



9th Integrated Workshop

01




TCS Activities

04



WG's News

07



MEMBERS Activities

11



ESCAP/WMO Typhoon Committee



UNITED NATIONS ESCAP  
Economic and Social Commission for Asia and the Pacific



WMO

Issue 29 • Year 2014  
Typhoon Committee Secretariat  
Macao, China

# newsletter



EDITORIAL

## 9th Integrated Workshop of the Typhoon Committee

**E**ight years have already passed since the Typhoon Committee Secretariat (TCS) was transferred from Manila where it was based from 1971 until 2006, thanks the generous hospitality of the Philippines.

The establishment of TCS in Macao, China permitted the Secretariat to have for the first time independent headquarters and a significant endowment fund provided by the host Member, which has allowed the smooth operation of the TC Secretariat. One cannot say that the current conditions are ideal, but the assignment of an independent office was an important milestone in TC history. The conditions will be better when the funds are sufficient to implement the Noblemaire principle, which was adopted not only by the United Nations System, but also by other international and



**T**he Integrated Workshop (IWS) is an annual event for TC Members to review the activities and work progress of the Working Groups (WGs) on Meteorology, Hydrology and Disaster Risk Reduction (DRR), and to make work plans for the coming year.

Taking into account the progress in the implementation of the SSOP project, and due to the relevance of the Standard Operating

Procedures (SOP) concept, it was adopted as title for the IWS “Synergized, Integrated, Collaborative Standard Operating Procedures Strategies to Improve Early Warning System for Coastal Multi-hazards”. The workshop was held in the United Nations Conference Center, in Bangkok, on 20-24 October 2014. It was attended by 79 participants including the representatives from 12 of 14 Members of the Typhoon Committee. Only Cambodia and Singapore could not be represented.

intergovernmental organizations like the TC. The adoption of this principle would allow candidates of all TC Members, including those with higher standard of living, to submit applications for future vacancies in TCS.

The main milestones in these eight years, besides the independent operation of TCS, were undoubtedly the adoption of the TC Strategic Plan, the revision of the Basic Documents of the Committee, the creation of a series of Technical Publications, the participation in joint missions to assess the damages caused by very intense tropical cyclones, the implementation of a project covering for the first time countries of another sister organization, and the first steps for the creation of a Cooperative Mechanism between TC and the Panel on Tropical Cyclones. The identity of TC was also reinforced with the song "Typhoon, Typhoon", a kind of anthem in whose lyrics the TC Key Results Areas (KRA) are poetically reflected, particularly as regards the KRA3 – "Enhanced typhoon-related beneficial effects for the betterment of quality of life". The lyrics start with the phrase "Typhoon, Typhoon, our friend and our foe ...".

The transition from the Regional Cooperation Programme Implementation Plan (RCPIP) to the TC Strategic Plan 2007-2011, and more recently SP 2012-2016, was a step of great importance due to the commitment of the TC Members and also to people like Chow Kok Kee, James Weyman, Le Huu Ti and other members of the Advisory Working Group who have put all their experience and wisdom in building a strategic plan where the TC objectives and the way to reach them are properly identified through the KRAs, strategic goals and associated activities.

The missions related to the severe Tropical Storm Washi/Sendong and the typhoon Haiyan/Yolanda are examples of activities that need to be followed in future, in so far as they have allowed identifying gaps, some of which have already been filled.

The guidance from ESCAP and WMO, the active collaboration of the AWG and the commitment of the majority of Members greatly contributed for the success of TC. The working conditions offered by the host Member and the host country also contributed to the success achieved over the last two four-year terms that the secretariat has been hosted by Macao, China.

At the end of my duties as Secretary of the Committee, my deepest desire is that TCS continue to have the support of Members as had so far and conditions are given so that the international staff can be composed of experts from any Members including those that are characterized by higher **standard of living**. Only then the secretariat will be able to fully perform its functions in the best conditions.



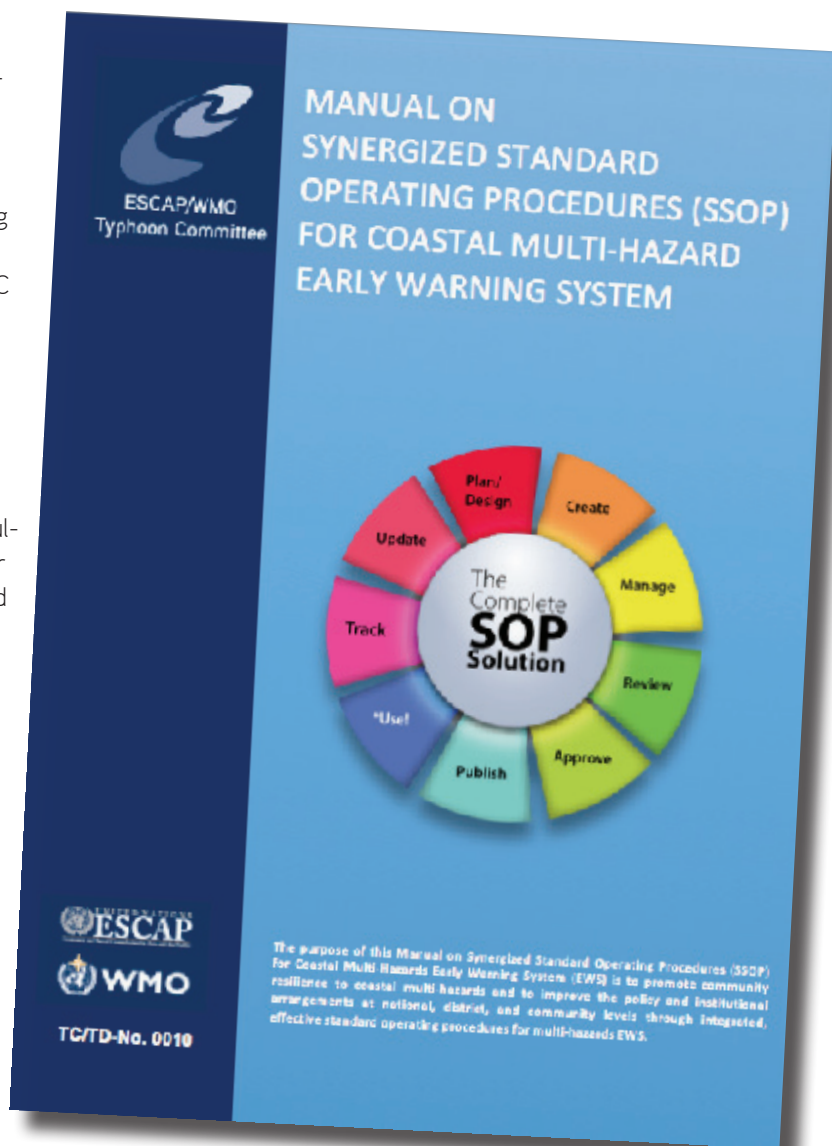


# Main Activities of the TC Secretariat

## Activities under the SSOP project

During the second semester 2014 TCS was in close contact with beneficiary countries preparing training missions of experts in Meteorology, Hydrology and DRR, under the project “Synergized Standard Operating Procedures (SSOP) for Coastal Multi-Hazards Early Warning System”. The missions were successfully carried out in January/ early February 2015 in PTC countries (Bangladesh, Maldives and Myanmar) and TC countries (Cambodia, Lao PDR and the Philippines).

The drafting of the “Manual on Synergized Standard Operating Procedures for Coastal Multi-Hazards Early Warning System” by the project manager with the collaboration of consultants, task force, TCS, SSOP partners and other organizations has progressed during the second semester 2014.





## Expert Missions under SSOP Project:



Participants at the training on SSOP in Cambodia- January 2015



Aspect of the hands-on training on SSOP – Lao PDR (January 2015)

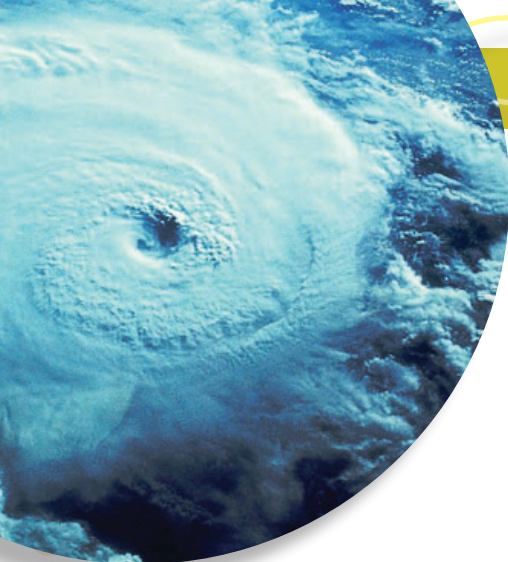


Aspect of the hands-on training on SSOP – Maldives (January 2015)

## Visit of high officials of ESCAP to TCS:



Aspect of the visit of Ms. Shamika Sirimanne, Director of ICT of ESCAP to TCS on 30th October 2014



## WGM News

With the kind support from Economic and Social Commission for Asia and Pacific (ESCAP), the 9<sup>th</sup> Integrated Workshop with the theme on “Synergized,

Integrated, Collaborative Standard Operating Procedures Strategies to Improve Early Warning System for Coastal Multi-hazards” was held in UN Conference Center (UNCC) of ESCAP, Bangkok, Thailand on 20-24 October 2014. The Workshop was attended by 79 participants including the representatives from 12 of 14 Members of the Typhoon Committee (China; DPR Korea; Hong Kong, China; Japan; Lao PDR; Macao, China; Malaysia; Philippines; Republic of Korea; Thailand; the United States of America and the Socialist Republic of Viet Nam); observer from Asian Disaster Reduction Center (ADRC); invited lecturer from Asia Disaster Preparedness Center (ADPC). The representatives from ESCAP, WMO, TCS and PTC (supported by ESCAP) also attended the Workshop.

