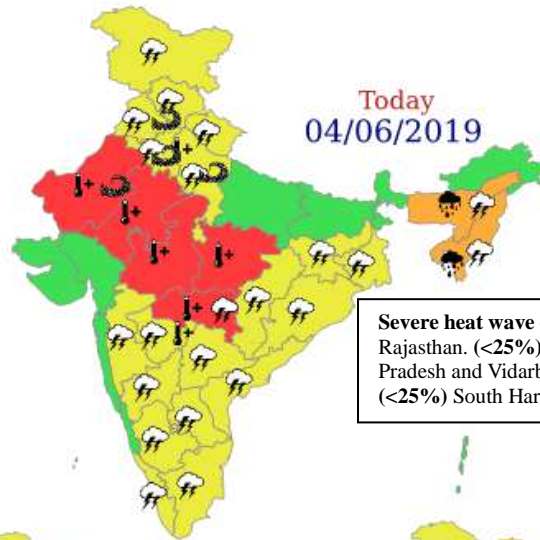
Maximum temperature departures as on 03-06-2019: Maximum temperatures were markedly above normal (5.1°C or more) at most places over West Rajasthan; at many places over East Rajasthan; at a few places over West Madhya Pradesh; at isolated places over East Madhya Pradesh; appreciably above normal (3.1°C to 5.0°C) at many places over Marathwada and Vidarbha; at isolated places over Telangana and South Interior Karnataka; above normal (1.6°C to 3.0°C) at many places over Himachal Pradesh and Madhya Maharashtra; at a few places over Arunachal Pradesh, Assam & Meghalaya, Jammu & Kashmir, Haryana, Chandigarh & Delhi, Gujarat Region, Konkan & Goa Kerala and Tamilnadu, Puducherry & Karaikal.. **Yesterday, the highest maximum temperature of 50.3°C was recorded at Churu (West Rajasthan).**

Temperatures Recorded at 1430 Hours IST of Today, the 04th June, 2019

- **Churu (West Rajasthan) recorded the maximum temperature of 47.6°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-6°C in most parts over Chattisgarh, in isolated pockets over Bihar, Coastal Andhra Pradesh and Uttarakhand; risen by 1-3°C in many parts East Uttar Pradesh, Jharkhand, Odisha and in isolated pockets over Karnataka, Rayalaseema, Kerala and Tamilnadu & Puducherry.(Annexure 4).**

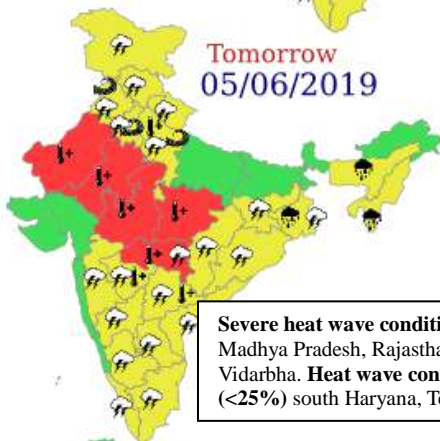
Heat Wave Warnings for Next 5 Days (on next page)

(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)



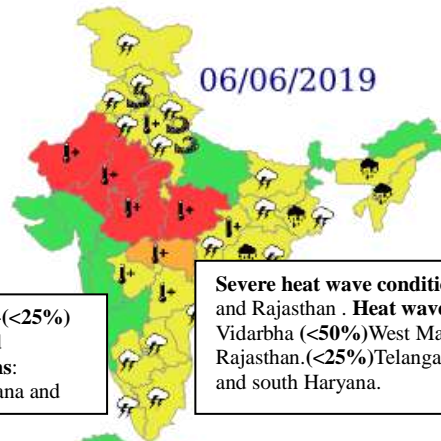
Today
04/06/2019

Severe heat wave conditions: -(<50%) West Rajasthan. (<25%) East Rajasthan, Madhya Pradesh and Vidarbha. **Heat wave conditions:** (<25%) South Haryana and Marathwada.



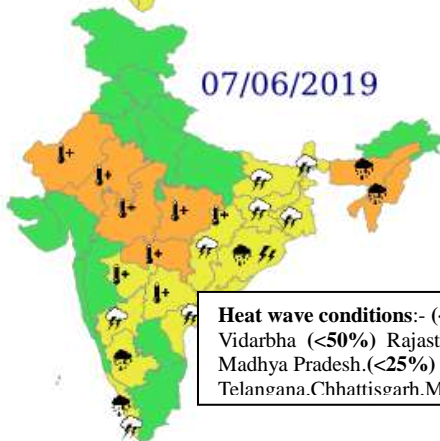
Tomorrow
05/06/2019

Severe heat wave conditions: -(<25%) Madhya Pradesh, Rajasthan and Vidarbha. **Heat wave conditions:** (<25%) south Haryana, Telangana and Marathwada.



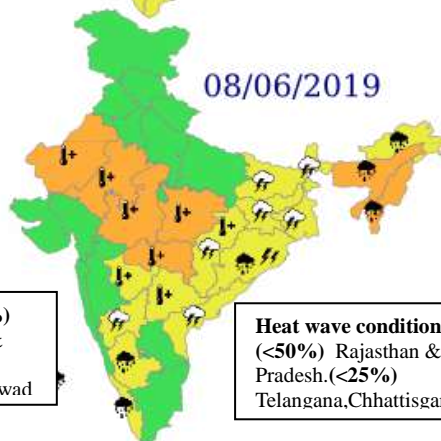
06/06/2019

Severe heat wave conditions: -(<25%) Madhya Pradesh and Rajasthan. **Heat wave conditions:** -(<75%) Vidarbha (<50%) West Madhya Pradesh and Rajasthan. (<25%) Telangana, Chhattisgarh, Marathwada and south Haryana.



07/06/2019

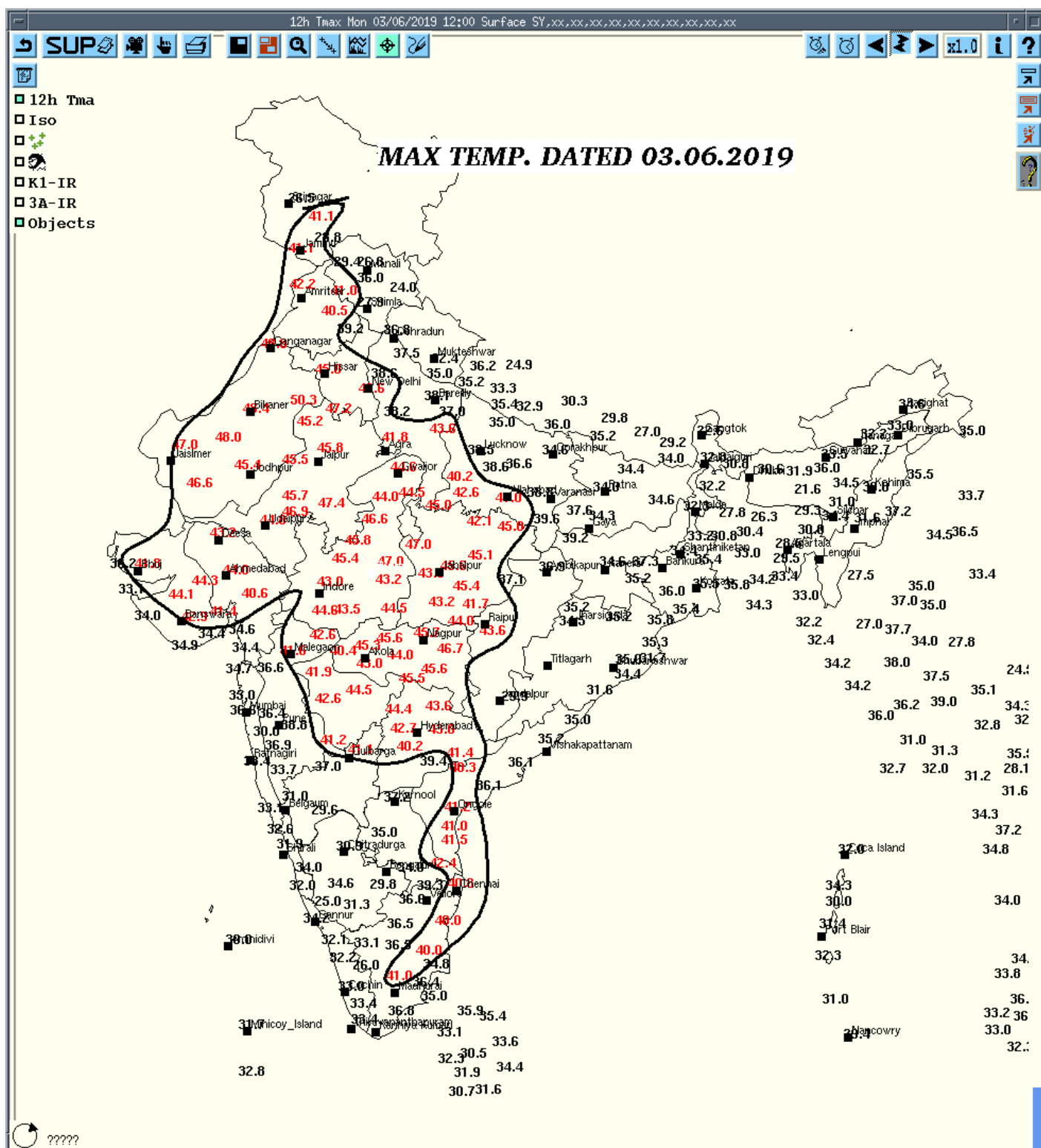
Heat wave conditions:- (<75%) Vidarbha (<50%) Rajasthan & Madhya Pradesh. (<25%) Telangana, Chhattisgarh, Marathwada and south Haryana.

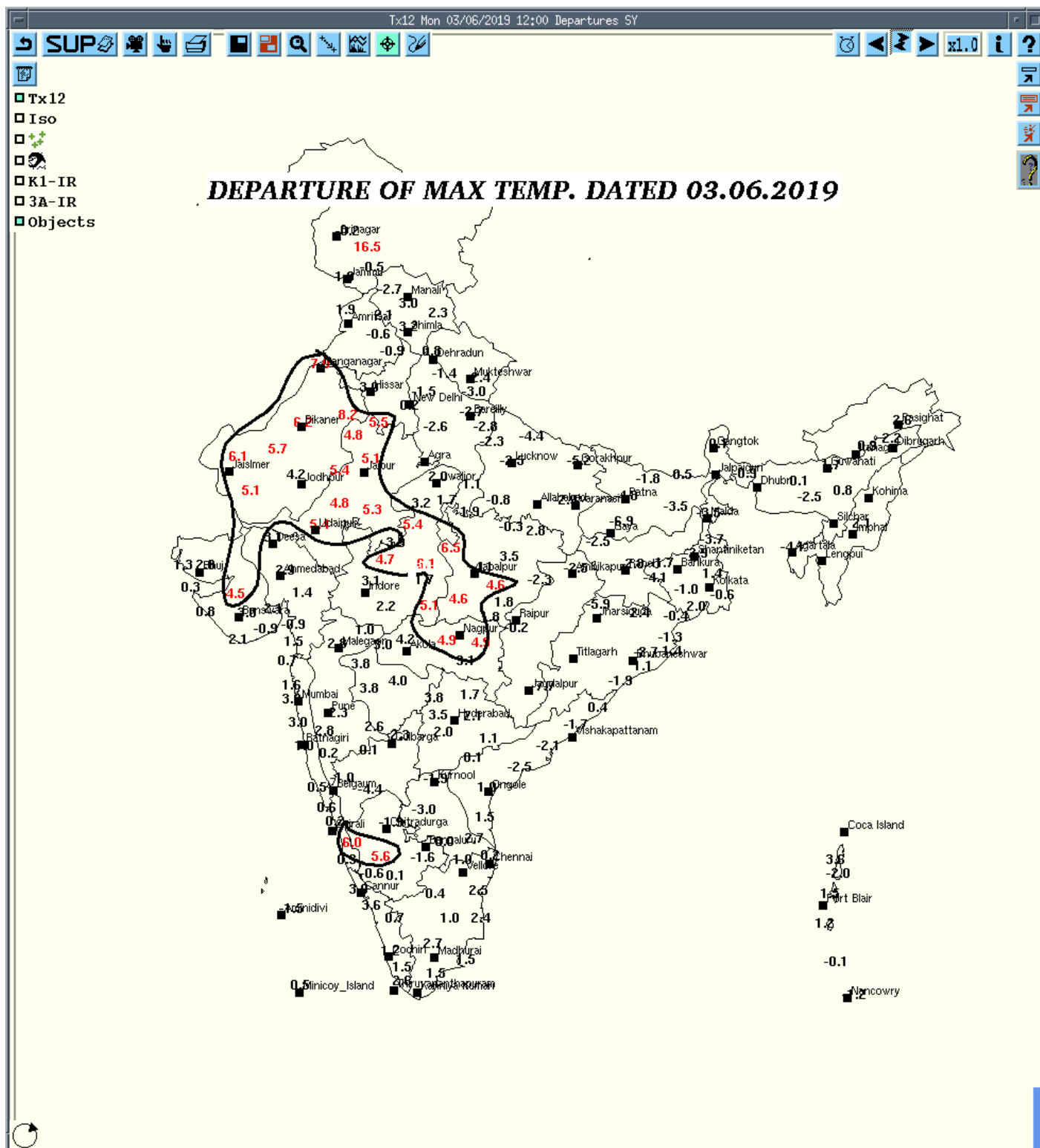


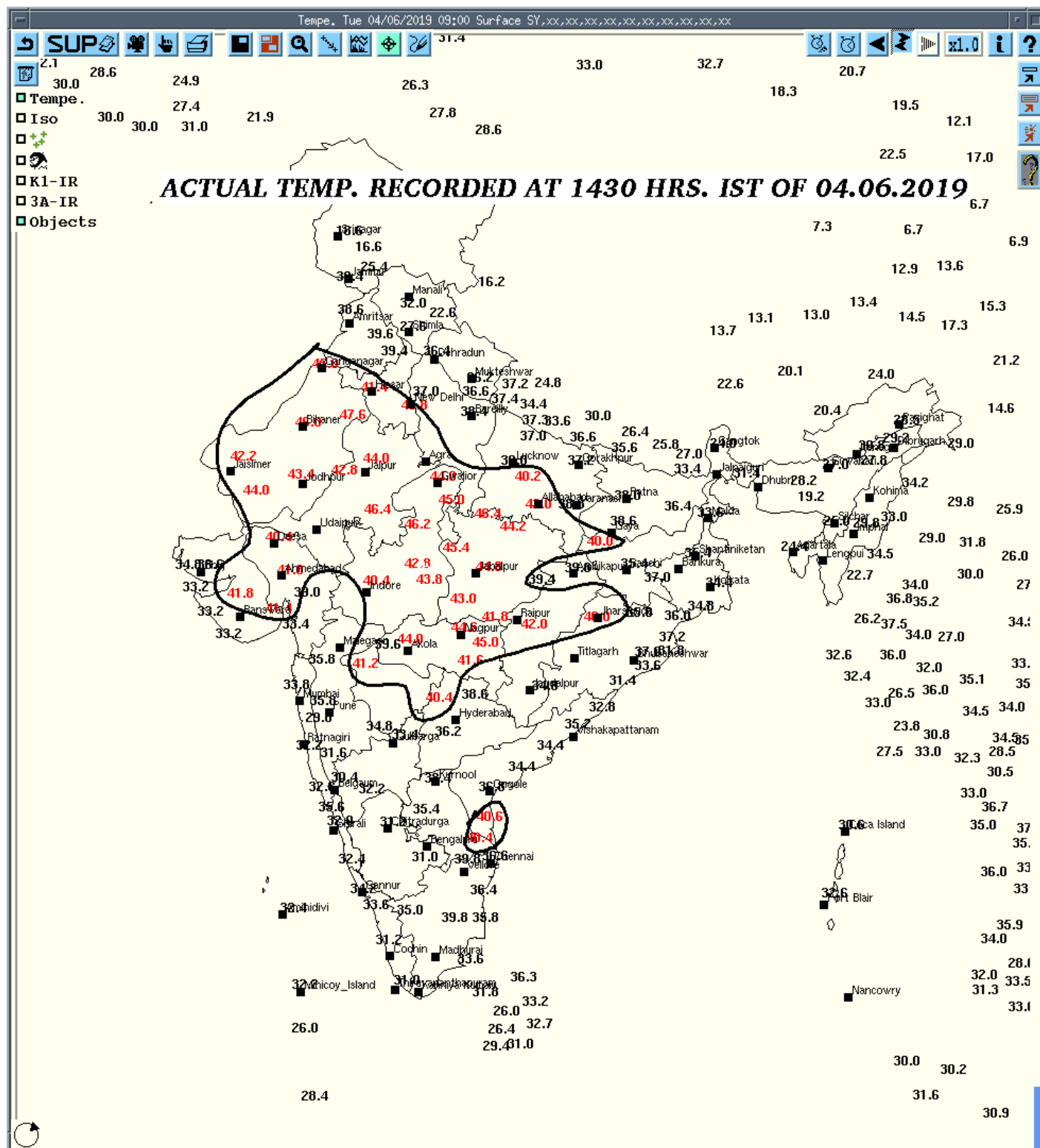
08/06/2019

Heat wave conditions:- (<75%) Vidarbha (<50%) Rajasthan & Madhya Pradesh. (<25%) Telangana, Chhattisgarh, Marathwada and south Haryana.

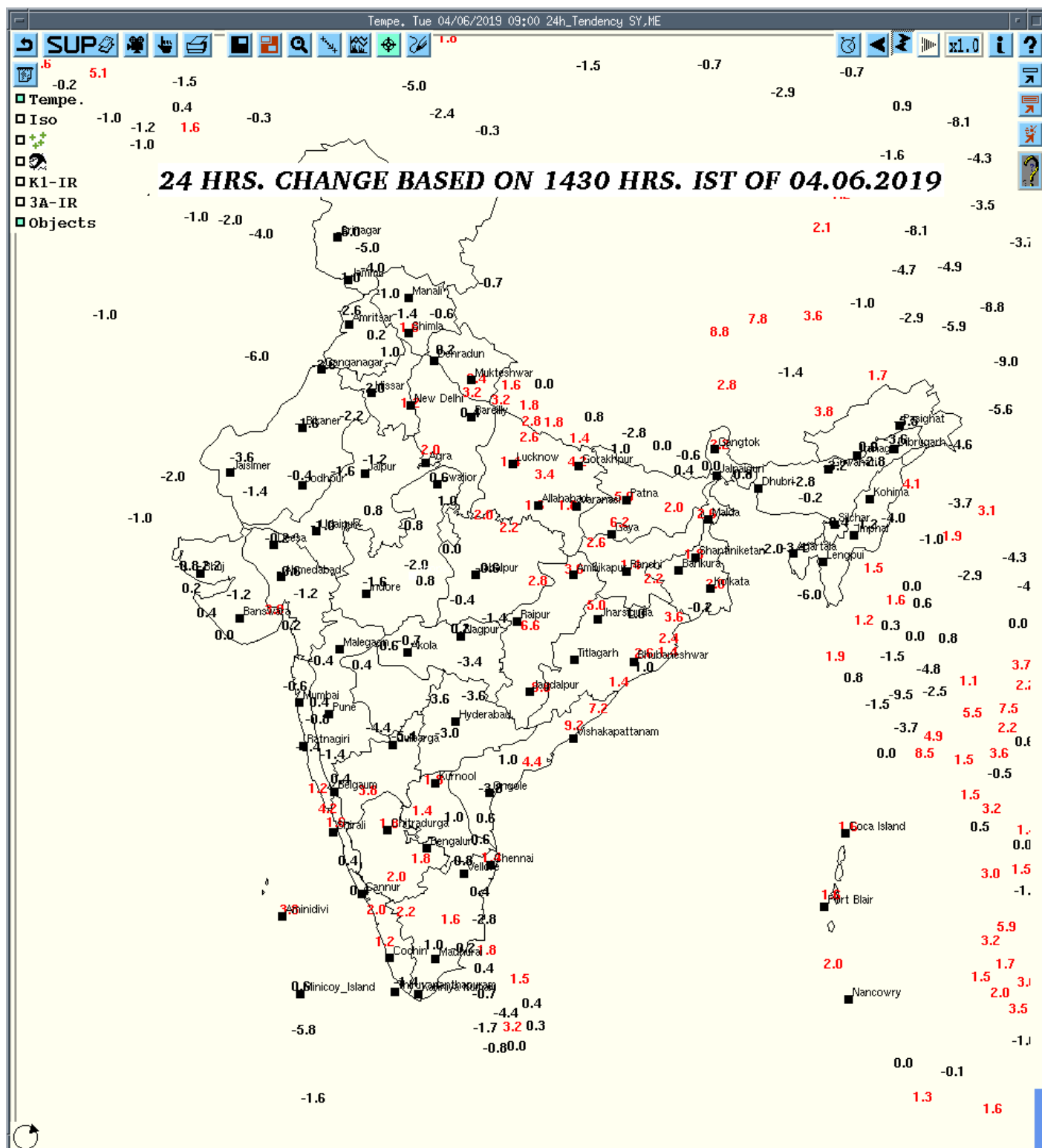
Annexure 1







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department

Dated: 07th June, 2019
Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 06 June, 2019 to 0830 hrs IST 07 June, 2019)

Heat Wave:

Yesterday, heat Wave Conditions were observed in most parts with **Severe Heat Wave** in isolated pockets over Madhya Pradesh and Vidarbha. Heat Wave Conditions were observed in many parts over West Rajasthan; in some parts over East Rajasthan and in isolated pockets over Marathwada, North Interior Karnataka, Chhattisgarh and Telangana. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over Vidarbha and Madhya Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at most places over North Interior Karnataka and Madhya Maharashtra; at many places over Uttarakhand, Haryana, Chandigarh & Delhi, Rajasthan, Telangana, Rayalseema and Coastal Karnataka; at a few places over Himachal Pradesh, Marathwada, Konkan & Goa and Kerala & Mahe and at isolated places over Punjab, Saurashtra & Kutch, Coastal Andhra Pradesh & Yanam, Tamilnadu, Puducherry & Karaikal, Odisha and Andaman & Nicobar Islands; **above normal (1.6°C to 3.0°C)** at Most places over South Interior Karnataka; at a few places over Arunachal Pradesh, Assam & Meghalaya, Gujarat region, Jharkhand and Chhattisgarh and at isolated places over Sub-Himalayan West Bengal & Sikkim. Yesterday, **the highest maximum temperature of 48.1°C** was recorded at **Brahmapuri (Vidarbha).**

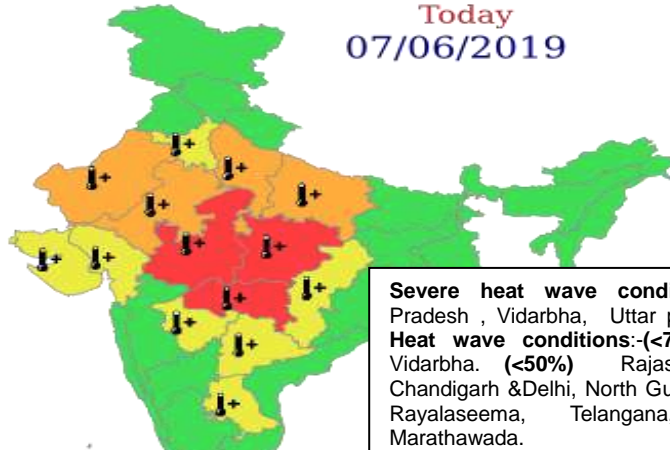
Temperatures Recorded at 1430 Hours IST of Today, the 07th June, 2019

- **Hoshangabad(West Madhya Pradesh)** recorded **the maximum temperature of 46.8°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** in most parts over Jammu & Kashmir, Himachal Pradesh, Bihar, Coastal Karnataka, Madhya Maharashtra and Sub Himalayan West Bengal & Sikkim; in many parts over Uttarakhand, West Rajasthan, Konkan & Goa, Tamilnadu, Coastal Andhra Pradesh and Gujarat and in one or two pockets of Madhya Pradesh and South Interior Karnataka. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

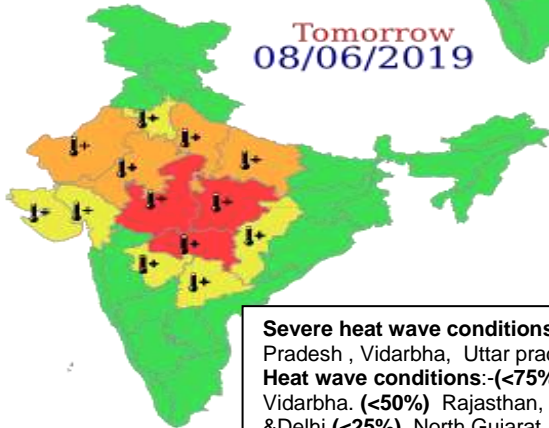
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
07/06/2019



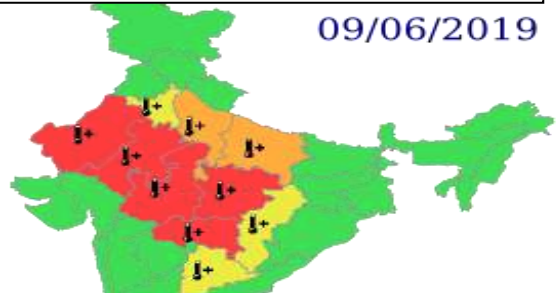
Severe heat wave conditions: -(<25%) Madhya Pradesh , Vidarbha, Uttar pradesh and Rajasthan.
Heat wave conditions:-(<75%) Madhya Pradesh , Vidarbha. (**<50%**) Rajasthan .(**<25%**) Haryana, Chandigarh & Delhi, North Gujarat, Saurashtra & Kutch, Rayalaseema, Telangana, Chhattisgarh, and Marathawada.

Tomorrow
08/06/2019



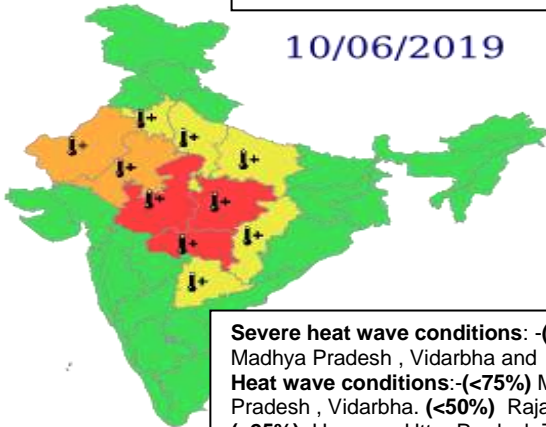
Severe heat wave conditions: -(<25%) Madhya Pradesh , Vidarbha, Uttar pradesh and Rajasthan.
Heat wave conditions:-(<75%) Madhya Pradesh , Vidarbha. (**<50%**) Rajasthan, Haryana, Chandigarh & Delhi. (**<25%**), North Gujarat, Saurashtra & Kutch, Telangana, Chhattisgarh, and Marathawada

09/06/2019



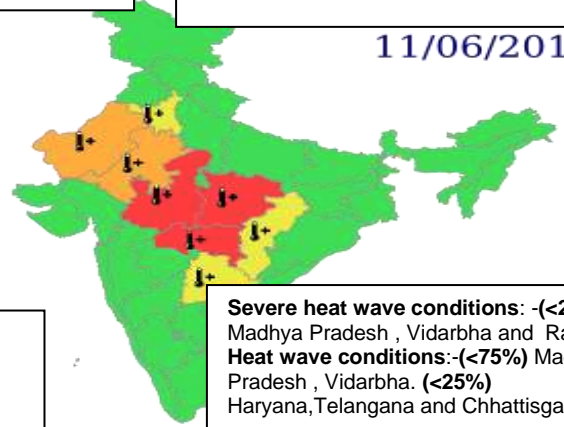
Severe heat wave conditions: -(<25%) Madhya Pradesh , Vidarbha, Uttar pradesh and Rajasthan.
Heat wave conditions:-(<75%) Madhya Pradesh , Vidarbha. (**<50%**) Rajasthan, Haryana, Chandigarh & Delhi. (**<25%**) Telangana and Chhattisgarh.

10/06/2019



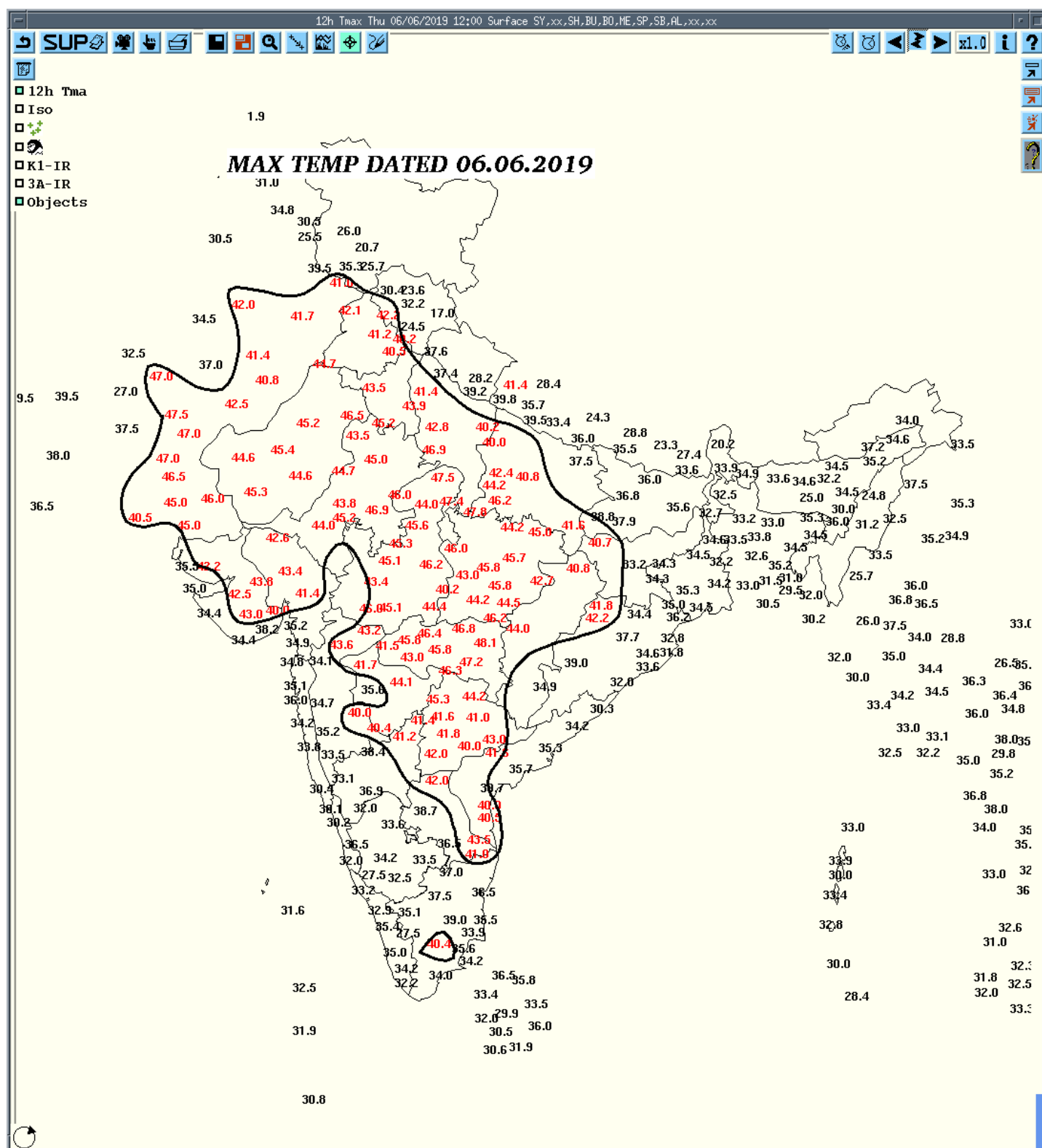
Severe heat wave conditions: -(<25%) Madhya Pradesh , Vidarbha and Rajasthan.
Heat wave conditions:-(<75%) Madhya Pradesh , Vidarbha. (**<50%**) Rajasthan, (**<25%**) Haryana, Uttar Pradesh, Telangana and Chhattisgarh.

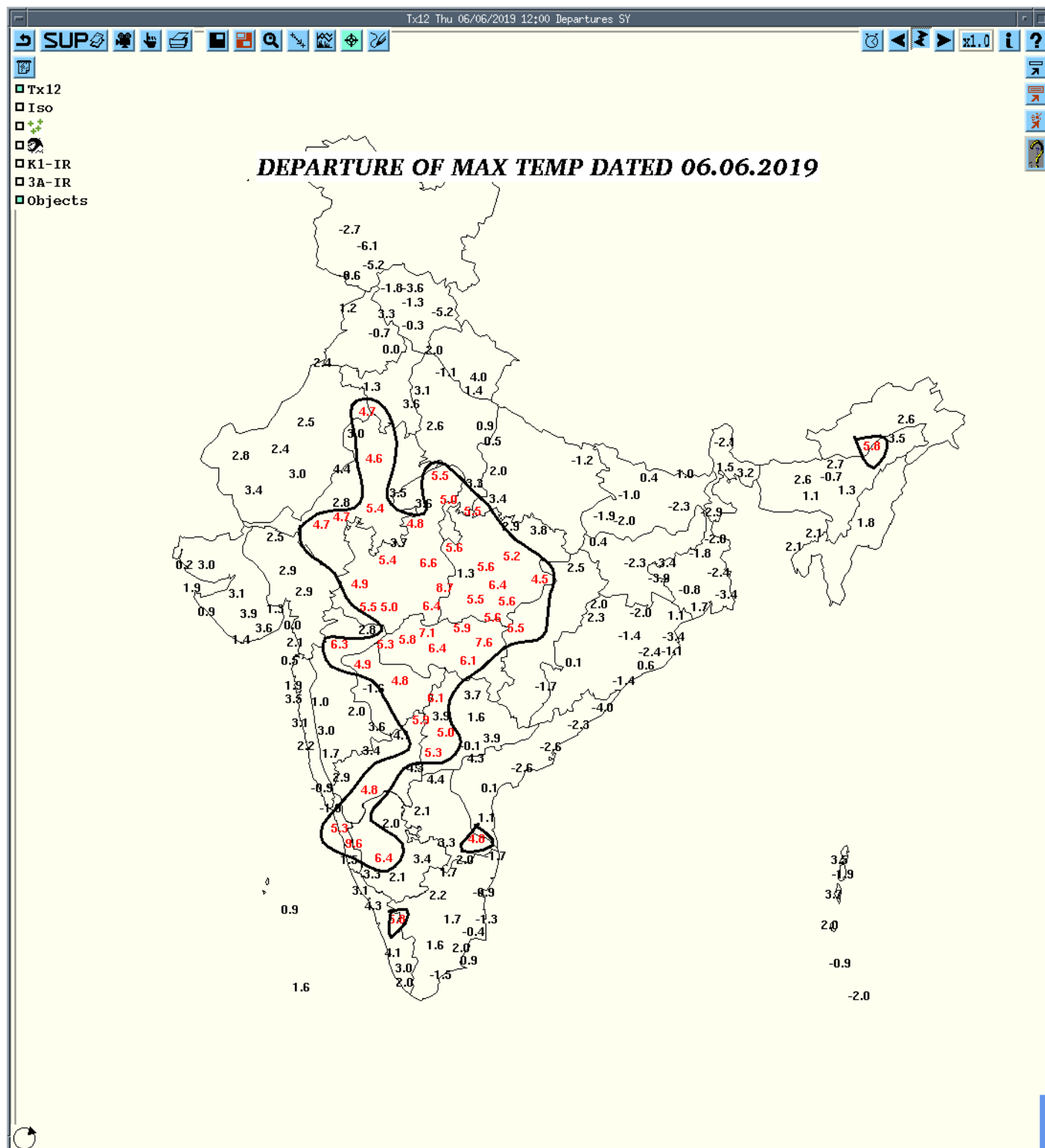
11/06/2019

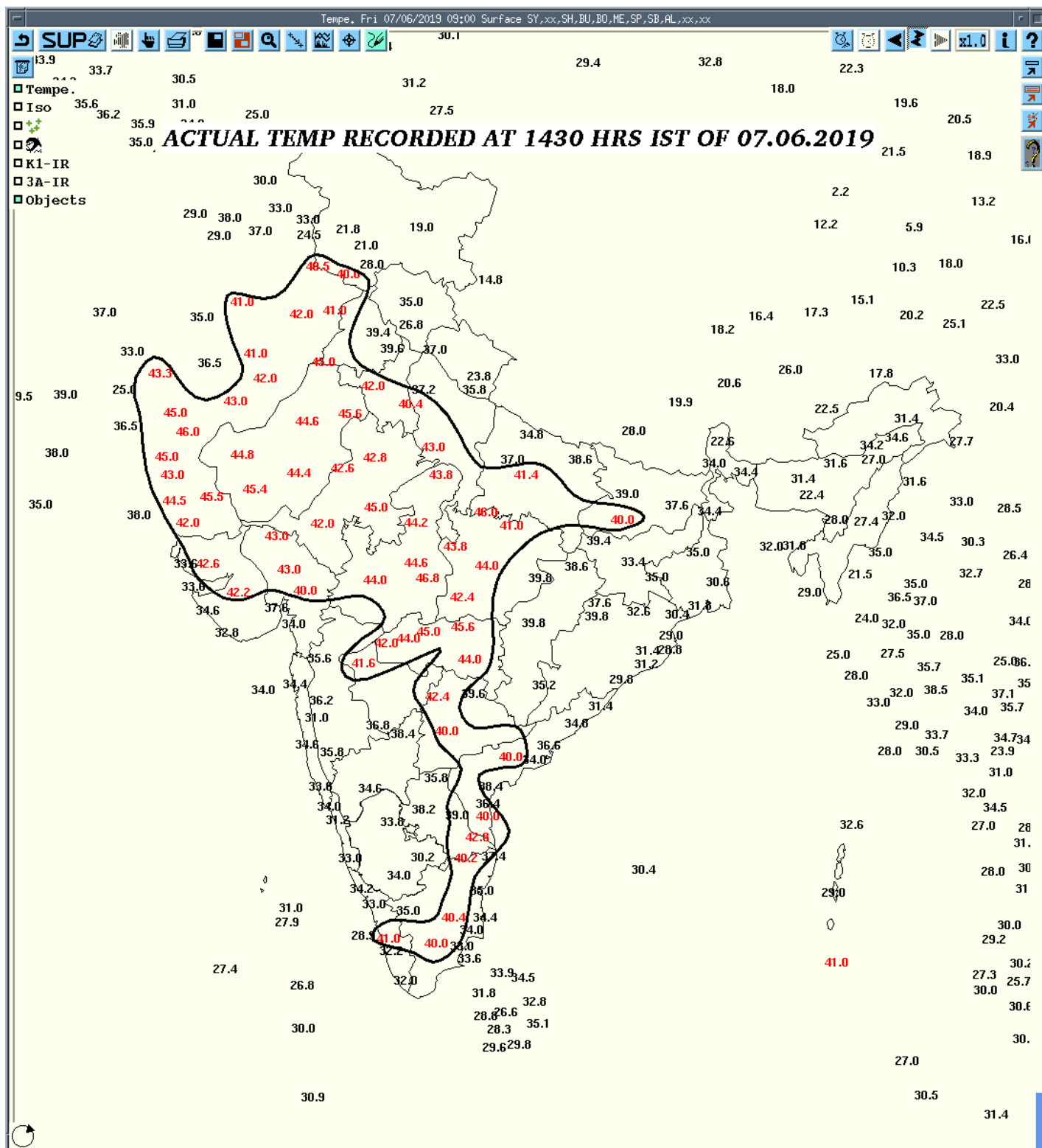


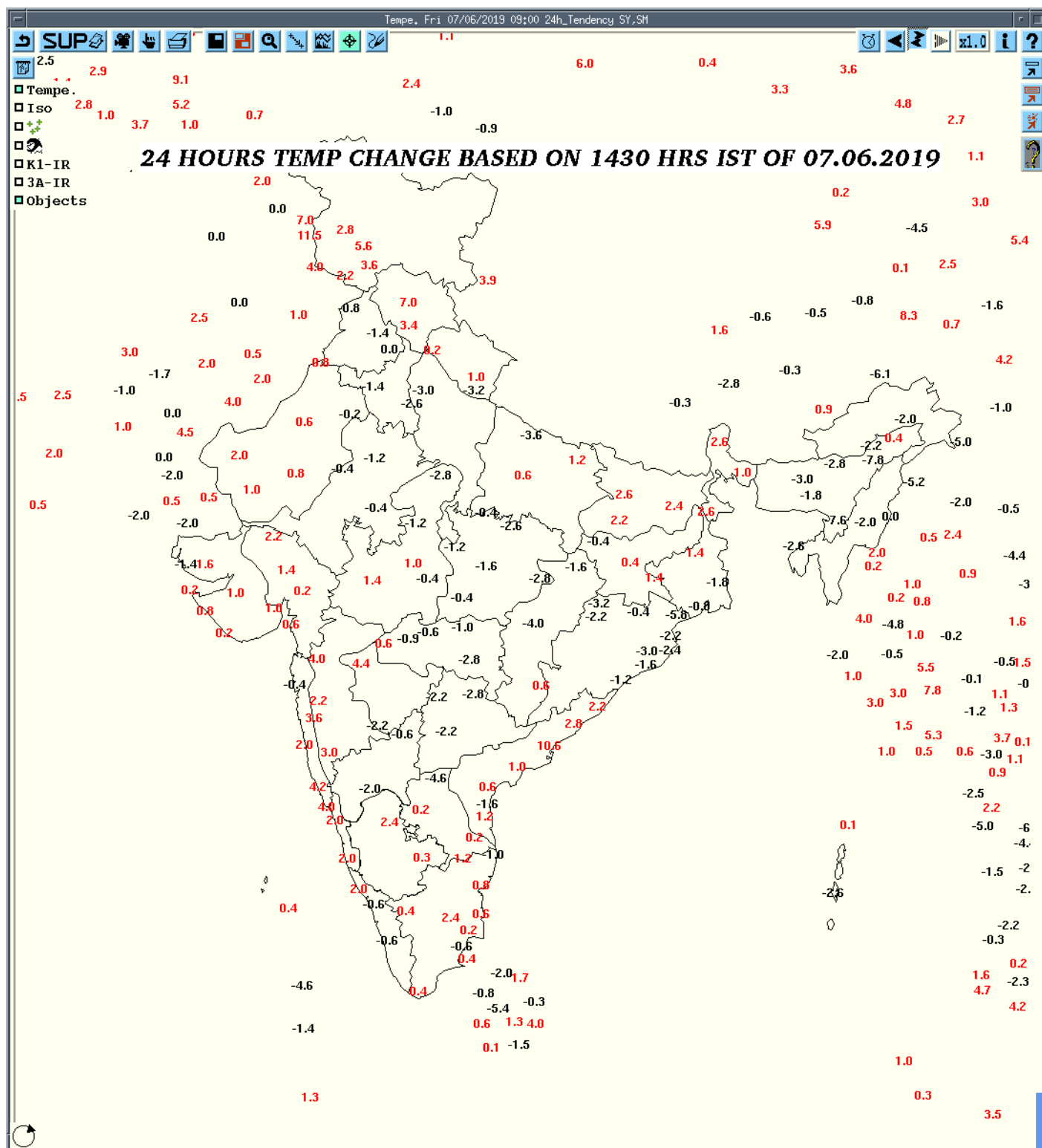
Severe heat wave conditions: -(<25%) Madhya Pradesh , Vidarbha and Rajasthan.
Heat wave conditions:-(<75%) Madhya Pradesh , Vidarbha. (**<25%**) Haryana, Telangana and Chhattisgarh.

Annexure 1









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 08th June, 2019
Time of Issue: 1630 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 07 June, 2019 to 0830 hrs IST 08 June, 2019)

Heat Wave:

Yesterday Heat Wave Conditions observed in many parts with **Severe Heat Wave** in isolated pockets over West Madhya Pradesh and Vidarbha. Heat Wave Conditions observed in most places over West Rajasthan; some parts over East Rajasthan and isolated pockets over Marathwada, Telangana, north Gujarat and Saurashtra..(Annexure 1 & 2).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Vidarbha; at a few places over West Madhya Pradesh, Chhattisgarh, Madhya Maharashtra; at isolated places over East Madhya Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at most places over West Rajasthan; at many places over East Rajasthan, Saurashtra & Kutch, Konkan & Goa, South Interior Karnataka; at a few places over Gujarat Region, Marathwada, Telangana, Coastal & North Interior Karnataka, Rayalaseema, Kerala; at isolated places over Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at a few places over Uttarakhand, Sub-Himalayan West Bengal & Sikkim, Assam & Meghalaya, Arunachal Pradesh and at isolated places over Bihar. Yesterday, **the highest maximum temperature of 47.2°C** was recorded at **Hoshangabad(West Madhya Pradesh)**.

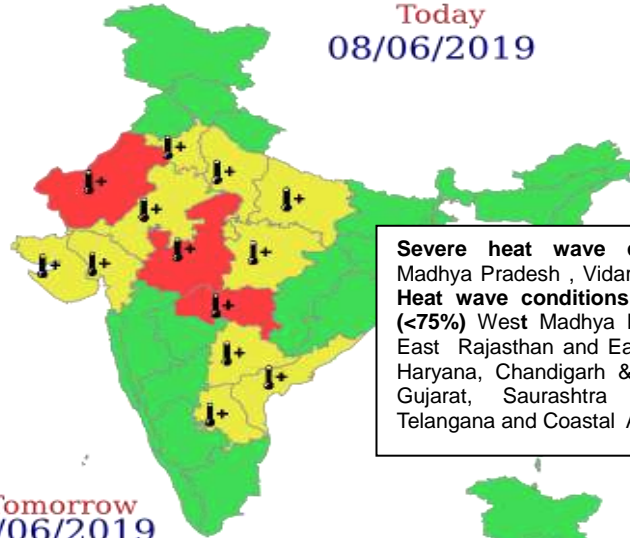
Temperatures Recorded at 1430 Hours IST of Today, the 08th June, 2019

- **Bikaner (West Rajasthan)** recorded the maximum temperature of **46.6°C (Annexure 3)**.
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** in most Places over Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh, Jharkhand, Coastal Andhra Pradesh and Gangetic West Bengal; in many Places over Tamilnadu and Orissa; at some places over Bihar, Assam & Meghalaya and Himachal Pradesh and in one or two pockets of Coastal Karnataka, Sub Himalayan West Bengal & Sikkim and Jammu & Kashmir.(Annexure 4).

Heat Wave Warnings for Next 5 Days (on next page)

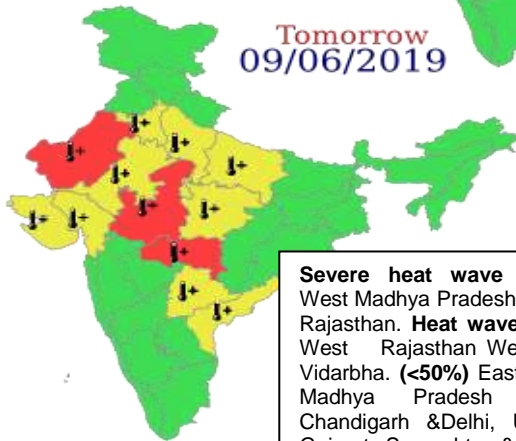
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
08/06/2019



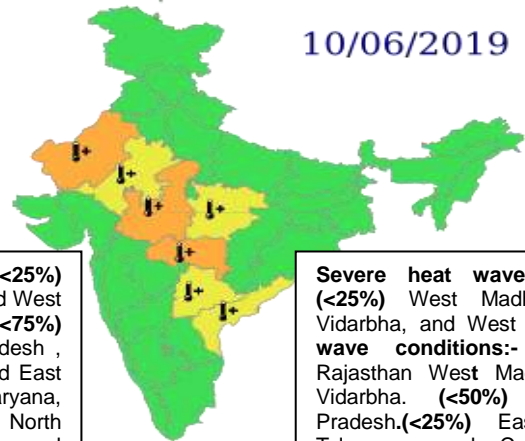
Severe heat wave conditions: -(<25%) West Madhya Pradesh , Vidarbha, and West Rajasthan. **Heat wave conditions:-(>75%)** West Rajasthan (<75%) West Madhya Pradesh , Vidarbha. (<50%) East Rajasthan and East Madhya Pradesh .(<25%) Haryana, Chandigarh & Delhi, Uttar Pradesh, North Gujarat, Saurashtra & Kutch, Rayalaseema, Telangana and Coastal Andhra Pradesh.

Tomorrow
09/06/2019



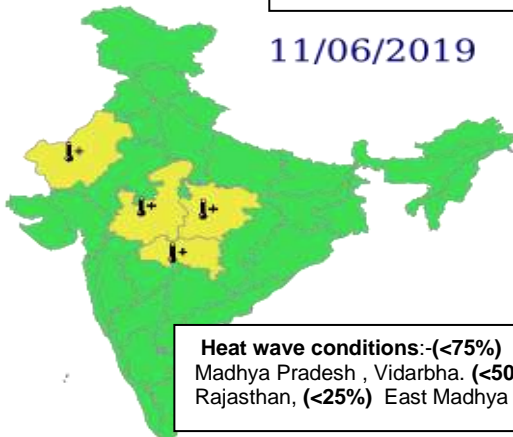
Severe heat wave conditions: -(<25%) West Madhya Pradesh , Vidarbha, and West Rajasthan. **Heat wave conditions:- (<75%)** West Rajasthan West Madhya Pradesh , Vidarbha. (<50%) East Rajasthan and East Madhya Pradesh .(<25%) Haryana, Chandigarh & Delhi, Uttar Pradesh, North Gujarat, Saurashtra & Kutch, Telangana and Coastal Andhra Pradesh.

10/06/2019



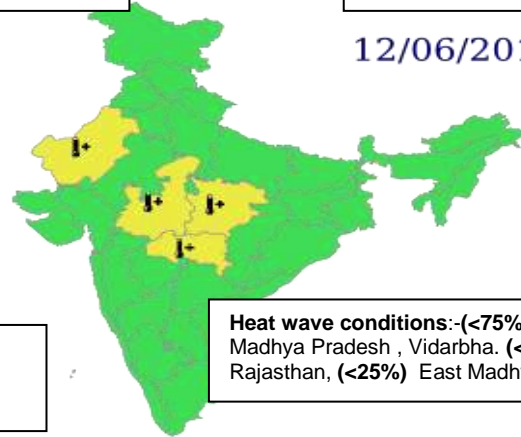
Severe heat wave conditions: - (<25%) West Madhya Pradesh , Vidarbha, and West Rajasthan. **Heat wave conditions:- (<75%)** West Rajasthan West Madhya Pradesh , Vidarbha. (<50%) East Madhya Pradesh. (<25%) East Rajasthan Telangana and Coastal Andhra Pradesh.

11/06/2019



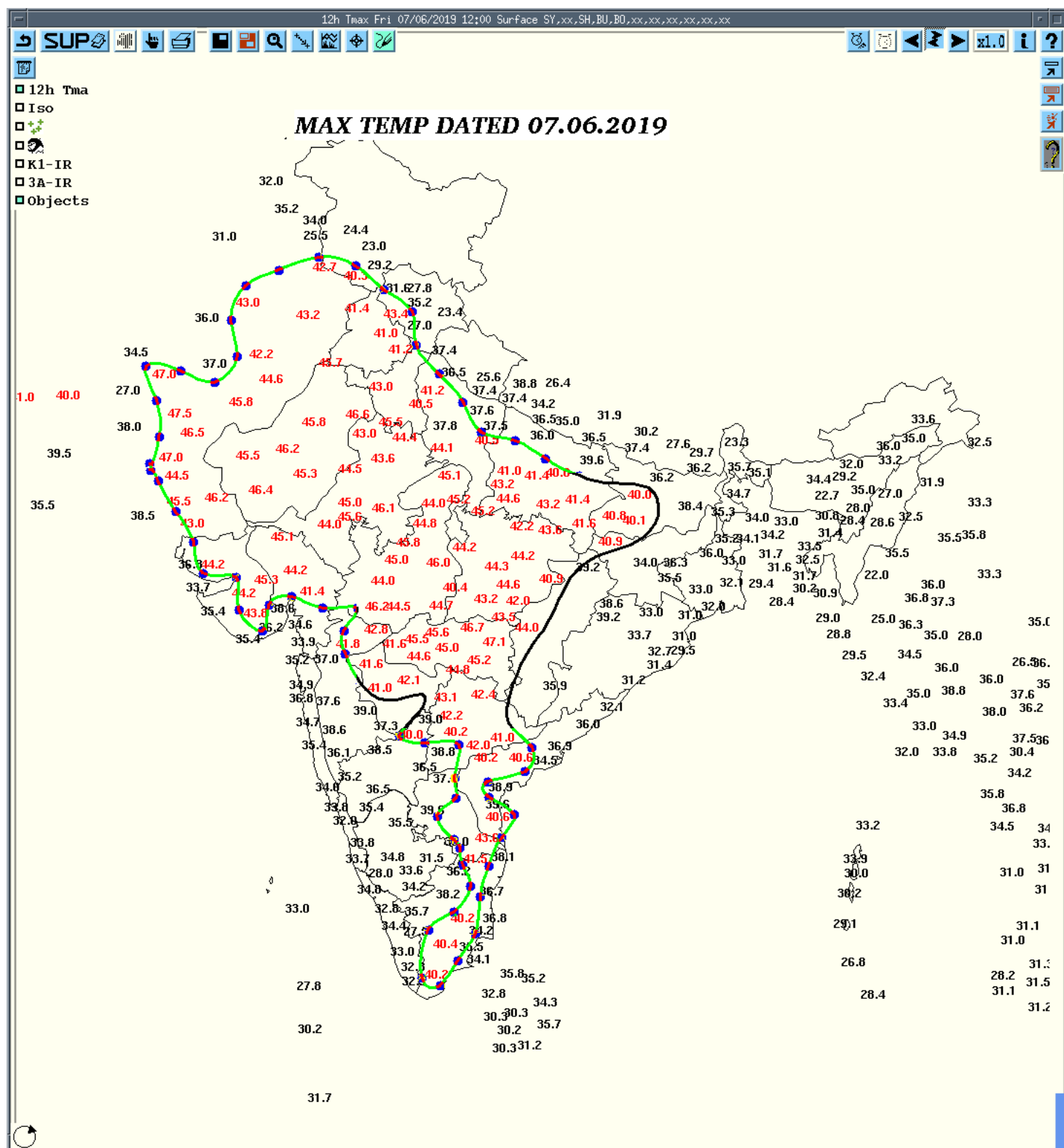
Heat wave conditions:-(<75%) West Madhya Pradesh , Vidarbha. (<50%) West Rajasthan, (<25%) East Madhya Pradesh.

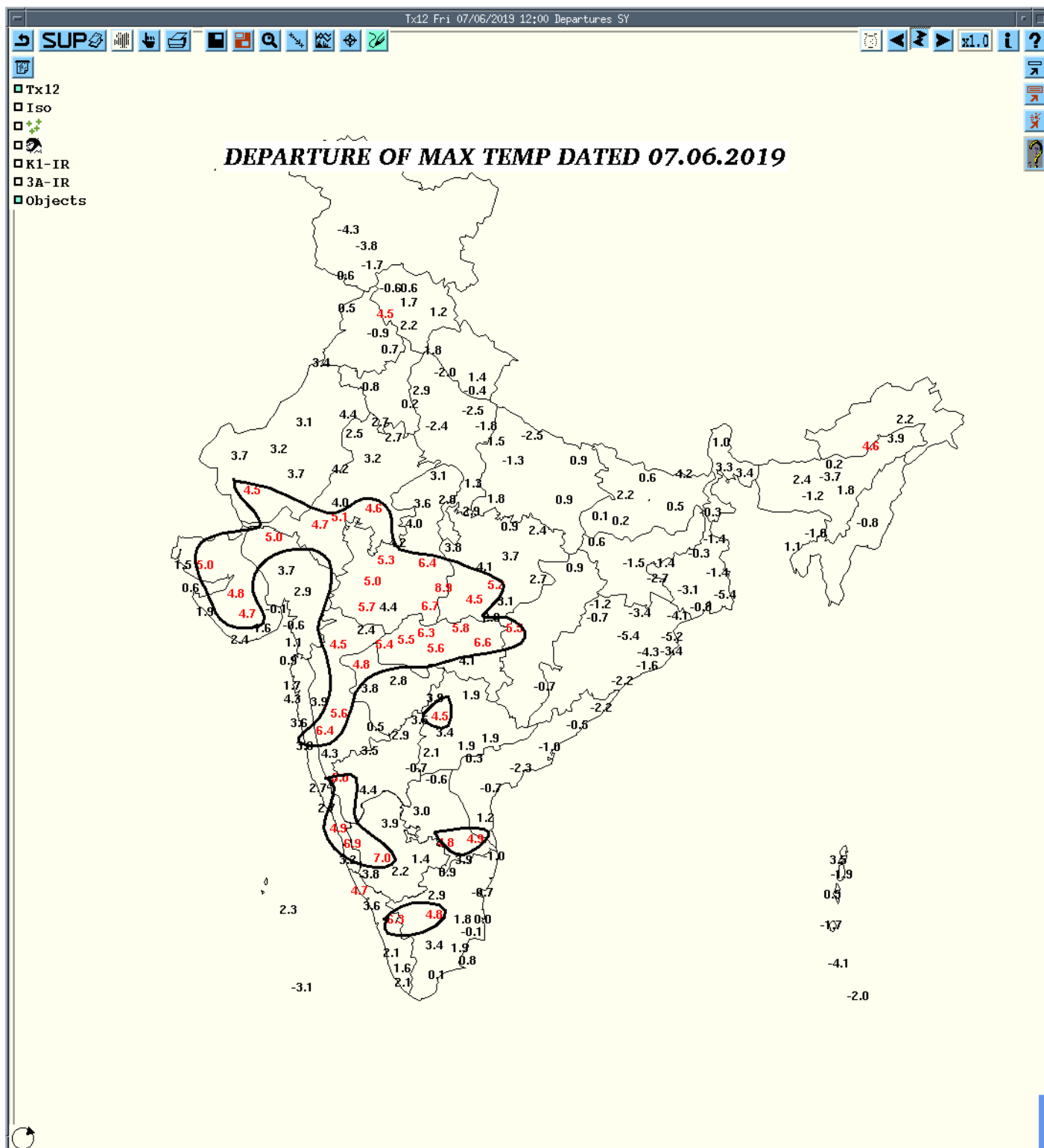
12/06/2019

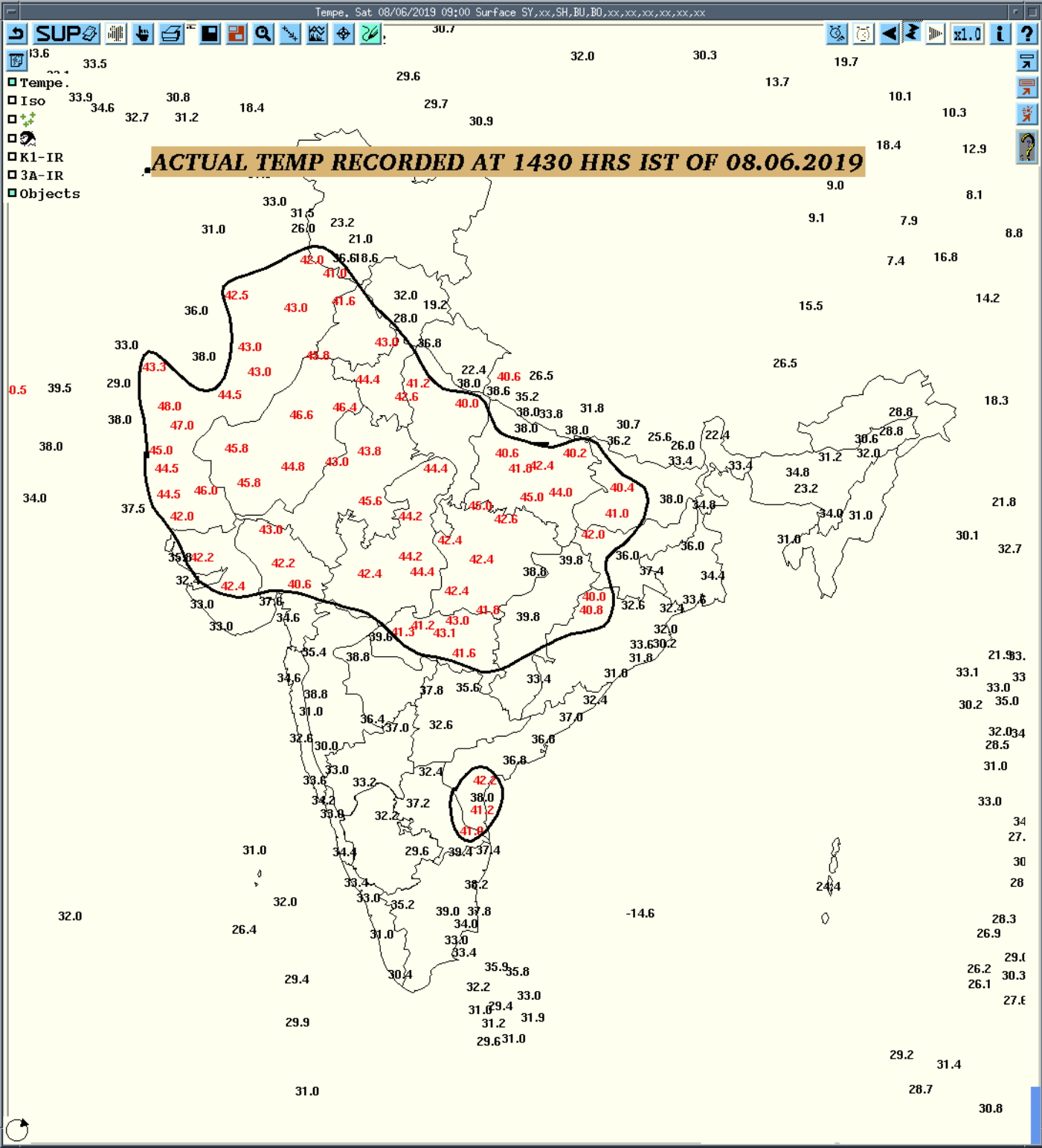


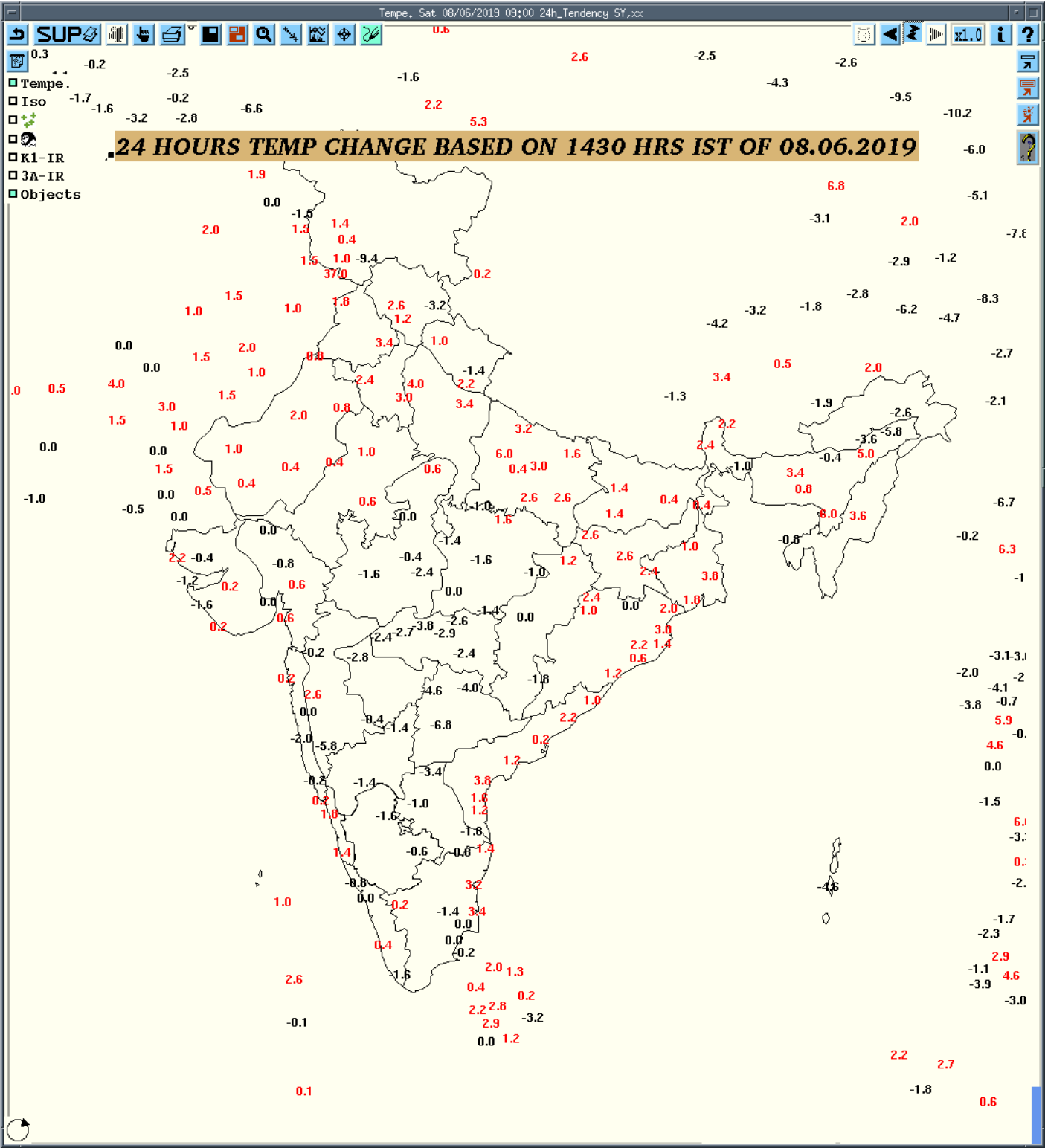
Heat wave conditions:-(<75%) West Madhya Pradesh , Vidarbha. (<50%) West Rajasthan, (<25%) East Madhya Pradesh.

Annexure 1









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department

Dated: 10th June, 2019
Time of Issue: 1700 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 09 June, 2019 to 0830 hrs IST 10 June, 2019)

Heat Wave:

Yesterday, Severe Heat Wave conditions were observed in many parts over West Rajasthan and at isolated pockets over East Rajasthan. Heat wave in many parts with severe heat wave in isolated pockets over Madhya Pradesh. Heat Wave Conditions in some parts with severe heat wave in isolated pockets over East Uttar Pradesh and in isolated pockets over Haryana, Chandigarh & Delhi, Bihar, Saurashtra & Kutch, Madhya Maharashtra and Vidarbha. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over East Rajasthan; at a few places over West Rajasthan and Madhya Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at most places over Haryana, Chandigarh & Delhi and Vidarbha; at many places over Chhattisgarh; at a few places over Himachal Pradesh, Uttar Pradesh, Gujarat, Bihar, Gangetic West Bengal, Madhya Maharashtra and Marathwada and at isolated places over Jammu & Kashmir; **above normal (1.6°C to 3.0°C)** at most places over Konkan & Goa, Karnataka, Telangana and Rayalaseema and at isolated places over Odisha and Kerala. Yesterday, **the highest maximum temperature of 48.5°C** was recorded at **Ganganagar (West Rajasthan).**

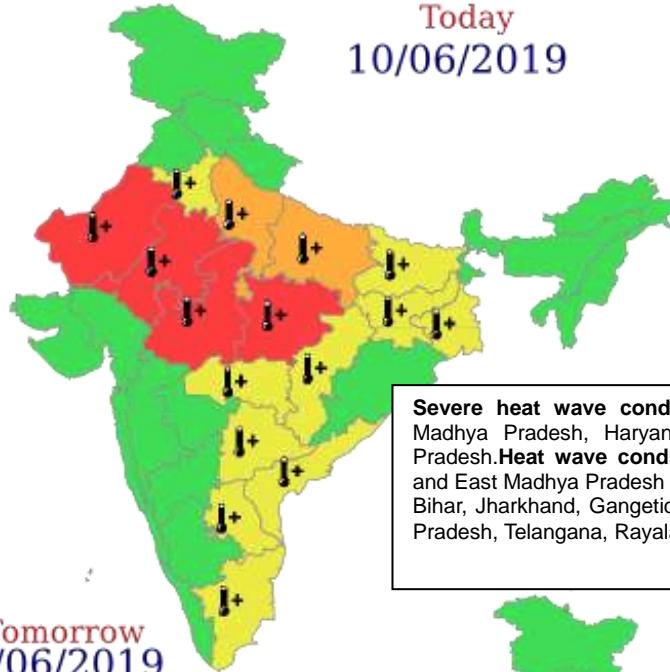
Temperatures Recorded at 1430 Hours IST of Today, the 10th June, 2019

- **Churu(West Rajasthan)** recorded the maximum temperature of **48.6°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** in most Places over Vidarbha and Assam& Meghalaya; in many places over Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Delhi & Chandigarh and Jharkhand; at some places over Uttarakhand, Gangetic West Bengal and Orissa and in one or two pockets of Madhya Pradesh, Uttar Pradesh and Tamilnadu. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

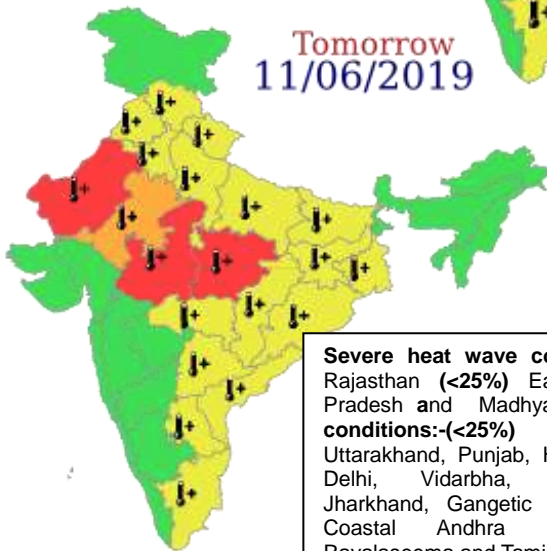
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
10/06/2019



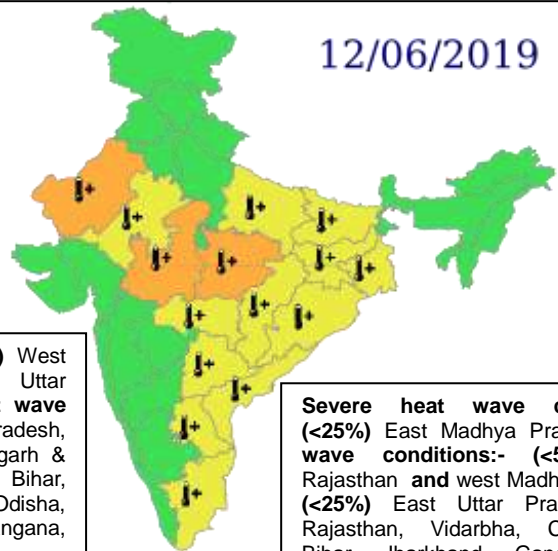
Severe heat wave conditions:-(<75%) Rajasthan.(**<25**) Madhya Pradesh, Haryana, Chandigarh & Delhi, Uttar Pradesh.**Heat wave conditions:- (<50%)** Haryana, Delhi and East Madhya Pradesh .(**<25%**) Vidarbha, Chhattisgarh, Bihar, Jharkhand, Gangetic West Bengal, Coastal Andhra Pradesh, Telangana, Rayalaseema and Tamilnadu.

