

Current status of operations of Tokyo Climate Center (TCC) (RCC Tokyo)

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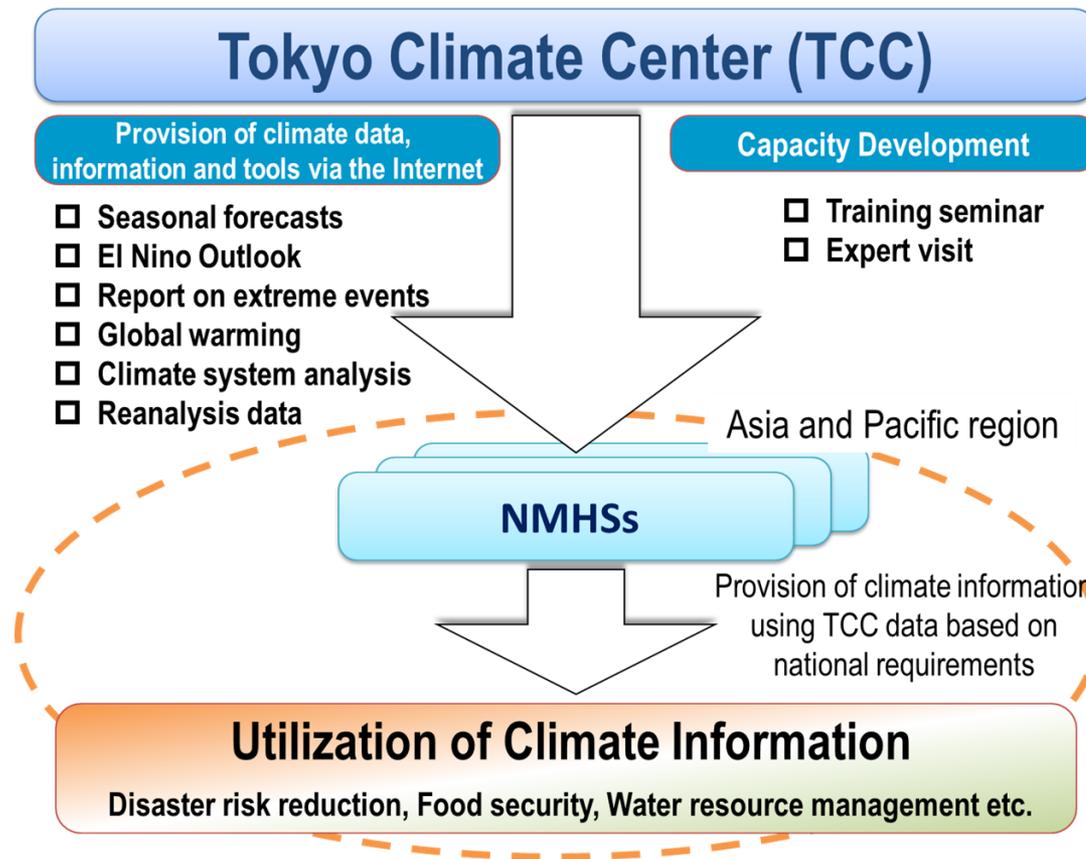
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World Meteorological Organization
Organisation météorologique mondiale

**WMO International Workshop on Global
Review of RCC Operations, Pune, India,
12 – 14 November 2018**

Tokyo Climate Center (TCC) (RCC Tokyo)

- TCC has served as a **WMO Regional Climate Centre in the RA II** since 2009.
- TCC supports NMHSs through data/information provision and capacity development activities.



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TCC website

<https://ds.data.jma.go.jp/tcc/tcc/index.html>



Tokyo Climate Center
WMO Regional Climate Center in RA II (Asia)



TCC home About TCC Site Map Contact us

El Niño Monitoring NWP Model Prediction Global Warming Climate in Japan Training Module Press release Links

TCC products in line with RCC functions

What are WMO RCCs

WMO RCCs are centres of excellence...

RCC Functions

Operational Activities for Long-range Forecasting

Operational Activities for Climate Monitoring

Operational Data Services, to support operational LRF and climate monitoring

Training in the use of operational RCC products and services

Latest Updates

World Climate Updated: 15 October 2018

Climate System Monitoring Updated: 15 October 2018

El Niño Monitoring Updated: 11 October 2018



Periodically updated TCC products

Main Products



iTacs

iTacs, Interactive Tool for Analysis of the Climate System, is a web-based application to assist NMHSs to analyse extreme climate events and to monitor climate status.



