



Recent activities of the Tokyo Climate Center (TCC)

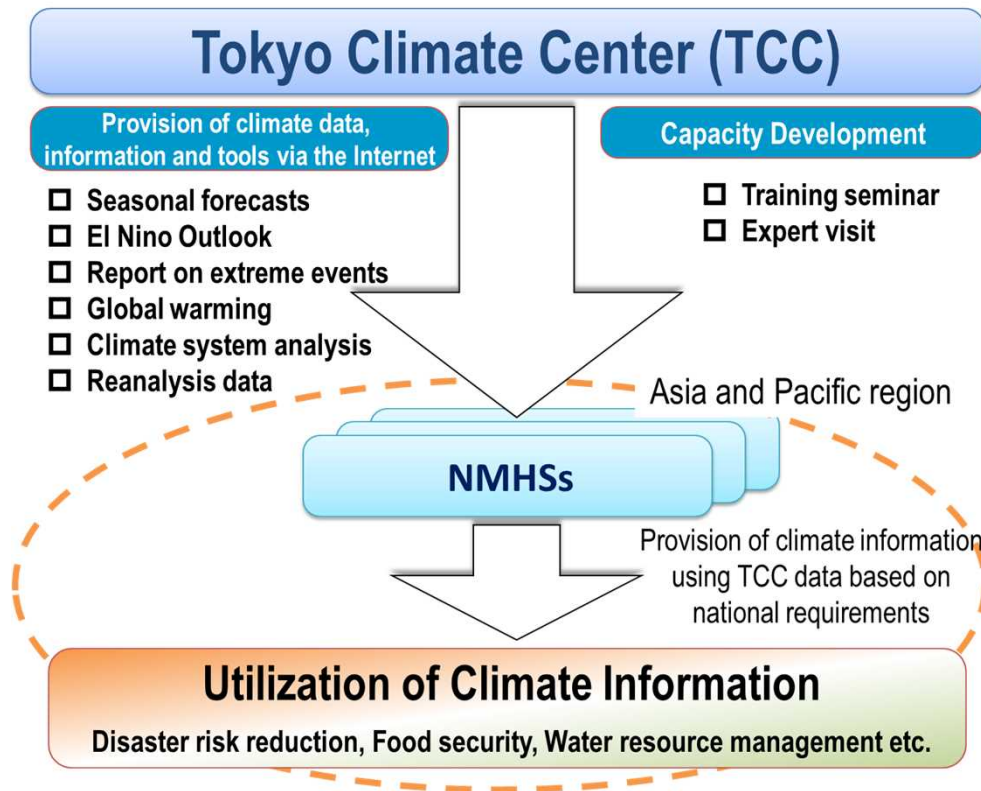
Kazuaki TSUJI

Tokyo Climate Center

Japan Meteorological Agency

Tokyo Climate Center (TCC)

- TCC has served as a WMO Regional Climate Center (RCC) in Regional Association II since 2009.
- TCC supports National Meteorological and Hydrological Services (NMHSs) through data/information provision and capacity development activities.



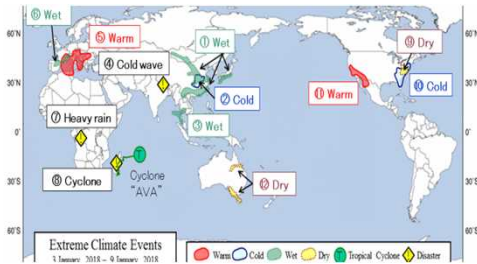
Status of RCCs or RCC-Networks implementation in and around RA-II

- designated RCC
- ▲ designated RCC-Network
- RCC in demonstration phase
- ▲ RCC-Network in demonstration phase
- RCC proposed
- ▲ RCC-Network proposed

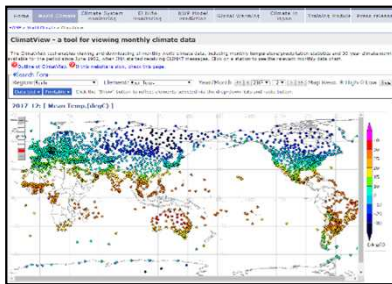
<http://www.wmo.int/pages/prog/wcp/wcasp/rcc/rcc.php>