Tomorrow
11/06/2019



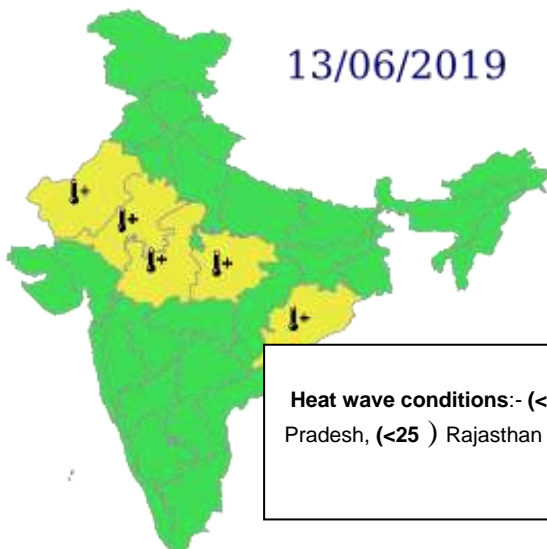
Severe heat wave conditions: -(<50) West Rajasthan (**<25%**) East Rajasthan , Uttar Pradesh and Madhya Pradesh. **Heat wave conditions:-(<25%)** Himachal Pradesh, Uttarakhand, Punjab, Haryana, Chandigarh & Delhi, Vidarbha, Chhattisgarh, Bihar, Jharkhand, Gangetic West Bengal, Odisha, Coastal Andhra Pradesh, Telangana, Rayalaseema and Tamilnadu.

12/06/2019



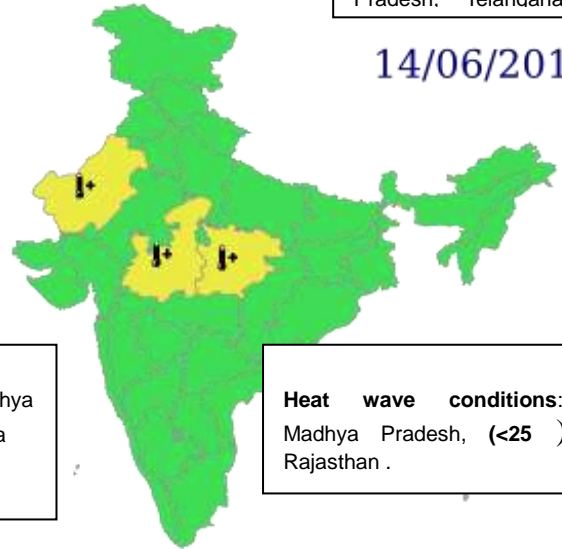
Severe heat wave conditions:- (<25%) East Madhya Pradesh. **Heat wave conditions:- (<50%)** west Rajasthan and west Madhya Pradesh. (**<25%**) East Uttar Pradesh, East Rajasthan, Vidarbha, Chhattisgarh, Bihar, Jharkhand, Gangetic West Bengal, Odisha, Coastal Andhra Pradesh, Telangana, Rayalaseema

13/06/2019



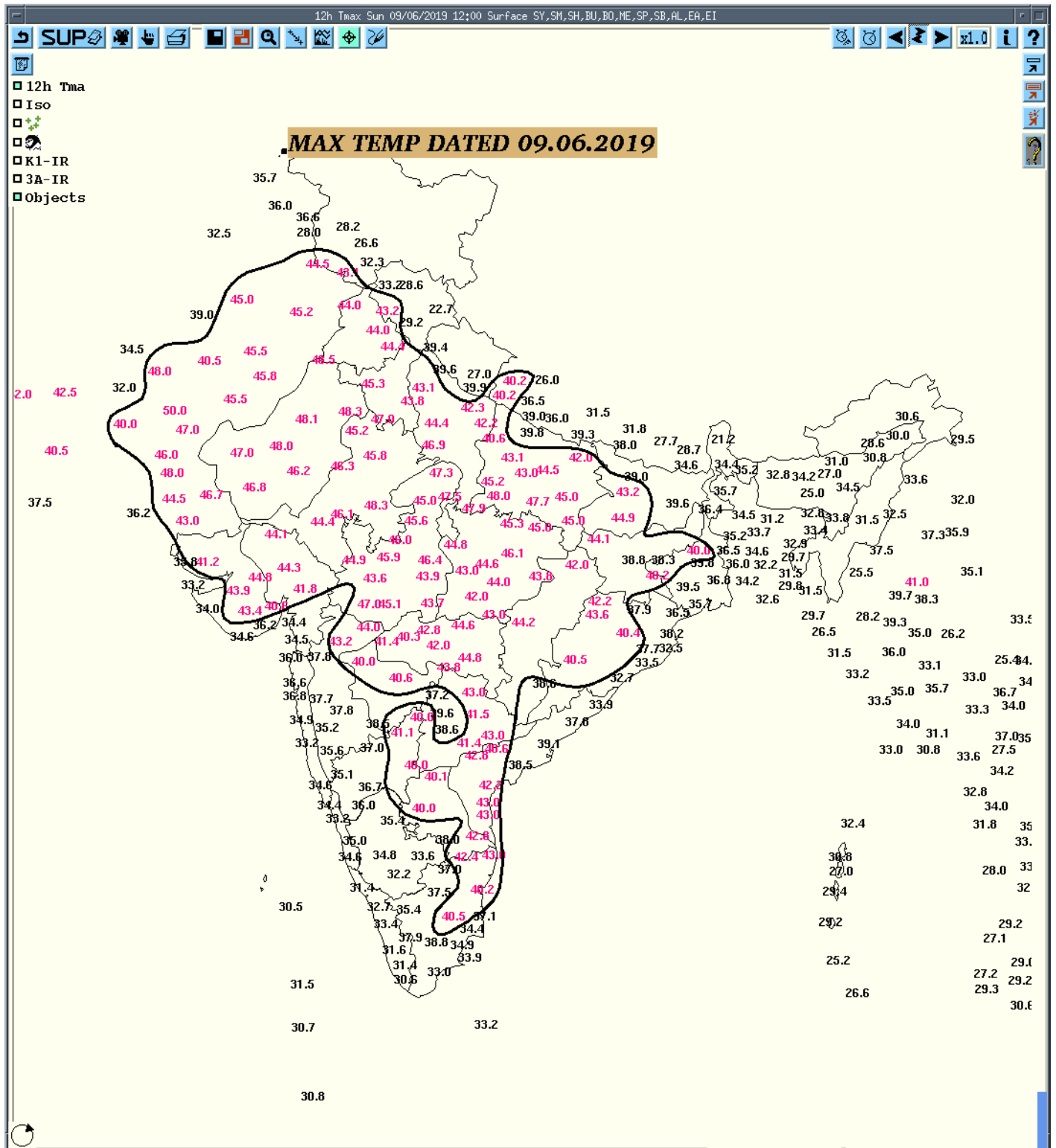
Heat wave conditions:- (<50%) Madhya Pradesh, (**<25**) Rajasthan and Odisha

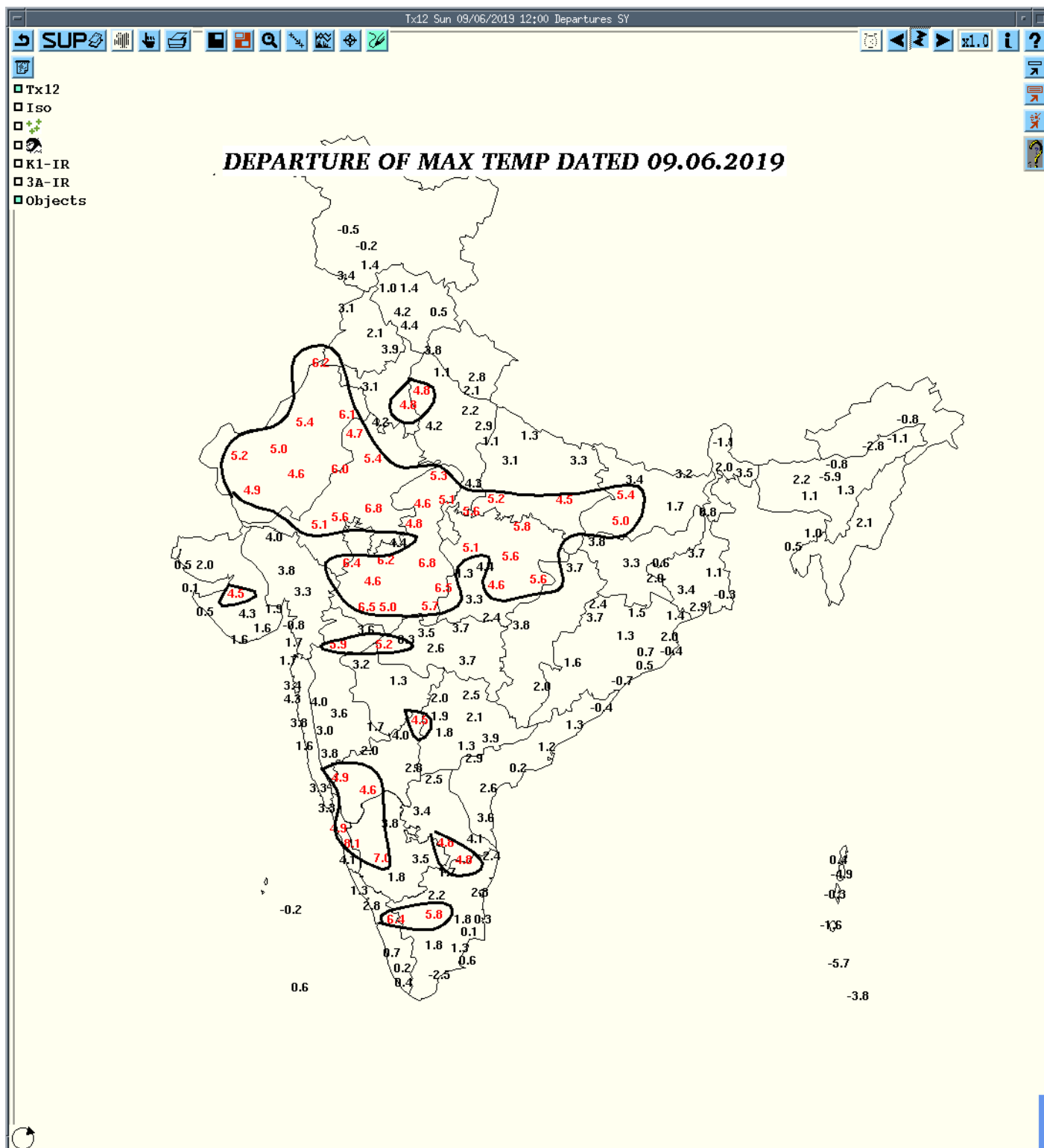
14/06/2019

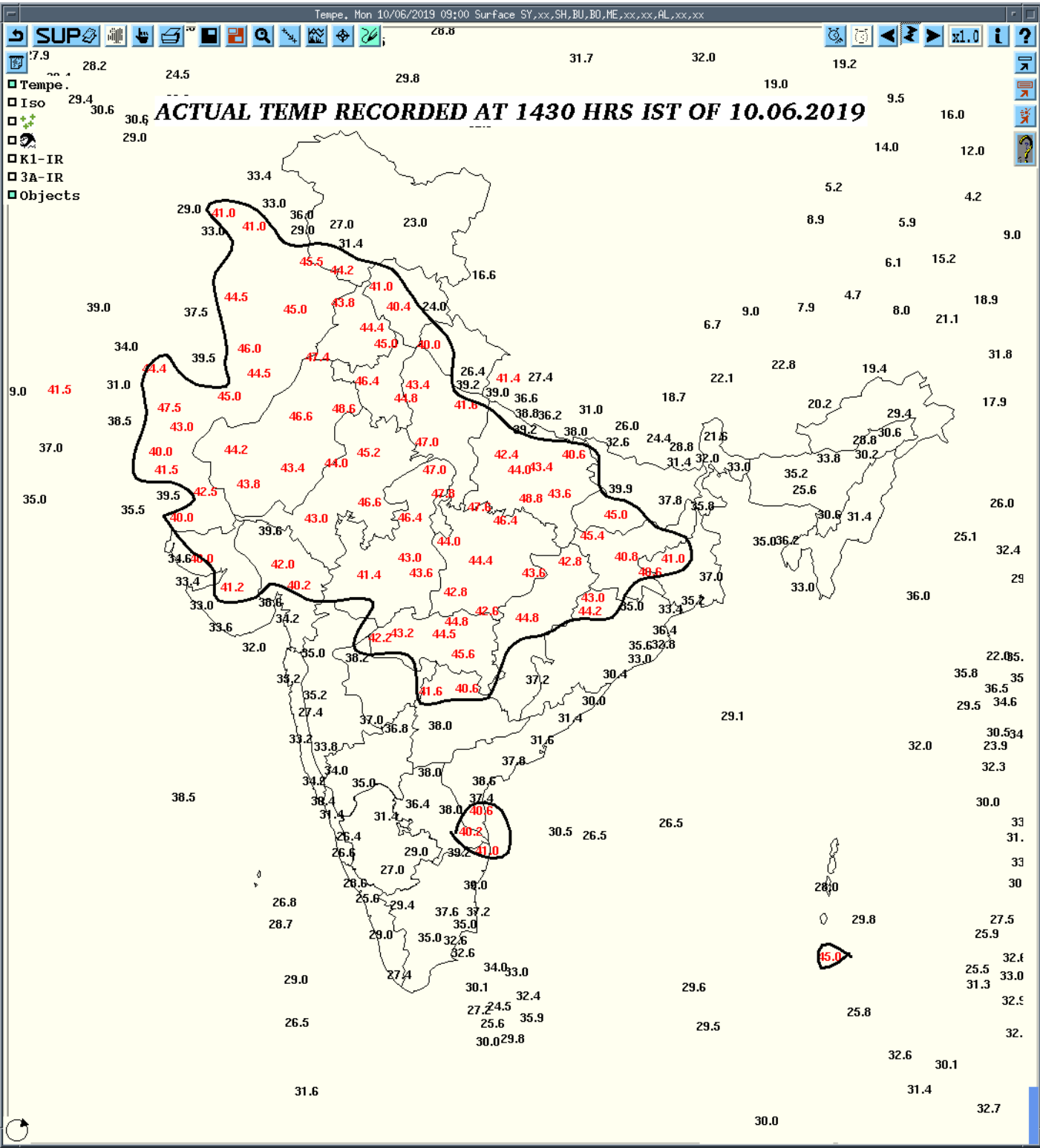


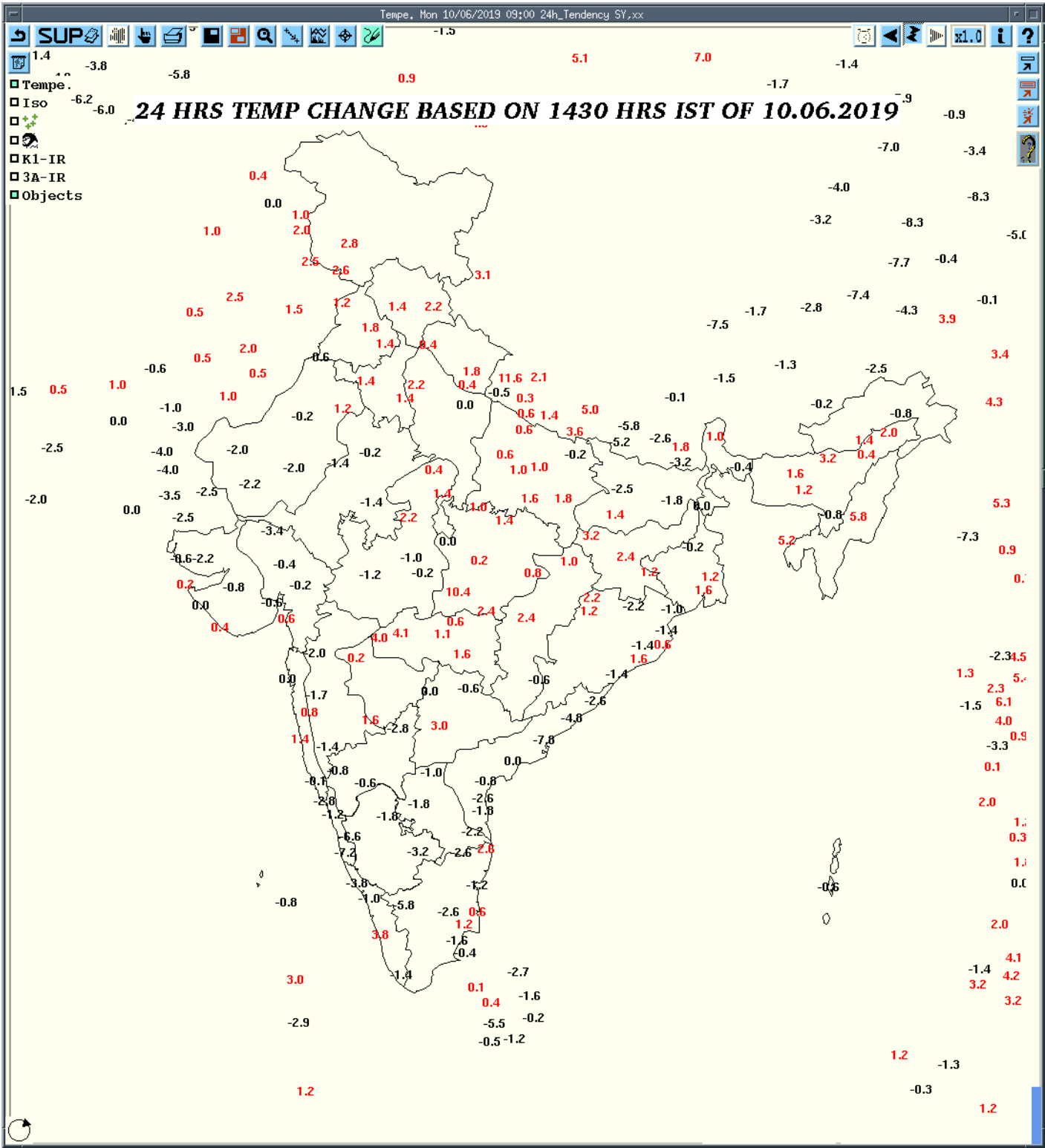
Heat wave conditions:- (<50%) Madhya Pradesh, (**<25**) west Rajasthan .

Annexure 1









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department

Dated: 12th June, 2019
Time of Issue: 1630 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 11 June, 2019 to 0830 hrs IST 12 June, 2019)

Heat Wave:

Yesterday, Severe Heat Wave conditions were observed in many parts over Madhya Pradesh; in some parts over West Rajasthan. Heat wave in many places with severe heat wave in some parts over Vidarbha; in some parts with severe heat wave in isolated pockets over East Rajasthan. Severe Heat Wave to Heat Wave conditions over Uttar Pradesh and Jharkhand. Heat Wave conditions in many places over Punjab and Odisha; in some parts over Haryana, Chandigarh & Delhi and Telangana and in isolated pockets over Bihar, Gangetic West Bengal, Madhya Maharashtra and Marathwada. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperature departures as on 11-06-2019: Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over Punjab, Madhya Pradesh and Vidarbha; at many places over Uttarakhand, Jharkhand and Chhattisgarh; at a few places over Himachal Pradesh, Rajasthan and Haryana, Chandigarh & Delhi and at isolated places over Odisha and Telangana; appreciably **above normal (3.1°C to 5.0°C)** at many places over Uttar Pradesh, Konkan & Goa, Marathwada, Rayalaseema, Coastal Andhra Pradesh & Yanam and Madhya Maharashtra; at a few places over Gangetic West Bengal, Gujarat state, Nagaland, Manipur, Mizoram & Tripura, Assam & Meghalaya and Tamil Nadu, Puducherry and Karaikal; **above normal (1.6°C to 3.0°C)** at most places over North Interior Karnataka; at many places over Arunachal Pradesh and at a few places over Coastal Karnataka. Yesterday, **the highest maximum temperature of 49.0°C** was recorded at **Banda (East Uttar Pradesh)**.

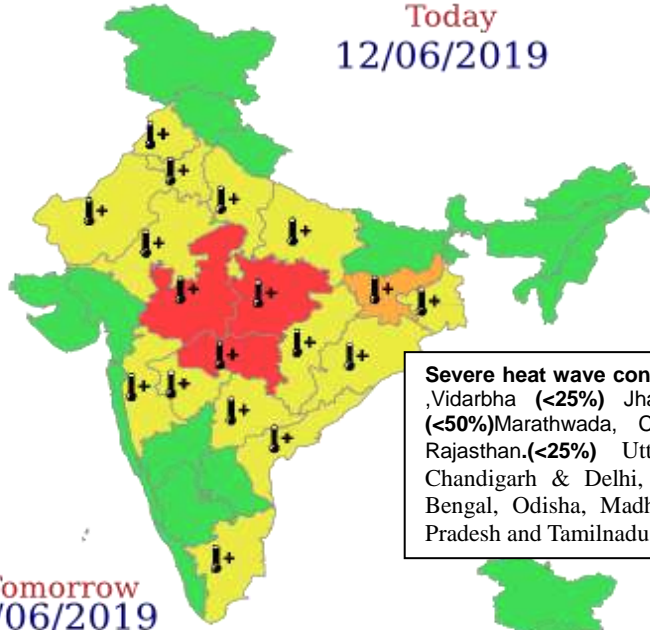
Temperatures Recorded at 1430 Hours IST of Today, the 11th June, 2019

- **Bikaner (West Rajasthan)** recorded the maximum temperature of 45.6°C **(Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** in most Places over sub himalayan west Bengal & Sikkim, Assam, Bihar; in many places over Saurashtra & kutch and Coastal Andhra Pradesh; at some places over Odisha and in one or two pockets of Gangetic West Bengal, Jharkhand and Chattisgarh. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

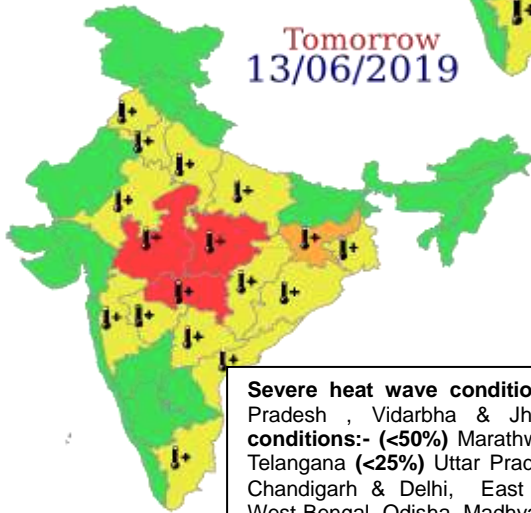
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
12/06/2019



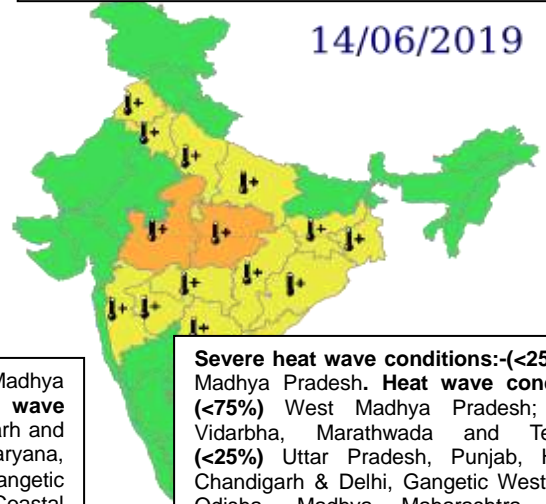
Severe heat wave conditions:-(<50%)Madhya Pradesh & ,Vidarbha **(<25%)** Jharkhand.**Heat wave conditions:- (<50%)**Marathwada, Chhattisgarh, Telangana & West Rajasthan.**(<25%)** Uttar Pradesh, Punjab, Haryana, Chandigarh & Delhi, East Rajasthan, Gangetic West Bengal, Odisha, Madhya Maharashtra, Coastal Andhra Pradesh and Tamilnadu.

Tomorrow
13/06/2019



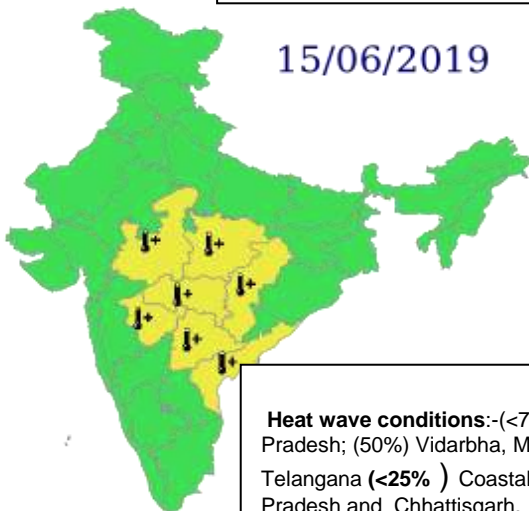
Severe heat wave conditions: - (<25%) Madhya Pradesh , Vidarbha & Jharkhand. **Heat wave conditions:- (<50%)** Marathwada, Chhattisgarh and Telangana **(<25%)** Uttar Pradesh, Punjab, Haryana, Chandigarh & Delhi, East Rajasthan, Gangetic West Bengal, Odisha, Madhya Maharashtra, Coastal Andhra Pradesh, and Tamilnadu.

14/06/2019



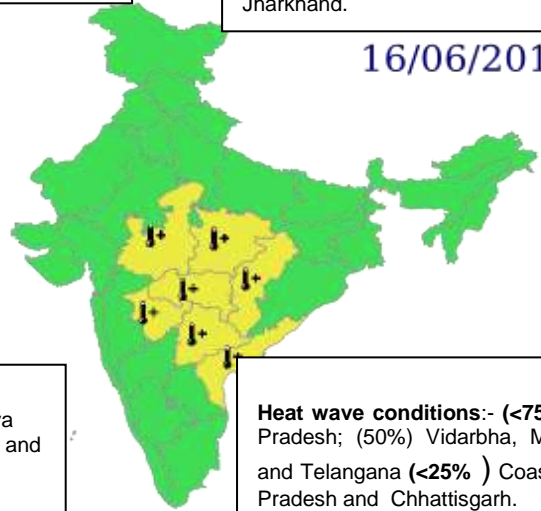
Severe heat wave conditions:-(<25%) East Madhya Pradesh. **Heat wave conditions:- (<75%)** West Madhya Pradesh; (<50%) Vidarbha, Marathwada and Telangana **(<25%)** Uttar Pradesh, Punjab, Haryana, Chandigarh & Delhi, Gangetic West Bengal, Odisha, Madhya Maharashtra, Coastal Andhra Pradesh, Chhattisgarh and Jharkhand.

15/06/2019



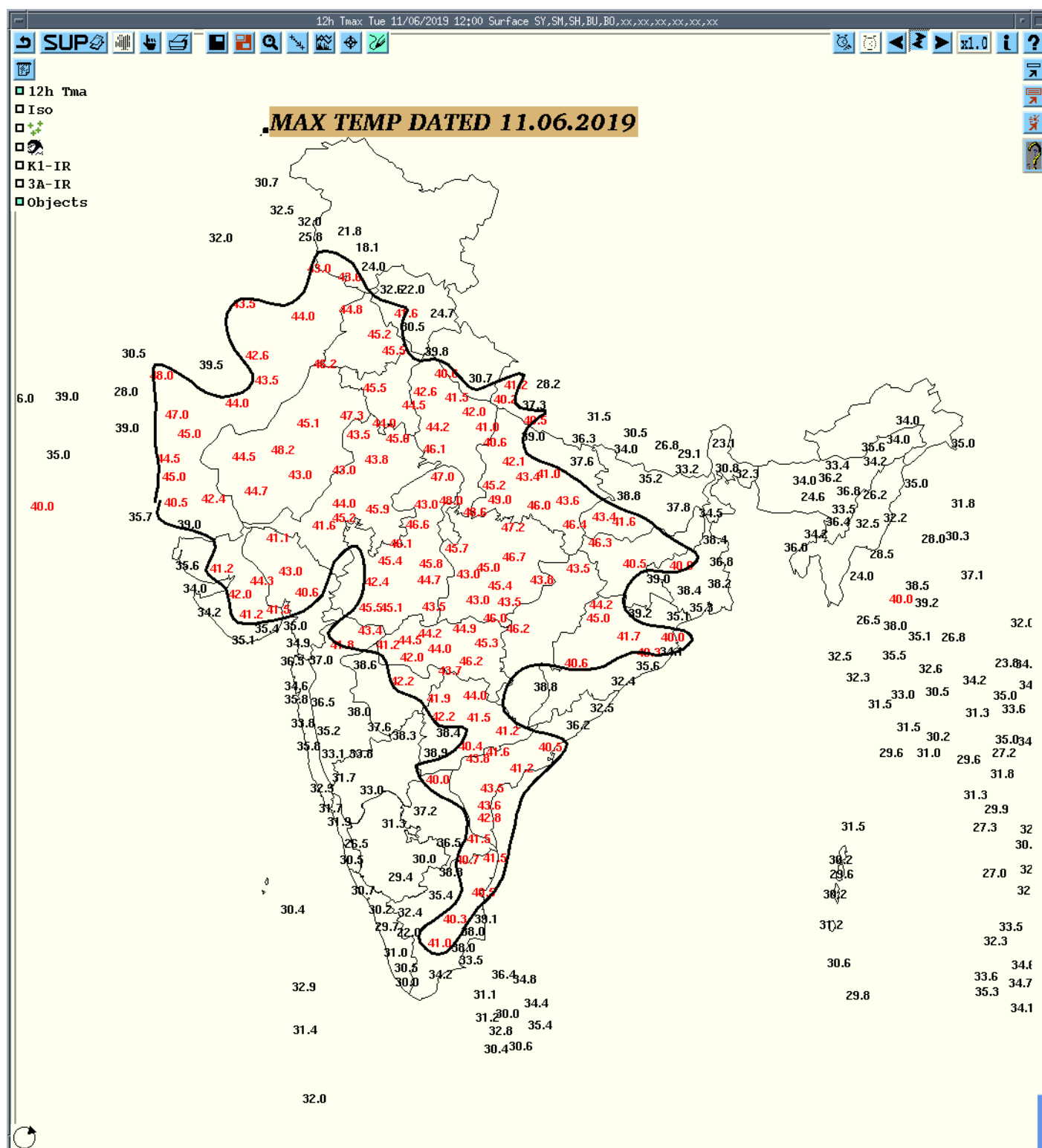
Heat wave conditions:-(<75%)Madhya Pradesh; (50%) Vidarbha, Marathwada and Telangana **(<25%)** Coastal Andhra Pradesh and Chhattisgarh.

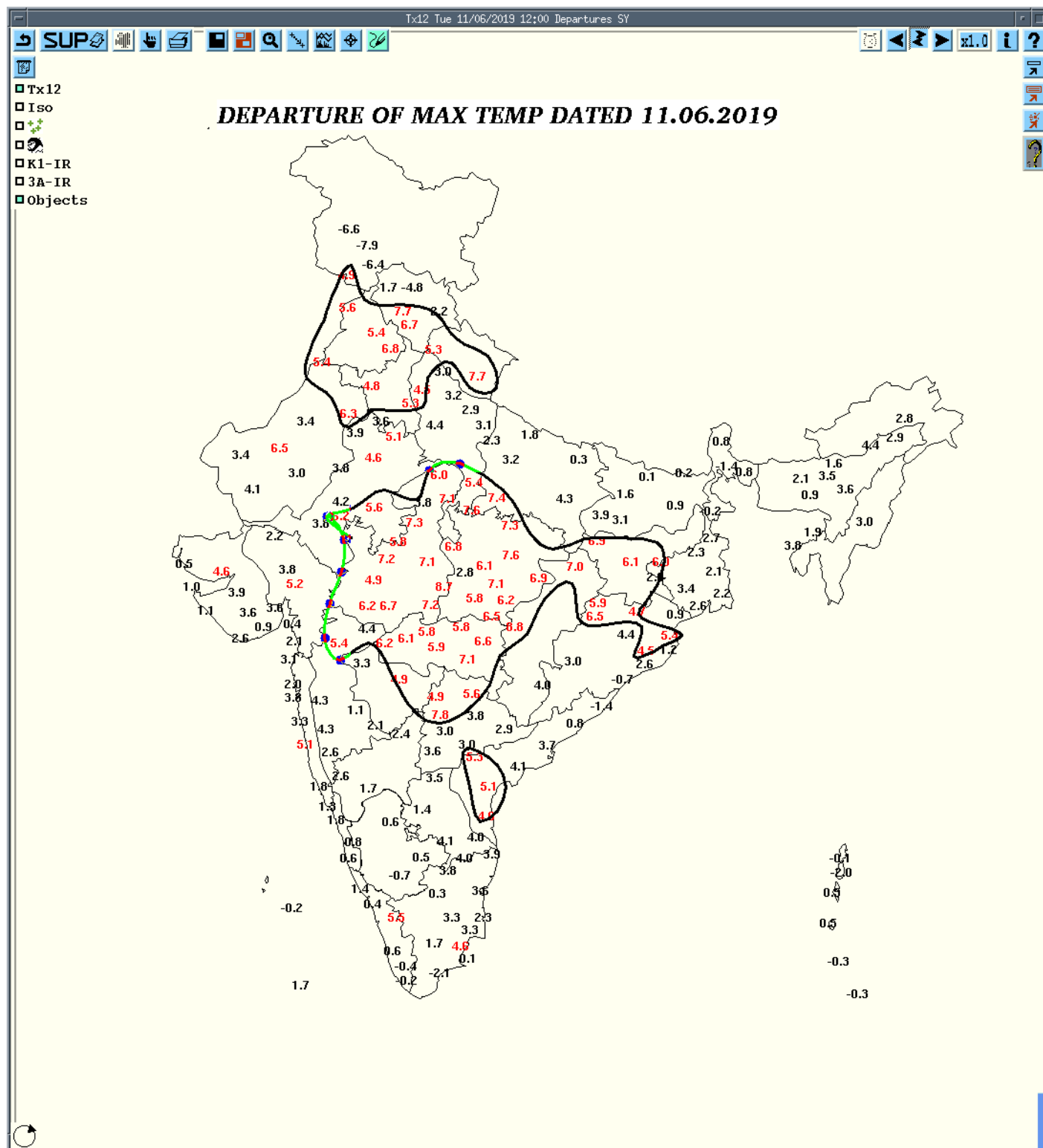
16/06/2019

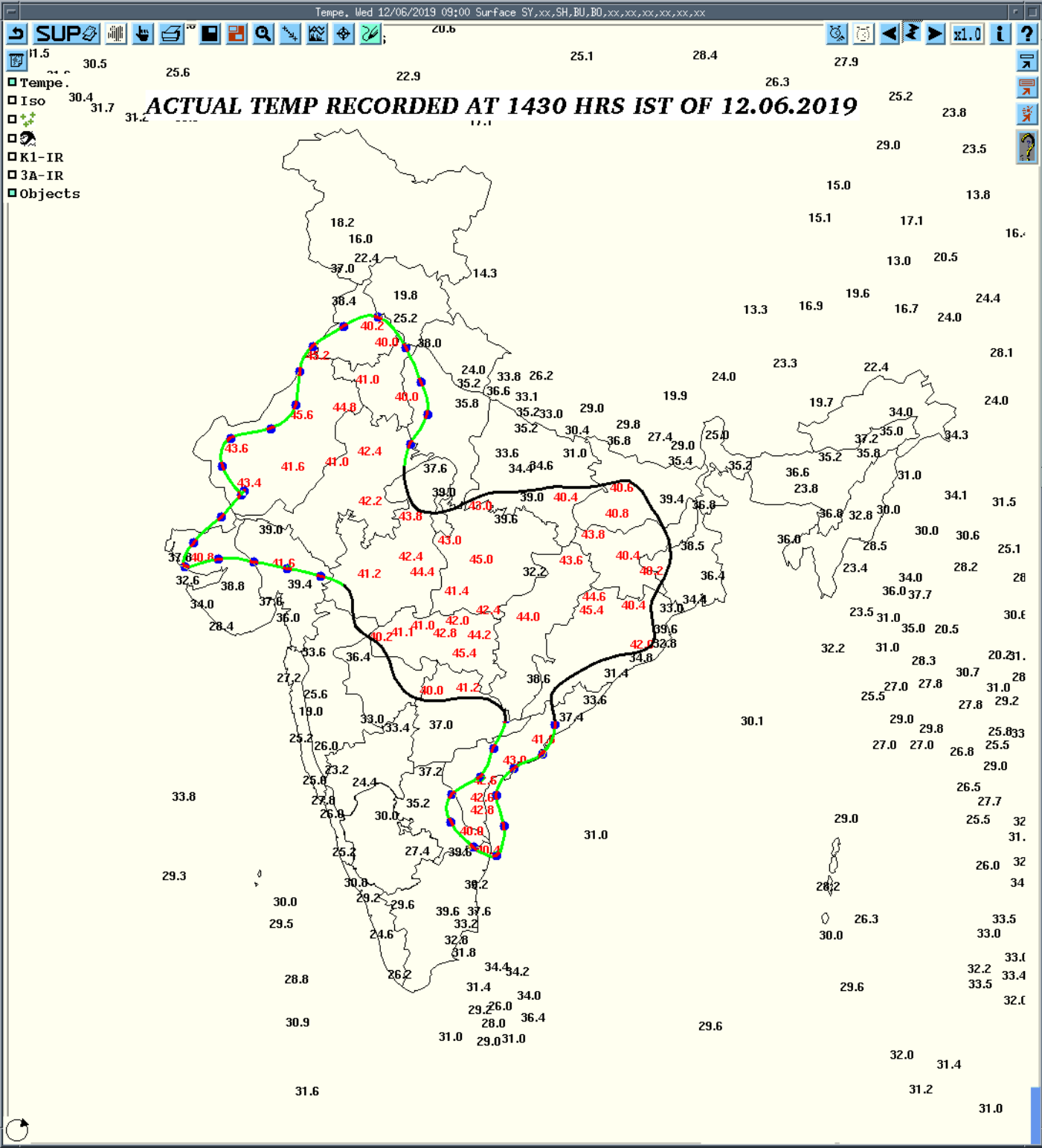


Heat wave conditions:- (<75%)Madhya Pradesh; (50%) Vidarbha, Marathwada and Telangana **(<25%)** Coastal Andhra Pradesh and Chhattisgarh.

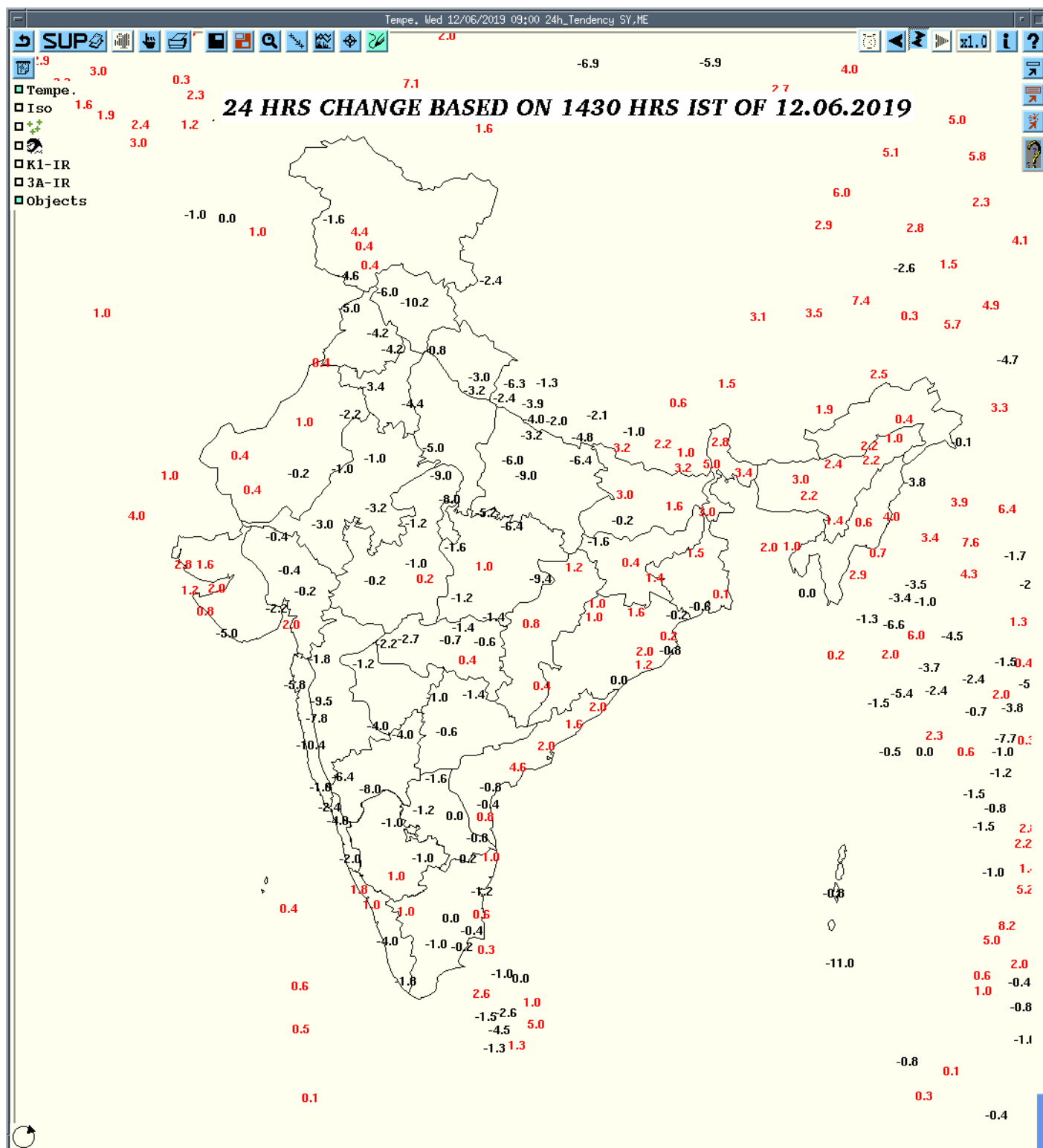
Annexure 1







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department

Dated: 06th June, 2019
Time of Issue: 1630 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 05 June, 2019 to 0830 hrs IST 06 June, 2019)

Heat Wave:

Yesterday, Heat wave conditions were observed in many parts with **Severe Heat Wave** in isolated pockets over Madhya Pradesh; in some parts with **Severe Heat Wave** in isolated pockets over West Rajasthan and Vidarbha. Heat Wave conditions were observed in many parts over Madhya Maharashtra and in isolated pockets over East Rajasthan, Marathwada, Chhattisgarh and Odisha. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were markedly above normal (5.1°C or more) at many places over East Madhya Pradesh, Vidarbha and Madhya Maharashtra; at a few places over West Madhya Pradesh and Coastal Karnataka and at isolated places over East Rajasthan and Kerala; appreciably above normal (3.1°C to 5.0°C) at most places over North Interior Karnataka; at many places over West Rajasthan and Telangana; at a few places over Himachal Pradesh, Uttarakhand, Haryana, Chandigarh & Delhi, Rayalaseema and Marathwada and at isolated places over Punjab, Saurashtra & Kutch, Konkan & Goa, Tamilnadu & Puducherry, Coastal Andhra Pradesh and Andaman & Nicobar; above normal (1.6°C to 3.0°C) at many places over South Interior Karnataka; at many Places over Chhattisgarh; at a few places over Jharkhand, Gujarat Region and Andhra Pradesh and at isolated places over Odisha, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura. Yesterday, the **Highest maximum temperature of 47.9°C** was recorded at **Nowgong (East Madhya Pradesh).**

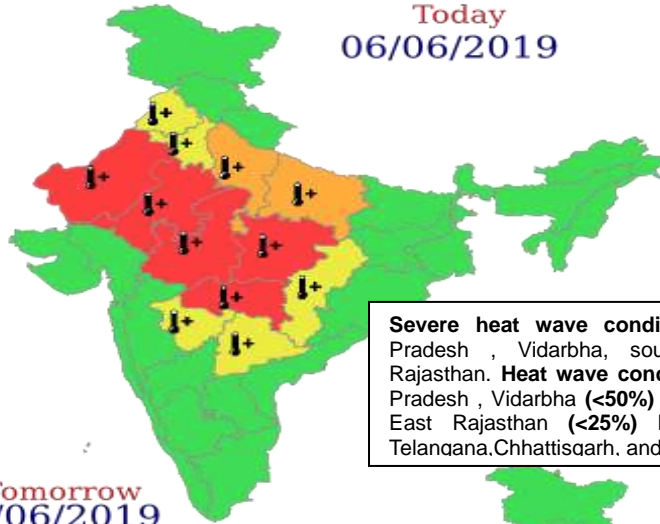
Temperatures Recorded at 1430 Hours IST of Today, the 06th June, 2019

- **Brahmapuri(vidarbha) and Jhansi(Uttar pradesh), Hoshangabad recorded the maximum temperature of 47.2°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-3°C in most parts over Assam & Meghalaya, Vidarbha and Sub Himalayan West Bengal & Sikkim and in one or two pockets of West Rajasthan, Saurashtra and Kutch, Telangana, Delhi and West Madhya Pradesh..(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

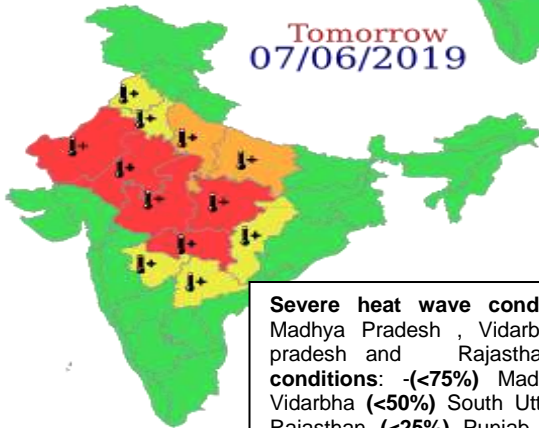
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
06/06/2019



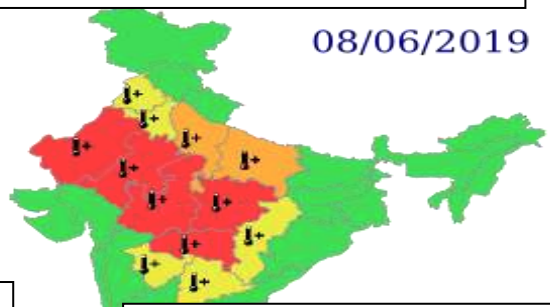
Severe heat wave conditions: -(<25%) Madhya Pradesh , Vidarbha, south uttar pradesh and Rajasthan. **Heat wave conditions: -(<75%)** Madhya Pradesh , Vidarbha (<50%) South Uttar pradesh and East Rajasthan (<25%) Punjab, south Haryana Telangana,Chhattisgarh, and Marathawada.

Tomorrow
07/06/2019



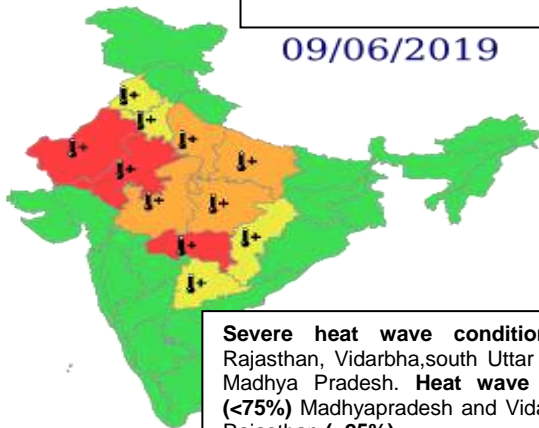
Severe heat wave conditions: -(<25%) Madhya Pradesh , Vidarbha, south uttar pradesh and Rajasthan. **Heat wave conditions: -(<75%)** Madhya Pradesh , Vidarbha (<50%) South Uttar pradesh and Rajasthan (<25%) Punjab, south Haryana Telangana,Chhattisgarh, and Marathawada.

08/06/2019



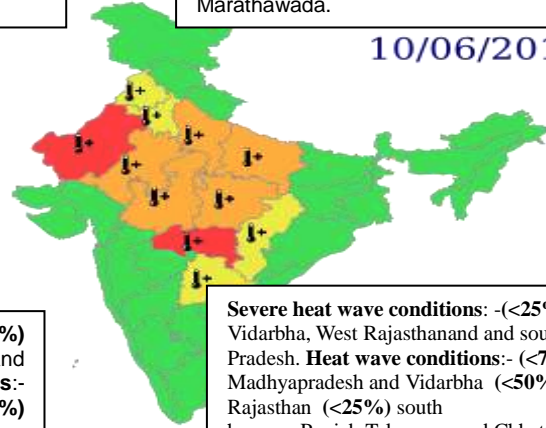
Severe heat wave conditions: -(<25%) Madhya Pradesh , Vidarbha, south uttar pradesh and Rajasthan. **Heat wave conditions: -(<75%)** Madhya Pradesh , Vidarbha,west Rajasthan. (<50%) South Uttar pradesh and East Rajasthan (<25%) Punjab, south Haryana Telangana,Chhattisgarh, and Marathawada.

09/06/2019



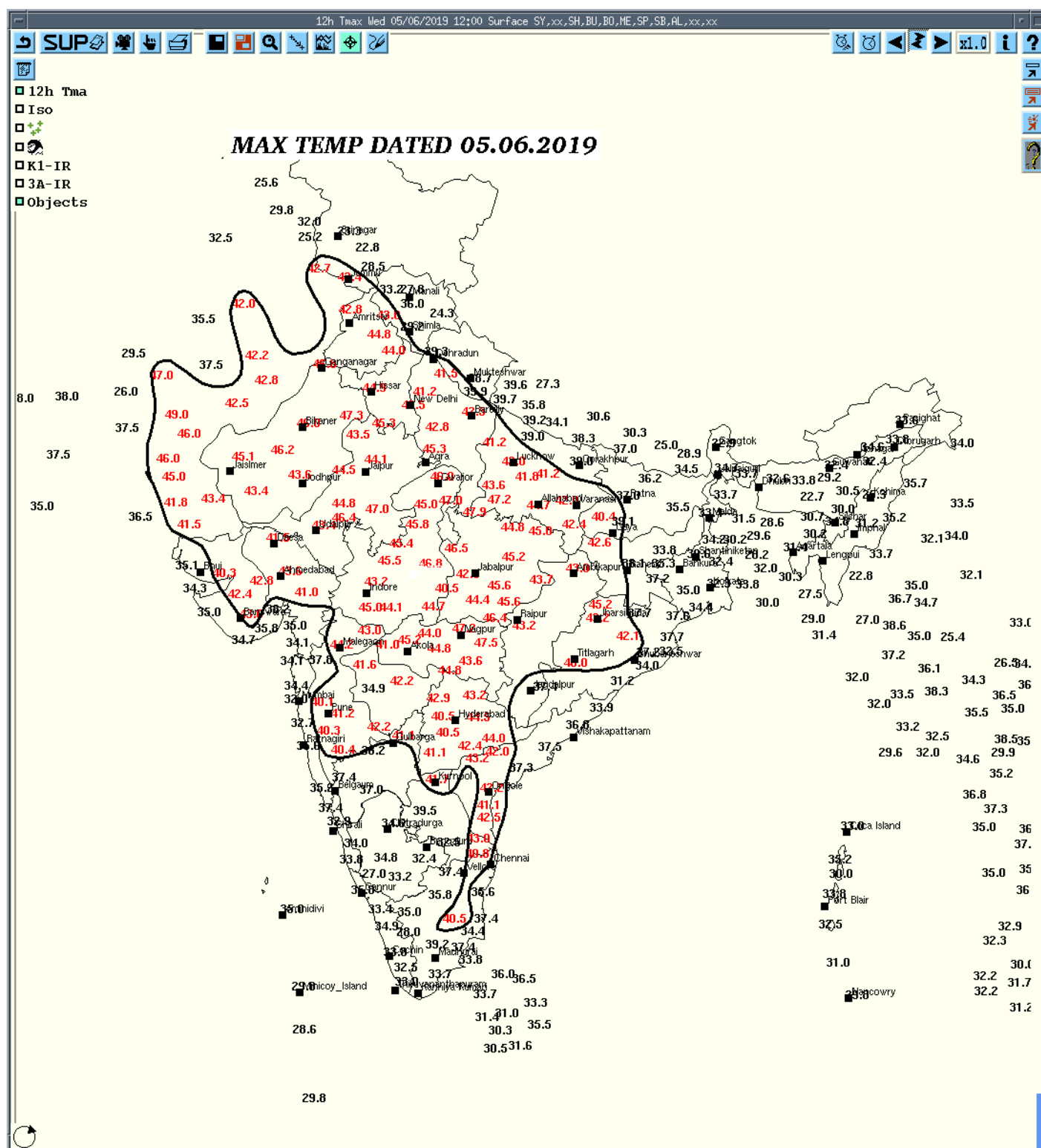
Severe heat wave conditions: -(<25%) Rajasthan, Vidarbha,south Uttar pradesh and Madhya Pradesh. **Heat wave conditions:- (<75%)** Madhyapradesh and Vidarbha.(<50%) Rajasthan.(<25%) south haryana,Punjab,Telangana and Chhattisgarh.

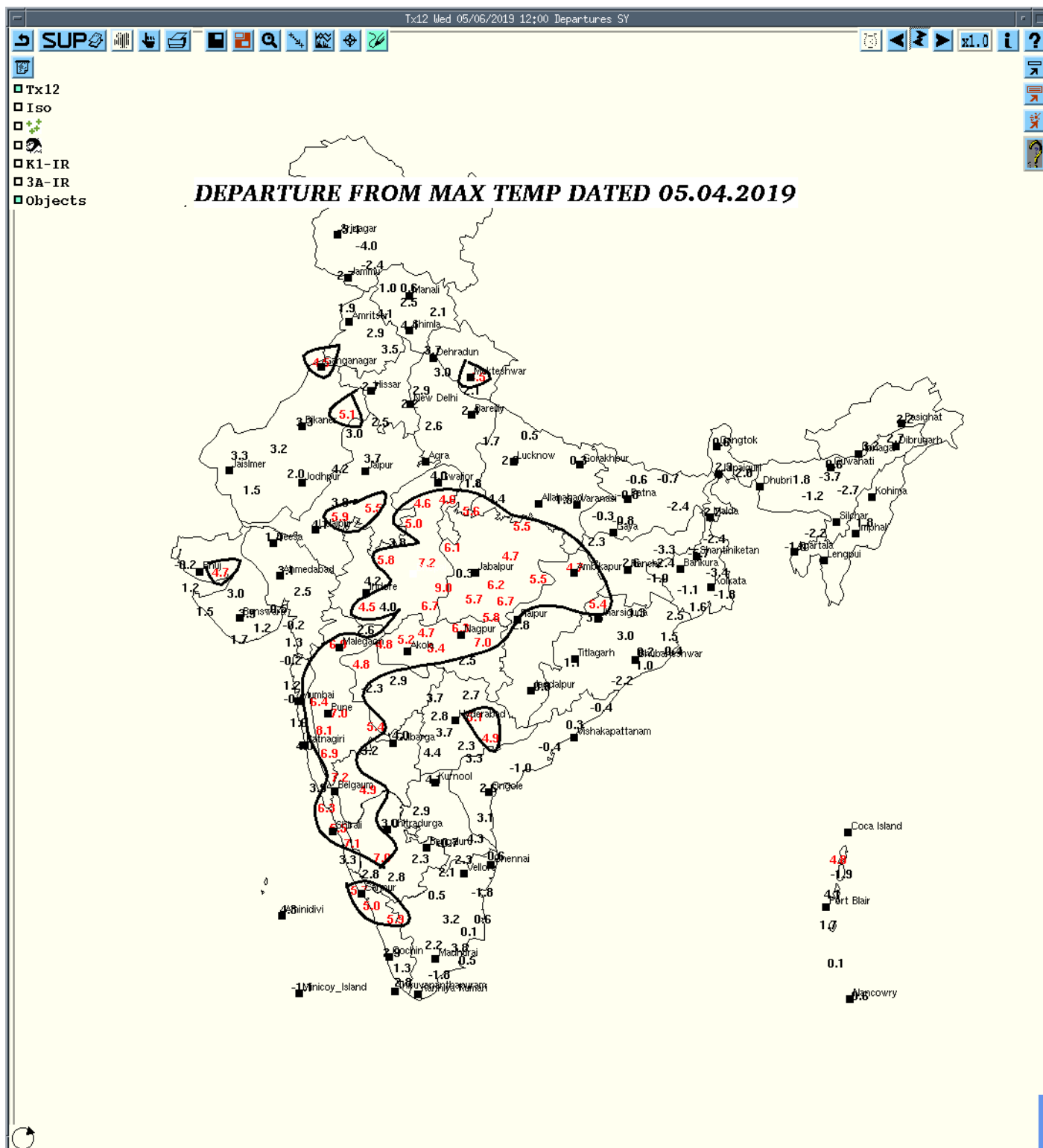
10/06/2019



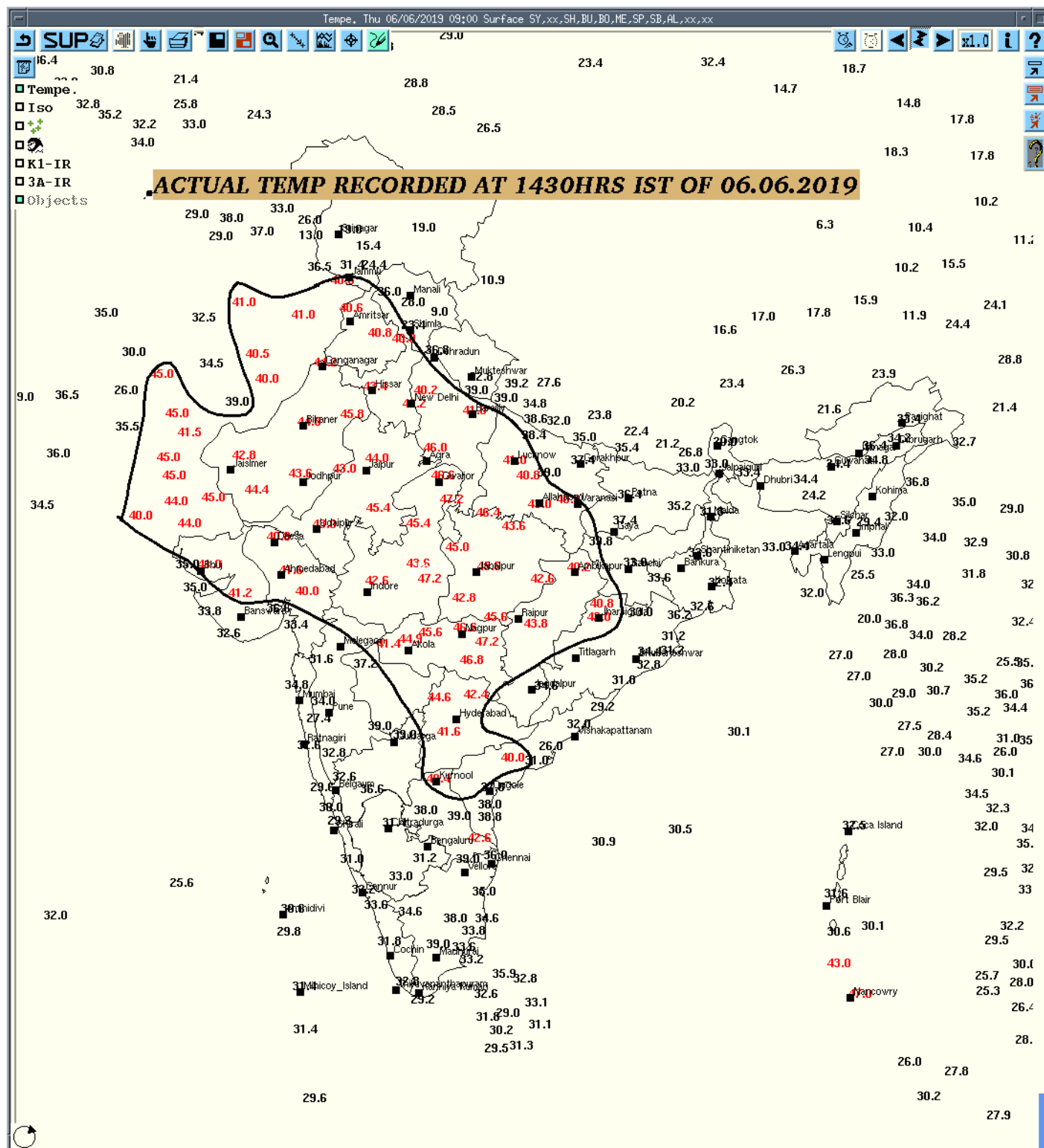
Severe heat wave conditions: -(<25%) Vidarbha, West Rajasthanand and south Uttar Pradesh. **Heat wave conditions:- (<75%)** Madhyapradesh and Vidarbha (<50%) Rajasthan (<25%) south haryana,Punjab,Telangana and Chhattisgarh .

Annexure 1

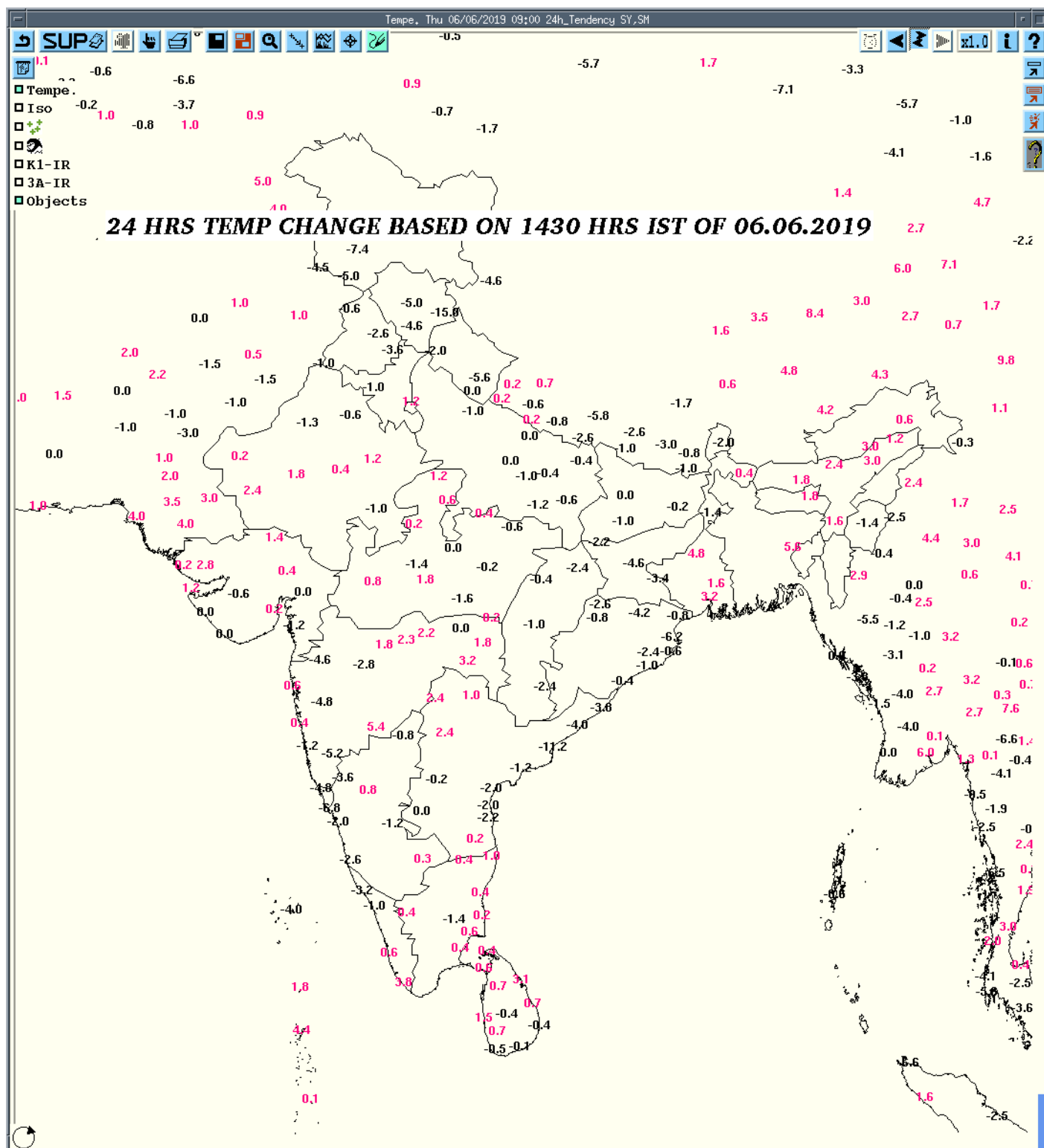




Annexure 3



Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 11th June, 2019

Time of Issue: 1630 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 10 June, 2019 to 0830 hrs IST 11 June, 2019)

Heat Wave:

Yesterday, **Severe Heat Wave** conditions were observed in many parts over West Rajasthan and at isolated pockets over East Rajasthan. Heat wave in many parts with severe heat wave in isolated pockets over Madhya Pradesh and Haryana, Chandigarh & Delhi. Heat Wave Conditions in some parts with severe heat wave in isolated pockets over East Uttar Pradesh and in isolated pockets over Bihar, Saurashtra & Kutch, Madhya Maharashtra and Vidarbha. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over Punjab, Haryana, Chandigarh & Delhi, East Rajasthan, Madhya Pradesh and Vidarbha; at many places over West Rajasthan Himachal Pradesh, Uttarakhand, Jharkhand and Chhattisgarh and at isolated places over Jammu & Kashmir, Saurashtra & Kutch and Telangana; **appreciably above normal (3.1°C to 5.0°C)** at most places over Uttar Pradesh, Marathwada and Madhya Maharashtra; at many places over Bihar, Odisha, Gangetic West Bengal, Gujarat region and North Interior Karnataka; at a few places over Rayalaseema, Konkan & Goa and Coastal Karnataka and at isolated places over Coastal Andhra Pradesh & Yanam and Assam & Meghalaya; **above normal (1.6°C to 3.0°C)** at many places over Sub-Himalayan West Bengal & Sikkim and Nagaland, Manipur, Mizoram & Tripura; at a few places over Tamilnadu, Puducherry and Karaikal and at isolated places over South Interior Karnataka. Yesterday, **the highest maximum temperature of 50.3°C** was recorded at **Churu (West Rajasthan).**

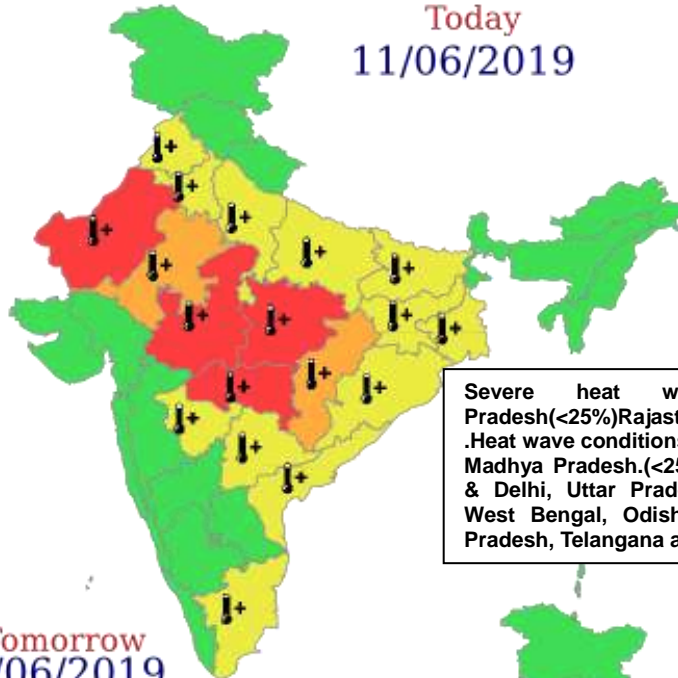
Temperatures Recorded at 1430 Hours IST of Today, the 11th June, 2019

- **Khajuraho(East Madhya Pradesh)** recorded the maximum temperature of **48.2°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** in most Places over Andhra Pradesh; in many places over Orrisa; at some places over Gujarat State, Tamilnadu and Assam & Meghalaya and in one or two pockets of Kerala and Arunachal Pradesh. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

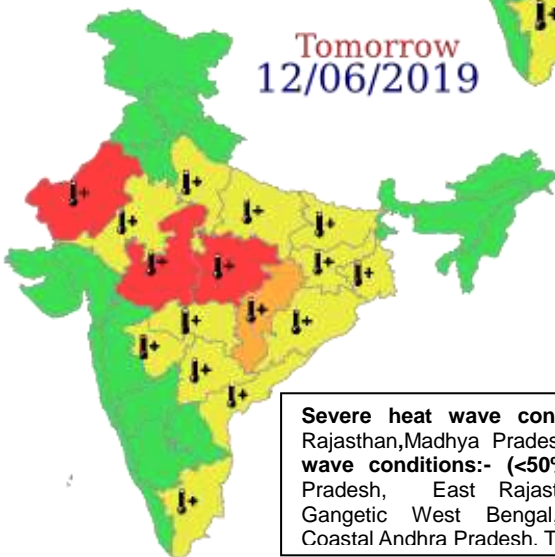
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
11/06/2019



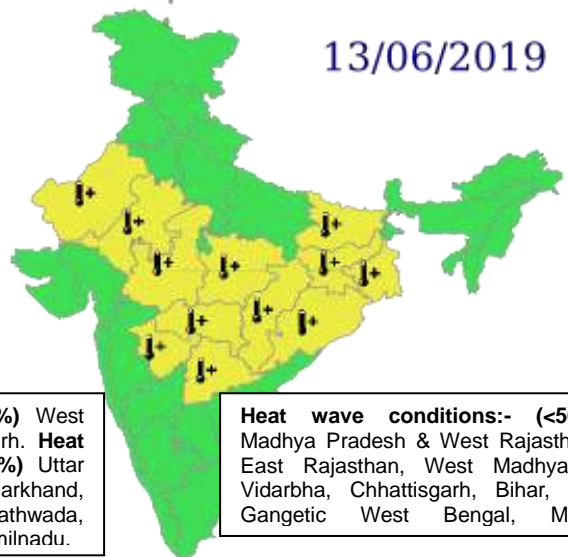
Severe heat wave conditions:-(<50%)Madhya Pradesh(<25%)Rajasthan,Vidarbha and Chandigarh .Heat wave conditions:- (<50%) Haryana, Delhi and East Madhya Pradesh.(<25%) Punjab, Haryana, Chandigarh & Delhi, Uttar Pradesh, Bihar, Jharkhand, Gangetic West Bengal, Odisha, Marathwada, Coastal Andhra Pradesh, Telangana and Tamilnadu.

