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Newsletter

Macao • China

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NEWS by TCS

International Seminar for Disaster Prevention Cooperation – Challenges of Scientific Disaster Management for Future Resilient Society - Seoul, Republic of Korea, October 30 -1 November 1, 2012.

Under invitation of the National Disaster Management Institute (NDMI) of the Republic of Korea, the Secretary of TC presented the lecture “Strategies for International Cooperation Research for DRR and the role of the Typhoon Committee”. This International Seminar was composed of three parts: “International Workshop for Volcanic Risk Assessment and Disaster Preparedness”, “The 4th International Workshop on Natural Disaster Reduction and Management among Taiwan-Japan-Korea” and the “Typhoon Committee Roving Seminar”.

Roving Seminar 2012, Seoul, Republic of Korea, October 30 – November 1, 2012

The Roving Seminar (TCRS) 2012, with the main theme Tropical Cyclone Damage Assessment and Impact Forecast, was held in Seoul, Republic of Korea. It was organized by the TC and hosted by the National Disaster Management Institute



Mr. Maeng Hyung Kyu, Minister of Public Administration and Security (MOPAS), Republic of Korea, welcomes the invited lecturers of the International Seminar

(NDMI) of Republic of Korea, as one of the Sessions of the International Seminar for Disaster Prevention Cooperation 2012 which was also hosted by NDMI from 30 October to 1 November. Mr. Leong Kai Hong, Meteorologist of TCS, and the Secretary of TC also attended the Seminar.



Presentation during the Roving Seminar-2012



Group photo of the participants of the Roving Seminar-2012

UNESCAP/WMO Typhoon Committee Held Its Seventh Integrated Workshop in Nanjing, China

Following the decision of the 44th Session, Typhoon Committee (TC) held its 7th Integrated Workshop (IWS) with the title “Effective Warnings” and sub-theme “Common Alerting Protocol” in Nanjing, China from 26 to 30 November 2012 at the kind invitation of the WMO Regional Training Centre (RTC), Nanjing (Nanjing University of Information Science and Technology, NUIST).

The Objectives of TC 7th IWS were aimed mainly to review and discuss the following issues:

- Effective warnings
- Common Alerting Protocol
- TC Annual Operating Plan (AOP) in 2012
- Draft Annual Operating Plan (AOP) for 2013 and beyond
- Members’ reports on the activities in 2012
- ESCAP funding project on Synergized Standard Operating Procedures for Coastal Multi-Hazards Early Warning



Ms. Li Mingmei of CMA, on behalf of TC Chair Ms. Jiao Meiyuan, was delivering her welcome speech at opening ceremony

The opening ceremony was held in the NUIST on 26 November 2012 with introductory remarks by Mr. Olavo Rasquinho, TC Secretary, followed by opening addresses by Mr. Kang Jooyoub, Director of River Management Division, Ministry of Land, Transport



The Opening ceremony of TC 7th Integrated Workshop



The group photo of participants of TC 7th Integrated Workshop

and Maritime Affairs (MLTM), Republic of Korea; Ms. Kelly Anne Hayden, Economic Affairs Officer, ESCAP; Mr. Koji Kuroiwa, Chief of Tropical Cyclone Programme, WMO; Mr. Guan Zhaoyong, Vice President, Nanjing University of Information Science and Technology (NUIST) and Mr. LIU Zhiyu, Representative of the Ministry of Water Resources of China. The welcome speech was addressed by Ms. Li Mingmei, Deputy Director-General, Department of International Cooperation, China Meteorological Administration (CMA).

The IWS was attended by more than 100 participants from 13 of 14 Members of the Typhoon Committee, namely: China; Hong Kong, China; Japan; Macao, China; Malaysia; Philippines; Republic of Korea; Singapore; Thailand; the Socialist Republic of Viet Nam; and the United States of America, and international organizations, namely: World Meteorological Organization (WMO), the Economic and Social Commission for Asia and the Pacific (ESCAP), Asian Disaster Reduction Center (ADRC), and Typhoon Committee Secretariat (TCS).

The Committee invited 4 Keynote

Lectures on Effective Warnings (namely Ms. Haleh Kootval, Chief of PWS Programme of WMO, Mr. LAN Hongping, Researcher, Senior Engineer, Deputy Director of Meteorological Bureau of Shenzhen Municipality, CMA; Dr. LEE Choong Ke, Assistant Director, Han River Flood Control Office, MLTM) and 2 keynote lectures on Common Alerting Protocol (CAP) (namely Dr. KIM Jeong-hee (Ms.), Deputy Director, Weather Radar Center, Korea Meteorological Administration (KMA) and Mr. Armstrong Y.C. Cheng, Senior Scientific Officer, Hong Kong Observatory). The lectures were followed by active discussion, in which the invited lecturers responded to numerous questions asked by the participants. Representatives of the



The Secretary of TC Mr. Olavo Rasquinho was being interviewed by media during the Workshop



Keynote Speakers at TC 7th Integrated Workshop

media have also had active participation in the discussions, namely in what refers to Common Alerting Protocol.

The TC 7th Integrated Workshop provided the opportunity not only for the exchange of ideas among experts from the various areas covered by the Committee, but also to assess progress in the various activities endorsed by the Committee at its 44th Annual Session, always taking into consideration the main objective of the Committee: to integrate and enhance regional activities (meteorological, hydrological, and disaster risk reduction - DRR) of Members within international frameworks to reduce the loss of lives and minimize social, economic and environmental impacts by typhoon-related disasters. To strengthen international cooperation for jointly coping with climate change and improving the capability of disaster prevention and reduction is the consensus reached in the Workshop.

Typhoon Committee Training Center (TCTC) Officially Established in Nanjing, China

TC decided at its 44th Session to accept the offer of Nanjing University of Information Science and Technology (WMO Regional Training Centre – Nanjing) to serve as a training center for the Committee and to request AWG and TCS to work on the formal arrangement as needed.

On 26 November, 2012, taking advantage of the TC 7th Integrated Workshop in Nanjing, China, a plaque commemorating the inauguration of the Typhoon Committee Training Center was unveiled by Professor Guan Zhaoyong, Vice President NUIST, and Mr. Olavo Rasquinho, Secretary of TC. It was also signed by the Secretary of TC



Professor Guan Zhaoyong and Mr. Olavo Rasquinho were unveiling the plaque

two originals of the Agreement between the WMO Regional Training Center Nanjing and the TC for the recognition of WMO RTC-Nanjing as a Training Center of the Typhoon Committee. This signaled that Typhoon Committee Training Center (TCTC) was officially founded. More than 100 Participants taking part in the TC 7th Integrated Workshop witnessed this event.

The Secretary Mr. Olavo Rasquinho stressed that, the WMO Regional Training Center (RTC) Nanjing and Typhoon Committee have an important role to perform in this area. Our future is connected with weather, climate and water and there are increasing demands in relation to a greater accuracy of the weather forecasts and more effective early warning systems. Climate variability and climate change are also challenges for which it is necessary greater international cooperation. We count on the WMO RTC Nanjing to assist Members of the TC in their training activities to better meet the challenges of the future.

UFRM Training Course Held in Guangzhou, China

As one of activities of the cross-cutting project on Urban Flood Risk Management (UFRM) of Typhoon Committee, the YFRM training course for pilot cities was held in Guangdong Provincial Bureau of Hydrology, Guangzhou, China from 24 to 26 September 2012 by Bureau of Hydrology (BOH) of the Ministry of Water Resources (MWR) of China, in cooperation with Typhoon Committee Secretariat (TCS).

The objective of the training course is to enhance the capacity of urban flood forecasting and inundation mapping with contents including: (1) application of hydrological/hydraulic modeling (Xin'anjiang model); (2) urban flood inundation mapping; and (3) the skill of hydro-meteorological coupling modeling with QPE/QPF products application. Totally about 15 participants from China, Malaysia, Philippines, Thailand and Vietnam joined the training course. BOH invited 6 professors and experts from Beijing, Nanjing and Guangzhou



The Certificate signed by Mr. Olavo Rasquinho, the Secretary of Typhoon Committee

Participants of UFRM Training Course

to give lectures. The participants also discussed the possibility of applying Xin'anjiang Model in selected river basins in TC Members and development of Operational System for Urban Flood Forecasting and Inundation Mapping (OSUFFIM) in pilot cities of UFRM project. OSUFFIM was granted partially by Macao government of China. The Hydrologist Dr. Jinping LIU attended the training course and conferred the Certificates on participants on behalf of TC Secretary Mr. Olavo Rasquinho. He took the opportunity



TC AWG Meeting held in Macao in 2008 discussed UFRM project



Mr. Jinping LIU, hydrologist of TCS and Ms. CHEN Zhijing, Chief Engineer of Guangdong Provincial BOH were conferring the certificates to Participants



Main drafters of UFRM Guidelines in Nanjiang, China for drafting meeting in 2012

Drafting Meeting on Urban Flood Risk Management (UFRM) Guidelines of Typhoon Committee
13-14 February 2012 WMO Regional Training Centre Nanjing China

to have visited Sun Yat-sen University for discussing the possibility of jointly developing OSUFFIM for TC Members.