Climate monitoring and forecast products

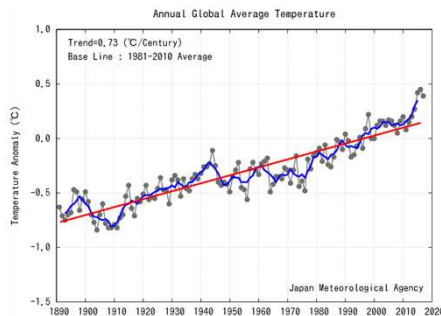
● A variety of TCC's monitoring and forecast products



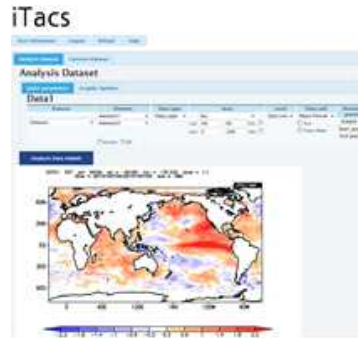
Monitoring of Extreme Climate Events



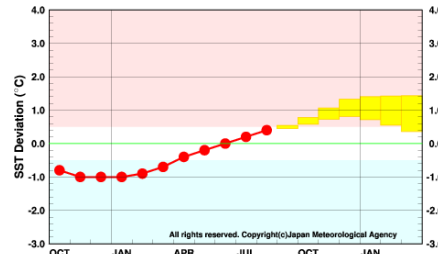
Climate database (ClimatView)



Global Average Surface Temperature Anomalies



Interactive Tool for Analysis of the Climate System



El Niño outlook



Long-term reanalysis data

Three-month Prediction (Tropics and Asia)

This product is displayed for use by National Meteorological and Hydrological Services (NMHSs).

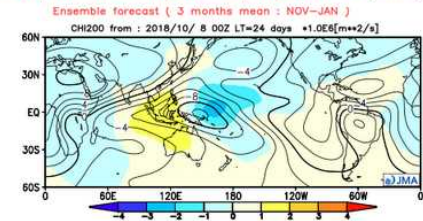
Forecast Maps

forecast period
3 months mean

initial date
2018.10.08.00Z

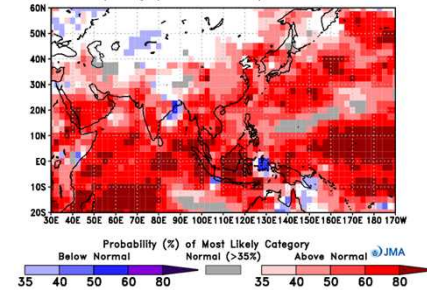
area
60N-60S
Asia

data



JMA Seasonal Forecast (Forecast Initial month is 10 2018)

Most likely category of Surface Temperature for NDJ 2018

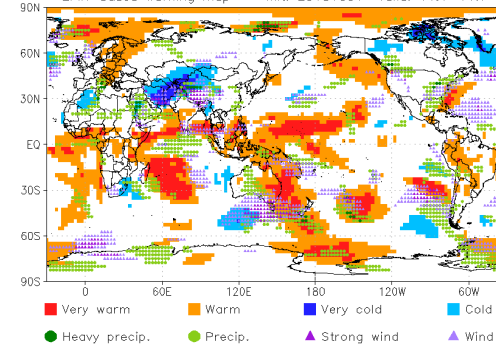


Seasonal Forecast maps

JMA One-month Prediction

EFIR-based warning map

init: 20181031 valid: 11:1-11:7



EFI-based climate early warning products

Capacity Development Activities

Annual Training Seminars

- TCC holds annual training seminars on the application of its climate monitoring and prediction products.



TCC Training Seminar on One-month Forecast (November 2018)

Expert visits

- TCC arranges expert visits to NMHSs to support capacity building for climate services and facilitate the effective transfer of technical expertise on TCC products and tools.



Visit to DMH of Myanmar (June 2014)

Hosting NMHSs staff



Visit by BMKG climate experts (July 2019)

Interactive One-month Guidance Tool

- TCC has launched a new interactive tool enabling the generation of **statistical guidance** for station points in support of operational seasonal forecasts covering periods of a month or less.

