TCC Activity Report for 2024

In 2024, the Tokyo Climate Center (TCC) continued to support Asia-Pacific National Meteorological and Hydrological Services (NMHSs) by providing and enhancing data and products, holding training seminars, publishing quarterly newsletters and participating in international meetings.

1. Enhancement of online data/products/tools

1.1 Special reports on extreme events

In a mandate role as a WMO Regional Climate Centre (RCC) in Regional Association II (RA II), 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 (https://www.data.jma.go.jp/tcc/tcc/products/clisys/reports/index.html).

Record-high temperatures were observed nationwide in Japan in July 2024, with the national average even exceeding the previous July 2023 record. This situation persisted into August, with unprecedented temperatures in western Japan. Heavy rainfall was observed in northern Japan in late July, with the second-highest-ever levels on the Sea of Japan side.

In this context, the Japan Meteorological Agency (JMA), with the help of the Advisory Panel on Extreme Climatic Events (see TCC News No. 9), investigated atmospheric and oceanic conditions considered to have contributed to such climate extremes and summarized related primary factors. A comprehensive report is available at https://www.data.jma.go.jp/tcc/data/news/press_20241018.pdf (TCC News No. 78).

An expert of TCC investigated the contribution of an unprecedented marine heatwave to the extremely hot summer conditions observed over northern Japan in 2023 (see https://www.data.jma.go.jp/tcc/data/news/press_20240815.pdf, TCC News No. 77).

1.2 Pilot launch of Seasonal Tropical Cyclone Forecast Products

In its role as a WMO Regional Climate Center, TCC began experimentally providing products for seasonal forecasting of tropical cyclones reaching tropical storm intensity or higher for the western North Pacific to support WMO Members in the Asia/Pacific region. Registered users within NMHSs can access these products via the TCC website (see TCC News No. 76).

1.3 Launch of TCC experimental Three-month Guidance Tool

TCC's interactive Three-month Guidance Tool was released as an extension of its one-month version (TCC News No. 56), simplifying calculation of statistical guidance for any given station point and supporting operational seasonal forecasts (see TCC News No. 77).

2. Capacity development

TCC conducts annual training seminar as part of capacity-development activities related to its role as an RCC in RA II. It also arranges expert visits to and hosts visitors from NMHSs to support discussions on climate services and effective transfer of technology.

2.1 Training seminar

TCC holds training each fiscal year (i.e., April to March). The Center held a seminar on seasonal forecasting from 29 January to 2 February 2024, with in-person attendance for the first time in four years following COVID-19. Details are reported in TCC News No. 75.

2.2 Expert visits

TCC experts visited the National Center for Hydrology and Meteorology (NCHM) of Bhutan from 6 to 8 August 2024 as part of the JICA (Japan International Cooperation Agency) Project for Capacity Enhancement of Meteorological Observation, Forecasting and Flood Warning for Disaster Preparedness and Response in the Thimphu and Paro River Basins. This included related capacity development by TCC in its WMO Regional Climate Center role (see TCC News No. 77).

Content encompassed training on medium-to-long range forecasts and the effective use of TCC resources, including the online Interactive Tool for Analysis of the Climate System (iTacs; see TCC News No. 71) and TCC's Three-month Guidance Tool launched in July 2024 (see TCC News No. 77)..

3. International meetings

3.1 Regional climate outlook forums

RCCs are expected to actively contribute to and lead useful discussions in Regional Climate Outlook Forums (RCOFs). In 2024, TCC experts participated in the following RCOFs in Asia together with WMC-Tokyo experts:

- 20th session of the Forum on Regional Climate Monitoring, Assessment and Prediction for Regional Association II (FOCRA II-20) in Qingdao, Shandong, China, from 9 to 11 May
- 28th session of the South Asian Climate Outlook Forum (SASCOF-28), in Pune, India, from 29 April to 1 May
- 29th session of the South Asian Climate Outlook Forum (SASCOF-29) online, 25, 26 September and 3 October
- 23rd session of the ASEAN Climate Outlook Forum (ASEANCOF-23) online, from 26 to 29 November
- 12th session of the East Asia winter Climate Outlook Forum (EASCOF-12) in Daejeon, Korea, from 8 to 10 November

TCC attendees gave presentations on seasonal predictions based on JMA's numerical model and participated in discussions toward a consensus on regional forecasts at SASCOF-28. Representatives also highlighted a new experimental product for seasonal tropical cyclone forecasting at SASCOF-29.

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 2024, TCC News No. 75 - 78 were issued and made available on the TCC website.

5. Plans for 2025

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

RCCs are expected to play a major role in GFCS implementation. In this context, TCC plans to further strengthen its activities and lead RA II contributions to the framework. These efforts will include the provision of ongoing assistance to NMHSs for better climate services, as well as maintenance of a site for information sharing on climate services in RA II.

- **Product/tool provision**

The seasonal ensemble forecast system will be updated in the second half of FY 2025, and related TCC products will be changed for use of products from the system.

- **Capacity development**

TCC will host a dozen experts at its annual training seminar in the second half of FY 2025, and will continue to dispatch experts to NMHSs as necessary and host visitors from NMHSs upon request.

(TAKAHAHI Kiyotoshi, Tokyo Climate Center)