Tomorrow
12/06/2019



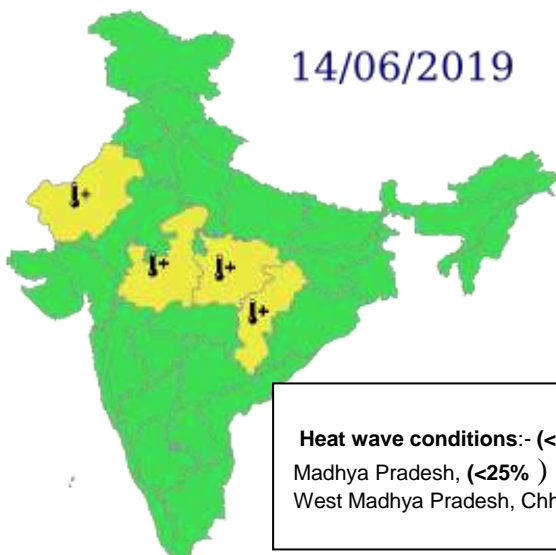
Severe heat wave conditions: - (<25%) West Rajasthan,Madhya Pradesh and Chandigarh. Heat wave conditions:- (<50%)Vidarbha (<25%) Uttar Pradesh, East Rajasthan, Bihar, Jharkhand, Gangetic West Bengal, Odisha, Marathwada, Coastal Andhra Pradesh. Telangana and Tamilnadu.

13/06/2019



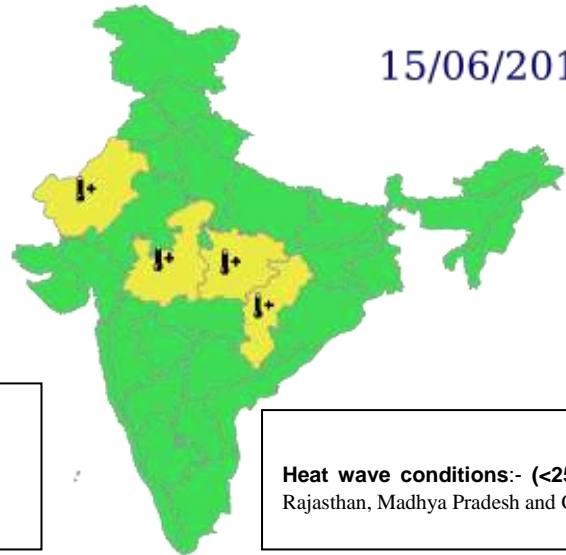
Heat wave conditions:- (<50%) East Madhya Pradesh & West Rajasthan (<25%) East Rajasthan, West Madhya Pradesh, Vidarbha, Chhattisgarh, Bihar, Jharkhand, Gangetic West Bengal, Marathwada,

14/06/2019

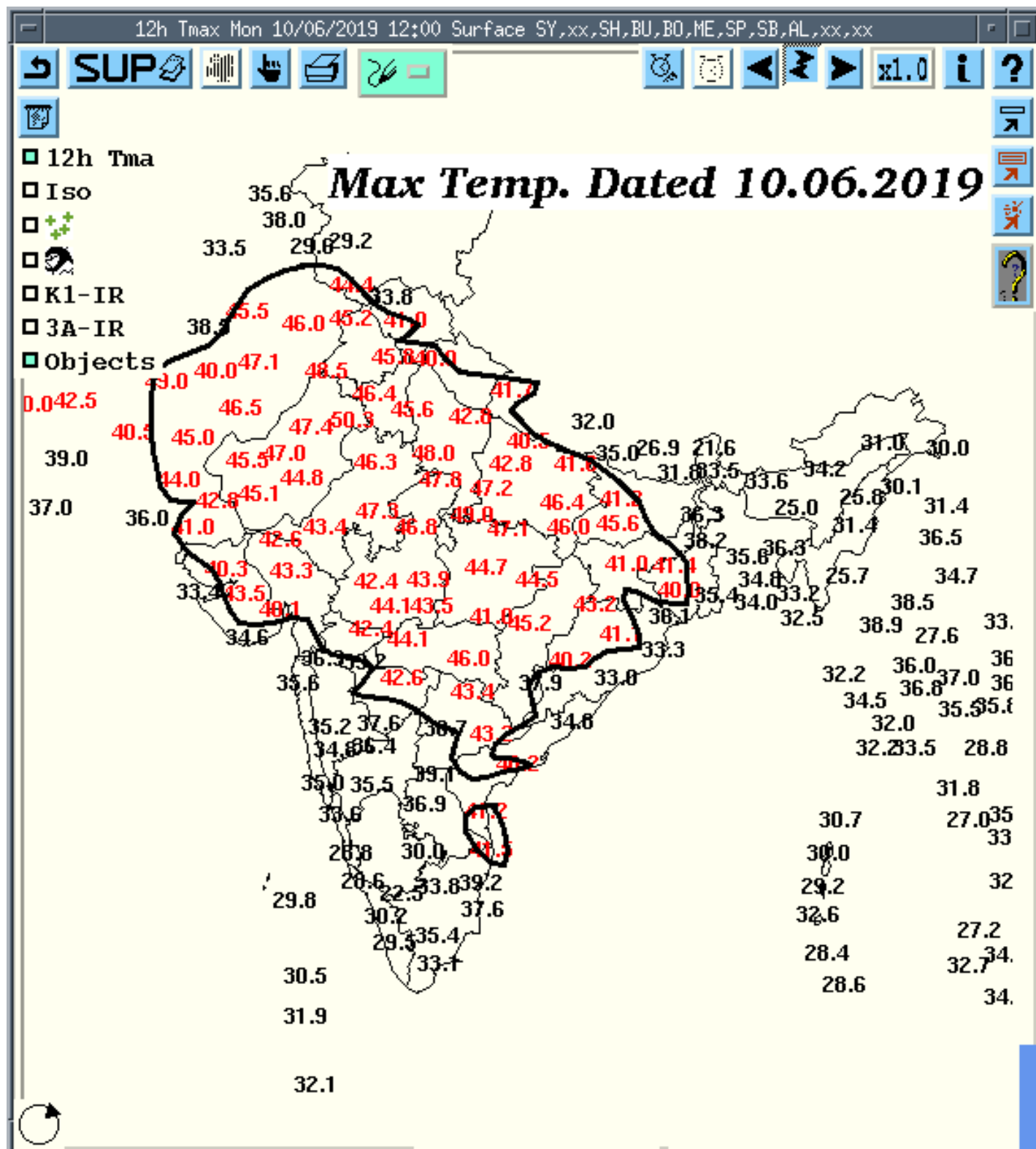


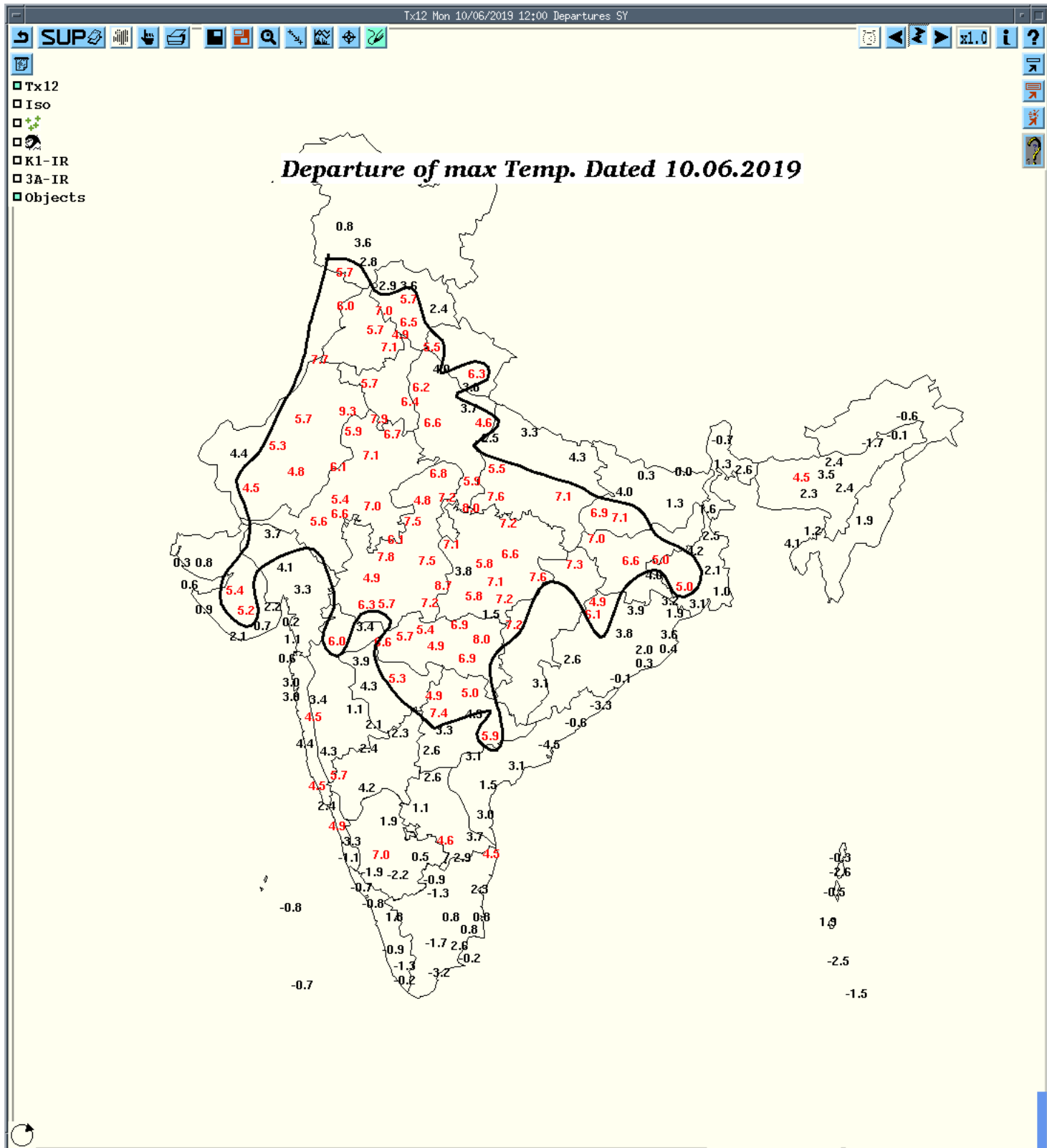
Heat wave conditions:- (<50%)East Madhya Pradesh, (<25%) Rajasthan, West Madhya Pradesh, Chhattisgarh.

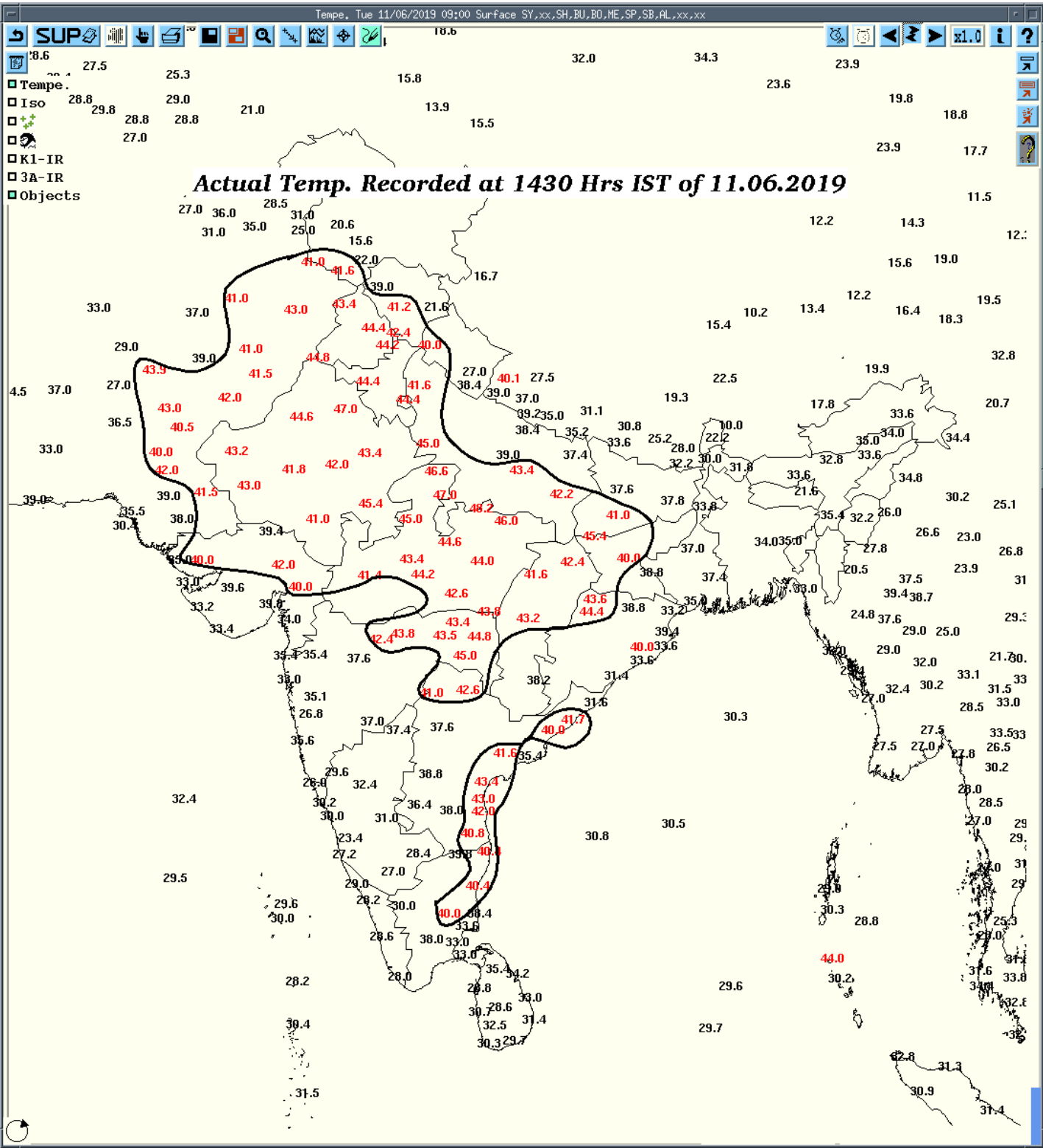
15/06/2019

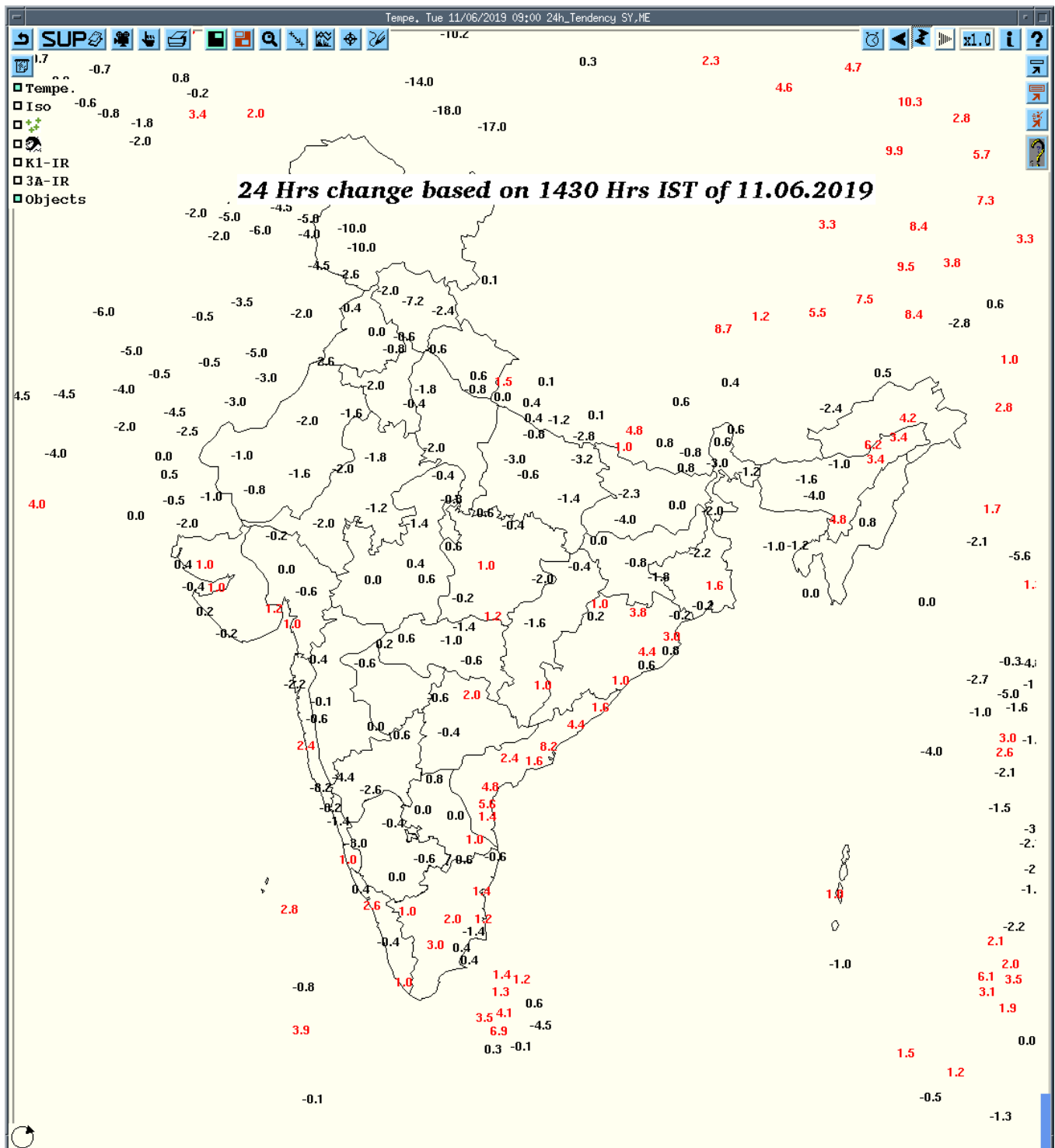


Heat wave conditions:- (<25%) West Rajasthan, Madhya Pradesh and Chhattisgarh









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 15th June, 2019
Time of Issue: 1700 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 14 June, 2019 to 0830 hrs IST 15 June, 2019)

Heat Wave:

Yesterday, **Heat Wave to Severe Heat Wave Conditions** observed in isolated pockets over West Rajasthan. **Heat Wave Conditions** observed at many places over Vidarbha; in isolated pockets over West Madhya Pradesh, Odisha, Chhattisgarh, Telangana and Coastal Andhra Pradesh & Yanam. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Bihar and at isolated places over Gangetic West Bengal, Vidarbha and Coastal Andhra Pradesh & Yanam; **appreciably above normal (3.1°C to 5.0°C)** at most places over Uttar Pradesh, Jharkhand, Sub-Himalayan West Bengal & Sikkim and Odisha; at many places over Punjab, Himachal Pradesh and Uttarakhand; at a few places over West Rajasthan and West Madhya Pradesh and at isolated places over Haryana, Chandigarh & Delhi, Marathwada, Telangana, Rayalaseema and Tamilnadu, Puducherry & Karaikal; **above normal (1.6°C to 3.0°C)** at a few places over Arunachal Pradesh, Assam & Meghalaya, Konkan & Goa and East Madhya Pradesh and at isolated places over East Rajasthan, Madhya Maharashtra, North Interior Karnataka and Kerala & Mahe. Yesterday, the **highest maximum temperature of 47.4°C** was recorded at **Phalodi** (West Rajasthan).

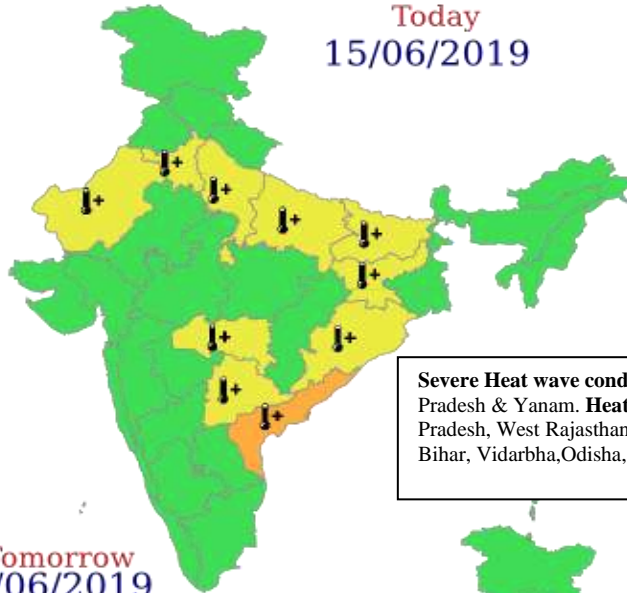
Temperatures Recorded at 1430 Hours IST of Today, the 15th June, 2019

- **Sultanpur(East Uttar Pradesh)** recorded **the maximum temperature of 46.2°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-5°C.** in one or two pockets of Madhya Pradesh, Saurashtra & Kutch, interior Karnataka and Kerela, **by 1-3°C** in most Parts over East Uttar Pradesh; in many Parts over Uttrakhand, Telangana and Coastal Karnataka, at some parts over Bihar, Jharkhand Coastal Andhra Pradesh and Tamilnadu and in one or two pockets of Himachal Pradesh, Assam & Meghalaya, Chattisgarh, Odisha, West Rajasthan and Konkan & Goa. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

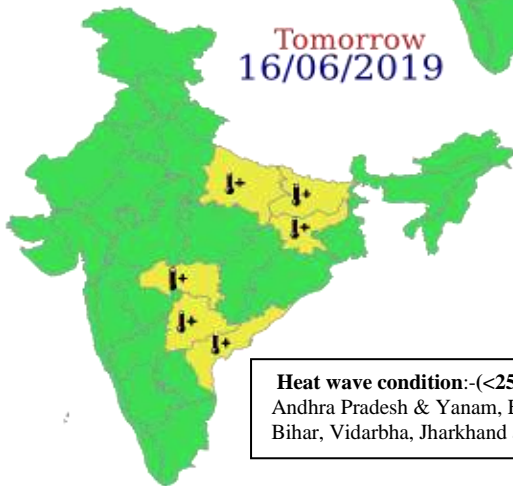
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
15/06/2019



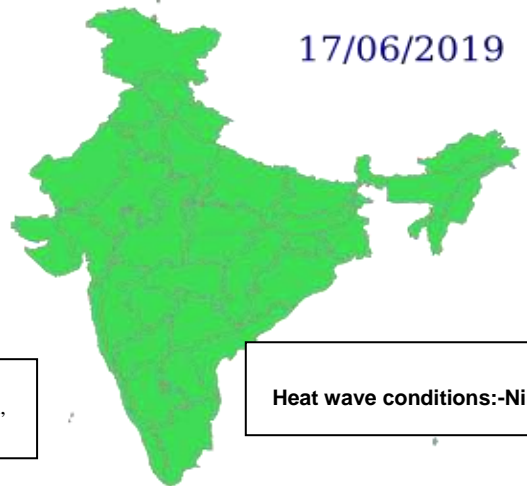
Severe Heat wave condition:-(<25%) Coastal Andhra Pradesh & Yanam. **Heat wave condition:-(<25%)** Uttar Pradesh, West Rajasthan, Haryana, Chandigarh & Delhi, Bihar, Vidarbha, Odisha, Jharkhand and Telangana.

Tomorrow
16/06/2019



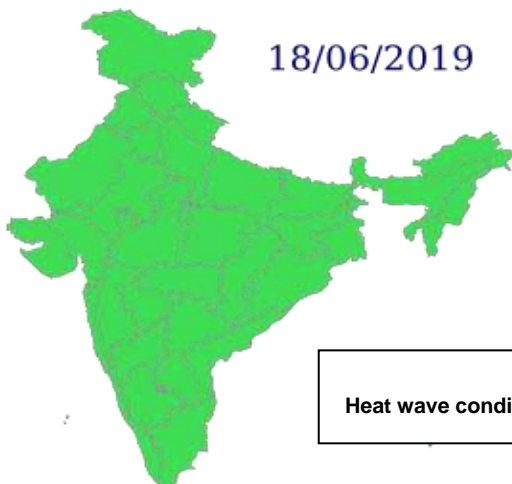
Heat wave condition:-(<25%) Coastal Andhra Pradesh & Yanam, East Uttar Pradesh, Bihar, Vidarbha, Jharkhand and Telangana.

17/06/2019



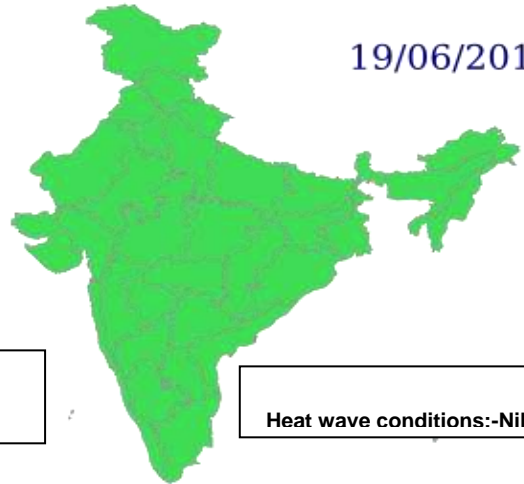
Heat wave conditions:-Nil

18/06/2019



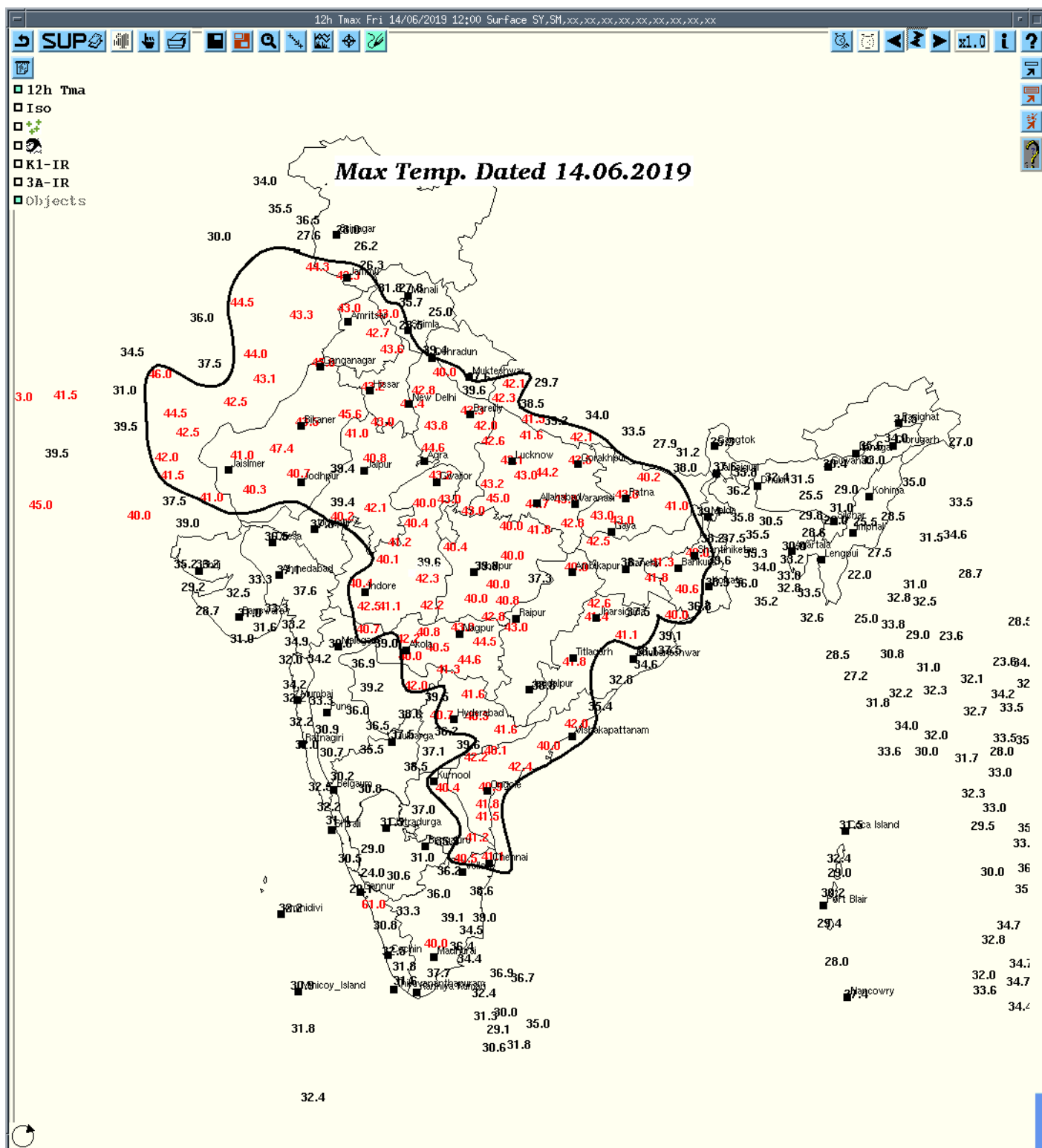
Heat wave conditions:-Nil

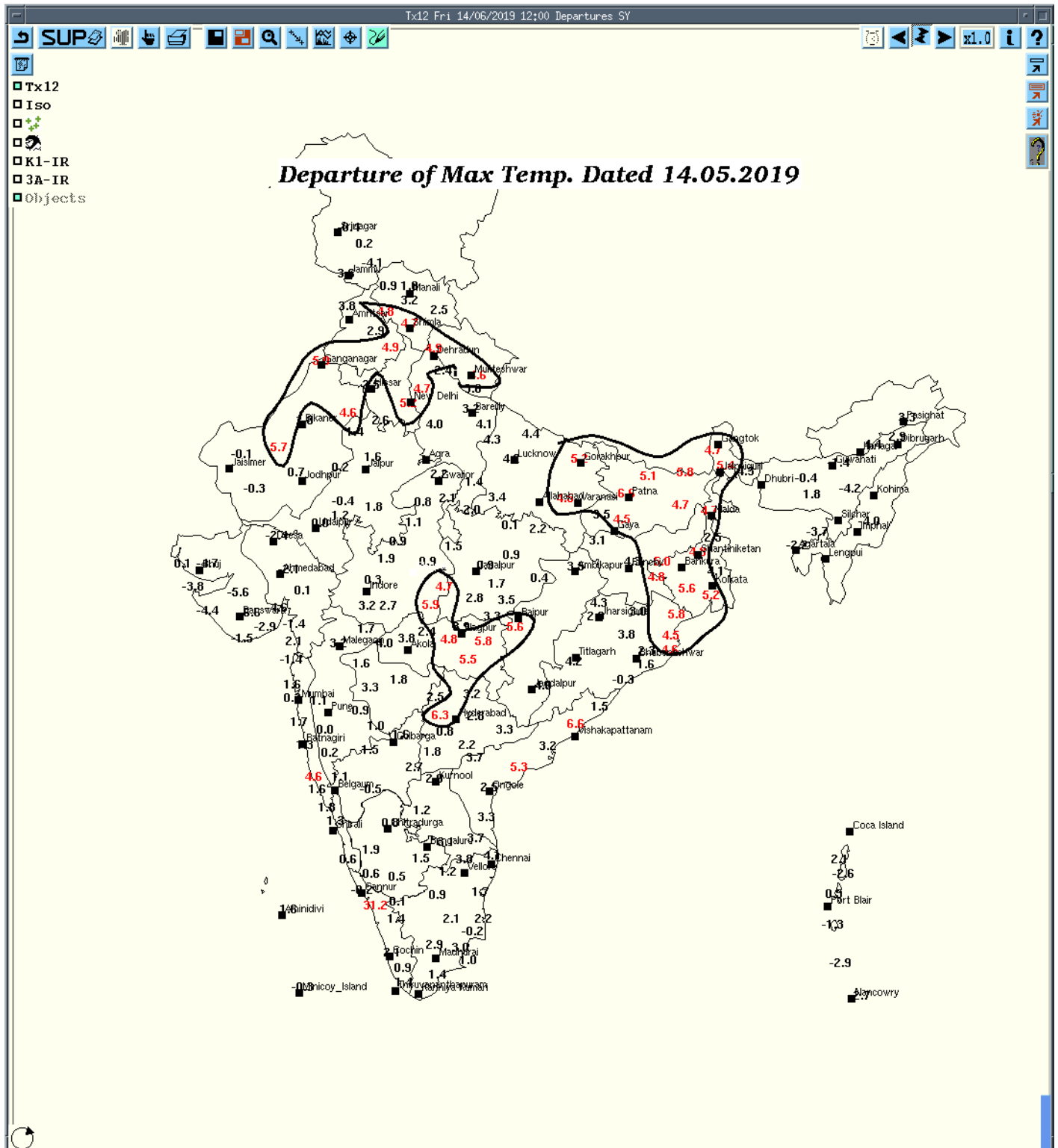
19/06/2019

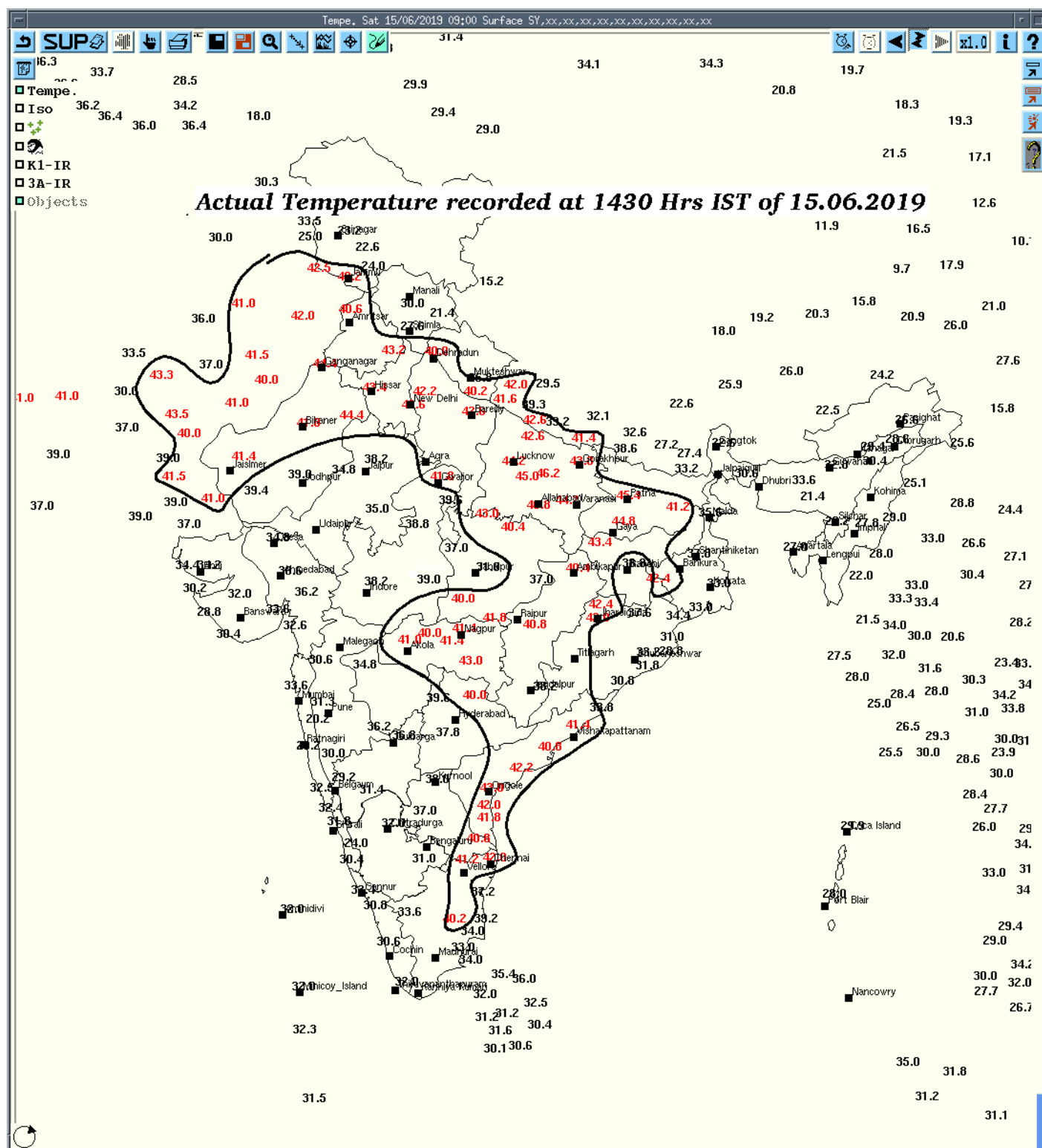


Heat wave conditions:-Nil

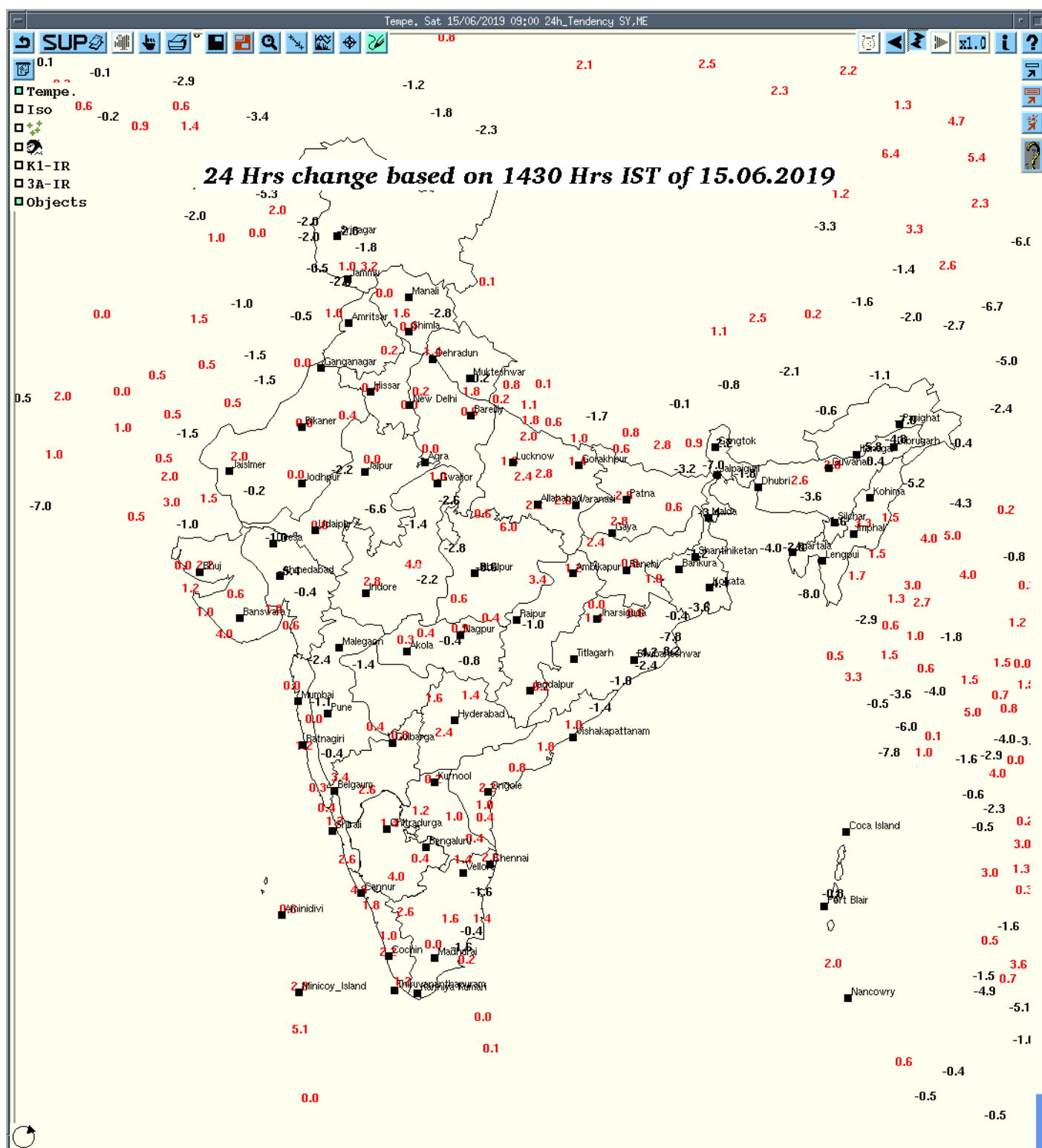
Annexure 1







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 16th June, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 15 June, 2019 to 0830 hrs IST 16 June, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions were observed at many places over Vidarbha; in some parts over Coastal Andhra Pradesh & Yanam and in isolated pockets over West Madhya Pradesh, Chhattisgarh and Telangana. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over Jharkhand, Chhattisgarh and Telangana; many places over East Uttar Pradesh, Bihar, Marathwada, Vidarbha and Coastal Andhra Pradesh & Yanam; at a few places over Punjab and at isolated places over Odisha and Gangetic West Bengal; appreciably **above normal (3.1°C to 5.0°C)** at most places over Uttarakhand and Rayalaseema; at many places over West Uttar Pradesh, Karnataka and Tamilnadu, Puducherry & Karaikal; at a few places over Himachal Pradesh, Madhya Pradesh and Kerala & Mahe and at isolated places over Haryana, Chandigarh & Delhi; **above normal (1.6°C to 3.0°C)** at most places over Lakshadweep; at many places over Madhya Maharashtra and at a few places over Sub-Himalayan West Bengal & Sikkim. . **Yesterday, the highest maximum temperature of 46.4°C** was recorded at **Sultanpur (East Uttar Pradesh).**

Temperatures Recorded at 1430 Hours IST of Today, the 16th June, 2019

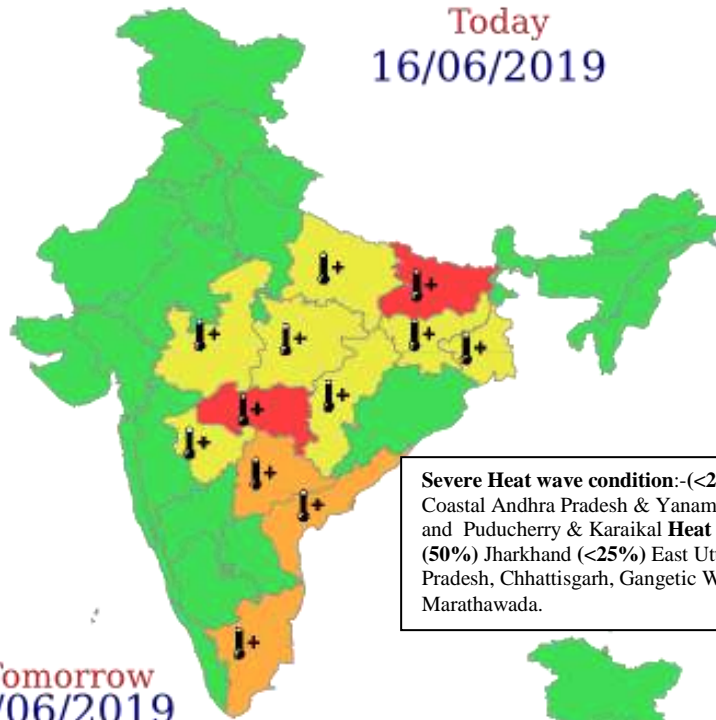
- **Patna(Bihar)** recorded **the maximum temperature of 44.4°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-5°C.** in one or two pockets of Madhya Pradesh, Saurashtra & Kutch, Gangetic West Bengal and Assam & Meghalaya, **by 1-3°C** in most Parts over Nagaland, Manipur, Mizoram & Tripura; at some parts over Jammu & Kashmir, Konkan & Goa, Kerala and Madhya Maharashtra and in one or two pockets of Himachal Pradesh, East Rajasthan, Madhya Pradesh, North Interior Karnataka and Tamilnadu & Puducherry. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

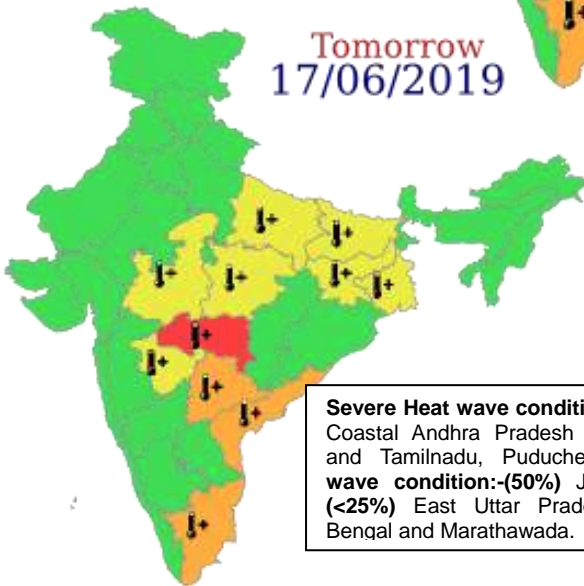
=====

Today
16/06/2019



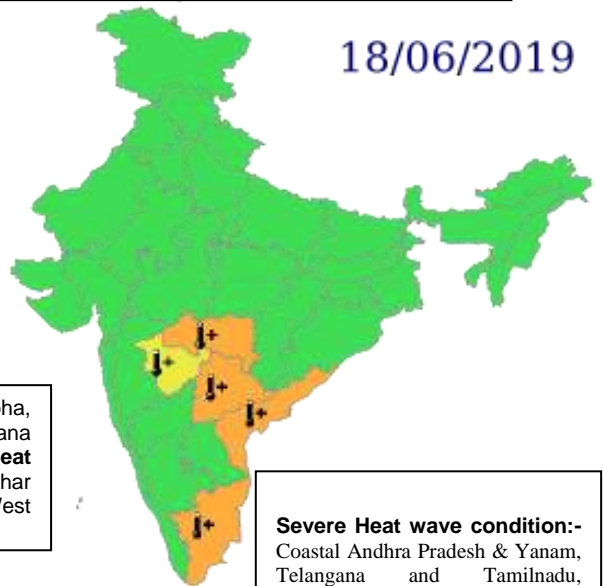
Severe Heat wave condition:-(<25%) Bihar ,Vidarbha, Coastal Andhra Pradesh & Yanam, Telangana ,Tamilnadu and Puducherry & Karaikal **Heat wave condition:- (50%)** Jharkhand (<25%) East Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Gangetic West Bengal and Marathawada.

Tomorrow
17/06/2019



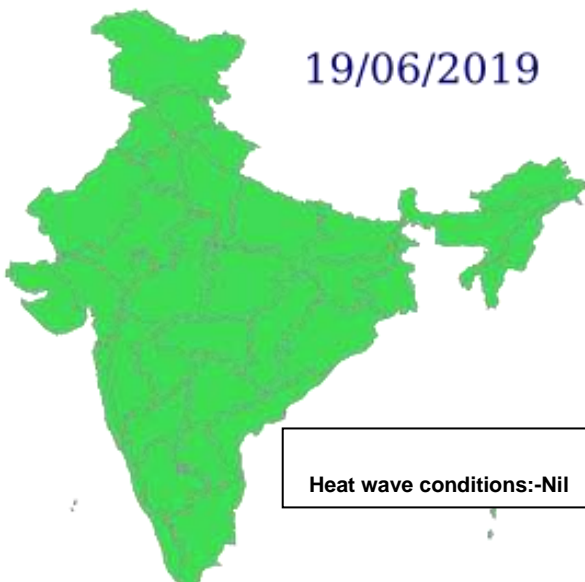
Severe Heat wave condition:-(<25%) Vidarbha, Coastal Andhra Pradesh & Yanam, Telangana and Tamilnadu, Puducherry & Karaikal. **Heat wave condition:-(50%)** Jharkhand and Bihar (<25%) East Uttar Pradesh, Gangetic West Bengal and Marathawada.

18/06/2019



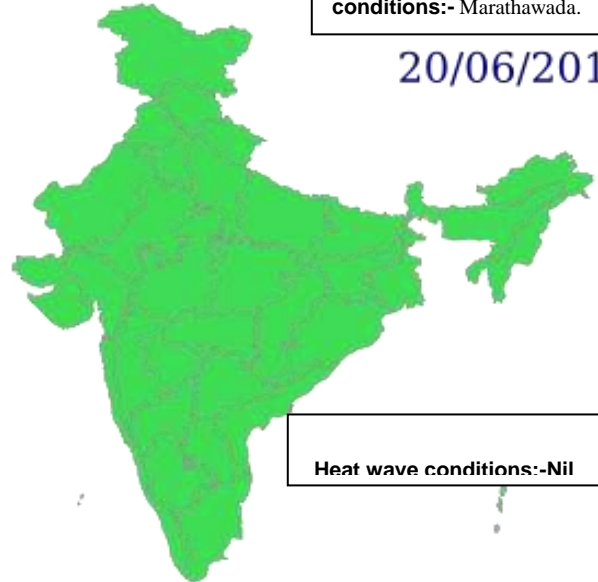
Severe Heat wave condition:- Coastal Andhra Pradesh & Yanam, Telangana and Tamilnadu, Puducherry & Karaikal and Vidarbha. **Heat wave conditions:-** Marathawada.

19/06/2019



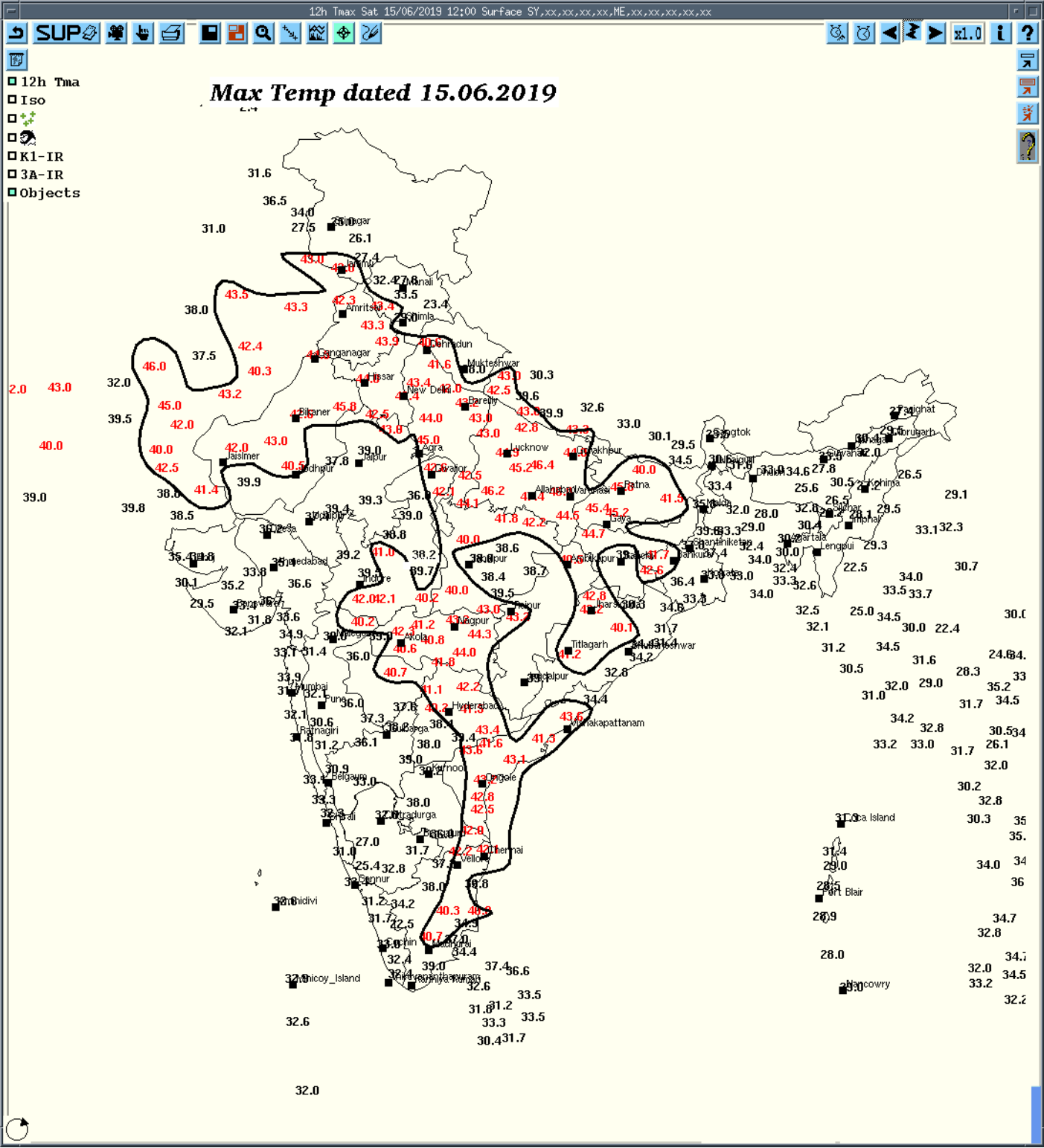
Heat wave conditions:-Nil

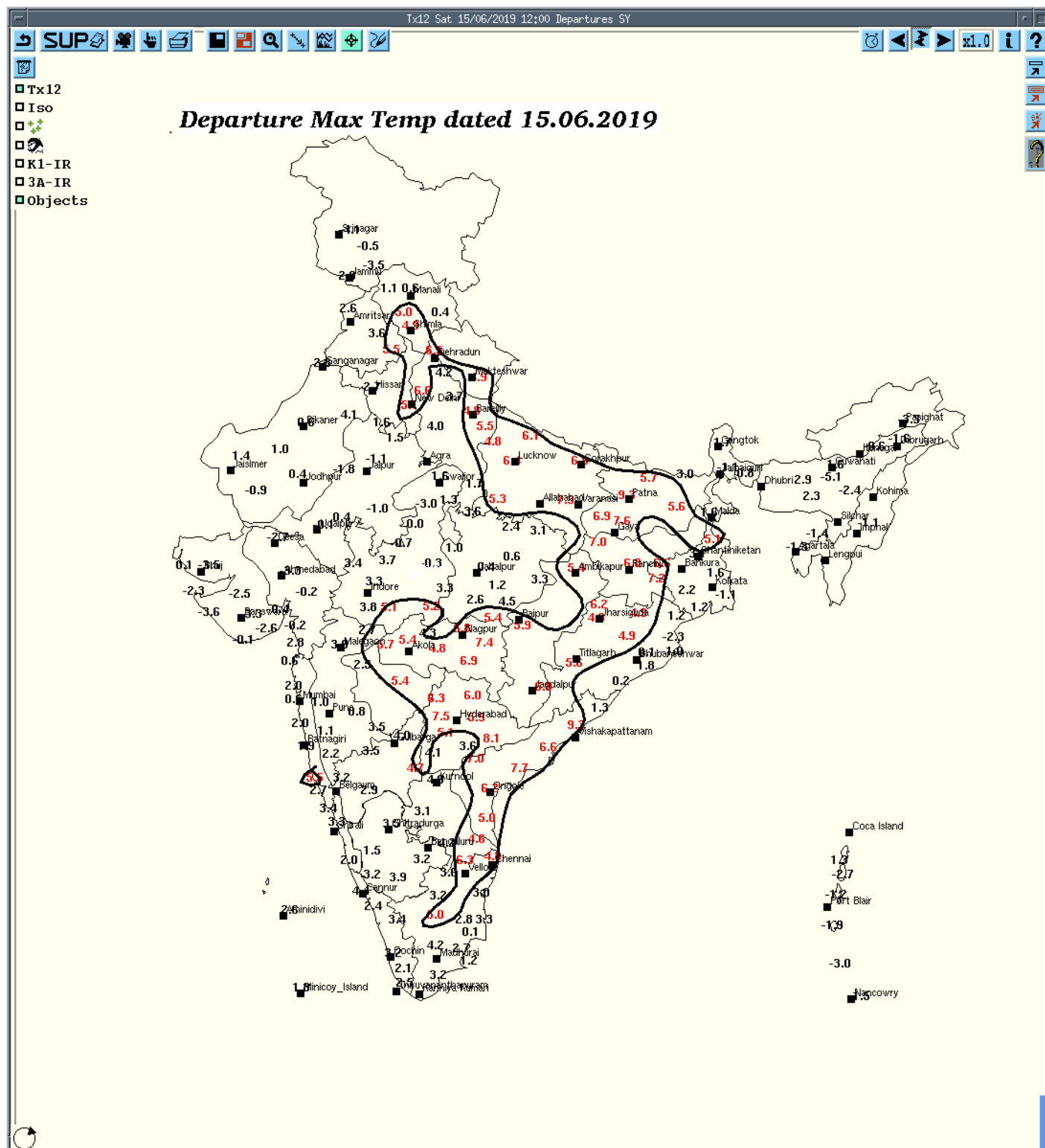
20/06/2019

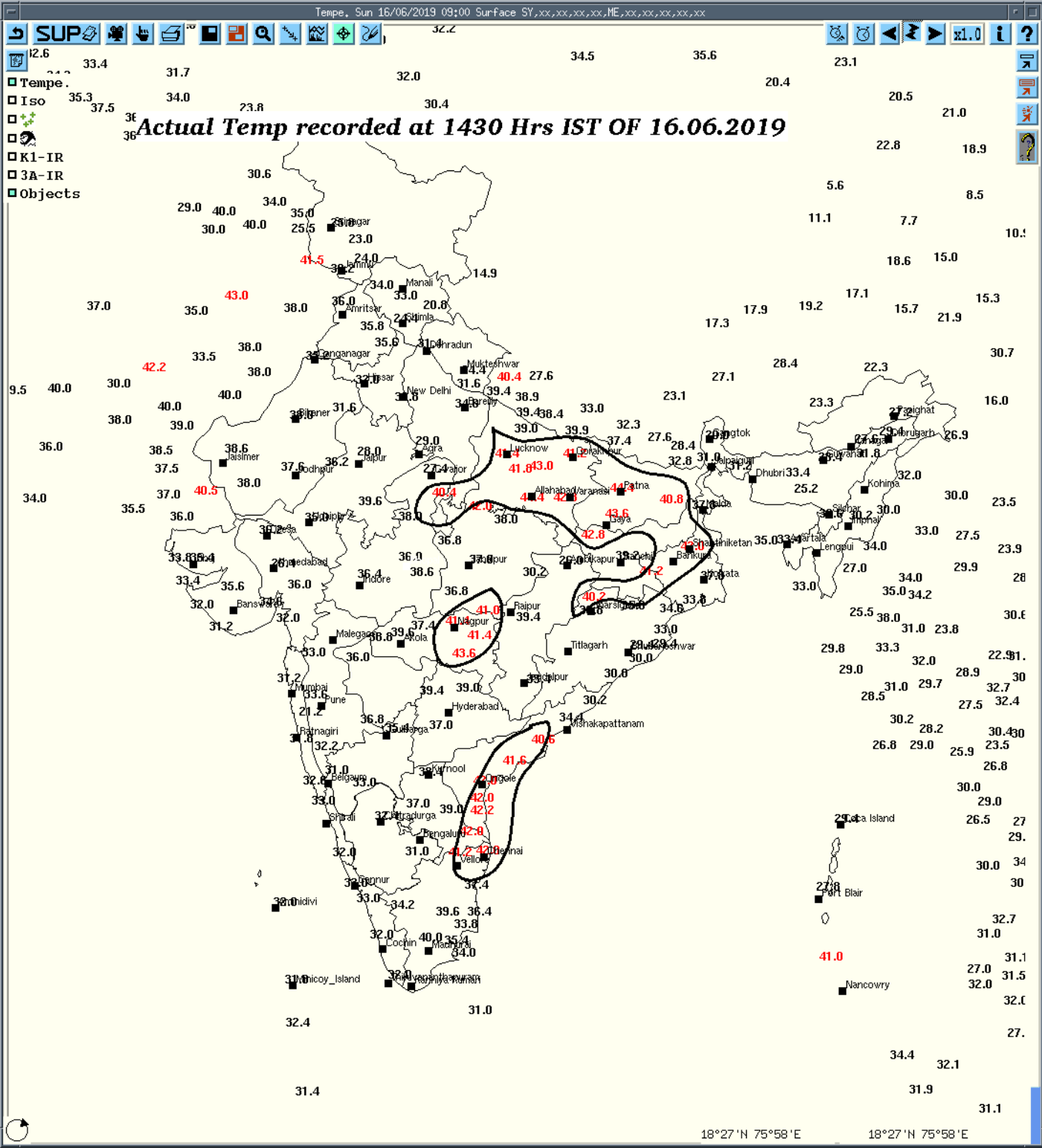


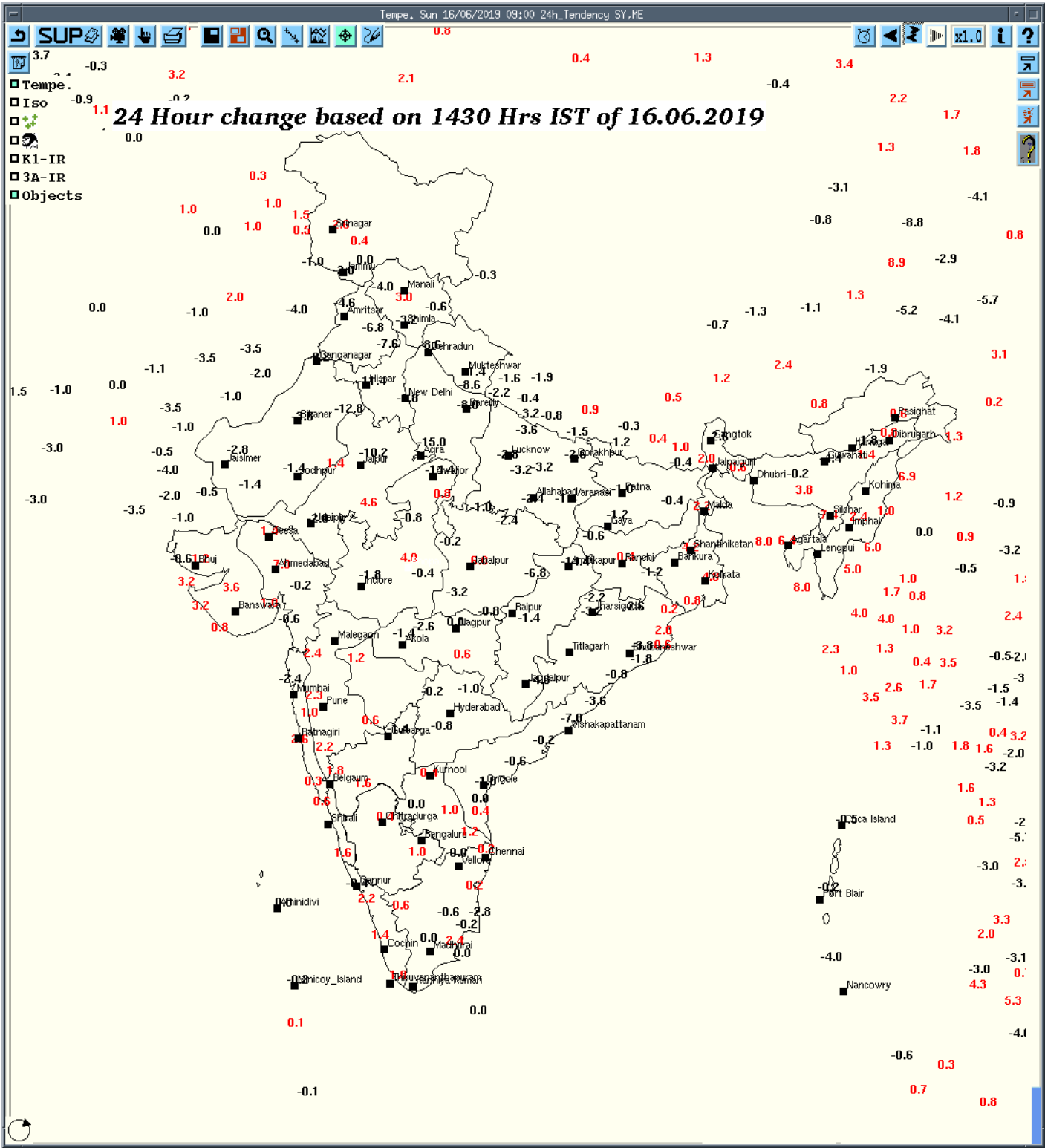
Heat wave conditions:-Nil

Annexure 1









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 13th June, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 12 June, 2019 to 0830 hrs IST 13 June, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions in many places with Severe Heat Wave in isolated pockets were observed over West Rajasthan, Madhya Pradesh, Vidarbha, Odisha, Chhattisgarh and Jharkhand and Heat Wave Conditions in isolated pockets observed over Telangana and Coastal Andhra Pradesh & Yanam. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Madhya Pradesh, Chhattisgarh and Jharkhand; at a few places over Vidarbha, Telangana and Odisha; at isolated places over West Rajasthan; **appreciably above normal (3.1°C to 5.0°C)** at many places over Nagaland, Manipur, Mizoram & Tripura, Assam & Meghalaya and Arunachal Pradesh; at a few places over East Rajasthan, Bihar and West Bengal & Sikkim; at isolated places over Gujarat and Tamil Nadu, Puducherry & Karaikal; **above normal (1.6°C to 3.0°C)** at most places over Marathwada; at many places over Punjab, Uttarakhand and Haryana, Chandigarh & Delhi; at a few places over Rayalaseema and Coastal Karnataka. Yesterday, **the highest maximum temperature of 48.2°C** was recorded at **Phalodi (West Rajasthan).**

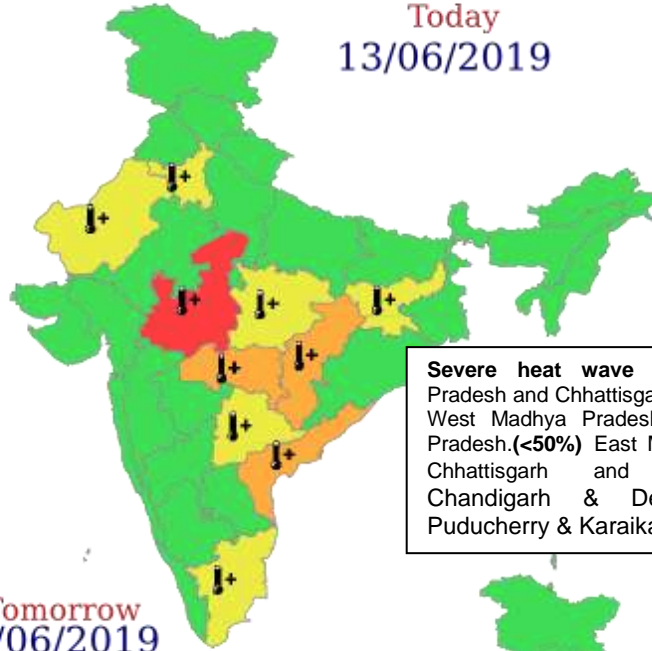
Temperatures Recorded at 1430 Hours IST of Today, the 13th June, 2019

- **Chandrapur (Vidarbha)** recorded the maximum temperature of **44.0°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-5°C** in many places over Jammu & Kashmir and Himachal Pradesh and in few places over Konkan & Goa. **risen by 1-3°C** in most Places over Coastal Karnataka; in many places over Uttarakhand, Uttar Pradesh, Sub Himalayan West Bengal & Sikkim and Kerala; at few places over Tamilnadu & Puduchery and interior Karnataka and in one or two pockets of Punjab, Haryana and Asaam & Meghalya. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

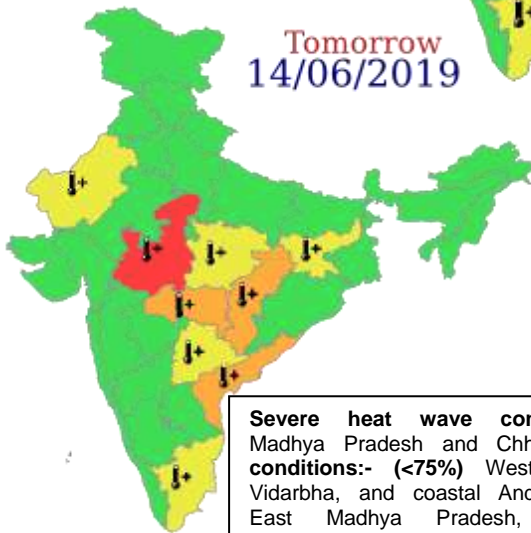
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
13/06/2019



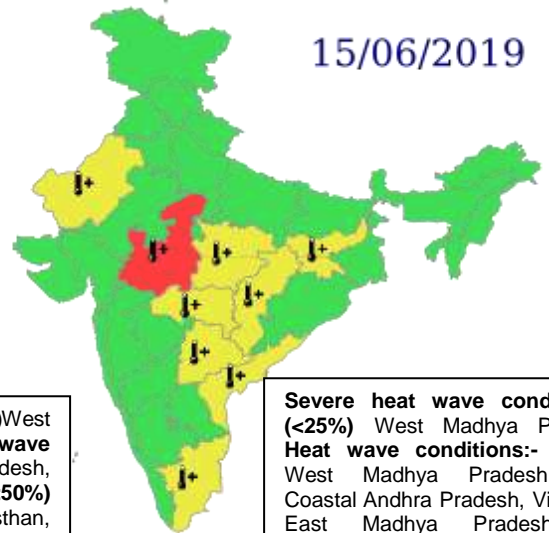
Severe heat wave conditions:-(<25%)West Madhya Pradesh and Chhattisgarh.**Heat wave conditions:- (<75%)** West Madhya Pradesh, Vidarbha, and coastal Andhra Pradesh.**(<50%)** East Madhya Pradesh, West Rajasthan, Chhattisgarh and Telangana.**(<25%)** Haryana, Chandigarh & Delhi, Jharkhand, Tamilnadu, Puducherry & Karaikal

Tomorrow
14/06/2019



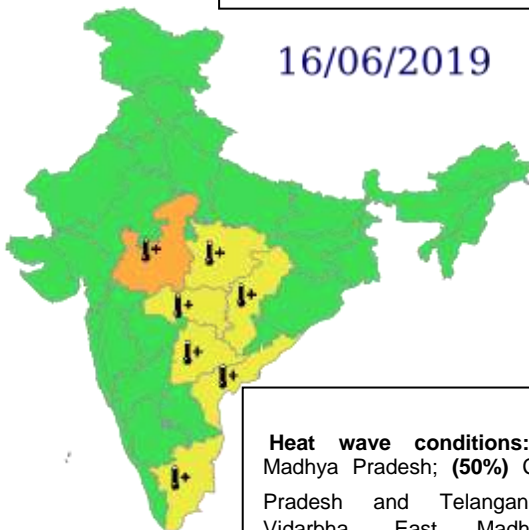
Severe heat wave conditions:-(<25%)West Madhya Pradesh and Chhattisgarh.**Heat wave conditions:- (<75%)** West Madhya Pradesh, Vidarbha, and coastal Andhra Pradesh.**(<50%)** East Madhya Pradesh, West Rajasthan, Chhattisgarh and Telangana.**(<25%)** Jharkhand, Tamilnadu, Puducherry & Karaikal.

