

# TCC Activity Report for 2014

In 2014, 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, sending experts and hosting visitors.

## 1. Highlights of 2014

### 1.1 Contribution to the Global Framework for Climate Services (GFCS)

At its 15th session held in Doha, Qatar in December 2012, the WMO Regional Association recognized that the implementation of the GFCS depends on the sharing of good practices and lessons learned (including advanced project management capabilities), the development of projects and the improvement of climate services provided by NMHSs. Toward the achievement of these aims, the new Pilot Project for Information Sharing on Climate Services was adopted. TCC plays a leading role in the implementation of the Project, and started collecting information from NMHSs in 2013. Based on the data received, the Center has developed a new dedicated website to support the sharing of information on climate services provided by NMHSs and on their Framework-related activities. The website (<http://ds.data.jma.go.jp/tcc/pilot/>) was officially launched on 31 March 2014, and is kept updated. RAII Members are encouraged to inform TCC of any updates on their related activities.

The GFCS is intended to enable better management of climate-related risk. As reported in [TCC News No. 38](#), JMA has also developed a new website for climate risk management (CRM) (<http://www.data.jma.go.jp/gmd/risk/en/index.html>), which is linked to the TCC website. The new website includes information on the following to support CRM activities in Japan:

- Clarification of the basic CRM concept and related processes
- Good practices in CRM conducted by JMA together with partner organizations in the agriculture and apparel/fashion industries

### 1.2 New provision of “Monthly Discussion on Seasonal Climate Outlooks”

On 25 March 2014, TCC started providing a new product called Monthly Discussion on Seasonal Climate Outlooks on its web page (<http://ds.data.jma.go.jp/tcc/tcc/products/model/index.html>). This website is intended to assist NMHSs in the Asia-Pacific region in interpreting and assessing products from the Global Producing Center of Long-range Forecasts (GPC) Tokyo for three-month prediction and warm/cold season prediction, and to facilitate understanding of current climate system conditions. ([TCC News No.36](#))

### 1.3 New Forecast Products in Support of Early Warnings for Extreme Weather Events

Early warnings for extreme events on a sub-seasonal time scale are of great benefit in socio-economic activities such as mitigating the effects of floods and heatwaves and ensuring

appropriate food and water supplies. TCC has developed a set of extreme weather warning products for phenomena such as high/low temperatures, heavy precipitation/drought conditions, and strong winds, based on JMA's operational one-month ensemble prediction system (EPS) to support the provision of early warnings for extreme events. The products include maps of the Extreme Forecast Index (EFI), extreme weather warnings based on the EFI, and probabilistic forecasts for extreme conditions together with an EPSgram covering the period up to two weeks ahead. On 28 August 2014, TCC started providing the new forecast products via the TCC website ([TCC News No.38](#)).

#### **1.4 Issuance of special reports on extreme events**

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

In August 2014, Japan experienced unseasonable weather. In particular, the western part of the country saw record-high precipitation and record-low sunshine durations. TCC invited members of its Advisory Panel on Extreme Climate Events ([TCC News No. 28](#)) to investigate and discuss possible factors related to these unseasonable conditions. Based on its deliberations, the Panel issued a statement on primary factors causing the cloudy and rainy conditions observed. The statement and detailed analysis were issued in Japanese and English on the JMA website, and the English versions were also made available on the TCC website ([http://ds.data.jma.go.jp/tcc/tcc/news/press\\_20140903.pdf](http://ds.data.jma.go.jp/tcc/tcc/news/press_20140903.pdf)).

TCC also closely monitored the extreme events listed below and a number of others, and issued related media releases in Japanese. These are available on the JMA website at [http://www.data.jma.go.jp/gmd/cpd/monitor/extreme\\_world/index.html](http://www.data.jma.go.jp/gmd/cpd/monitor/extreme_world/index.html).

- Extreme cold in northern America in December 2013 and January 2014
- Drought in the southwestern US starting in January 2013

In its role as an RCC in RA II, TCC informed WMO of events in the region to assist in the preparation of the WMO Statement on the Global Climate in 2014.

It is worth noting that the global temperature for 2014 was the highest since 1891 according to TCC's analysis. A preliminary report was issued on 22 December, and the final report was published in February 2015 ([TCC News No.39](#)).

#### **1.5 Upgrade of JMA's One-month forecast model in March 2014**

TCC provides one-month prediction products via the web based on JMA's Ensemble Prediction System (EPS) for operational one-month forecasting (One-month EPS). On 6 March, JMA implemented a major upgrade of the One-month EPS. Major changes to the new system include increased horizontal resolution of the Atmospheric Global Circulation Model

(AGCM), improvement of its boundary conditions, and amendment of the ensemble method ([TCC News No.35](#)).

## **2. Enhancement of data/products/tools on the TCC website**

TCC strives to continuously enhance its services in the provision of data, products and tools. In 2014, the following data and products were made available on this site:

- 30 January: Upgraded version of ClimatView
- 10 February: Updated hindcast gridded data for one-month forecasts
- 28 February: JRA-55 data via ITACS
- 3 March: Climate products (e.g., analysis charts and indices on the Asian Monsoon) generated using JRA-55 (as opposed to the previous products generated using JRA-25)
- 25 March: [Monthly Discussion on Seasonal Climate Outlooks](#)
- 28 August: Forecast Products in Support of Early Warnings for Extreme Weather Events, including Extreme Forecast Index (EFI) maps

Some of these were made available in response to requests by NMHSs, and are also expected to be useful to other parties. The Center will continue to accommodate requests from NMHSs wherever possible.