12 Members delivered their Members Report in the plenary session of the Workshop. The three WGs (WGM, WGH and WGDRR) were separated to hold their respective WG parallel meetings during the Workshop. The WGs reviewed separately the implementation status of the Annual Operating Plan in 2014 and made action plans for 2015. All the information related to the 9<sup>th</sup> IWS including the Members Reports, WGs’ Reports, and the presentation files of the keynote lectures are available at the TC Website: <http://www.typhooncommittee.org/9IWS>. As summarized in the WGM report of the WGM parallel meeting, it was noted that WGM has completed all the action items, which were endorsed at the 46<sup>th</sup> Session. In 2014, WGM has been carrying out many activities that involved the cooperation among Members as well as other TC WGs and international organizations which includes:

- Coordinate with RSMC Tokyo to orga-

nize the Attachment Training held at RSMC Tokyo from 23 July to 1 August 2014, with funding support from TCTF and WMO. Three experts from Lao PDR, the Malaysia, and the Philippines attended the Attachment Training.

- Coordinate with STI of CMA, TCS and WMO/TCP to edit and publish the **Typhoon Committee Journal Tropical Cyclone Research and Review**, No.1-4 of Vol.3. Two visiting editors from the Philippines and Thailand was invited to visit the editorial office in STI to provide guidance of improving the editorial procedures, reviewing articles as well as inviting articles to be submitted to the Journal.

- Coordinate with National Typhoon Center (NTC) of KMA, STI and National Meteorology Center (NMC) of CMA to organize the 7<sup>th</sup> China-Korea joint workshop on the tropical cyclones, held in Jeju and Seoul of Republic of Korea on 25-29 May 2014.

- Coordinate with KMA to conduct a training course and research fellowship on TAPS, held at KMA from 12 May to 11 July 2014. Three experts from the Philippines (PAGASA), Vietnam (NCHMF) and China (STI/CMA) participated the training and the research fellowship.

- Coordinate with Lao PDR to invite 2 experts from NTC of KMA to carry out a mission to DMH in Lao PDR for the transfer of TAPS technology on Sept. 29 to Oct. 2, 2014.

- Coordinate with WMO Regional Training Center (RTC) of Nanjing to conduct a training workshop on SSOP, held at Nanjing of China on 9-11 June 2014. Thirty-three participants from the TC and PTC beneficiary countries attended the training workshop.

- Coordinate with STI/CMA to conduct a research fellowship on tropical cyclone genesis, held at STI from August to September 2014. One expert from Thailand and two experts from DPRK participated the research fellowship.

- Coordinate with JMA and TMD to hold a technical meeting, on the quality management techniques of radar data and basic

calibration technique for QPE, at JMA in November 2014. Two experts from TMD participated the technical meeting.

□ Coordinate with HKO to conduct an attachment training and research fellowship on QPE/QPF and nowcasting, held at HKO from 6 Oct. to 5 Dec. 2014. One expert from PAGASA participated the attachment training and the research fellowship program.

□ Coordinate with HKO to conduct an Ad-hoc meeting of Taskforce on timing of upgrade of TC to TS, held at HKO on 13 May 2014. Four experts from CMA, JMA, HKO and TCS attended the meeting.

□ Coordinate with TRCG and HKO to organize the TC Roving Seminar on 3-5 November in Hong Kong, China.

□ Coordinate with KMA and WMO to organize the IWTC-8 and IWTC-3, held at Jeju of Republic of Korea on 2-10 Dec. 2014.

With the strong support from Tropical Cyclone Program (TCP) of WMO and Typhoon Committee Secretariat (TCS), and the sincere cooperation of all Members, WGM has made significant progress in related to the planned tasks in 2014. Looking forward ahead, WGM will continue to put their efforts to implement the action plans in 2015 as well as to carry out the studies on the future research works. Taking this opportunity, WGM would like to express its gratitude to all Members for their significant contributions, which thus enabled WGM to complete all the tasks in 2014 successfully.

## WGH News

### TC WGH Held Its 3rd Working Meeting in Seoul, Korea

The third WGH working meeting with the theme of “Extreme Flood and Structural Flood Control Measures in TC” was held in Seoul, Korea from 13 to 16 October 2014 at the kind invitation of the Ministry of Land, Infrastructure and Transport (MOLIT), Republic of Korea with generous offering of financial support.

The 3<sup>rd</sup> working meeting was attended by around 20 participants from 7 Members and TCS. The meeting was chaired by hydrologist of TCS Mr. Jinping LIU on behalf of Chairperson of WGH.

Taking the opportunity, the participants of working meeting were invited to attend the 40th anniversary ceremony of HRFCO. On behalf of TC Secretariat and WGH, Mr. Jinping LIU was invited to deliver a congratulation speech, as one of three invited speakers.

Taking the opportunity, the participants of working meeting were invited to visit the River Information Center of HRFCO and Radar Center of Korea Institute of Construction Technology (KICT). The present of KICT met the representatives of participants.





## TC WGH Held the Training Course for its AOP4 and AOP5 in Guangzhou, China

Bureau of Hydrology (BOH) of the Ministry of Water Resources (MWR) of China, in cooperation with Sun Yat-Sen University (SYSU) and Typhoon Committee Secretariat (TCS), organized the joint training course for WGH AOP4 (project on real time Operational System for Urban Flood Forecasting and Inundation Mapping) and AOP5 (project on Extension of

ESCAP/WMO Typhoon Committee Joint Training Course for AOP4 and AOP5  
1 - 7 December 2014, Sun Yat-sen University, Guangzhou, China



The 10 participants from the Members of pilot cities including Malaysia, Thailand and Vietnam





attended the training course. Total 8 experts and professors from BOH and SYSU took part in the course as lectures for OSUFFIM and Xinanjiang Model, respectively. Dr. LIU Zhiyu, Director of National Flood Forecasting Center of BOH, appeared the open ceremony. The participants were delivered the certificates signed by TC Secretary Mr. Olavo Rqsquinho.

The course was focusing on the data processing, model setting-up and system configuration. Participants also discussed the implementation plan for OSUFFIMT and Xinanjiang model application in 2015, respectively. Taking the opportunity, the participants were visited the Flood Forecasting Center of BOH of Guangdong Province and Huanglongdai Dam in the Liuxihe river basin.



## TC WGH Published the Technical Report for the Project on Assessment System of Flood Control Measures (ASFCM)

At its 40th Session held in Macao, China in 2007, Typhoon Committee launched the project on Assessment System of Flood Control Measures (ASFCM) which was proposed by the Working Group on Hydrology (WGH) with the objectives: to develop the evaluation system for various types of flood control measures, which are implemented for basin wide integrated flood control policy such as river levees and storage facilities, etc.; and to assist and determine the priorities of investment for disaster prevention related project and construction of infrastructures.

The project on ASFCM was led by Republic of Korea and performed in the period from 2008 to 2014. The Han River Flood Control Office (HRFCO), in cooperation with Korea Institute of Civil Engineering and Building Technology (KICT) and K-water, made great efforts and highly contributed to this project. Four workshops were held under this project and three events of field survey were conducted in the pilot Members, namely Lao PDR, Philippines and Thailand. The project on ASFCM has achieved the expected goals: (1) a system was developed for the economic assessment of structural flood control with basic inputs including topographic data, asset data and flood damage status in a target area; (2) the HEC-RAS (River Analysis System) model is imported into the system by flood stage estimation; (3) the flood damage cost estimation and the economic analysis using B/C ratios are used as reference information in the establishment of structural measures by estimating flood inundation area; and (4) finally, the optimum alternative regarding economic analysis is suggested.

This technical report was published as one publication of the Committee (TC/TD-No 0009), and divided into two parts including Guidelines for Structural Flood Control Measures Assessment and Manual for Assessment System of Flood Control Measures (ASFCM) which guide you to understand the mechanism of structural flood control measures assessment including flood damage cost estimation and the assessment procedure as well as the practical application of ASFCM step by step. This report will help decision-makers and engineers to examine the optimal flood control measure according to socioeconomic circumstances and support TC Members when establishing national/ regional/ local strategies responding to flood in practical activities.





