



Typhoon Committee Newsletter

Thirty-Eighth Session of the Typhoon Committee



Participants at the 38th session of the Typhoon Committee pose for posterity at the Melia Hanoi Hotel.

The Government of Vietnam, in cooperation with ESCAP and WMO, hosted the thirty-eighth annual session of the Typhoon Committee from 14-19 November 2005, the first for the socialist country of more than 50 million people. Some 80 experts and weather officials convened at Melia Hanoi Hotel joined by observers from Brunei, Germany, Italy and Russia and representatives of international organizations, including UNDP, UN-ISDR, UNESCO-IOC, CAS and ADRC.

Member-countries assessed on-going activities in 2005 and charted plans to accelerate their

goals related to meteorology, hydrology, and disaster prevention and preparedness as well as in training and research.

Discussions included decisions and recommendations provided by the parallel sessions of the Working Group on Meteorology (WGM), Working Group on Hydrology (WGH), Working Group on Disaster Prevention and Preparedness (WGDPP), and the Typhoon Committee Research Co-ordination Group (TRCG) responsible in the implementation of training and research, including fellowship scheme and roving seminar set for Vietnam in 2006.

The Working Group on Resource Mobilization (WGRM) was likewise formed which would be responsible for the development of a resource mobilization database in 2006. The members were urged to participate in the survey to develop the database to be presented at the next session of TC.

At the session, the Regional Specialized Meteorological Center (RSMC) -Tokyo reported it had started dissemination of SAREP report in BUFR format or TDCF's in November 2005 even as it would cease dissemination of SAREP in the present TACs in November 2006. RSMC Tokyo added it had already received observational data from eight members for inclusion in the production of Expanded Best Tract Data (EBT) from 1996 to 2004.

The RSMC Tokyo continued its provision to members of tropical cyclone advisories, warnings and information. It would also continue the attachment of two forecasters, from Laos and Vietnam, for on-the-job training in forecasting in July 2006. The Japan Meteorological Agency informed the Committee on the



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Officials of TCS, ESCAP, CMA, and WMO (from left), Dr. Roman L. Kintanar, Mr. Le Huu Ti, Dr. Xu Xiaofeng, Dr. Tokiyoshi Toya and Ms. Nanette C. Lomarda, preside the opening of the 38th session.

successful launching of its MTSAT-1R in February 2005 which would take over the meteorological communication function from GMS-5, starting in April 2005. JMA was requested to continue to provide the services of the rapporteur for the Typhoon Operational Manual (TOM). The TOM 2006 will be distributed by WMO in March 2006.

The Committee approved the holding of the "Fourth Storm Surge and Wave Forecasting Workshop", in coordination with WMO-TCP, to take place in Manila in September 2006; and also the "Workshop on Inter-comparison of Typhoon Monitoring, Forecasting and Information Systems in the Typhoon Committee Region, including discussion on Ensemble Prediction Systems (EPS)," which is set for 2007. The Committee requested all working groups in cooperation with ESCAP, WMO and ISDR, to facilitate the participation of interested experts of the Committee in the "Third International Conference on early

Warning" to be held in Germany in March 2006.

The session also noted the progress made in the implementation of RCIIP projects under meteorology and hydrology, specifically, the projects on flood hazard mapping, sediment disaster forecasting and warning,

evaluation and improvement of operational flood forecasting system focusing on model performance, development of guidelines for reservoir operation related to flood forecasting, and extension of flood forecasting systems to selected river basins of WGH.

The Committee has requested the Advisory Working Group (AWG) and the Typhoon Committee Secretariat (TCS) to develop an annual work plan on specific action to meet the objectives of RCIIP. The WGDPP was tasked to prioritize the conduct of survey on existing early warning systems operated by members; WGM to conduct assessment of GTS and communication; and WGH to conduct study on standardization of methodology to assess socio-economic impacts of typhoon-related disasters. TCS was to follow up on the registration of domain names for the improvement of the TC website.

Address the issues on the level of advancement and capacity of



Delegates during a member's presentation.

NMHSs as stipulated in the objectives of RCPIP took on renewed urgency. The Committee urged the WGM to continue the task and called on the ESCAP, WMO, TCS, members and development partners to provide assistance for Cambodia, Lao PDR and DPR Korea.

The Committee also approved the organization of the "Workshop on Integrating Activities of Hydrology, Meteorology and DPP Components of the Typhoon Committee into the related International Frameworks on Disaster Risk Management for better Impacts and Visibility," the first integrated workshop to be organized for all working groups of TC. The Committee agreed to support the participation of experts at the 6th International Workshop on Tropical Cyclones, to be held in Costa Rica in September 2006. It also authorized WGH, in cooperation with ESCAP, WMO and TCS, to mobilize resources for the participation of TC experts at the Fourth World Water Forum, to be held in Mexico in March 2006.

The ESCAP representative reported the establishment of a regional multi-donor trust fund with initial contribution of US\$10 million from Thailand to support

regional efforts in the development of multi-hazard early warning systems for the Indian Ocean and South China Sea. The trust fund is being administered by ESCAP.

The Republic of Korea also provided a trust fund of up to US\$ 1 million to ESCAP to implement pilot projects related to tsunamis and other disaster preparedness for tsunami-risk countries.

ESCAP provided advisory services to Laos in 2005 in the development of legislation to promote participation of the private sector in water supply. Within the framework of its own programme of work, ESCAP assured it would continue to provide substantive support to TC.