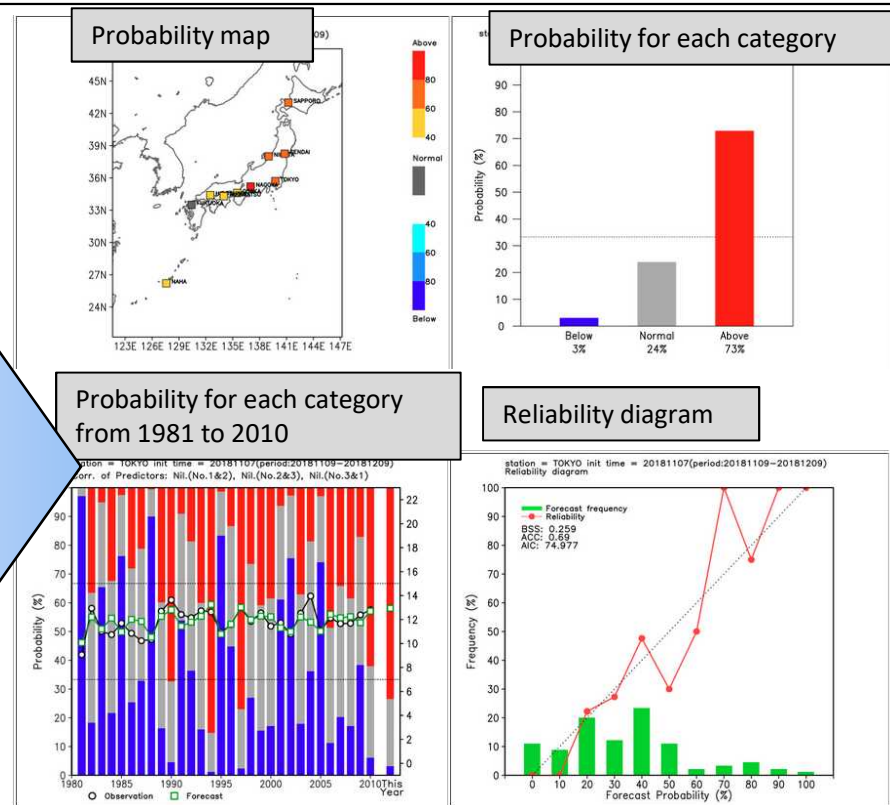
JMA's One-month Guidance Tool [\(Commentary\)](#)

Initial date: → The beginning and ending date of the valid time
 Forecast period: / / - / /
 Predictor: -- Nc
 Station and observation data: (Sample text data: [Temperature](#), [Precipitation](#))

Input your observation data

```
#elname=
#undef=-9999
#station= TOKYO, NIIGATA, SENDAI, NAGOYA, OSAKA, SAPPORO, HIRO
#lon=, , 139.76, 139.76, 141.85, 141.85, 138.25, 134.13, 140.4, 1
#lat=, , 35.681, 36.38, 38.25, 35.2, 34.6, 43.34, 34.3, 33.5, 26.2
1981, 1, 1, 5, 2.2, 1.8, 3.4, 4.6, -3.3, 2.7, 2.8, 5.3, 15.6
1981, 1, 2, 4.6, 4.3, 2.9, 3.5, 5, -2.2, 2.9, 4.6, 2.7, 13.4
1981, 1, 3, 5.1, 4.3, 1.1, 2.2, 3, -0.3, 1.2, 2.8, 2.2, 13.3
1981, 1, 4, 4.4, 4.7, 1.9, 1.7, 2.9, -2.4, 1.8, 2.8, 2.1, 14.2
1981, 1, 5, 4.1, 1.9, 0, 1.8, 2.7, -6.7, 2, 2.7, 3.4, 14.9
1981, 1, 6, 3.5, 1, -0.7, 1.3, 2.7, -6, 1.9, 2.9, 2.9, 15.3
```

