TCC Activity Report for 2017

In 2017, the Tokyo Climate Center (TCC) continued to support the climate services of NMHSs in Asia-Pacific countries by providing and enhancing data and products, holding training seminars, dispatching experts and hosting visitors.

1. Enhancement of data/products/tools on the TCC website

1.1 Launch of JMA's Global Ensemble Prediction System for one-month prediction

JMA replaced the previous One-month EPS (Ensemble Prediction System) with the Global EPS (GEPS) on Thursday 23 March 2017, which produces prediction maps and gridded datasets for one-month predictions on the TCC website. The GEPS is an integrated solution supporting JMA's issuance of typhoon information, one-week forecasts and one-month forecasts.

Changes in the new system include enhanced model resolution, improved physics in the model's atmospheric and oceanic components, and the introduction of a combination of the Local Ensemble Transform Kalman Filter (LETKF) method and the Singular Vector (SV) methods to produce initial perturbation as an alternative to the Breeding Growing Mode (BGM) method. The changes made improved predictive skill overall, among other things, ones for Asian summer monsoon and geopotential height at 500hPa over the Northern Hemisphere for all season. More detailed verification results are provided on the TCC website.

To support the provision of one-month prediction products on the TCC website every Thursday, the GEPS is run once a week with 50 members composed of 13 members each integrated from initial fields at 00 and 12 UTC every Tuesday and Wednesday. An outline of the model's configuration and its operation is provided on the TCC website and in TCC News No. 48.

1.2 Issuance of special reports on extreme events

In a mandate role as a WMO Regional Climate Center (RCC) in Regional Association II (RAII), TCC monitors world climate conditions with focus on Asia and its surrounding area. The Center issues reports on extreme climate events and summaries of the Asian summer/winter monsoon on its website (http://ds.data.jma.go.jp/tcc/tcc/products/clisys/reports/index.html).

In the first half of August 2017, the Pacific side of northern Japan experienced shorter-than-normal sunshine durations and cooler-than-normal conditions, and the Pacific side of eastern Japan also experienced shorter-than-normal sunshine durations. Under such climatic conditions, TCC issued press release on primary factors causing the unusual weather condition in Japan observed. The reports were issued in Japanese and English on the JMA website, and the English version was also made available on the TCC website (http://ds.data.jma.go.jp/tcc/tcc/news/press_20170822.pdf).

1.3 Update of website on RA II Information sharing for Climate Services

For the improvement of climate services and successful implementation of the Global Framework for Climate Services, it is important to share information on the services, good practices and lessons learned in climate-related activities, especially among NMHSs in climatologically similar region. However, such important information has not so far been fully shared among NMHSs in WMO RA II.

In response to related decisions taken at the 15th and 16th sessions of Regional Association II (RA II) to improve information sharing on climate services in the region, TCC operates a dedicated website (http://ds.data.jma.go.jp/tcc/RaiiInfoshare/, see TCC News No.36 for more information).

A July 2017 questionnaire survey conducted by TCC for updating of the website generated responses from more than 10 Members thanks to the kind cooperation of their involvement. Based on the information provided, the site was updated and refined in October 2017 with additions a clickable map to enhance usability and accessibility to individual NMHSs' information on climate services.

2. Capacity development

TCC holds annual training seminars as part of capacity-development activities related to its role as an RCC in RA II. In addition to running annual training seminars, it also arranges expert visits to and hosts visitors from NMHSs to support exchanges of views on climate services and the effective transfer of technology.

2.1 Training seminar

TCC hold a training seminar in its each fiscal year from April to March. In 2017, preparations were made for the event to be held in January 2018. The Center put "Seasonal Forecast" as the theme of the annual event. Details of the training are reported in TCC News No. 51.

2.2 Expert visits and other follow-up activities

TCC experts visited the Meteorological, Climatological and Geophysical Agency (BMKG) of Indonesia in March and the Malaysian Meteorological Department (MMD) in July, to hold a "TCC follow-up training seminar on Primary Modes of Global Climate Variability and Regional Climate and on the basic operation of TCC's Interactive Tool for Analysis of the Climate System (iTacs)". Discussions on future cooperation with BMKG and MMD were also held (TCC News No. 48 and TCC News No. 49).

A TCC expert also paid a visit to Sri Lanka's Department of Meteorology (DOM) to provide training on Operational Applications of Meteorology and Climate Monitoring in the Tropics under JICA's Project for Improving of Meteorological Observation, Weather Forecasting and Dissemination. The session provided opportunities for DOM experts to learn about meteorological aspects of Southern Asian monsoons via practical exercises using TCC's handy iTacs application.