The Committee welcomed the possible Italian-TC cooperation on the project proposal Improvement of Forecasting and Early Warning for the Least-developed Members of the Typhoon Committee. The Committee requested the Interim Secretary to hold further consultations with the Italian Government and to submit a report to the chairman and AWG for further consideration.

The Committee has endorsed four targets of the TCP Expert Meeting on Effective Early Warnings of Tropical Cyclones held in Kobe, Japan, in conjunction with the World Conference on Disaster Reduction in January 2005. These are the following:

- All TC RSMC and TCWCs to increase the accuracy of track and intensity forecasts of tropical cyclones by 10 percent by 2015 despite its difficulty based on current research;
- All TC RSMC, TCWCs and members of tropical cyclone regional bodies to issue probabilistic forecasts of tropical cyclones up to 5 days by 2015;
- Members of tropical cyclone bodies to educate stakeholders annually on proper interpretation of tropical cyclone forecasts, advisories, warnings and other meteorological and hydrological information; and
- Members of tropical cyclone bodies to ensure dependable and effective dissemination of tropical cyclone nowcasts, forecasts, advisories, watches and warnings in real time to decision-makers including emergency managers, media, general public and other stakeholders.

At the session, the delegates elected Bui Van Duc of Vietnam and Jeffrey LaDouce of USA as chairman and vice-chairman of the Committee, respectively. The delegates also welcomed the offer from the Philippine Government to host the thirty ninth session of the TC in December 2006.



TC interim-secretary R. L. Kintanar with ADRC's Maria Go and TCFI's Angelo Palmones.



Participants at session break.

Typhoon Committee Natural Disaster Prevention Award

Viet Nam's National Hydro-meteorological Service

wins TC Prize 2005



Angelo Palmones of TCFI reads the citation for the 2005 Typhoon Committee Natural Disaster Prevention Award.

The National Hydro-meteorological Service of the Socialist Republic of Viet Nam won the Typhoon Committee Natural Disaster Prevention Award 2005, the Committee's annual award for the promotion of natural disaster prevention in the region.

The Typhoon Committee Foundation, Inc. (TCFI) presented the TC Prize at a ceremony held at the opening of the 38th session of the Typhoon Committee in Hanoi, Viet Nam, on November 14, 2005. The NHMS, lead agency of the Ministry of Natural Disaster Resources and Environment (MONRE) of

Viet Nam, has exerted great efforts in providing timely and effective weather forecasts and warnings for disaster preparedness and mitigation.

The TC Prize was founded in 1989 and is awarded to individuals or groups selected from a list of candidates coming from the member-country which is hosting the TC session. The only time the award did not come from the host country was when the Hong Kong Observatory won in Hawaii in 2001 and the RSMC Honolulu Hurricane Center in Malaysia in 2003. The Viet Nam national service award is the fourteenth TC prize handed out by TCFI.



NHMS Director-General Bui Van Duc shows off the 2005 TC award plaque.

TC Changes

Hiraki succeeds
Nagasaka



Tetsu Hiraki, 59, succeeded Koichi Nagasaka as new Director-General of the Japan Meteorological Agency

Mr. Hiraki

(JMA). Hiraki holds a Ph.D. (1977) and a B.Sc. (1969) from the University of Tokyo.

Hiraki started his meteorological career at the Fukuoka District Meteorological Observatory of JMA in 1976. He served as Director of the Forecast Department (2004-2006), Seismological and Volcanological

Department (2003-2004) and Fukuoka District Meteorological Observatory (2001-2003).

Hiraki has worked extensively in operational meteorological services including development and implementation of operational numerical weather prediction systems, and in international activities mainly in the

framework of WMO and ESCAP. He was a visiting scientist at the Bureau of Meteorology Research Centre (BMRC) in Australia, from 1984 to 1985, to study objective analysis of atmospheric motion with satellite data.

Hiraki was a member of the Commission for Basic Systems (CBS) and the Commission for Atmospheric Sciences (CAS) of WMO in 2004-2006. He is an acting member of the WMO Executive Council elected at its fifty-eighth session in 2006.

Yap is new director general of MMD



Dr. Yap

Dr. Yap Kok Seng was appointed new director-general of the Malaysian Meteorological Department in December 2005 succeeding Dr. Chow Kok Kee who retired from service. Yap, who has been with MMD since 1978, holds a Masters degree and PhD in Meteorology from Florida State

University.

His interests and areas of specialization include meteorological service planning and development, weather forecasting systems, numerical weather prediction and data assimilation, monsoons, science of climate change, and climate change negotiations.

At the United Nations Framework Convention on Climate Change Conference of Parties and its Subsidiary Bodies Meetings, Yap served as lead negotiator for G77 and China on the issue of development and transfer of technologies, and as co-chair for the negotiations on scientific, technical and socio-economic aspects of mitigation.

Lee appointed new KMA head



Mr. Lee

Mr. Man-Ki Lee was appointed as administrator of the Korea Meteorological Administration taking over from Dr. Kyung-Sup Shin who passed away during climbing Mt. McKinley in North America on 29 June 2006. Dr. Shin was 53.

Lee, 56, finished Nuclear Engineering at Karlsruhe University in Germany and earned a master's degree in Policymaking from Graduate School of Public Administrator of Dongguk University.

He joined the Korea Electric Power Company in 1971 and entered government service in 1976. He became Assistant Director of Division for Educational Facilities of the Ministry of Education in 1977 before taking the position of Deputy Director in International Cooperation Division of the Ministry of Science and Technology.

Lee also worked as a counselor for science and technology at the Korean Embassy in Germany for three years and was appointed as Director General of Nuclear Safety Bureau, Policy Planning & Coordination Bureau, and Basic Research & Manpower Development Bureau of the Ministry of Science and Technology.