Model Output Statistics

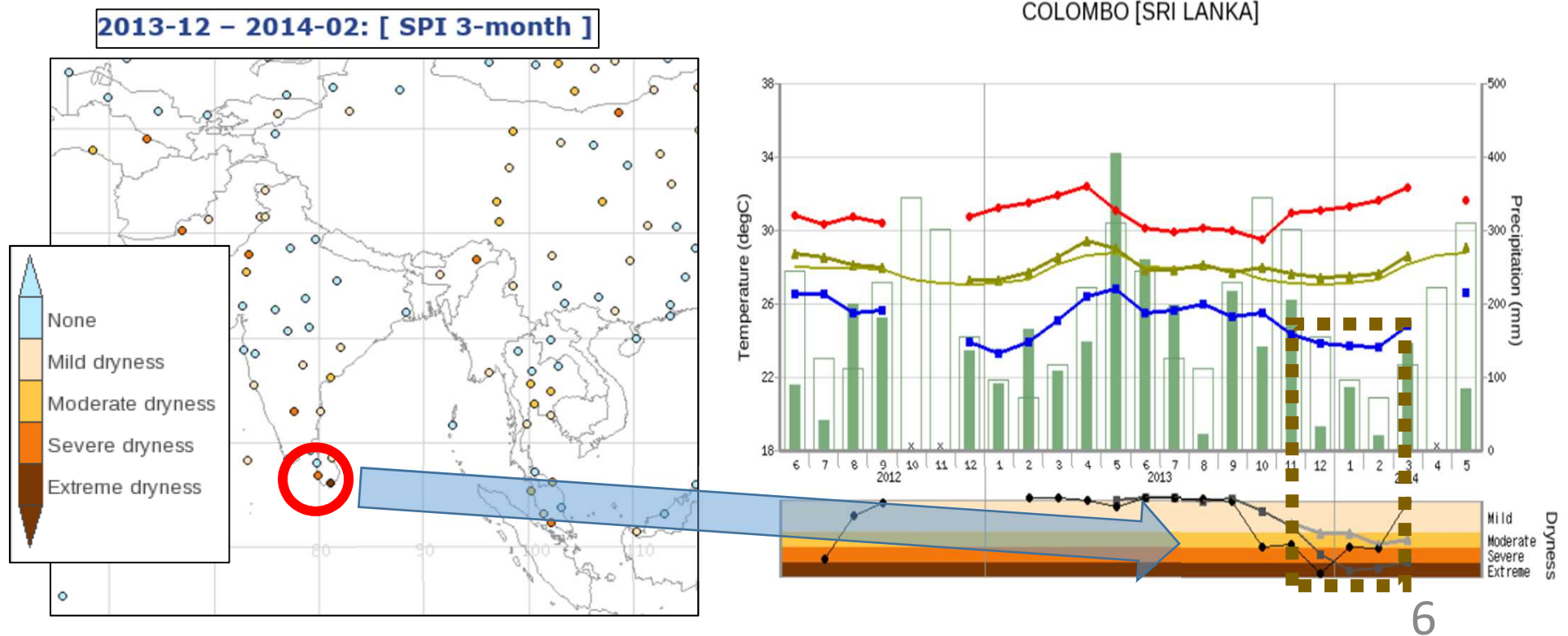


https://extreme.kishou.go.jp/cgi-bin/simple_guidance/index.cgi (PW protected)
https://extreme.kishou.go.jp/tool/simple_guidance/help/ (commentary)

Standardized Precipitation Index (SPI) installed in ClimatView

- TCC provides worldwide drought monitoring information (SPI) via its interactive online ClimatView tool since March 2019 to assist NMHSs in their monitoring of current and historical rainfall deficits.

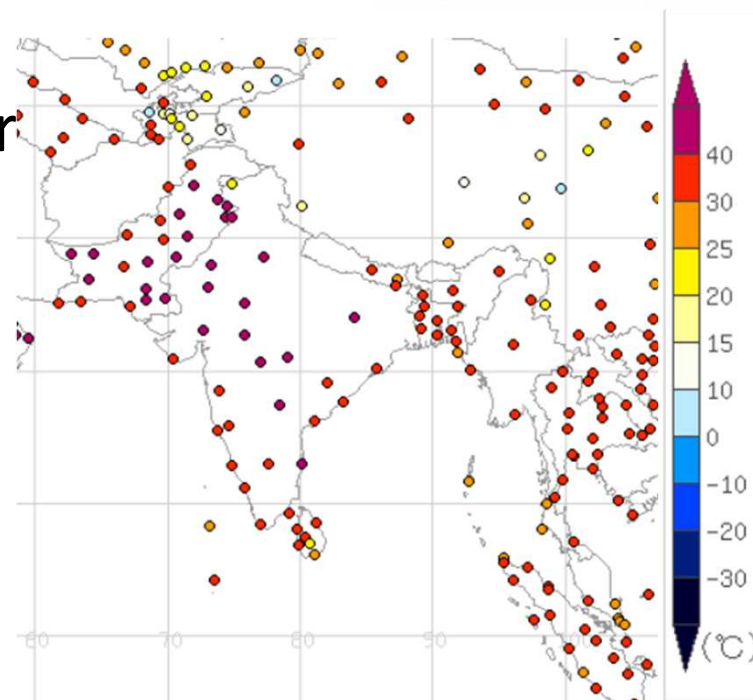
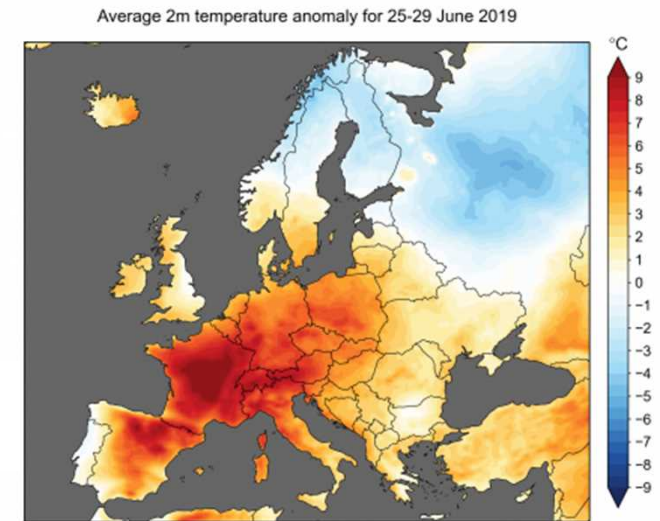
<https://ds.data.jma.go.jp/tcc/tcc/products/climate/climatview/frame.php>