15/06/2019



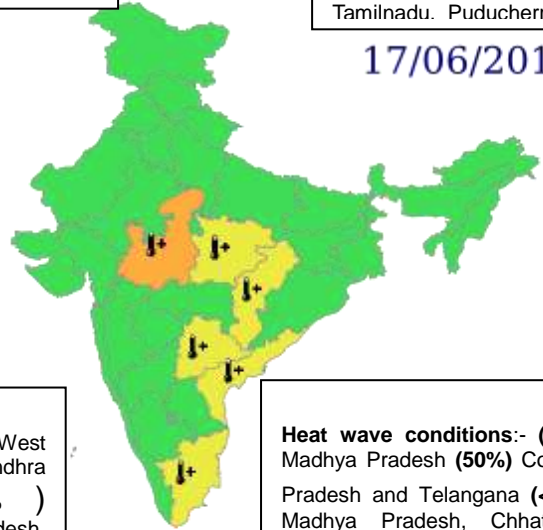
Severe heat wave conditions:- (<25%) West Madhya Pradesh.**Heat wave conditions:- (<75%)** West Madhya Pradesh.**(<50%)** Coastal Andhra Pradesh, Vidarbha, East Madhya Pradesh and Telangana.**(<25%)** West Rajasthan, Chhattisgarh, Jharkhand and Tamilnadu. Puducherry & Karaikal.

16/06/2019



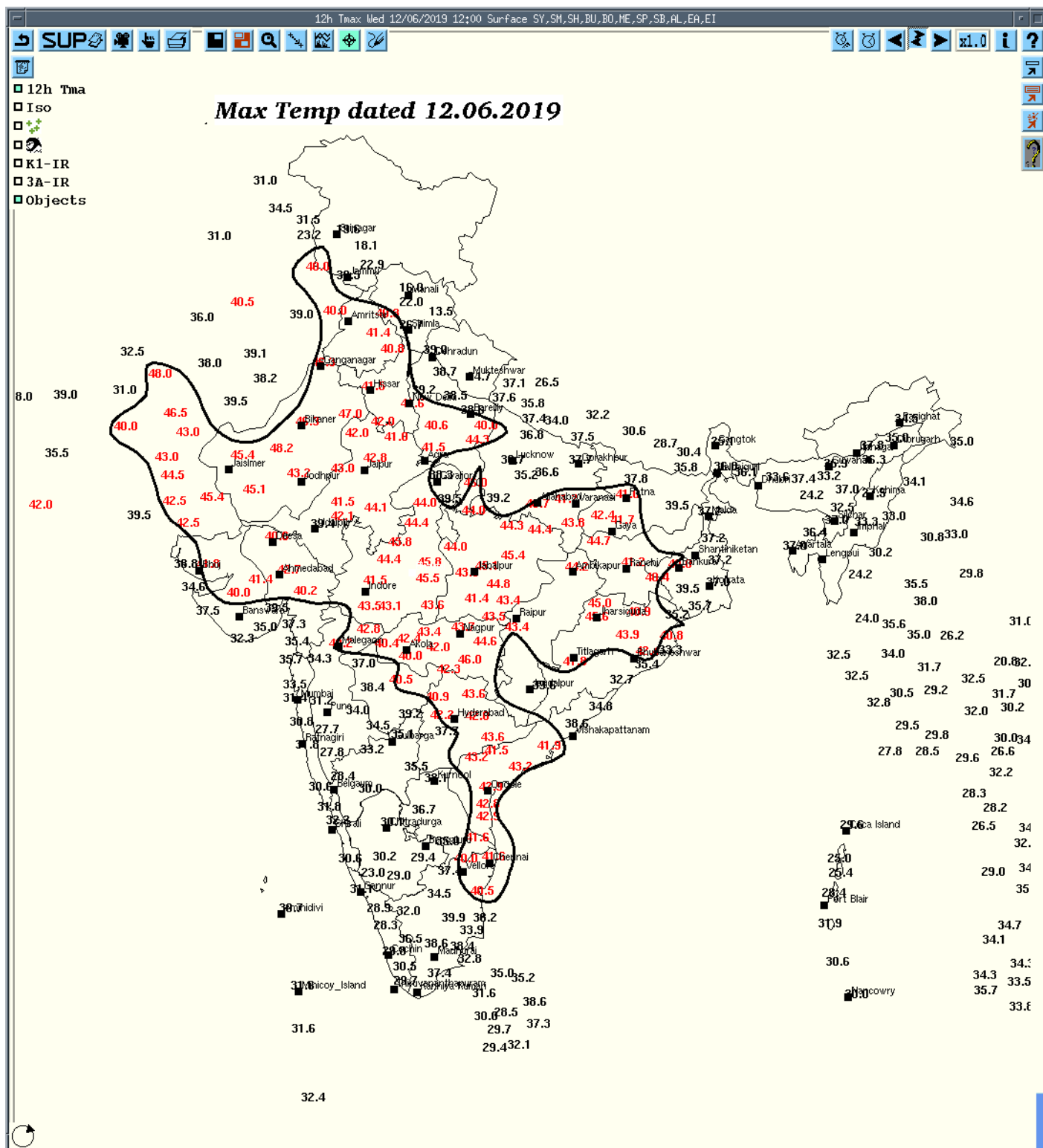
Heat wave conditions:-(<75%) West Madhya Pradesh; **(50%)** Coastal Andhra Pradesh and Telangana **(<25%)** Vidarbha, East Madhya Pradesh, Chhattisgarh and Tamilnadu, Puducherry & Karaikal

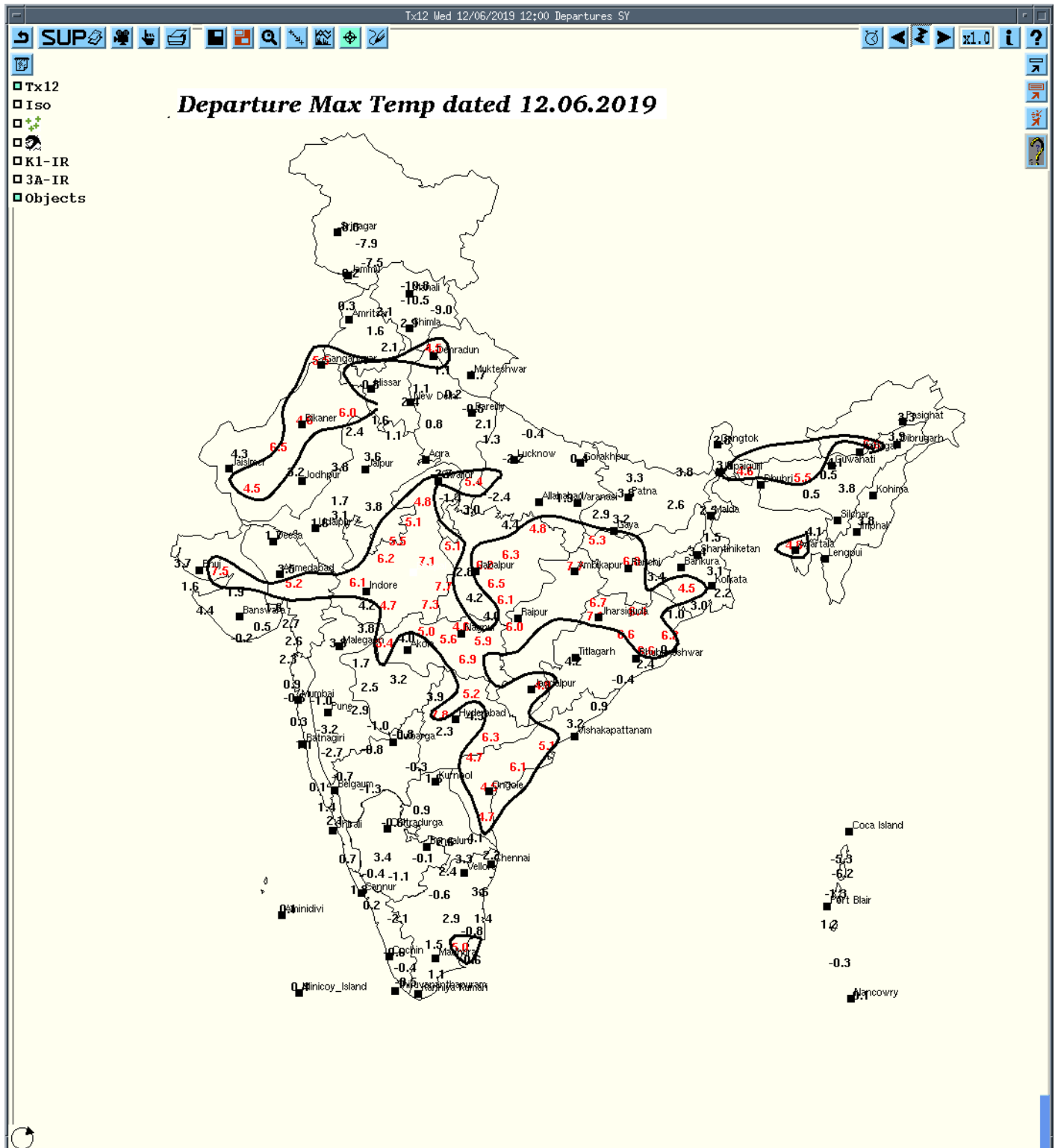
17/06/2019

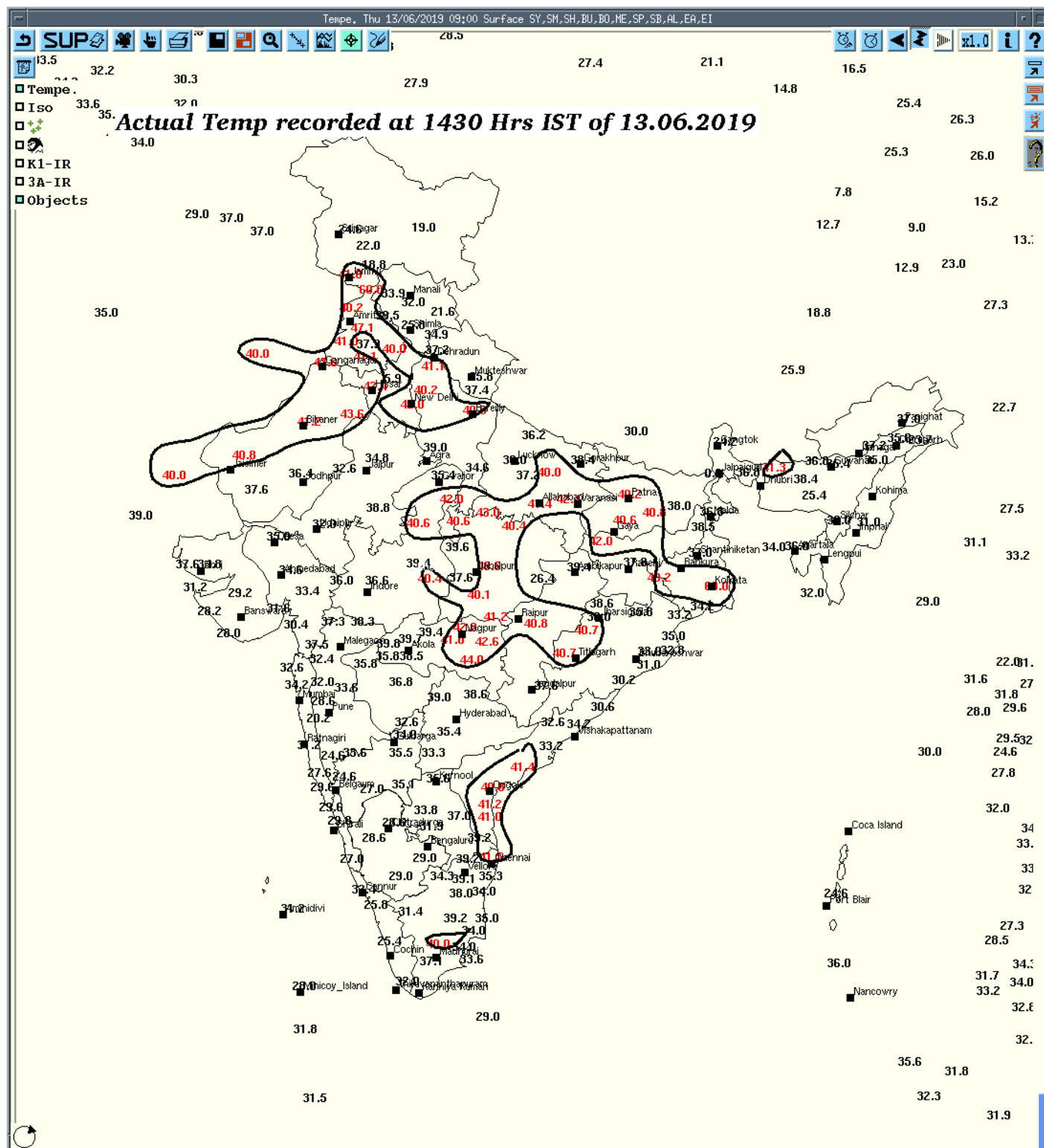


Heat wave conditions:- (<75%) West Madhya Pradesh **(50%)** Coastal Andhra Pradesh and Telangana **(<25%)** East Madhya Pradesh, Chhattisgarh and Tamilnadu, Puducherry & Karaikal

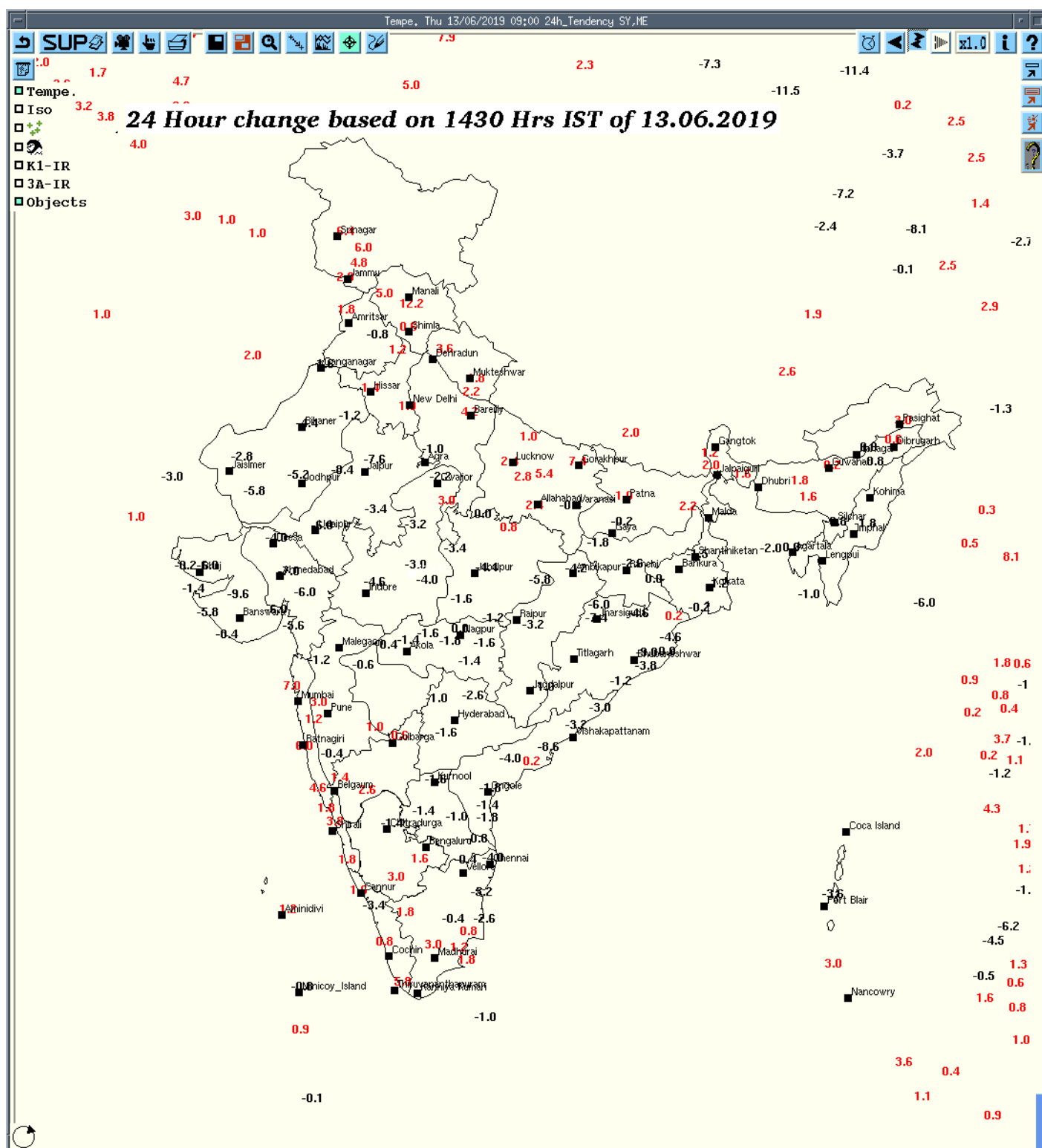
Annexure 1







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department

Dated: 17th June, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 16 June, 2019 to 0830 hrs IST 17 June, 2019)

Heat Wave:

Heat Wave Conditions were observed at some places with **severe Heat wave** at isolated places over Bihar. **Heat Wave Conditions** were observed at many places over Vidarbha, Coastal Andhra Pradesh & Yanam and Telangana and in isolated pockets over Gangetic West Bengal, Jharkhand, East Uttar Pradesh, Marathawada, Chhattisgarh and Tamilnadu, Puducherry & Karaikal. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperature departures as on 16-06-2019: Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over Jharkhand; at many places over Bihar, Telangana and Coastal Andhra Pradesh & Yanam; at a few places over Chhattisgarh and at isolated places over East Uttar Pradesh, Gangetic West Bengal, Vidarbha and Tamilnadu, Puducherry & Karaikal; **appreciably above normal (3.1°C to 5.0°C)** at most places over Marathawada, North Interior Karnataka and Rayalaseema; at many places over Coastal & South Interior Karnataka and Kerala & Mahe; at isolated places over Madhya Maharashtra; **above normal (1.6°C to 3.0°C)** at most places over Lakshadweep; at many places over Konkan & Goa; at a few places over Madhya Pradesh and Odisha and at isolated places over Sub-Himalayan West Bengal & Sikkim and Nagaland, Manipur, Mizoram & Tripura. **Yesterday, the highest maximum temperature of 45.3°C was recorded at Allahabad (East Uttar Pradesh).**

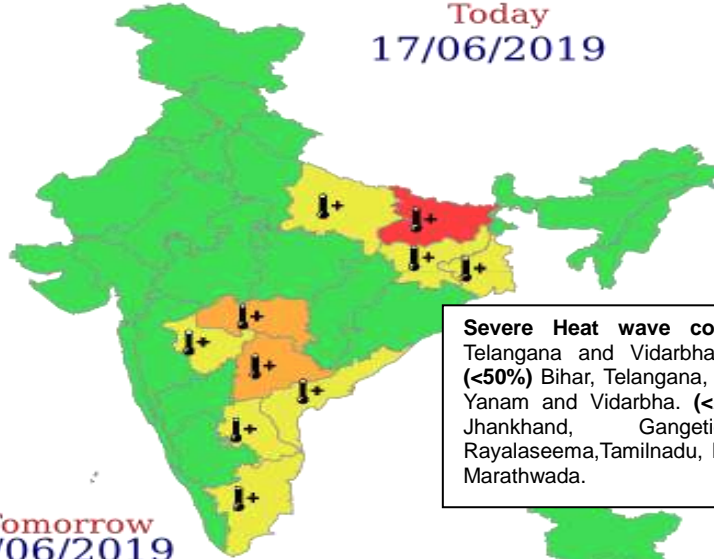
Temperatures Recorded at 1430 Hours IST of Today, the 17th June, 2019

- **Shanti-Niketan(West Bengal)** recorded **the maximum temperature of 42.4°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-5°C** in many Parts over Punjab and at some parts over Odisha, Chhattisgarh and Uttarakhand; **by 1-3°C** in many Parts over Gujarat region and in one or two pockets of Jammu & Kashmir, Himachal Pradesh, Rajasthan, Madhya Pradesh, West Uttar Pradesh, Coastal Andhra Pradesh and Tamilnadu & Puducherry. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

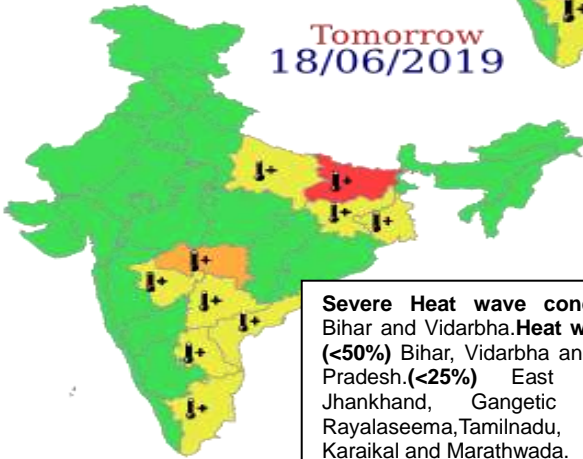
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
17/06/2019



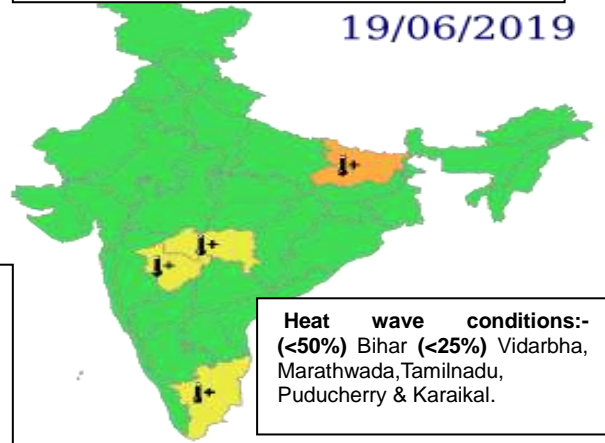
Severe Heat wave conditions:- (<25%) Bihar, Telangana and Vidarbha.
Heat wave conditions:- (<50%) Bihar, Telangana, Coastal Andhra Pradesh & Yanam and Vidarbha. (**<25%**) East Uttar Pradesh, Jharkhand, Gangetic West Bengal, Rayalaseema, Tamilnadu, Puducherry & Karaikal and Marathwada.

Tomorrow
18/06/2019



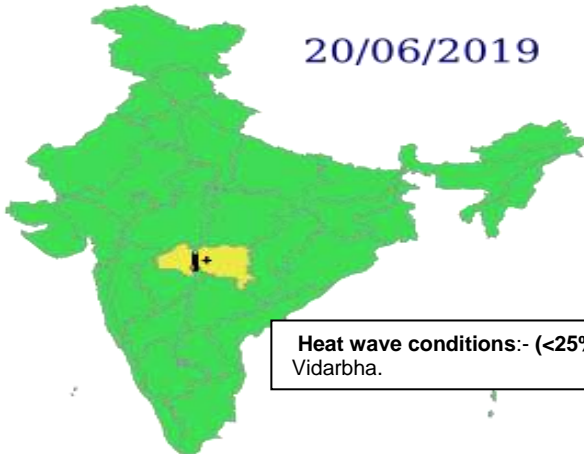
Severe Heat wave conditions:- (<25%) Bihar and Vidarbha.
Heat wave conditions:- (<50%) Bihar, Vidarbha and Coastal Andhra Pradesh. (**<25%**) East Uttar Pradesh, Jharkhand, Gangetic West Bengal, Rayalaseema, Tamilnadu, Puducherry & Karaikal and Marathwada.

19/06/2019



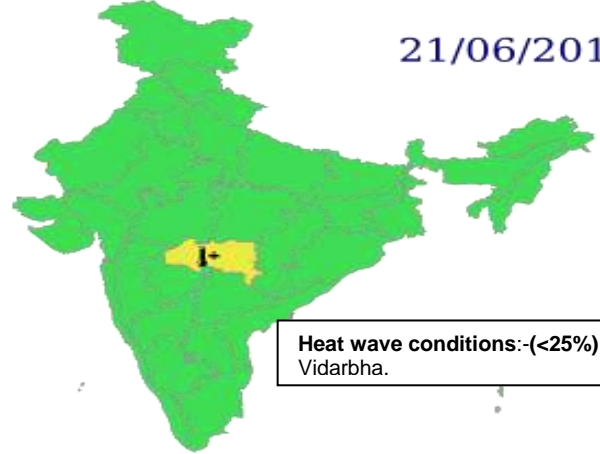
Heat wave conditions:- (<50%) Bihar (**<25%**) Vidarbha, Marathwada, Tamilnadu, Puducherry & Karaikal.

20/06/2019



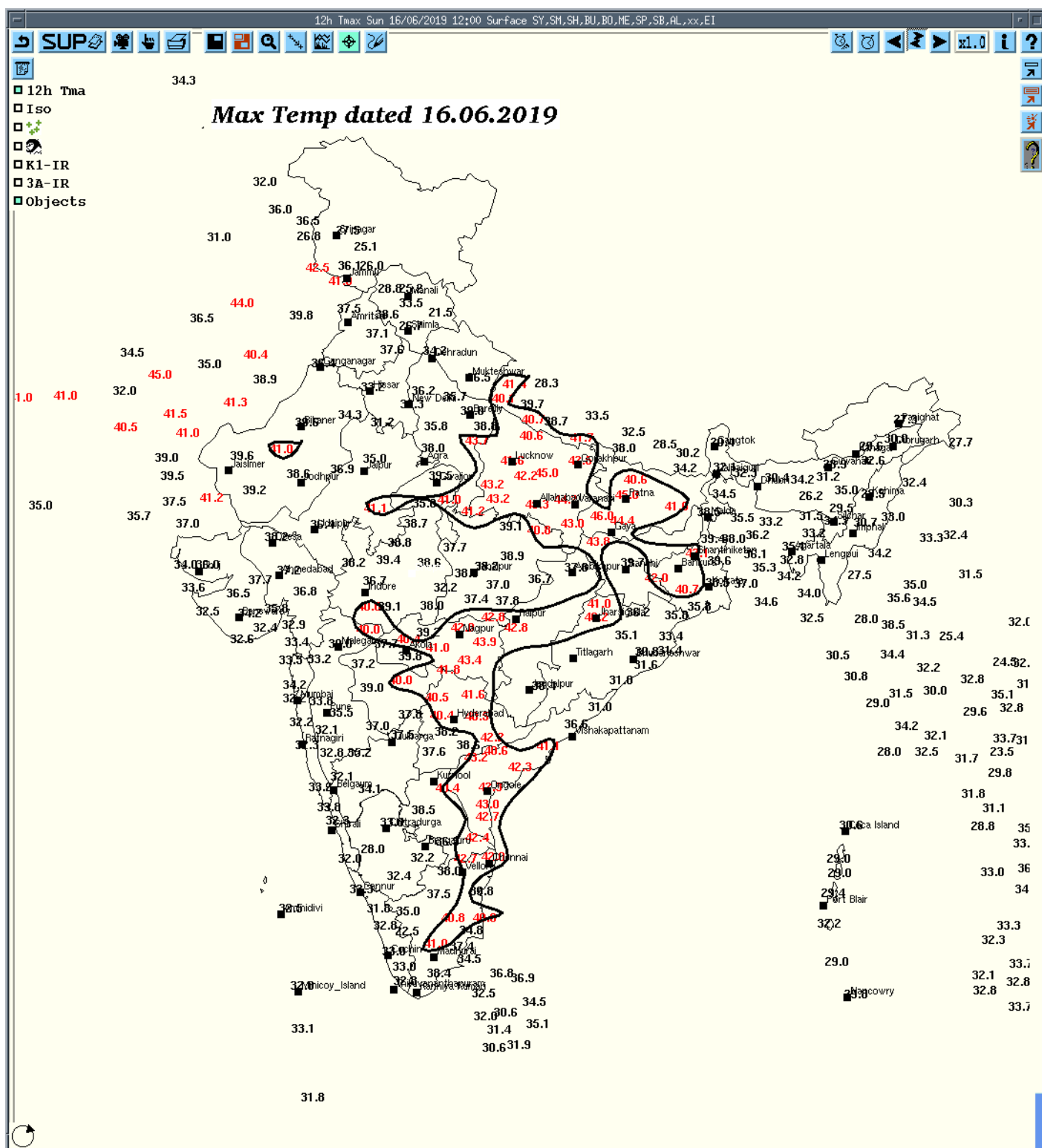
Heat wave conditions:- (<25%) Vidarbha.

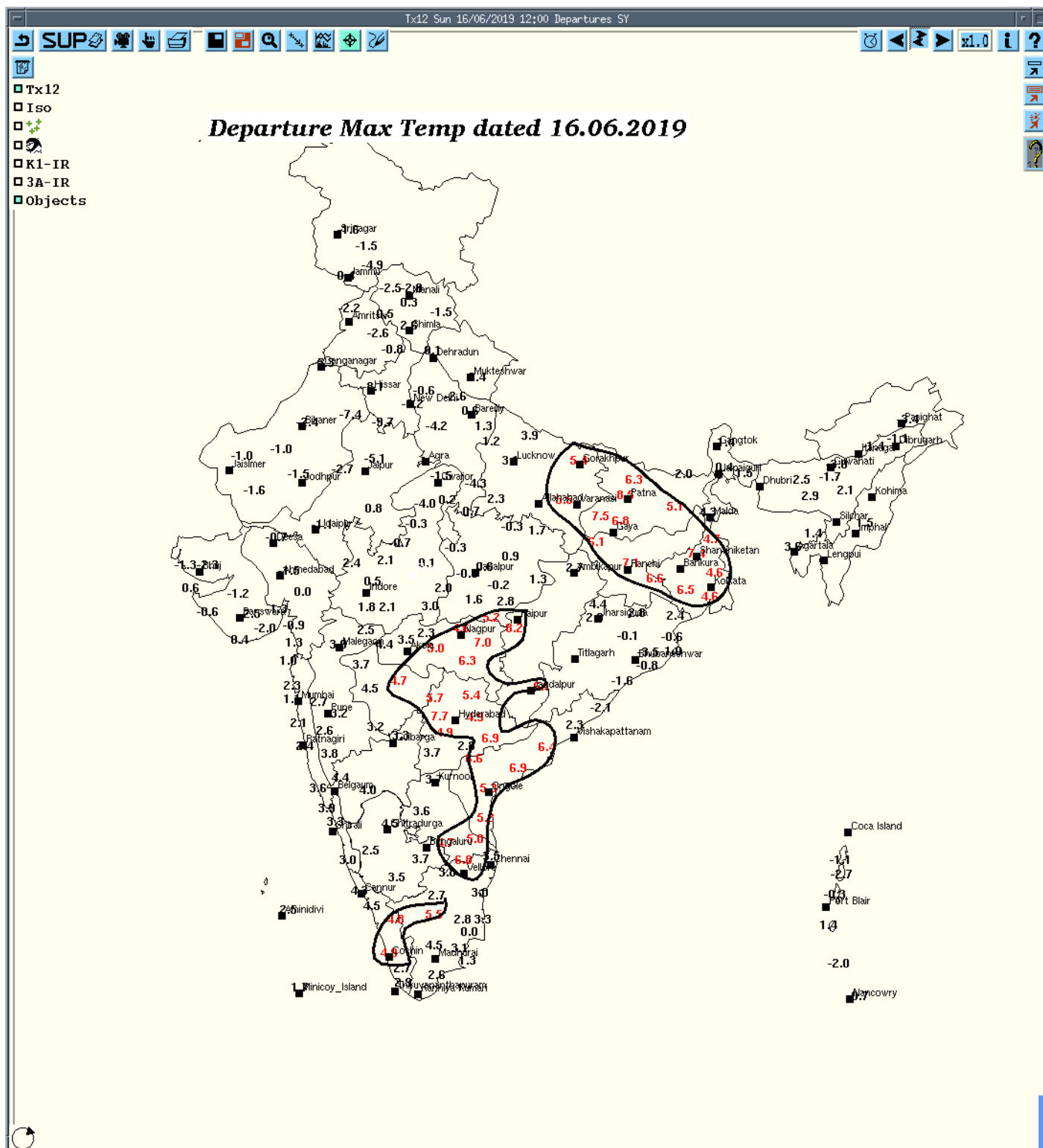
21/06/2019



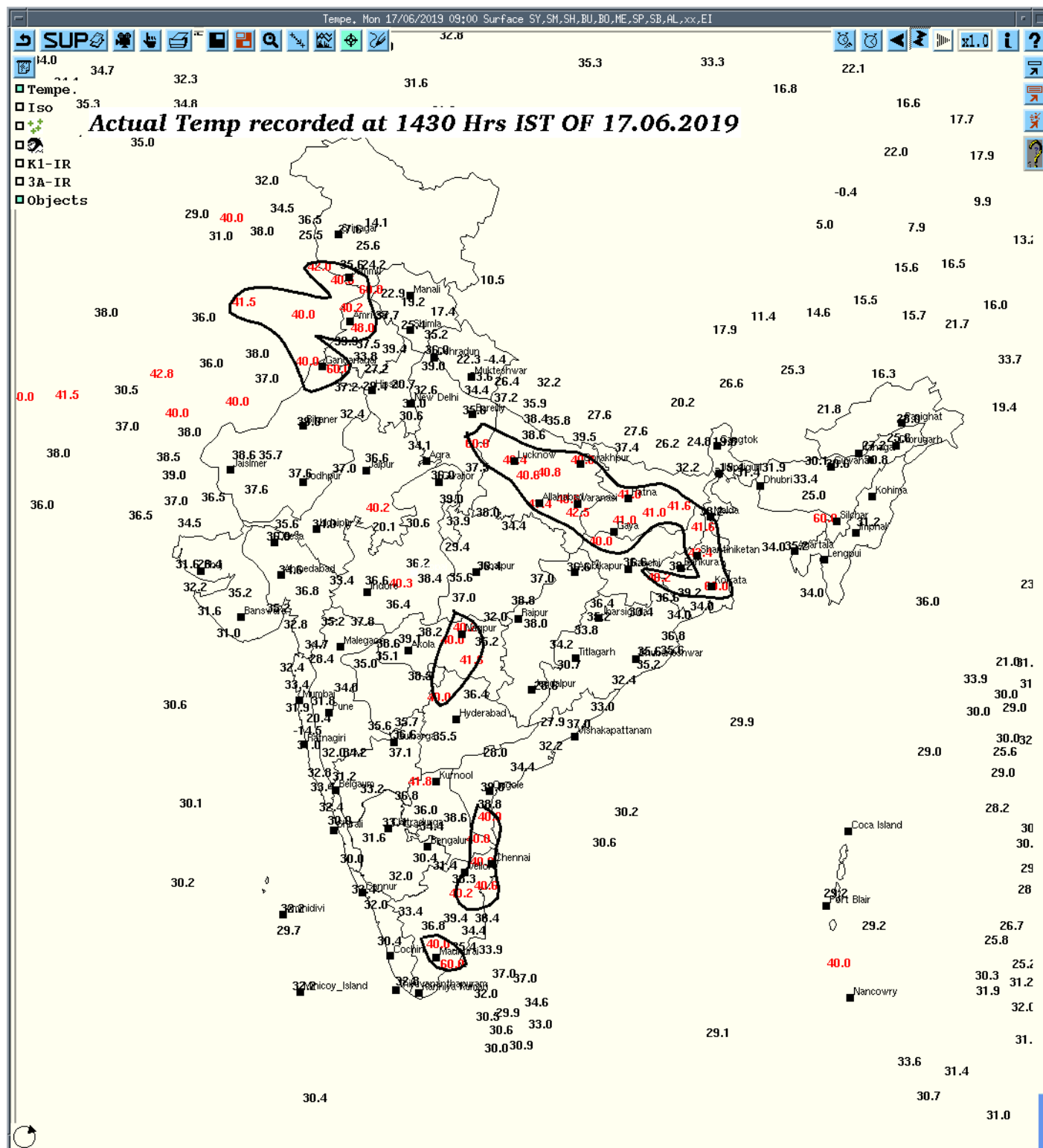
Heat wave conditions:- (<25%) Vidarbha.

Annexure 1

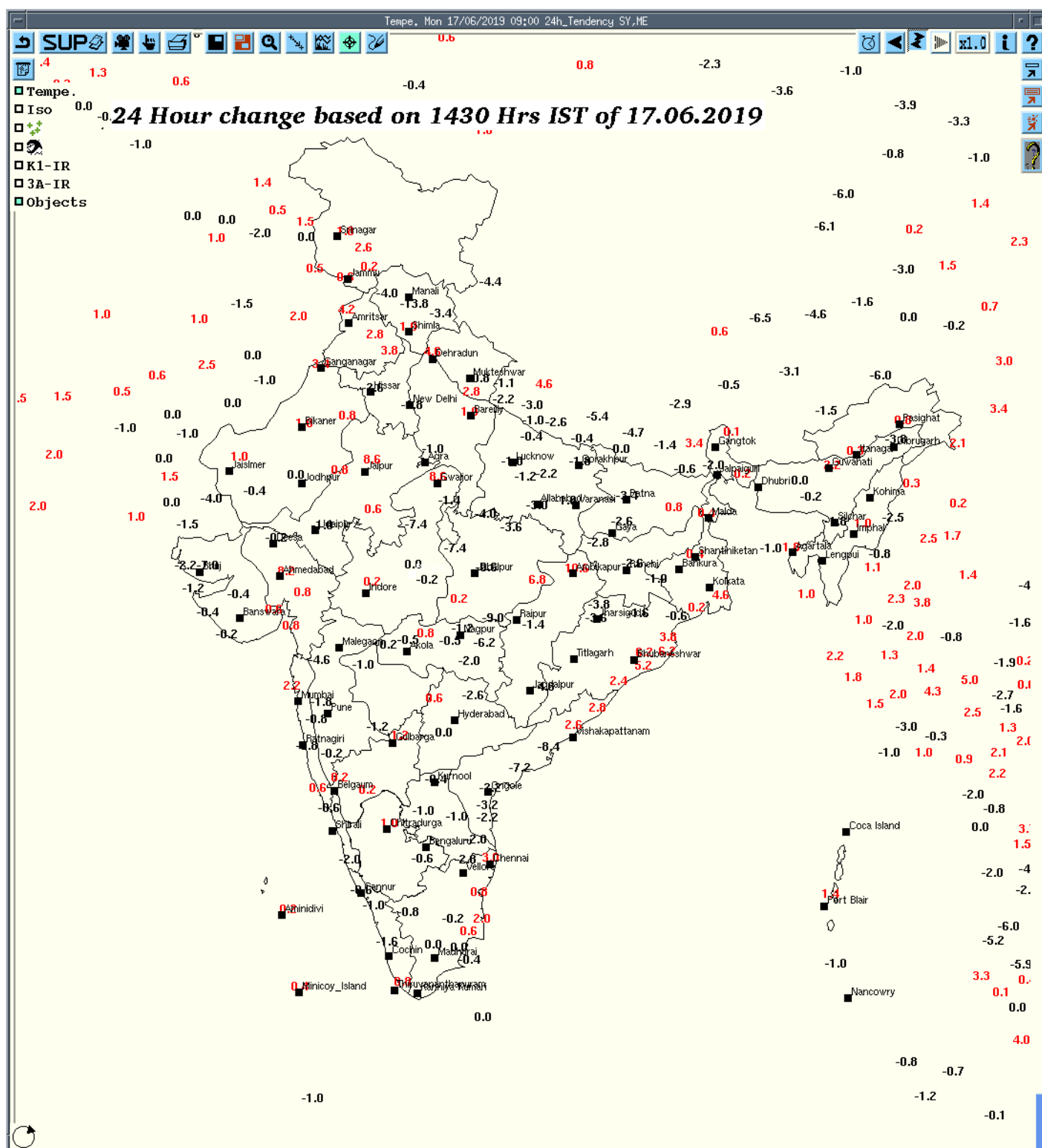




Annexure 3



Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 09th June, 2019

Time of Issue: 1630 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 08 June, 2019 to 0830 hrs IST 09 June, 2019)

Heat Wave:

Yesterday, Severe Heat Wave was observed in many places over West Rajasthan. Heat wave in many parts with severe heat wave in isolated pockets over West Madhya Pradesh. Heat Wave Conditions observed in many places over East Rajasthan and in isolated pockets over East Madhya Pradesh, Haryana, Chandigarh & Delhi, south Uttar Pradesh and Saurashtra.

(Annexure 1 & 2).

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over West Madhya Pradesh; at a few places over Madhya Maharashtra; at isolated places over Rajasthan; **appreciably above normal (3.1°C to 5.0°C)** at most places over Coastal Karnataka; at many places over East Madhya Pradesh and Kerala & Mahe; at a few places over Himachal Pradesh, Haryana, Chandigarh & Delhi, Gujarat, Vidarbha, Konkan & Goa and Interior Karnataka; at isolated places over Uttar Pradesh and Tamilnadu, Puducherry & Karaikal; **above normal (1.6°C to 3.0°C)** at many places over Punjab, Uttarakhand, Sub-Himalayan West Bengal & Sikkim, Rayalaseema and Chhattisgarh; at a few places over Bihar, Marathawada and Coastal Andhra Pradesh & Yanam and at isolated places over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura. Yesterday, **the highest maximum temperature of 47.4°C was recorded at Churu & Phalodi (West Rajasthan).**

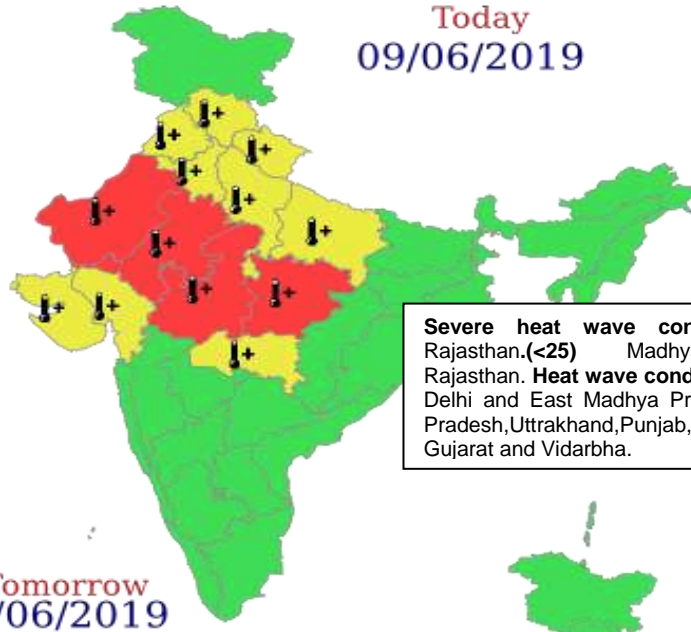
Temperatures Recorded at 1430 Hours IST of Today, the 09th June, 2019

- **Ganganagar (West Rajasthan) and Kota(East Rajasthan) recorded the maximum temperature of 48.0°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C in most Places over Jammu & Kashmir, Bihar, Chhattisgarh, Orissa, Gangetic West Bengal, Telangana, Rayalaseema, Tamilnadu and North interior Karnataka; in many Places over Himachal Pradesh, Uttarakhand, Uttar Pradesh and East Rajasthan; at some places over Madhya Pradesh, Vidarbha and Jharkhand and in one or two pockets of Gujarat State and Madhya Maharashtra. (Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

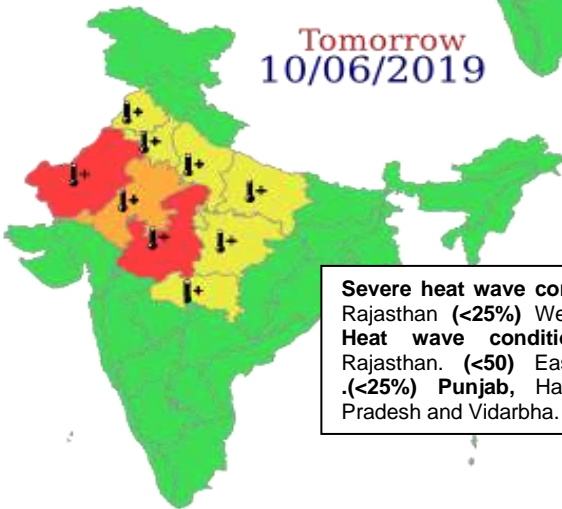
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
09/06/2019



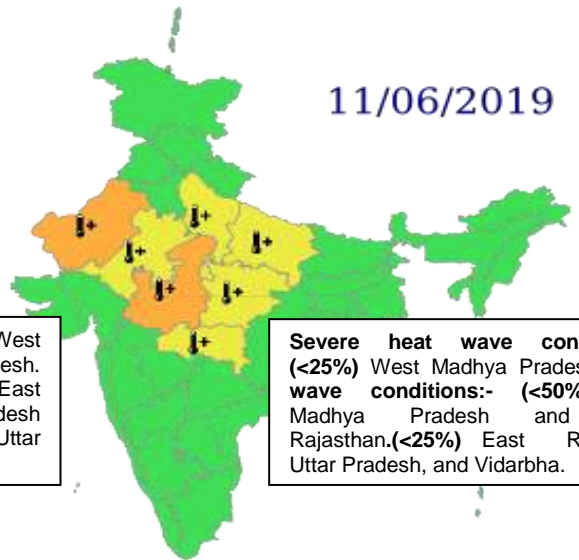
Severe heat wave conditions: (<50%) West Rajasthan.(<25%) Madhya Pradesh and East Rajasthan. **Heat wave conditions:-** (<50%) Haryana, Delhi and East Madhya Pradesh .(<25%) Himachal Pradesh,Uttarakhand,Punjab, south Uttar Pradesh, Gujarat and Vidarbha.

Tomorrow
10/06/2019



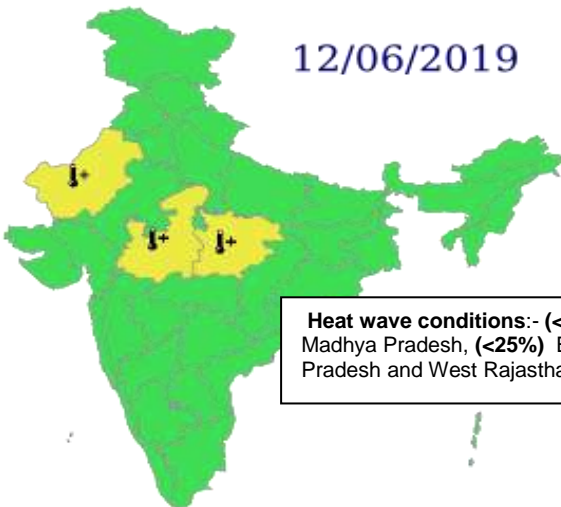
Severe heat wave conditions: -(<50) West Rajasthan (<25%) West Madhya Pradesh. **Heat wave conditions:-** (<75%) East Rajasthan. (<50) East Madhya Pradesh .(<25%) Punjab, Haryana &Delhi, Uttar Pradesh and Vidarbha.

11/06/2019



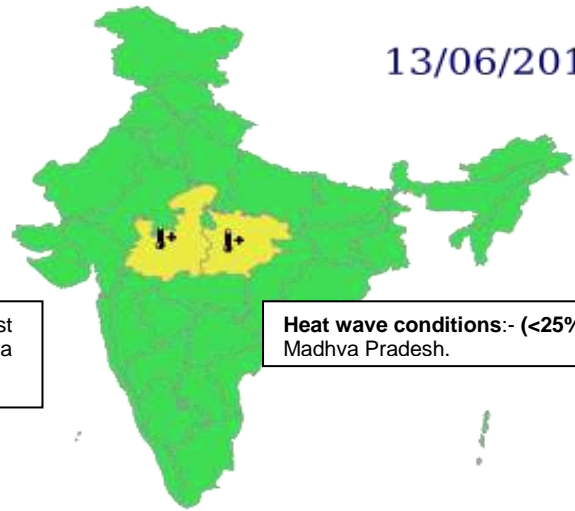
Severe heat wave conditions:- (<25%) West Madhya Pradesh. **Heat wave conditions:-** (<50%) East Madhya Pradesh and West Rajasthan.(<25%) East Rajasthan Uttar Pradesh, and Vidarbha.

12/06/2019



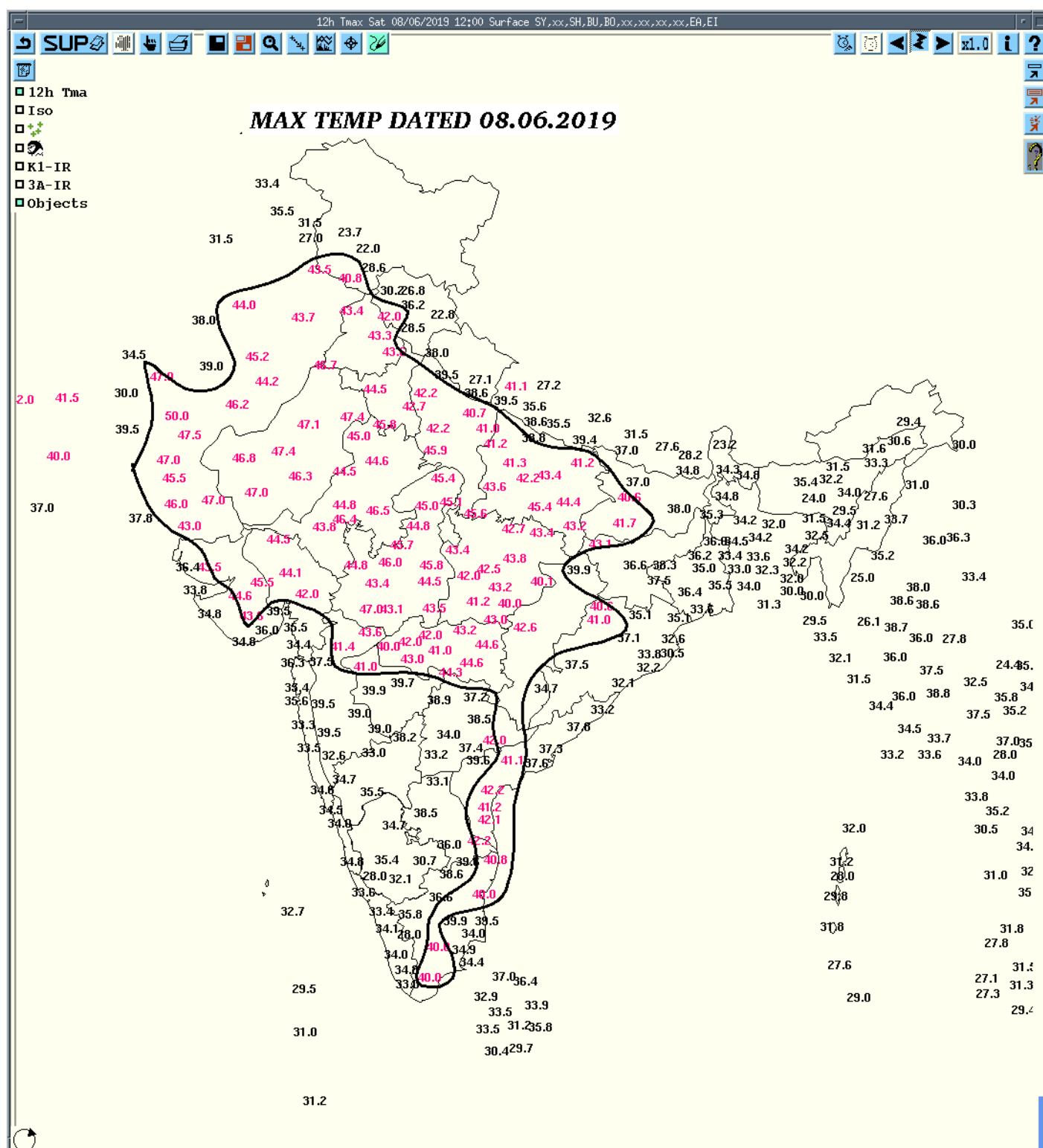
Heat wave conditions:- (<50%) West Madhya Pradesh, (<25%) East Madhya Pradesh and West Rajasthan.

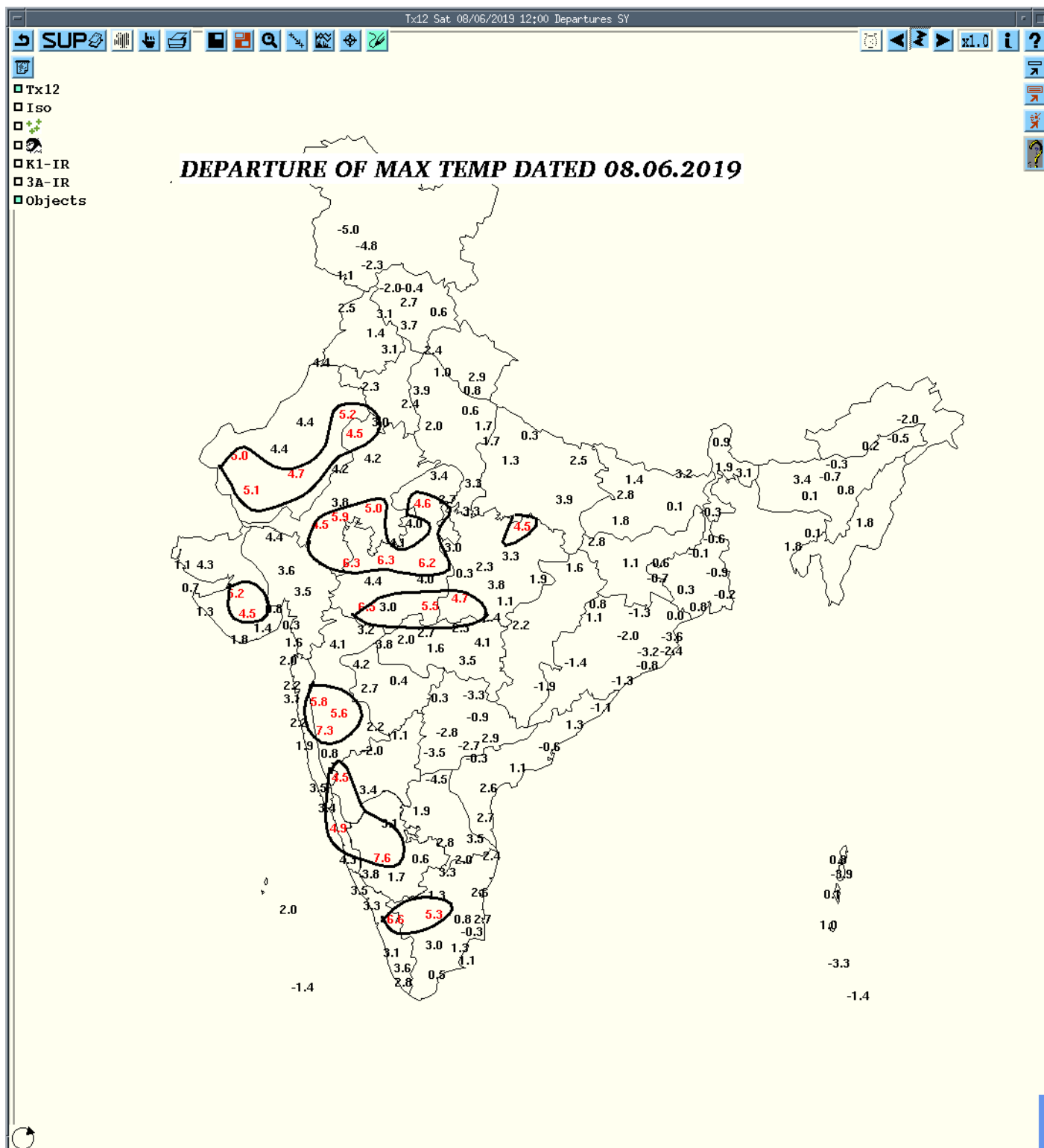
13/06/2019

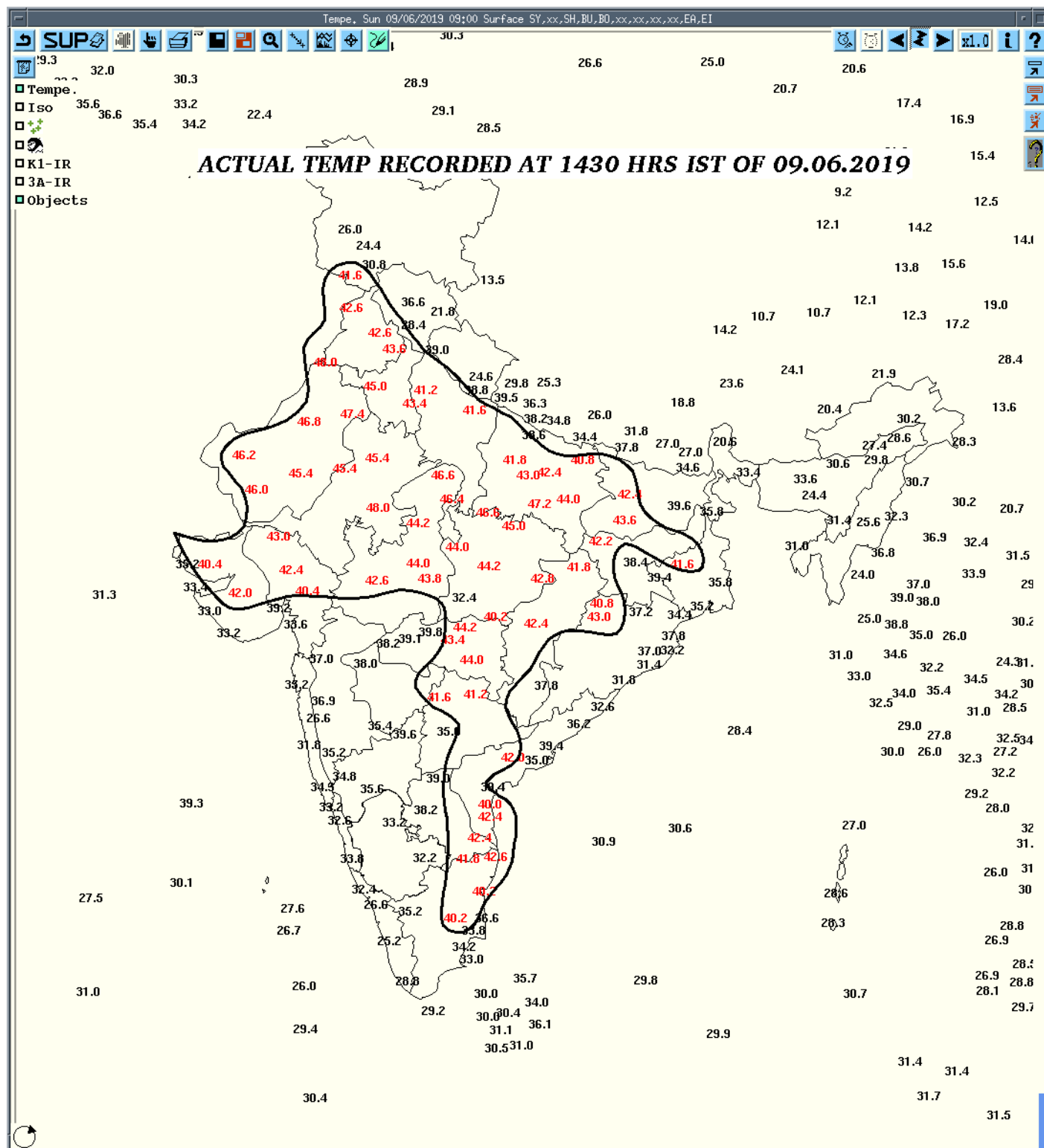


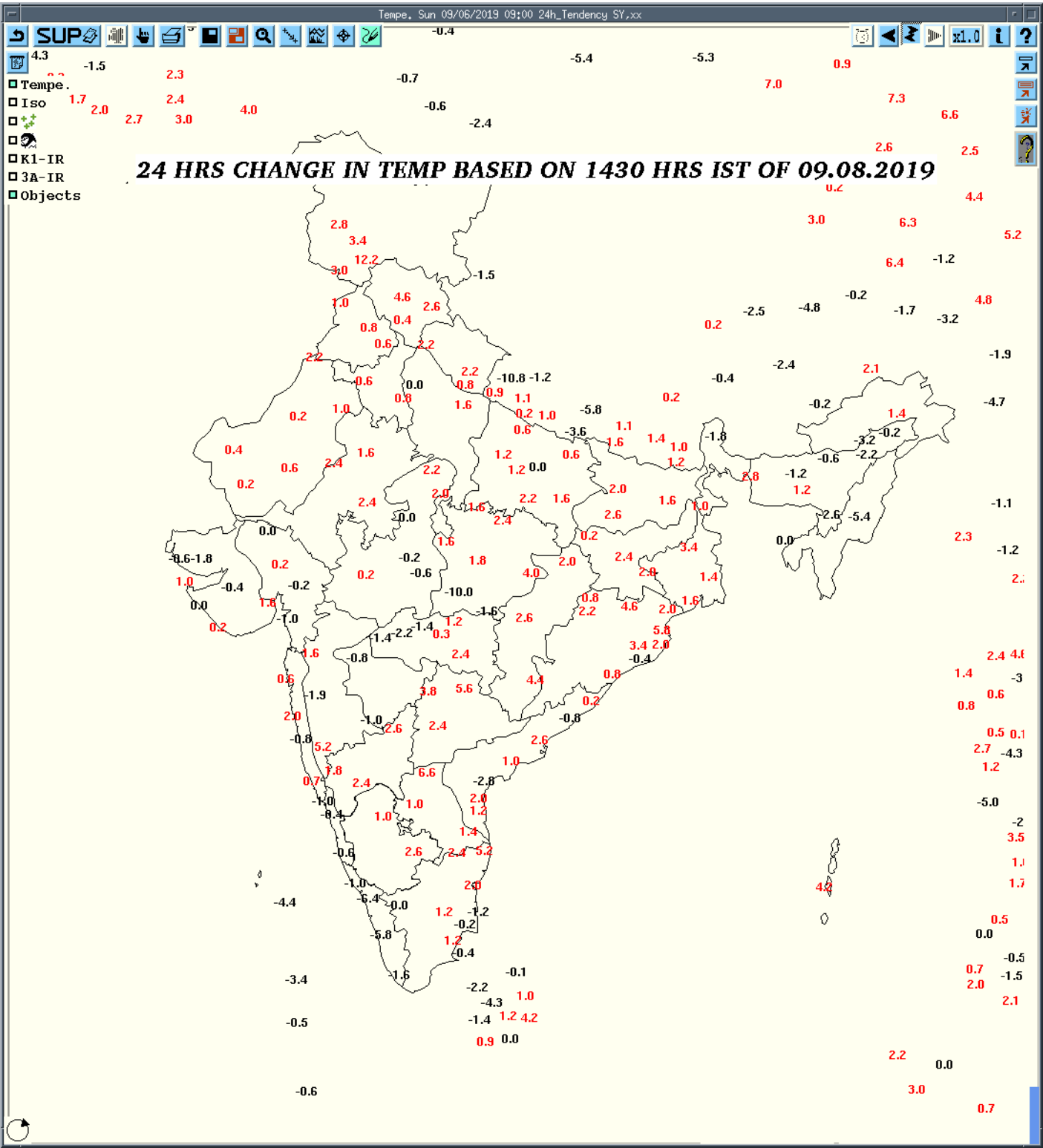
Heat wave conditions:- (<25%) Madhya Pradesh.

Annexure 1









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department

Dated: 14th June, 2019
Time of Issue: 1630 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 13 June, 2019 to 0830 hrs IST 14 June, 2019)

Heat Wave:

Yesterday, **Heat Wave Conditions** observed in isolated pockets over West Rajasthan, West Madhya Pradesh, Vidarbha, Telangana and Coastal Andhra Pradesh & Yanam. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Assam & Meghalaya and at isolated places over Telangana and Arunachal Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at most places over Jharkhand; at many places over Vidarbha, Coastal Andhra Pradesh & Yanam, Chhattisgarh, Sub-Himalaya West Bengal & Sikkim and Nagaland, Manipur, Mizoram & Tripura; at a few places over Uttarakhand, East Madhya Pradesh and Bihar and at isolated places over West Rajasthan, West Madhya Pradesh and Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over West Uttar Pradesh, Punjab, Haryana, Chandigarh & Delhi; at many places over Marathwada and Gangetic West Bengal; at a few places over Kerala & Mahe and Rayalaseema and at isolated places over Konkan & Goa, Madhya Maharashtra, East Uttar Pradesh, North Interior Karnataka and Odisha. Yesterday, **Yesterday, the highest maximum temperature of 48.0°C** was recorded at **Phalodi** (West Rajasthan).

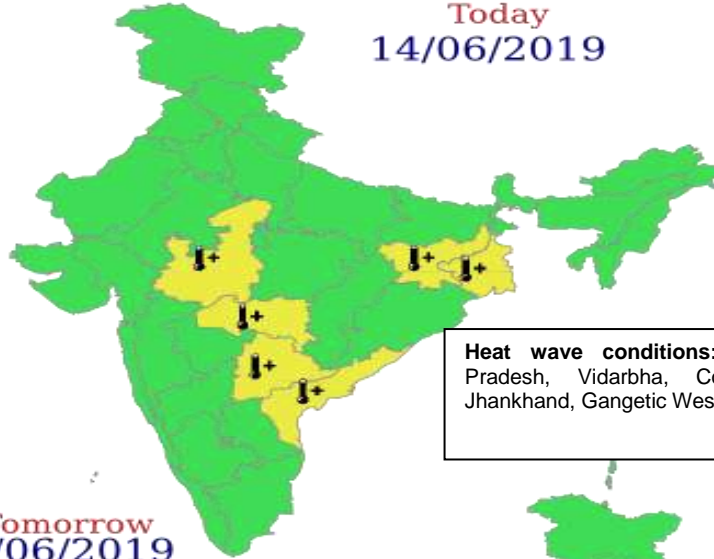
Temperatures Recorded at 1430 Hours IST of Today, the 14th June, 2019

- **Delhi-Ridge(Delhi)** recorded the maximum temperature of **45.0°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-5°C** in most Parts over East Uttar Pradesh; in many Parts over East Rajasthan and at some parts over Odisha, Coastal Andhra Pradesh and Kerala. **by 1-3°C** in most Parts over Jammu & Kashmir, Himachal Pradesh, Punjab, Uttarakhand and West Uttar Pradesh; in many Parts over Gujarat state, Gangetic West Bengal and Interior Karnataka and at some parts over West Rajasthan and Madhya Maharashtra and in one or two pockets of Madhya Pradesh, Rayalaseema, Kerala and Tamilnadu & Puducherry. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

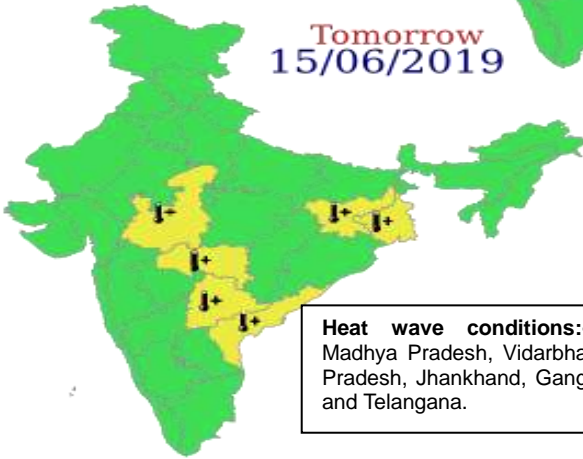
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
14/06/2019



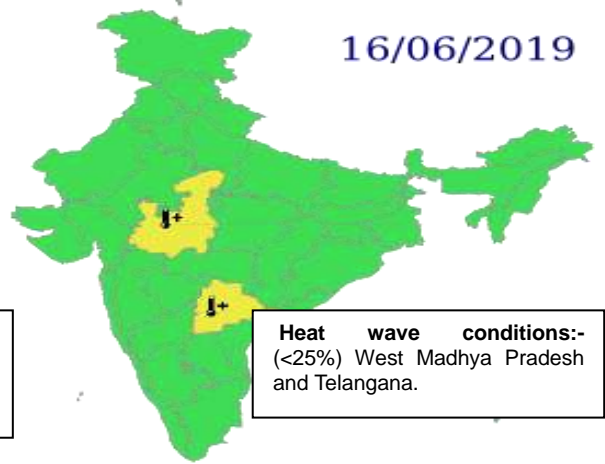
Heat wave conditions:- (<25%) West Madhya Pradesh, Vidarbha, Coastal Andhra Pradesh, Jharkhand, Gangetic West Bengal and Telangana.