Prior to his appointment as the administrator of KMA, Lee assumed the post as Auditor for the Korea Institute of Science and Technology (KIST) and as Secretary General of the Presidential Advisory Council on Science and Technology (PACST).

Lee has vast experience in the field of Energy and is widely recognized among the science community and Korean media.

Third International Conference on Early Warning In Bonn, Germany

Countries in the Indian Ocean should have a warning system against tsunami or sea surges in place by July 2006, the United Nations said during the Third International Conference on Early Warning held in Bonn, Germany in March 2006. UN officials took those countries to task for failing to prepare civilians for a potential future disaster.

Opening the conference, UN Under Secretary Jan Egeland said there was still a long way to go before the early alert system would cover every community in the Indian Ocean rim states and to ensure that warnings will reach their people. The UN praised Sri Lanka for setting up siren systems and conducting drills for school children but added that all efforts should be directed from the highest government officials in every country to avoid confusion when a climate disaster strikes. In a related development, dozens of countries across the Pacific Ocean, including Malaysia, Thailand and the Philippines, took part in a drill to test a regional tsunami warning system. Officials at the Pacific Tsunami Warning Center (PTWS) in Hawaii declared a success the ocean-wide exercise on May 16, the first test of a Pacific warning system set up in 1965.

The drill began with the PTWS in Hawaii sending warnings by e-mail and fax about a mock earthquakes off Chile which theoretically triggered a tsunami across the eastern Pacific.

The second phase involved a fake quake in the Philippines. Officials in Hawaii said the test, which focused on communications, was a huge improvement despite some difficulties encountered in getting through to in few areas involving small-island Pacific states where communications were not well developed.



NEWS FROM TC MEMBERS

China

China's first TV weather channel launched

China's first weather channel, CWTV, which provides updated weather forecasts every ten minutes round the clock, was launched on 18 May 2006. CWTV is a specialized TV channel providing timely, authoritative and refined meteorological information and relevant services of practical use for the daily lives of the Chinese people.



CWTV inaugural.

Following the advocacy of the China Meteorological Administration (CMA) and World Meteorological Organization (WMO), CWTV is geared towards natural disaster preparedness and mitigation. Continuous coverage in the event of high impact or severe weather, such as typhoons, heavy rain, floods and sand or dust storms will be high on the CWTV's agenda.

The new channel presents and updates round-the-clock, rolling programmes such as "Weather Report", "Weather over China", "World Weather", "Significant Weather", "Traffic Weather", "7-day Weather Forecast", "Weather & Life", "Meteorological Knowledge," and "Weather & Tourism."

275th Xiangshan Science Conference

The 275th Xiangshan Science Conference entitled 'Scientific Issues on Landfalling Typhoon and

Disaster Prevention and Reduction' was held from 18 to 20 April 2006 at the Xiangshan Hotel in Beijing. The conference was chaired by Prof. Chen Lianshou of the Chinese Academy of Meteorological Sciences of CMA; Prof. Wu Rongsheng of Nanjing University; Prof. Wang Angsheng of Chinese Academy of Sciences of CMA and Prof. Duan Yihong of Shanghai Typhoon Institute of CMA.

The Xiangshan Science Conference is a routinely held high-level meeting sponsored by the Ministry of Science and Technology and Chinese Academy of Sciences, which aimed to explore scientific fronts and promote knowledge innovation.

Over 40 experts from 20 local and overseas institutions held thorough discussions on basic scientific issues and future directions of the theory and forecast techniques for landfall typhoons, theories for typhoon warning efficiency and reliability, and

scientific issues related to typhoon disaster prevention and reduction.

National standard of grade of tropical cyclones

The new amendatory China national standard on grade of tropical cyclone (GB/T 1920-2006) took effect on 15 June 2006, as follows:

	Mean wind speed (m/s)	Maximum wind scale
Tropical depression (TD)	10.8-17.1	6-7
Tropical storm (TS)	17.2-24.4	8-9
Severe tropical storm (STS)	24.5-32.6	10-11
Typhoon (TY)	32.7-41.4	12-13
Severe typhoon (STY)	41.5-50.9	14-15
Super typhoon (Super TY)	≥51.0	16 or more

New names for typhoons solicited

China marked the 2006 World Meteorological Day with an invitation to people around the world to

come up with new names for typhoons, as the name Longwang was retired from the traditional list of 140 names.

The campaign which ended on May 31 with more than 34,000 people participating. Nezha, Haikui, Shuixian, Qilin and Wutong were the winning names as replacement for approval at the 39th session of the Typhoon Committee.



Xiangshan Science Conference

2nd Session of the Forum on Regional Climate Monitoring-Assessment-Prediction for Asia (FOCRA)

The second session of the Forum on Regional Climate Monitoring-Assessment-Prediction for Asia (FOCRA), organized by Beijing Climate Center of CMA, in collaboration with the National Natural Science Foundation, Ministry of Science and Technology of PR China and the State Administration of Foreign Express Affairs, was held in Beijing, China, on 6-8 April 2006.

The CMA has long recognized the need to build the capacity on climate prediction. Building on the existing infrastructure and the expertise of the National Climate Center in China, CMA established the Beijing Climate Center (BCC) in 2003 which aimed to make

tailored climate forecast products that can contribute to the regional sustainable development in Asia.

In 1998, the WMO proposed to establish the Regional Climate Centers (RCC) focusing on providing products of seasonal to inter-annual climate prediction for the National Meteorological and Hydrological Services (NMHS) of its members.