GPC Tokyo

Products of long-range forecast from Global Producing Center (GPC) Tokyo are available. These products are based on JMA's ensemble prediction system.



Monthly Discussion on Seasonal Climate Outlook

This is intended to assist NMHSs in the Asia-Pacific region in interpreting GPC Tokyo's three-month prediction and warm/cold start-up products.



El Niño Monitoring

"El Niño Monitoring" of current condition and prediction. This is issued every month around 10th.



ClimatView

The ClimatView tool enables viewing and downloading of monthly world climate data, including monthly temperature/precipitation statistics and 30-year climate normals.



TCC News

TCC News, a quarterly newsletter from Tokyo Climate Center, acquaints with significant climate disasters and events, forecaster's commentaries on seasonal outlooks, besides topics on the renewal and the usage of TCC products.

Main products

What's New

RSS

5 October 2018

Announcement: The 2017 edition of Climate Change Monitoring Report is now available.

30 August 2018 **NEW**

- TCC News No. 33 (Summer 2018) (PDF)
- Upgrade of iTacs
- Primary Factors behind the Heavy Rain Event of July 2018 and the Subsequent Heatwave in Japan from Mid-July Onward
- Sea Ice in the Arctic Ocean (July 2018)
- Kosa (Aeolian Dust) over the Philippines
- TCC Experts Visit the Philippines

22 August 2018 **NEW**

Press release: Primary Factors behind the Heavy Rain Event of July 2018 and the Subsequent Heatwave in Japan from Mid-July Onward

» Previous news
» Press release

Latest news of TCC's activities

Links

Regional Climate Centers

- RA II Regional Climate Center (RCC) Network Homepage
- Beijing Climate Center
- National Climate Centre, China **NEW**
- North Eurasian Climate Centre (NEACC)
- WMO RA VI RCC-Network

Regional Climate Outlook Forum (RCOF)

- Forum on Regional Climate Outlook Assessment and Prediction for Asia (FOCRAC)
- East Asian Winter Climate Outlook Forum (EASCOF)
- South Asian Climate Outlook Forum (SASCOF)
- ASEAN Climate Outlook Forum (ASEANCOF)

WMO RA II Climate Services

- Information Sharing on Climate Services **NEW**

Links to related websites



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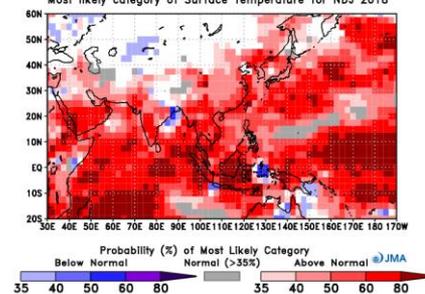
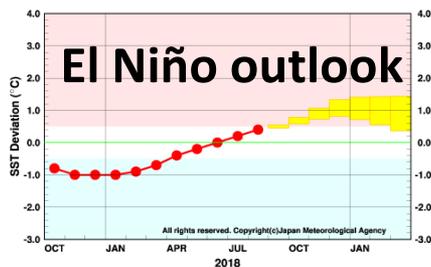
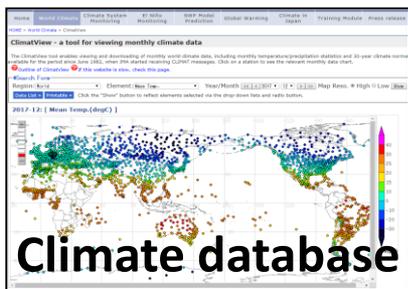
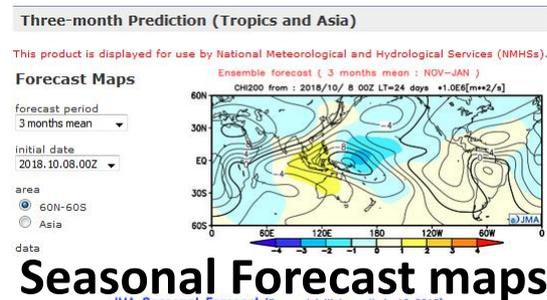
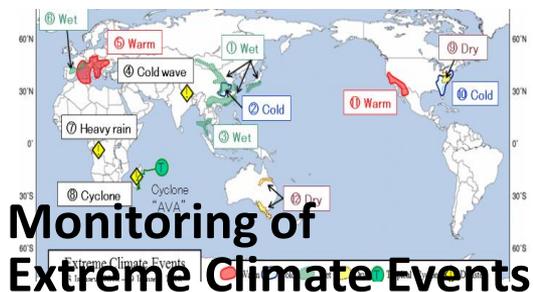
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RCC Operations: Mandatory Functions