Tomorrow
15/06/2019



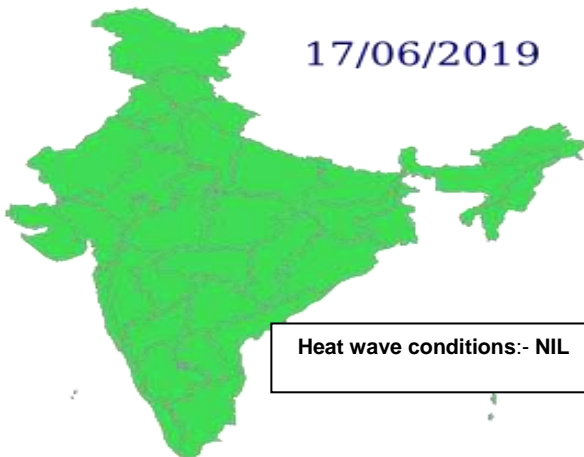
Heat wave conditions:- (<25%) West Madhya Pradesh, Vidarbha, Coastal Andhra Pradesh, Jharkhand, Gangetic West Bengal and Telangana.

16/06/2019



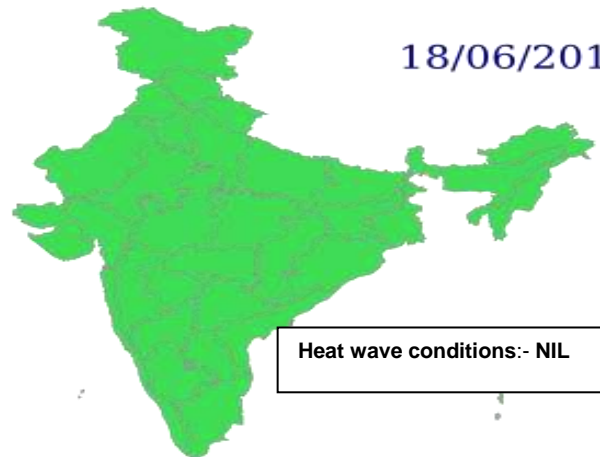
Heat wave conditions:- (<25%) West Madhya Pradesh and Telangana.

17/06/2019



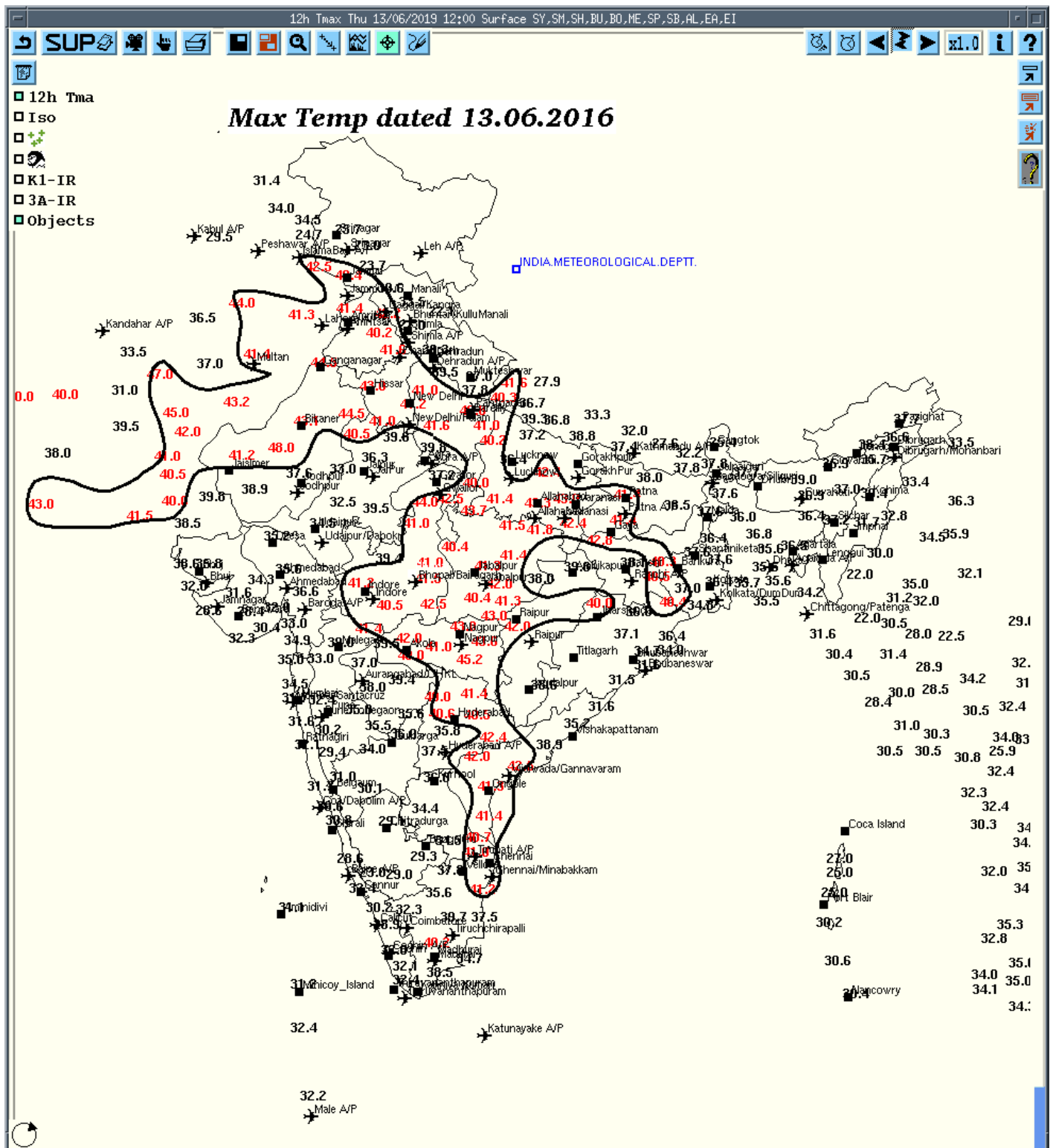
Heat wave conditions:- NIL

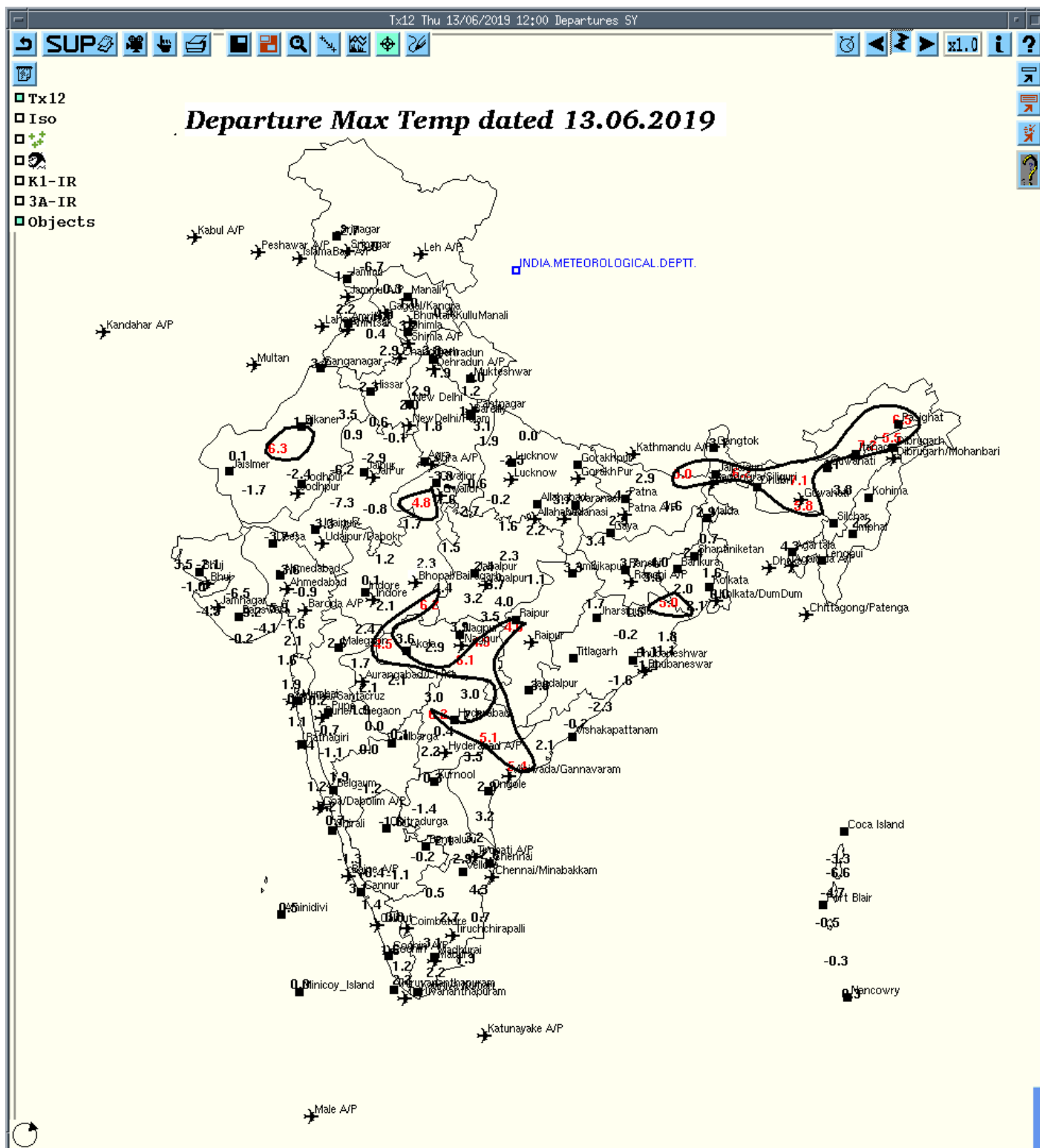
18/06/2019

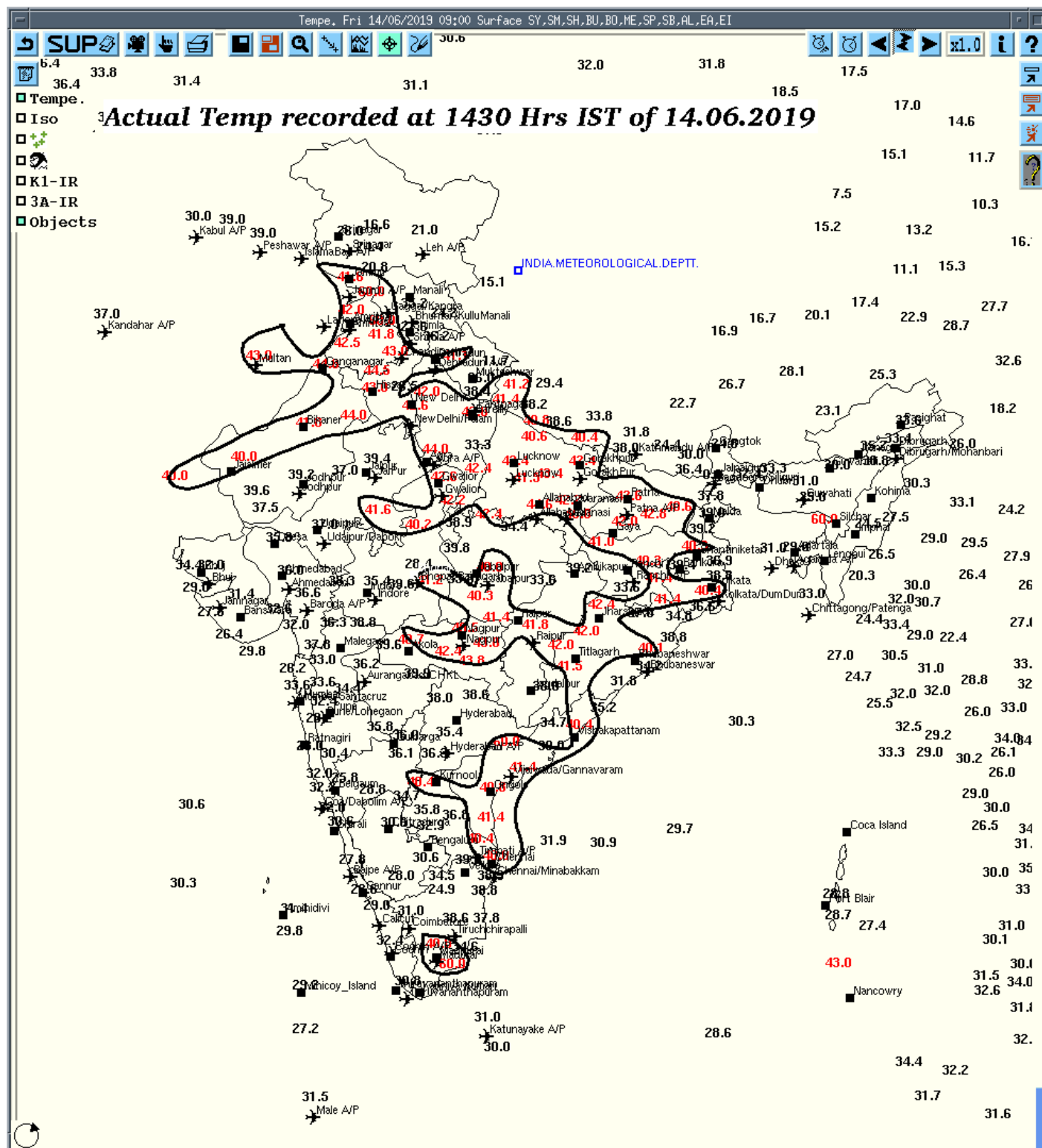


Heat wave conditions:- NIL

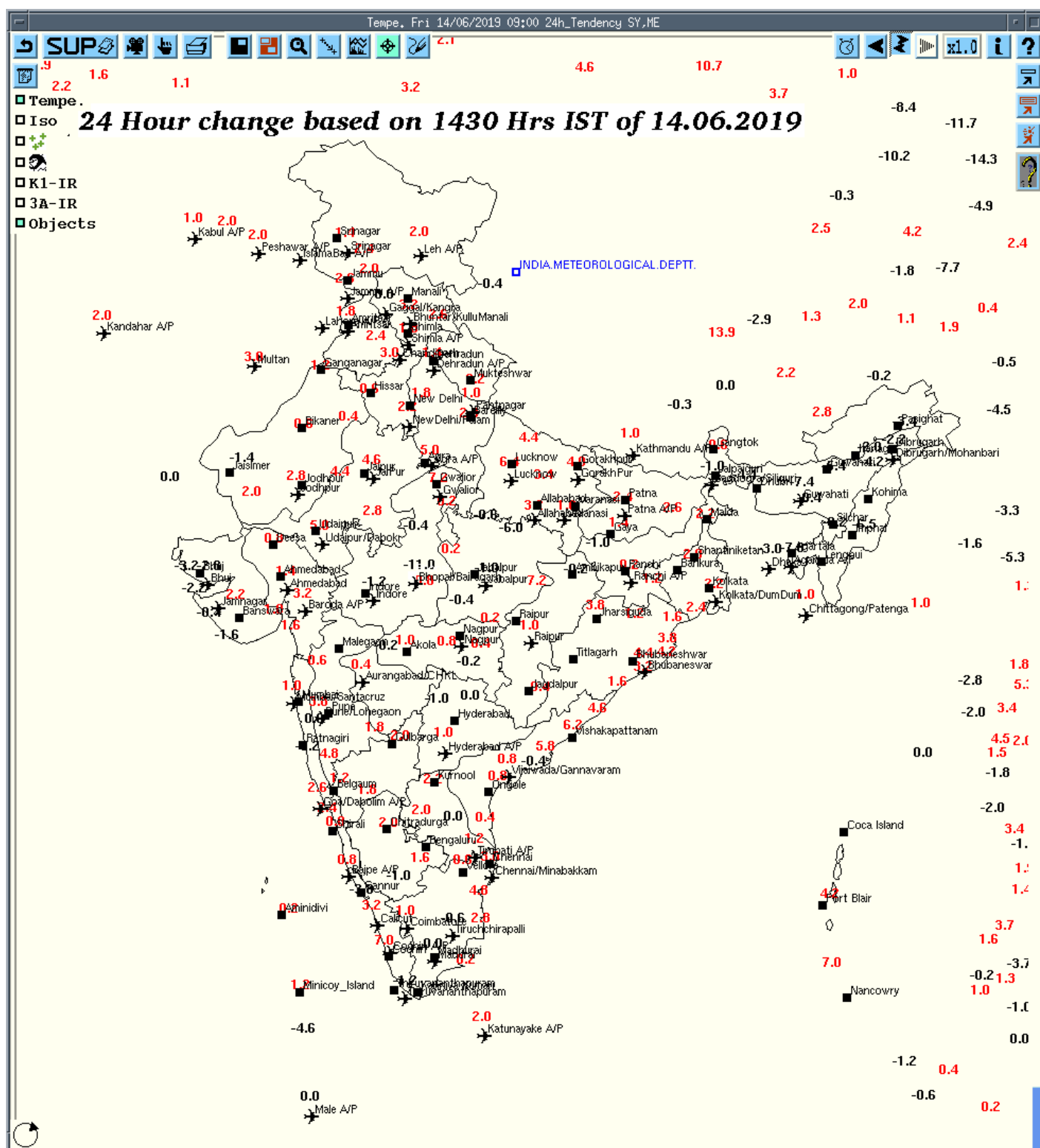
Annexure 1







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 18th June, 2019
Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 17 June, 2019 to 0830 hrs IST 18 June, 2019)

Heat Wave:

Heat Wave Conditions were observed at some places Bihar, Jharkhand and Vidarbha and in isolated places over Gangetic West Bengal (**Annexure 1 & 2**).

Maximum Temperature

Maximum temperature departures as on 17-06-2019: Maximum temperatures were **markedly above normal (5.1°C or more)** at a few places over Bihar and at isolated places over Gangetic West Bengal, Jharkhand and Telangana; **appreciably above normal (3.1°C to 5.0°C)** at most places over North & South Interior Karnataka; at many Places over Vidarbha and Kerala; at a few places over Marathawada, Coastal Karnataka, Tamilnadu, Puducherry & Karaikal and Rayalaseema and isolated places over Odisha, Coastal Andhra Pradesh, Madhya Maharashtra and Konkan & Goa; **above normal (1.6°C to 3.0°C)** at most places over Lakshadweep; at a many places over Chhattisgarh and East Uttar Pradesh; at a few places over Uttarakhand and at isolated places over Madhya Pradesh and Himachal Pradesh. **Yesterday, the highest maximum temperature of 43.9°C** was recorded at **Fatehgarh (East Uttar Pradesh)**.

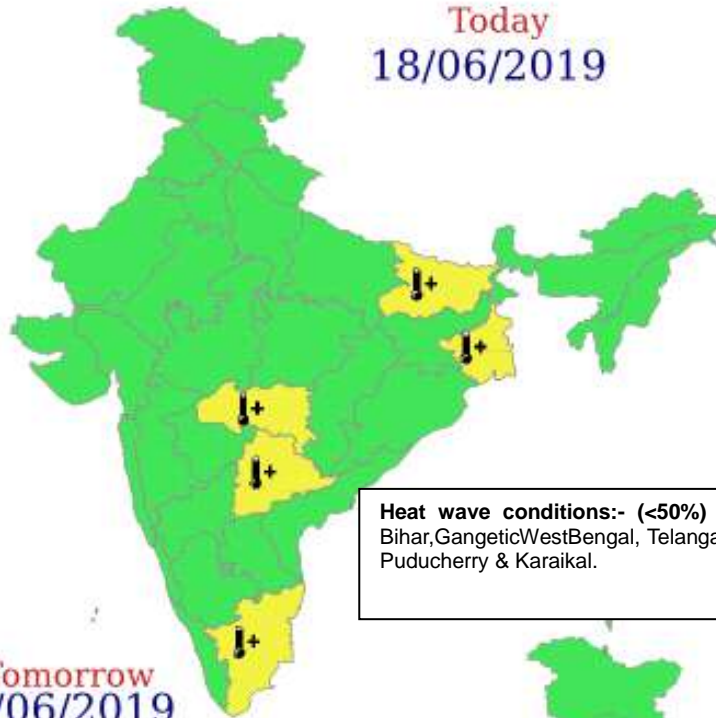
Temperatures Recorded at 1430 Hours IST of Today, the 18th June, 2019

- **Kavali(Coastal Andhra Pradesh)** recorded the maximum temperature of **42.0°C (Annexure 3)**.
- **Temperatures recorded at 1430 hours IST of today have risen by 3-5°C** at some parts over Coastal Andhra Pradesh and one or two pockets of Himachal Pradesh; **by 1-3°C** in many Parts over Odisha; some parts over East Madhya Pradesh, Chhattisgarh, Assam & Meghalaya, West Bengal and Kerala and in one or two pockets of West Madhya Pradesh, Delhi, Telangana, Rayalaseema, Saurashtra & Kutch, Coastal Karnataka and South Interior Karnataka (**Annexure 4**).

Heat Wave Warnings for Next 5 Days (on next page)

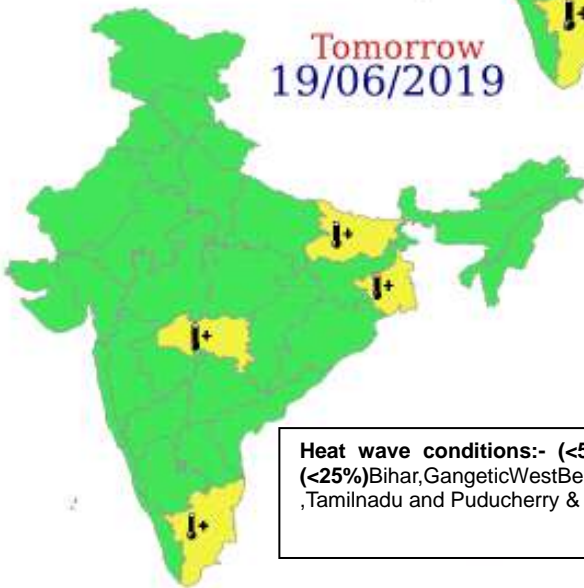
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
18/06/2019



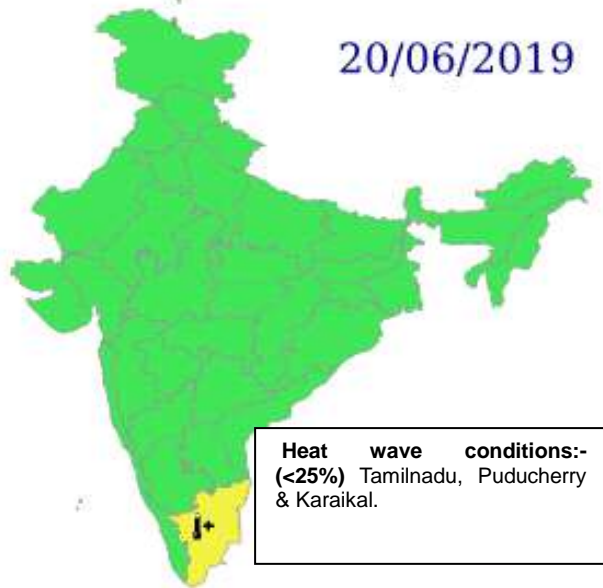
Heat wave conditions:- (<50%) Vidarbha. (<25%) Bihar, Gangetic West Bengal, Telangana, Tamil Nadu and Puducherry & Karaikal.

Tomorrow
19/06/2019



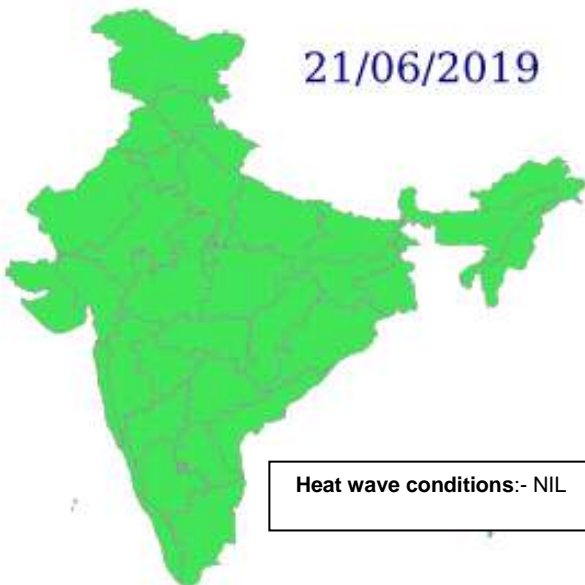
Heat wave conditions:- (<50%) Vidarbha. (<25%) Bihar, Gangetic West Bengal, Tamil Nadu and Puducherry & Karaikal.

20/06/2019



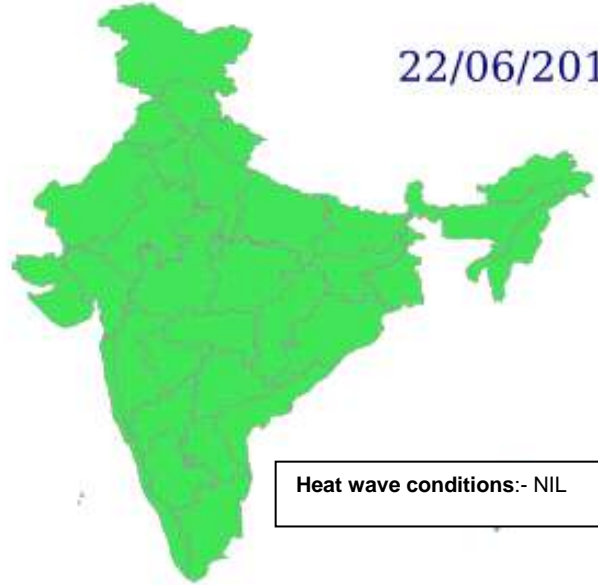
Heat wave conditions:- (<25%) Tamil Nadu, Puducherry & Karaikal.

21/06/2019



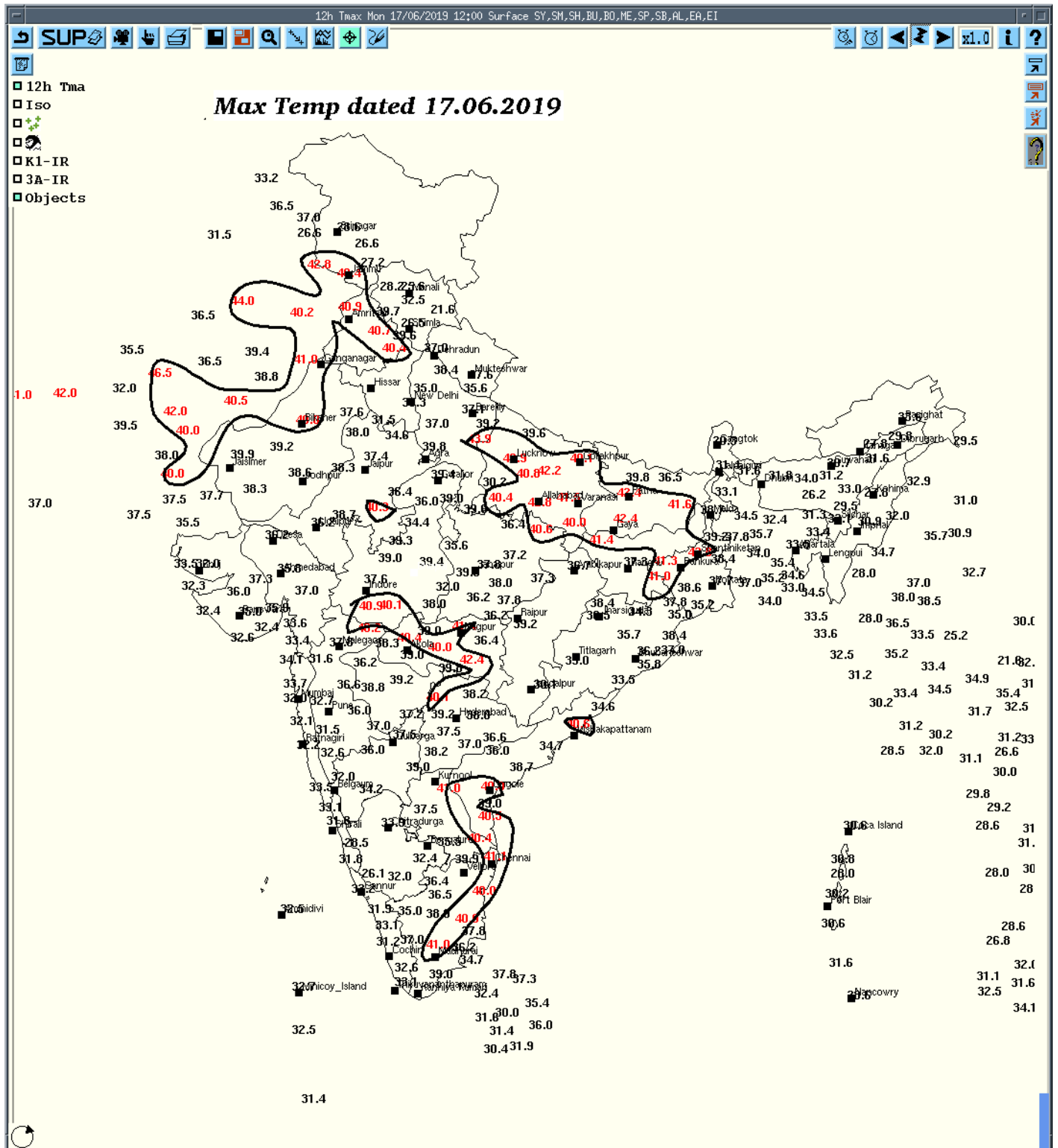
Heat wave conditions:- NIL

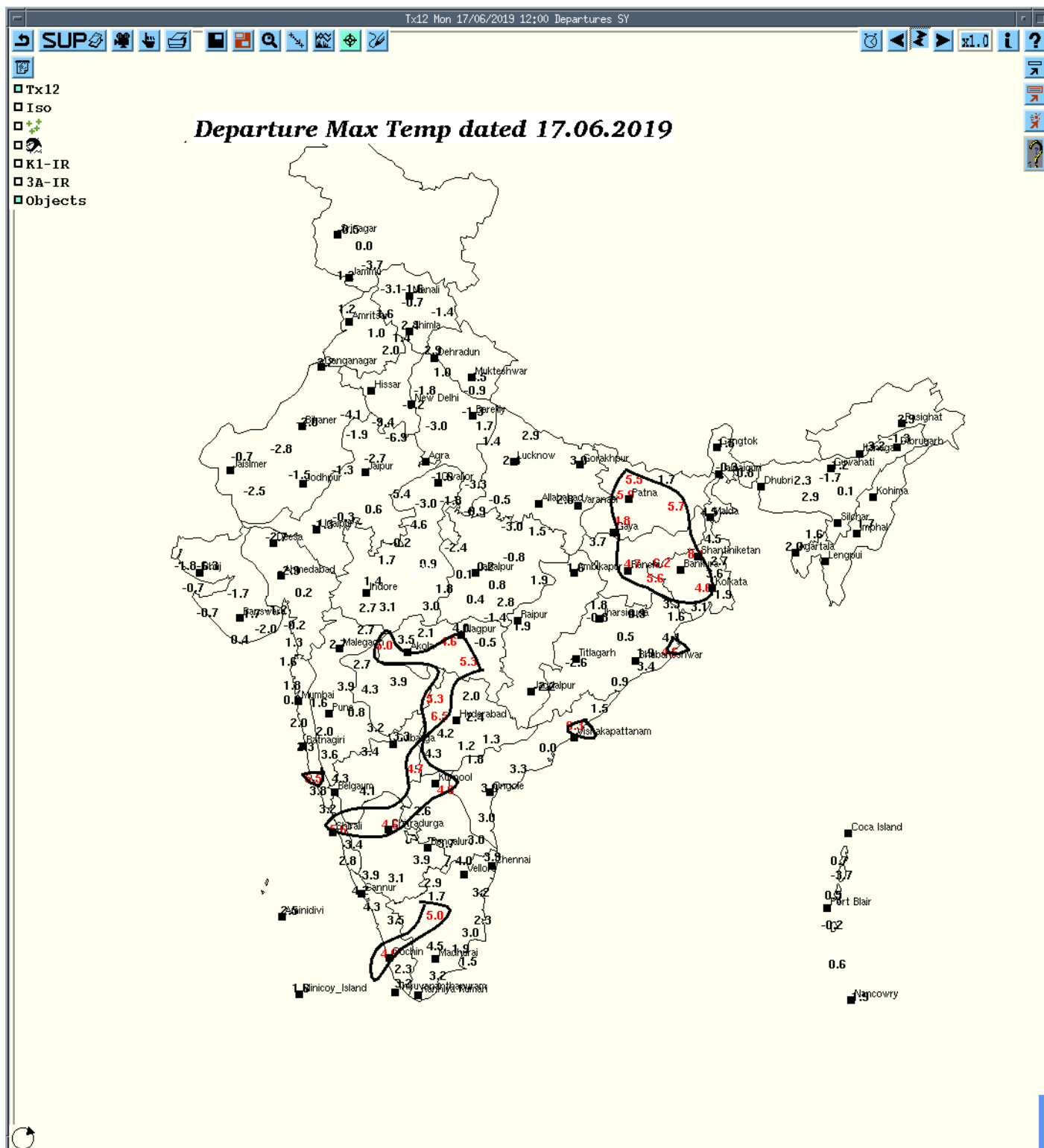
22/06/2019



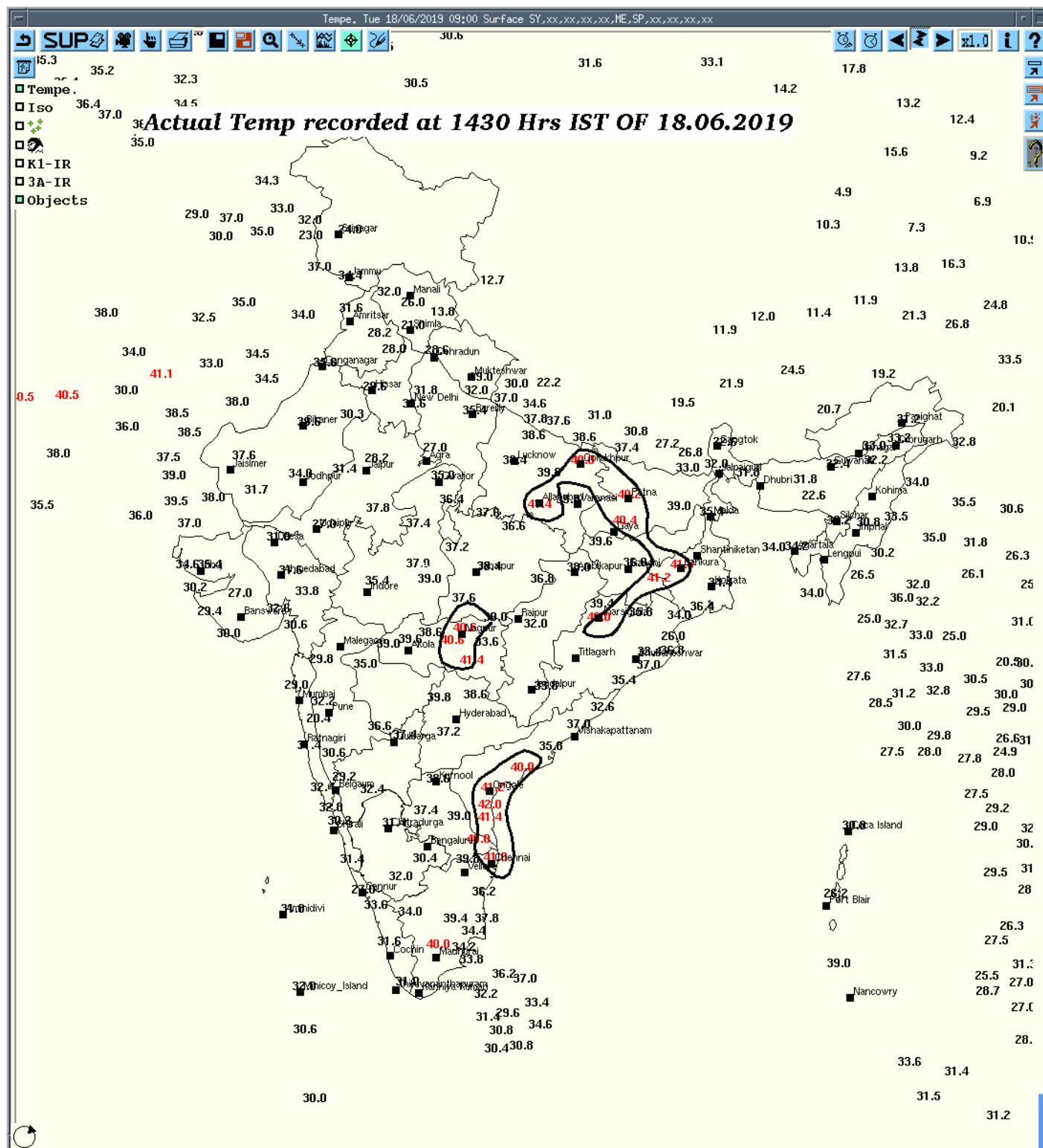
Heat wave conditions:- NIL

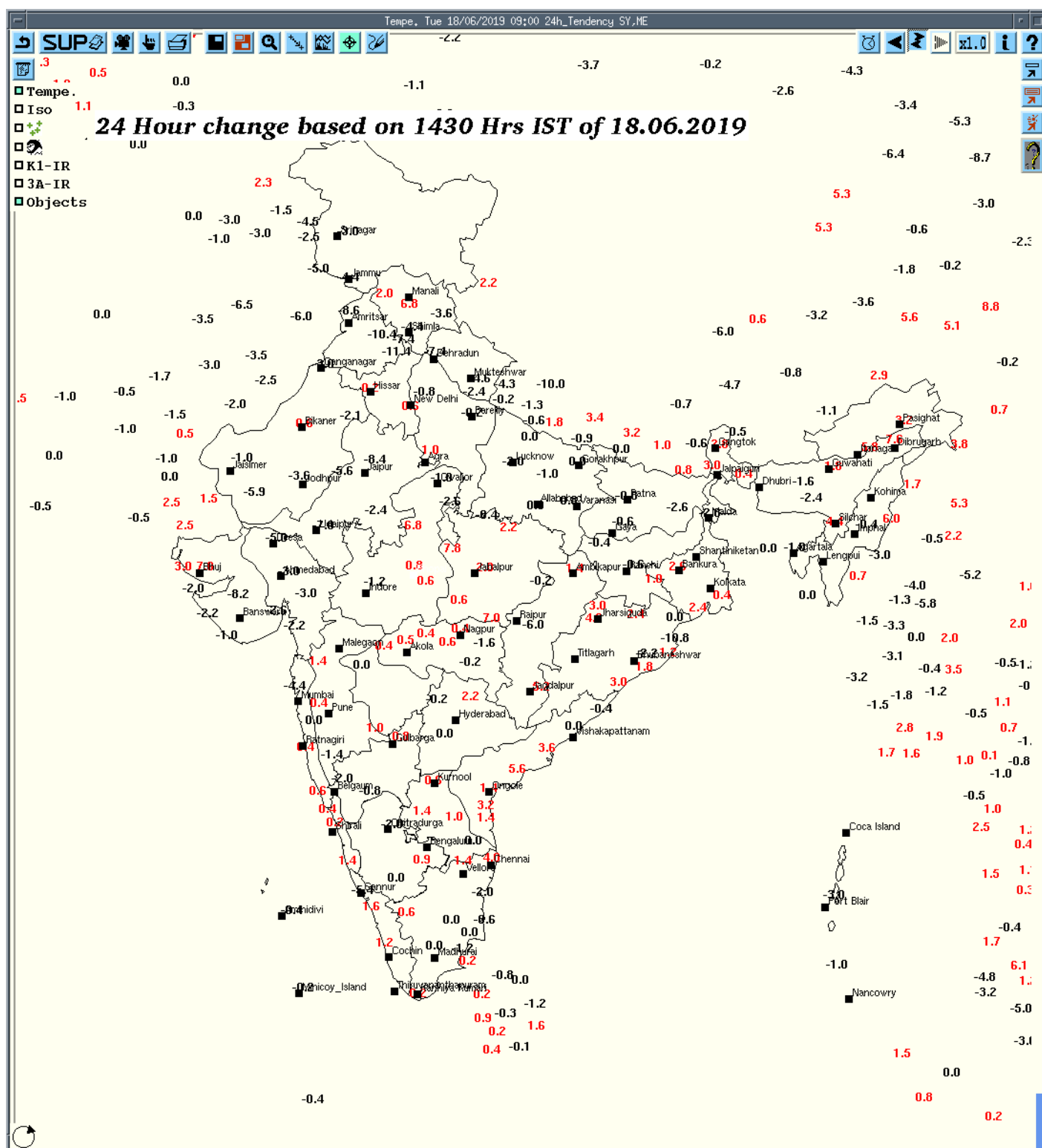
Annexure 1





Annexure 3





Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 22th June, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 21 June, 2019 to 0830 hrs IST 22 June, 2019)

Heat Wave:

Yesterday Yesterday, Heat wave conditions in some parts with **severe heat wave** at isolated pockets were observed over Vidarbha. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Vidarbha and at isolated places over Madhya Pradesh, Telangana and Madhya Maharashtra; **appreciably above normal (3.1°C to 5.0°C)** at most places over Marathawada; at many places over North Interior Karnataka, Uttarakhand, Nagaland, Manipur, Mizoram & Tripura and Arunachal Pradesh; at a few places over Sub-Himalayan West Bengal & Sikkim and at isolated places over Konkan & Goa and East Uttar Pradesh; **above normal (1.6°C to 3.0°C)** at many places over Bihar and Jharkhand; at a few places over Saurashtra & Kutch, Coastal & South Interior Karnataka, Tamilnadu & Puducherry, Assam & Meghalaya and Andaman & Nicobar and at isolated places over Gujarat Region, West Uttar Pradesh and Gangetic West Bengal. **Yesterday, the highest maximum temperature of 42.4°C** was recorded at **Ganganagar (West Rajasthan).**

Temperatures Recorded at 1430 Hours IST of Today, the 22th June, 2019

- **Churu(West Rajasthan)** recorded the maximum temperature of **43.6°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-5°C** in most parts over Punjab; in many Parts over Himachal Pradesh; in some parts over Jammu & Kashmir and Coastal Andhra Pradesh and in one or two pockets of Rajasthan, Tamilnadu and Assam & Meghalaya; **by 1-3°C** in most Parts over orissa and Gangetic West Bengal; in some parts over Gujarat region and Rayalaseema and in one or two pockets of West Madhya Pradesh. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

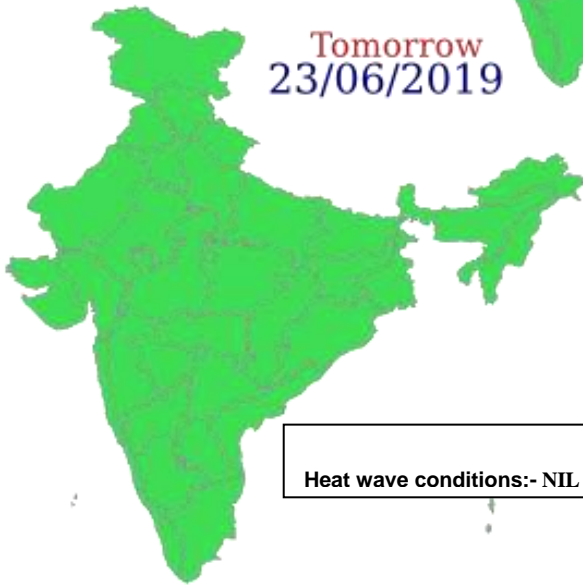
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
22/06/2019



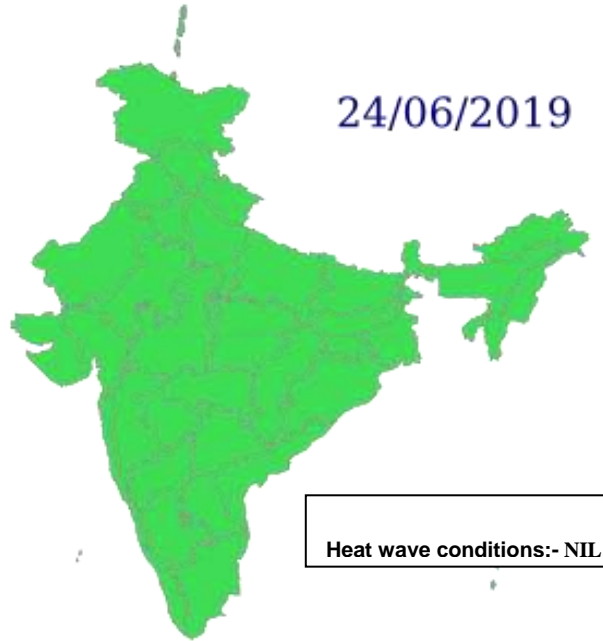
Heat wave conditions:- NIL

Tomorrow
23/06/2019



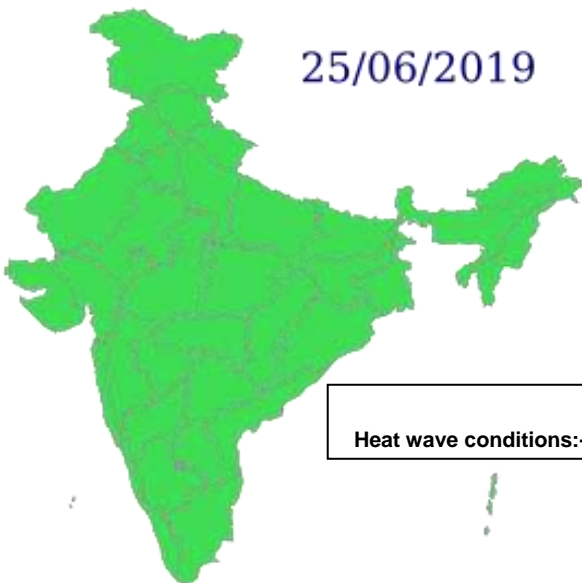
Heat wave conditions:- NIL

24/06/2019



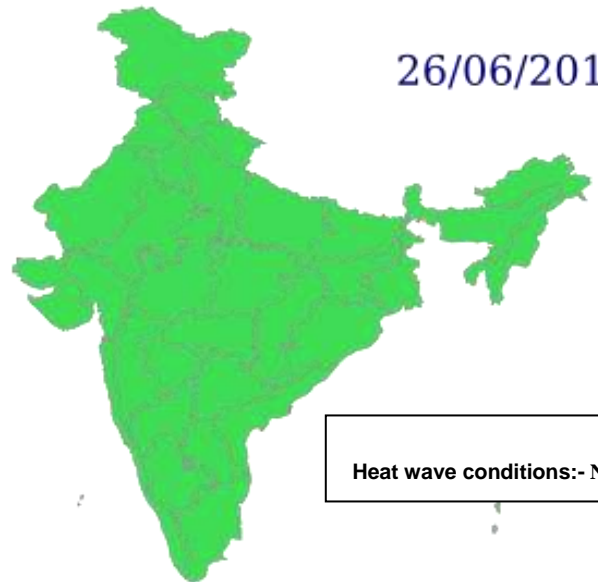
Heat wave conditions:- NIL

25/06/2019

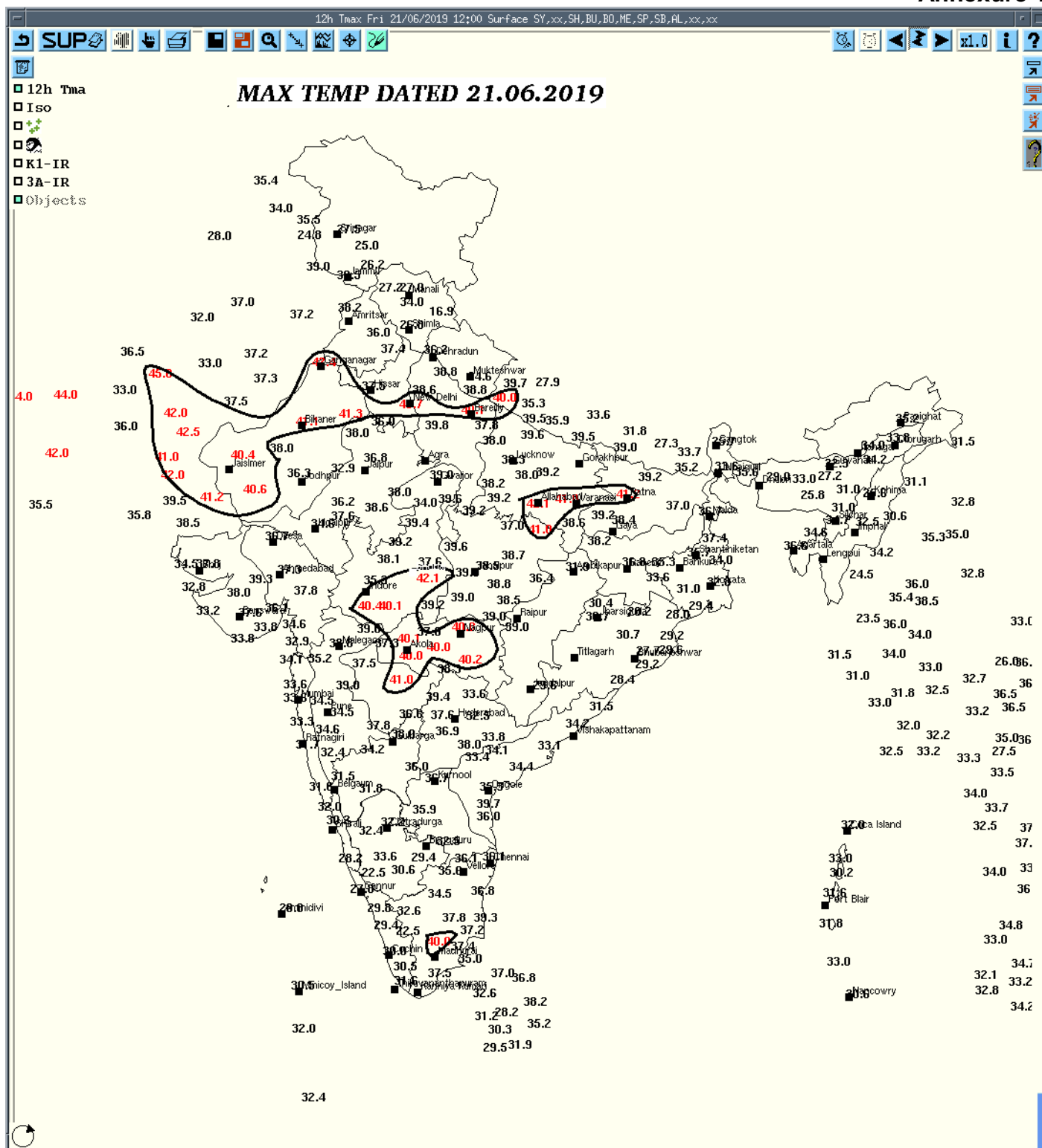


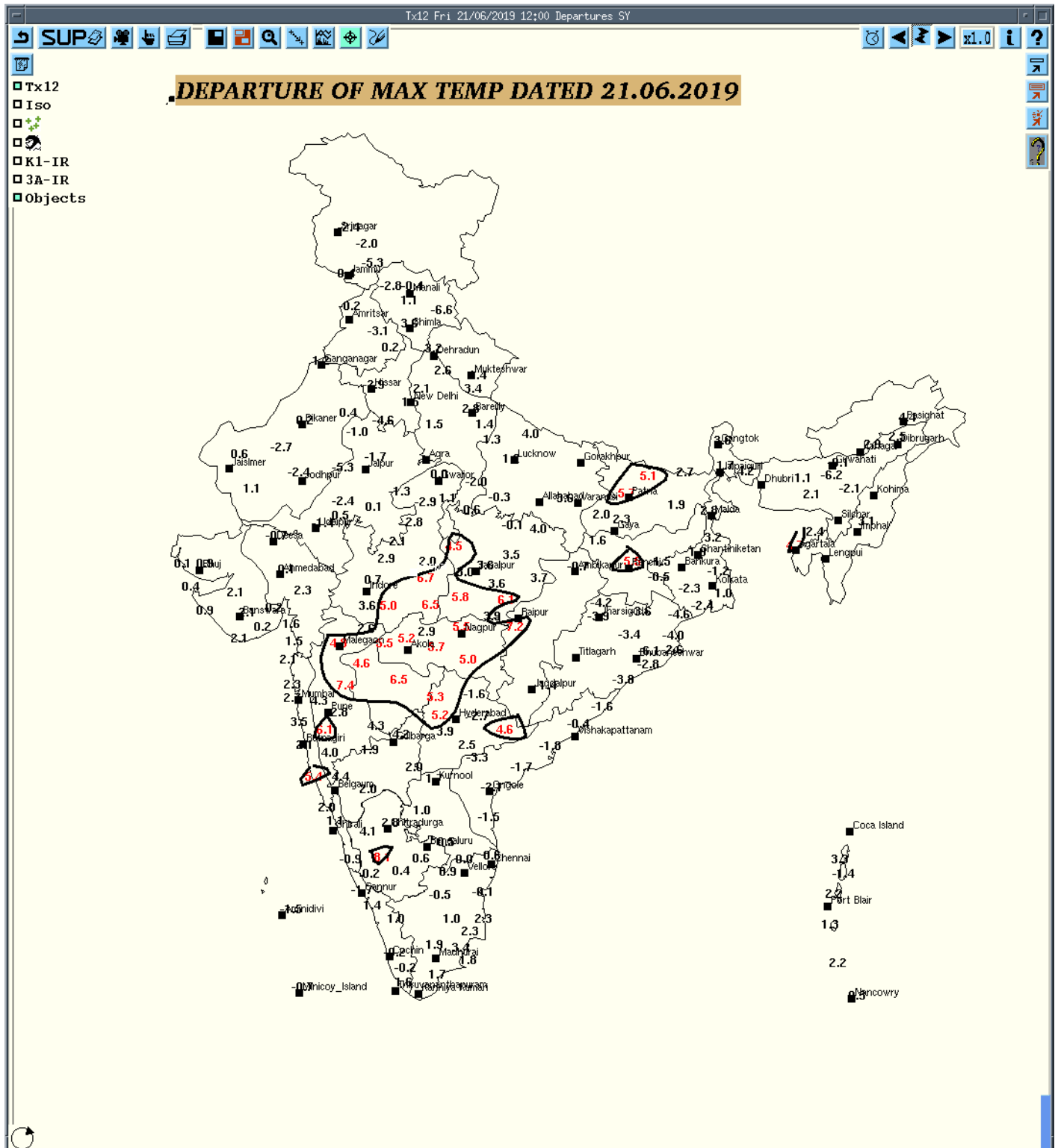
Heat wave conditions:- NIL

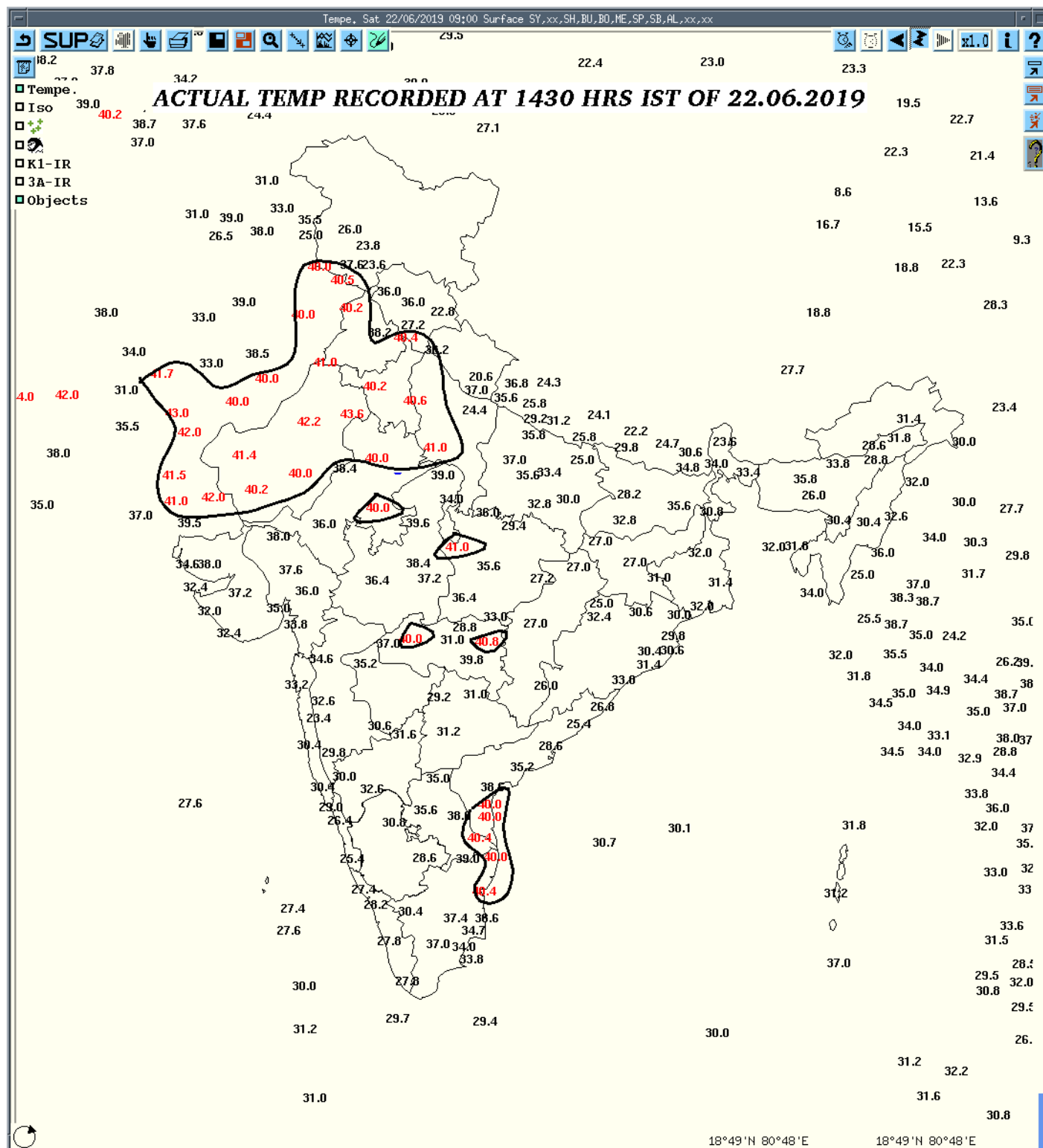
26/06/2019

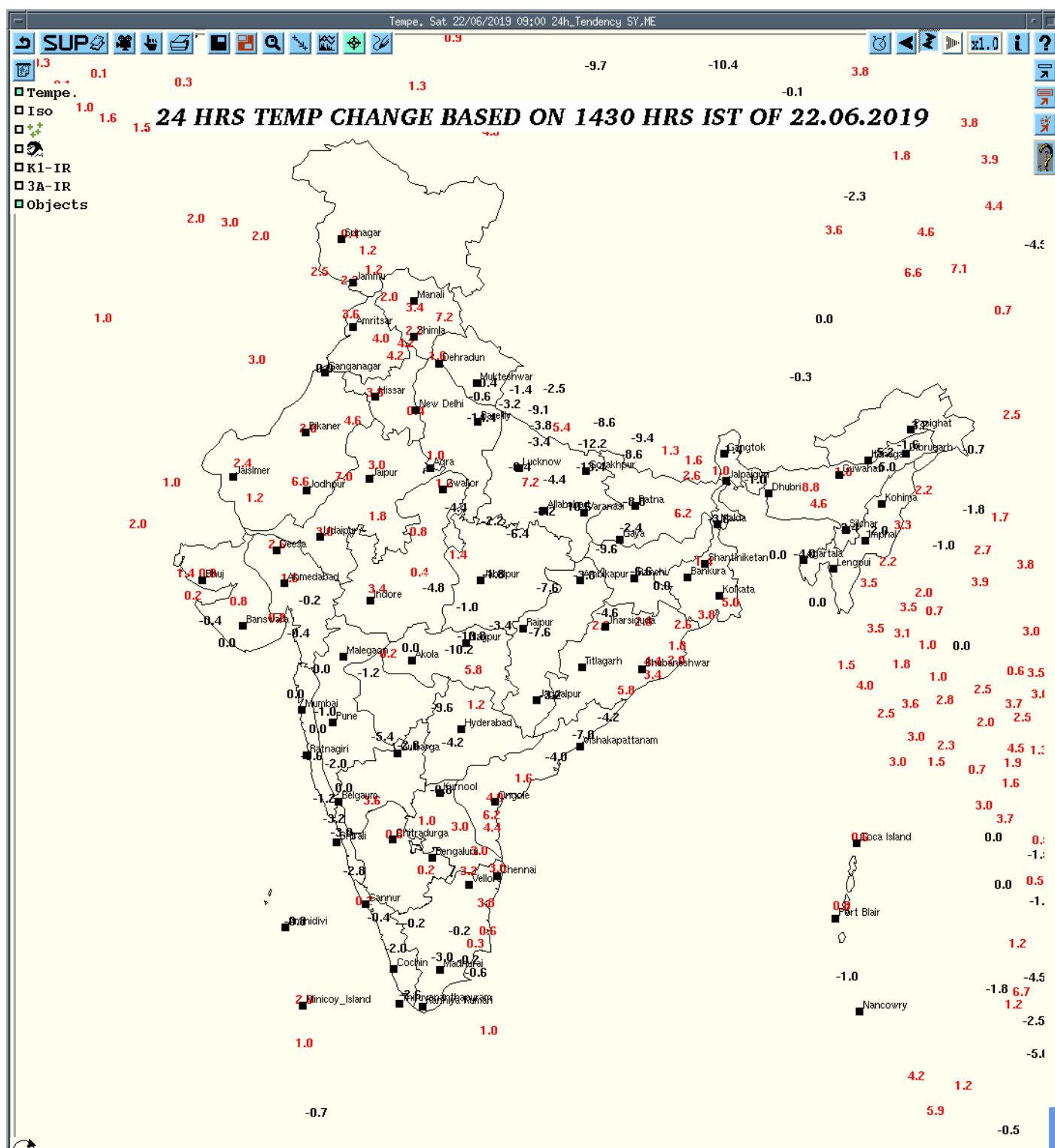


Heat wave conditions:- NIL









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 19th June, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 18 June, 2019 to 0830 hrs IST 19 June, 2019)

Heat Wave:

heat Wave Conditions were observed at some parts over Coastal Andhra Pradesh and Vidarbha and in isolated places over Gangetic West Bengal, Bihar, Telangana, Tamilnadu, Puducherry & Karaikal and Jharkhand.

(Annexure 1 & 2).

Maximum Temperature

Maximum temperature departures as on 18-06-2019: Maximum temperatures were **markedly above normal (5.1°C or more)** at isolated places over Gangetic West Bengal, Odisha, Coastal Andhra Pradesh, Vidarbha and Telangana; **appreciably above normal (3.1°C to 5.0°C)** at most places over Rayalaseema and Marathawada; at many places over Kerala, Bihar, Jharkhand and Nagaland, Manipur, Mizoram & Tripura; at a few places over South Interior Karnataka and Tamilnadu, Puducherry & Karaikal and at isolated places over Konkan & Goa and Madhya Maharashtra; **above normal (1.6°C to 3.0°C)** at many places over Coastal Karnataka, Chhattisgarh and Assam & Meghalaya and at isolated places over Madhya Pradesh and East Uttar Pradesh. **Yesterday, the highest maximum temperature of 42.8°C was recorded at Bapatla (Coastal Andhra Pradesh).**

Temperatures Recorded at 1430 Hours IST of Today, the 19th June, 2019

- **Machilipatnam(Tamilnadu)** recorded **the maximum temperature of 43.0°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-5°C** in most Parts over Punjab, Haryana, Chandigarh & Delhi, and at some parts over Himachal Pradesh and Uttar Pradesh and one or two pockets of West Rajasthan; **by 1-3°C** in most Parts over East Rajasthan and Gujarat state; many parts over Assam & Meghalaya and Sub Himalayan West Bengal & Sikkim; some parts over Odisha and Gangetic West Bengal and in one or two pockets of Coastal Andhra Pradesh, Chhattisgarh and Konkan & Goa. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

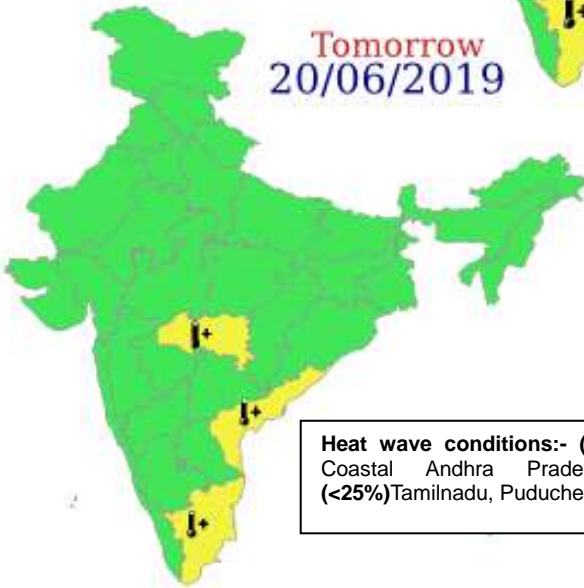
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
19/06/2019



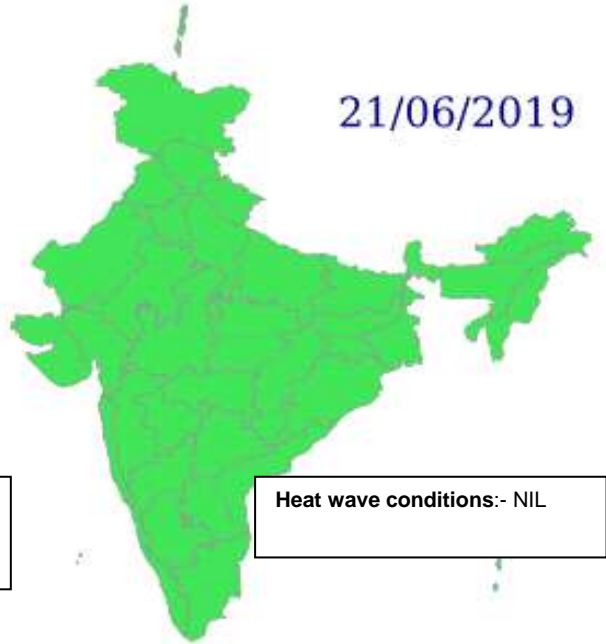
Heat wave conditions:- (<50%) Vidarbha, Coastal Andhra Pradesh & Yanam (**<25%**) Bihar, Gangetic West Bengal, Telangana, Rayalaseema, Tamil Nadu, Puducherry & Karaikal.

Tomorrow
20/06/2019



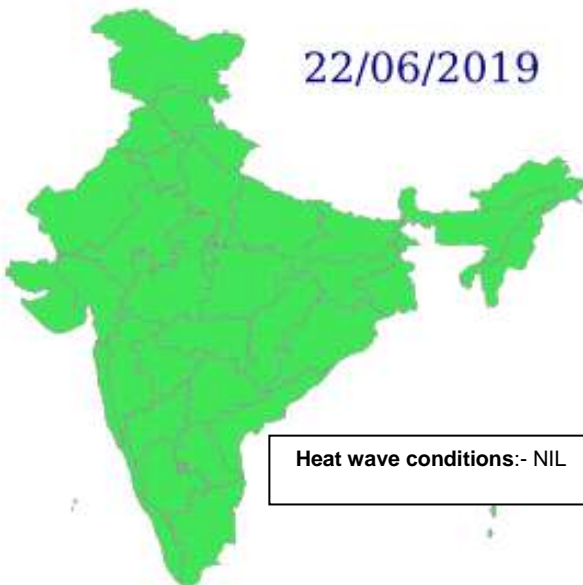
Heat wave conditions:- (<50%) Vidarbha, Coastal Andhra Pradesh & Yanam (**<25%**) Tamil Nadu, Puducherry & Karaikal.