While the first session of FOCRA in 2005 offered a review of the limitations and prospects of seasonal to inter-annual climate prediction methodologies and systems, the second session provided a platform to share experience and prediction

products for Asia from the climate prediction centers around the world.

The FOCRA II was composed of a training course and workshop. The course was intended for participants with strong skills in climate science that are in a good position to work with climate predictions at their home institutions. The participants also were given opportunity to interact with invited international experts.

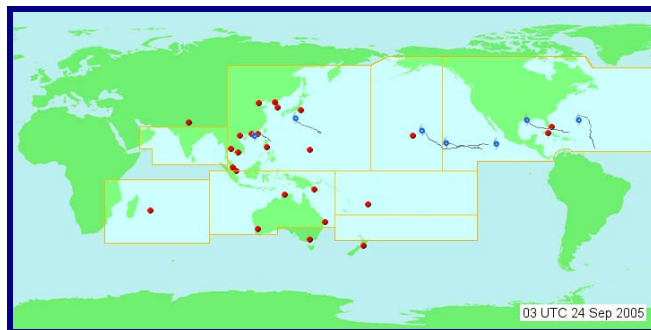
The workshop focused on the presentation and discussion of climate forecasting products for Asia such as atmospheric circulation, temperature, precipitation, monsoon, typhoon and ENSO.

Hong Kong

Tropical Cyclone Tract Animation Movies

As a convenient way to recap tropical cyclone activities in 2005, the Hong Kong Observatory (HKO) has prepared a set of animation movies on VCDs showing both global and regional distributions as well as movements of all tropical cyclones reported by the Regional Specialized Meteorological Centers (RSMCs) and Tropical Cyclone Warning Centers (TCWCs), by stitching together the 3-hourly web pages archived in the website-Severe Weather Information Center (SWIC) <http://severe.worldweather.wmo.int>, operated by HKO on behalf of WMO.

Copies of the movies were distributed to members of SWIC as a token of thanks to their contributions to the WMO project.



A video capture of 7 tropical cyclones occurring around the world at 03UTC on 24 September 2005. The tropical cyclone positions are for indicative purposes only.

Research fellowship in HK

Dr. Vicente Malano of the Philippine Atmospheric, Geophysical and Astronomical Administration (PAGASA) completed a 2-month attachment at the Hong Kong Observatory under the Typhoon Committee Research Fellowship Scheme in December 2005. His project focused on the impact of moisture data in the numerical simulation of selected tropical cyclone cases in 2004 and 2005.



Dr. Malano

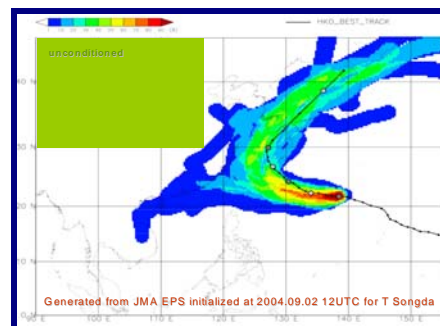
Using a non-hydrostatic model (NHM) with initialized hydro-meteor contents, improvements were found in the prediction of precipitation distribution for these tropical cyclones. The use of high-resolution NHM also enhanced the accuracy of forecast tropical cyclone tracks and intensity.

Conditioned strike probability for tropical cyclone forecasting

In 2005, the HK Observatory collaborated with the Japan Meteorological Agency (JMA) in the verification and utilization of JMA's EPS output for tropical cyclone (TC) track and intensity forecasts. The "conditioning" of strike probability (CSP) using actual TC positions *a posteriori* (i.e. positions observed between the last model run and the latest fix) was found to have potential benefits for operational

forecasting, particularly for divergent EPS track scenarios such as in the case of Songda.

As verified by the actual track (shown as black line in figure), the CSP algorithm successfully enhanced the likelihood of Songda recurving towards higher latitudes. Further studies will be undertaken



Conditioned strike probability map for Typhoon Songda (inset shows the unconditioned strike probability map).

to develop the methodology for operational implementation.

Safer living campaign

The HK Observatory, together with several government

departments and organizations in Hong Kong, jointly organized a community education campaign with the theme "Safer Living" from March 2005 to May 2006. The campaign aimed to enhance public understanding of natural hazards so that appropriate response actions could be taken to



Safer Living exhibition in April 2006 attracted about 24,000 visitors in Hong Kong.

reduce natural disasters and achieve a safer living.

The campaign concluded successfully with a one-month public exhibition featuring major natural hazards experienced in Hong Kong, HKO's early warning systems, mitigating engineering works, and rescue operations as well as community participation in reducing the impact of natural disasters.

Waterspout caused by Sanvu

Severe tropical storm Sanvu struck at about 300 km to the ENE of Hong Kong on 13 August 2005. Its outer rainbands brought severe squally thunderstorms in Hong Kong and deposited more than 150 millimeters of rainfall. Sanvu also caused a waterspout in the afternoon, lasting about 15 minutes as reported some 10 kilometers southwest of the Hong Kong synoptic observation station.



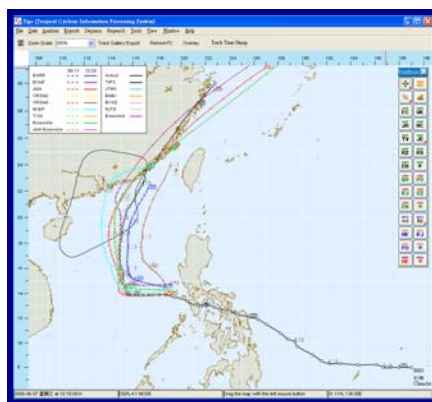
PPI image at 0.6 degree elevation angle taken by the Terminal Doppler Weather Radar at 08:44 UTC, 13 August 2005. Enclosed in the dotted circle is the location of the reported waterspout. Blue/purple colors indicate winds blowing towards the northeast, while yellow/brown colors indicate winds blowing towards the southwest.