1~3. Climate monitoring and forecast products

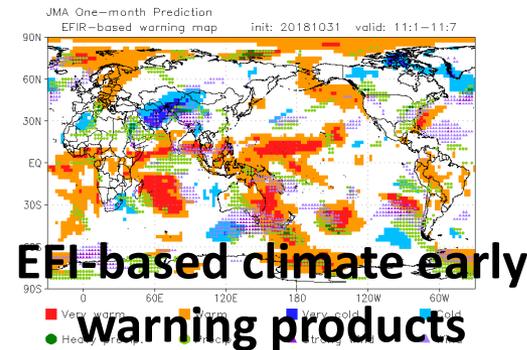
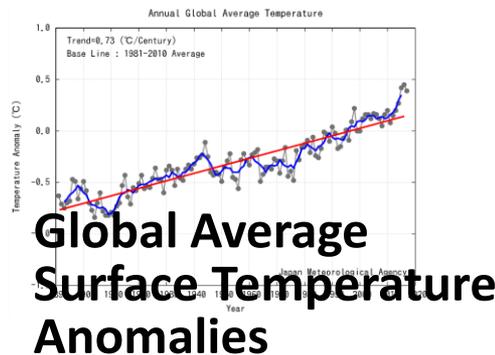
● A variety of TCC's monitoring and forecast products

For more details, please refer to supplement items after the main slide.