# TC News from Members

China



## 1. Verification of Tropical Cyclone Operational Forecast (WMO-TLFDP)

a. Based on the WMO-TLFDP project, which had developed and established typhoon forecast evaluation methods and procedures to verify and analyze simulations and forecasting techniques, verification of tropical cyclone operational forecasts in 2013 was continually conducted by STI/CMA, including: forecasts of tropical cyclone tracks from operational forecast agencies and deterministic NWP models, with results reported to the 46th Session of Typhoon Committee; forecasts of tropical cyclone intensity from global EPS systems; landfall tropical cyclone rainfall forecasts from operational NWP models through a case study on Fitow (2013) as a joint effort with CAWCR, with results reported to the working group meeting of WMO/WWRP/WGTMR. And an invited presentation about above mentioned verification results was given in the 6th International Verification Methods Workshop in March 2014.



• Yuyao of Ningbo

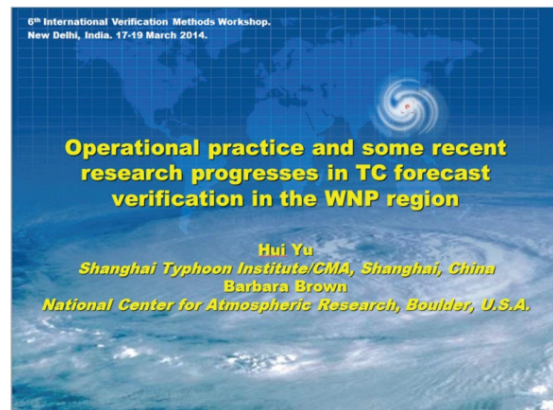


• Shanghai

Flood induced by Fitow (2013)



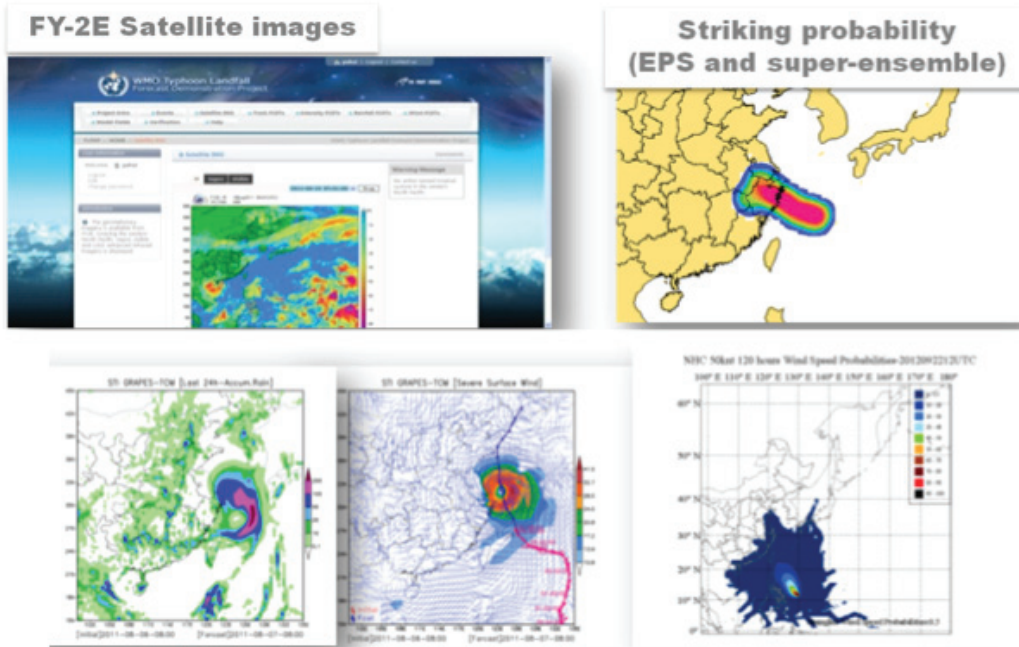
Report in the 46th Session of Typhoon Committee



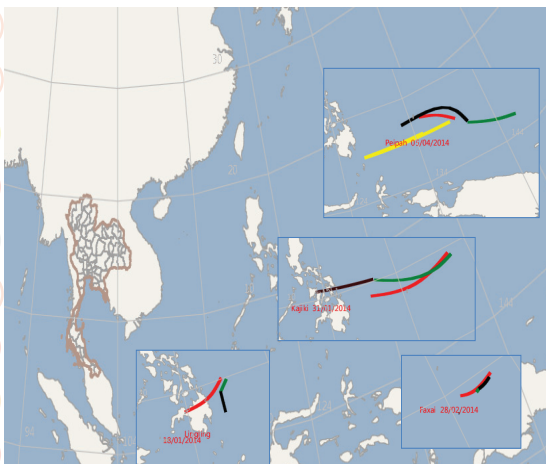
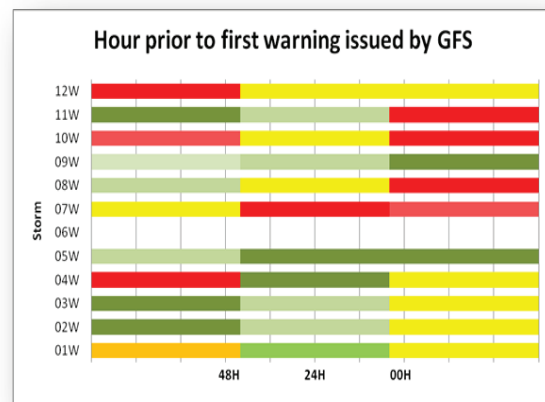
Invited presentation in the 6th International Verification Methods Workshop

b. In addition to the post-season verification, real time verification on track and intensity forecasts was also conducted and the results were provided through WMO-TLFDP website (<http://tlfdp.typhoon.gov.cn>).

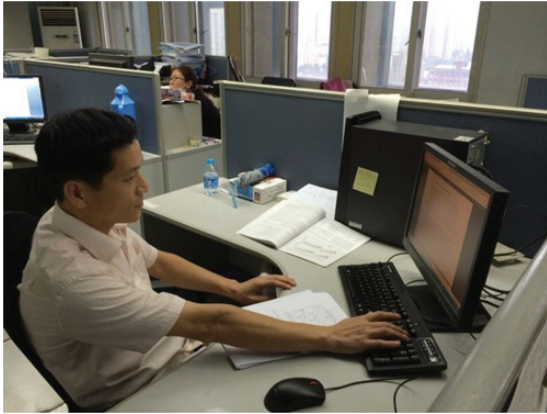
Sample images from the WMO-TLFDP website



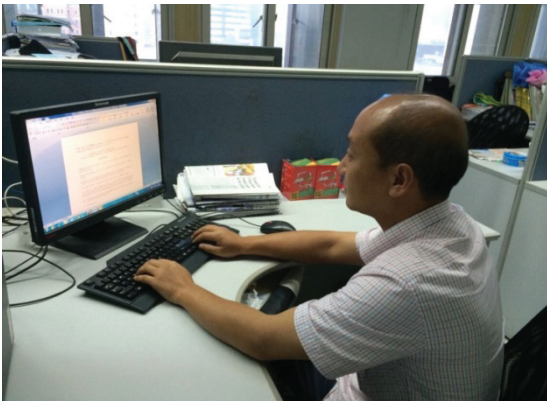
c. To further improve the evaluation system for tropical cyclone forecast, especially the genesis and ensemble forecast, in conjunction with the WMO-TLFDP, and jointly with the Typhoon Committee, STI/CMA offered fellowship for training, including: a two-month visit of Mr. Boothum Tanglumlead from Thailand, who evaluated the real time tropical cyclone genesis products based on CMA-T639 and NCEP-GFS gridded output; a one-month visit of Mr. SONG Yong Chol and Mr. PAK Sang Il from DPRK, who implemented the real time tropical cyclone genesis products based on ECMWF-IFS gridded output into the Typhoon Forecast Evaluation and Assessment System (TFEAS).



Mr. Boothum Tanglumlead from TMD, 2 Jul – 31 Aug, 2014



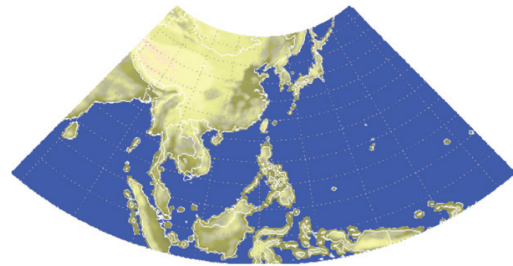
Mr. Pak Sang Il from DPRK, 31 Aug – 30 Sep



Mr. Song Yong Chol from DPRK, 31 Aug – 30 Sep

## 2. Improvement of the Tropical Region Assimilation Model for South China Sea (TRAMS)

a. The TRAMS has provided 120-h typhoon track and intensity forecasts since January 2014. The model domain covers the range of 0.8°-50.5°N, 81.6°-160.8°E, with a horizontal grid interval of 0.36°, and 55 vertical layers. More details of the TRAMS can be found through its website. Several improvements have been made to enhance the overall performance of TRAMS, including the calculation of the nonlinear term in model dynamics, the marine boundary layer parameterization technique, and coupling process between dynamics and physics, etc.