Heatwaves in this summer

- Heatwaves hit South Asia and Europe this year
- **Early warning** is a key to save those who are vulnerable; **children, elderly and laborers outside**
- In fact, death toll in France is “10 times fewer deaths than the 2003 heatwave” with the authorities’ preventive measures, said health minister (France Info radio)

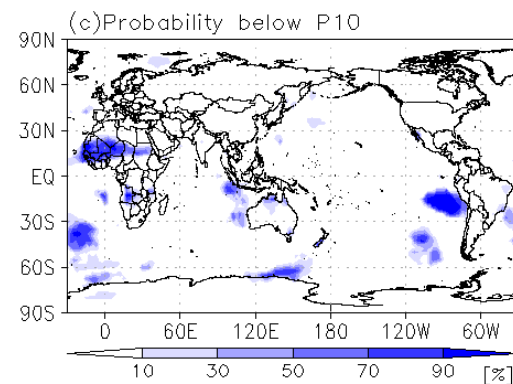
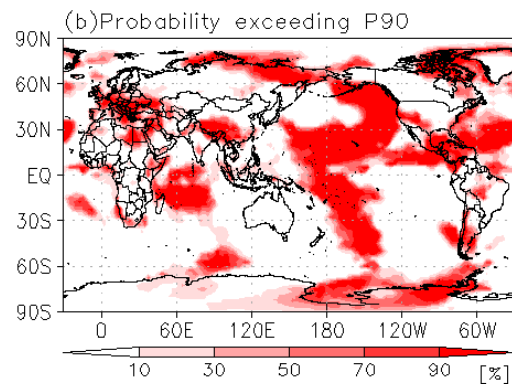
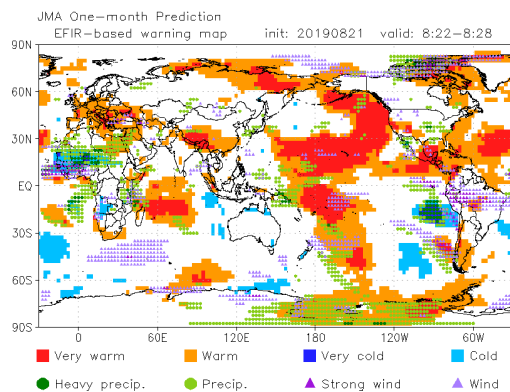
Figure from WMO News



Daily max. surf. temp. (SYNOP)
June 8 2019
Figure from ClimatView by JMA

Forecast products in support of Early Warnings for extreme weather events

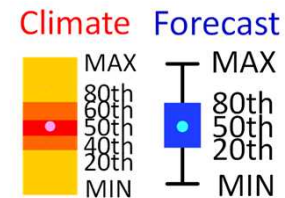
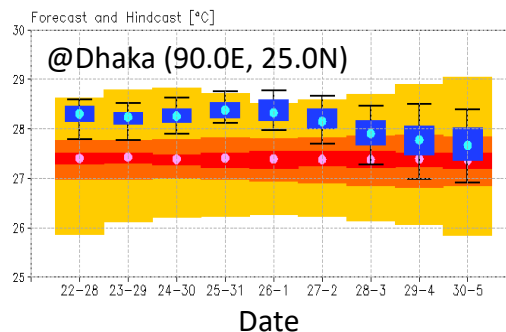
- To support the Asia-Pacific NMHSs in the provision of early warnings for extreme events, TCC provides a set of **extreme weather warning products** on the basis of **Extreme Forecast Index (EFI)** using JMA's operational Global Ensemble Prediction System.