Observers reported also a diameter of about 300 meters and a height of 1000 to 1500 meters.

A Terminal Doppler Weather Radar nearby captured a rare image of the waterspout.

Tropical Cyclone Information Processing System

The HK Observatory has completely revamped its computer-based tool called



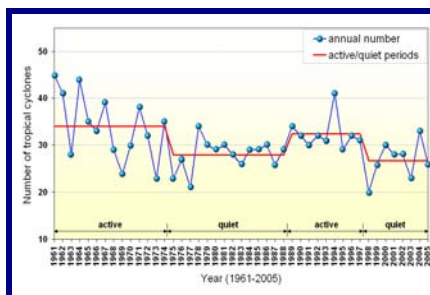
TIPS displayed NWP tracks and the ensemble TC track to provide guidance on the issuance of warnings in HK. The black line delineates the area where a typhoon will bring strong winds to HK waters with greater than 50% probability.

Tropical Cyclone Information Processing System (TIPS). Its main functions are to archive and display tropical cyclone (TC) positions predicted by major NWP Centers and NMHSs as well as related information on satellite/radar fixes and imageries; to calculate the multi-model ensemble forecast track; and to calculate key parameters for making warning decisions such as the location and time of closest approach of TC, periods of strong winds or gales over the city center and the airport.

The new TIPS has begun formal operation in 2006 to support the issuance of TC warnings.

Tropical Cyclone activity in the Western North Pacific

Hurricane Katrina has sparked much debate about



Tropical cyclone activity in the western North Pacific between 1961 and 2005.

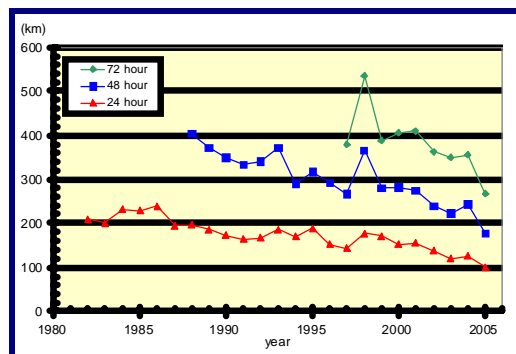
changes in tropical cyclone activity. The HK Observatory's best track data showed that in the western North Pacific, tropical cyclone activity has gone through relatively 'active' and 'quiet' periods indicating modulation by inter-decadal oscillations. The period from 1998 to 2005 appears to be a 'quiet' period.

A record TC track forecast at RSMC Tokyo in 2005

Tropical Cyclone track forecast at RSMC Tokyo - Typhoon Center in 2005 was the best ever recorded. The mean error of track forecast of 24, 48, 72-hour were 102, 176 and 266 km, respectively, in 2005. The errors were reduced by about 25% from the previous year.

The remarkable results in 2005 were brought mostly by major upgrades of Global Spectral Model (GSM) in February 2005 such as the introduction of a four-dimensional variational (4D-Var) data assimilation method and a modification of convective parameterization scheme.

Another reason can be attributed to the characteristics of the TCs of the year. There were more TCs that were moving westward in 2005 than in normal year, and it was relatively easier to forecast tracks of such kind.



Mean track error of RSMC Tokyo - Typhoon Center.

JMA's computer system and NWP models replaced

JMA has replaced its computer system for numerical weather prediction (NWP) and upgraded the NWP models on 1 March 2006. The main components of the new computer system are two sets of 80 node HITACHI SR11000 model K1. Total peak performance of those components is 21.5TFlops which is 28 times faster than the previous system, and its total main memory is 10.0TBytes.

The following changes were introduced to the NWP models at the same time. No changes were made to the Regional Spectral Model (RSM) and the Typhoon Model (TYM) except for the introduction of a global daily sea surface temperature data derived from satellite microwave radiometer, satellite infrared radiometer and in-situ observation (MGDSST).

◆ Main changes of Global Spectral Model (GSM)

- ⇒ New operation at 06 and 18UTC with forecast time up to 36 hours in addition to 00UTC with 90 hours and 12UTC with 216 hours
- ⇒ Increase in the inner-loop (iteration) resolution of the four-dimensional variational (4D-Var) data assimilation system from T63L40 to T106L40

◆ Main changes of Medium-Range Ensemble Prediction Model

- ⇒ Introduction of a semi-Lagrangian advection scheme
- ⇒ Increase in the spectral resolution from T106 (quadratic grid) to T159 (linear grid)
- ⇒ Increase in the number of ensemble members from 25 to 51
- ⇒ Refinement of the radiation scheme

◆ Main changes of Mesoscale Model (MSM)

- ⇒ Increase in the horizontal resolution from 10km to 5km and the enhancement of the number of the vertical levels from 40 to 50
- ⇒ New operation at 03, 09, 15 and 21 UTC in addition to 00, 06, 12 and 18 UTC
- ⇒ Refinements of the radiation scheme, the cumulus parameterization scheme, and the surface and boundary layer scheme
- ⇒ Introduction of MGDSST

More details for these changes can be found at <http://ddb.kishou.go.jp/DDBnew.html>.

Further upgrades of the NWP models are planned in the early summer of 2007. They include the increase in resolution of GSM from TL319L40 to TL959L60 and of the Medium-Range Ensemble Prediction Model from TL159L40 to TL319L60.