Other follow-up to previous TCC training seminars included hosting visiting experts at TCC and conducting teleconferences to provide technical support.

3. International meetings

3.1 Regional Climate Outlook Forums

RCCs are expected to actively contribute to and lead profound discussions in Regional Climate Outlook Forums (RCOFs). In 2017, TCC experts participated in the following RCOFs in Asia:

- Thirteenth session of the Forum on Regional Climate Monitoring, Assessment and Prediction for Regional Association II (FOCRA II) held in Beijing, China, from 24 to 26 April
- Tenth session of the South Asian Climate Outlook Forum (SASCOF-10) held in Thimpu, Bhutan, from 24 to 26 April
- Eleventh session of the South Asian Climate Outlook Forum (SASCOF-11) held in Male, Maldives, from 25 to 27 September
- Fifth session of the East Asia winter Climate Outlook Forum (EASCOF-5) held in Tokyo, Japan, from 8 to 10 November (Hosted by JMA; see 3.2 for details.)

TCC attendees gave presentations on seasonal predictions based on JMA's numerical model and participated in discussions toward the formulation of a consensus statement on regional forecasts.

TCC also provided seasonal forecast materials to the 13th session of the North Eurasian Climate Outlook Forum (NEACOF-13) and the 9th session of the ASEAN Climate Outlook Forum (ASEANCOF-9).

3.2 EASCOF

The Fifth session of EASCOF (EASCOF-5) was held at JMA's headquarters in Tokyo, Japan, from 8 to 10 November 2017 (TCC News No. 50). More than 30 experts from China, Japan, Mongolia and the Republic of Korea attended the event, sharing information on the current status of and future plans for seasonal forecasting services in individual NMHSs. The attendees also discussed recent understandings of phenomena related to seasonal prediction of the East Asian Winter Monsoon and seasonal outlooks for the coming winter. A new session providing a platform for discussion of good practices toward user involvement in climate services was also held to encourage NMHS efforts in the promotion of climate service utilization. Presentation materials used in the session are available via the EASCOF portal website (http://ds.data.jma.go.jp/tcc/tcc/library/EASCOF/).

3.3 WMO Workshop on Global Review of RCOFs

In autumn 2017, TCC dispatched Yasushi Mochizuki and Shoji Hirahara as expert representatives to the WMO Workshop on Global Review of RCOFs, which was held from 5 to 7 September 2017 in Guayaquil, Ecuador. These TCC staff, who had been involved in RCOF processes, participated in the workshop and contributed to discussions on aspects of RCOF operations from regional- and global-center viewpoints (TCC News No. 50).

3.4 Other meetings

In 2017, TCC's Atsushi Goto and Shoji Hirahara attended the WMO International Workshop on Climate Services Information System (CSIS) Operations and Coordination held in Nanjing, China, to contribute to discussions on an action plan for climate service delivery via CSIS operations. TCC head Kiyotoshi Takahashi and TCC expert Atsushi Goto also attended the fifth session of the Management Committee of the Intergovernmental Board on Climate Services held in Reading, the United Kingdom, to contribute to the implementation and management of GFCS.

4. Publications

TCC has published its newsletter (TCC News) on a quarterly basis since 2005. The publication is intended to enhance communication and provide information to NMHSs and related communities about recent TCC developments, events and activities as well as details of the Center's reports on the state of the climate, monitoring results and outlooks. In 2017, TCC News Nos. 48 – 51 were issued and made available on the TCC website.

Other English-language publications related to the climate, such as Climate Change Monitoring Report 2016 and Annual Report on the Climate System 2016, were also published on the TCC website.

5. Plans for 2018

- Contribution to the Global Framework for Climate Services (GFCS)

RCCs are expected to play a major role in the implementation of the GFCS. TCC plans to further strengthen its activities and lead RA II's contribution to the Framework. Such activities include the provision of further assistance to NMHSs for better climate services, as well as maintenance of the portal site for Information Sharing on Climate Services in RA II.

- New/upgraded data, products and tool development

To utilize the JRA-55 long-term reanalysis dataset, investigation on teleconnection indices (e.g., the Arctic Oscillation Index) is being conducted to enhance monitoring of atmospheric circulation. TCC plans to publish the investigation results and the indices on its website as soon as material is ready. In addition to its work on the above-listed products and tool, TCC is making efforts to develop information/products based on the Standardized Precipitation Index (SPI) toward better monitoring of droughts worldwide.

- Capacity development

In the last quarter of the year, TCC will hold its annual training seminar with a dozen invited experts as attendees. The Center will also continue to dispatch experts to NMHSs as necessary and host visitors from NMHSs upon request.