21/06/2019



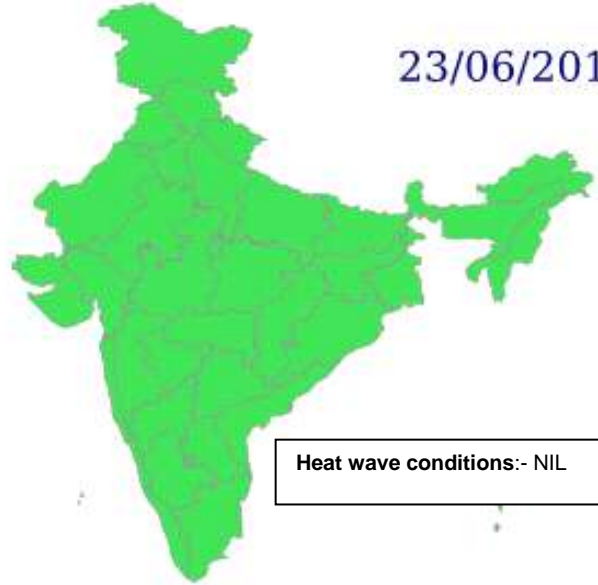
Heat wave conditions:- NIL

22/06/2019



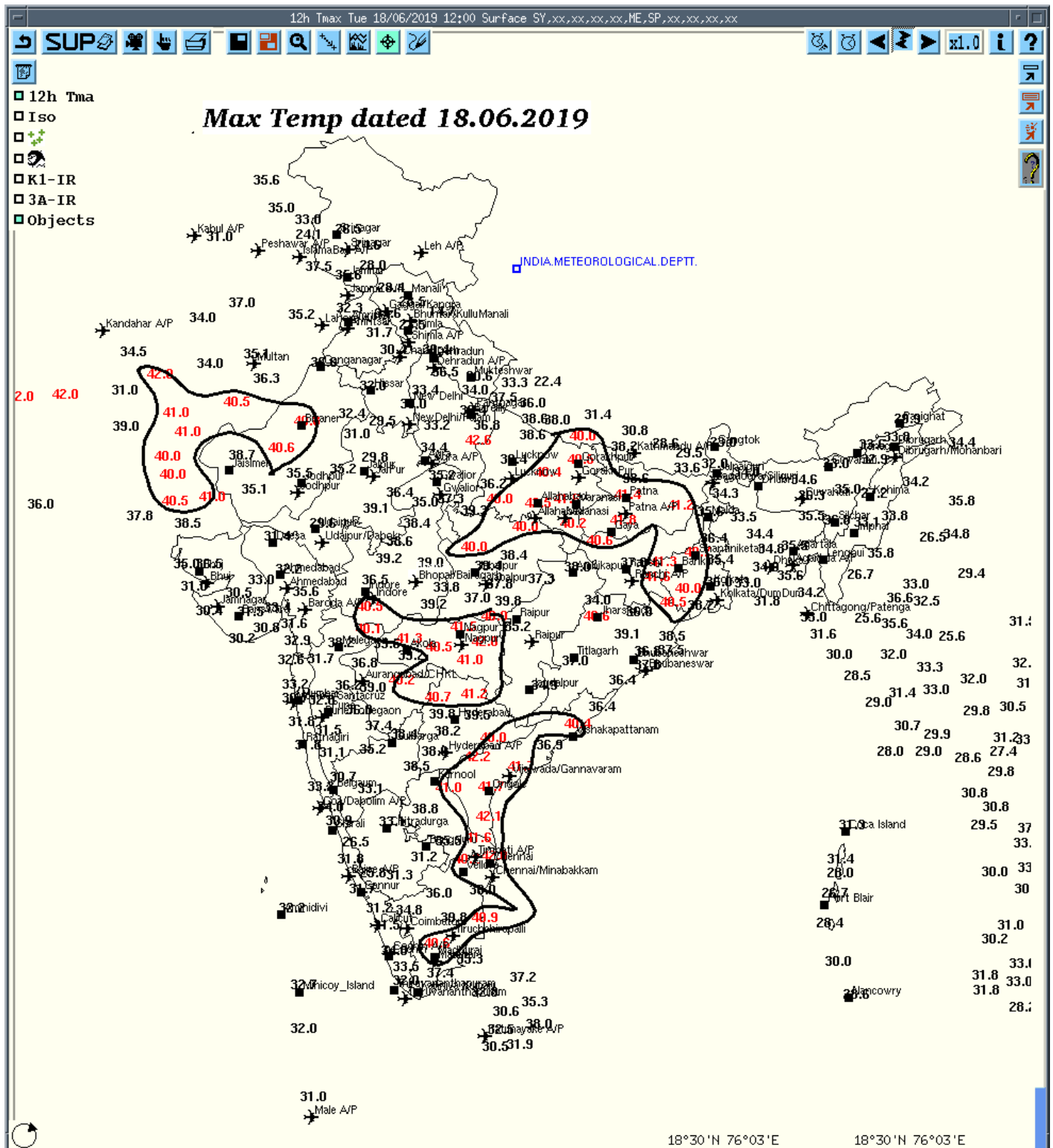
Heat wave conditions:- NIL

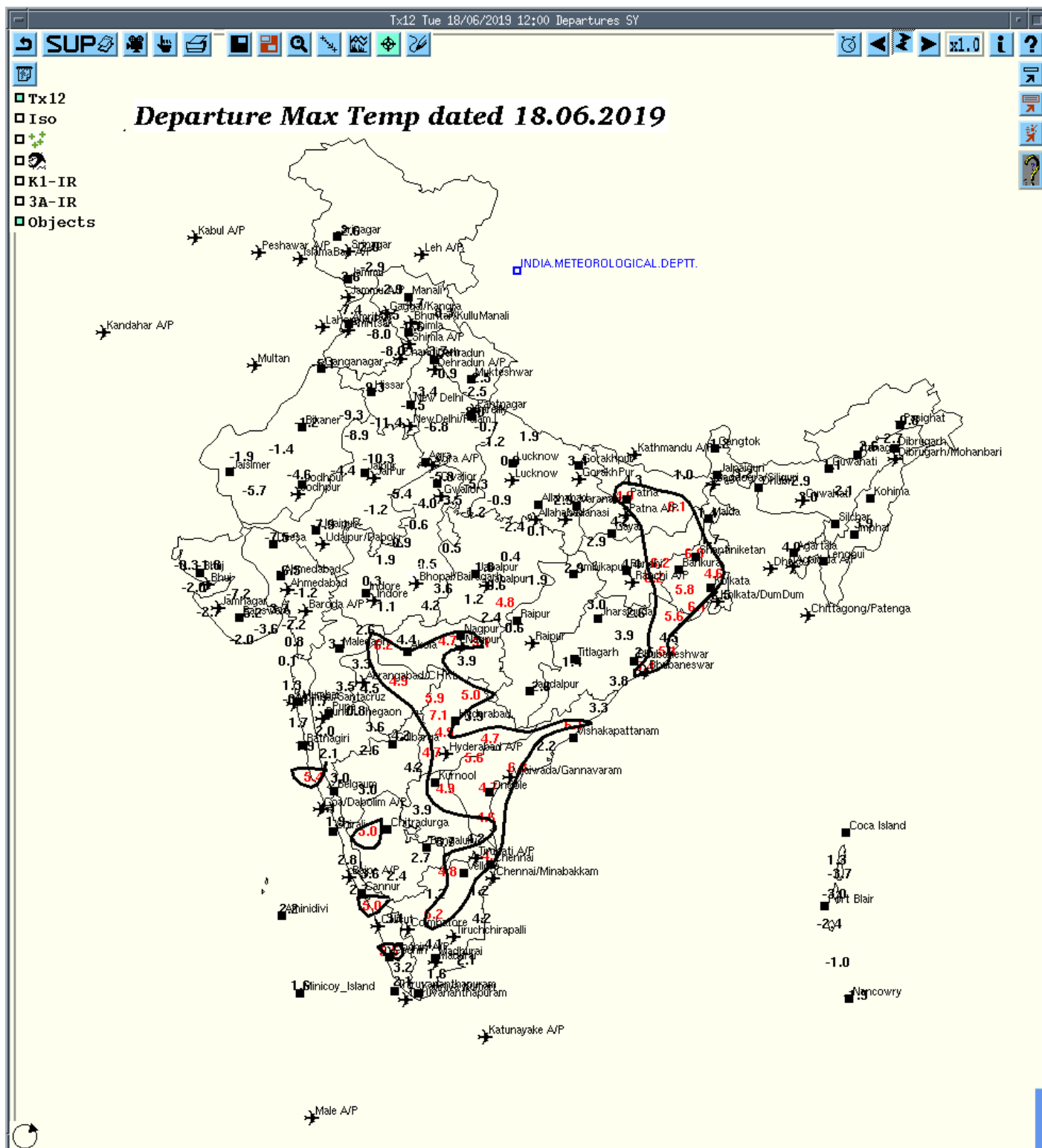
23/06/2019



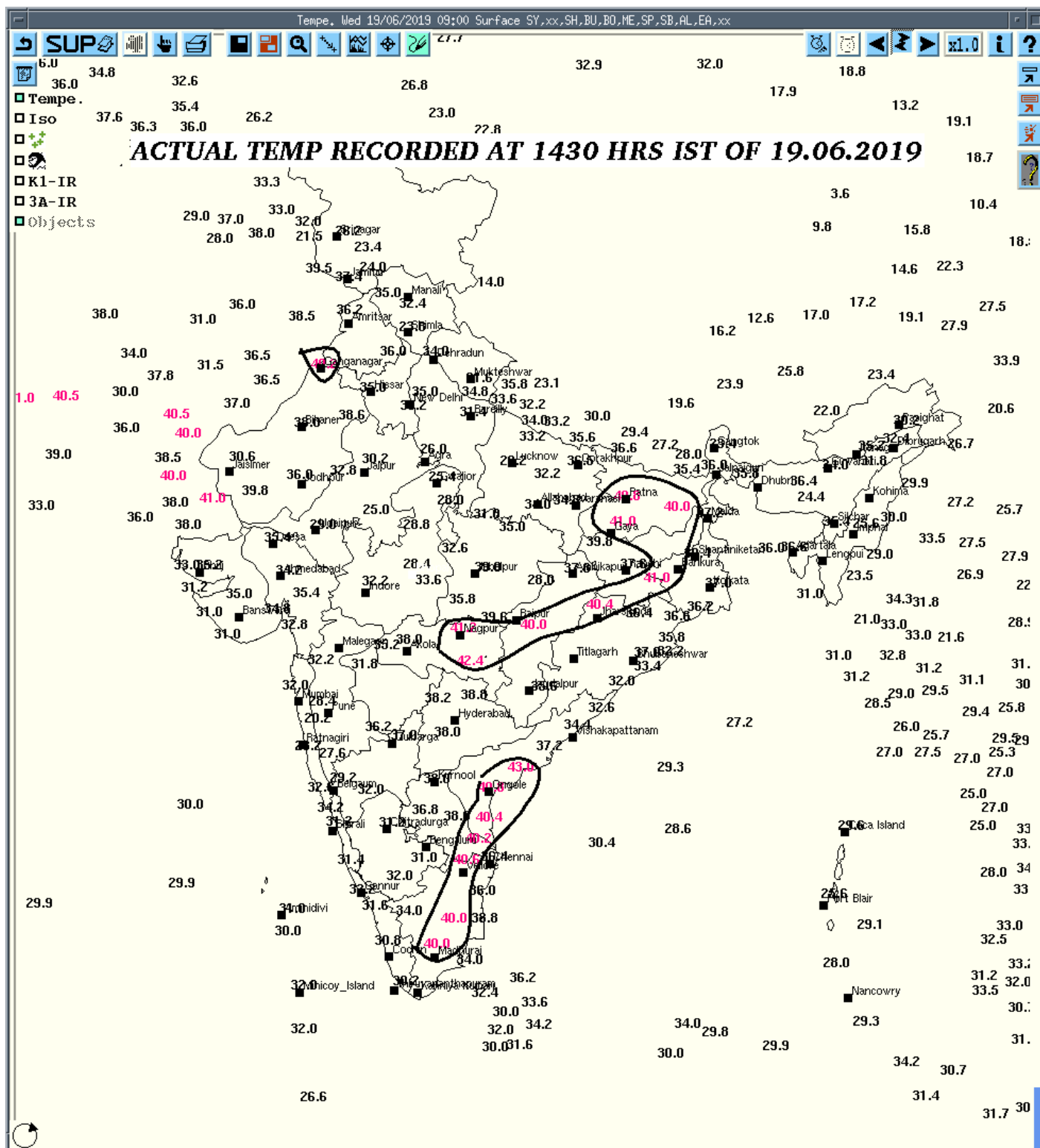
Heat wave conditions:- NIL

Annexure 1

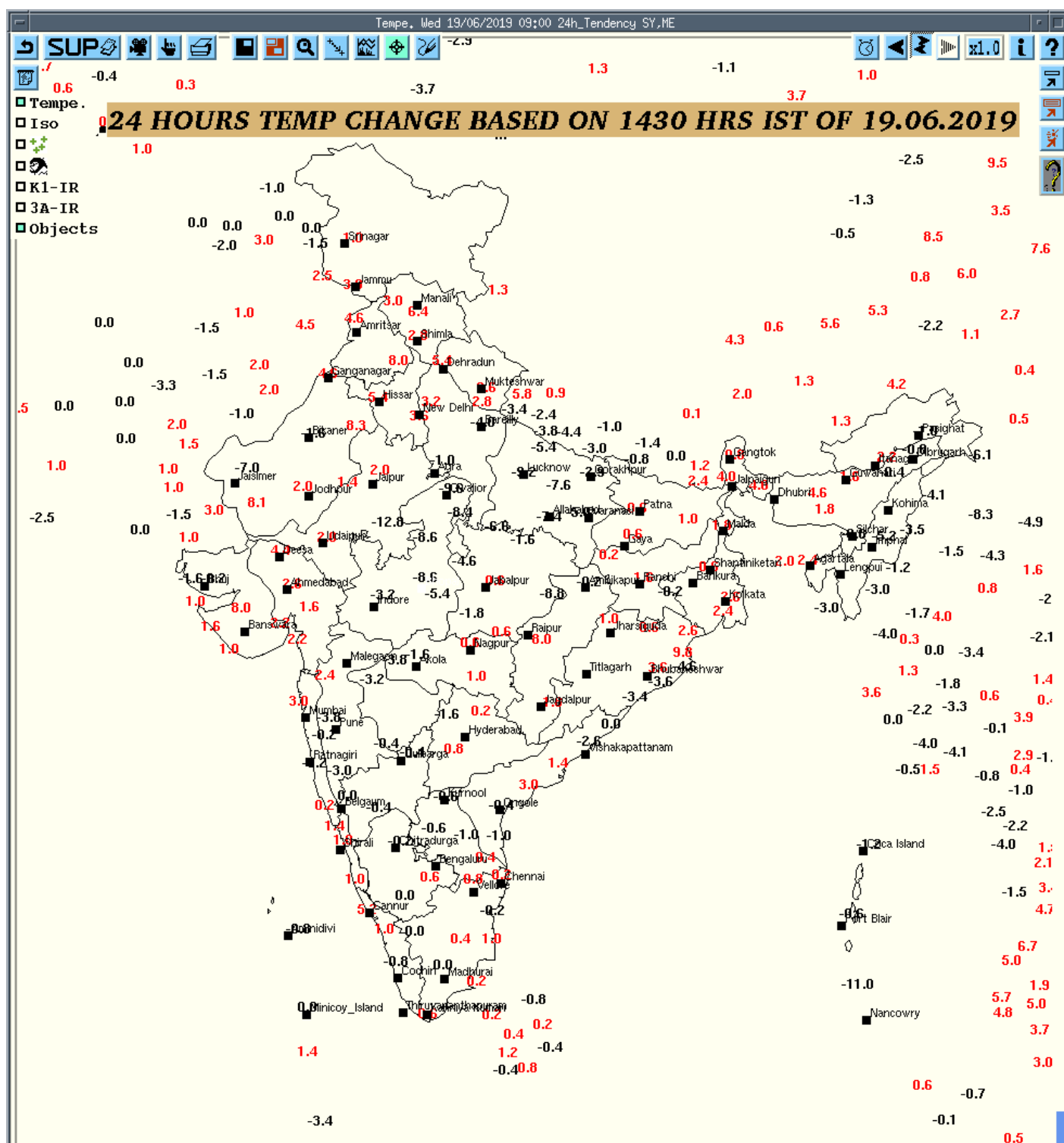




Annexure 3



Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 24th June, 2019
Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 23 June, 2019 to 0830 hrs IST 24 June, 2019)

Heat Wave:

No heat wave conditions observed. (Annexure 1 & 2).

Maximum Temperature:

Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at many places over Himachal Pradesh and Sub-Himalayan West Bengal & Sikkim; at a few places over West Rajasthan, West Madhya Pradesh, Bihar, Gangetic West Bengal, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura; at isolated places over Haryana, Chandigarh & Delhi, Saurashtra & Kutch, East Madhya Pradesh and Vidarbha; **above normal (1.6°C to 3.0°C)** at many places over Gujarat region, East Rajasthan and Madhya Maharashtra; at a few places over Uttarakhand, Punjab, Konkan & Goa, North Interior Karnataka, Tamil Nadu, Puducherry & Karaikal and Andaman & Nicobar Islands. **Yesterday, the highest maximum temperature of 45.2°C** was recorded at **Churu (West Rajasthan)**.

Temperatures Recorded at 1430 Hours IST of Today, the 24th June, 2019

- **Churu(West Rajasthan)** recorded the maximum temperature of 41.8°C (Annexure 3).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** in most parts over East Uttar Pradesh, Jharkhand, Odisha and Chhattisgarh; in many Parts over Gangetic West Bengal, Coastal Andhra Pradesh and Kerala; in few parts over Jammu & Kashmir, Bihar, East Madhya Pradesh, Telangana and Tamilnadu & Puducherry and in one or two pockets of West Madhya Pradesh, Sub Himalayan West Bengal & Sikkim, Vidarbha, Karnataka, Tripura and Mizoram.
(Annexure 4).

Heat Wave Warnings for Next 5 Days (on next page)

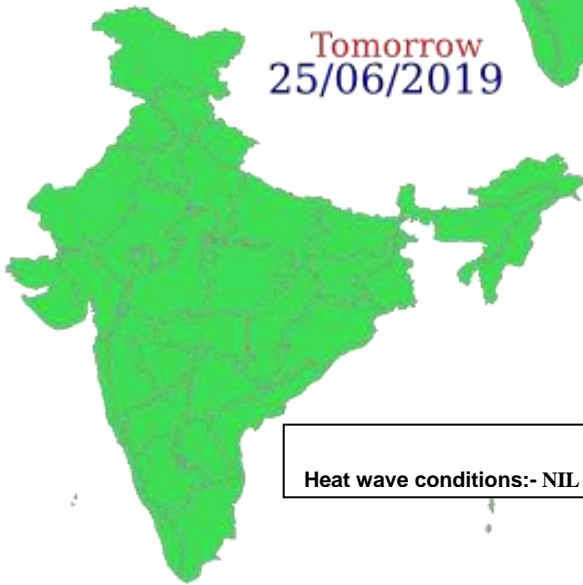
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
24/06/2019



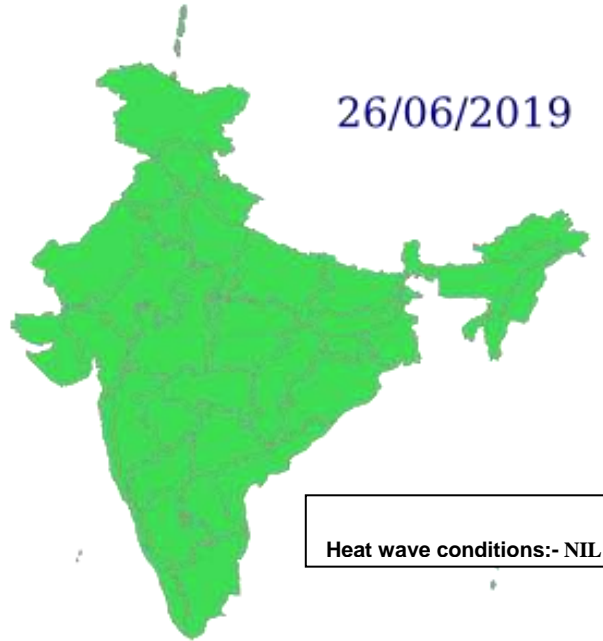
Heat wave conditions:- NIL

Tomorrow
25/06/2019



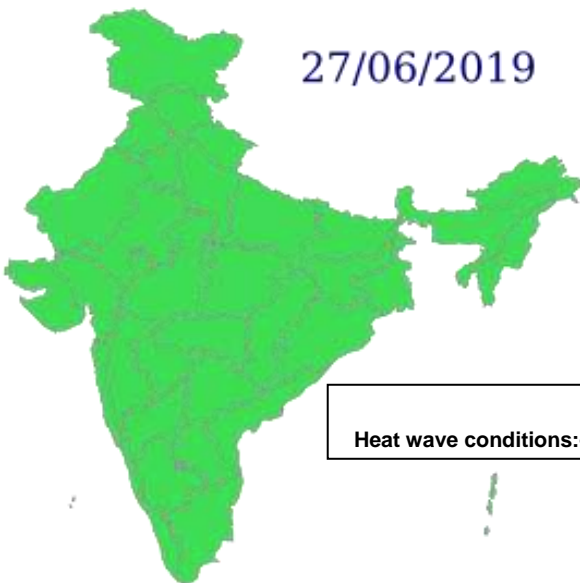
Heat wave conditions:- NIL

26/06/2019



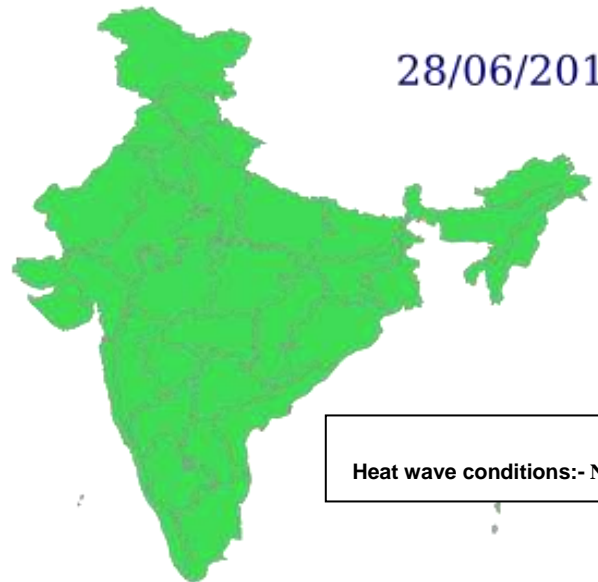
Heat wave conditions:- NIL

27/06/2019

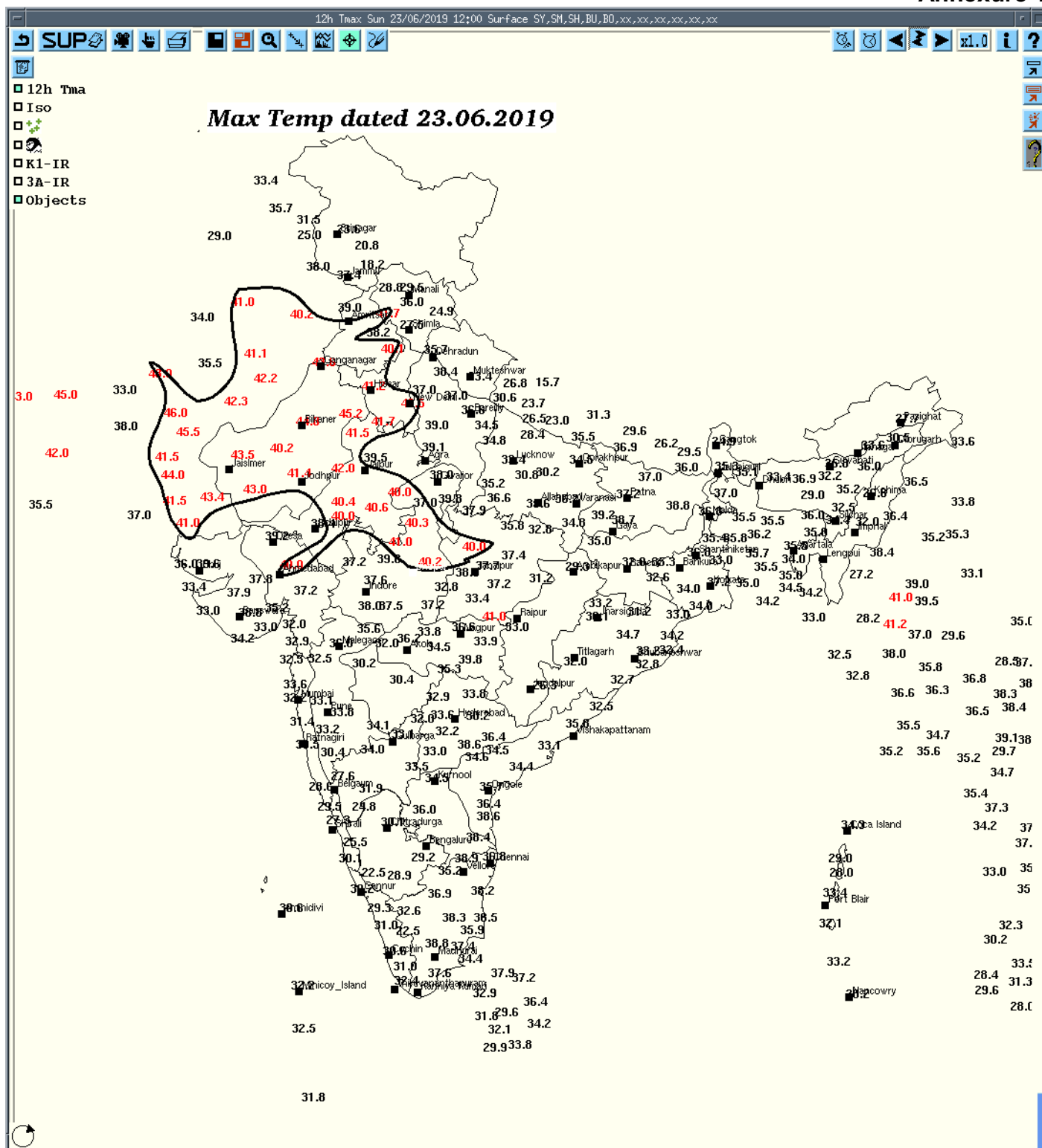


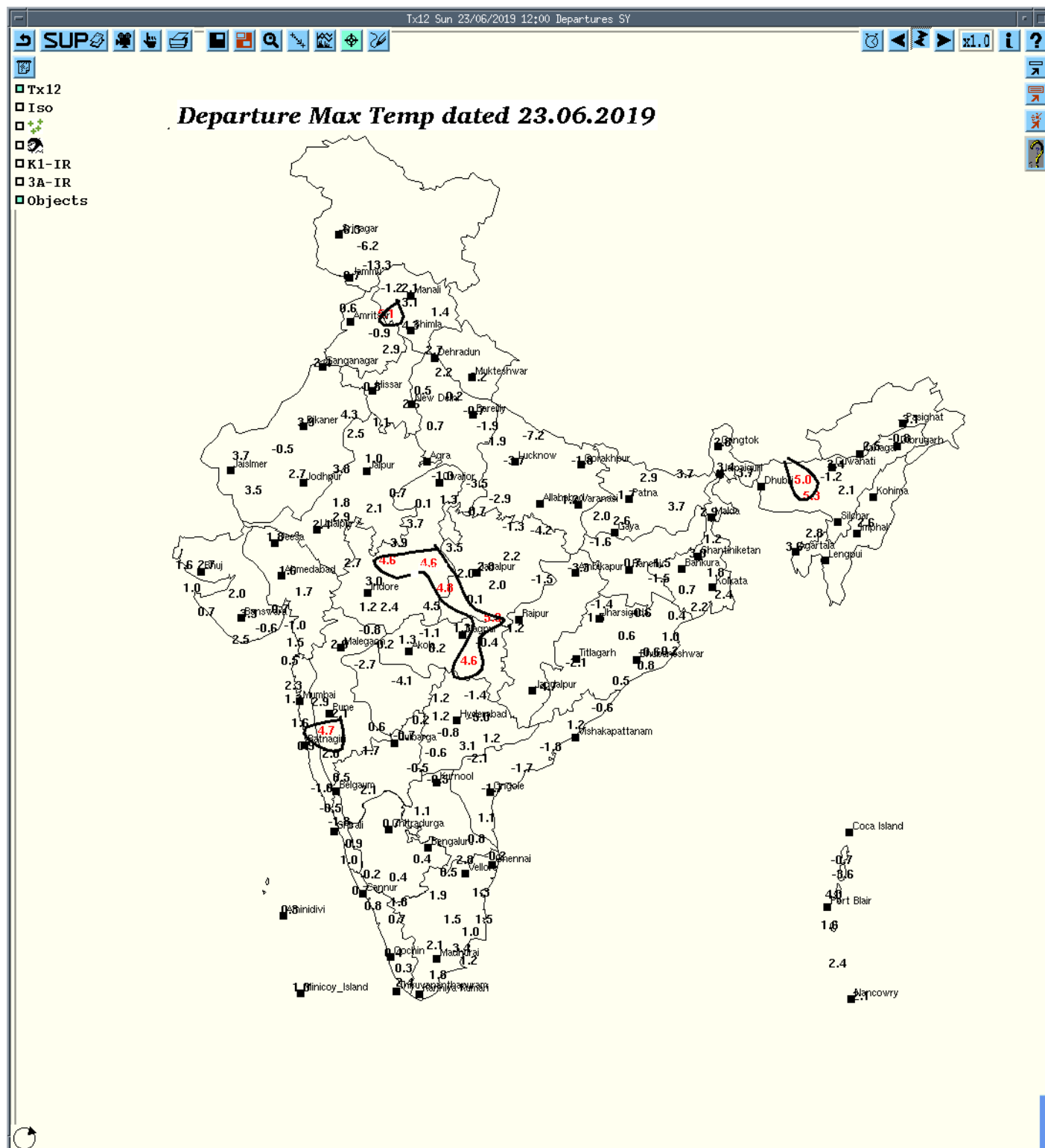
Heat wave conditions:- NIL

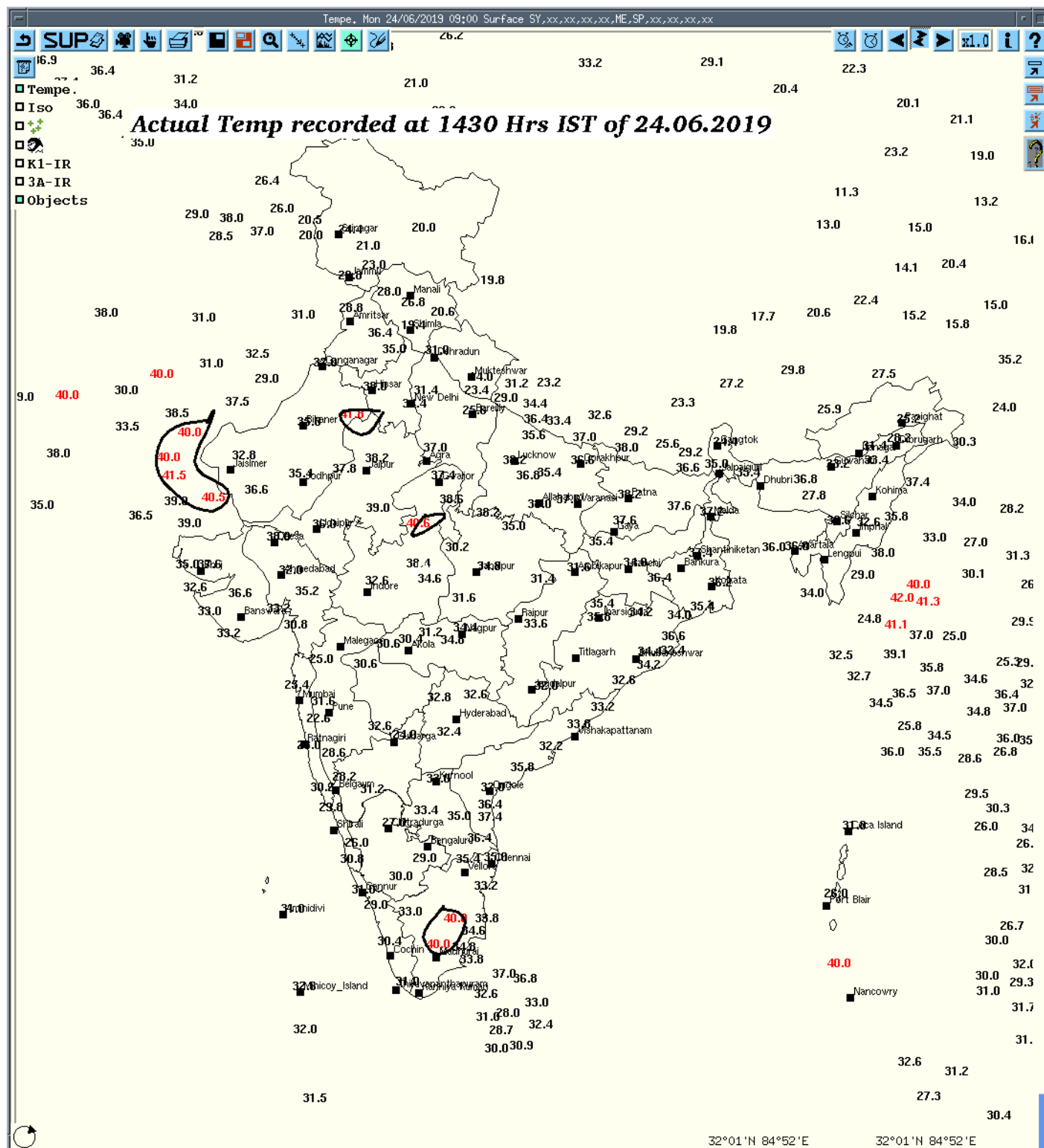
28/06/2019

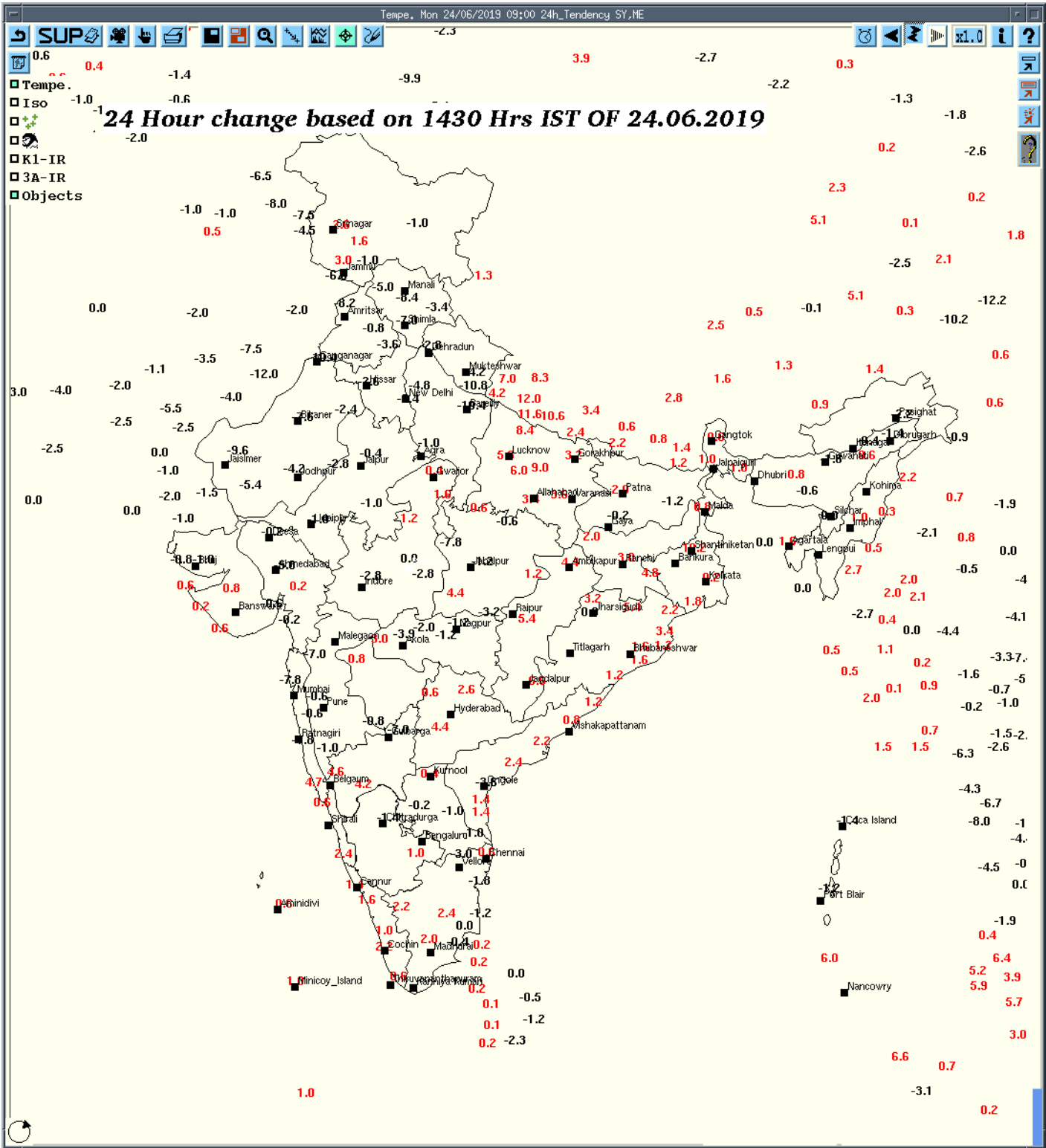


Heat wave conditions:- NIL









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 23rd June, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 22 June, 2019 to 0830 hrs IST 23 June, 2019)

Heat Wave:

Yesterday, heat wave conditions were observed in isolated pockets over Vidarbha. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at isolated places over West Madhya Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at most places over Vidarbha; at many places over Himachal Pradesh and Madhya Maharashtra; at a few places over Marathwada and at isolated places over Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh, Assam & Meghalaya, East Madhya Pradesh, North Interior Karnataka and Tamilnadu, Puducherry & Karaikal; **above normal (1.6°C to 3.0°C)** at most places over Gujarat region, Rajasthan and Konkan & Goa; at many places over Sub-Himalayan West Bengal & Sikkim, Saurashtra & Kutch and Rayalseema; at a few places over Andaman & Nicobar Islands, Arunachal Pradesh and Nagaland, Manipur, Mizoram & Tripura and at isolated places over Coastal Andhra Pradesh & Yanam and Gangetic West Bengal. **Yesterday, the highest maximum temperature of 43.8°C** was recorded at **Churu (West Rajasthan).**

Temperatures Recorded at 1430 Hours IST of Today, the 23rd June, 2019

- **Churu(West Rajasthan)** recorded the maximum temperature of **44.2°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** in most parts over Bihar and Jharkhand; in many Parts over Gangetic West Bengal, Odisha, Chhattisgarh, Assam & Meghalaya and Kerala; in few parts over West Rajasthan, East Uttar Pradesh, East Madhya Pradesh and Vidarbha and in one or two pockets of Himachal Pradesh, East Rajasthan, West Madhya Pradesh, Coastal Andhra Pradesh, Telangana and Tamilnadu & Puducherry. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

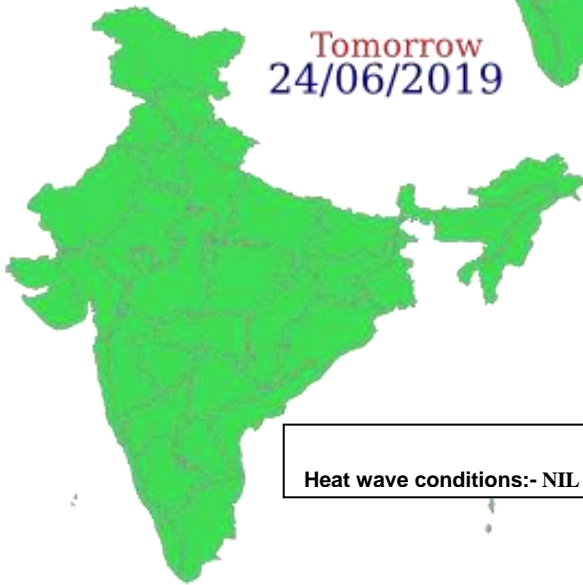
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
23/06/2019



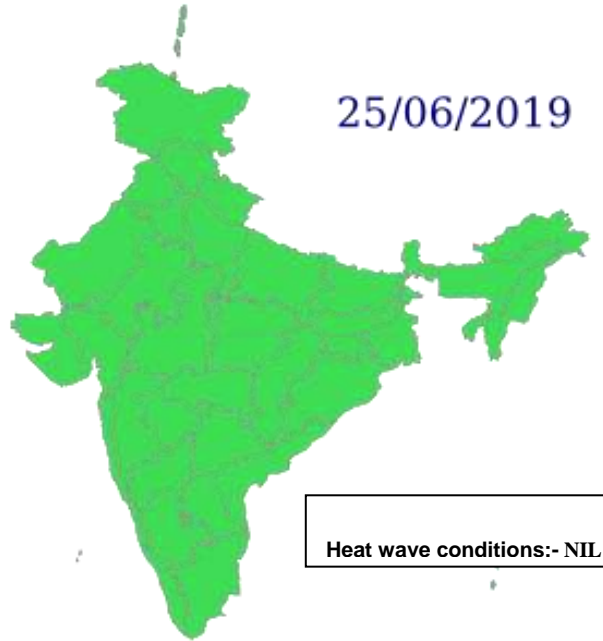
Heat wave conditions:- NIL

Tomorrow
24/06/2019



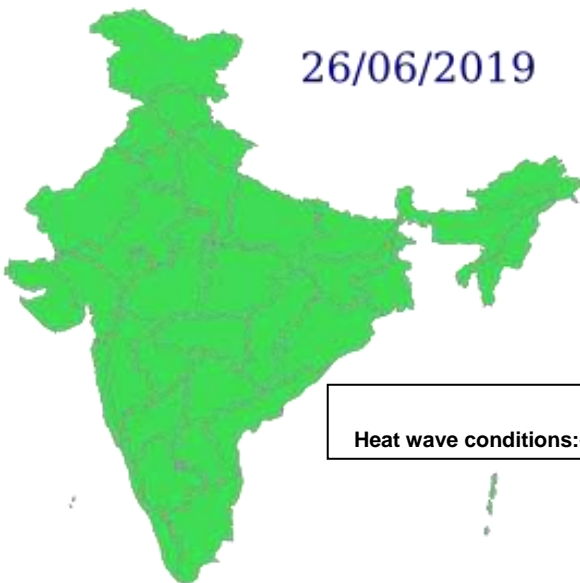
Heat wave conditions:- NIL

25/06/2019



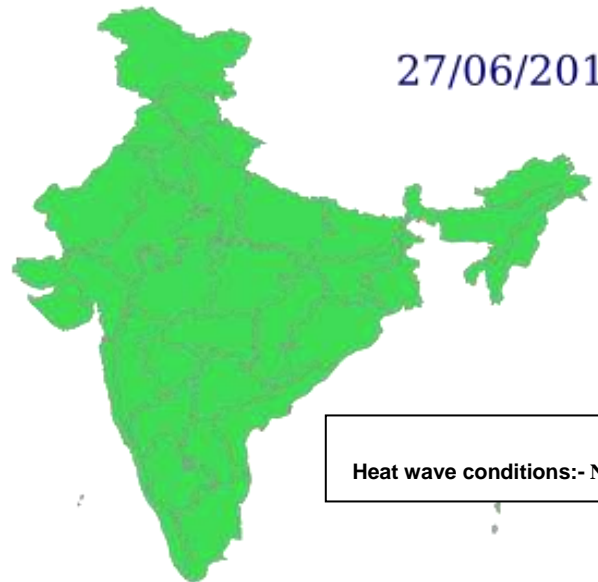
Heat wave conditions:- NIL

26/06/2019



Heat wave conditions:- NIL

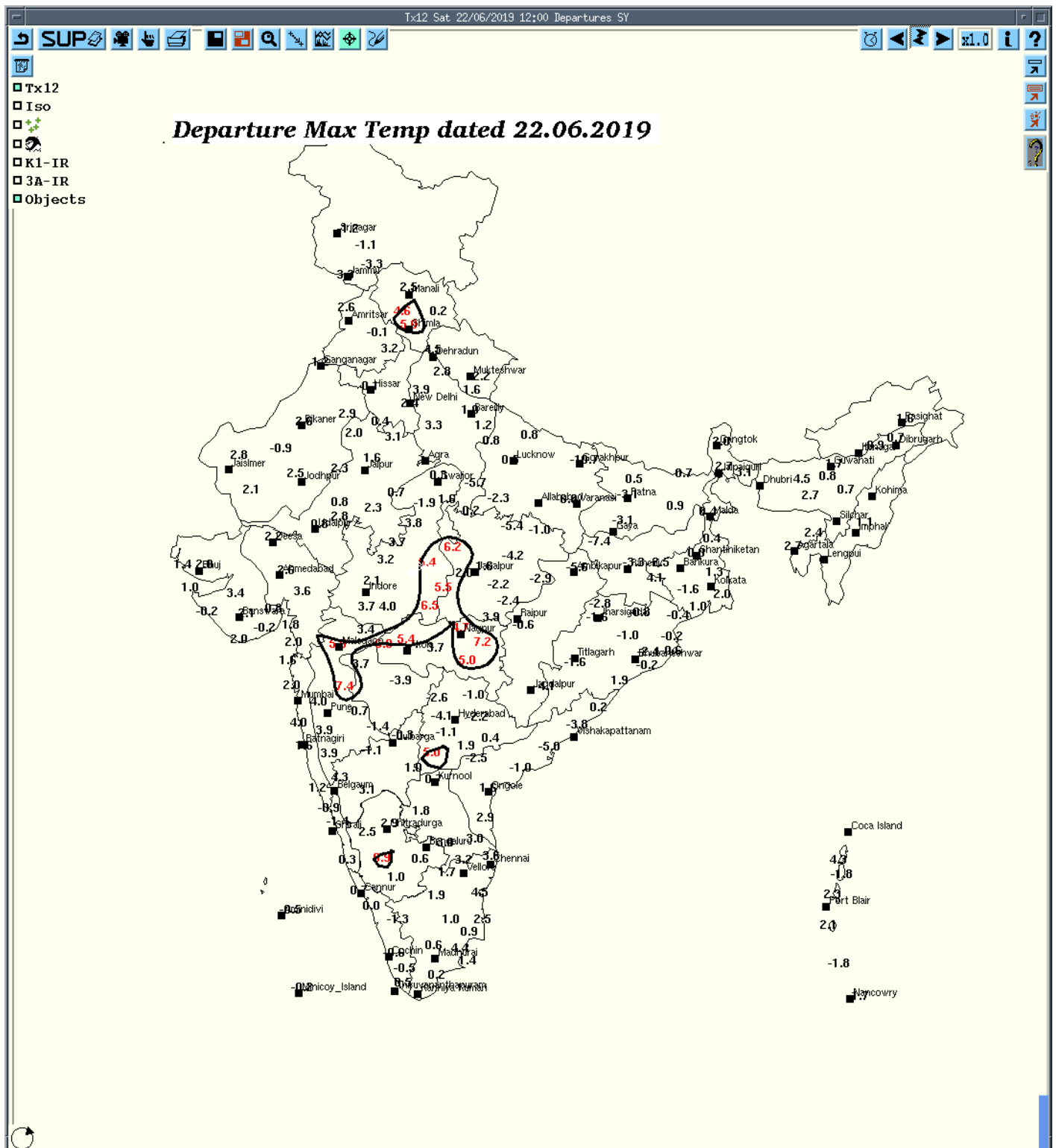
27/06/2019



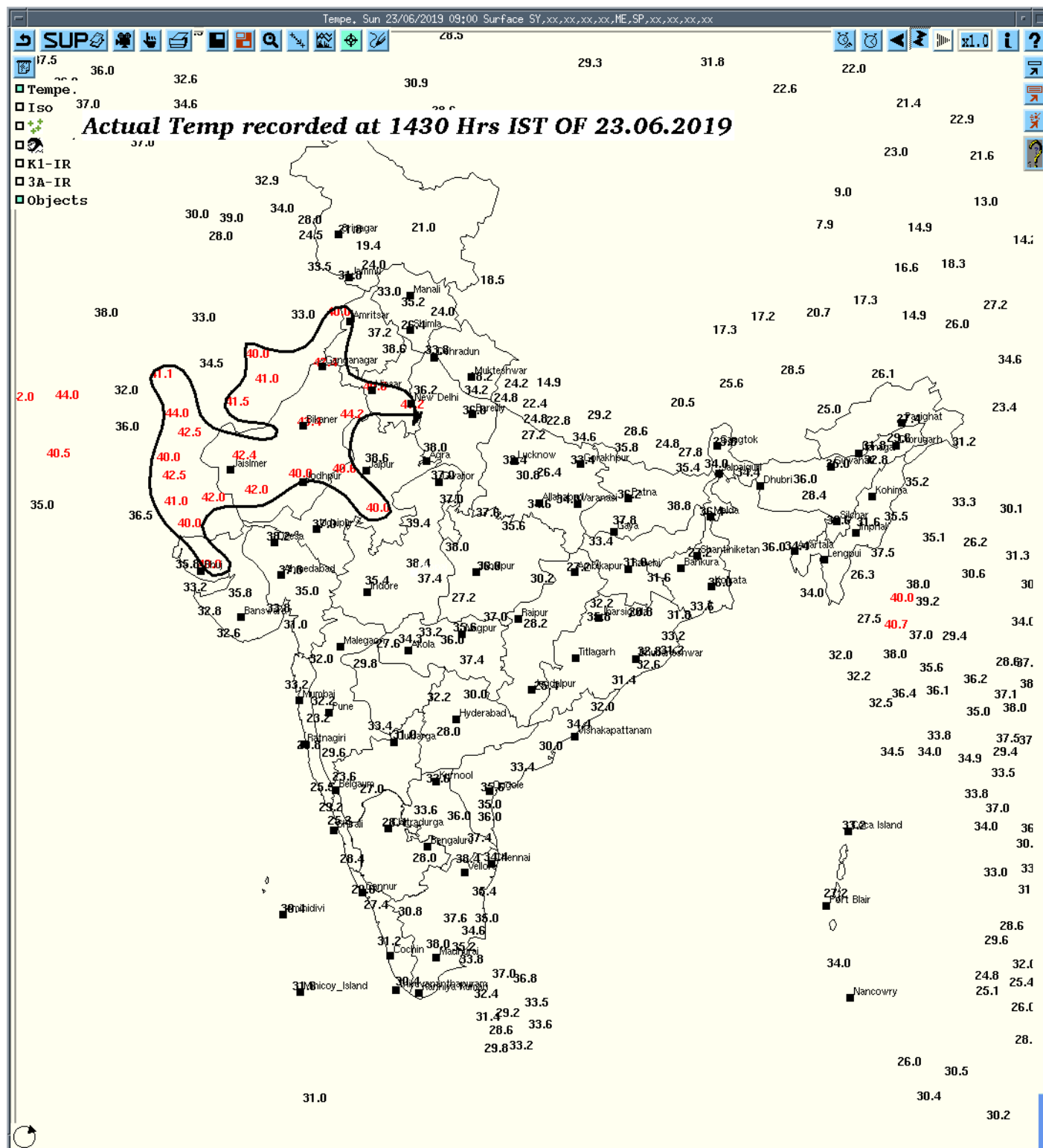
Heat wave conditions:- NIL



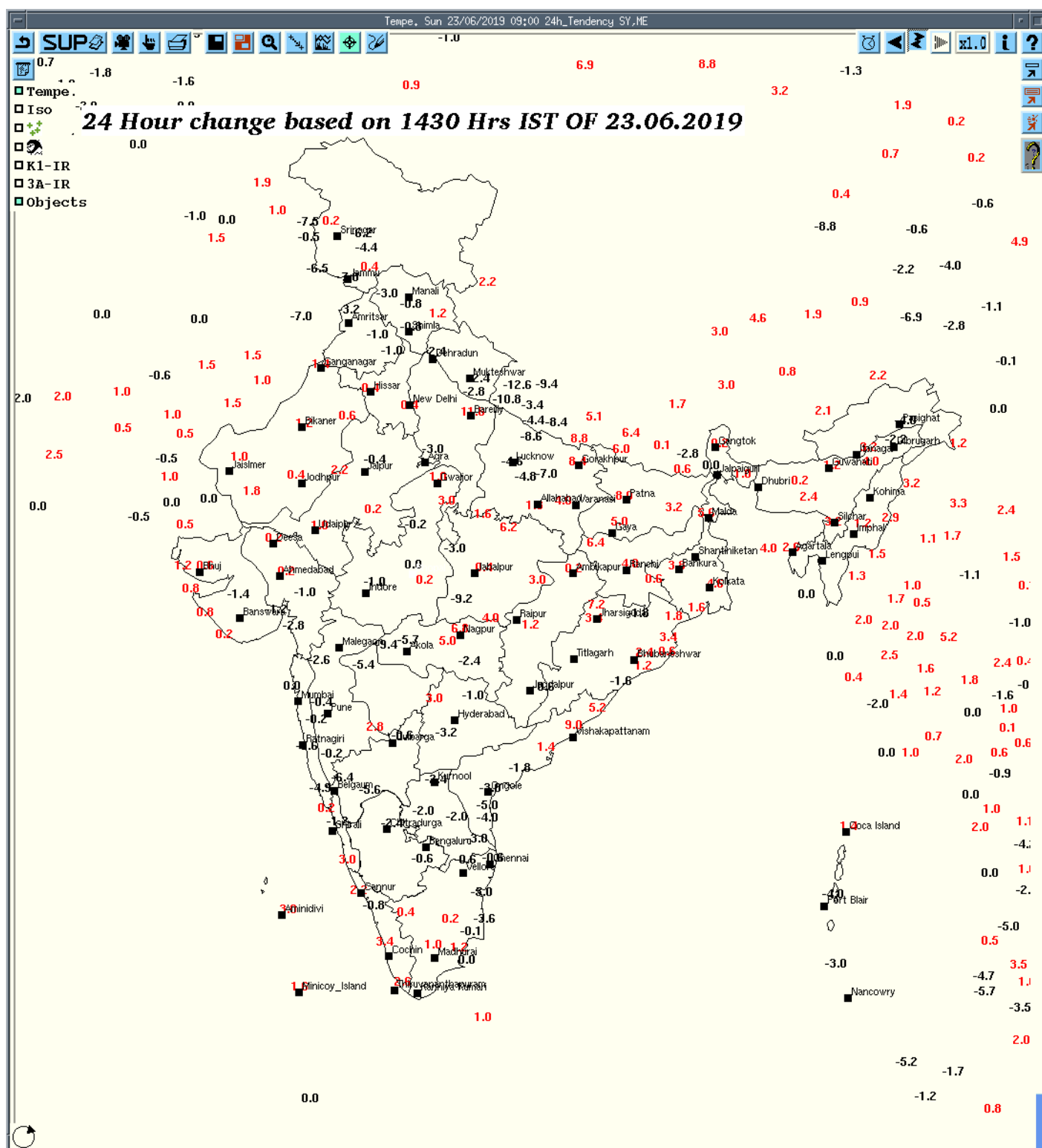
Annexure 2



Annexure 3



Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 26th June, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 25 June, 2019 to 0830 hrs IST 26 June, 2019)

Heat Wave:

No heat wave conditions observed. (Annexure 1 & 2).

Maximum Temperature:

Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over Bihar; at many places over East Madhya Pradesh; at a few places over Vidarbha and Jharkhand and at isolated places over West Madhya Pradesh and Odisha; appreciably **above normal (3.1°C to 5.0°C)** at most places over Gangetic West Bengal and at isolated places over Telangana and East Uttar Pradesh; **above normal (1.6°C to 3.0°C)** at most places over Madhya Maharashtra, Konkan & Goa, Lakshadweep and Kerala; at many places over Interior Karnataka and Tamilnadu, Puducherry & Karaikal and at isolated places over Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura and Saurashtra & Kutch. Yesterday, **the highest maximum temperature of 41.5°C** were recorded at **Rewa (East Madhya Pradesh)** and **Jodhpur (West Rajasthan)**.

Temperatures Recorded at 1430 Hours IST of Today, the 26th June, 2019

- **Bikaner(West Rajasthan)** recorded the maximum temperature of 43.2°C (Annexure 3).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** in most parts over Himachal Pradesh, Punjab, West Rajasthan and Haryana, Delhi & Chandigarh; in many Parts over Gujarat state; in few parts over Uttarakhand, East Uttar Pradesh and Telangana and in one or two pockets of East Madhya Pradesh, Vidarbha and Assam & Meghalaya. (Annexure 4).

Heat Wave Warnings for Next 5 Days (on next page)

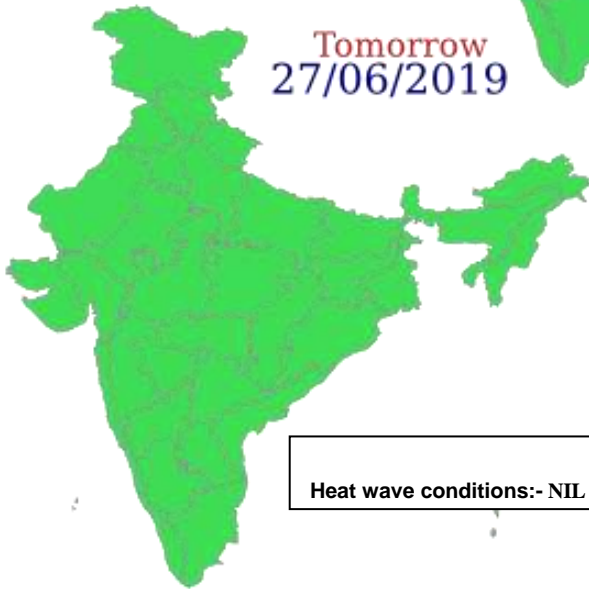
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
26/06/2019



Heat wave conditions:- NIL

Tomorrow
27/06/2019



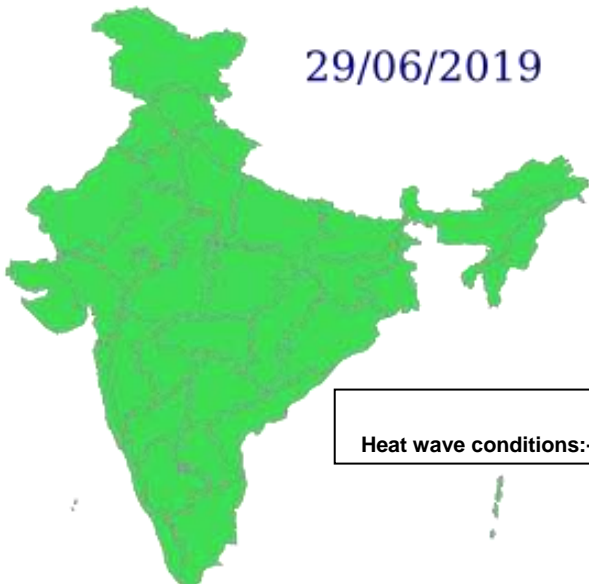
Heat wave conditions:- NIL

28/06/2019



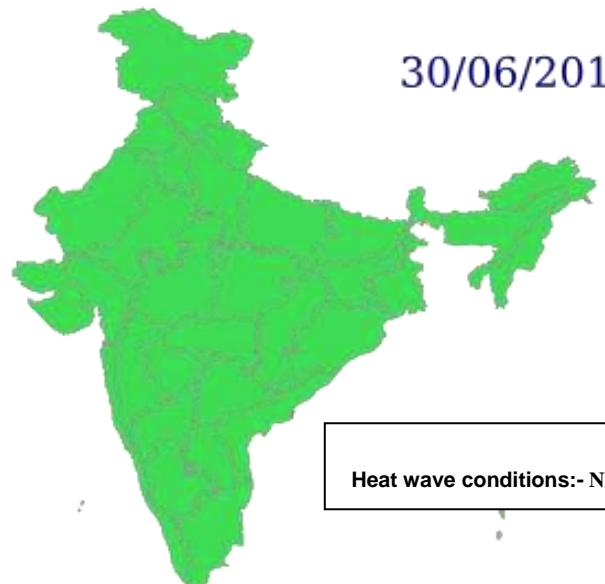
Heat wave conditions:- NIL

29/06/2019

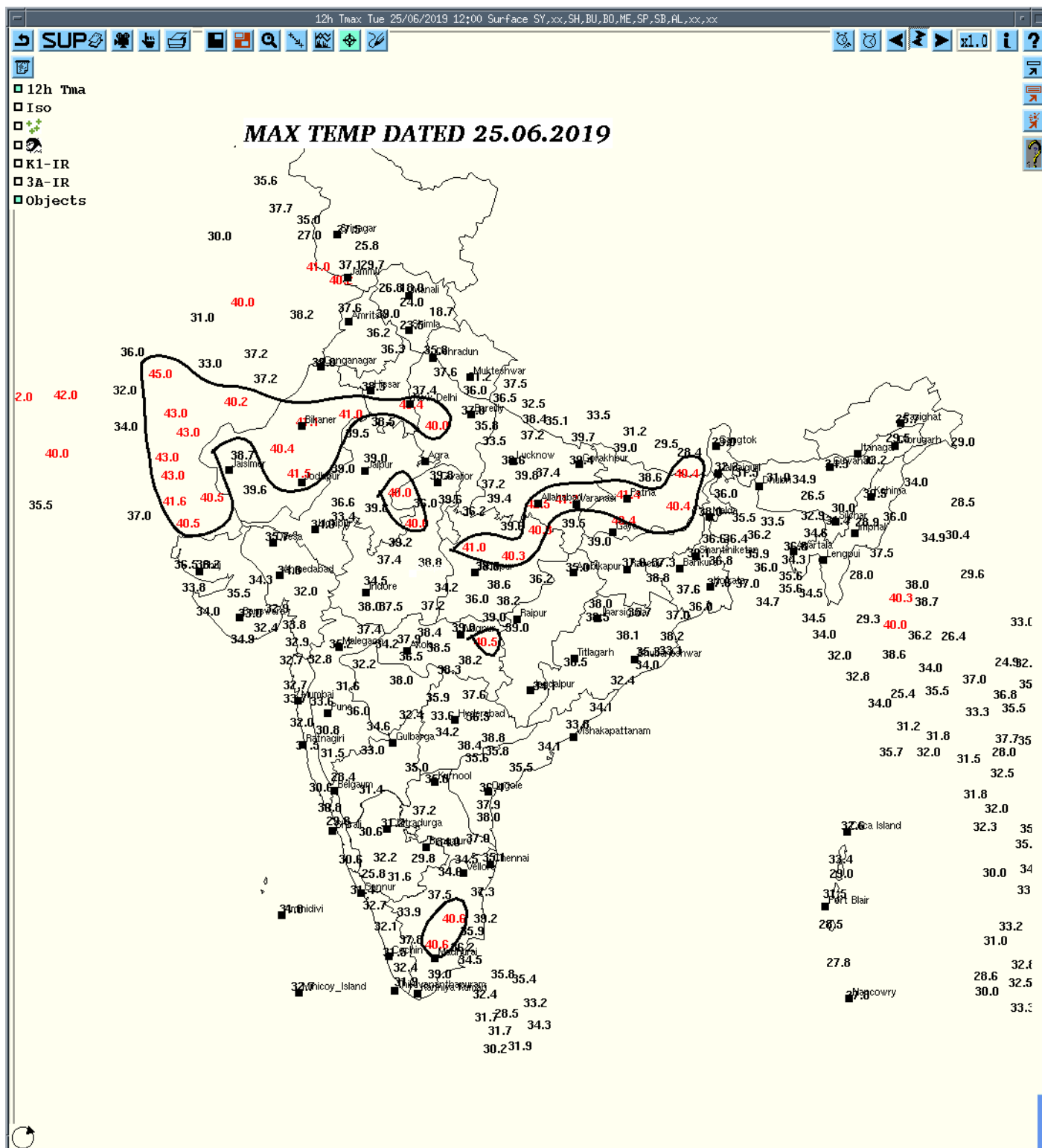


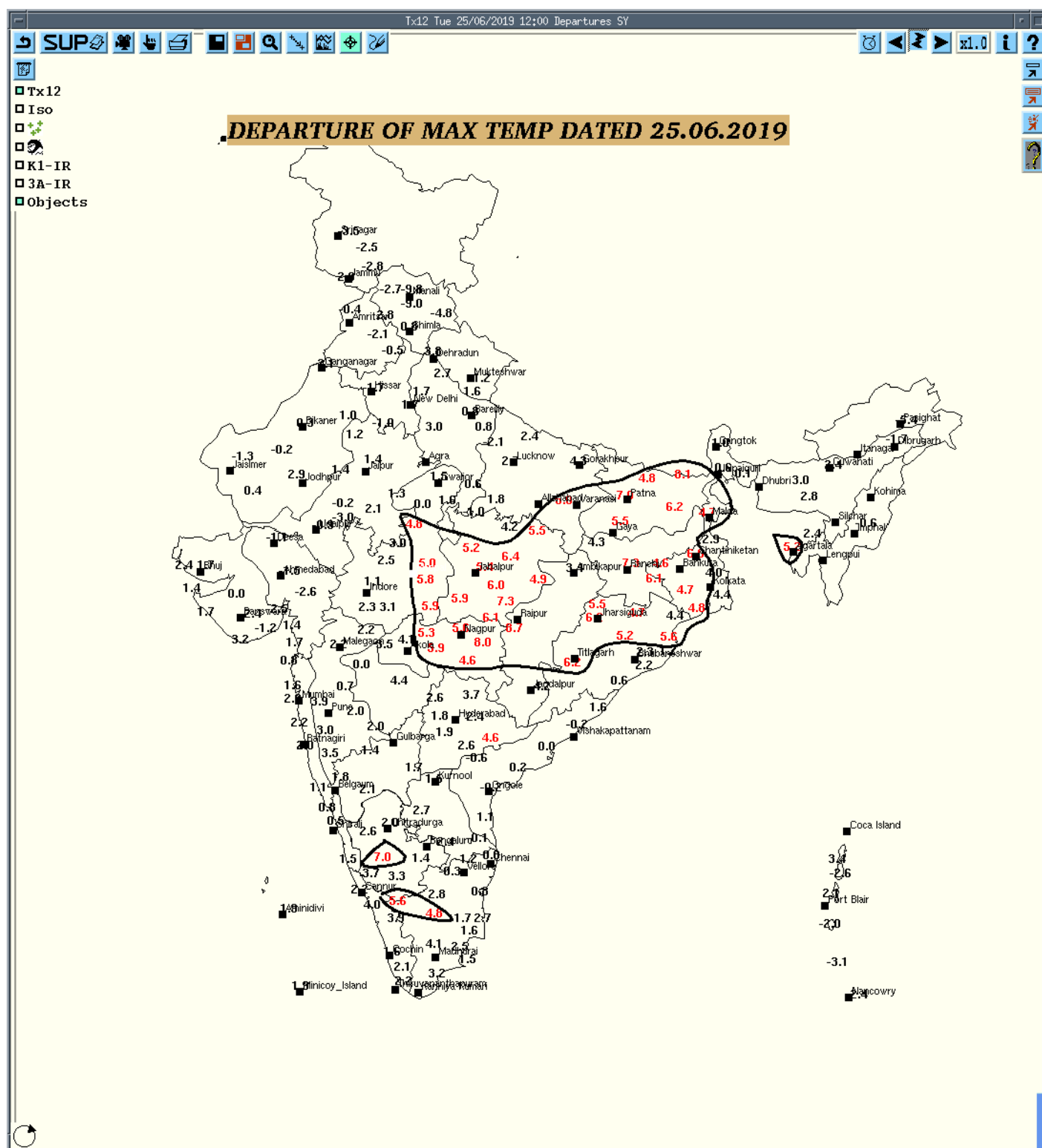
Heat wave conditions:- NIL

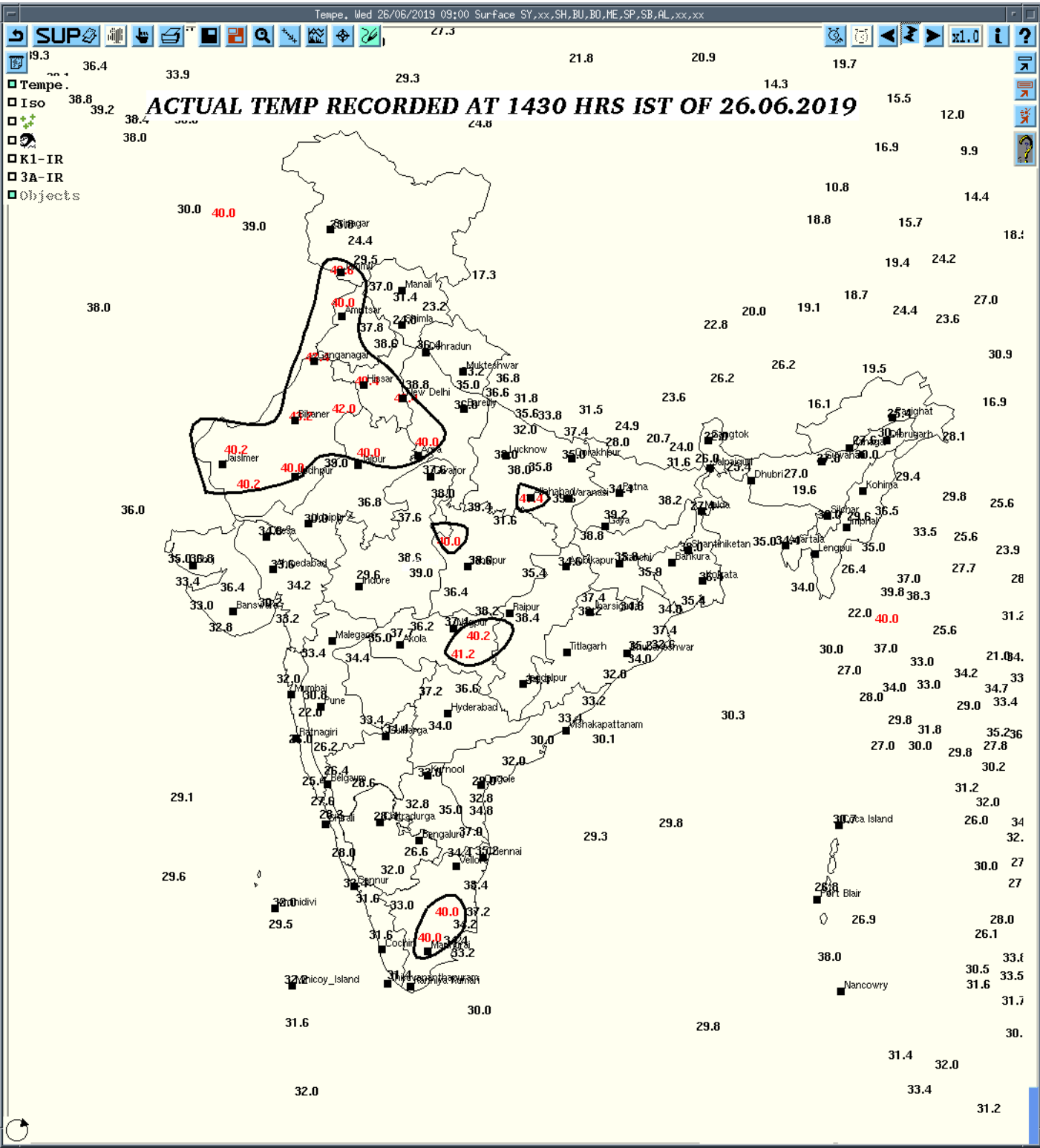
30/06/2019



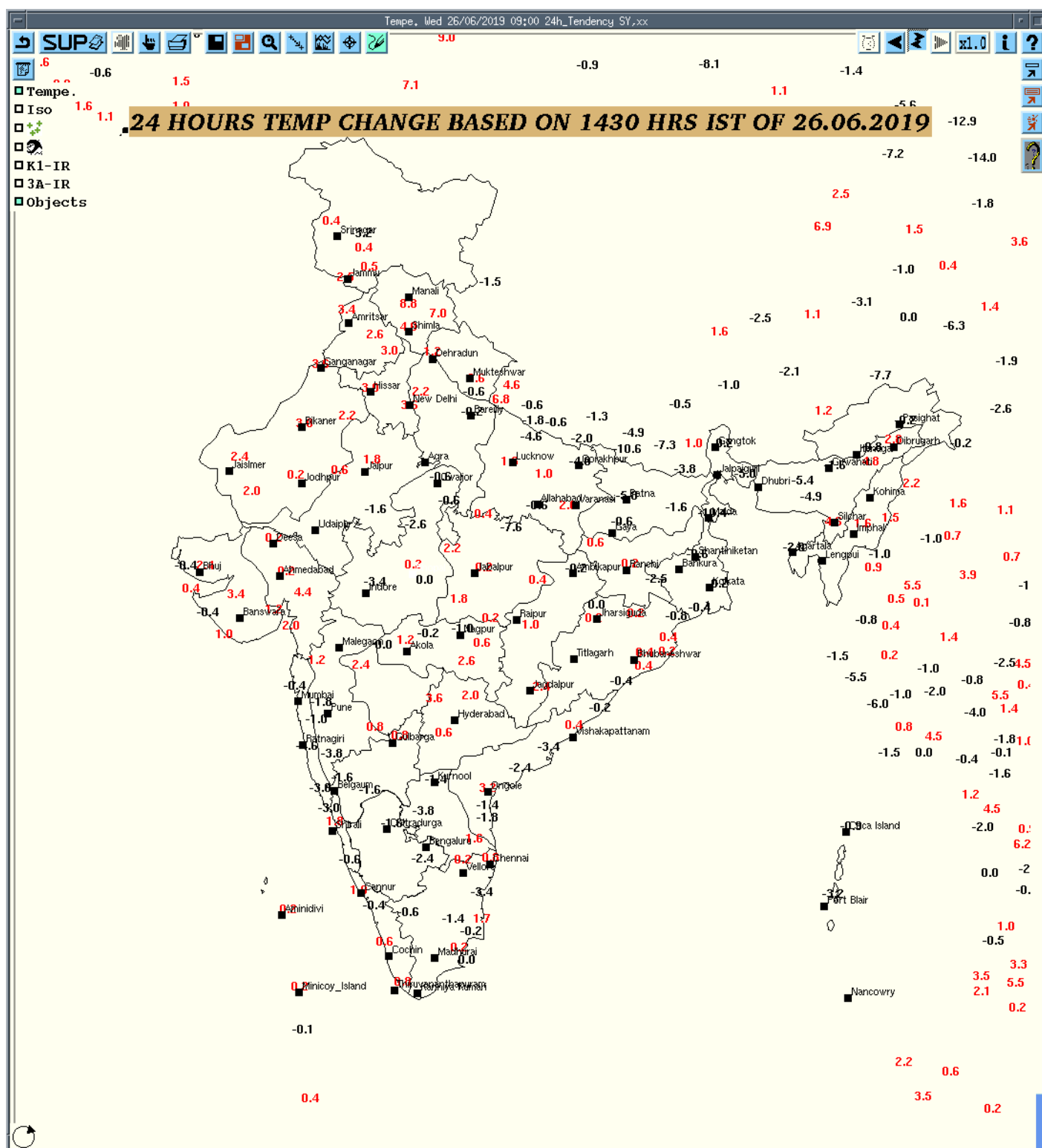
Heat wave conditions:- NIL







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 20th June, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 19 June, 2019 to 0830 hrs IST 20 June, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions in many places with Severe Heat Wave in isolated pockets were observed over Coastal Andhra Pradesh. Heat Wave Conditions were observed at a few places over Vidarbha and in isolated pockets over Gangetic West Bengal, Bihar, Telangana and Tamilnadu, Puducherry & Karaikal. **(Annexure 1 & 2).**

Maximum Temperature

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Jharkhand, Telangana and Coastal Andhra Pradesh; at a few places over Nagaland, Manipur, Mizoram & Tripura, Vidarbha and Gangetic West Bengal and at isolated places over Assam & Meghalaya and Chhattisgarh; **appreciably above normal (3.1°C to 5.0°C)** at most places over Rayalaseema and Bihar; at many places over Kerala and Tamilnadu, Puducherry & Karaikal; at a few places over South Interior Karnataka, Sub-Himalayan West Bengal & Sikkim and Odisha and at isolated places over North Interior Karnataka; **above normal (1.6°C to 3.0°C)** at a few places over East Madhya Pradesh, Marathwada and Coastal Karnataka and at isolated places over Madhya Maharashtra and Konkan & Goa. Yesterday, **the highest maximum temperature of 43.5°C** was recorded at **Machilipatnam (Coastal Andhra Pradesh).**

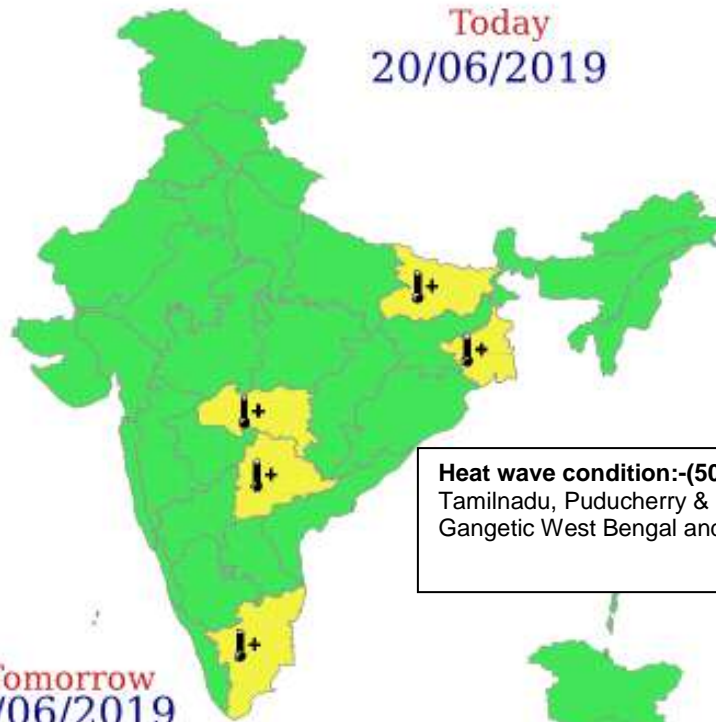
Temperatures Recorded at 1430 Hours IST of Today, the 20th June, 2019

- **Chandrapur(Vidarbha)** recorded **the maximum temperature of 42.0°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 3-5°C** in most parts over East Uttar Pradesh, East Rajasthan and West Madhya Pradesh and in one or two pockets of Madhya Maharashtra, Marathwada, Gangetic West Bengal and Kerala, **by 1-3°C** in most Parts over West Rajasthan and West Uttar Pradesh; in many Parts over Madhya Maharashtra; at some parts over Konkan & Goa and Haryana & Delhi and in one or two pockets of Jammu & Kashmir, East Madhya Pradesh, Assam & Meghalaya, Gujarat and Tamilnadu & Puducherry. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

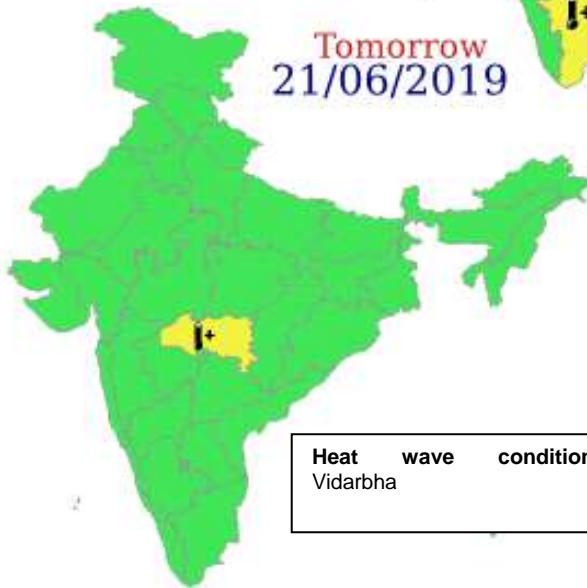
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
20/06/2019



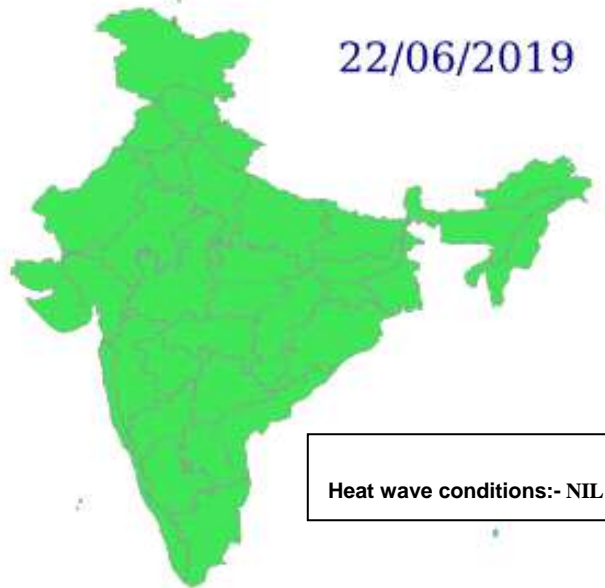
Heat wave condition:- (50%) Vidarbha (<25%)
Tamilnadu, Puducherry & Karaikal, Telangana,
Gangetic West Bengal and Bihar.