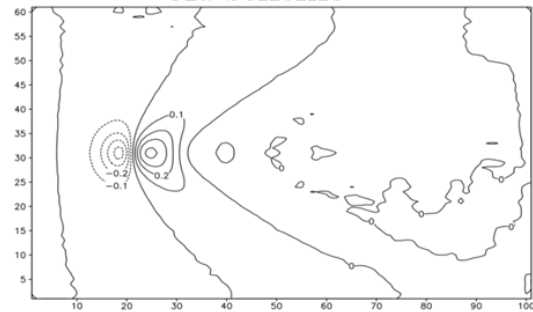


Domain of the TRAMS

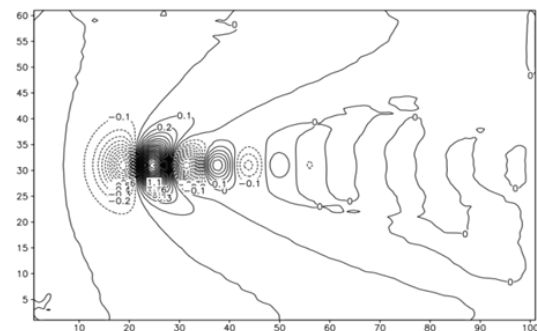


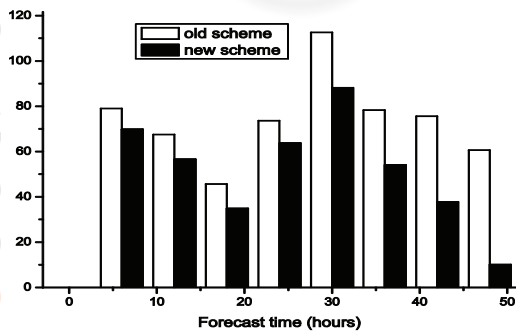
Website of the TRAMS

### old scheme



### new scheme

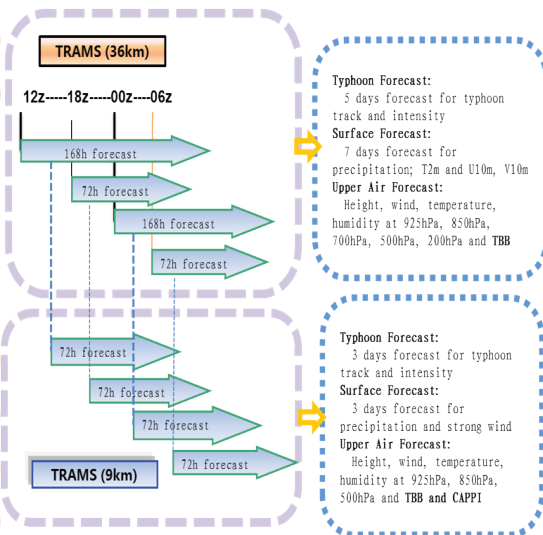




Ideal case (the propagation of gravity wave)  
The number of the closed gravity wave is increased in the new scheme

The track error is significantly reduced after the correction of Coriolis force in the motion equations

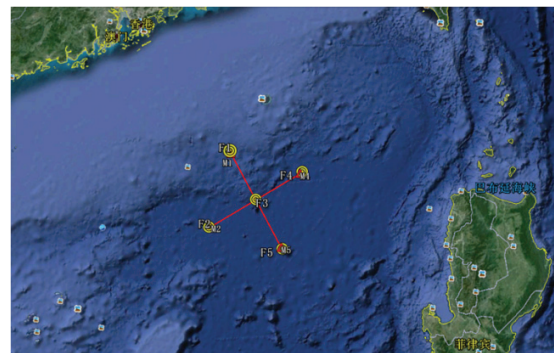
b. The TRAMS-9km, which is the version with higher resolution, has been developed. It is movable nested in TRAMS, based on the typhoon location. The number of nested domain of TRAMS-9km can automatically follow the number of the typhoon, and the domain center for parameters setup and the generation of the static

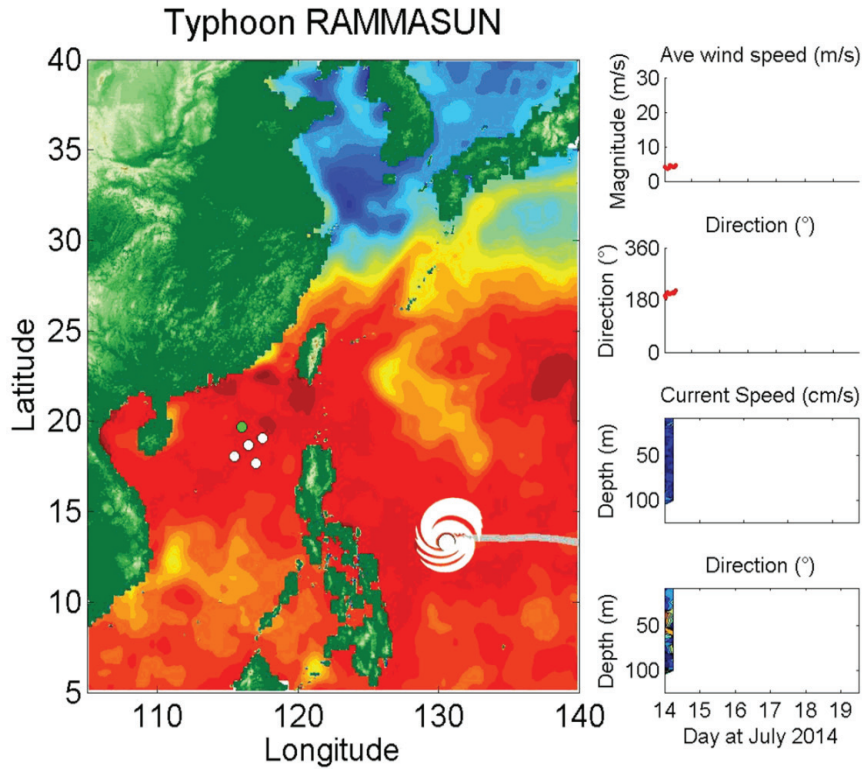


data can match the location of each typhoon center. Experimental results show that the typhoon track forecast within 60 h from the version of higher resolution is better than that from TRAMS-36km.

### 3. Experiment on Typhoon Intensity Change in Coastal Area (EXOTICA)

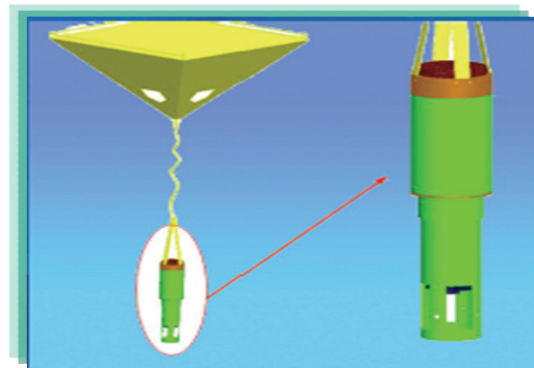
a. With the support of the Chinese national key research program, a buoy network, including 5 Yi-satellite buoy stations, has been established in South China Sea in July. Two tropical cyclones passed through the buoy network by Oct. 2014. The boundary momentum and heat exchange of air-ocean interaction during the process were captured.





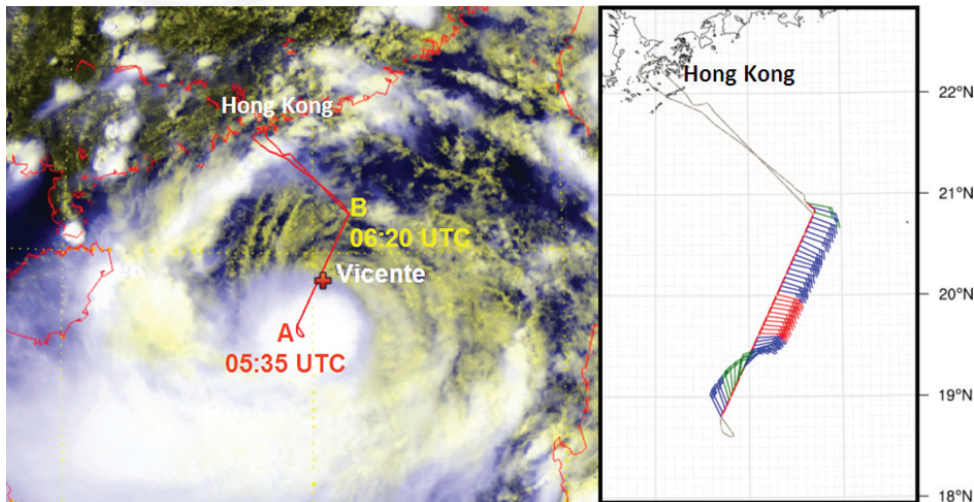
Yi-Satellite buoy: Super Typhoon (Rammasun, 2014)

b. STI/CMA continued to monitor the landfall typhoon with the mobile sounding system. And we have also finished the preparation for piloting the un-manned aircraft and dropsonde on rocket in 2015.



c. HKO continued to get the troposphere structure change information when typhoon was near coast by using the surveillance flight, and try to make use of the data in the typhoon model.