JRA project

Long-term reanalysis data



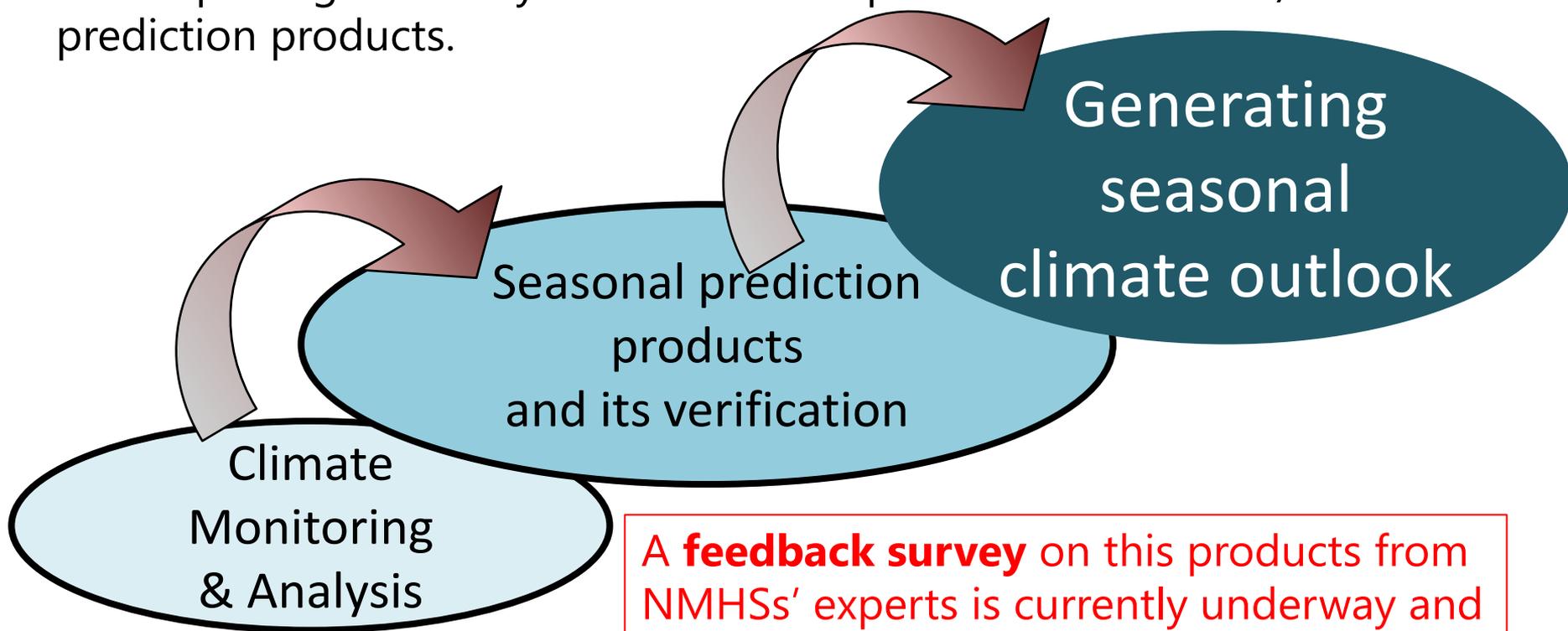
RCC Operations: Mandatory Functions

3. Long Range Forecasting

● TCC's monthly discussion on seasonal climate outlook

https://ds.data.jma.go.jp/tcc/tcc/products/model/monthly_discussion/latest.pdf

- This monthly bulletin intended to assist NMHSs in the Asia-Pacific region in interpreting GPC Tokyo's three-month prediction and warm/cold season prediction products.



A **feedback survey** on this products from NMHSs' experts is currently underway and TCC will revise its contents taking into account NMHSs' needs.



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RCC Operations: Mandatory Functions

4. Training/Guidance in the use of RCC products

● TCC annual training seminar

(One of the GFCS Contributing Projects)

<https://ds.data.jma.go.jp/tcc/tcc/library/index.html>

- **161 experts from NMHSs of 27 nations/territories** in Asia-Pacific region (since 2008, as of 2018).
- Dealing with a different theme from climate analysis, long-range forecast and global warming projection.
- **Practical exercises using products provided by the TCC** so that the participants will be ready to apply what they learn to their operational climate services as soon as they return home.

● TCC experts visit NMHSs in Asia-Pacific region

- **20 times visit to NMHSs** in Asia-Pacific region (since 2006, as of 2018)
- Support capacity building for climate services and facilitate the **effective transfer of technical expertise on TCC products and tools**.
- Sharing latest TCC's development of climate services, **collect feedback and requests from NMHSs** and discuss future possible collaboration.



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TCC products used for climate services

- **TCC products in support of climate forecast in the Asia-Pacific**

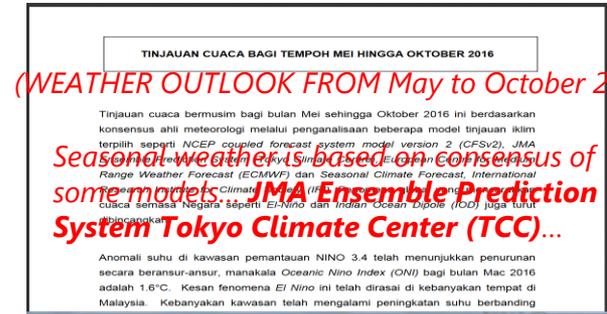
- Cases for Bangladesh and Pakistan
- Figures generated from GPC-LRF-Tokyo products are available on the Bangladesh Meteorological Department (BMD) and Pakistan Meteorological Department (PMD) website.**



BMD; <http://bmd.gov.bd/nwp-products/one-month-forecast/>
 PMD; http://www.pmd.gov.pk/rnd/rndweb/rnd_new/tcc_products.php

- Cases for several NMHSs
- NMHSs take TCC's climate forecast products into account their seasonal forecasts.**