Tomorrow
21/06/2019



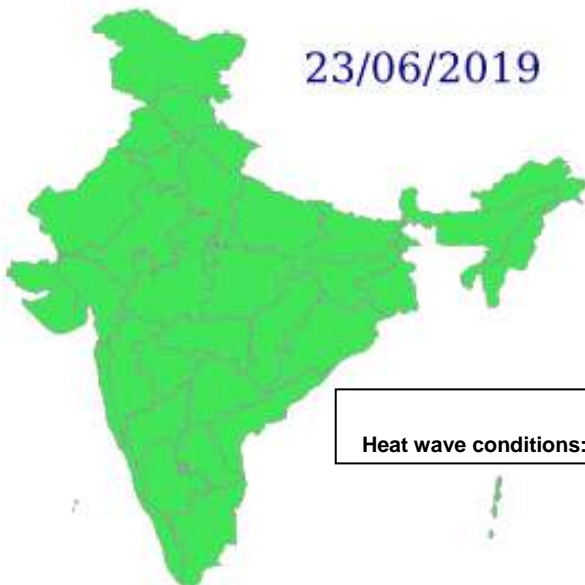
Heat wave condition:- (<25%)
Vidarbha

22/06/2019



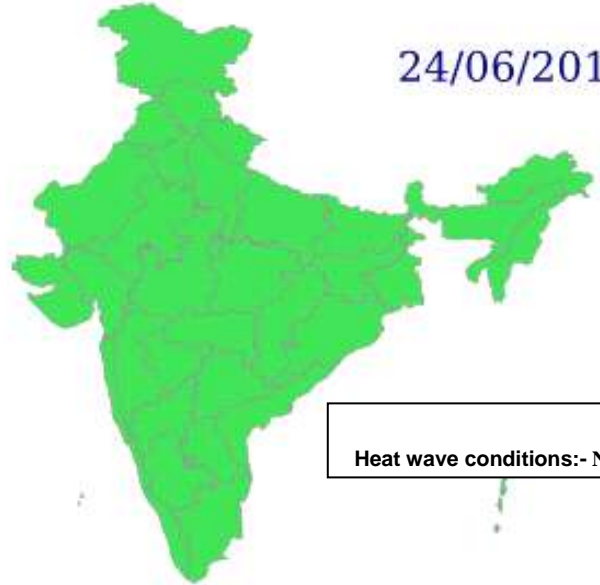
Heat wave conditions:- NIL

23/06/2019



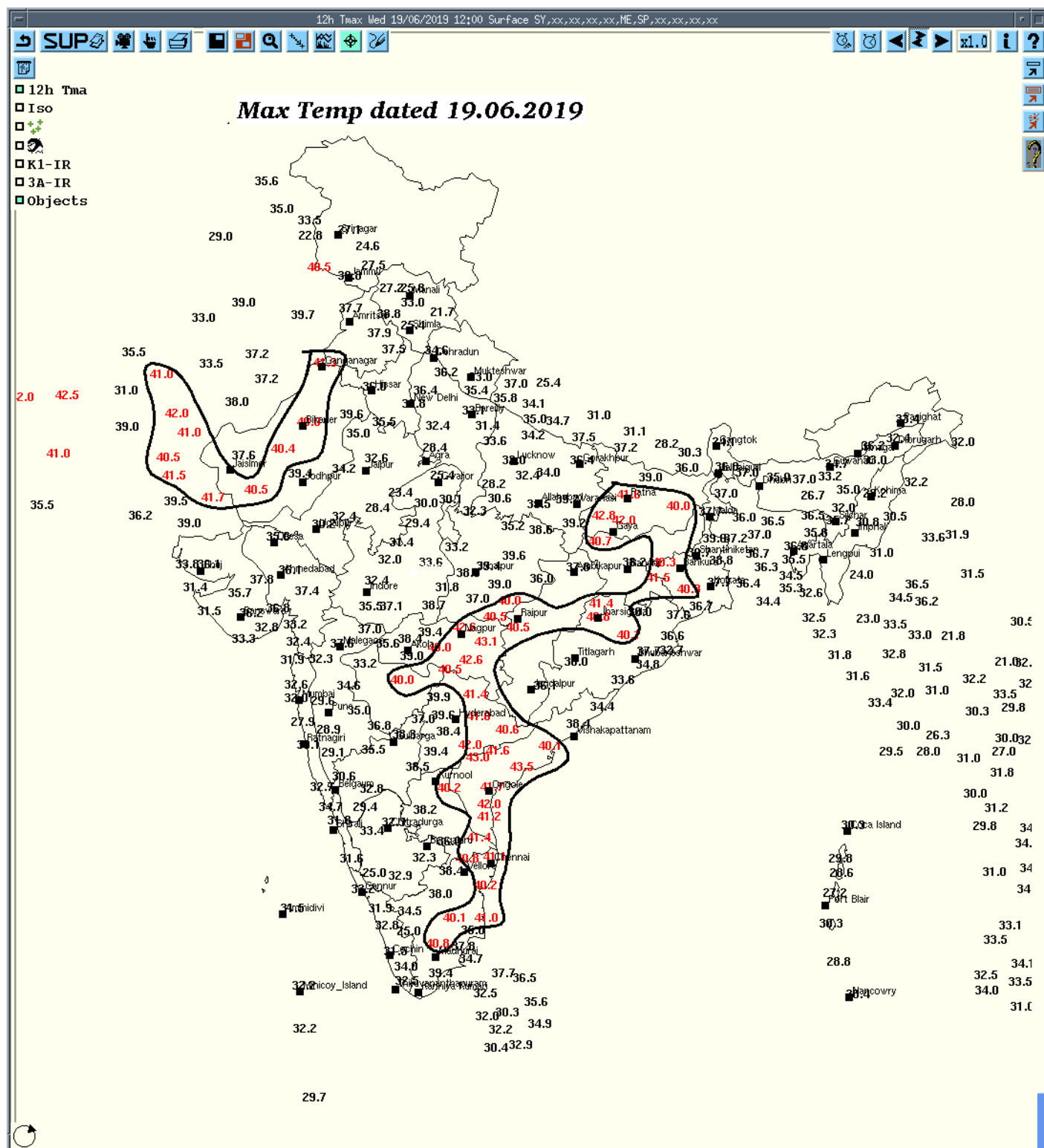
Heat wave conditions:- NIL

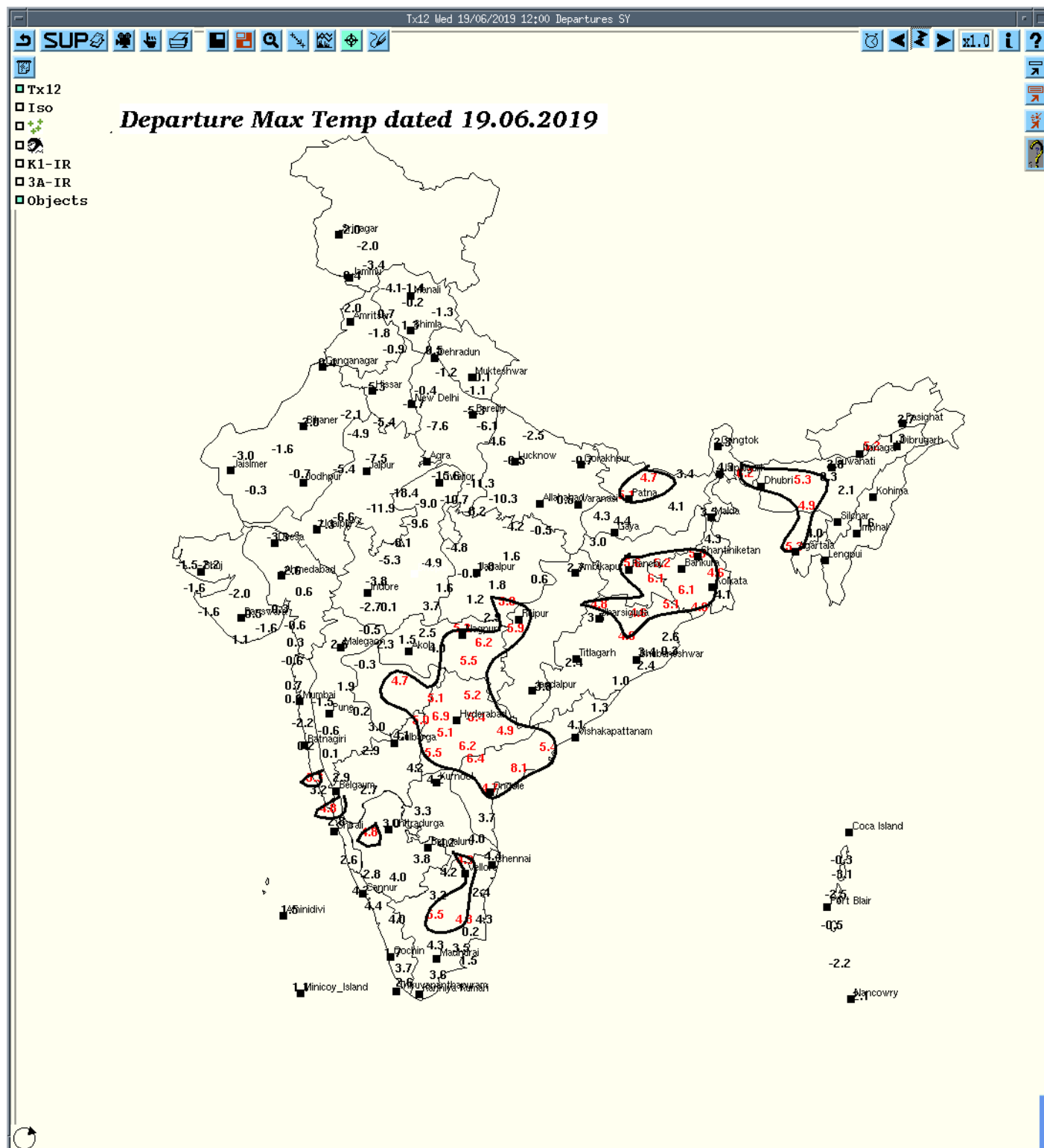
24/06/2019

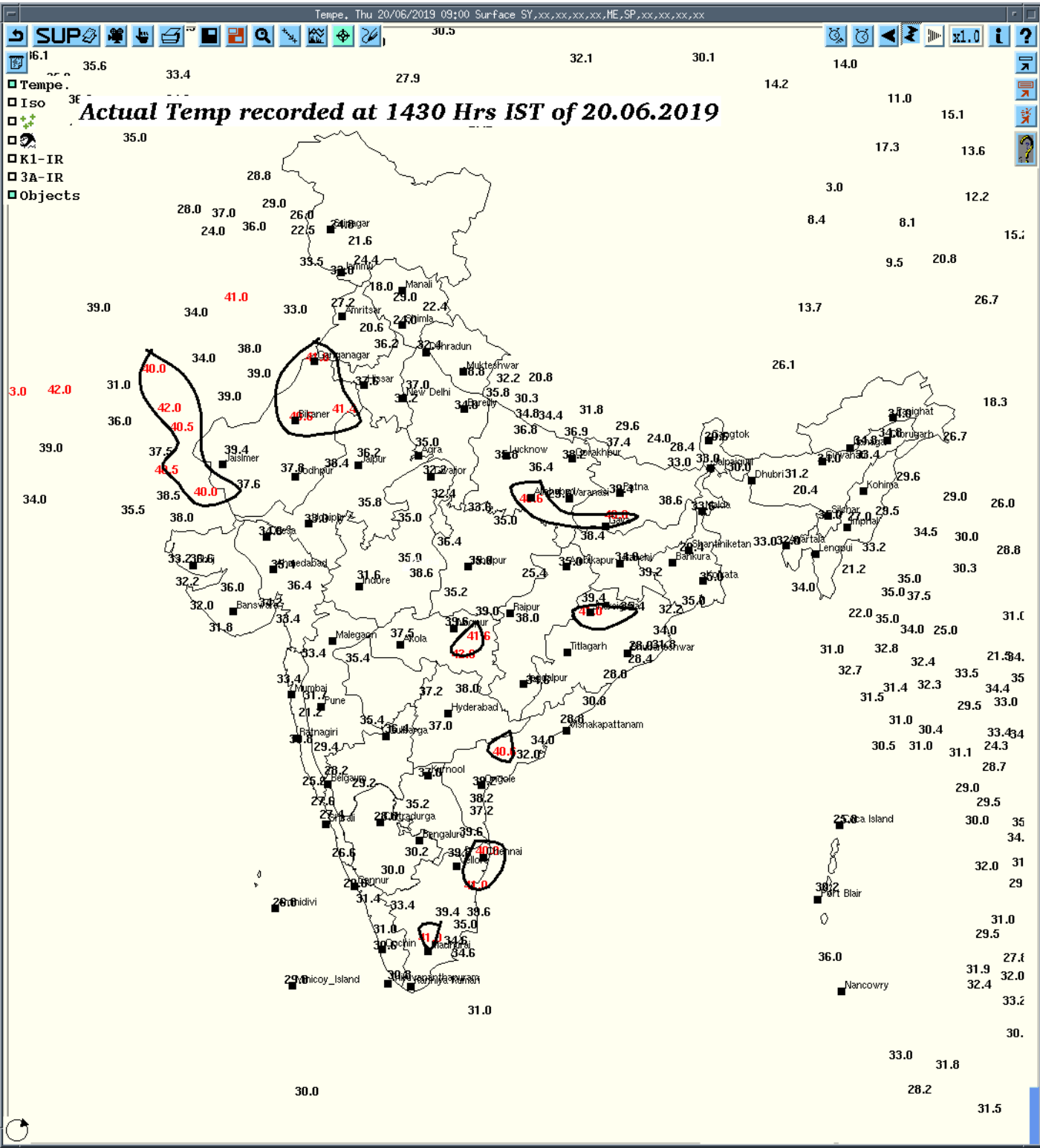


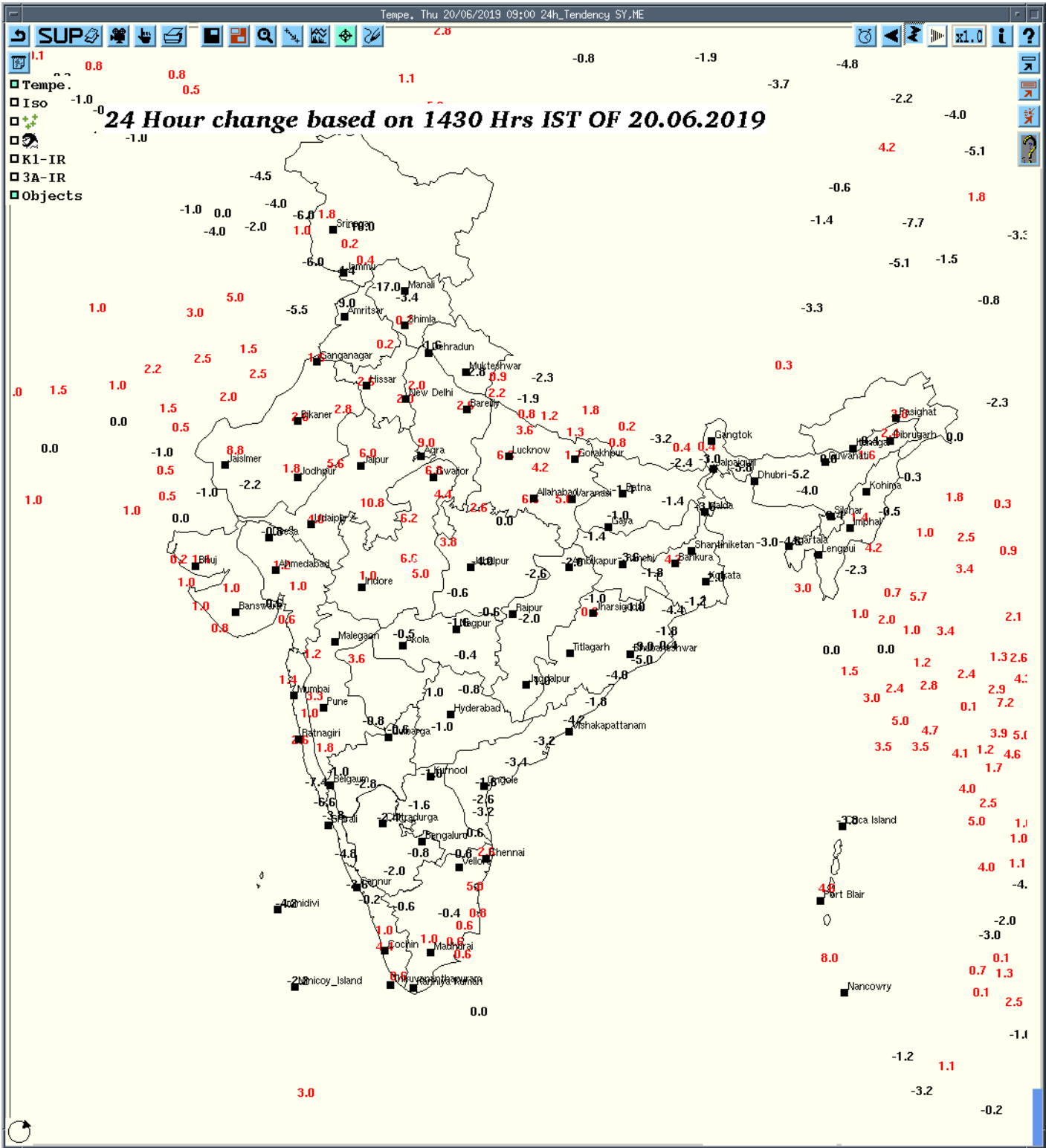
Heat wave conditions:- NIL

Annexure 1









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 25th June, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 24 June, 2019 to 0830 hrs IST 25 June, 2019)

Heat Wave:

No heat wave conditions observed. (Annexure 1 & 2).

Maximum Temperature:

Maximum temperature departures as on 24-06-2019: Maximum temperatures were **markedly above normal (5.1°C or more)** at a few places over Jharkhand; at isolated places over Assam & Meghalaya; **appreciably above normal (3.1°C to 5.0°C)** at most places over Sub-Himalayan West Bengal & Sikkim; at many places over Gangetic West Bengal, Bihar and Nagaland, Manipur, Mizoram & Tripura; at isolated places over East Madhya Pradesh, Odisha, Kerala & Mahe and Tamil Nadu, Puducherry & Karaikal; **above normal (1.6°C to 3.0°C)** at many places over North Interior Karnataka and Telangana; at a few places over Saurashtra & Kutch and Chhattisgarh; at isolated places over Madhya Maharashtra, Coastal Karnataka and Andaman & Nicobar Islands.

Temperatures Recorded at 1430 Hours IST of Today, the 25th June, 2019

- **Tiruchchirapalli(Tamilnadu)** recorded the maximum temperature of 40.4°C (Annexure 3).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** in most parts over Jammu & Kashmir, Uttarakhand, Delhi, Bihar, Jharkhand, East Madhya Pradesh and Vidarbha; in many Parts over West Uttar Pradesh, West Rajasthan, Konkan & Goa and Chhattisgarh; in few parts over Himachal Pradesh, East Uttar Pradesh, Gangetic West Bengal and Rayalaseema and in one or two pockets of Punjab, West Madhya Pradesh, Marathwada, Madhya Maharashtra, Interior Karnataka, Coastal Andhra Pradesh, Tamilnadu and Kerala (Annexure 4).

Heat Wave Warnings for Next 5 Days (on next page)

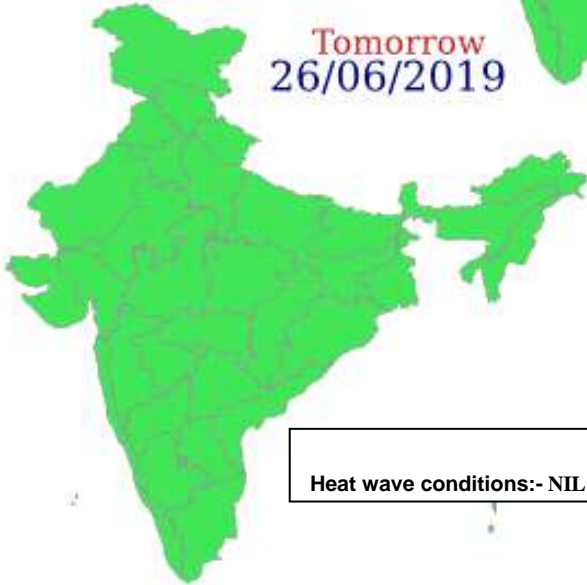
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
25/06/2019



Heat wave conditions:- NIL

Tomorrow
26/06/2019



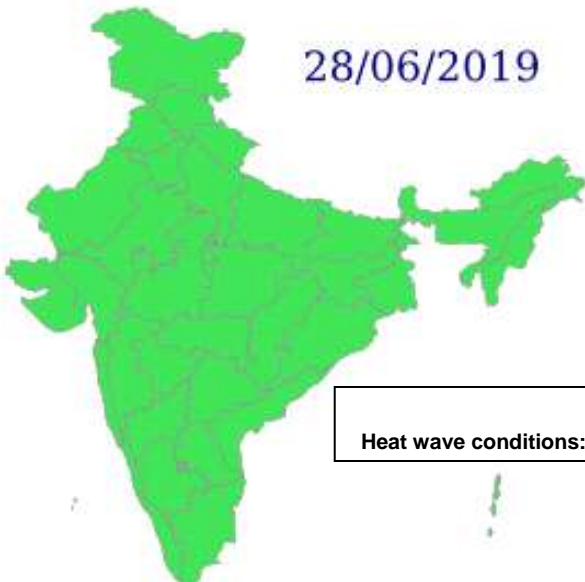
Heat wave conditions:- NIL

27/06/2019



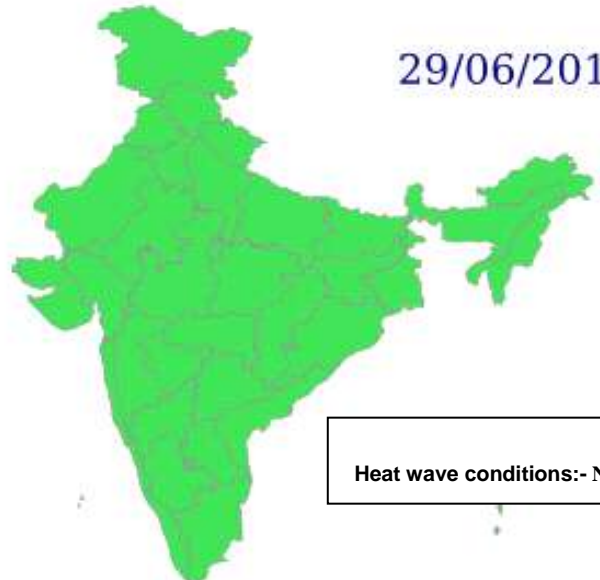
Heat wave conditions:- NIL

28/06/2019

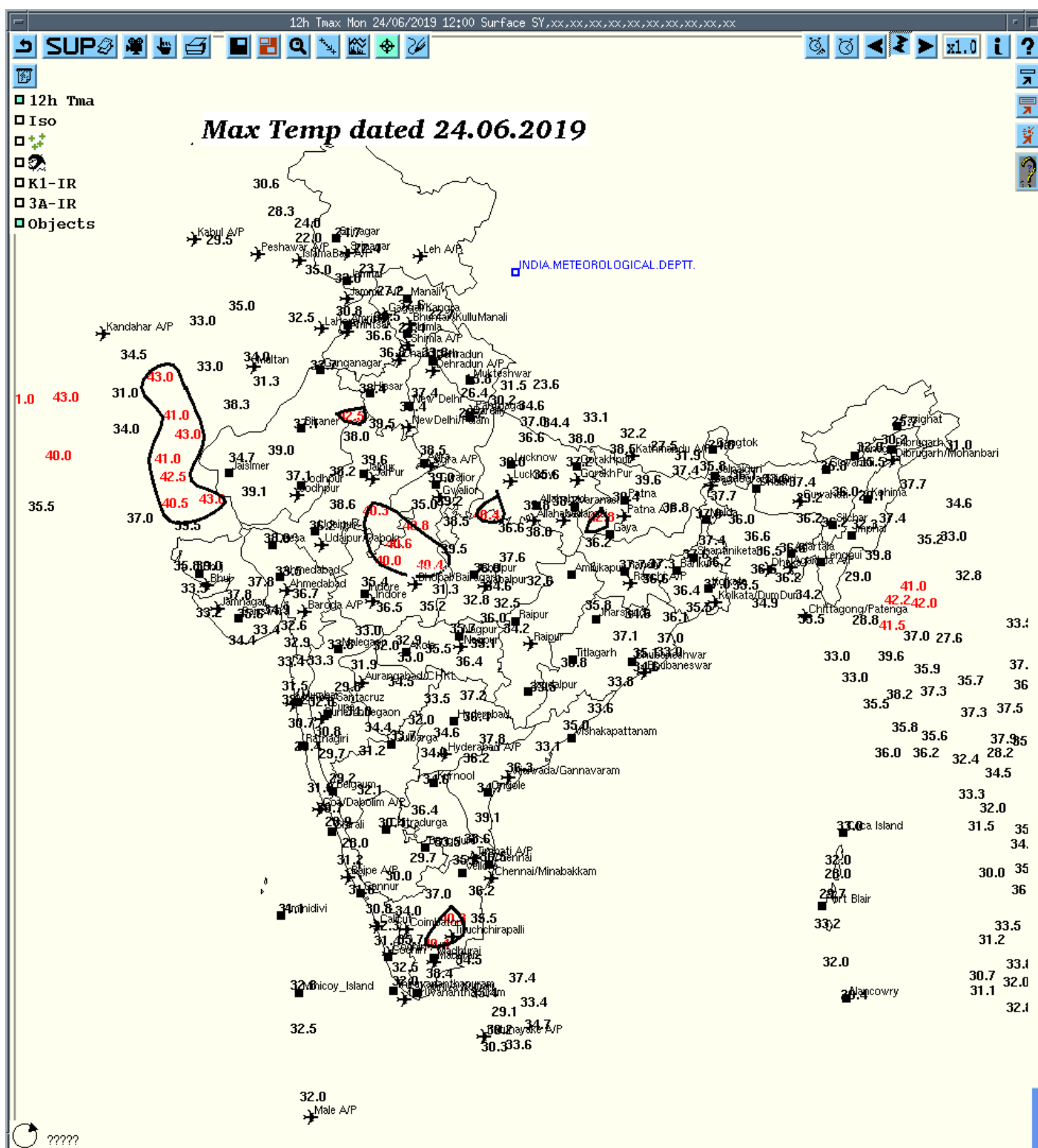


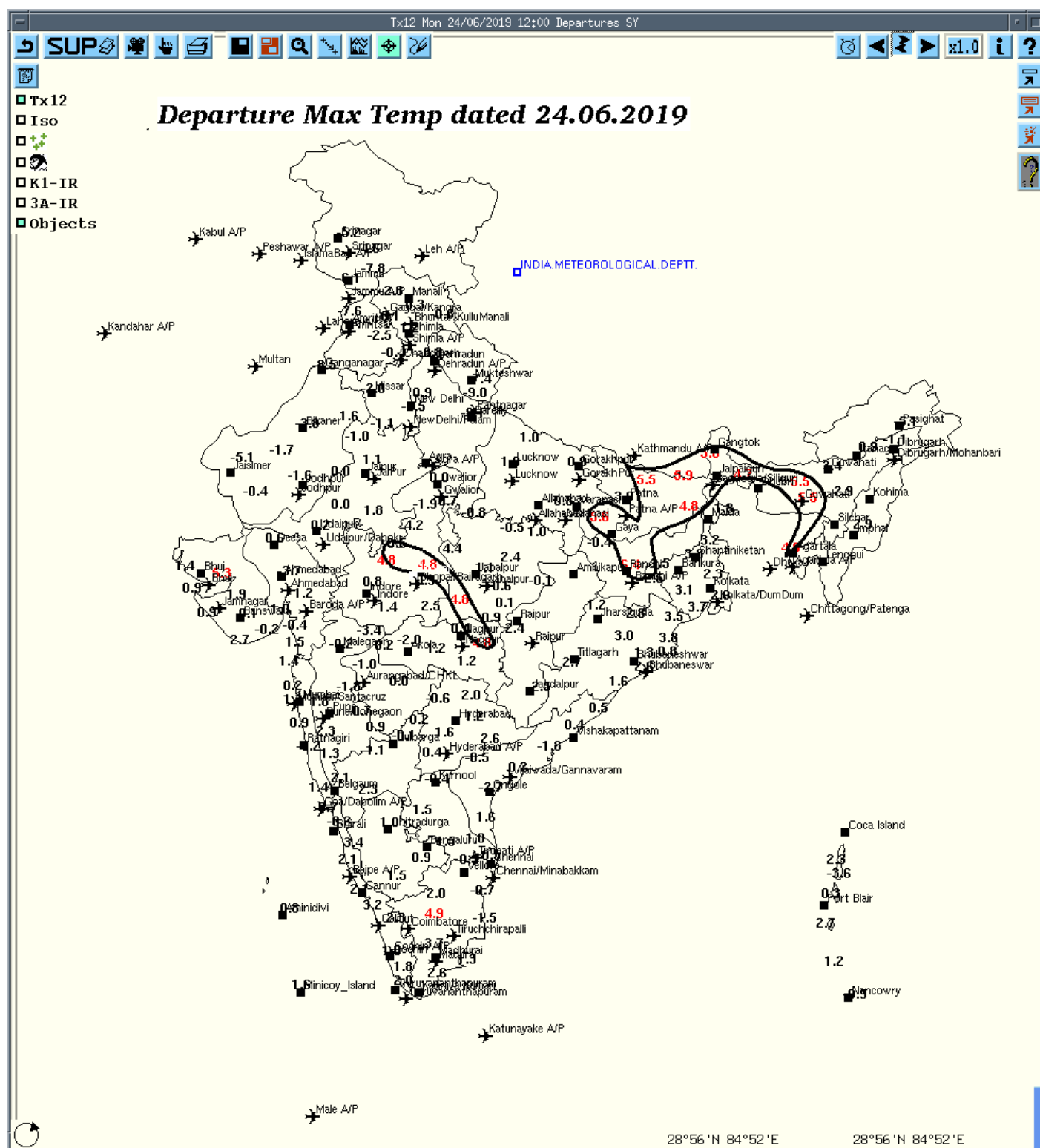
Heat wave conditions:- NIL

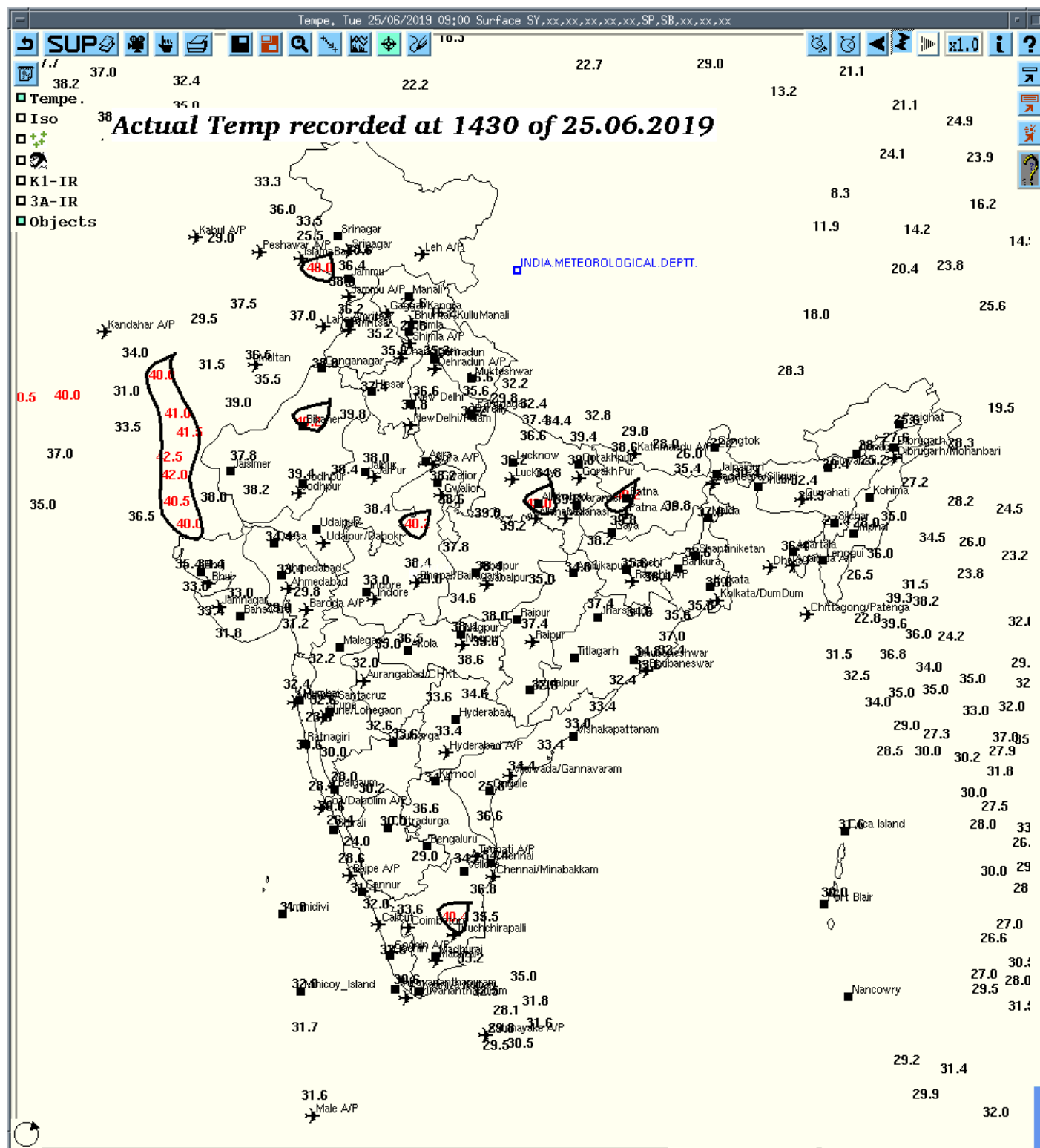
29/06/2019



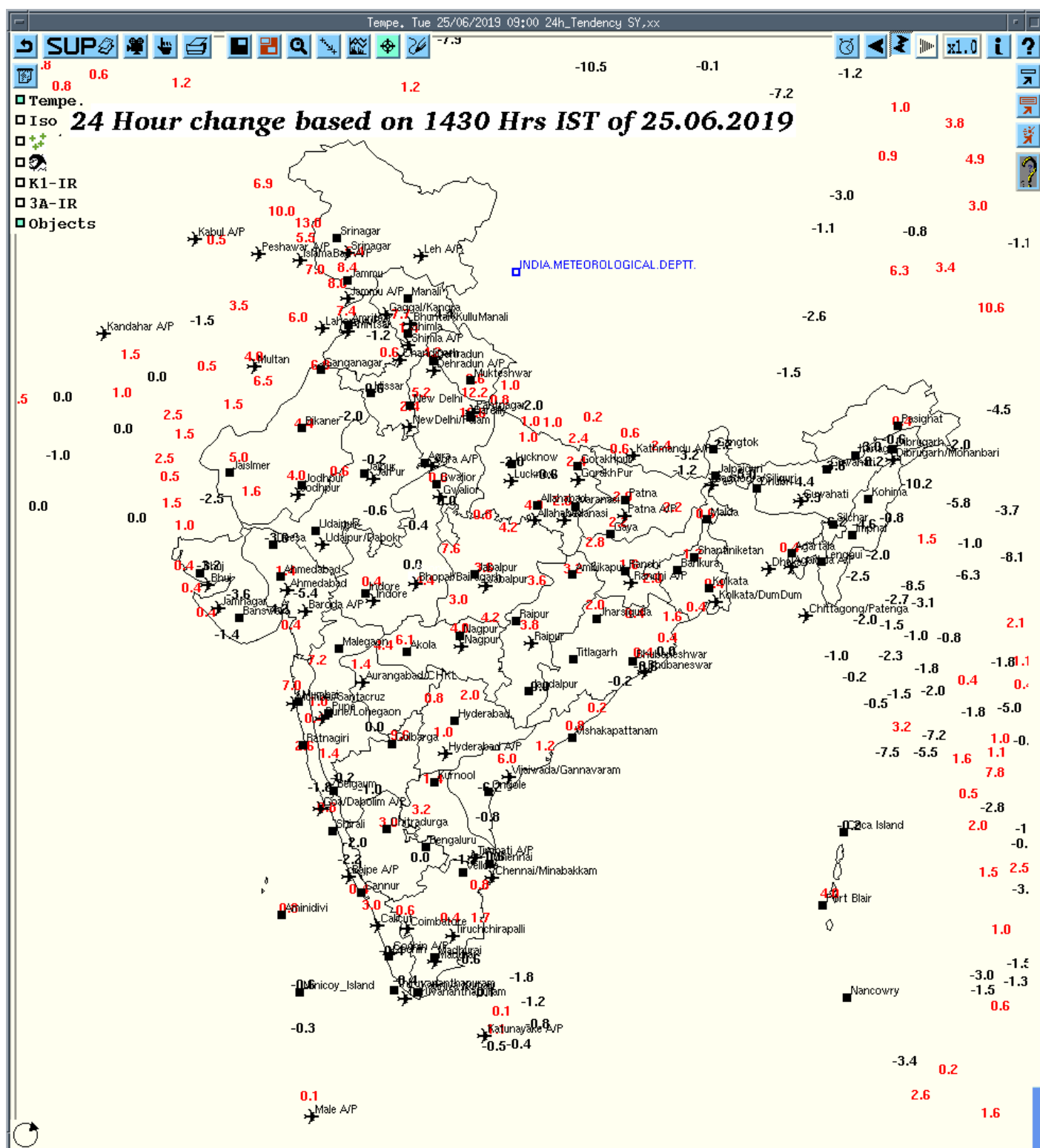
Heat wave conditions:- NIL







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 27th June, 2019
Time of Issue: 1600 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 26 June, 2019 to 0830 hrs IST 27 June, 2019)

Heat Wave:

No heat wave conditions observed. (Annexure 1 & 2).

Maximum Temperature:

Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over Bihar and Jharkhand; at many places over Vidarbha; at a few places over East Madhya Pradesh, Chhattisgarh and Odisha and at isolated places over West Madhya Pradesh and Gangetic West Bengal; **appreciably above normal (3.1°C to 5.0°C)** at most places over Marathawada; at a few places over Uttarakhand and Punjab and at isolated places over Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh, East Rajasthan, Madhya Maharashtra and Sub- Himalayan West Bengal & Sikkim; **above normal (1.6°C to 3.0°C)** at most places over Lakshadweep; at many places over Saurashtra & Kutch and North Konkan & Goa; at a few places over Nagaland, Manipur, Mizoram & Tripura and at isolated places over Tamilnadu & Puducherry. Yesterday, **the highest maximum temperature of 43.6°C** was recorded at **Churu (West Rajasthan)**.

Temperatures Recorded at 1430 Hours IST of Today, the 27th June, 2019

- **Gwalior(West Madhya Pradesh)** recorded the maximum temperature of 41.0°C (Annexure 3).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** in most parts over Coastal Andhra Pradesh; in many Parts over Gujarat region and Rayalaseema; in few parts over East Uttar Pradesh, Interior Karnataka and Tamilnadu & Puducherry and in one or two pockets of West Uttar Pradesh, Madhya Pradesh, Telangana, Coastal Karnataka and Assam & Meghalaya. (Annexure 4).

Heat Wave Warnings for Next 5 Days (on next page)

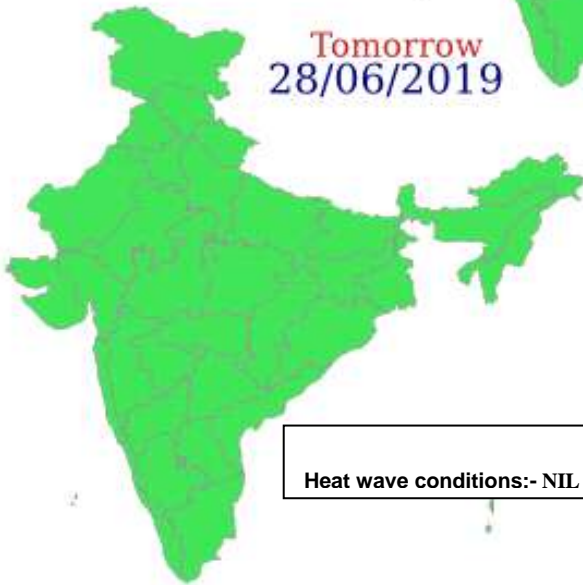
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
27/06/2019



Heat wave conditions:- NIL

Tomorrow
28/06/2019



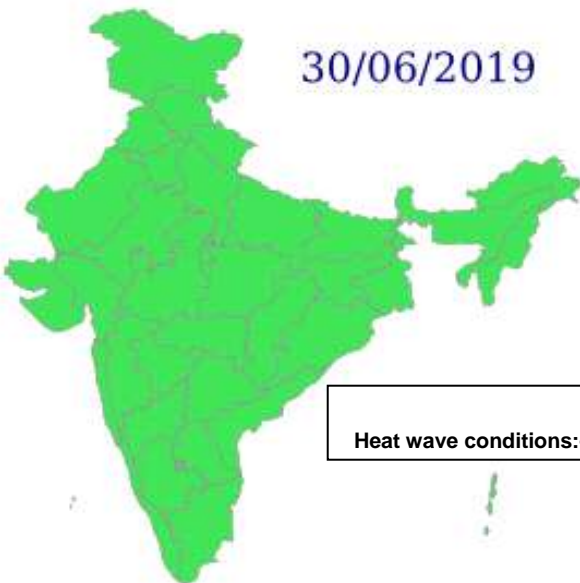
Heat wave conditions:- NIL

29/06/2019



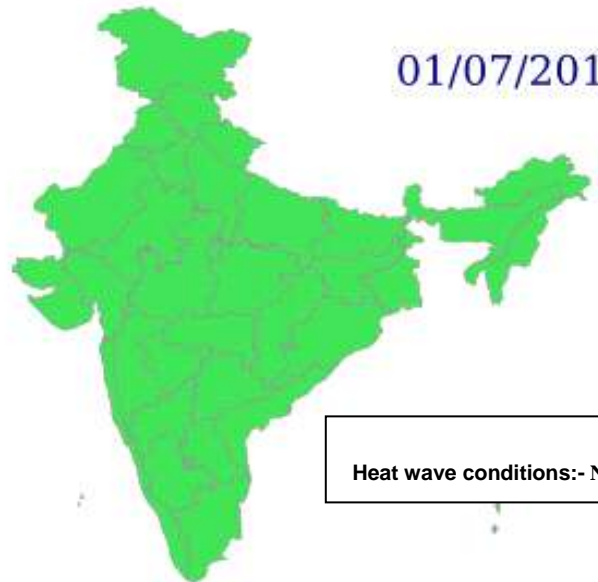
Heat wave conditions:- NIL.

30/06/2019

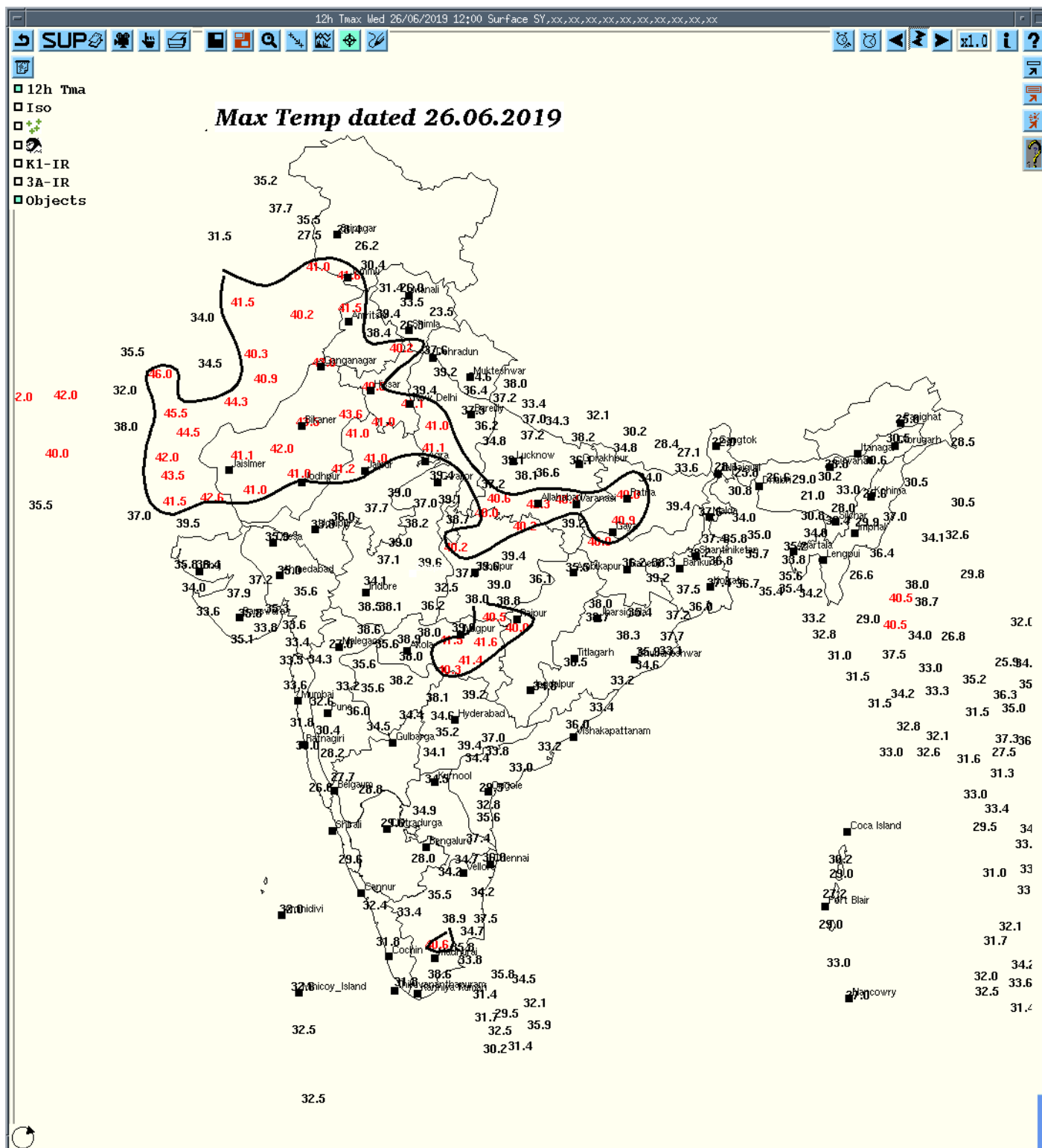


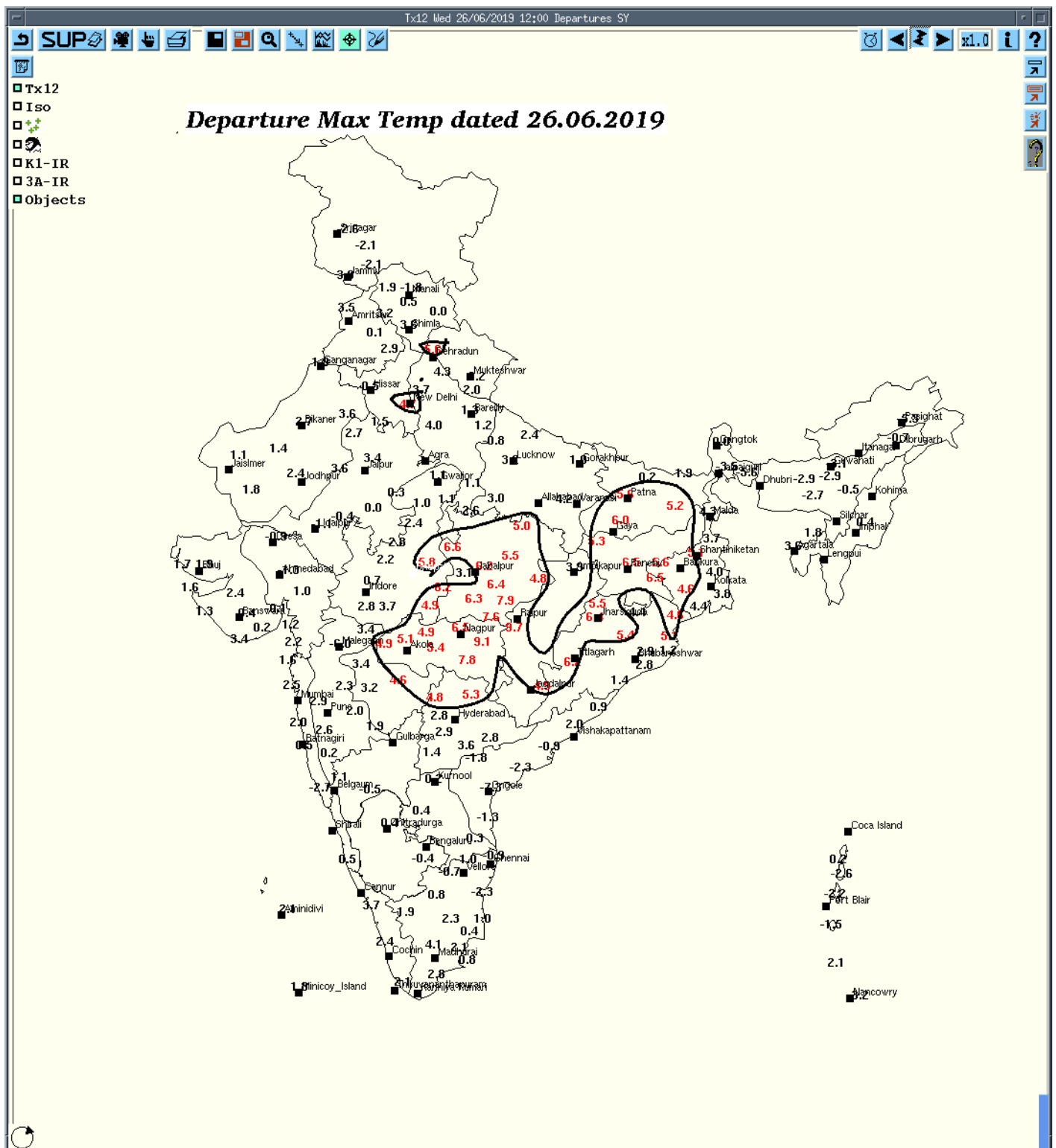
Heat wave conditions:- NIL

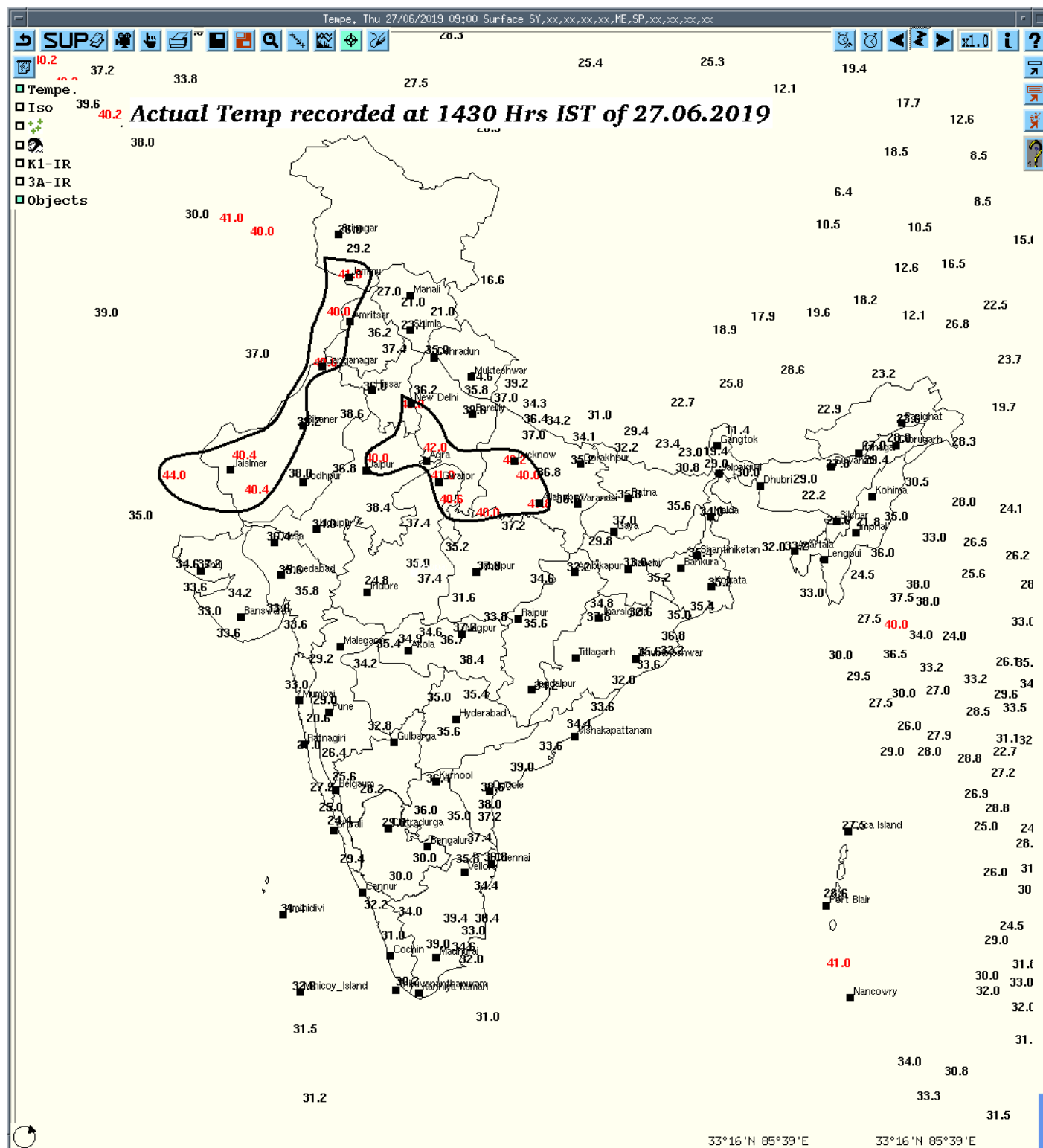
01/07/2019



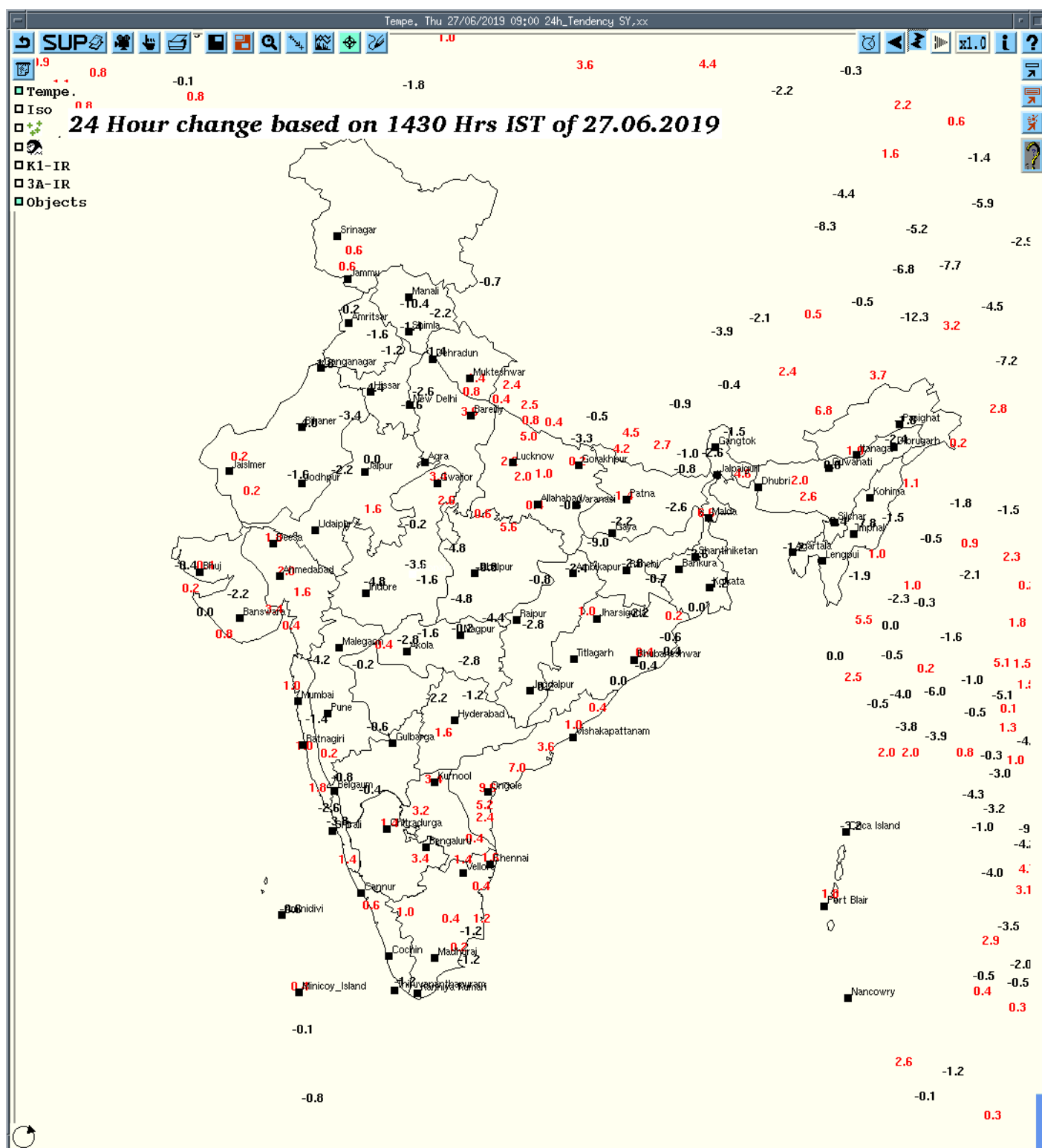
Heat wave conditions:- NIL







Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

**Dated: 28th June, 2019
Time of Issue: 1615 Hours IST**

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 27 June, 2019 to 0830 hrs IST 28 June, 2019)

Heat Wave:

No heat wave conditions observed. (Annexure 1 & 2).

Maximum Temperature:

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Chhattisgarh; **appreciably above normal (3.1°C to 5.0°C)** at most places over East Uttar Pradesh and Telangana; at many places over East Madhya Pradesh, Vidarbha, Odisha, West Uttar Pradesh, Jharkhand and Uttarakhand; at a few places over Marathawada, West Madhya Pradesh and Coastal Andhra Pradesh and at isolated places over Tamilnadu & Puducherry; **above normal (1.6°C to 3.0°C)** at most places over Gangetic West Bengal; at many places over Bihar, Rayalaseema and Gujarat region; at a few places over Punjab and Lakshadweep and at isolated places over Saurashtra & Kutch, Konkan & Goa, Himachal Pradesh, Jammu & Kashmir, Kerala and Andaman & Nicobar Islands. Yesterday, **the highest maximum temperature of 43.8°C** was recorded at **Banda (East Uttar Pradesh)**.

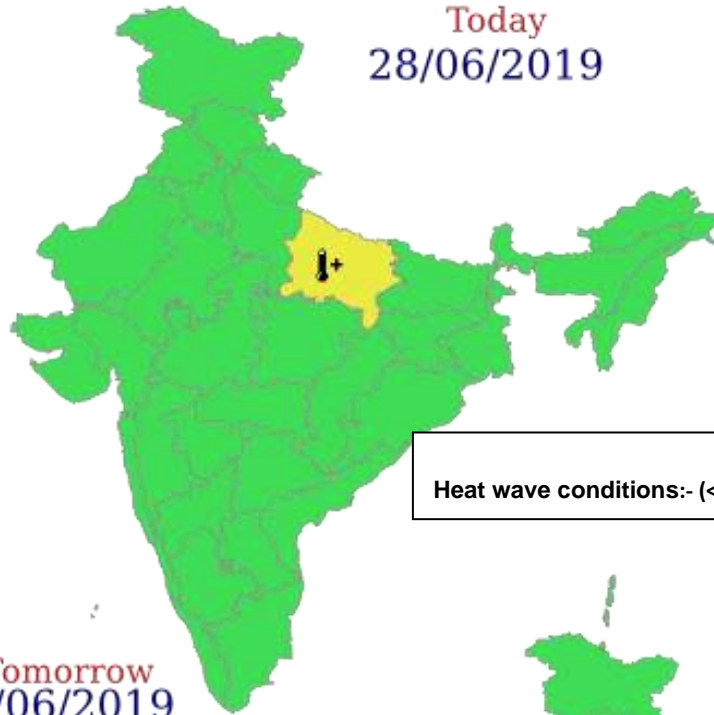
Temperatures Recorded at 1430 Hours IST of Today, the 28th June, 2019

- **Churu (West Rajasthan)** recorded the maximum temperature of **43.0°C** (Annexure 3).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** in most parts over Punjab, Haryana, Delhi & Chandigarh, East Uttar Pradesh, Bihar and Jharkhand; in many Parts over Himachal Pradesh and West Uttar Pradesh; in few parts over Coastal Andhra Pradesh, West Rajasthan and Sub Himalayan West Bengal & Sikkim and in one or two pockets of Tamilnadu & Puducherry, Kerala and Coastal Karnataka. (Annexure 4).