Probability above/below the 90th/10th percentile of the model climatology

Occurrence probabilities for various extreme events are plotted on each map based on the following EFI Thresholds:

Very warm, Very cold, Heavy precip. and Strong wind : $|EFI| \geq 0.8$
Warm, Cold, Precip. and Wind : $|EFI| \geq 0.5$



Time series of the EPS forecast (cold color) and the model climate (warm color)

<https://ds.data.jma.go.jp/tcc/tcc/gpv/EFI/index.php>
(password-protected; updated every Thursday)

Two-week Temperature Forecast

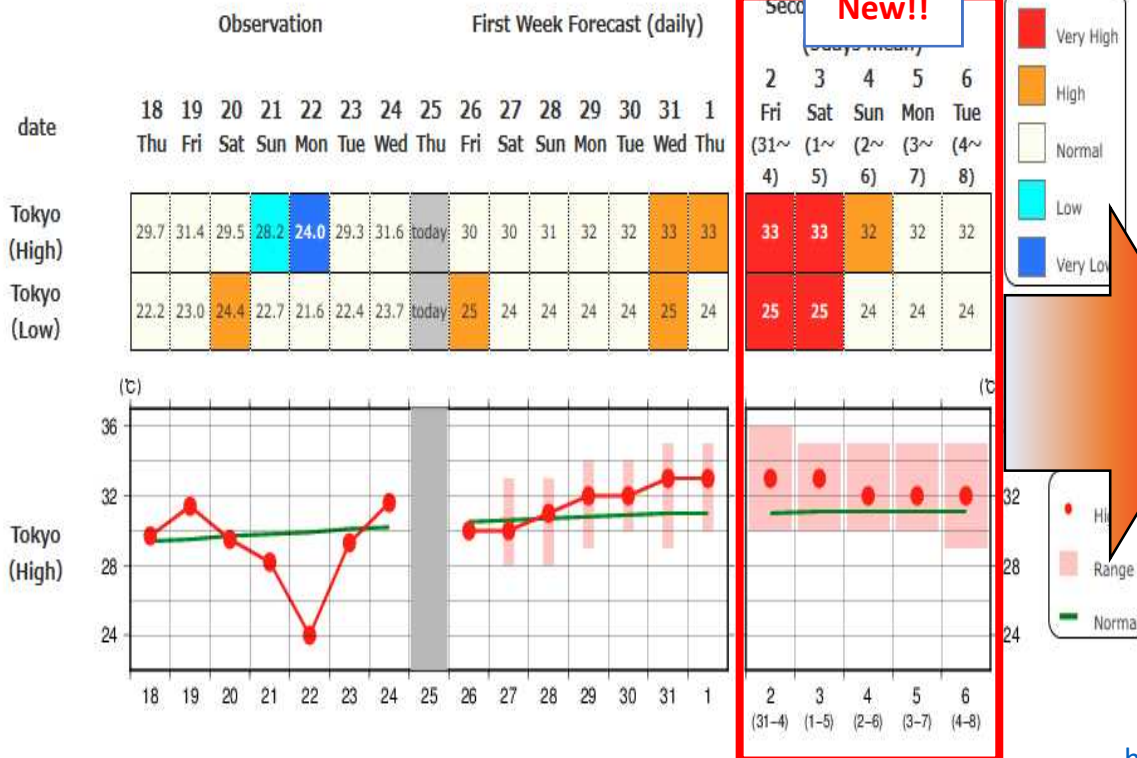
- Improvements of Numerical Weather Prediction (NWP) technology enabled more detailed temperature forecast for two week ahead

Two-week Temperature Forecast

(for domestic only)

Prefecture Updated at 14:30 JST,25 Jul, 2019

[Tokyo](#) | [Hachiojijima](#) | [Chichijima](#) | [Kanto/Koshin](#)



Disaster mitigation use;
Early warning

as well as

Industrial use;
Demand projection

Agricultural use;
Protecting plants from
extreme temperatures



Thank you