A new Ensemble Prediction System (EPS) for typhoon forecast will be implemented in 2007 to improve the typhoon track forecast by creating probabilistic information on typhoon tracks.

The inner loops of the data assimilation systems will be run with T159 instead of T106 for all of GSM, Medium-Range EPS and typhoon EPS. Around the same period of the above upgrades, the forecast time of MSM will be extended from 15 hours to 33 hours for the predictions initiated at 03, 09, 15, and 21 UTC to provide consistent products for the domestic and international aeronautical services and for disaster prevention up to 24 hours ahead. Following this extension, a 4D-Var based on non-hydrostatic model will be introduced.

Renewal of RSMC DSS

The RSMC DSS (RSMC Data Serving System) operated by JMA has provided NMHSs with numerical weather prediction products of JMA and synoptic observation data of the globe through Internet since 1995. The new system of the RSMC DSS started its operation on 25 October 2005 as its third generation.



New data providing servers running on a load-balancing system.

Major challenges of the new system are to improve overall performance and operational reliability and to standardize file names.

The system consists of two types of servers with specific functions, i.e. a data processing server and a set of three data providing servers running on a load-balancing system. In addition to the fact that performance of the new servers is significantly higher than that of the previous servers, this functional upgrade of servers has achieved a higher reliability and improvement of security of the system. Moreover, since the system is being operated and monitored under the comprehensive telecommunication system of JMA, which was also renewed on 25 October 2005, the RSMC DSS can be recovered more swiftly in case of system failure.

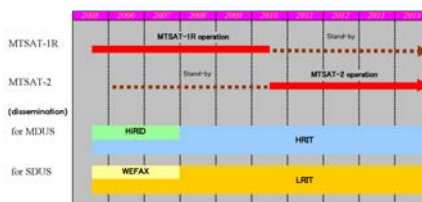
While data sets available on the new system are basically identical with the old RSMC DSS, the above improvement will provide users with a higher accessibility to data. In addition, users may easily identify their interested data using the file name described according to the WMO standard file naming convention.

The old system stopped its service as the RSMC DSS on 1 March 2006 after parallel operation with the new system for four months, during which users were requested to cope with changes (e.g. file names) and to migrate to the new server.

Operations of MTSAT-1R and MTSAT-2

JMA started operational observation with MTSAT-1R on 28 June 2005 from 140 degrees East above the equator. MTSAT-1R observes 24 full disk images, 24 northern hemisphere images, and 8 southern hemisphere images every day, and disseminates these images in a new digital HRIT/LRIT format. Conventional HiRID/WEFAX services will be continued until the end of 2007.

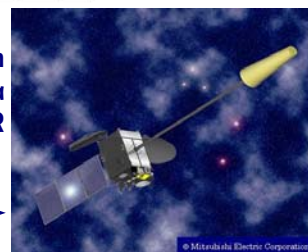
MTSAT-2 was successfully launched on 18 February 2006. MTSAT-2 is under in-orbit testing



Operation and dissemination plan of MTSATs.

and will be there on standby in orbit as a replacement for MTSAT-1R this fall.

MTSAT-2



JMA to contribute to THORPEX Program

THORPEX is a 10-year international global atmospheric research program under the World Meteorological Organization (WMO)/World Weather Research Program (WWRP) to accelerate improvements in the accuracy of 1-day to 2-week high-impact weather forecasts, established by the 14th WMO Congress in May 2003. The Asian Regional Committee (ARC) for THORPEX (China, India, Japan, Republic of Korea and Russia) is

working to implement regional campaign plan.

Specifically the ARC is planning a Typhoon special observation campaign in 2008 over the western North Pacific, called Pacific Asia Regional Campaign, (PARC), coordinated with the North America Regional Committee for THORPEX.

PARC is a major international collaboration focusing on advancing knowledge and improving prediction of i) the lifecycle of western Pacific and Asian typhoons from genesis to extra-

tropical transition/decay, and ii) high-impact weather events, over North America, the Arctic and other locations, whose dynamical roots and/or forecast errors are driven by upstream typhoons and other intense cyclogenesis events over east Asia and the western Pacific.

Research activities of THORPEX are expected to bring useful findings for TC members and JMA intends to contribute to the program. To get more information on THORPEX, please log on WMO THORPEX website at <http://www.wmo.ch/thorpe/>.

Macau

SMG commemorates WMD 2006

The Meteorological and Geophysical Bureau of Macau SAR (SMG) commemorated World Meteorological Day 2006 with a series of activities promoting the theme for this year "Preventing and Mitigating Natural Disasters."



2nd Guangdong, Hongkong and Macau Seminar on Earthquake Science and Technology

The second Guangdong, Hong Kong and Macau Seminar on Earthquake Science and Technology" was held in Macau on March 1 & 2 bringing together 39 participants from the three places to share and exchange experience and research study on the topic of earthquake and its influence. The

presentation included Monitoring and Warning System of Earthquake and Tsunami; Data Processing and Analysis; Tsunamis Affecting the Coast of South-eastern China; Historical Tsunamis in South China; and Seismic Engineering.

In order to promote public awareness on the importance and influence of severe weather and climate change, and the knowledge and understanding of general science on meteorology and geophysics, a program on "Interactive Talk" was conducted by SMG staff for high school students, from March 13 to 31. Topics of the program included Preventing and Mitigating Typhoon Disasters, Climate Change, Earthquake and Its Influence, Knowing Rainstorm and Its Impact, Air Pollution and Health, and Horizontal Eye-safe Mie LIDAR for Monitoring of Urban Aerosols in Macao. The program got the desired participation from a number of schools which was very fruitful.