Heat Wave Warnings for Next 5 Days (on next page)

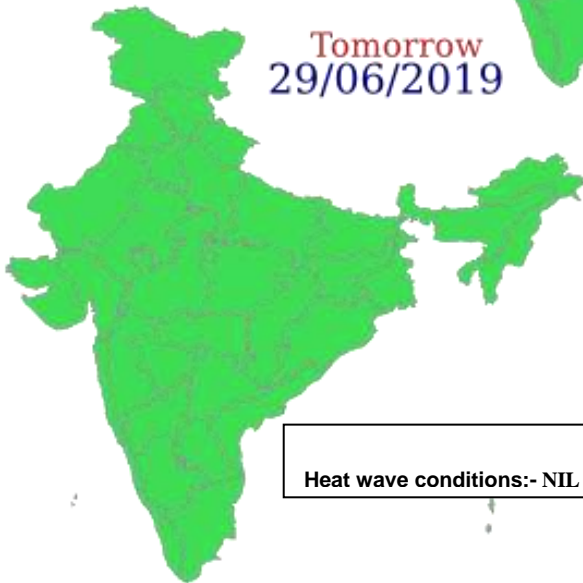
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
28/06/2019



Heat wave conditions:- (<25%) East Uttar Pradesh

Tomorrow
29/06/2019



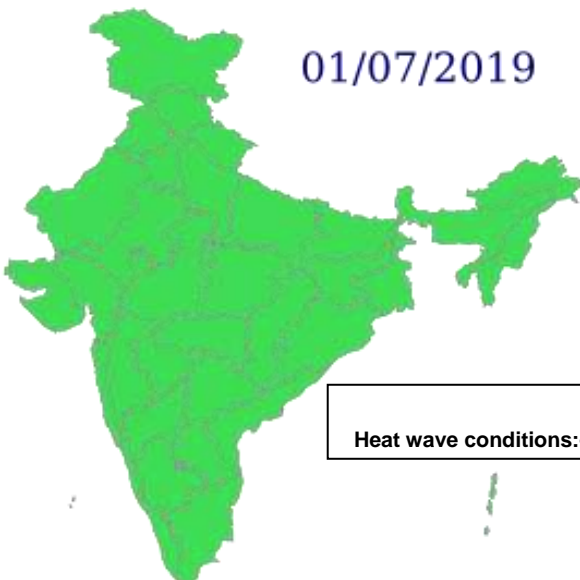
Heat wave conditions:- NIL

30/06/2019



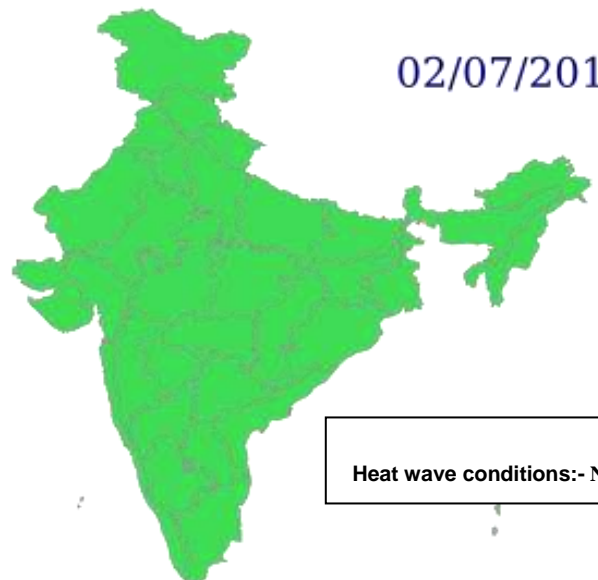
Heat wave conditions:- NIL.

01/07/2019

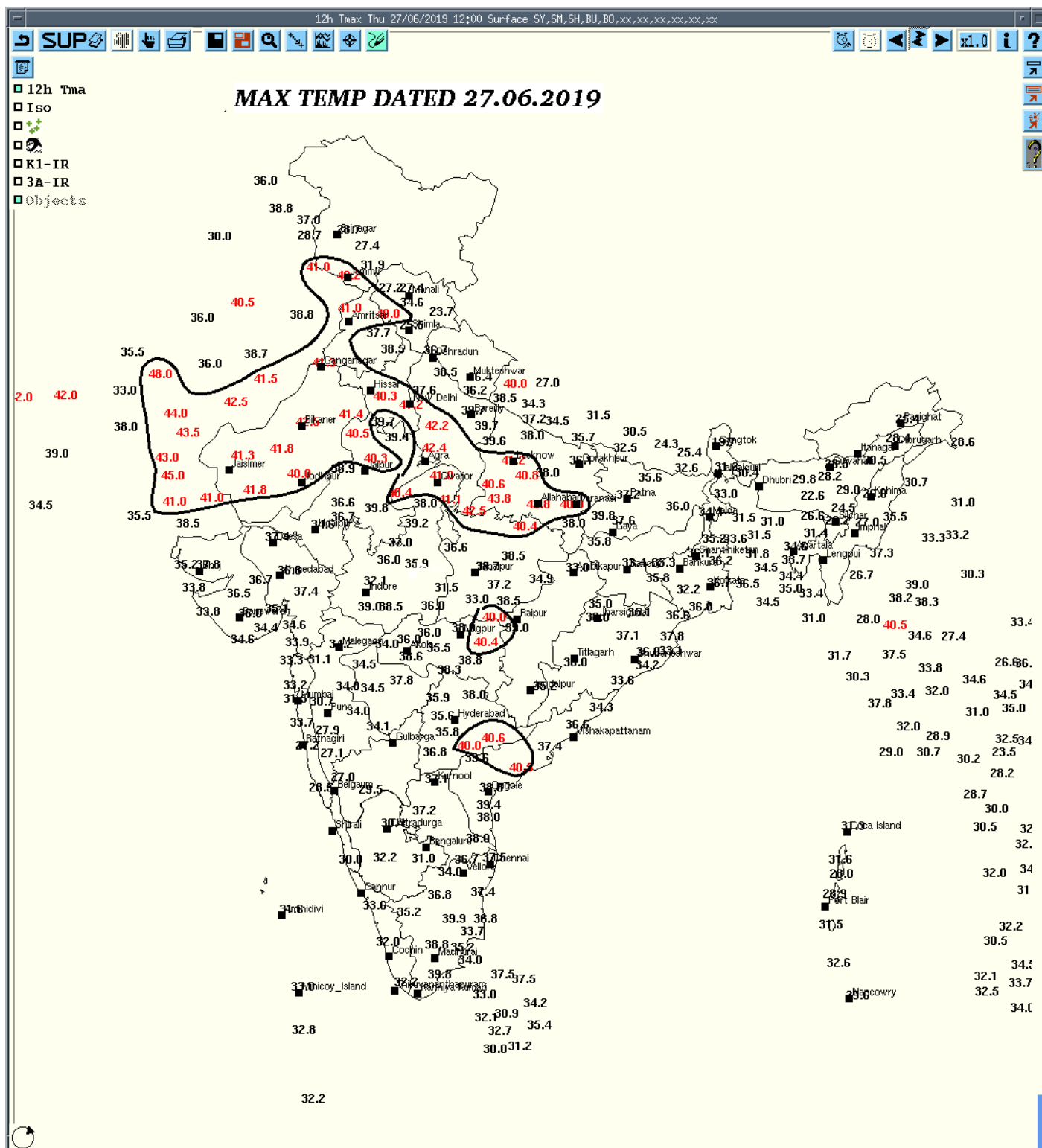


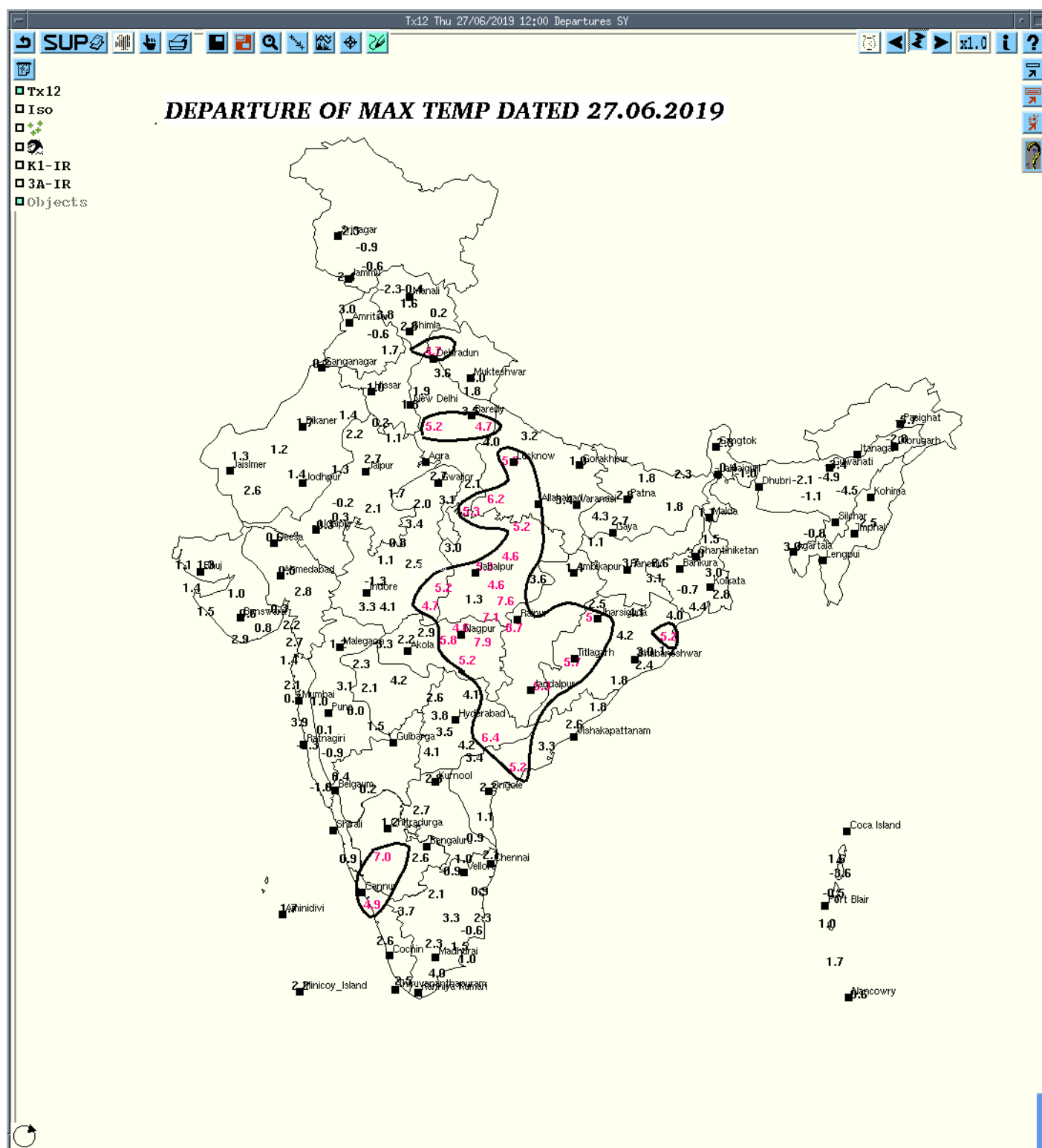
Heat wave conditions:- NIL

02/07/2019

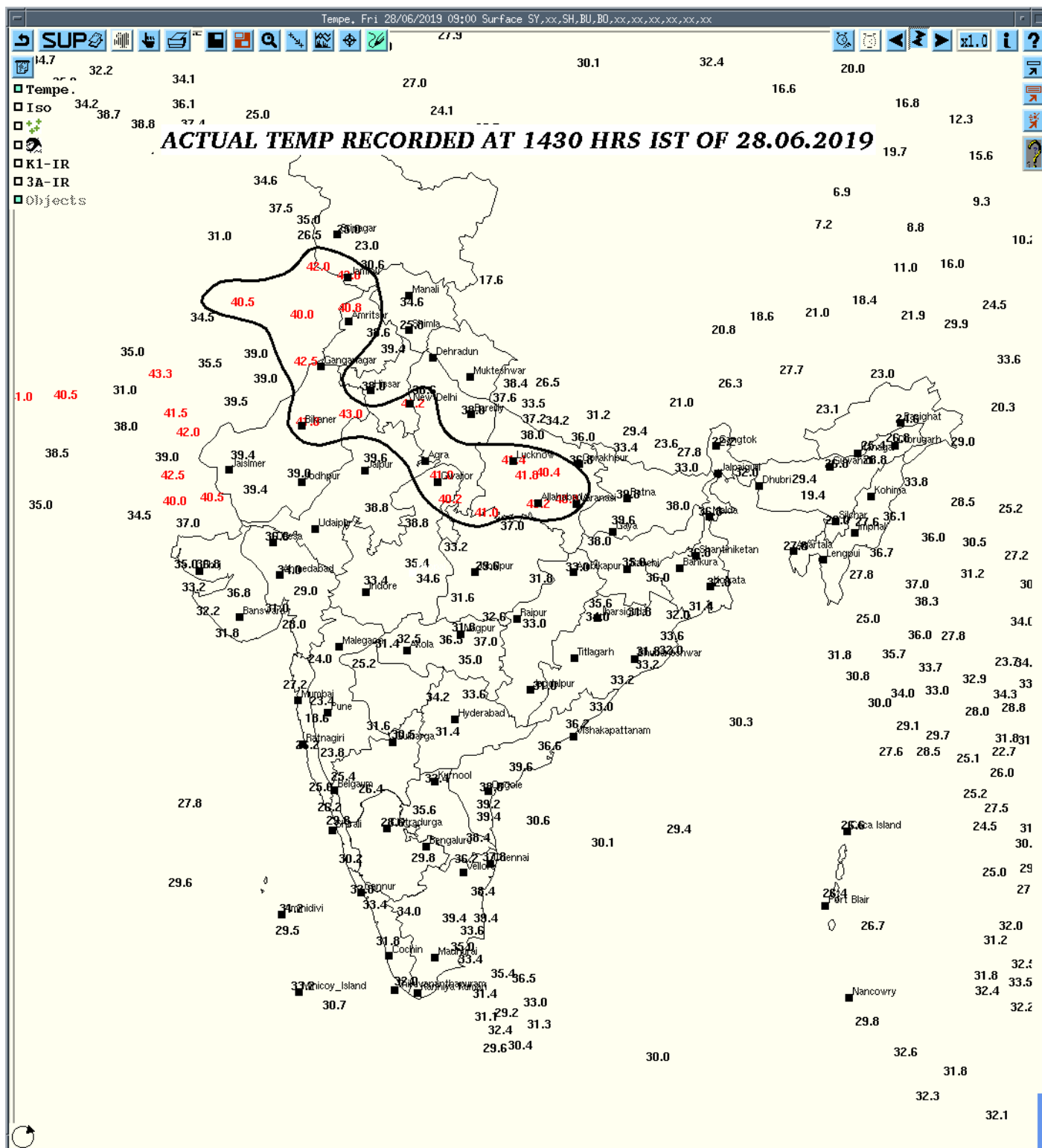


Heat wave conditions:- NIL

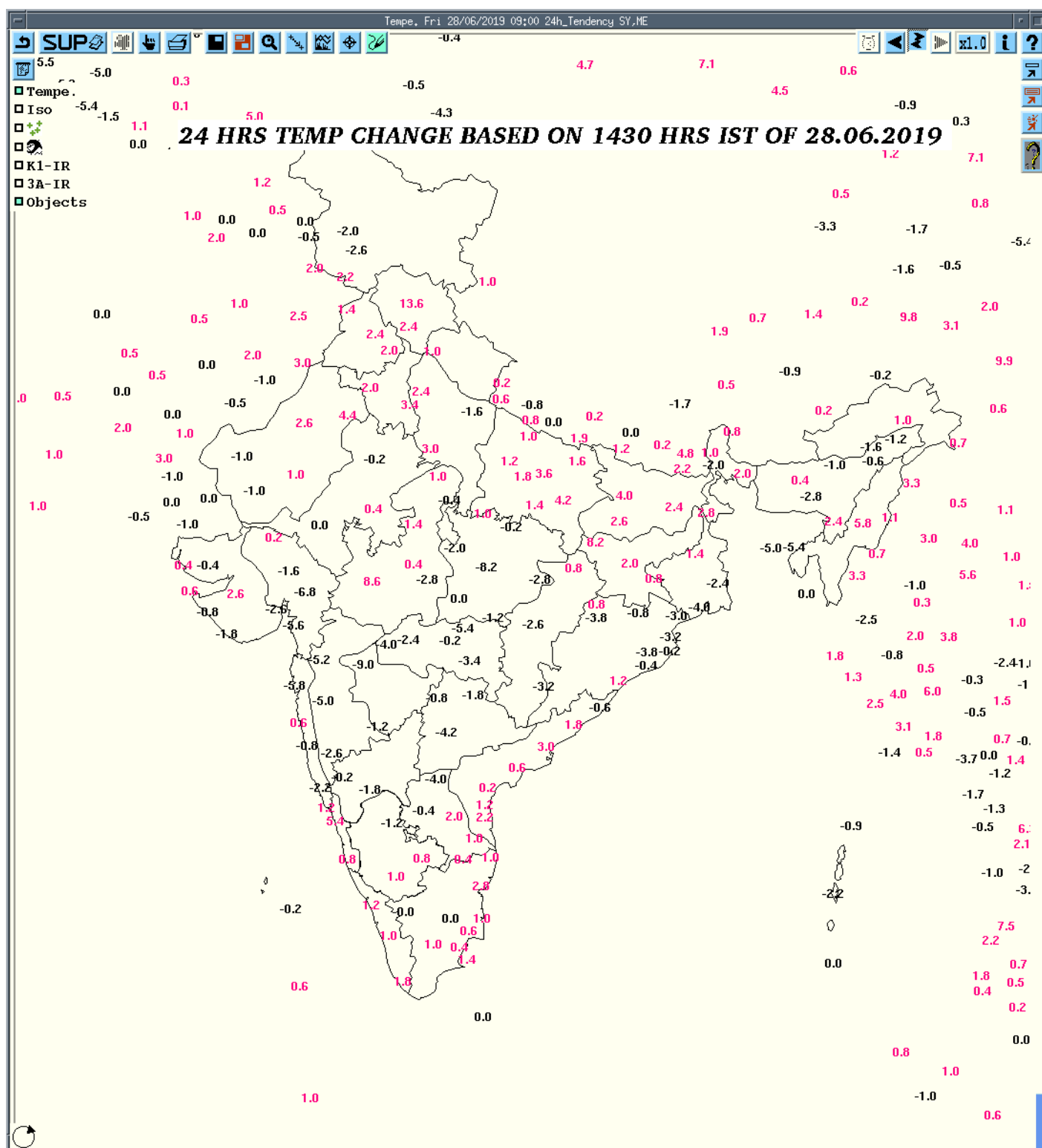




Annexure 3



Annexure 4



Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 29th June, 2019

Time of Issue: 1630 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 28 June, 2019 to 0830 hrs IST 29 June, 2019)

Heat Wave:

No heat wave conditions observed. (Annexure 1 & 2).

Maximum Temperature:

Maximum temperatures were **markedly above normal (5.1°C or more)** at a few places over East Uttar Pradesh; at isolated places over West Uttar Pradesh and Bihar; **appreciably above normal (3.1°C to 5.0°C)** at many places over Jharkhand; at a few places over Uttarakhand, Tamilnadu, Puducherry & Karaikal, Kerala & Mahe and Madhya Pradesh; at isolated places over Himachal Pradesh, Haryana, Chandigarh & Delhi, Coastal Andhra Pradesh, Vidarbha, Odisha and Gangetic West Bengal; **above normal (1.6°C to 3.0°C)** at most places over South Interior Karnataka; at many places over Rajasthan, Telangana and Rayalaseema; at a few places over Marathwada and at isolated places over Saurashtra & Kutch and Lakshadweep. Yesterday, **the highest maximum temperature of 44.3°C** was recorded at **Churu (West Rajasthan)**.

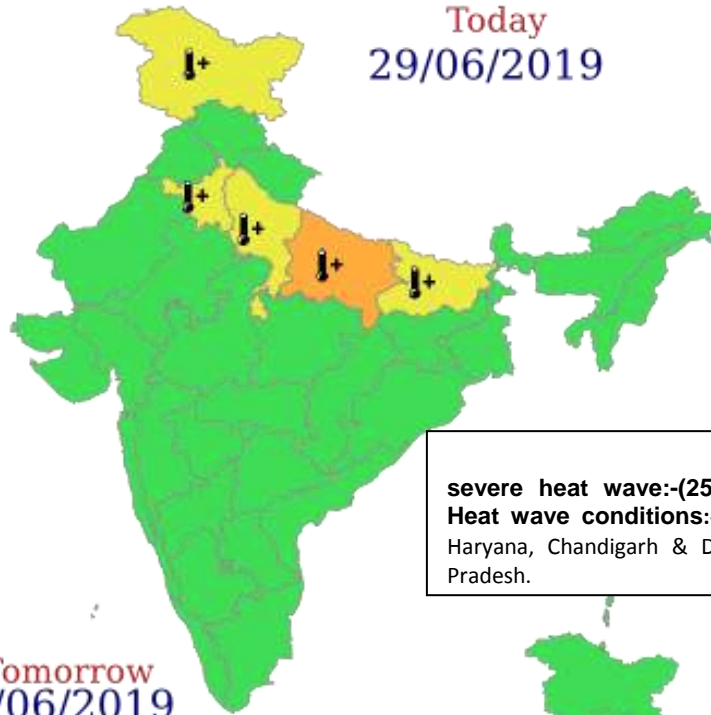
Temperatures Recorded at 1430 Hours IST of Today, the 29th June, 2019

- **Churu(West Rajasthan)** recorded the maximum temperature of 44.0°C (Annexure 3).
- **Temperatures recorded at 1430 hours IST of today have risen by 1-5°C** in most parts over Punjab, Haryana, Delhi & Chandigarh, East Madhya Pradesh and Arunachal Pradesh; in many Parts over Assam & Meghalaya; in few parts over Jammu & Kashmir, East Uttar Pradesh and Sub Himalayan West Bengal & Sikkim and in one or two pockets of Gangetic West Bengal, Orrisa and Tamilnadu & Puducherry. (Annexure 4).

Heat Wave Warnings for Next 5 Days (on next page)

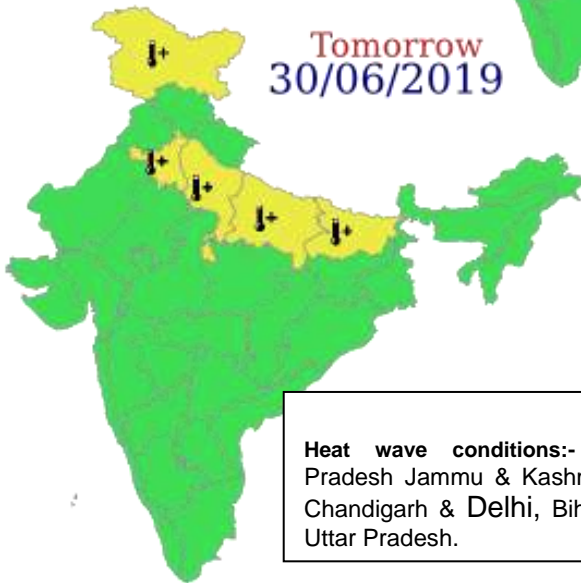
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
29/06/2019



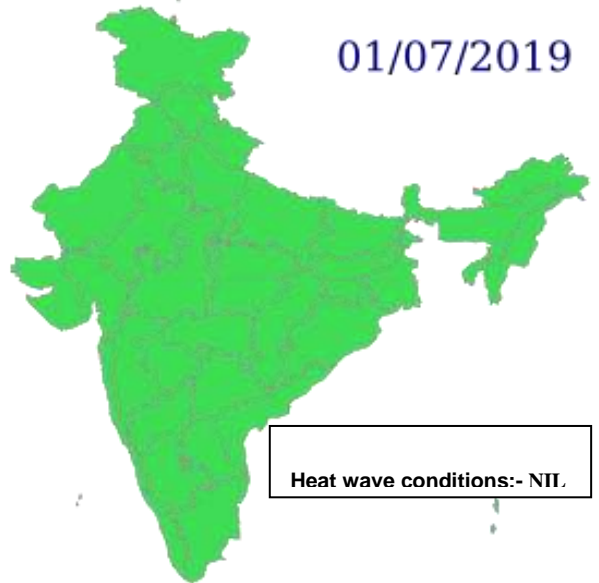
severe heat wave:-(25%) East Uttar Pradesh ;
Heat wave conditions:- (<25%) Jammu & Kashmir,
Haryana, Chandigarh & Delhi, Bihar and West Uttar Pradesh.

Tomorrow
30/06/2019



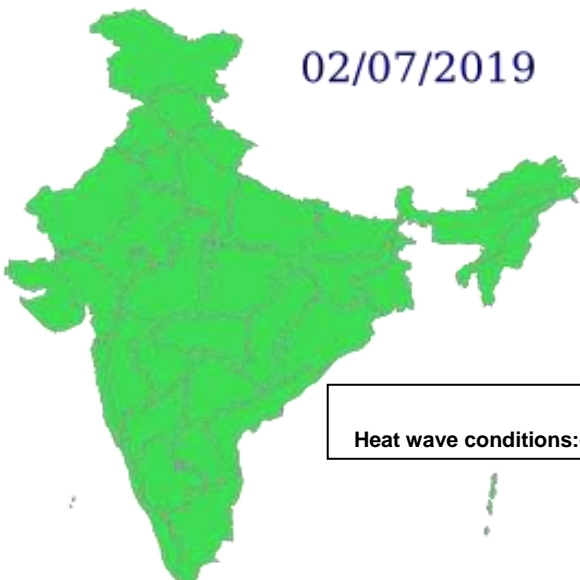
Heat wave conditions:- East Uttar Pradesh Jammu & Kashmir, Haryana, Chandigarh & Delhi, Bihar and West Uttar Pradesh.

01/07/2019



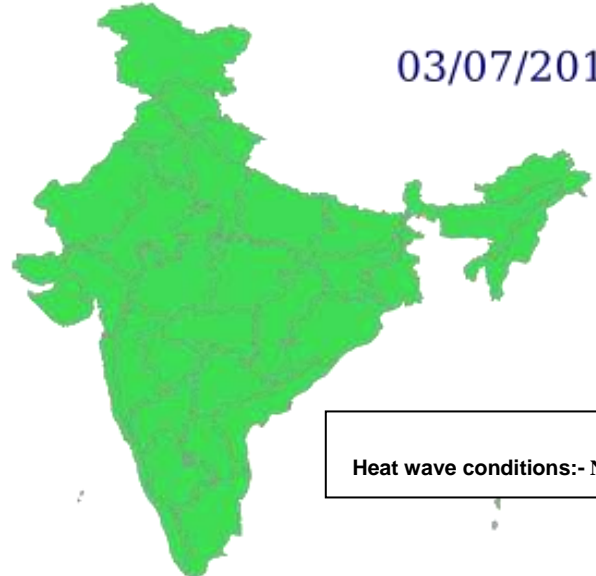
Heat wave conditions:- NIL.

02/07/2019

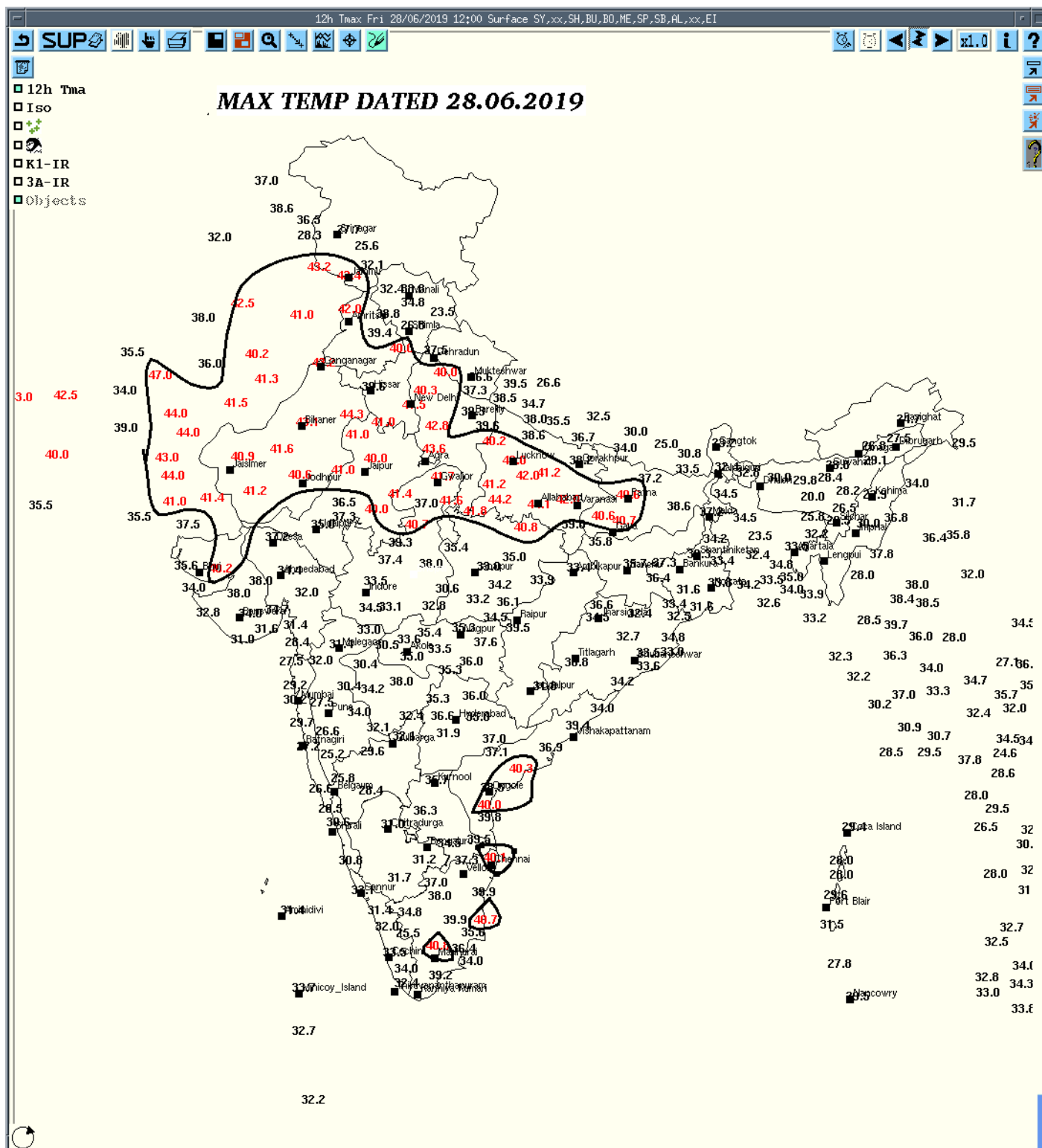


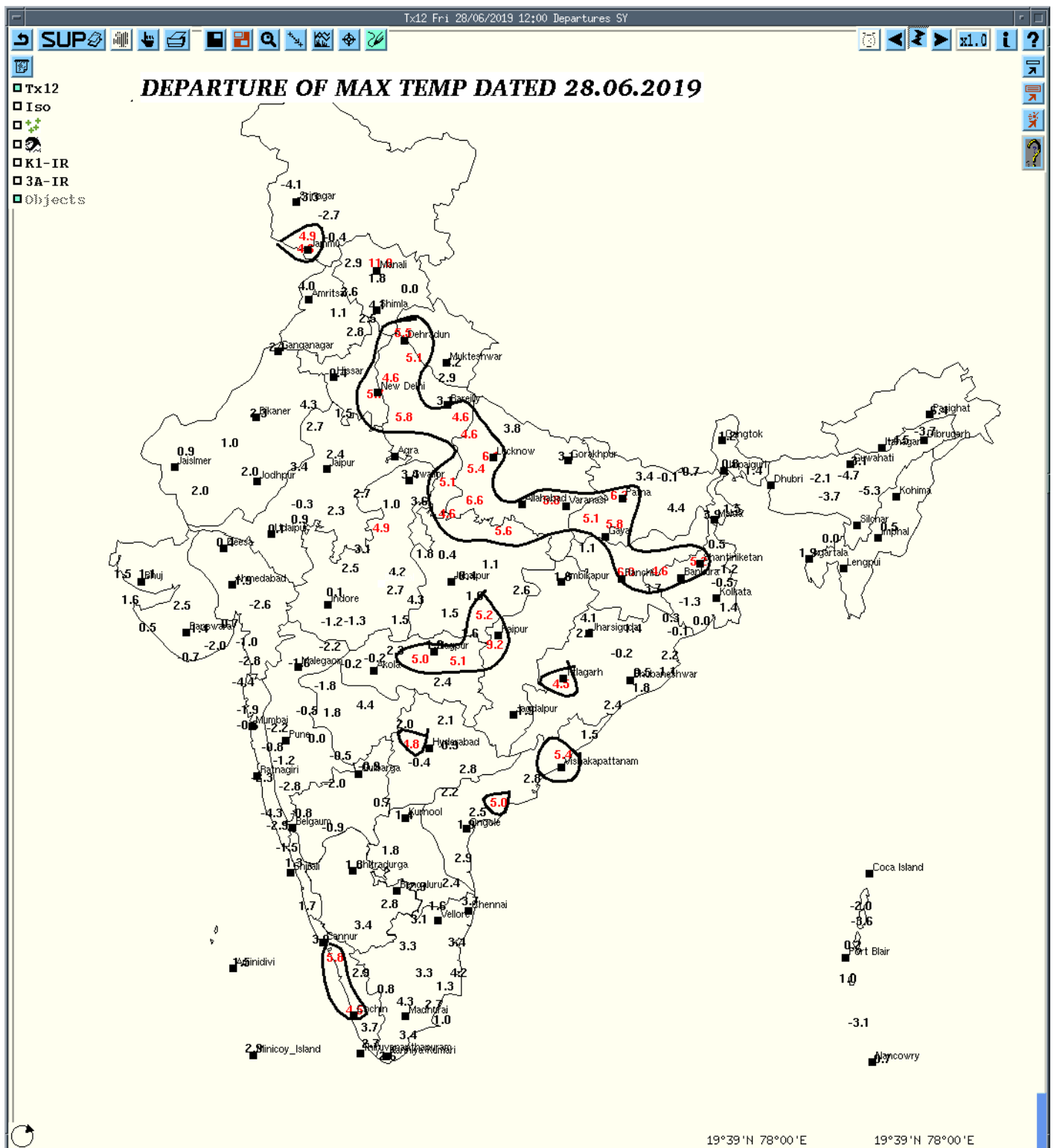
Heat wave conditions:- NIL

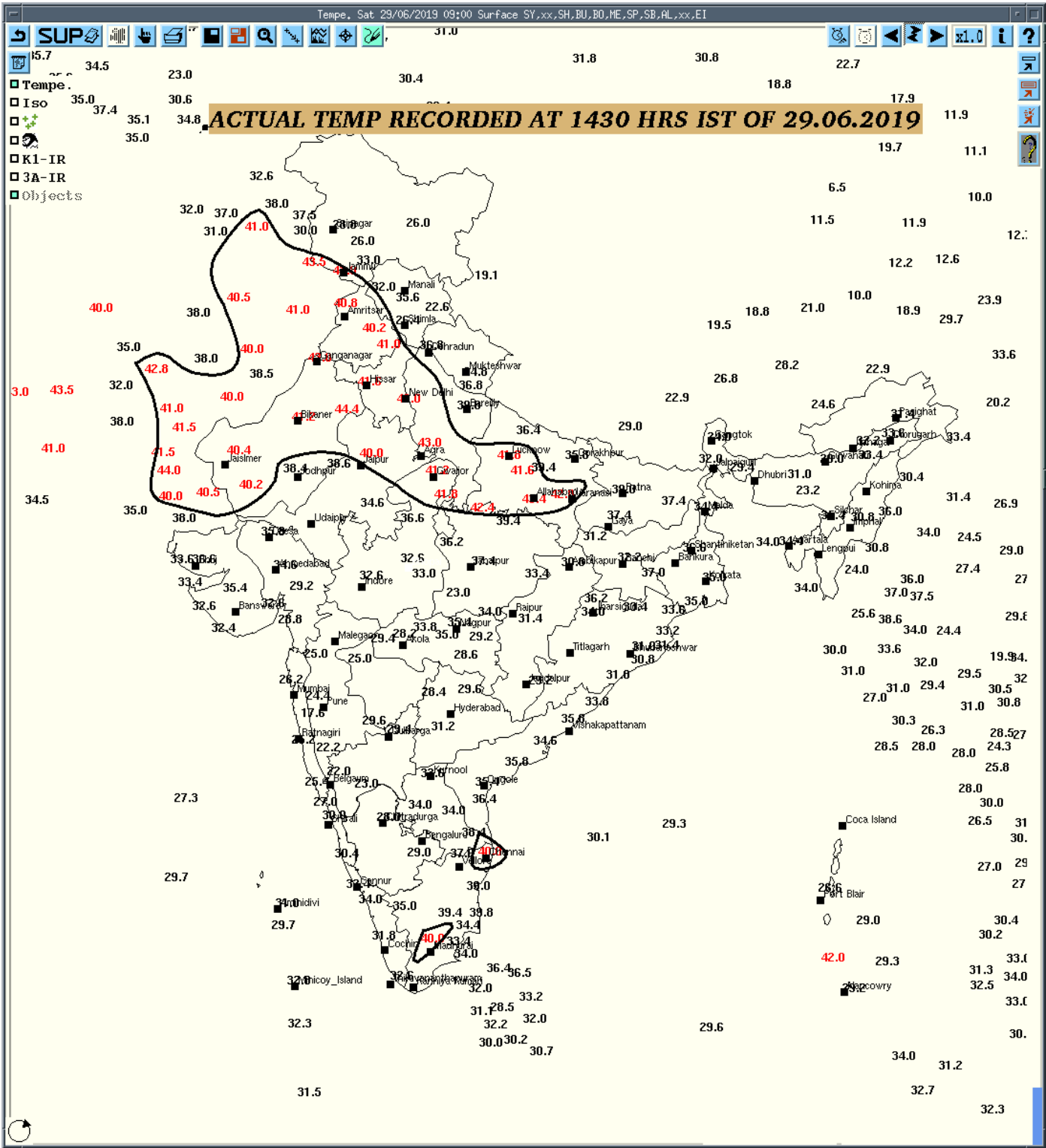
03/07/2019

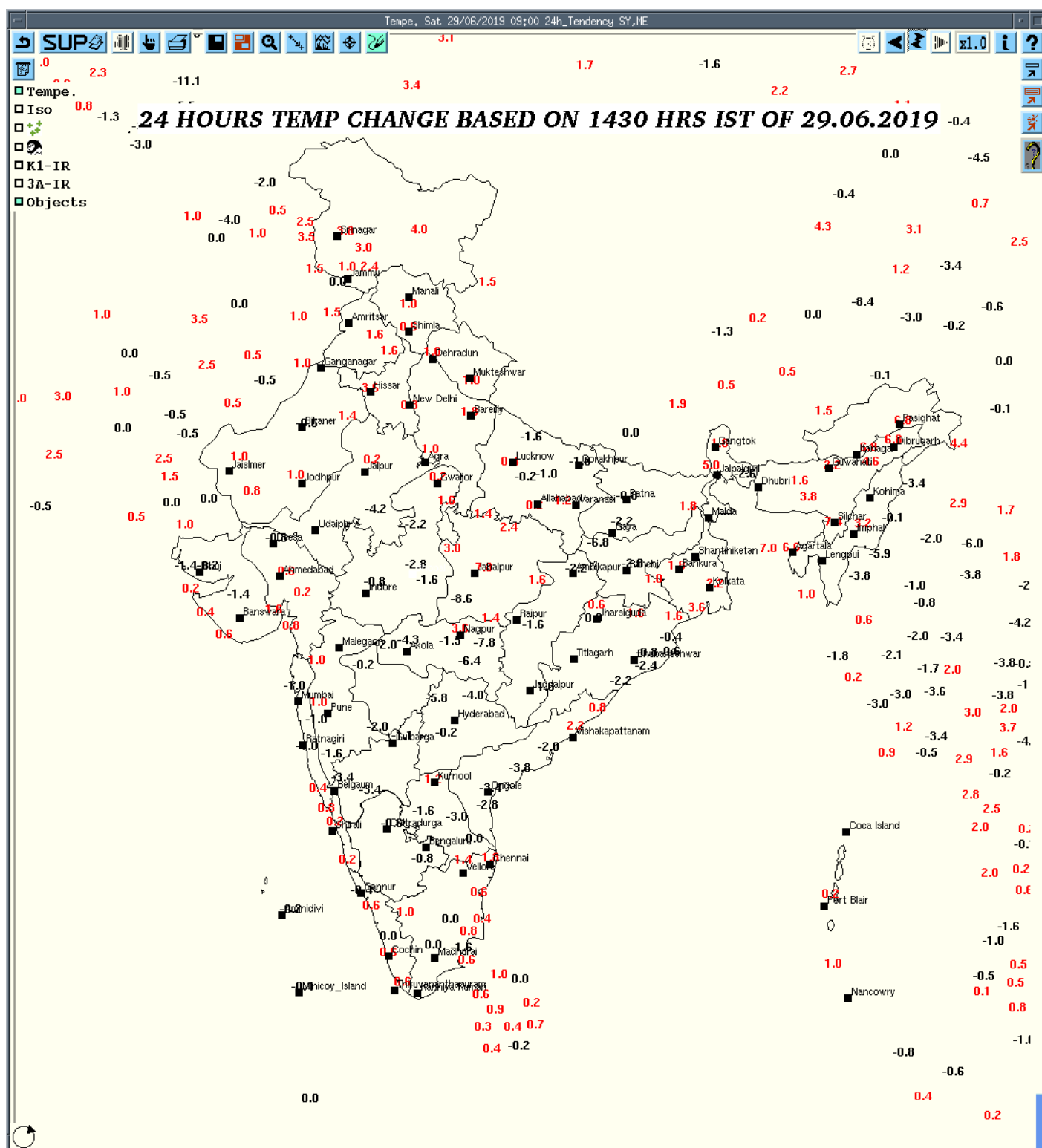


Heat wave conditions:- NIL









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Dated: 30th June, 2019

Time of Issue: 1600 Hours IST

Current Temperature Status and Warning for next five days

Heat Wave and Temperature Observed Yesterday (Past 24 hours from 0830 hrs IST of 29 June, 2019 to 0830 hrs IST 30 June, 2019)

Heat Wave:

Yesterday, Heat Wave Conditions were observed in many parts with **severe heat wave** in isolated pockets over East Uttar Pradesh; **Heat Wave Conditions** in many parts over West Uttar Pradesh and in isolated pockets over Jammu & Kashmir, Haryana, Chandigarh & Delhi, East Madhya Pradesh and Bihar. **(Annexure 1 & 2).**

Maximum Temperature:

Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Uttar Pradesh; at isolated places over Himachal Pradesh, Haryana, Chandigarh & Delhi and East Madhya Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at many places over Punjab, Bihar, Jharkhand, Kerala & Mahe and Tamilnadu, Puducherry & Karaikal; at a few places over Gangetic West Bengal and West Madhya Pradesh; at isolated places over Jammu & Kashmir and Rajasthan; **above normal (1.6°C to 3.0°C)** at most places over Nagaland, Manipur, Mizoram & Tripura; at a few places over Chhattisgarh, South Interior Karnataka, Vidarbha, Rayalaseema, Odisha and Lakshadweep. **Yesterday, the highest maximum temperature of 45.1°C** was recorded at **Churu (West Rajasthan).**

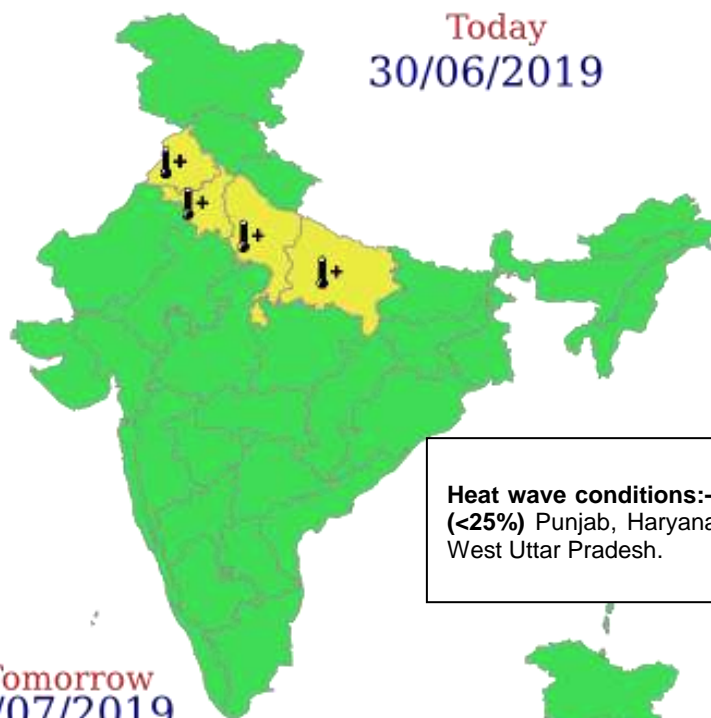
Temperatures Recorded at 1430 Hours IST of Today, the 30th June, 2019

- **Churu(West Rajasthan)** recorded the maximum temperature of **44.2°C (Annexure 3).**
- **Temperatures recorded at 1430 hours IST of today have risen by 1-4°C** in most parts Assam & Meghalaya and Konkan & Goa; in many Parts over Vidarbha; in few parts Gujarat Region and in one or two pockets of Himachal Pradesh, East Rajasthan, Jharkhand, East Madhya Pradesh, Chhattisgarh, Odisha, North Interior Karnataka and Coastal Andhra Pradesh. **(Annexure 4).**

Heat Wave Warnings for Next 5 Days (on next page)

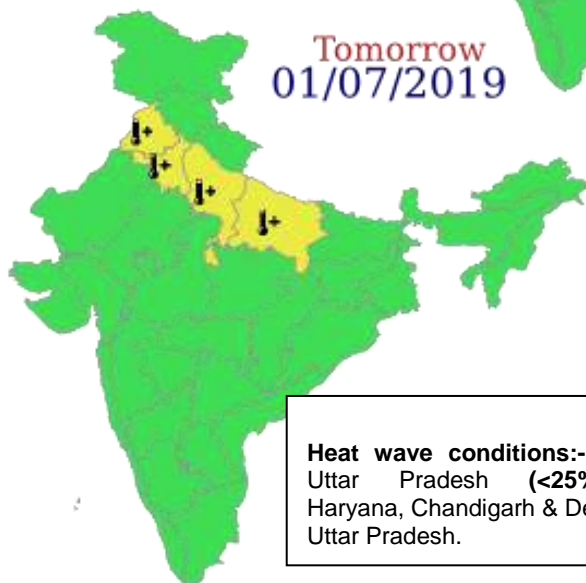
(For significance of colour code, criteria and its Impact & action suggested for Heat Wave kindly refer to Annexure-5 at end of this document)

Today
30/06/2019



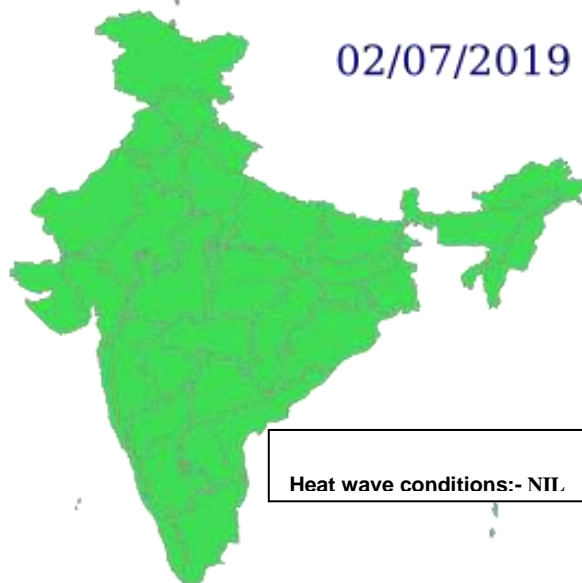
Heat wave conditions:- (50%) East Uttar Pradesh (<25%) Punjab, Haryana, Chandigarh & Delhi and West Uttar Pradesh.

Tomorrow
01/07/2019



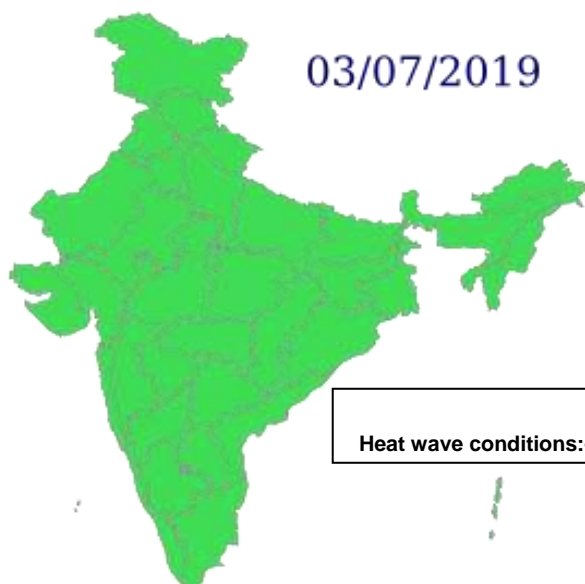
Heat wave conditions:- (50%) East Uttar Pradesh (<25%) Punjab, Haryana, Chandigarh & Delhi and West Uttar Pradesh.

02/07/2019



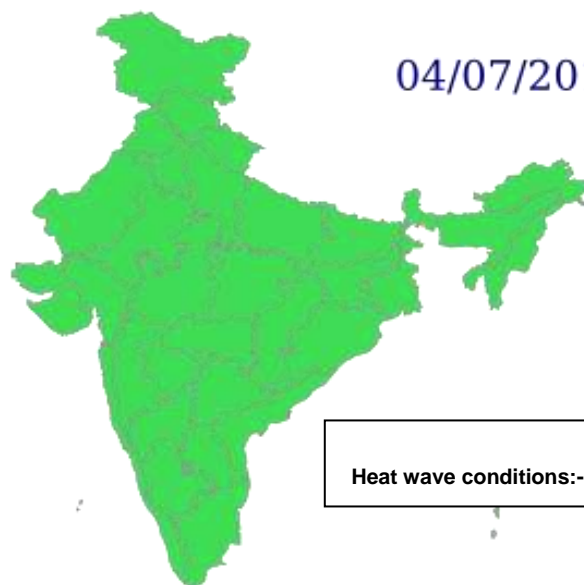
Heat wave conditions:- NIL.

03/07/2019

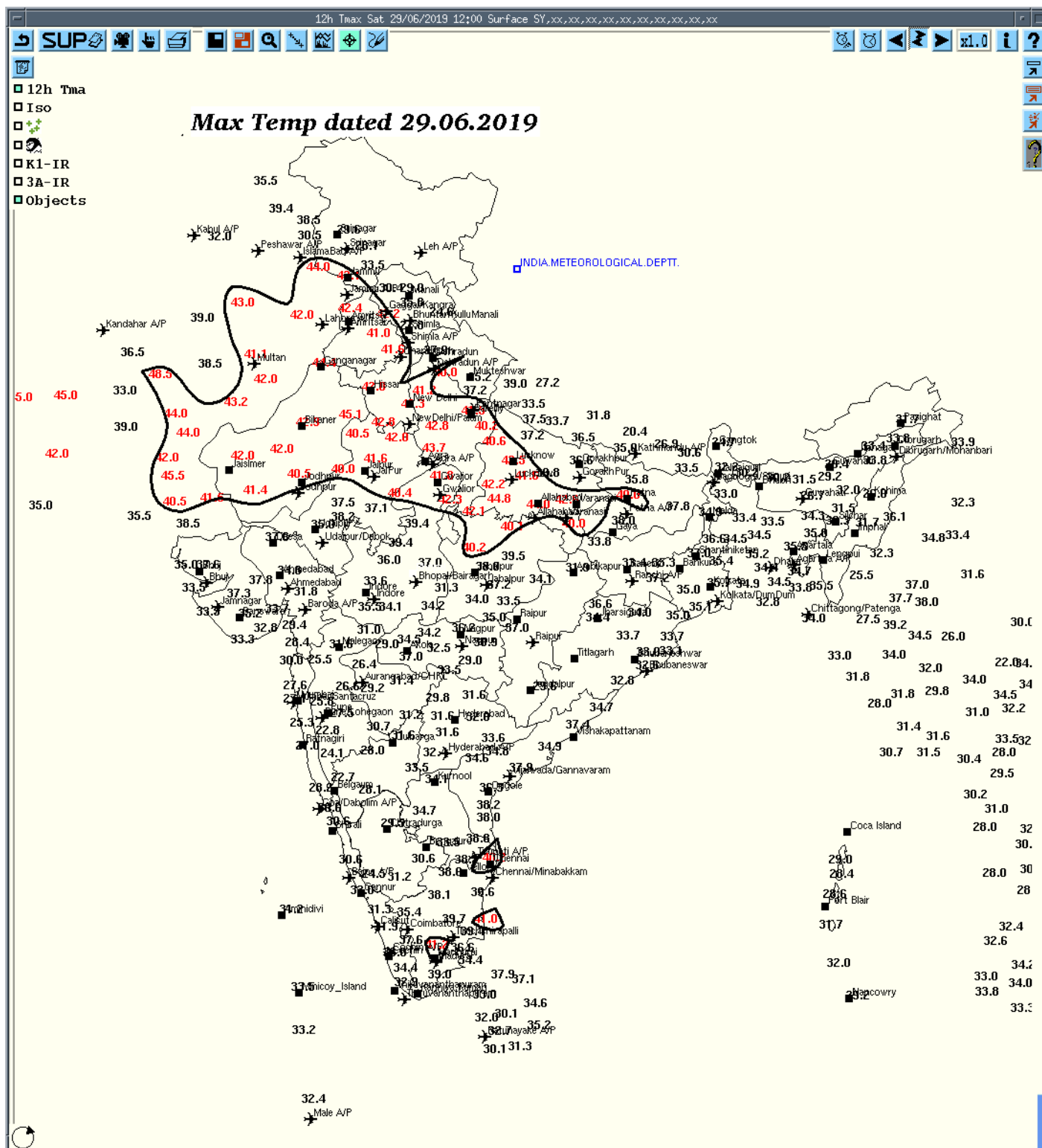


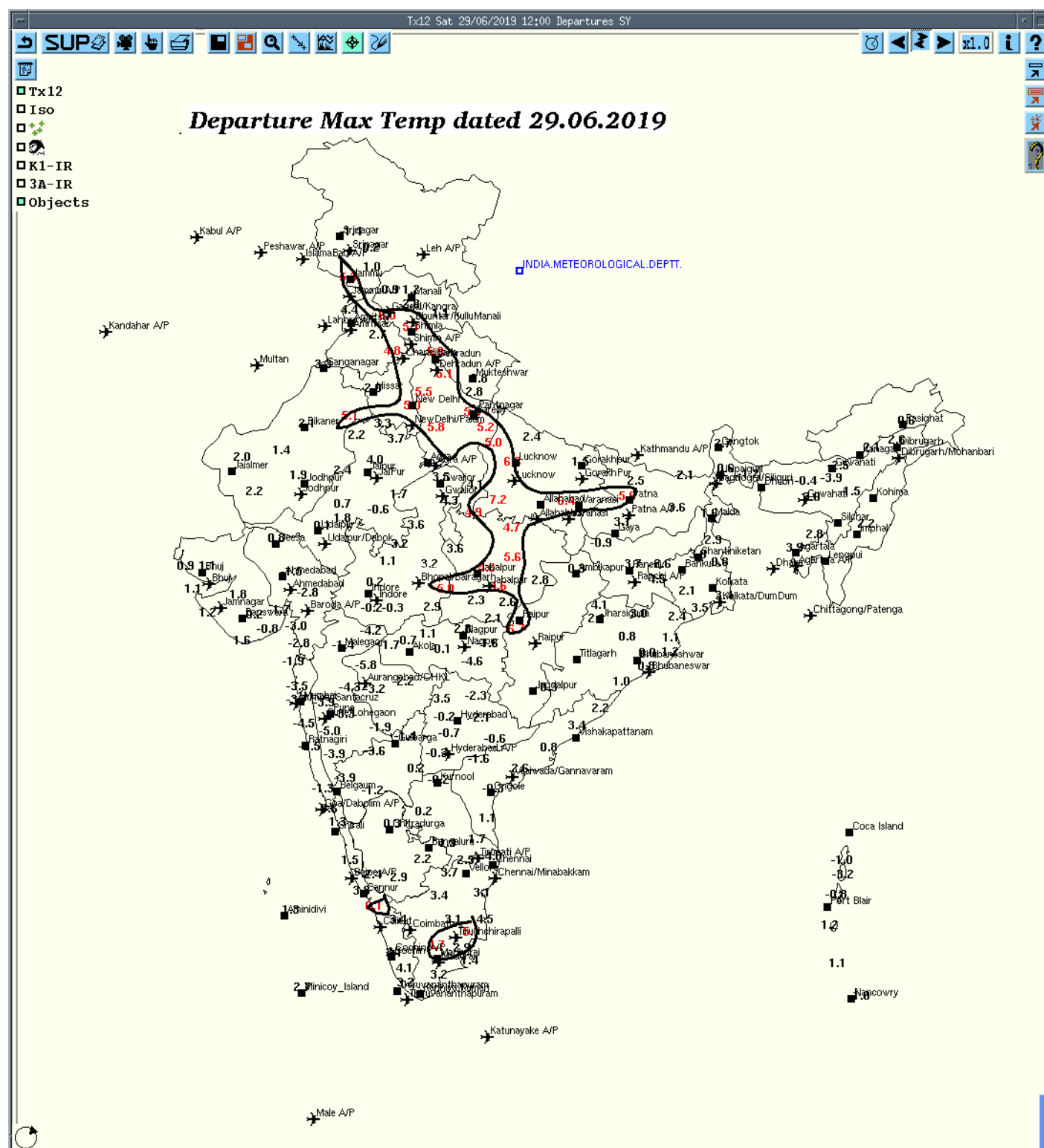
Heat wave conditions:- NIL

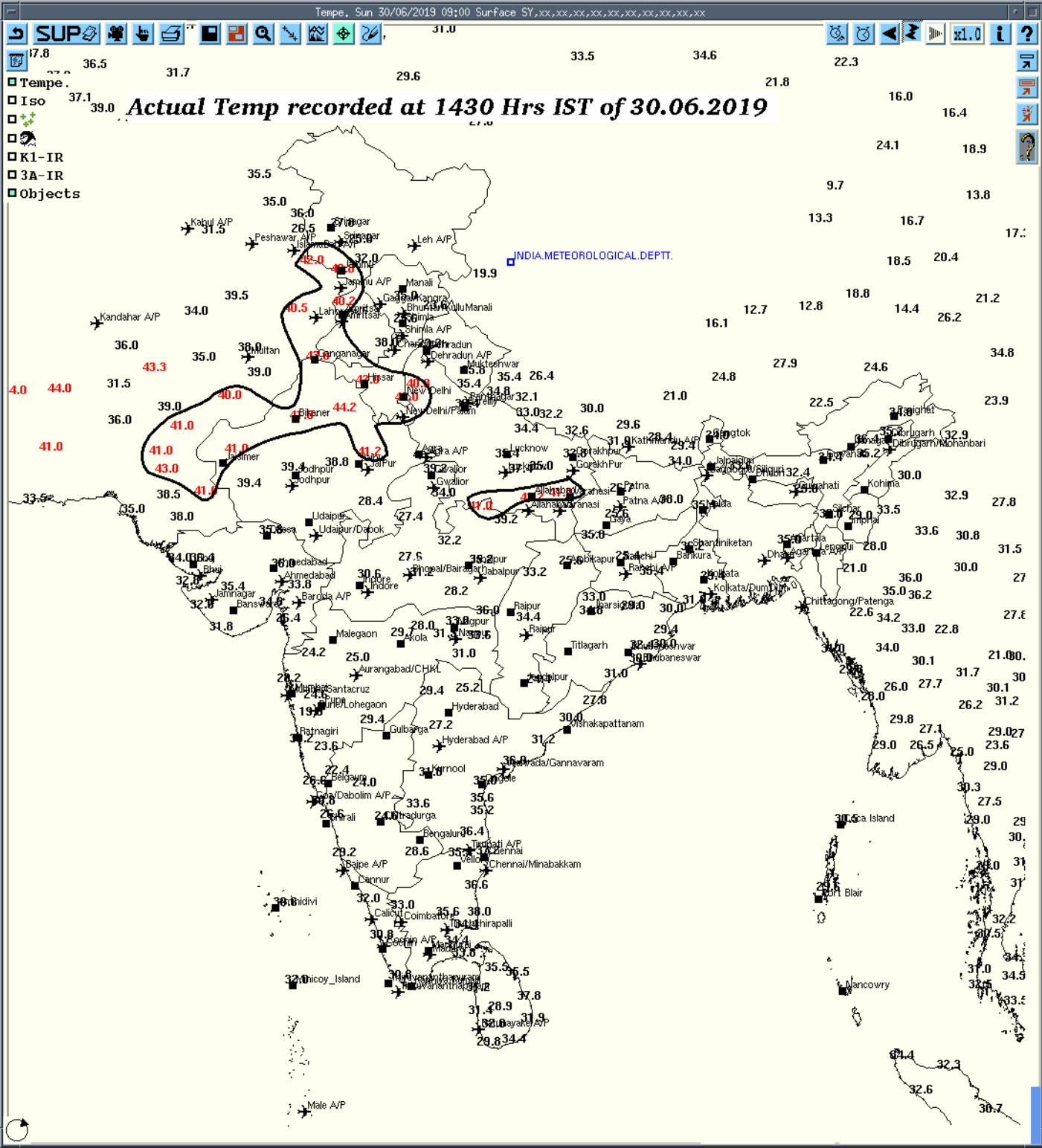
04/07/2019

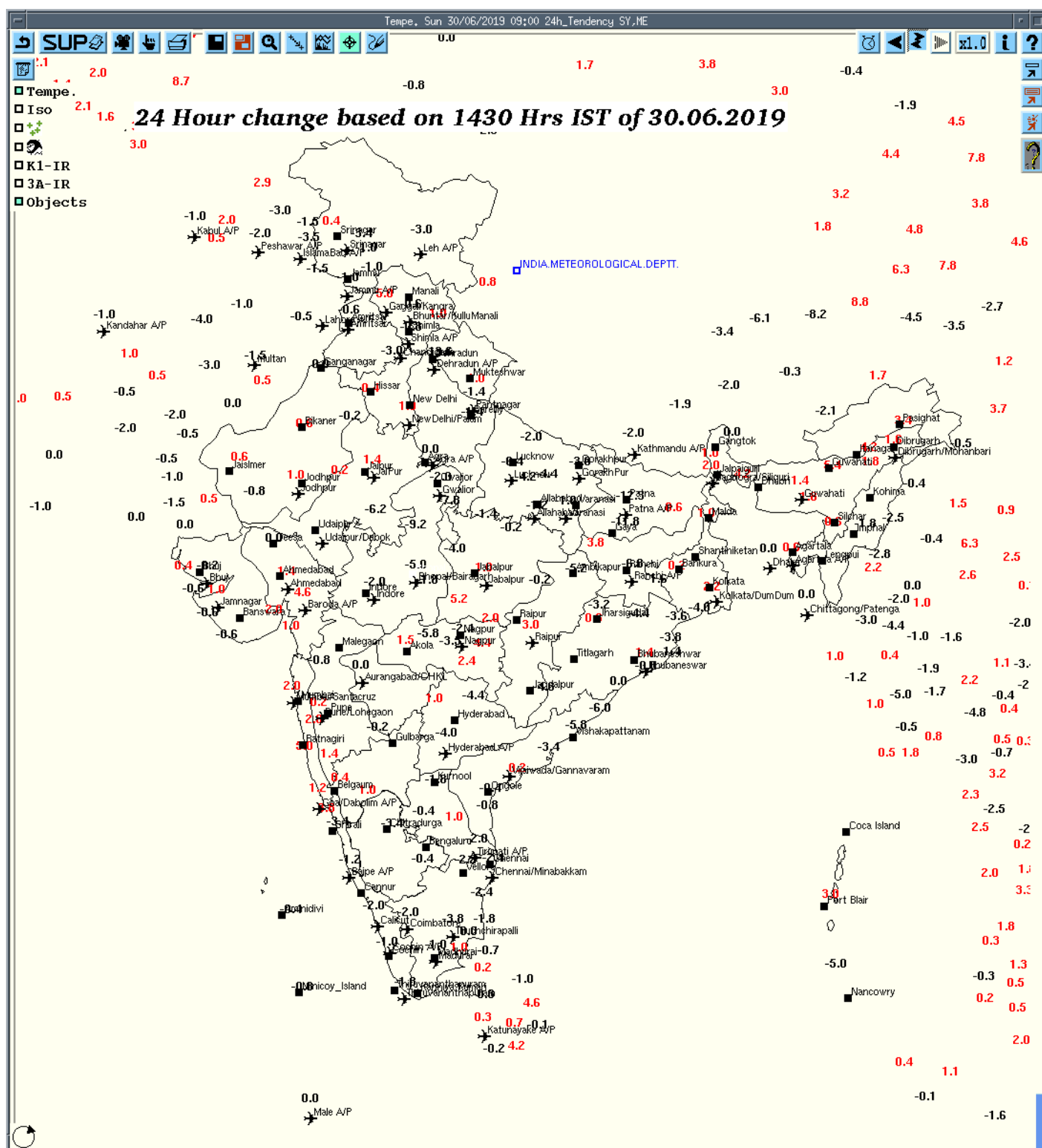


Heat wave conditions:- NIL









Heat Wave

Heat wave is considered if maximum temperature of a station reaches at least 40°C or more for Plains, 37°C or more for coastal stations and at least 30°C or more for Hilly regions. Following criteria are used to declare heat wave:

a) Based on Departure from Normal

- *Heat Wave*: Departure from normal is 4.5°C to 6.4°C
- *Severe Heat Wave*: Departure from normal is >6.4°C

b) Based on Actual Maximum Temperature (for plains only)

- *Heat Wave*: When actual maximum temperature $\geq 45^{\circ}\text{C}$
- *Severe Heat Wave*: When actual maximum temperature $\geq 47^{\circ}\text{C}$

To declare heat wave, the above criteria should be met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it will be declared on the second day.

Heat Wave Warning

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people.

ANNEXURE IV

COLOR CODE FOR WARNING

Green (No action)	Normal Day	Maximum temperatures are near normal
Yellow Alert (Be updated)	Heat Alert	Heat wave conditions at district level likely to persist for 2 days
Orange Alert (Be prepared)	Severe Heat Alert for the day	(i) Severe heat wave conditions persist for 2 days. (ii) With varied severity, heat wave is likely to persists for 4 days or more
Red Alert (Take Action)	Extreme Heat Alert for the day	(i) Severe heat wave persists for more than 2 days. (ii) Total number of heat/severe heat wave days likely to exceeds 6 days.

ANNEXURE V

IMPACT OF HEAT WAVE AND ACTION SUGGESTED

Warning	Impact	Suggested Actions
Nil	Comfortable temperatures	No cautionary action required
Heat wave conditions at district level, likely to persist for 2 days	Heat is tolerable for general public but moderate health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure
i. Severe heat wave conditions likely to persist for 2 days. ii. With varied severity, heat wave is likely to persist for 4 days or more.	Increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work. High health concern for vulnerable people e.g. infants, elderly, people with chronic diseases.	Avoid heat exposure– keep cool. Avoid dehydration
i. Severe heat wave likely to persist for more than 2 days. ii. Total number of heat/severe heat wave days likely to exceed 6 days.	Very high likelihood of developing heat illness and heat stroke in all ages.	Extreme care needed for vulnerable people. <small>Activate W Go to Settings</small>

ANNEXURE VI

VARIOUS SKILL SCORES

Table 1: Seasonal skill scores for homogeneous region and all India for five days

D1	FAR	MR	CSI	HSS	POD
All India	0.11	0.08	0.49	0.60	0.92
East India	0.11	0.17	0.29	0.40	0.83
North West	0.11	0.04	0.55	0.65	0.96
Central	0.24	0.06	0.64	0.64	0.94
West India	0.11	0.12	0.47	0.58	0.88
South India	0.10	0.11	0.34	0.46	0.89
D2	FAR	MR	CSI	HSS	POD
All India	0.10	0.15	0.47	0.58	0.85
East India	0.10	0.14	0.31	0.43	0.86
North West	0.10	0.12	0.53	0.64	0.88
Central	0.25	0.15	0.58	0.55	0.85
West India	0.10	0.16	0.46	0.57	0.84
South India	0.09	0.19	0.33	0.45	0.81
D3	FAR	MR	CSI	HSS	POD
All India	0.08	0.38	0.38	0.49	0.62
East India	0.05	0.69	0.16	0.23	0.31
North West	0.08	0.32	0.44	0.55	0.68
Central	0.25	0.25	0.51	0.48	0.75
West India	0.06	0.49	0.34	0.44	0.51
South India	0.07	0.53	0.22	0.31	0.47
D4	FAR	MR	CSI	HSS	POD
All India	0.05	0.49	0.37	0.48	0.51
East India	0.03	0.97	0.02	0.01	0.03
North West	0.06	0.43	0.41	0.53	0.57
Central	0.18	0.30	0.52	0.51	0.70
West India	0.04	0.61	0.30	0.40	0.39
South India	0.04	0.70	0.18	0.27	0.30
D5	FAR	MR	CSI	HSS	POD
All India	0.04	0.58	0.32	0.43	0.42
East India	0.01	0.97	0.03	0.03	0.03
North West	0.05	0.59	0.30	0.40	0.41
Central	0.17	0.34	0.50	0.49	0.66
West India	0.03	0.75	0.20	0.28	0.25
South India	0.03	0.74	0.18	0.27	0.26

Table 2: Monthly and seasonal skill scores for all India for five days

Months	Days	CSI	FAR	POD	MR	HSS
April	D 1	0.51	0.07	0.97	0.03	0.64
	D 2	0.40	0.07	0.80	0.20	0.53
	D 3	0.33	0.06	0.61	0.39	0.45
	D 4	0.34	0.6	0.59	0.41	0.46
	D 5	0.31	0.4	0.49	0.51	0.43
May	D 1	0.40	0.14	0.93	0.07	0.50
	D 2	0.41	0.13	0.89	0.10	0.52
	D 3	0.35	0.09	0.64	0.35	0.45
	D 4	0.30	0.05	0.45	0.54	0.40
	D 5	0.22	0.04	0.31	0.68	0.30
June	D 1	0.57	0.11	0.90	0.10	0.66
	D 2	0.57	0.09	0.85	0.15	0.66
	D 3	0.45	0.07	0.62	0.38	0.55
	D 4	0.44	0.03	0.51	0.49	0.55
	D 5	0.41	0.03	0.47	0.53	0.52
Season	D 1	0.49	0.11	0.92	0.08	0.60
	D 2	0.47	0.10	0.85	0.15	0.58
	D 3	0.38	0.08	0.62	0.38	0.49
	D 4	0.37	0.05	0.54	0.49	0.48
	D 5	0.32	0.04	0.42	0.58	0.43