#### 4. Tropical Cyclone Research and Review (<http://tcrr.typhoon.gov.cn/>)

- a. Up to now, 75 articles have been published. The contributors come from 13 countries and regions, including Typhoon Committee Members and several non-Members. Two-thirds of them are overseas authors.
- b. With the online submission and reviewing system which is familiar to the international reviewers and the manuscripts they are interested in, more than two-thirds of the manuscripts were peer-reviewed by the overseas reviewers.
- c. According to the statistics from the TCRR official website, the readers spread over 100 countries and regions. Capacity of full text download has steadily increased, which means the journal is attracting more and more attention from a wide range of readers. Up to now, each article is downloaded for 461 times on average.
- d. In 2014, Mr. Maytee Mahayosananta from TMD and Mr. Paul Icamina from PAGASA were accepted as the visiting editors. After their visit in the Editorial Office located in STI/CMA during 21 to 27 September, they submitted visiting report on recommendations to improve the editorial procedure.



Visiting editor from PAGASA: Mr. Paul Icamina



Visiting editor from TMD: Mr. Maytee Mahayosananta





## 1. The Hong Kong Observatory hosted the Typhoon Committee Roving Seminar 2014

The Hong Kong Observatory hosted the ESCAP/WMO Typhoon Committee Roving Seminar with the theme on “Warning Communication” from 3 to 5 November 2014. Two overseas experts, Mr. Charles (Chip) Guard from the US National Weather

Service in Guam and Mr. Ahmed Nadeem from the Asia-Pacific Broadcasting Union, gave lectures on early warning systems and media liaison for disaster risk reduction respectively. Ms. Sandy Song and Mr. KL Lee from the Observatory also shared Hong Kong’s experience in communicating weather warnings and information to the public through web technology and social media.

The 3-day seminar was attended by 13 participants from the meteorological services of Cambodia; Hong Kong, China; Lao PDR; Macao, China; Philippines; Republic of Korea and Thailand. They actively took part in the discussion at the seminar and considered the material obtained most useful for operational implementation back in their home countries.

Figure 1 Lecturers and participants of the Roving Seminar taking a group photo with the Director of the Hong Kong Observatory, Mr. Shun Chi-ming (middle at the front row).



## 2. Training Workshop on Community Weather Station Project (iCoWIN) 2014

A training workshop on Typhoon Committee Community Weather Station Project (iCoWIN) was conducted during 5 to 7 November 2014 at Hong Kong, China. The project was led by the Hong Kong Observatory under Typhoon Committee Working Group on Disaster Risk Reduction (WGDRR) to raise public awareness on weather through community weather observing scheme. Colleagues from the Observatory shared their experience of

setting up community weather stations with participants from Vietnam and Lao. The trainees were also provided with a basic set of community weather station which will be installed in the communities of Vietnam and Lao for data sharing and contribution to the iCoWIN project.

Figure 2

The Observatory colleagues showing the weather observation equipment to participants from Vietnam and Lao.





### 3. The Observatory's participation in the IWTC-VIII & IWTCLP-III

Five staff members of the Hong Kong Observatory (HKO) were invited to attend the Eighth International Workshop on Tropical Cyclones (IWTC-VIII), held in conjunction with the Third International Workshop on Tropical Cyclone Landfall Processes (IWTCLP-III) in Jeju, Republic of Korea during 2 – 10 December 2014. Mr. SHUN Chi-ming, Director of HKO, together with Dr. CHENG Cho-ming, Assistant Director, chaired the Recommendation Committee that deliberated

on and consolidated recommendations for future forecasting studies and researches, the most important outcome of the workshops. Mr. CHAN Sai-tick, Senior Scientific Officer, and Mr. WOO Wang-chun, Scientific Officer, also served as the rapporteurs of the working group on tropical cyclone (TC) track, structure and intensity changes at landfall and the working group on TC rainfall respectively.



Figure 3

Mr. SHUN Chi-ming, Director of the HKO, presided over the discussion on recommendations.

Figure 4 Group photo of the IWTC-VIII participants.



## 4. Typhoon Committee Research Fellowship Scheme 2014

Mr. Evan Carlos from the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) attached to the Hong Kong Observatory from 6 October to 5 December 2014 and received training on quantitative precipitation estimates (QPE), quantitative precipitation forecasts (QPF), severe weather nowcasting techniques as well as installation and operation of the SWIRLS nowcasting system. He also undertook a research project to enable nationwide nowcast of tropical cyclone rainfall. Following the completion of the project, SWIRLS has been successfully adapted to integrate data from radar mosaics and geostationary weather satellite images (visible and infrared channels) for the generation of QPE and QPF over the Philippines. Applications on selected tropical cyclone cases have been demonstrated showing promising results

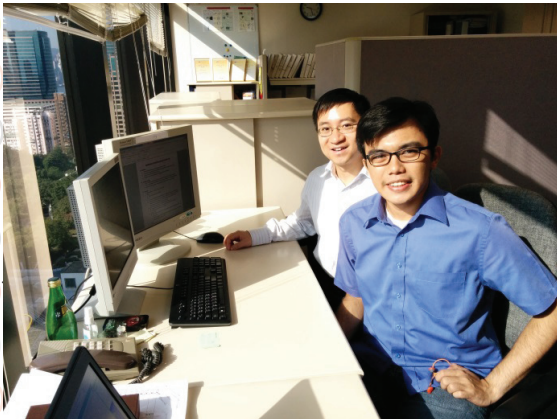


Figure 5

Photo of Mr. Evan CARLOS of PAGASA (front) and Mr. WOO Wang-chun of the Observatory (back).

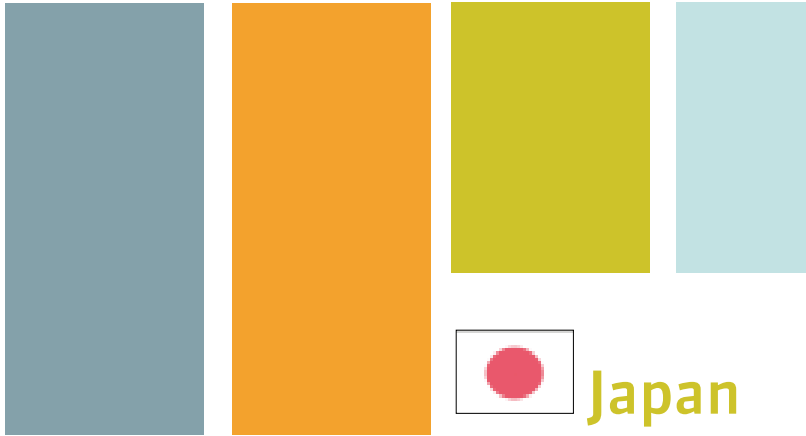
## 5. Public Scientific Talk on Tropical Cyclone Impact and Forecast

A public scientific talk on “Tropical Cyclone Impact and Forecast” under the “Science in the Public Service” Campaign, a joint campaign established by Hong Kong government bureaux and departments, was held on 7 September 2014. The talk aimed to enhance the scientific knowledge of members of the public on tropical cyclones, including the state-of-the-art tropical cyclone analysis, forecasting techniques and uncertainties. The talk also raised the public awareness on the risks and potential impacts of tropical cyclones, particularly the threat of storm surge. About one hundred members of the public attended the talk.



Figure 6

Mr. Terence Kung, Scientific Officer of the Observatory, sharing the scientific knowledge on tropical cyclones with members of the public.

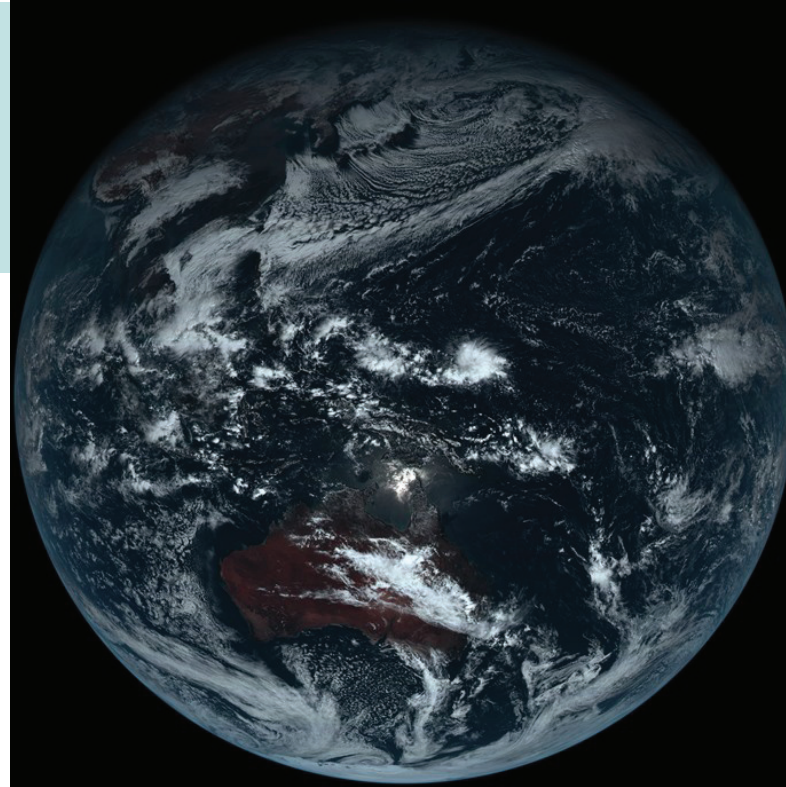


## Himawari-8 successfully launched

The next-generation geostationary meteorological satellite of the Japan Meteorological Agency (JMA), Himawari-8, was successfully launched using H-IIA Launch Vehicle No. 25 on 7 October 2014 from the Tanegashima Space Center in Kagoshima, Japan. The satellite entered geostationary orbit on 16 October 2014 as planned.