The First Cross-cutting Project of the Committee Enters the Last Stage

The Project on Urban Flood Risk Management (UFRM) in Typhoon Committee Area, led by China, has been

lasting 5 years as the first cross-cutting project of the Committee.

In the past years from 2008 to 2012, the committee gave its very close attention and strong support to the implementation of this project. During the thorough period from 2008 to 2012, TC WGs, UFRM Task Force members and TC Members, particularly the Members of UFRM pilot cities contributed greatly to the implementation of TC Cross-cutting project of UFRM.



TC Integrated Workshop on UFRM, held in Macao in 2010

The main drafters of UFRM Guidelines coming from China; Japan; Hong Kong, China; Philippines and Republic of Korea

contributed their valuable time and knowledge. The Task Force Members (Chairs/Vice Chairs of WMG, WGH, WGDRR and TRCG) contributed their expertise and constructive advice to the project implementation. ESCAP and WMO provided very important guidance and support, particularly the consultancy and workshops funded by ESCAP. TCS has been providing the conscientious coordination for this project since very beginning. The in-kind contributions in both aspects of finance and expertise from TC Members provided great assistance to this cross-cutting project.

The project will be closed after the TC 45th Session. As the first cross-cutting project, the implementation of UFRM project has brought the obvious benefit to the Committee, including the aspects of technology and visibility. The achievement and outcomes would be referred not only in TC Members but also in outside of TC area. In general, the main outcomes of the project could be summarized as following six aspects:

- Provided and accumulated the experience for the Committee on how to carry on the cross-cutting project in the Committee
- Summarized and abstracted the good practices in TC area on urban flood risk management
- Found the main gaps and needs in TC Members on urban flood risk management in aspects of hydrology, meteorology and disaster prevention and preparedness
- Trained the staffs and transferred the technique for TC Members on QPE/QPF application, urban flood inundation mapping and disaster assessment
- Completed the UFRM Guidelines for TC Members
- Enhanced the visibility of the Committee in a sense

The finalization of the cross-cutting project on UFRM does not mean the end of research on urban flood risk management in the committee. Actually, there are many topics on the aspect of UFRM still exiting and waiting for further action. To meet the requirement of pilot cities, WGH proposed a new

project (AOP) for 2013 and beyond, named Development of Operational System for Urban Flood Forecasting and Inundation Mapping (OSUFFIM) for TC Members, as the consequent activity of TC Cross-cutting Project of UFRM. To promote the capacity of early warning of urban flood and emergency response, particularly urban flood forecasting and inundation mapping, Typhoon Committee Secretariat (TCS) and Macao Meteorological and Geophysical Bureau (SMG) jointly proposed this project, which will be lasted from 2013 to 2016.

The Science and Technology Development Fund (STDF) of Macao Government has decided to provide partial grant to support the development of "OSUFFIM". Sun Yat-Sen University of China is willing to contribute this activity for Typhoon Committee based on its existing achievement on urban flood inundation mapping and possibly to merge their own potential budget to cover the shortage of the funding for development of OSUFFIM. The deep cooperation is expected for developing OSUFFIM.



2012, the Working Group on Hydrology (WGH) had its first working meeting with the theme of "Comprehensive Counterplan for Extra-Ordinary Flood" in Han River Flood Control Office (HRFCO) of Korea, Seoul from 7 to 10 October 2012 at the kind invitation of the Ministry of Land, Transport, and Maritime Affairs (MLTM), Korea with generous offering of financial support.



The participants of the 1st meeting of TC WGH

The First Working Meeting of UNESCO/WMO TC WGH Held in Seoul, Korea

Referring to the decision of the 44th Session of the ESCAP/WMO Typhoon Committee (TC) which was held in Hangzhou, China from 6 to 11 February

The objective of the meeting were (1) to review the implementation progresses of WGH Annual Operating Plan (AOP); (2) to review the floods happened in China, Philippines and Thailand; (3) to discuss the activity plan for WGH in 2013; and (4) to discuss the preparation of the 7th Integrated Workshop to be

held in Nanjing from 26 to 30 November 2012.

The meeting was hosted by MLTM in cooperation with Korea Institute of Construction (KICT) and co-chaired by WGH chairperson Mr. Kamoto Minoru and the director of Information Center of HRFCCO Dr. Sang Heon LEE. The Director General of HRFCCO Dr. Byung Kok JEON attended open ceremony. Totally about 25 participants from China, Japan, Korea, Laos, Malaysia, Philippines, Thailand, the United States, Vietnam and TCS took part in the meeting.

To respond the comments from Madam Chair of TC at 44th Session on how to promote the flood forecasting capacity of TC Members, the meeting discussed two new projects for 2013 and beyond, including: (1) Development of Operational System for Urban Flood Forecasting and Inundation Mapping (OSUFFIM) for TC Members, and (2) Extend Application of Xin'anjiang Model in Selected River Basins in TC Members. The participants were arranged to visit the Han River Pavilion, one of river restoration exhibition halls of four river projects in Korea.

The participants recognized the working meeting is very important event for WGH to review the progresses of the AOPs and to prepare the IWS. WGH expressed its highest appreciation to Korea government through MLTM and KICT for supporting WGH working meeting and expected the working meeting can be continued.

TC published the Final Report for the Project on Hazard Mapping for Sediment-related Disasters (HMSD)

To promote the capacity of prevention and reduction of sediment-related disaster induced by heavy rainfall, the Committee endorsed WGH to launch the project of Hazard Mapping for Sediment-related Disasters (HMSD) in 2009, as the consequent activity of the project "Sediment-related Disaster Forecasting Warning System Project" closed in 2008. This project led by Japan through the National Institute for Land and Infrastructure Management (NILIM), the



Field training in Zhuhai, China, and Nha Trang, Vietnam

SABO (Erosion and Sediment Control) Department of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and the SABO and Landslide Technical Center (STC).

The aim of the project is to share Japanese SABO technique and consequently to facilitate Members to make and use hazard maps for sediment-related disasters. Purposes of hazard maps are to restrict land use and to provide early warning information to residents who live in hazardous areas so they will evacuate. The Project is related to TC Key Result Areas (KRA) as: 1) KRA 1, Reduced loss of life from typhoon-related disasters; 2) KRA 2, Minimized typhoon-related social and economic impacts; 3) KRA 4, Improved typhoon-related disaster risk management in various sectors; and 4) KRA 5, Strengthened resilience of communities to typhoon-related disasters.

This project is one of the most successful projects of WGH. During implementation of project in the past 4 years, Japanese SABO technique shared and demonstrated how to identify hazardous areas and how to establish the integrated system for residents' evacuation from sediment-related disasters; TCS and TC Members provided very close cooperation. The field training was held in Zhuhai, China in 2010 and SABO Workshop was held in Nha Trang, Viet Nam in 2011. The



Indoor lectures in Zhuhai, China, and in Nha Trang, Vietnam

final report of this report explains how to identify hazardous areas and how to establish the integrated system for residents' evacuation from sediment-related disasters. The Government of the Hong Kong SAR of China provided very valuable information for the report. The project has achieved the expected goals and its success will have a great impact in relation to sediment-related disaster prevention not only for the Typhoon Committee but also for the Members of the Panel on Tropical Cyclones, Hurricane Committee and the other regional bodies of the WMO Tropical Cyclone Programme. This

final report does not mean the end of the cooperation in aspect of sediment disaster prevention in TC area. A new project named “Project on estimation for socio-economic impact of sediment-related disaster” will be launched in 2013 as one of AOPs of WGH.

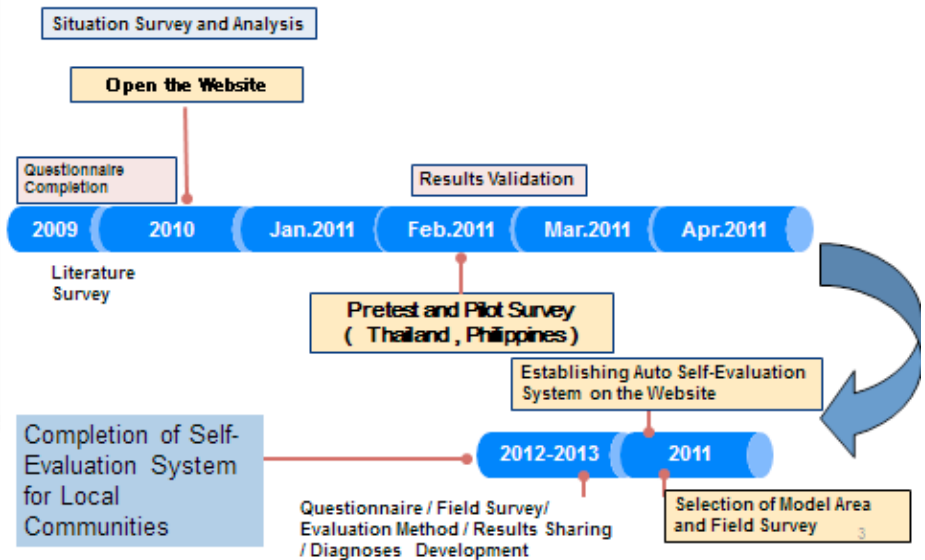
Flood Disaster Preparedness Indices has been implemented in local communities in the Philippines, Thailand, and Vietnam. The project also prepares 12 languages versions for the self- evaluations of local communities among TC Member countries. This final report aims to review and summarize the progress and the achievement of the project in the past years.