Malaysian Meteorological Department

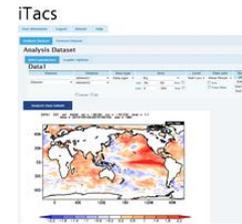


Hong Kong Observatory

Outcomes of the capacity development activities

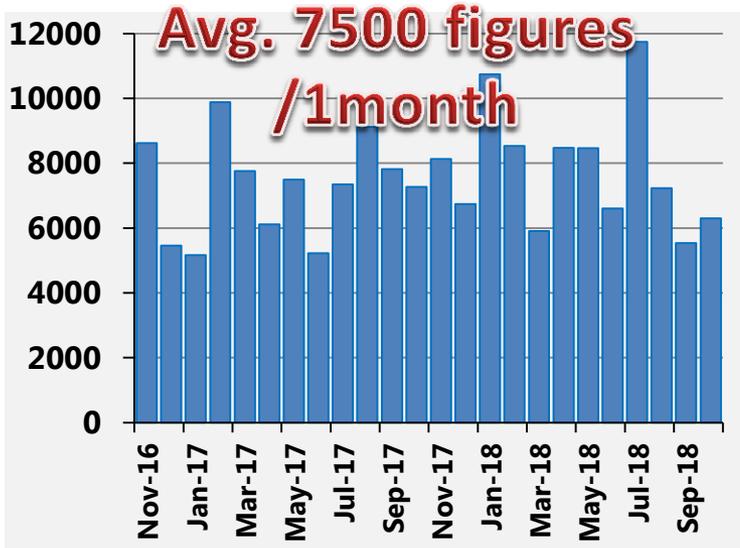
● iTacs in support of generating nationally tailored products

(One of the candidates for Climate Service Toolkit contents)



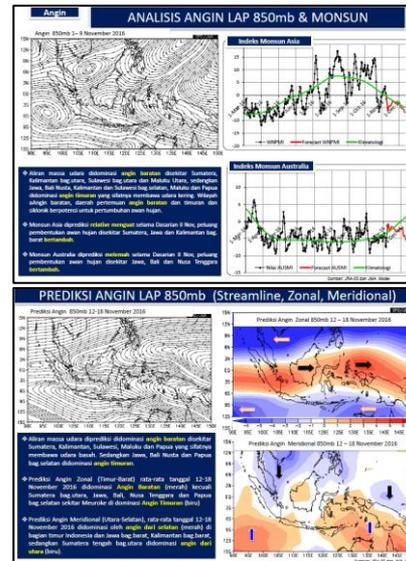
iTacs, Interactive Tool for Analysis of the Climate System, is a web-based application to assist NMHSs to analyse extreme climate events and to monitor climate status.

Number of monthly use by NMHSs (recent 2yrs)

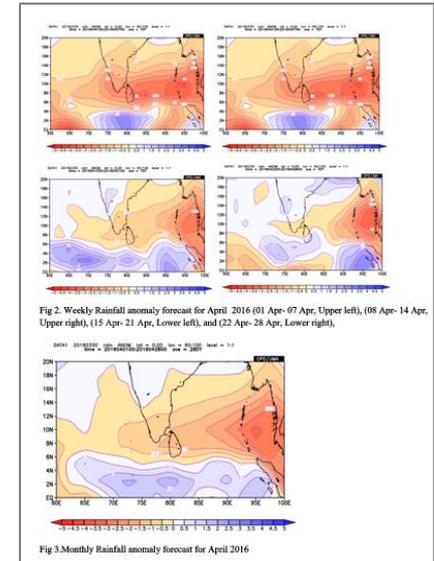


- A case for Indonesia (BMKG) and Sri Lanka (DoM)
- TCC's iTacs are used to generate 10-days climate monitoring report in BMKG and one-month forecast products in DoM of Sri Lanka

BMKG



DoM of Sri Lanka

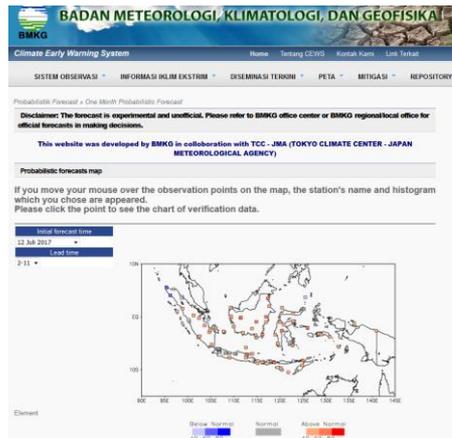


Outcomes of the capacity development activities and collecting feedbacks

● TCC products in support of generating nationally tailored products

- A case for Indonesia (BMKG)
- Core technique of generating one-month probabilistic forecasts was technically transferred to BMKG, and staff members of BMKG developed their tailored products in close collaboration with TCC.