H-IIA Launch Vehicle No. 25

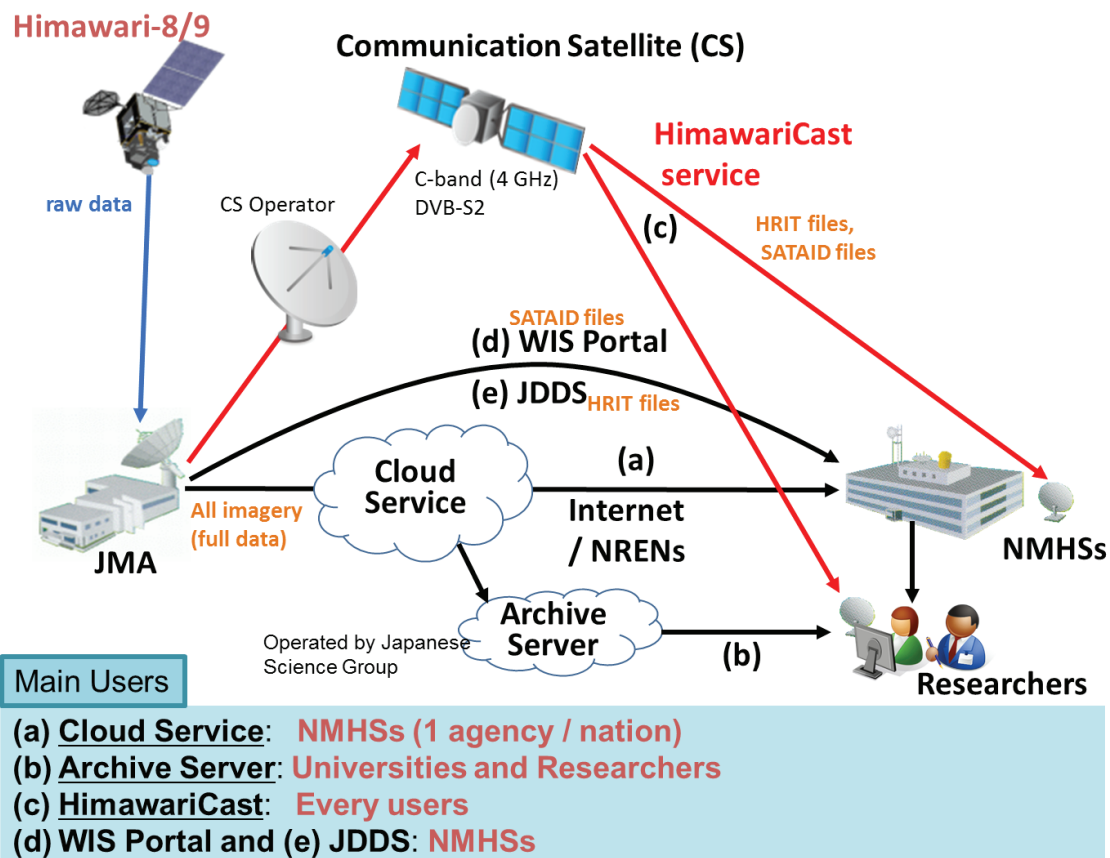


Right: True-color composite (Band 1 (blue), Band 2 (green), Band 3 (red))

JMA conducted in-orbit testing of the satellite as scheduled, and released the first test imagery on 18 December 2014. After the completion of all testing and checking of the satellite system including related ground facilities, the satellite is expected to start operation in mid-2015 as a replacement for MTSAT-2. Himawari-8, together with its backup and successor satellite Himawari-9, will observe the East Asia and Western Pacific regions for a period of 15 years.

JMA will distribute all imagery derived from the satellite to National Meteorological and Hydrological Services (NMHSs) via an Internet cloud service. The Agency also plans to start a HimawariCast service by which primary sets of satellite imagery together with other meteorological data (e.g., SYNOP, NWP, etc.) will be disseminated to NMHSs via a communication satellite. The online imagery distribution services used for MTSAT (WIS Portal (GISC-Tokyo) and the JMA

Data Dissemination System (JDDS)) will be continued for Himawari-8/9. For updates, see <http://www.data.jma.go.jp/mscweb/en/himawari89/>.



## 14th Typhoon Committee Attachment Training at the RSMC Tokyo – Typhoon Center

The RSMC Tokyo – Typhoon Center has organized ESCAP/WMO Typhoon Committee Attachment Training courses every year since 2001 with the support of the WMO Tropical Cyclone Programme (TCP) and the Typhoon Committee to enhance the capacity of Committee members in typhoon analysis and forecasting. The 14th Attachment Training course was held at JMA Headquarters from 23 July to 1 August 2014.

In line with this year's increase in the number of trainees from two to three, the course was attended by Mr. Vanhdy Douangmala from Lao PDR, Ms. Nurul Salwa Abdul Ghani from Malaysia and Ms. Maria Ana Glaiza Ganace Escullar from the Philippines.

The training focused on improving skills in tropical cyclone analysis and forecasting through practical training, including hands-on learning using the Satellite Analysis and Viewer Program (SATAID). It included presentations on a variety of subjects, including Dvorak analysis, interpretation of microwave data, quantitative precipitation estimation (QPE), quantitative precipitation forecasting (QPF) and storm surge forecasting.



The trainees also attended daily tropical weather briefings provided by Tokyo Typhoon Center forecasters and discussed the outlook for tropical cyclone activity in the western North Pacific region using MTSAT images, numerical weather prediction (NWP) output and other resources.

The training helped the attendees to deepen their understanding of operational tropical cyclone monitoring, analysis and forecasting.



Briefing in the office room (JMA's Forecast Division)



Courtesy visit to JMA Director-General Mr. Noritake Nishide

Top: (from left) Noritake Nishide, Maria Ana Glaiza Ganace Escullar, Nurul Salwa Abdul Ghani, Vanhdy Douangmala, Tsukasa Fujita (Head of Tokyo Typhoon Center)

Bottom: trainees and Noritake Nishide with Tokyo Typhoon Center staff (23 July 2014, Director-General's office)



Presentation and training in JMA's seminar room

## Technical Meeting on a Radar Composite Map for Thailand

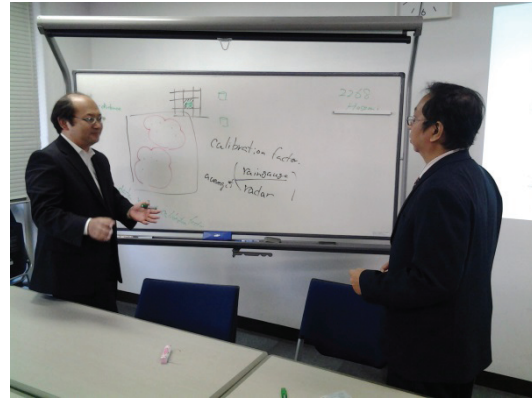
Tokyo, Japan, 25 – 28 November 2014



The ESCAP/WMO Typhoon Committee (TC) promotes the development of a regional radar network covering Southeast Asia. To support this goal, JMA held a radar composite map technical meeting at its headquarters from 25 to 28 November 2014 with two invited experts from the Thai Meteorological Department (TMD).