The experts of ICHARM/PWRI of Japan, all related hydrologists of TC Members and TCS contributed their kind cooperation and support to this project during the past 4years.



TC published the Final Report for the Project on Establishment of Flood Disaster Preparedness Indices (FDPI)

Development and Application of Flood Disasters Preparedness Indices (FDPI)



The project on Establishment of Flood Disaster Preparedness Indices (FDPI) was launched in 2008, as one of AOPs of Working Group on Hydrology (WGH). The aim of the Project is to establish indices to improve flood disaster preparedness levels of local governments and communities so that to promote the capacity of flood disaster risk reduction in TC Members. This project led by ICHARM/PWRI of Japan. It is one of the successful projects of WGH. It is in line with 4 of 7 TC Key Results Areas (KRAs) of Strategy plan (2012-2016), namely: 1) KRA1: Reduced Loss of Life from Typhoon-related Disasters; 2) KRA2: Minimized Typhoon-related Social and Economic Impacts. 3) KRA4: Improved Typhoon-related Disaster Risk Management in Various Sectors. 4) KRA5: Strengthened Resilience of Communities to Typhoon-related Disaster.

During its implementation in the past 4 years, the project on Establishment of





TC News from Members



China

1) Training course on Dvorak Technique

Typhoon and Marine Weather Forecast Centre of CMA (TMWFC) held a training course on Dvorak technique from 22 to 29 February for young forecasters. The trainees were from TMWFC and researchers from Remote Sensing Department of NSMC and Shanghai Typhoon Institute. On the first half of the course, Dr. XU Yinglong, Chief Forecaster of NMC, gave an explanation to the process and rules of Dvorak technique in detail. On the second half of the course, Mr. Chan S.T., senior scientific director of HKO, was invited to give an introduction on the history of Dvorak technique and each detailed step of the technique documents and the present application situation of Dvorak technique in each tropical cyclone forecasting centre over the world. Besides, Mr. Chan shared much experience in using Dvorak technique in HKO operational work. The trainees practiced Dvorak technique using previous TC cases under tutors' guidance.



Fig.1 Forecasters and Researchers in the Dvorak Technique Training Course

2) Improvement of Telecommunication System

CMACast, the newly established DVB-S2 standard satellite data broadcast system of CMA, has been put into operational use since 1 June 2012. The CMACast is an integrated satellite data-broadcasting system in conformance with the DVB-S2 standard, substituting the present satellite data-broadcasting systems (PCVSAT, DVB-S and FENGYUNCast) which already have 2400, 700 and 200 users respectively. The CMACast is the major component of China's national meteorological data dissemination system, continuously broadcasting the real-time observational

data and products crucial for the weather forecasts and related services to more than 2500 users. It is also the most effective way to share the various meteorological data and products with the public user communities in China. At present, the daily broadcast data volume is more than 210 GB, including the territorial and international observation data, the CMA T639 NWP products, the satellite observation products of FY2D/E and FY3A/B, EUMETSAT satellite products, etc.

the Regional GEONETCast Network Centre (GNC) for the FENGYUNCast, which was formerly integrated into GEONETCast in 2007 as the contribution of China to GEONETCast. The CMACast system, compared with the FENGYUNCast, provides higher bandwidth, many new data, as well as the improved user and data management mechanism. The CMACast system has achieved the requirements so as to provide the full services within the

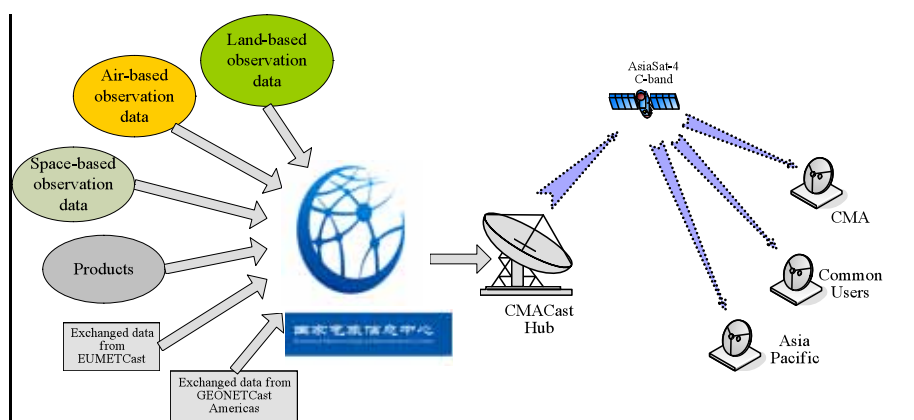


Fig.2 The Diagram of Cast System

The CMACast system is also a major component of WMO IGDDS and GEONETCast systems. It substitutes

framework of GEONETCast, plus the better ones to the users in Asia-Pacific Region.

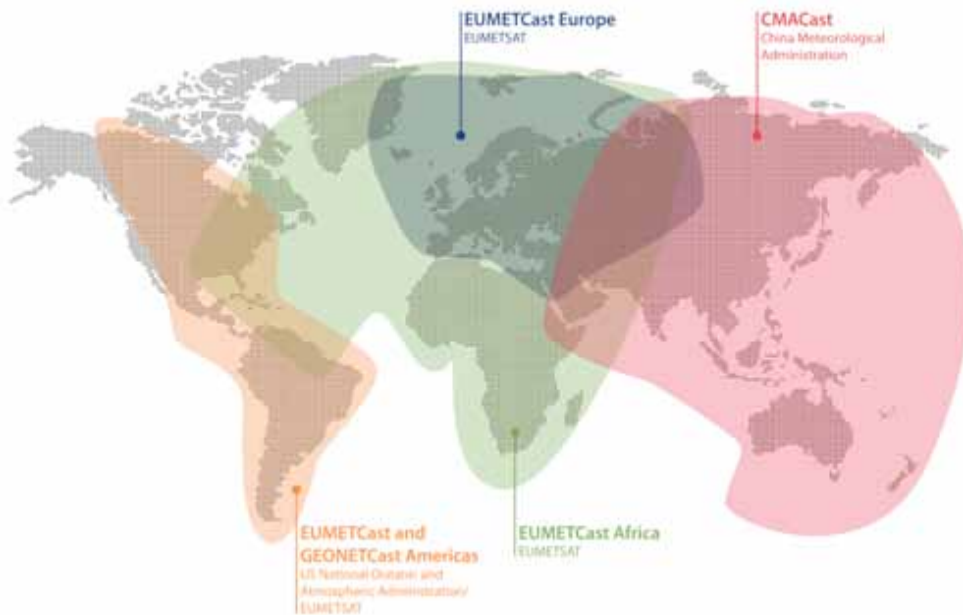


Fig.3 The Four Meteorological Information Centers around the World

3) International Training Course for Weather Forecasters

The first international training course for weather forecasters hosted by National Meteorological Centre was held in WMO Regional Training Centre Nanjing, China from 17 to 27 in September. There were eighteen forecasters from fifteen developing countries attending this ten-day's training. During the training, fifteen experts from NMC gave presentations on weather forecasting system, synoptic analysis, typhoon and marine forecasts, numerical forecasts, MICAPS system application, etc. The aim of this international training was to reinforce the operational application of MICAPS (developed by National Meteorological Centre) in those recipient countries.

The topics of this training course are as beside:

- ✧ Briefing of the Weather Forecast Operations of National Meteorological Centre of CMA
- ✧ Communicating Forecast Uncertainty
- ✧ Medium-range Meteorology
- ✧ Monitoring of Climate Extremes
- ✧ Marine Weather Forecasting and Warning in CMA
- ✧ Operational Typhoon Analysis and Forecasts in CMA
- ✧ Recent Development of Numerical Weather Prediction Systems in CMA
- ✧ MICAPS System
- ✧ Introduction to CMACast and its Data Catalogue& Interface between CMACast and MICAPS
- ✧ Severe Convective Weather Prediction Operations and its Development in CMA
- ✧ Monitoring of Strong Convective Weather and Nowcasting
- ✧ Meso-Scale Analysis and Forecasting on Strong Convective Weather
- ✧ Objective Methods on Severe Convective Weather Prediction
- ✧ Short-Range Weather Forecast and its Development in CMA
- ✧ NWP Output Verification and Modification
- ✧ NWP Ensemble Products Application
- ✧ How to Make a Better QPF



Fig.4 The International Training Course for Weather Forecasters Hosted by National Meteorological Centre, CMA at Nanjing University of Information and Science Technology (17- 27, September, 2012)

4) Enhanced Tropical Cyclone Monitoring with FY-2F Satellite

The FY-2F geostationary satellite was successfully launched on 13th January 2012 and has been used to monitor tropical cyclones' activities since this summer. Compared with FY-2D and FY-2E, FY-2F can provide much more frequent observation for tropical cyclones over the Northwestern Pacific and the South China Sea.