WMD 2006 opening ceremony

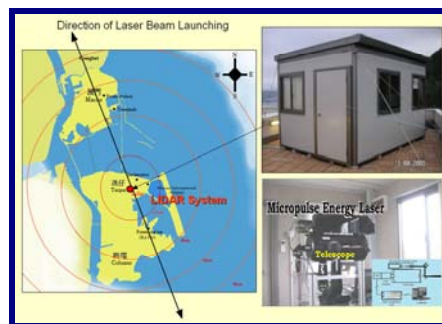
A grand celebration on the 2006 WMD theme was held on March 23 at the SMG building which aimed to promote the functions and importance of meteorological services and also its contribution to disaster prevention and mitigation in the region.

The event was presided by the Secretary of Transport and Public Works, Eng. Ao Man Long. An important message was

delivered by the SMG director Fong Soi Kun. The representatives from the Civil Protection Operation Center gave a presentation on their role and functions, and the operational procedures in disaster prevention and mitigation.

The new system, Horizontal Eye-safe Mie LIDAR for monitoring of Urban Aerosols in Macao, a technical cooperation achievement between SMG and the City

University of Hong Kong, was also held during the ceremony.



Horizontal Eye-safe Mie LIDAR

MMGB Collected Papers (Vol 2): Asia Summer Monsoon and Mesoscale Numerical Simulation

Since 1996, Macau has been a Member of the World Meteorological Organization (WMO) and has participated actively in its activities including regional and international meetings of technical cooperation, research and exchange of experiences, such as the WMO congress, Regional Association (RA) II session, Typhoon Committee session, International seminar on Meteorological Science and Technology, and China-Macao-Portugal seminar on Meteorological Science and Technology.

With the signing of the Cooperation Protocol with the Faculty of Atmospheric Science of the Sun Yat-Sen University in China in 1997, a project on the introduction of meteorological mesoscale weather prediction model was started which went further in cooperation and exchange of experience in research in areas of meteorology and environment.

To promote the activities and achievement in research cooperation as well as the use as incentive of experience exchange among professionals in the area, the SMG has collected some of the technical-scientific papers presented in regional and international conferences and seminars and those published in scientific periodicals to be published in a Technical Collected Papers of MMGB.



MMGB Collected Papers

Volume 2 of the collected papers is the second publication compiled by the MMGB following Volume 1 of this series published in 2004. It is edited in English with dimension of 184X260 and has about three hundred pages. The preface is written by the Secretary for Transport and Public Works, Eng. Ao Man Long.

The book consists of three parts. Part One has articles in Asia summer monsoon including 7 papers, with emphasis on the characteristics of climate change in Asia summer monsoon. Part Two consists of articles in mesoscale numerical simulation including 14 papers which involved heavy rainfall and typhoon. All the papers in these two parts have already been published in scientific journals.

Part Three has the extended abstracts for papers presented at various conferences and seminars. It has a total of 21 papers selected and rewritten into extended abstracts by several authors.

A ceremony launching the publication was held on 29 May 2006 at the SMG head-



Launching ceremony for MMGB collected papers

quarters in Taipa Grande which was presided by Eng. Ao Man Long and attended by Dr. Xu Xiaofeng, Deputy Administrator of China Meteorological Administration and Dr. Fong Soi Kun, Director of Macau Meteorological and Geophysical Bureau.

Malaysia

Winter MONEX: A Quarter Century and Beyond

The Malaysian Meteorological department, in cooperation with the WMO/TMRP-Pacific Science Association International Panel for East Asian Monsoon hosted an international symposium, Winter MONEX: A Quarter Century and Beyond, in Kuala Lumpur, Malaysia, on 4-7 April 2006. The symposium was held to commemorate the first GARP Global Experiment conducted over Southeast Asia and South China Sea, from 1978-1979, one of the most important field phases of the Global Weather Experiment participated by one of the biggest

gathering of countries in East Asia and involving other countries around the world.

Winter MONEX highlighted international cooperation on the study of Asian winter monsoon since the Winter MONEX field experiment more than a quarter of century ago. It reviewed the progress made in research, observation and forecasting since 1978. It also discussed future scientific efforts and cooperation on weather and climate research and forecast over the broad Asian winter monsoon region.

The symposium was also co-sponsored by the WMO center for Climate System Research of the University of Tokyo and the APEC Climate Center.

ROKorea

KMA fellowship completed in KMA



Hoa Van Vo

Hoa Van Vo of the National Hydro-meteorological Services (NMHS) of Vietnam completed his 3-month research fellowship with the Typhoon Research Team of the Korea Meteorological Administration in Seoul, Korea in September 2006. Vo's research study entitled Evaluation of WRF Model Performance for Typhoon Prediction aims to find the best cumulus parameterization scheme of the WRF (Weather Research and Forecasting) model with respect to typhoon prediction. It is expected to provide positive impact on KMA's work to develop new tropical cyclone prediction model.

The KMA has given fellowship studies to four members since 2002 under the Typhoon Committee fellowship scheme.

Korea Typhoon Center launched

The KMA has launched the development of the new Korea Typhoon Center to be completed in 2008. The center, which will be located in picturesque Jeju Island, will promote cooperative activities and research in typhoon mitigation with other countries and international organizations.



An artist's model of the National Typhoon Center in Jeju Island.