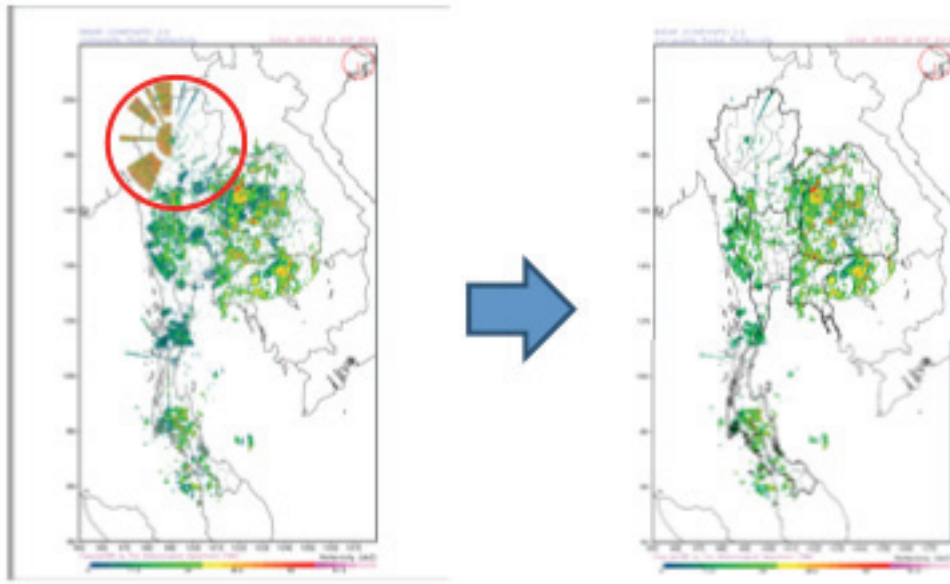
During the meeting, JMA experts gave a series of presentations covering information necessary for the creation of a high-quality radar composite map, such as methodical quality management and statistical quality control. As a result of the practical training in quality control provided at this meeting, TMD experts were able to improve radar data quality in their nationwide composite map.



Presentations on quantitative precipitation estimation (QPE) focused on a two-dimensional calibration method applied to radar monitoring based on rain gauge observations. Typical cases of quality deterioration in QPE were also highlighted.

The attendees further discussed the implementation of quality management in TMD radar operation and ideas for QPE development in TMD.





Radar quality improvement based on discussions held during the meeting (TMD radar composite map created using data from seven radars in Thailand, 0630 UTC, 2 September 2014)





1. In order to improve the severe weather monitoring capabilities around the Pearl River delta, Macao Meteorological and Geophysical Bureau (SMG) and Zhuhai Meteorological Bureau (ZMB) has established a new S band Dual-Polarization Doppler Weather Radar at Sanzhou town, Zhuhai (Southwest of Macao around 30km). This radar is the first S band Dual Polarization Meteorological Doppler Weather Radar in China. It can detect accurately the different precipitation type, such as rain, heavy rain, hail, snow and even non-meteorological objects. From the operation at March 2014 till now, the operational status and quality remain intact. It facilitated the capabilities on severe weather nowcasting between Zhuhai and Macao. To ensure the effectiveness of the operation, ZMB and SMG has set up a communication mechanism on problem reporting and maintenance. Also, share the product generating, technique application and special weather case study so as to improve the staff's skill and their service quality.



The new S band Dual-Polarization Doppler Weather Radar at Sanzhou town, Zhuhai

2. At the end of 2014, Macao Meteorological and Geophysical Bureau (SMG) release the new official web-page. The new web-page provides more different weather information as well as water level monitoring data. It uses simple and user-friendly format to display different kind of information, so that the resident can get the weather information quickly and conveniently. Furthermore, SMG newly added the service of "Special Weather Prompts", which will alert the user if there will be any thunderstorm or rainstorm in Macao for the following 2 to 3 hours, so that the related user can have their own precaution process.

www.smg.gov.mo/smg/e\_index.htm
↻

Hourly Information: 2014-12-31 00:00 Temp.: 14°C Humi.: 70%

**地球物理暨氣象局**  
 Direcção dos Serviços Meteorológicos e Geofísicos

[\[中文\]](#) [\[English\]](#) [\[Português\]](#)

- Home
- Introduction
- Latest Weather
- Actual Weather Report
- Weather Chart
- Satellite
- Radar
- Weather Cam
- Real Time Lightning Detector
- Pearl River Delta Lightning
- UV Index
- Real Time Tide
- Water Level Monitoring
- Forecasts
- Warnings
- Air Quality
- Aviation Weather
- Geophysics
- Climate
- Enquiry
- Weather Report (PDF)
- World Weather
- China Weather
- Disclaimer

Remote Sensing
Actual Weather
Weather Cam

2014-12-31 00:33  
 [Temp][RH][Wind Dir]  
 [Wind Spd][Gust][Pres]  
 [Prec(Hr)][Prec(Tt)]

7 day Forecast

Date	31/12 Wed	01/01 Thu	02/01 Fri	03/01 Sat	04/01 Sun	05/01 Mon	06/01 Tue
Weather	Haze					Mist	
Temp	10 / 20°C	10 / 17°C	10 / 18°C	12 / 18°C	14 / 19°C	16 / 20°C	17 / 20°C
Humi	35 / 75%	30 / 70%	40 / 75%	50 / 85%	70 / 90%	75 / 95%	80 / 98%

Indexes

The temperature index is expected to be Yellow (cold) on the 31 December.

Maximum UV index is expected to be 5, which is classified as Moderate on the 31 December.

Weather Forecast

2014-12-31  
 The temperature index is Yellow (Cold).  
 Dry.  
 Fine.  
 Haze.  
 Force 3 to 4 north to northeasterly winds, becoming force 5 with gusts.  
 Temperature will range between 10 °C and 20 °C.  
 Relative humidity will range between 35% and 75%.  
 Maximum UV index is expected to be 5, which is classified as Moderate.

2015-01-01  
 Cold.  
 Fine.  
 Force 4 to 5 northerly winds with gusts.  
 Temperature will range between 10 °C and 17 °C.

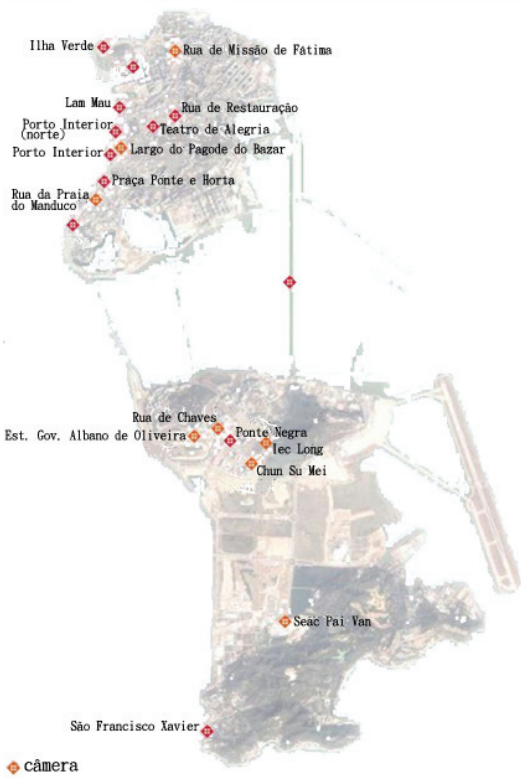
UV Index

Tide, Sun Rise & Set

The new SMG web-page

3. In response to the social needs after the great financial losses inflicted by the storm surge of typhoon Hagupit in 2008, SMG has established 9 sets of land water level station, 2 sets of tide station and 1 set of wave height station in Macao to enhance the monitoring capabilities in year of 2009. In this year, SMG newly built up 8 sets of land water level

station in the flooding location (spot), the new stations optimized the original monitoring network and integrated with the automatic weather observation sensors and web-cam. Therefore, the real time precipitation and water level data can be collected easily for provide the storm-surge warning and flooding alert related to the rainstorm.



The water level monitoring network



The new water level monitoring station



## Rep. of Korea

### 1. The 8th IWTC and 3rd IWTCLP

The National Typhoon Center (NTC) of KMA has hosted the 8th International Workshop on

Tropical cyclones (IWTC-VIII), in conjunction with the 3rd International Workshop on Tropical Cyclone Landfall Processes (IWTCLP-III) at Lotte Hotel in Jeju, Republic of Korea, from 1-10 December 2014. This workshop is one of WMO's major quadrennial workshop series organized by the World Weather Research Program and the Tropical Cyclone Program. It is a special and unique gathering of more than 250 researchers and warning specialists from all regions affected by tropical cyclones, including those from members belonging to the WMO TCP regional bodies.

Under the main theme of "Quantifying and Communicating Forecast Uncertainty", various presentations and discussions were made. Specifically, there were 8 topics: 1) Motion, 2) Cyclogenesis, intensity and intensity change, 3) Communication and effective warning systems, 4) Structure and structure change, 5) Beyond synoptic timescales, 6) Track, structure and intensity changes at landfall, 7) Storm surge and 8) Rainfall. In particular, the WMO Lead Center for Tropical Cyclone Forecasts using Multi-model Ensemble Techniques suggested by the KMA has gained agreements and supports from many researchers & forecasters.



Fig. 1. Group photo of the participants in the IWTC-VIII



Fig. 2. Group photo of the participants in the IWTCLP-III

## 2. Capacity Building of Typhoon Analysis and Forecast

The NTC/KMA has carried out the Typhoon Research Fellowship Program (TRFP) for a number of typhoon experts from the ESCAP/WMO Typhoon Committee Members since 2001. In 2014, three typhoon experts respectively from the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA), Vietnam National Center for Hydro-Meteorological Forecasting (NCHMF), and the Shanghai Typhoon Institute (STI) of the China Meteorological Administration (CMA) were trained for two months (12 May to 11 July 2014) by the staffs of NTC/KMA. The trainees took a typhoon analysis course using TAPS and conducted research on three research topics such as the typhoon-mid latitude pressure system interaction, study on the typhoon re-curvedure and moving speed, and study on the relationship between the central pressure and maximum sustained winds for typhoon. They enthusiastically performed their missions and completed the training report in spite of the short period. In addition, they improved their typhoon analysis and forecast skills, as well as shared their ideas and plans for applying the TAPS system.