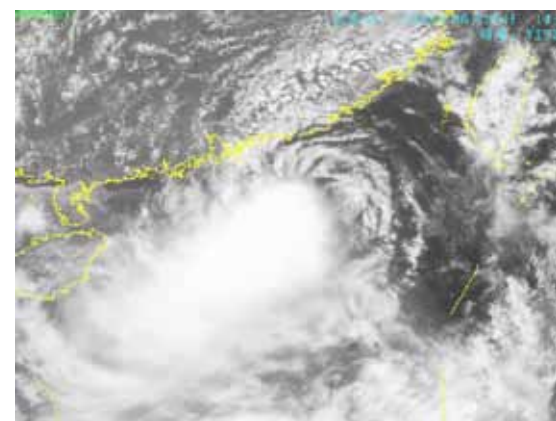


Fig.5 FY-2F Visible Image for Monitoring Tropical Cyclones

FY-2F could provide cloud imagery every 6 minutes, helping forecasters effectively analyze and determine Tropical Storms' location and intensity.



Fig.6 WMO-TLFDP Training Workshop on Tropical Cyclone Forecasting

5) Training Workshop of WMO Typhoon Landfall Forecast Demonstration Project (TLFDP)

The WMO-TLFDP Training Workshop on Tropical Cyclone Forecasting was held in Shanghai, China during 12-14 June 2012. More than 70 participants attended the meeting, including 16 lecturers from 7 institutions worldwide. The WMO-TLFDP is jointly supported by WMO World Weather Research Program (WWRP), Tropical Cyclone Program (TCP) and Public Weather Service Program (PWS). It is also an annual operating plan (AOP-Verification of Landfall Typhoon Forecast) of Typhoon Committee Working Group on Meteorology. This project made some progress in the past two years. Real-time forecast products were collected; forecast products and its official website (<http://tlfdp.typhoon.gov.cn>) were disseminated; training courses were organized; verification techniques on Tropical Cyclone forecast had been improved, etc. Through this workshop, a set of verification techniques was established and the project will be extended to 2015.

6) Launching of the Inaugural Issue of the Tropical Cyclone Research and Review

The first issue of the Tropical Cyclone Research and Review was launched during the 44th session. China Meteorological Administration, together with TCS, edits and publishes the Typhoon Committee science and technology journal quarterly from February 2012. This journal publishes research findings on basic theoretical and applied studies on tropical

cyclones. It also publishes review and research on hydrology and disaster risk reduction related to tropical cyclones. Contributions are made via the website (<http://mc03.manuscriptcentral.com/tcrr>). Additional information is available at <http://tcrr.typhoon.gov.cn>

7) Edit and Publish the Journal of Tropical Cyclone Research and Review

Shanghai Typhoon Institute (STI) of China Meteorological Administration, together with TCS, edits and publishes the Typhoon Committee science and technology journal quarterly from February 2012. The journal website (<http://tcrr.typhoon.gov.cn>) and the editorial office have been established in STI of CMA. The online manuscript submission and review system (<http://mc03.manuscriptcentral.com/tcrr>) has been installed in 2012. The first visiting editor, from National Typhoon Center of KMA, has fulfilled his duty in STI this December.



By the end of October, 3 issues (No.1-3) which contain 36 articles have been published. Not only WGs and TC Members, but also famous scientists worldwide submitted their research paper to this journal. Every article that is accepted for publication is assigned a DOI number. News of publication of each issue has been posted on Tropical-storms forum. At the same time, each issue has been sent to 14 TC Members, WMO, universities and institutions, etc.

The journal is attracting more and more attention. Till the end of October, abstract page view is up to 7906, averagely, abstract of each article was viewed 208 times. The full text of papers was downloaded 4785 times, and averagely, each article was downloaded 125 times. The website of the journal is popular among 60 countries.

8) Verification of Current Operational Forecast Status for Tropical Cyclones in the Western North Pacific Region

Based on the outcomes of the WMO Typhoon Landfall Forecast Demonstration Project (WMO-TLFDP), the verification techniques and system on the tropical cyclone track, intensity, precipitation forecast and ensemble prediction have been improved. Post-season verification and reliability analyses have been carried out on tropical cyclone forecast in 2010 and 2011. A survey on current operational status of tropical cyclone forecast verification in the Western North Pacific Region will be submitted to 45th Typhoon Committee session.

9) Web-based Typhoon Forum

The on-line forum has been established and upgraded by sharing more real-time observation, forecast and warning information by Typhoon Committee Members. For example, some real-time information and forecasts, including the seasonal predictions of STI/CMA and NTC/KMA, were exchanged via this forum.

As the end of October 2012, the number of registered users and the team of moderators on related topics expanded.

64 members from 11 countries joined the forum, and 55 topics and 141 posts were presented in the forum.

10) The 5th China-Korea Joint Workshop on Tropical Cyclone

Shanghai Typhoon Institute and Typhoon and Marine Weather Forecasting Center of CMA, together with National Typhoon Center (NTC) of Korea Meteorological Administration (KMA) co-organized the 5th China-Korea joint workshop on tropical cyclones, which was held in Republic of Korea during 10-14 December, 2012.



12th Typhoon Committee Attachment Training at the RSMC Tokyo - Typhoon Center

JMA's RSMC Tokyo - Typhoon Center provides assistance to members of the ESCAP/WMO Typhoon Committee in typhoon analysis and forecasting services. One of the Center's activities involves holding on-the-job training on typhoon operations for forecasters in the region to improve analysis and forecasting skills through the exchange of views and the sharing of experience in the field.

Two forecasters – Mr. Ngo Hai Duong (from Viet Nam) and Ms. Connie Rose S. Dadvivas (from the Philippines) – visited JMA's Headquarters from 18 to 27 July, 2012, to participate in the 12th Typhoon Committee Attachment Training. The information covered included the following areas:

1. The Satellite Analysis and Viewer Program (SATAID)
2. Tropical cyclone analysis (Dvorak technique)
3. Tropical cyclone forecasting
4. Storm surges
5. Quantitative precipitation estimation (QPE) and quantitative precipitation forecasting (QPF)
6. The Severe Weather Forecasting Demonstration Project (SWFDP)



Participants on a courtesy visit to JMA Director-General Dr. Mitsuhiro Hatori. Dr. Hatori is shown between Mr. Ngo Hai Duong (right) and Ms. Connie Rose S. Dadvivas (left) with National Typhoon Center staff (18 July, 2012, Director-General's office).



Discussion in the operation room (JMA's Forecast Division) (left). Lecture and training in JMA's seminar room (right).

During the training, two tropical storm landfalls (Severe Tropical Storm Khanun on the Korean Peninsula and Typhoon Vicente on South China) were observed. This allowed the two trainees to gain hands-on experience of TC analysis and forecasting using real-time examples.

Upgrade plan of JMA's global numerical weather prediction system

The supercomputer system at the Japan Meteorological Agency (JMA) was upgraded in June 2012, and is now in operation. The theoretical peak performance of the new Hitachi SR16000/M1 system (Figure 1) is about 30 times higher than that of its Hitachi SR11000 predecessor at more than 800 trillion floating-point operations per second.

Taking advantage of these advanced computational resources, JMA plans to upgrade its numerical weather prediction (NWP) system. The number of vertical levels in the operational Global Spectral Model (GSM) will be enhanced from 60 (L60) to 100 (L100), and the top level of the model will be raised from 0.1 hPa to 0.01 hPa. This higher vertical resolution is expected to improve the representation of atmospheric vertical structure and atmospheric processes; this applies particularly to those in the boundary layer, which is quite important in tropical cyclone (TC) forecasting with numerical weather prediction models. Raising the model's top level enables better usage of satellite data channels, which are sensitive to middle atmosphere conditions, in data assimilation.

JMA also plans to upgrade its Typhoon Ensemble Prediction System, which is run up to four times a day with a forecast range of 132 hours and specializes in TC forecasting. The upgrade includes enhancement of the spatial resolution and the number of vertical levels in the forecast model from TL319L60 to TL479L100 and an increase in the ensemble size from 11 to 25. The enhancement of the model's horizontal resolution will lead to



Figure 1 JMA's new supercomputer system

better representation of TC structures and high-impact weather conditions such as heavy precipitation and strong wind accompanying TCs. The aim of increasing the ensemble size is to improve the reliability of TC strike probability forecasts. Preliminary results show a positive impact from the size increase on probabilistic TC track forecasts, as shown in Figure 2.

