Japanese Heat Health Warning System

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0. Development of Japanese HHWS

  http://www.wbgt.env.go.jp/
- Guideline for sports activities (1994~, Japan Sports Association)
- The ministry of Environment
- The Fire and Disaster Management Agency
- Japan Meteorological Agency (heat warning 2011~)
- Heat Stroke patients information site (2008~)
- Agencies liaison conference for HS
1. WBGT observation network

The globe temperature sensor is set in 11 cities (at Japan Meteorological Agency observation field). Temperature and humidity are observed/provided from JMA observatories. (at Tokyo, temperature and humidity are observed by Ministry of Environment.)
Around 840 points
• 1 hourly observed WBGT
• 3 hourly forecast for today, tomorrow and the day after tomorrow
3. Heat Stroke Information Sharing System

Mail service:
WBGT real time/forecast up to 5 cities (of 840 cities) sent to users. The threshold (wbgt>=31,28,25,21 or all) for data delivery, time interval and service time is selectable.

FTP service:
WBGT CSV files are forwarded to local government, network providers and so on for provision to users.

On web site, WBGT is ranked/colored with 5 risk categories based on the guideline for sports and general public.
4. WBGT risk rank

Guideline for general public is issued by Japan Biometeorology Society in 2008 (updated in 2013)
Guideline for sport fields is issued by Japan Sport Association in 1994 (updated in 2013)

For example

WBGT>=31 degree in Celsius
<public>: danger
aged people should stay/move at/to cooling room and avoid outside activities.
<sport>: sport activities should be stopped except well-organized/administrated situation, all activities should be stopped.
For kids, prohibited.
5. Example of recent heat event (patients ambulanced in 2018).

- Number of patients ambulanced by heat diseases is reported on Tuesday by the Fire and disaster management Agency. (from 2008)

- In 2018, records from 2008 was updated. 82,614 from July to August (48,242 in 2013) 90,409 from June to September (55,870 in 2010) (previous record), based on prompt report.

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Fire and Disaster Management Agency: http://www.fdma.go.jp/neuter/topics/fieldList9_2.html
6. Trend of heat disease patients from 2008 to 2018

- Number of patients increased (jumped) in 2010 and 2018
- Ratio of severe symptom (~=hospitalized) patients remains around 2% (in 2010 heat wave, the ratio increased to 4%)

Ratio of severe patients (%)

Ambulanced patients

Total and average from July to August in each year.

WBGT at 6 cities (°C)
7. Activities to reduce patients

Cool/rest spots (stores, community centers)

Tachikawa-city

Gyoda-city

On 2018 final report, 95,137 patients ambulanced. 48.1% is aged people (>=65) 40.3% was ambulanced from home.

WBGT information, cool scurf 2011~
Kumagaya-city

http://www.city.kumagaya.lg.jp/at susataisaku/


8. Difference between ISO7243-WBGT and WBGT calculated from JMA observed data

Temperature/humidity is observed under shaded 5m/s condition (JMA regulation).

On the other hand, ISO7243 requires sun-shined and natural ventilated condition.

Under weak-wind and well-sun-shined condition the difference would be 2 degree.

<table>
<thead>
<tr>
<th>Temp. (°C)</th>
<th>Humidity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tg-Ta=10°C</td>
<td>wind 1m/s</td>
</tr>
<tr>
<td>35</td>
<td>1.2 1.3 1.4 1.6 1.7 1.9 2.0 2.2 2.5 2.9</td>
</tr>
<tr>
<td>30</td>
<td>1.5 1.6 1.7 1.8 1.9 2.1 2.3 2.5 2.8 3.0</td>
</tr>
<tr>
<td>25</td>
<td>1.8 1.9 2.1 2.3 2.4 2.5 2.7 2.9 3.0 3.1</td>
</tr>
<tr>
<td>20</td>
<td>2.1 2.1 2.3 2.4 2.5 2.7 2.8 3.0 3.2 3.4</td>
</tr>
<tr>
<td>15</td>
<td>2.4 2.5 2.6 2.8 2.9 3.0 3.2 3.2 3.4 3.6</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Temp. (°C)</th>
<th>Humidity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tg-Ta=0°C</td>
<td>wind 5m/s</td>
</tr>
<tr>
<td>35</td>
<td>0.0 0.0 0.0 0.0 -0.1 0.0 0.0 -0.1 -0.1 -0.1</td>
</tr>
<tr>
<td>30</td>
<td>0.0 0.0 0.0 0.0 0.0 -0.1 0.0 -0.1 -0.1 -0.1</td>
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Effective range of Tr estimation