TCC Activity Report for 2008

The Tokyo Climate Center (TCC) of the Japan Meteorological Agency (JMA) has prepared the *Activity Report of the Tokyo Climate Center for 2008*, covering climate-related activities by TCC in 2008 and its plans for 2009.

1. TCC website and products

TCC updated its website (http://ds.data.jma.go.jp/tcc/tcc/index.html) in March 2008 with several new features including downscaled products for one-month prediction in Southeast Asia.
A new publication, *Annual Report on Climate System 2007* was issued in March 2008, covering topics on extreme climate events around the world and giving a summary of the climate system in 2007. Other publications, such as *Climate Change Present and Future* and *Climate Change Monitoring Report for 2007*, were also made available on the TCC website.

2. JRA-25 Atlas

The joint project between JMA and the Central Research Institute for Electric Power Industry on long-term global atmospheric reanalysis (called the *Japanese 25-year Reanalysis (JRA-25)*), was completed in March 2006. In March 2008, maps of annual, seasonal and monthly averaged climate fields for various meteorological variables from JRA-25 products have been made available in the JRA-25 Atlas at http://ds.data.jma.go.jp/gmd/jra/atlas/eng/atlas-tope.htm.

3. Extended- and long-range EPS

In January 2008, new elements of GPV data (700-hPa temperature and its anomaly) were added as one-month predictions, and have been made available to registered NMHSs.

4. ODAS and El Niño prediction system

The Meteorological Research Institute (MRI) of JMA has been developing a new Ocean Data Assimilation System (ODAS), named MOVE (Multivariate Ocean Variational Estimation), and an ocean prediction model named MRI.COM (MRI Community Ocean Model) since 1999. The new ocean analysis system and the ocean-atmosphere coupled prediction system were put into operation in March 2008.

5. Global warming projection

JMA has implemented a projection of the atmospheric and oceanic climate around Japan for the end of the current century using a regional coupled ocean-atmosphere model developed by JMA/MRI and an improved version of the global ocean-atmosphere coupled model known as MRICGCM2.3.2.
Global Warming Projection Volume 7, published in March 2008 includes the climate and ocean currents projected in and around Japan.

6. RCC

TCC and the Beijing Climate Center (BCC) of the China Meteorological Administration (CMA) were recommended for designation to Regional Climate Center (RCC) status in WMO RA II at the Working Group on Climate-Related Matters (WGCRM) meeting in Beijing in April 2007. In close cooperation with the BCC, the Regional Climate Center Network in RA II (http://www.rccra2.org/detail/index.htm) website went live in June 2007.
At another WGCRM meeting in Tokyo in August 2008, it was agreed that other candidates (India, Iran and Russian Federation) should be encouraged to participate in the RA II RCC Network on a pilot-mode working with BCC and TCC.

7. Capacity building

JMA has conducted training courses in meteorology for experts of National Meteorological and Hydrological Services (NMHSs) since 1973 on an annual basis as one of the training initiatives provided by the Japan International Cooperation Agency (JICA). The 2008 course was held from September to December with an emphasis on the operational use of numerical weather prediction, satellite meteorology and climate information. In the climate information session, staff members from the Climate Prediction Division gave lectures on climate system monitoring, long-range forecasting, the El Niño outlook and global warming projection. At the request of the Malaysian Meteorological Department (MMD), JMA/TCC ran a hands-on training course on climate data communication and application for three weeks in July – August. Two officers from MMD's Climate Section participated in the course to learn the use of Linux machines and data processing for GRIB and GRIB2. Another four-week training course on climate forecasting and its application was conducted in September with the participation of another two officers from MMD to learn how to use seasonal forecasting models.

TCC convened the Training Seminar on Climate Information and Forecasting at JMA Headquarters from 4 – 6

November 2008 with 13 invited participants from 12 countries and territories who were engaged in operational long-range forecasting at NMHSs in East and Southeast Asia. The participants learned how to use the data and products available on the TCC website for long-range forecasting.

8. International conference and workshop

JMA held a meeting of WGCRM for RA II of WMO at JMA in Tokyo from 7 – 8 August 2008. The meeting reviewed the implementation of climate-related activities in RA II, and an agreement was made to further develop cooperative relationships among members. The Ninth Meeting for the Seasonal Prediction of the East Asian Winter Monsoon took place at JMA from 6 – 7 November 2008 with more than 30 participants from NMHSs in East and Southeast Asia. Attendees discussed the latest outlook for the 2008 – 2009 winter monsoon and exchanged information and knowledge about the East Asian Winter Monsoon System, El Niño/La Niña outlook, long-term trends and decadal variability/seasonal outlooks using statistical and dynamic forecast models.

9. Future plans

In the first quarter of 2009, TCC will publish a gridded dataset of annual and monthly mean temperature anomalies worldwide from 1891 onward on the TCC website. The data, which covers 5° x 5° grid boxes worldwide can be downloaded and displayed on a map. This resource will enable users to monitor and analyze climate change on a regional scale. In the second quarter of 2009, TCC's newly developed software, *Interactive Tool for Analysis of the Climate System (ITACS)*, will be made available on the TCC website, enabling registered NMHSs to display various kinds of maps with selected parameters and to make statistical analysis. In April 2009, the data format of one-month-forecast GPV products will be changed from GRIB1 to GRIB2. Daily GPV data for individual ensemble members will also be made available on the TCC website for the first time.

JMA is preparing for the upgrade of its seasonal forecast model scheduled for early 2010. The upgraded version will introduce a one-tier coupled system instead of the current two-tier system. It is expected that the forecast skill of the new model will be improved, particularly for precipitation over the tropics and the Asian monsoon/winter Australian winter monsoon. In February 2009, JMA will update the El Niño prediction system, which consists of a global ocean data assimilation system and a coupled atmosphere-ocean global circulation model (CGCM). TCC plans to hold a training seminar on the utilization of JRA-25 data for NMHSs in East and Southeast Asia in late 2009 or early 2010.