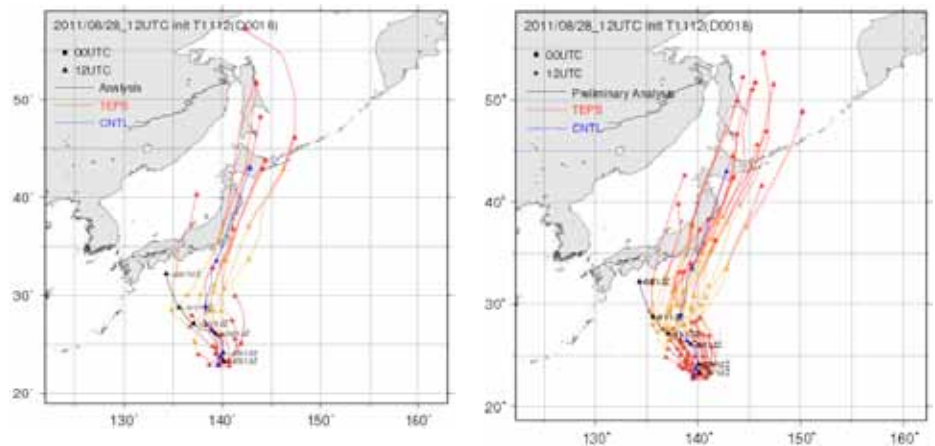


Figure 2 Ensemble TC tracks of Typhoon T1112 (Talas) covering periods up to 120 hours derived from the operational Typhoon EPS (11 members, left panel) and an experimental EPS (25 members, right panel). The initial time is 12 UTC on 28 August, 2011. Black and colored lines indicate the best track and forecast tracks, respectively.

1. Hong Kong Observatory continued to strengthen collection of meteorological information on tropical cyclones

The Hong Kong Observatory (HKO) continued its collaboration with the Hong Kong Government Flying Service (GFS) to conduct reconnaissance flights into tropical cyclones over the South China Sea in 2012, including Talim (19 June), Vicente (22 July), Kaitak (16 August) and Tembin (26 August). The meteorological data collected during the flights provided useful information to depict the location and the wind distribution of the storms (Figure 1), enhancing the Observatory's capability in monitoring their development and the associated weather affecting Hong Kong and coastal areas. Work is underway to streamline the quality control process of the flight data with a view to making the data available for international exchange.

HKO promoted the World Meteorological Organization (WMO) Voluntary Observing Ship (VOS) Scheme this year in Hong Kong through the Shipowners Association. As a result, four more container ships joined the scheme, increasing the number of ships in the Hong Kong VOS fleet to 58. Real-time meteorological observations over the oceans would be enhanced for forecasting and warning of tropical cyclones.

2. The first Hurricane Signal in Hong Kong since 1999

During the passage of Severe Typhoon Vicente, the Hurricane Signal No. 10 was issued in Hong Kong in the small hours on 24 July 2012. This was the first No. 10 Signal for the territory since Typhoon York 13 years ago in September 1999. Vicente underwent

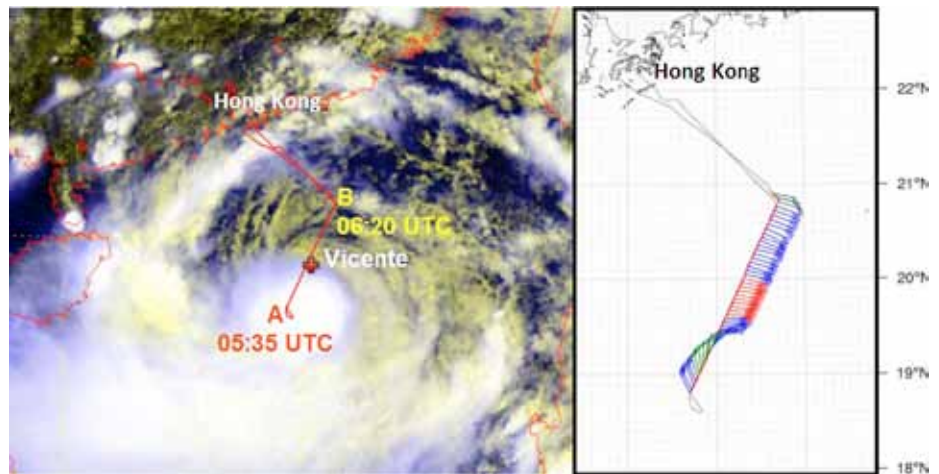


Figure 1 The flight path of the GFS fixed-wing aircraft on 22 July 2012 (red lines on left panel), overlaid on the MTSAT visible satellite imagery at 0532 UTC on that day. It could be seen that the aircraft had once flown very close to the centre of the tropical cyclone Vicente. The winds near sea surface estimated from the flight data from point A to point B are shown on the right panel.

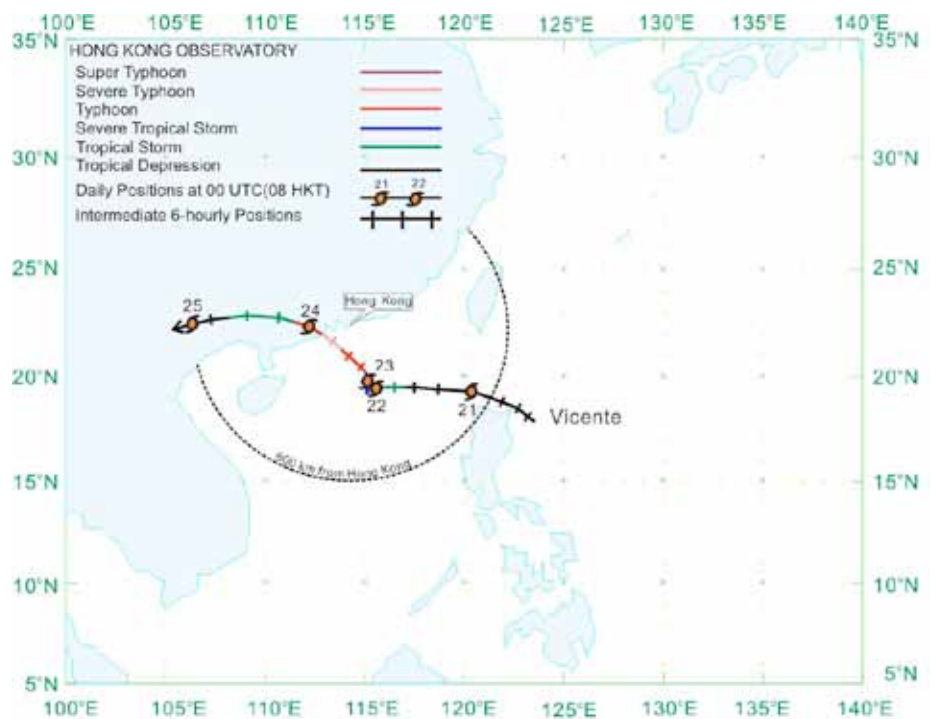


Figure 2 Track of Vicente (1208) on 20 – 25 July 2012.

rapid intensification within around 30 hours prior to its closest approach to Hong Kong, strengthening by three categories from a tropical storm to a severe typhoon. Such rapid intensification near the territory was rather rare among the tropical cyclones that had necessitated the issuance of the No. 10 Signal since 1946. Vicente was also the farthest

tropical cyclone that required the No. 10 Signal since 1946. Figures 2 and 3 show the track and time series of the maximum sustained wind speed near the centre of Vicente respectively. Severe Typhoon Vicente also brought heavy rainfall to Hong Kong during its passage. More than 200 millimetres were recorded generally from 21 to 24 July, with locally over

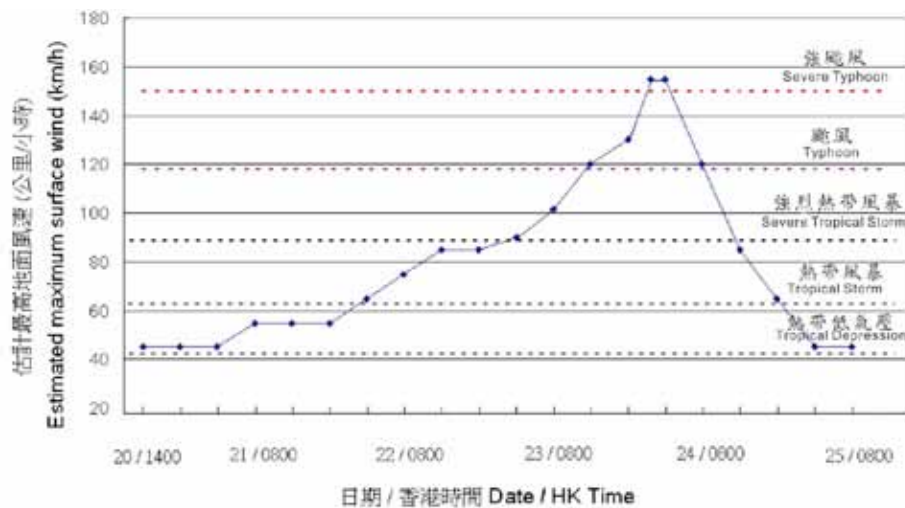


Figure 3 Time series of the maximum sustained wind speed (10-minute mean) near the centre of Vicente (1208), according to the post analysis of the Hong Kong Observatory.