Grid-point forecasts in KMA Digital Forecast

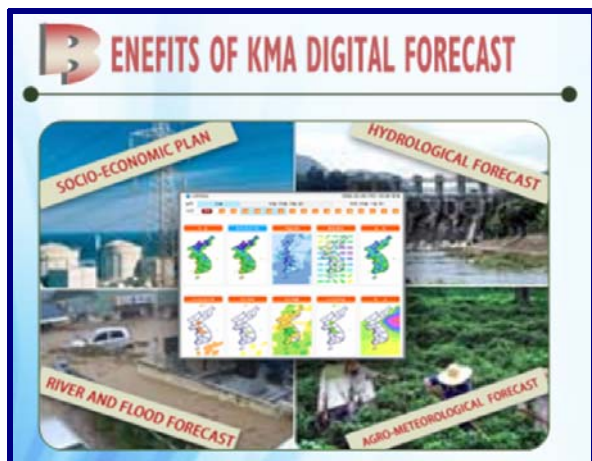
The database for XML (Extensible Markup Language) service of the KMA Digital Forecast is being updated every three hours. KMA employs XML Really Simple Syndication (RSS), a lightweight XML format designed for

sharing headlines and Web contents. RSS resolves myriad of problems webmasters commonly encounters, such as increasing traffic, as well as gathering and distributing news.

RSS can also be the basis for additional content distribution services. In addition, it can assist easily to access updated information into a client PC with reserved RSS options.

Provided with useful, detailed and quantitative weather information, customers of KMA Digital Forecast should get benefits on economic activities, industrial interests, agricultural outputs, and transportation efficiency. Agricultural groups gather their needed information such as agro-meteorological index for production, control of water resources, timing for scattering agricultural chemicals, and monitoring occurrence of frosts from the Digital Forecast dataset.

To satisfy government and private sectors, the KMA Digital Forecast services can apply a spectrum of socio-economic information such as traveling weather information and safe



KMA Digital Forecast



Exhibits at 4th World Water Forum.

transportation information to assist marketing strategy for private enterprises and secure private properties and public safety.

With increasing usages and extending user groups of Digital Forecast, KMA has exerted efforts to develop forecast weather element based on raw data and improve forecast contents using advanced

IT, GIS and high level programming languages. The Digital Forecast system was introduced during the 4th World water Forum held in Mexico in March 2006.

In a related development, the KMA started issuing a-twice-a-day public typhoon advisories on 15 May 2006 enhancing typhoon disaster prevention.

Thailand

WMD seminar at TMD

A seminar on the theme "Meteorological Data Application in IT Age" was hosted by the Thai Meteorological Department in commemoration of World Meteorological Day on 23rd March. The seminar aimed to encourage TMD staff to present their research works and share them with experts from other working units which have utilized the data.



Mr. Suparek Tansriratanawong, TMD Director-General, delivers his opening speech.



Guest lecturer presents a special lecture-Hard and Soft Computing Technique for Flood Forecasting.

A total of 13 lectures were presented including two special lectures entitled "Meteorological Data for Agricultural Researches and Forecasts" and "Hard and Soft Computing Technique for Flood Forecasting" given by guest lecturers from the Department of Agriculture and Rangsit University.

Skill enhancement for TMD staff

The TMD has made academic enhancement of its staff a top priority to improve their missions accomplishments on natural disaster warnings. Meteorologist Sampan Thaikruawan underwent a



Thaikruawan

6-month training on typhoon model at the Typhoon Research Department of Japan Meteorological Agency. Thaikruawan said he valued the experience which he would use in carrying out more advanced research on tropical cyclones.

TC's staff visits Macau

Preparatory to the transfer of the Typhoon Committee Secretariat to Macau, China, the TCS-Manila staff visited the Meteorological and Geophysical Bureau of Macau in Rampa de Observatoria, Taipa Grande, from 7 to 10 March 2006.

The visiting staff, composed of meteorologist Martin Rellin, Jr. and hydrologist Margie Bautista; with support group Bella Mendoza, Rose Anillo, Roman Mendoza and Hannibal Marayag met and discussed matters with the Macanese officials related to the proposed transfer. The SMG group included Dr. Olavo Rasquinho, Antonio Viseu, Glendon Ipan Hao and Cristopher Ku Chi Meng.

The agenda focused on the routine work (action sheet) of TCS in connection with the activities of the members of TC, including the preparation of the TCAR and newsletter. The two groups also talked on the operating costs of TCS and the memorandum of agreement between host Macau and TC.



SMG officials and TCS staff during a visit at the CPOC.

The Filipinos also visited and met with the officials of the Civil Protection and Operation Center (CPOC). The meeting concluded with the decision of Macau officials to visit the TCS in Manila in June to continue coordination for the transfer.

EDITOR's Note

With the transfer of operations of the Typhoon Committee Secretariat in Macau in January 2007, the editor and staff of the Typhoon Committee Newsletter wish to express their profound thanks to the member-countries for their contribution to the publication of this newsletter since its maiden issue of July 1989.

We would also like to mention the past editors of the newsletter, namely, Juanito Lucas, Gabriel Monroy, Nanette Lomarda and Efigenia Galang, to all four should go some kind of special kudos for leading the members, if not all, to extend their full support and cooperation to the publication.

Maraming salamat!
(Thank you very much).

The Typhoon Committee Newsletter is published in English by the Typhoon Committee Secretariat (TCS).

The Newsletter is available on request to the Editor.

Interim Secretary:
Dr. Roman L. Kintanar

Editor:
Martin F. Rellin, Jr.

Assistant Editor:
Hannibal B. Marayag

Staff:
Bella U. Mendoza
Rosemarie Z. Anillo
Roman O. Mendoza