BMKG



http://cews.bmkg.go.id/probabilistik_forecast/

● Products improvement in response to feedback from NMHSs

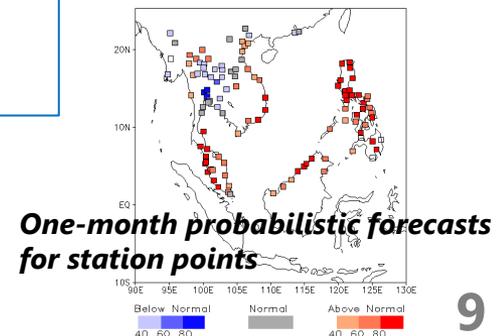
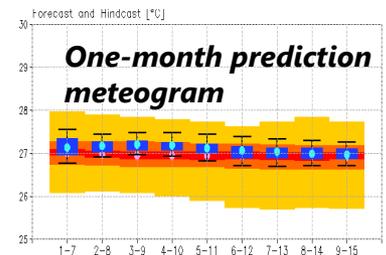
- Cases for several NMHSs
- Upon requests from several NMHSs, TCC improved its products by means of, for example, adding station points for requesting countries.

Meteorological Service Singapore

NCHM of Bhutan

Main Hydrometeorological Administration of Kyrgyz Republic

Hong Kong Observatory



TCC contributions to RCOFs

- **TCC contributes RCOFs by dispatching experts and sending forecast materials.**

| | |
|-----------------|---------------|
| FOCRAII | EASCOF |
| SASCOF | NEACOF |
| ASEANCOF | |

- The role of TCC in the participating RCOFs is to contribute to the development of consensus outlook and valuable exchange of expertise for climate outlook through following activities:
 - Provide numerical prediction products for the basis of consensus outlook
 - Send forecasters/experts who can interpret and assess GPC-LRF and RCC products in formulating seasonal forecasts.
- TCC maintains the EASCOF dedicated website and updates the achievement and materials of each session in such a way that staff members who did not participate in the session could refer to the session archives.

<https://ds.data.jma.go.jp/tcc/tcc/library/EASCOF/>

SWOT analysis

● Strength

- The strength would be that TCC has more than 10-years history as the RCC and have a lot of experience to support NMHSs in the Asia-Pacific region through providing various climate products and conducting capacity development activities in line with RCC mandatory functions.

● Weakness, threat, opportunity...

Way Forward

Climate Data Service

● JRA-3Q

- Long-term reanalysis dataset covering the period from 1947 to present (three quarters of a century (3Q))

● Upgrade of ClimatView

- New variables to be added
 - Standardized Precipitation Index (SPI)
 - Global daily temperature and precipitation based on SYNOP messages

LRF products

● One-month forecast

- Higher resolution numerical products
- JMA's interactive handy guidance tool

Feedback mechanism

● Acceleration of feedback

- Training seminars
- Visits by TCC experts
- Participating RCOFs
- Questionnaire surveys
- Communication with CCI experts

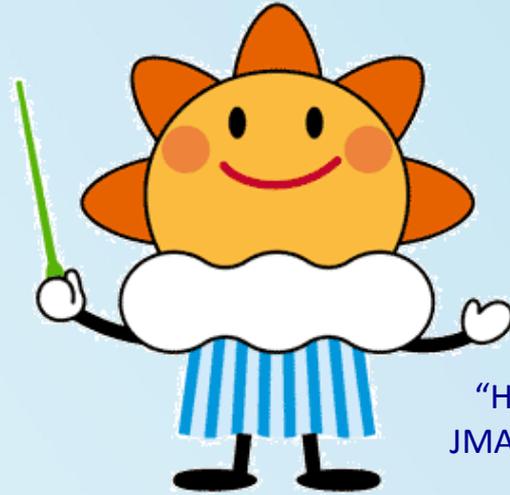
TCC will pay efforts to develop regionally tailored products taking into account NMHSs' needs.



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Thank you
Merci



"Harerun"
JMA's mascot

TCC website; <https://ds.data.jma.go.jp/tcc/tcc/index.html>

TCC mail address; tcc@met.kishou.go.jp



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