## **3. 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.

### **3.1 Training seminar**

TCC holds a training seminar each fiscal year (which runs from April to March). In 2014, preparations were made for the event to be held in January 2015. As the Fifth Assessment Report of the IPCC was issued in November 2014, the Center chose global warming as the subject of the annual event. Details of the training are reported in [TCC News No. 39](#).

### **3.2 Expert visits**

In June, a TCC expert visited the Department of Meteorology and Hydrology (DMH) of Myanmar in Nay Pyi Taw to assist with improvements to seasonal prediction services using numerical prediction model outputs and products available on the TCC website. The visit was planned as a follow-up to the TCC training seminar held in 2013, and also provided opportunities for DMH and TCC to discuss future collaboration ([TCC News No.37](#)).

Other follow-up activities to previous TCC training seminars included hosting expert visits at TCC and conducting teleconferences to provide technical support.

## **4. International meetings**

### **4.1 Regional Climate Outlook Forums**

RCCs are expected to actively contribute to discussions in Regional Climate Outlook Forums (RCOFs). In 2014, TCC experts participated in the following RCOFs in Asia:

- Fifth session of the South Asian Climate Outlook Forum (SASCOF-5) held in Pune, India, from 22 to 23 April, and a preceding training workshop on operational seasonal prediction
- Tenth session of the Forum on Regional Climate Monitoring, Assessment and Prediction for Regional Association II (FOCRA II) held in Beijing, China, from 23 to 25 April
- Second session of the East Asia winter Climate Outlook Forum (EASCOF) held in Tokyo, Japan, from 29 to 31 October (Hosted by JMA; see 4.2 for details.)
- Third session of the ASEAN Climate Outlook Forum (ASEANCOF) held in Singapore from 17 to 19 November

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.

### **4.2 EASCOF**

From 29 to 31 October, JMA hosted the second session of EASCOF at its headquarters in Tokyo with the attendance of over 30 experts from China, Japan, Mongolia and the Republic of Korea ([TCC News No.38](#)). After the session, TCC developed a new dedicated EASCOF website in collaboration with experts from other participating countries to share presentations and reports at EASCOF sessions (<http://ds.data.jma.go.jp/tcc/tcc/library/EASCOF/>). The new website is linked to the WMO website and the TCC web-site.

### **4.3 Other meetings**

In 2014, TCC was represented at the 16th session of the WMO Commission for Climatology (CCI-16) (July, Heidelberg, Germany) and the 2nd session of the Intergovernmental Board on Climate Services (IBCS-2) (November, Geneva, Switzerland). In conjunction with CCI-16 and the 35th Meeting of the Joint Scientific Committee of the World Climate Research Programme, the WMO Technical Conference on Climate Services- Building on CLIPS Legacy was held. At this event, TCC made a presentation on support from research for the operational activities of RCCs as well as a poster presentation on JRA-55. TCC experts also participated in the 16th Session of the Commission for Agricultural Meteorology (CAgM-16) (April, Antalya, Turkey), giving two poster presentations on JMA's contribution to improving climate risk management in Japan's agricultural sector and an introduction to JRA-55.

## **5. 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 2014, [TCC News No. 35](#) and [No. 38](#) were issued and made available online by TCC.

Other English-language publications related to the climate, such as Climate Change Monitoring Report 2013 and Annual Report on the Climate System 2013, were also published by TCC on the Web.

## **6. Staff changes**

Ryuji Yamada, who served as a TCC focal point for foreign colleagues for a number of years, moved to the WMO Secretariat in October to work as Programme Manager at the Regional Office for Asia and the South-West Pacific (RAP; part of WMO's Development and Regional Activities Department (DRA)). His position was taken over by Atsushi Goto, who also assumed his responsibilities as a member of the RCC's CCI Expert Team.

## **7. Plans for 2015**

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

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

### **- New/upgraded data and products**

TCC plans to implement a major upgrade of its Seasonal Ensemble Prediction System for operational three-month and warm/cold season forecasting by the summer of 2015.

Taking advantage of the JRA-55 long-term reanalysis dataset, investigation of ENSO's impact on the global climate is underway. Teleconnection indices (e.g., the Arctic Oscillation Index) are also being developed using JRA-55 to enhance monitoring of atmospheric circulation. TCC plans to make the investigation results and the indices available online in 2015.

TCC further plans to upgrade the Interactive Tool for Analysis of the Climate System (ITACS) to version 5.0 in 2015. The new version will have a renovated Graphical User Interface (GUI) to reduce network traffic and user burdens, and will feature a new function enabling the generation of one-month probabilistic forecasts at station points based on the Model Output Statistics (MOS) technique with 30-year (1981 – 2010) hindcasts. These up-grades are

expected to provide ITACS users with a more convenient operational environment and to be more useful in application.

TCC is additionally working on the development of information/products based on the Standard Precipitation Index (SPI) for improved monitoring of drought around the world.

**- 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.

*(Teruko Manabe, Tokyo Climate Center)*