400 millimetres in the northern part of Hong Kong. During the passage of Vicente, at least 138 people were injured and the number of fallen trees amounted to some 8 800. At the Hong Kong International Airport, at least 90 flights were cancelled, over 446 flights delayed and 50 flights diverted.

3. Computer Forecast Weather Map

HKO enhanced its website (<http://www.hko.gov.hk/nhm/nhme.htm>) in April 2012, providing forecast products with more detailed information on the predicted cloud cover and rainfall amount. The forecast weather maps (Figure 4) were based on the outputs of the high-resolution numerical prediction model operated by HKO, providing prediction of the evolution of weather patterns over East Asia and the western North Pacific up to three days ahead. They are particularly useful in showing expected development of tropical cyclones.

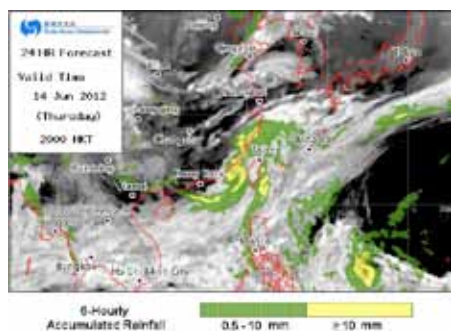


Figure 4 Forecast surface weather map enhanced with cloud cover and rainfall

4. Service delivery over the Internet and mobile platforms

HKO had taken great strides in enhancing the delivery of services, including tropical cyclone warnings and information, over the internet, mobile platforms and social network platforms. A new record in the access rate of the Observatory's website was set in 2011, registering a total of 6.2 billion, about 3.4 times that of 2010. The record had since been broken with the figure exceeding 20.4 billion

www.hko.gov.hk/myobservatory_e.htm) that delivered location-based personalized weather service in Hong Kong continued to be highly popular. In the first three quarters of 2012, the visitor statistics of the MyObservatory soared to 5.4 billions, which was 3 times that of the figure recorded in 2011. Featuring a suite of weather service products including real-time weather information and push notification of weather warnings, MyObservatory was enhanced with "Location-based Rain Forecast" service in September 2012. Users could easily get hold of the rainfall forecast in the coming two hours specific to their actual or selected location in Hong Kong. The new service was presented in different formats (Figure 5) including text, weather icon sequence and animated rainfall forecast maps. Notification message would also be sent to users automatically whenever rain is forecast at their actual or selected locations in the next two hours.

The weather information delivery service through the micro-blog websites, Twitter and Weibo, remained very well-received with the number



Figure 5 Sample screens for Location-based Rain Forecast service: (a) text and weather icon sequence (b) animated rainfall forecast map (c) notification message

in the first nine months of 2012.

HKO's in-house developed weather app, MyObservatory, available on iOS and Android platforms ([of followers exceeding a hundred thousand by September 2012.](http://</p>
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To better alert members of the public about impending hazardous weather



Figure 6 “Special Weather Tips” on Tropical Storm Doksuri over the Luzon Strait on HKO website.

including tropical cyclones, HKO started in 2012 to make available “Special Weather Tips” on the front page of its website (Figure 6), via the “MyObservatory” platform on popular mobile devices as well as HKO’s accounts through the microblog websites. The “Special Weather Tips” would be issued whenever significant change in weather such as the approach of heavy rain or potential change of local Tropical Cyclone Warning Signal was expected to enable users to better prepare for inclement weather.

5. Sharing of weather information through Co-WIN

The “Community Weather Information Network” (Co-WIN), started in 2007 in collaboration with the Hong Kong Polytechnic University, saw further expansion this year in the number of community weather stations to over 115, with relevant weather data made available to the public via the Internet. HKO also pioneered the “Community Weather Observing Scheme” (CWOS),

allowing community members to share first-hand experience in making weather observations, particularly on the change in weather during the passages of tropical cyclones. Weather data obtained through Co-WIN and observations made via CWOS are applied by school children in various educational projects and studies. Both Co-WIN and CWOS help raise awareness of severe weather, including tropical cyclones.

6. Enhancement for the Severe Weather Information Centre (SWIC)

A new version of the Severe Weather Information Centre (SWIC, <http://severe.worldweather.wmo.int/>) of WMO was launched in September 2012. With two new contributing Members, China and Malaysia, the SWIDget now provides weather warnings from seven weather services, viz. Hong Kong, Macao, Guam, Republic of Korea, Singapore, Malaysia, and the Guangdong province of China in a near real-time manner. The SWIDget is a software tool developed by the Observatory on behalf of the WMO to display weather warnings of contributing members automatically on personal computers. The new version improves program stability and optimizes the user interface for selecting official weather warnings of user’s choice (Figure 7). A dialogue box will pop up with an audio alarm on the user’s personal computer upon change in warning status.

7. School painting competition on “My life under Typhoon signal”

To promote public awareness on tropical cyclones, HKO co-organized with the Hong Kong Meteorological Society a painting competition titled “My life under typhoon signal” for primary school students. The paintings expressing the children’s spontaneous feeling about tropical cyclones and their creativity and imagination, were highly commended by the judges.

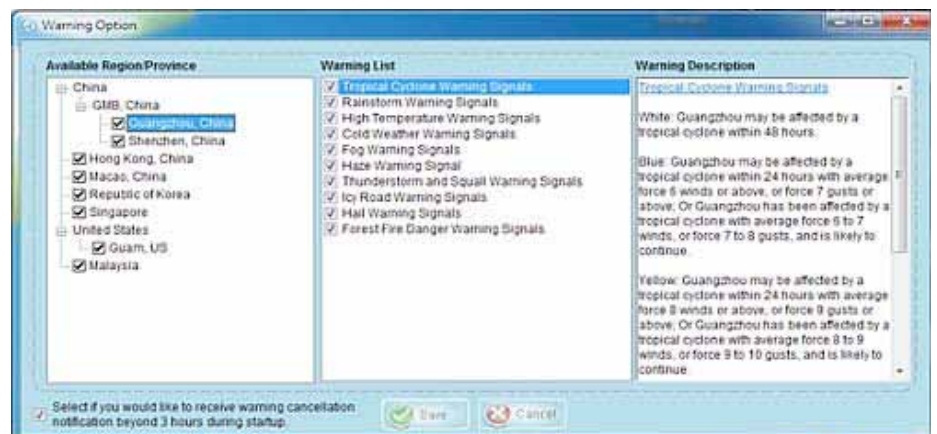


Figure 7 User interface for selection of official weather warnings



Figure 8 Painting award presentation ceremony at HKO in March 2012

8. Conducted training on estimation of tropical cyclone intensity from satellite imageries

At the invitation of the China Meteorological Administration (CMA), Mr. Chan Sai-tick, Senior Scientific Officer of HKO, conducted a training workshop on the technique to estimate tropical cyclone intensities based on satellite images in Beijing during February 2012. More than 20 personnel from CMA including the Shanghai Typhoon Institute attended the workshop. The workshop facilitated the standardization of the application of the technique in CMA and provided an opportunity for sharing of experience in tropical cyclone monitoring within the Asia Pacific region.



Figure 9 Participants of the training workshop on tropical cyclone intensities

9. Serving as lecturer in the World Bank workshop in early warning system

Organized through the WMO, Mr. Lee Lap-shun, Senior Scientific Officer of HKO, delivered lectures on Hong Kong's weather warning system and the recent activities of WMO in disaster risk reduction and public weather services in a workshop for World Bank staff held in Shanghai from 21 to 23 March. The objective of the workshop was to provide the World Bank staff with the latest information on the development and implementation of an effective weather warning system. This would facilitate the organization's development of investment programmes to improve emergency management and meteorological services in developing countries in Asia.



Figure 10 Mr. Lee Lap-shun of the HKO (front row, second from the left) together with the staff of the Shanghai Meteorological Bureau and the World Bank

10. Strengthening partnership with meteorological services in the region

HKO has been collaborating with the Korea Meteorological Administration (KMA) over the years in various disciplines including public weather service in support of developing countries. In recent years, the two organizations have further jointly coordinated a pilot project of the WMO to support meteorological services to develop numerical weather prediction capability. A Memorandum of Understanding (MOU) on cooperation between HKO and KMA was signed in May 2012 signifying further strengthening of the collaboration between the two services. It is hoped that the MOU can foster further development of weather services to reduce the impact of severe weather such as tropical cyclone to the society in the years to come.



Figure 11 Mr. Shun Chi-ming (left), Director of the HKO, pictured with Mr. Cho Seok Joon, Administrator of KMA, after the signing of the MOU

The “Long-term Co-operation Agreement between Guangdong Meteorological Bureau and Hong Kong Observatory in Numerical Weather Prediction Technology” was signed after the high-level Hong Kong/Guangdong Co-operation Joint Conference on 14 September 2012 (Figure 12). Under the Agreement, the two sides would enhance information exchange in order to improve the accuracy of weather forecast, enhancing meteorological service in both places. The strengthening of technical exchange serves to strengthen capability in disaster prevention and also mitigation in the region.



Figure 12 Director of the Hong Kong Observatory, Mr Shun Chiming (first left on the front row) signs the “Long-term Co-operation Agreement in Numerical Weather Prediction Technology” with Director-General of Guangdong Meteorological Bureau, Mr Xu Yongke (second left on the front row).

11. Regional exchange and sharing of experience on emergency management

Following the direct hit of Severe Typhoon Vicente over southern China, delegations from the nearby regional authorities of mainland China paid visits to the Hong Kong Observatory to learn about (a) the Observatory’s experience in operating weather warning signals; (b) the coordination in emergency response management in the city between the Observatory and other government departments as well as related organizations and (c) communication with the media. The visits enhanced regional exchange and sharing of experience on emergency management (Figure 13), thereby strengthening emergency response plans to safeguard life and property of people in the region.

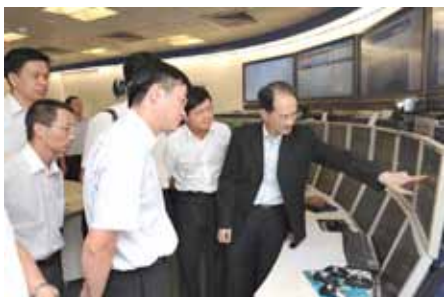


Figure 13 Dr. C.M. Cheng (first right), Assistant Director of the Hong Kong Observatory, providing a briefing on the operation of the Meteorological Centre of HKO to the delegation from the Emergency

Management Office of Guangdong Province.

12. Participates in the Typhoon Committee Research Fellowship Scheme

Under the Typhoon Committee Research Fellowship Scheme 2012, a total of three researchers from the Philippines and Malaysia attached to the Observatory for two months from late October 2012 to carry out nowcasting research studies on tropical cyclone rainfall. As a follow-up to the 44th Typhoon Committee Session, a training component on QPE/QPF was included in the attachment.

Another research fellow from the Malaysian Meteorology Department (MMD) under the Typhoon Committee Research Fellowship 2011 completed a research study on TC intensity forecast using multiple-model ensemble techniques. Results indicated that the equally-weighted multiple-model ensemble method generally performed better than each individual model in TC intensity forecasts. A joint paper on the research result prepared by MMD and HKO would be published in the journal “Tropical Cyclone Research and Review”.

13. Research on tropical cyclone activities in the Typhoon Committee region

HKO completed a study of the long term variations of tropical cyclone activity in the Typhoon Committee region. In the study, a number of recent publications and authoritative assessments were reviewed. Strong inter-annual and inter-decadal variations in the tropical cyclone activity over the western North Pacific were revealed. Regarding the detection of long term trends, analysis of available tropical cyclone data from different databases showed that most of the datasets depicted a decreasing trend in the annual number of tropical cyclones and typhoons in the western North Pacific, with some of them being statistically significant. It was also noted in the study that inter-agency co-operations are urgently required to ensure the homogeneity and longterm reliability of the tropical cyclone databases. A paper summarizing the study was available on the Observatory’s website (<http://www.hko.gov.hk/publica/pubreprint20.htm>).

A paper on “Long term variations of tropical cyclone activities in the South China Sea and the vicinity of Hong Kong” was prepared and accepted for publication in “Tropical Cyclone Research and Review”. The study results show that significant inter-annual and inter-decadal variations in the tropical cyclone activities were observed in the South China Sea and the vicinity of Hong Kong. For the long-term trend, there is a decrease in the number of tropical cyclones affecting Hong Kong in the last few decades, although the trend is not statistically significant.

1. Collecting users' opinion on "Flooding Alert SMS Service"

The "Flooding Alert SMS Service" has been launched for over two years. The purpose of setting up this alert service is to notify shop owners in the low-lying areas about flooding when it is likely to occur. In order to enhance our service, SMG visited several community groups and shop owners for collecting opinions and suggestions on this service. Users reflected that the service is running smooth and helping them to avoid property loss when flooding occurs. In conclusion, the interviewees were satisfied with this service.



2. SMG won the Government Service Quality Award

The Public Administration and Civil Service Bureau of the Macau SAR Government conducted a "Government Service Quality Award" which aims to encourage government departments to enhance their services to the public. After the assessment, SMG won the "Performance Promotion Award".



This prize is specifically awarded to those departments which have significant improvement on their job effectiveness.

3. Visits to the Elderly for enhancing SMG's Weather Alert Service

Elderly are less familiar with the technology products nowadays, which limits their channels of receiving weather information. In order to

better enhance SMG's message dissemination mechanism especially to the elderly, SMG visited the elderly through an activity namely "Warm Action in Winter", which aims to investigate their habits on receiving weather news and to strengthen our weather news dissemination channels. In addition to collecting feedback to the elderly, SMG wished to deliver the community's care and blessings to the elderly and to draw their awareness on the coming cold weather.



 **Malaysia**

The Malaysian Meteorological Department (MMD) is responsible in providing meteorological and oceanographic information and services which include forecast up to seven days on weather and sea condition over its Exclusive Economic Zone (EEZ) covering the Straits of Malacca, South China Sea, Sulu Sea and Celebes Sea. In supporting the increasing activities over its territorial waters and the adjacent seas, MMD continuously monitors the weather and seas conditions as well as issuing advisories and warning if necessary. The areas of coverage are shown in Figure 1 below:



Figure 1: Malaysia's Exclusive Economic Zone (EEZ)

MMD also provides more specific area forecasts which are mainly for fishing and recreational activities. The region for the specific area forecasts are indicated by the dotted line depicted in Figure 2 right above:



Figure 2: Region for the specific area forecasts as indicated by dotted line

To enable MMD to provide a reliable weather and sea condition forecast, MMD runs several ocean models such as the MMD-WAM global and regional, MMD-JMA MRI III and Storm Surge Model. The coverage, resolution and forecast period of the models are reflected in Table 1.

Table 1: Ocean Models Run at the Malaysian Meteorological Department

| Model | Coverage | Resolution | Forecast Period |
|---------------------------------|-------------------------------|-------------|--|
| Global MMD-WAM | 80°S-80°N, 180°E- 180°W | 1°x1° | Up to 192 hours of wave height & period |
| Regional MMD-WAM | 10°S-15°N, 95°-120°E | 0.25°x0.25° | Up to 384 hours of wave height & period |
| Regional MMD-JMA MRI III | 5°S-17°N, 95°-124°E | 0.25°x0.25° | Up to 384 hours of wave height & period |
| Regional MMD-JMA Storm Surge | 0°-20°N, 93° -123°E | 1'x1' | Up to 192 hours of sea level rise |

Until October 2012, a total of 124 advisories and warnings on strong winds and rough seas were issued for the Malaysian Exclusive Economic Zone (EEZ) and the adjacent seas. During the early period of 2012, there were two tropical cyclones formed over the South China Sea and located close to Malaysian waters namely TD ONE which was formed at 9.2°N 113.7°E on 17 February 2012 and Typhoon PAKHAR at 9.7°N 112.3°E on 29 March 2012 are shown in Figure 3 and Figure 4 respectively:

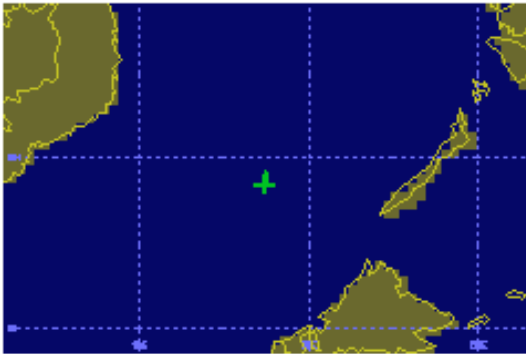


Figure 3: Tropical Depression ONE, (17 February 2012)



Figure 4: Typhoon PAKHAR, (29 March-1 April 2012)

Meanwhile, during the typhoon season between June and September 2012, MMD monitored about sixteen development of tropical depression (TD) of which four developed into tropical storm (TS) and seven reached typhoon (TY) intensity while five reached the highest intensity as super typhoon. During this typhoon period, among the tropical storm/typhoon that caused strong winds and rough seas over the Malaysian waters were Super TY Guchol (11-19 June 2012), TS Talim (17-21 June 2012), TY Vincente (20-24 July 2012), TY Saola (28 July-3 Aug 2012), TY Haikui (2-8 August 2012), TY Tembin (19-30 August 2012), Super TY Jelawat (20-30 September 2012) and TS Gaemi (1-6 October 2012).

The advisories and warnings on strong winds and rough seas issued by MMD are disseminated to the public and disaster management agencies through various communication channels such as the internet, short message system (SMS), facsimile, live media broadcast and the print media. In addition, MMD also uses notice boards and flags at several locations over the coastal areas for dissemination of strong winds and rough seas advisory/ warning. The locations of the notice boards and flags are shown in Figure 5 below:



Figure 5: Locations of notice boards and flags for visual warning on strong winds and rough seas

1. GISC Seoul was endorsed by EC-64(June 2012) with the on-site audit by CBS(May 2012)

KMA has started WIS(WMO Information System) project at the early stage since 2005, and participated in developing OpenWIS software in 2010. GISC Seoul was successfully audited by ET-GDDP in May 2012 and endorsed in WMO EC-65 in June 2012.

OpenWIS is versatile, fully interoperable, modular, portable and adaptable software satisfying all of 15 WMO Technical Specifications for WIS implementation. OpenWIS Consortium, developing and maintaining OpenWIS has five founders such as KMA, BoM, Met Office, Meteo France and one service provider.

For the settlement of WIS operation, the KMA held the 1st GISC Seoul International WIS Workshop in Jeju, Republic of Korea from 6 through 9 November 2012. The workshop provided a valuable opportunity to review the progress on management of endorsed GISCs and to share the WIS technologies and regional implementation plans. It was agreed that human resources development is the most essential part in WIS and these kinds of workshops should be continued.

The GISC Seoul is going to be normally in operation in the beginning of 2013. So is a DCPC, National Meteorological Satellite Center of Korea. Other Korean DCPCs will be operational in 2014. Support for DCPC and NCs in the area of responsibility of the GISC Seoul will be continued.

2. Host to the 5th Korea-China Joint Workshop on Tropical Cyclones

The National Typhoon Center (NTC) in KMA and the Shanghai Typhoon



Figure. 1. Group photo of participants in the 1ST GISC Seoul International WIS Workshop

Institute (STI) in CMA have been co-hosting Korea-China Joint Workshop on Tropical Cyclones since 2008. As the 5th workshop, the NTC/KMA held the workshop on 10-14 December 2012, at Seogwipo KAL Hotel in Jeju, Korea.

There were almost 50 experts in typhoons and related fields from KMA, CMA, Korea Institute of Ocean Science & Technology, Han River Flood Control Office, Korea Centre for Atmospheric Environment Research and six Korean universities. The participants made 20 presentations in a keynote speech and 4 sessions: Session I-Typhoon Analysis and Forecast, Session II-Typhoon Observation and Impact, Session III-Typhoon Related Modeling and Assimilation, and Session IV-R&D.

They made presentations on a wide range of topics such as capability and improvement of operational numerical models, development of new prediction systems and typhoon related technologies, typhoon analyses based on satellite and observation, rainfall estimates, socio-economic impacts, etc.

It also had an intensive discussion on collaboration activities between the NTC and STI. Through the discussion, it was decided to exchange the experts on sharing the operational flow of TC forecasts and the methodology about best-track data generation, depending on the interests of each organization. The 6th workshop will be held in China on the last week of May in the upcoming year.



Figure. 2. Group photo of participants in the 5th Korea-China Joint Workshop on Tropical Cyclones



Thailand

Appointment of new Director-General of Thai Meteorological Department

After the retirement of Dr. Somsri Huntrakul, his predecessor, Mr. Worapat Tiewthanom, was designated as the new Director-General of the Thai Meteorological Department (TMD) on 26 November 2012. Mr. Worapat Tiewthanom, born in 1954, holder of Master Degree of Political Science, from Chulalongkorn University. He started his career for the Government Service in 1978 at the Office of the Civil Service Commission and working for this Office for 24 years. In 2002, he transferred to the Ministry of Information and Communication Technology (ICT), served as the Director of Central Administration Bureau. Five years later, he was designated as the Inspector-General of the ICT Ministry in May 2007 and was subsequently promoted to be the Deputy Permanent-Secretary ICT Ministry during October 2007 – November 2012 before appointment as the present TMD’s Director-General. Mr. Worapat Tiewthanom had attended the 15th Session Regional Association II (Asia) during 13 – 19 December 2012 in Doha, Qatar, as his first participation in the WMO event. He has his intention to avail himself for the full cooperation on meteorology and hydrology for the benefit of international community.

Knowledge Transfer from TC Trainings at TMD Headquarters

In the second half of 2012, TMD sent its staff to attend in the two Typhoon Committee Trainings with the support of TCTF as namely : -
 Sent two meteorologists to attend the TC Roving seminar 2012 held in Seoul, Republic of Korea on 30 October – 1 November 2012.
 Sent two experts in the Attachment Training on the Radar Composite



Dr. Somsri Huntrakul
Former TMD’s Director-General



Mr. Worapat Tiewthanom
Present TMD’s Director-General

Techniques under the Working Group on Meteorology project “Development of Regional Radar Network” kindly offered by the Japan Meteorological Agency (JMA), Tokyo, Japan, on 19 – 22 November 2012.

On 25 December 2012, Knowledge Management (KM) forum was arranged at TMD Headquarters and broadcasted to remote meteorological networks for participants in the above two trainings to make their presentations on what they had learnt and obtained from the trainings and exchanged their ideas with the audiences who are the TMD executives and meteorologists as the first action after returning from the trainings and further application of their knowledge in to their operation work assignment as the next step. TMD always arranges the KM forum regularly for staff to make presentations and exchange knowledge and ideas between each others, especially when they attended in abroad trainings/seminars/workshop.



Ms. Prapaporn Wongsaming and Mr. Boonthum Tanglumlead, participants in the TC Roving seminar 2012, made presentations of what they had obtained from the Training to colleagues at TMD headquarters



Mr. Boonlert Archevarahuprok and Mr. Sombhop Wongwilai, TMD experts in the attachment Training on the Radar Composite Techniques, shared their knowledge and techniques received from JMA to TMD Radar team and colleagues during the KM forum.



The KM forum are normally attended by those who participated in the abroad trainings/seminars/workshop, and the audiences i.e. TMD executives meteorologists, and interested staff.

PUBLICATIONS

THE NEW STRATEGIC PLAN
2012-2016



REPORT ON DRR EXPERT MISSION,
by WGDRR



REPORT ON
WASHI, by
WGDRR



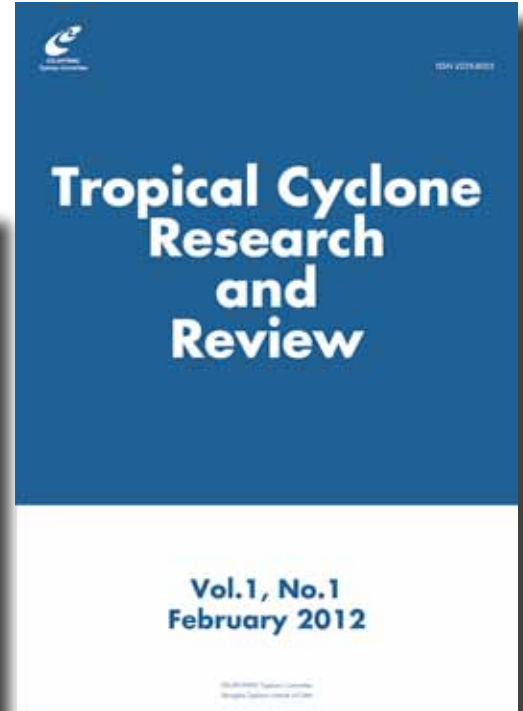
THE 2ND
ASSESSMENT
REPORT,
by WGM



REPORT ON HAZARD MAPPING FOR SEDIMENT RELATED DISASTERS, by WGH



REPORT OF THE PROJECT ON ESTABLISHMENT OF FLOOD DISASTER PREPAREDNESS, by WGH



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Avenida 5 de Outubro, Coloane, Macau-China
 Phone: +853 88010531
 Fax: +853 88010530
 Email: info@typhooncommittee.org

The newsletter is available on request to the Editor at the above address

Editor: Olavo Rasquinho, Secretary of TC

Staff Members:
 Leong Kai Hong, Derek • Meteorologist
 Liu Jinping • Hydrologist
 Denise Lau • Senior Secretary
 Kou Meng Kit, Lisa • Senior Finance Clerk



Humour Corner