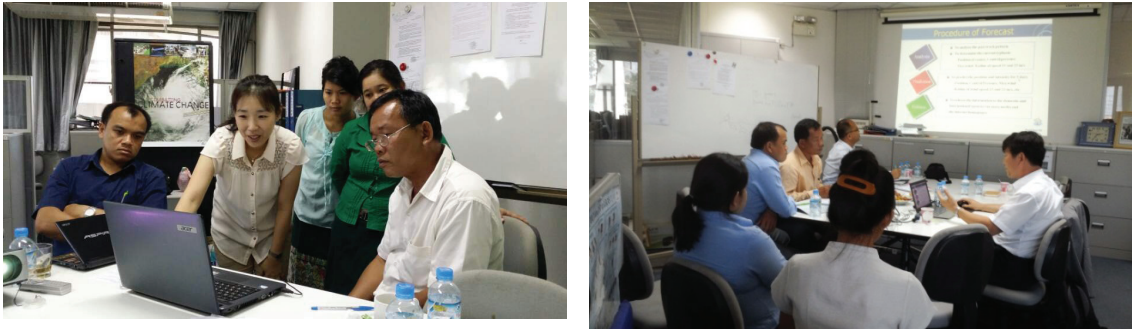


**Fig. 3. Three experts were awarded the Typhoon Research Fellowship in 2014**

## 3. Technology transfer for the Typhoon Analysis and Prediction System

Since 2011 the NTC/KMA has also transferred the technology of Typhoon Analysis and Prediction System (TAPS) including the training of the typhoon forecasters to TC members hoping to get support for the operational forecasting of tropical cyclones. Following the successful TAPS technological assistance to Vietnam in 2012 and the construction of TAPS data supporting system server in 2013, the NTC/KMA carried out the TAPS technology transfer to Lao PDR from Sept. 29 to Oct. 2, 2014. It included three lectures and two practice classes for the staff of the Weather Forecast and Aeronautical Meteorology division of the Department of Meteorology and Hydrology (DMH) in Lao PDR, which showed typhoon

forecast process and performed demonstration of typhoon forecasts using TAPS.



**Fig. 4. Photos of visit to DMH, Lao PDR**

## NDMI's news

### 1. The second phase of the Northern Mindanao Project was well completed in 2014

The Northern Mindanao project, launched in 2013 upon a request of the PAGASA of the Philippines, completed its second phase this year. The project aims to help the Philippines reduce flash flood-related risk, especially for Cagayan De Oro City in the Northern Mindanao, through installation of the Flash Flood Alert System (FFAS) and the Automatic Rainfall Warning Systems (ARWS). The city was one of the areas hit hard by Typhoon Wash in 2011. So far the FFAS has been installed at the PAGASA in Manila as well as its regional office in Cagayan De Oro. In addition, two rainfall gauges, one water level gauge, and two warning posts have been installed along with the Cagayan De Oro River. The FFAS receives real time-based monitoring data from

this equipment, and forecasts the occurrence of flash flood in three hour advance. The Northern Mindanao project will be completed next year, and NDMI is seeking to expand a disaster risk reduction project to other member countries.



The FFAS installed at PAGASA, Manila



Water level gauge installed in 2013





Intelligent CCTV overlooking the Cagayan De Oro River



River cross sectional survey



Warning post installed in 2014



Rainfall gauge installed in 2014

## 2. National Disaster Management Institute of the Republic of Korea signed the MOA with UNESCAP

On 20 October 2014, President of NDMI (Dr. Yeo Woongkwang, Chair of the WGDRR of TC) signed the MOA with Director (Dr. Shamika N Sirimanne) of ICT and Disaster Risk Reduction Division, UNESCAP on establishing a collaborative framework for disaster risk reduction in Asia and the Pacific. Two organizations have long been working together especially on capacity develop-

ment in the use of geospatial data and remote sensing data for developing countries, and this opportunity will scale up their level of cooperation in disaster risk reduction in the coming years. Under the MOA, they agreed to i) develop regional policies and guidelines in mainstreaming disaster risk reduction into development planning and financing; ii) carry out capacity development activities in the use of geospatial data and remote sensing data management; and iii) conduct joint research on disaster risk management.





President of NDMI(Dr. Yeo Woonkwang) and Director(Dr. Shamika N Sirimanne) of IDD, UNESCAP at the Signing Ceremony





Thailand

## 1. Appointment of the new Director-General of Thai Meteorological Department

After the retirement of Mr. Worapat Tiewthanom in September 2014, his predecessor, Mr. Wanchai Sakudomchai, was designated as the new Director-General of the Thai Meteorological Department (TMD) on 30 October 2014 and also designated as the present Permanent Representative of Thailand with WMO.



Mr. Worapat Tiewthanom  
Former Director-General of TMD



Mr. Wanchai Sakudomchai  
New appointed Director-General of TMD

Mr. Wanchai Sakudomchai was born in 1957. He gained a Bachelor Degree of Science from Ramkhamhaeng University, Thailand. He firstly joined the Thai Meteorological Department (TMD) in 1982 as a meteorologist in Agometeorological Division at TMD headquarters in Bangkok.

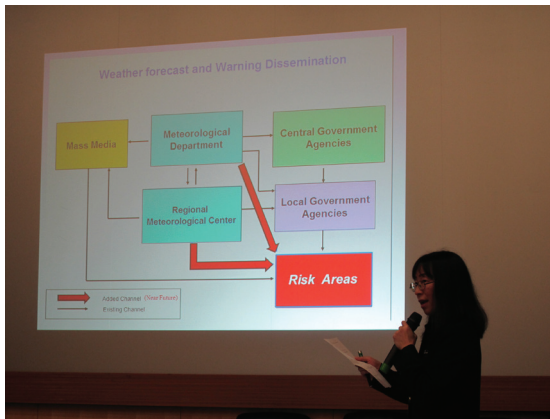
In 1988, he was rotated to work at TMD's Southern Regional Meteorological Center (East Coast) in Songkhla province as a meteorologist, and become the Director of Weather Forecast Division of the Center in 2003. Subsequently in 2008, he was promoted to be the Director of Southern Regional Meteorological Center (East Coast).

Before his appointment as the present TMD's Director-General, Mr. Wanchai Sakudomchai was promoted as a Deputy Director-General for Operations of TMD in 2013, during which he supervised the missions of Meteorological Observation Bureau, Meteorological Instruments Bureau, Bureau of Aeronautical Meteorology and five Regional Meteorological Centers. Mr. Wanchai Sakudomchai has now 32 years working experience at TMD in several scientific and administrative areas as mentioned above.

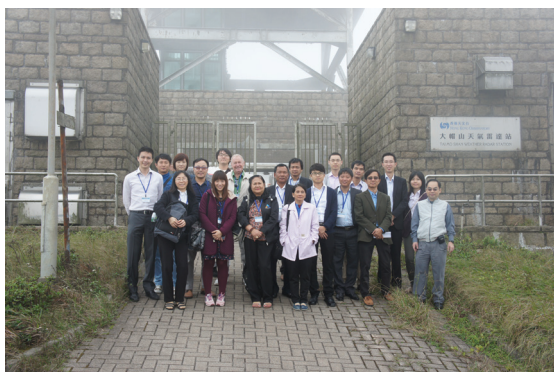


## 2. TMD sent two staff to join in the Typhoon Committee Roving Seminar 2014

Two meteorologists from the Thai Meteorological Department (TMD). Ms. Surangkana Jongsawat and Ms. Praphasri Udjai from Weather Forecast Bureau had been selected to participate in the Typhoon Committee Roving Seminar 2014 held at Hong Kong Observatory, Hong Kong, China from 3 to 5 November 2015.



Ms. Surangkana, one of TMD's participants shared an experience on severe weather warning system in Thailand



All participants visited the radar station, Tai Mo Shan

## 3. TMD sent two radar experts to attend in the Technical meeting on a Radar Composite Map for Thailand in Tokyo, Japan, 25-28 November 2014

The Typhoon Committee (TC) had endorsed the Development of Regional Radar Network as a project of the Working Group on Meteorology at its 43<sup>rd</sup> Session. The project was planned to work on the establishment of radar composite map in Thailand as its first step in 2011. Since then, the radar composite map has been implementing progressively by the Thai Meteorological Department with the technical assistance from the Japan Meteorological Agency (JMA).

During the past two years, JMA kindly transferred the radar composite techniques to TMD experts through the two training courses held at its headquarters in 2012 and 2013 respectively in order that TMD acquires the ability to produce a radar composite map on its own. In 2013, TMD could produce the echo intensity at the lowest level of 3 radar sites with the technique provided by JMA.

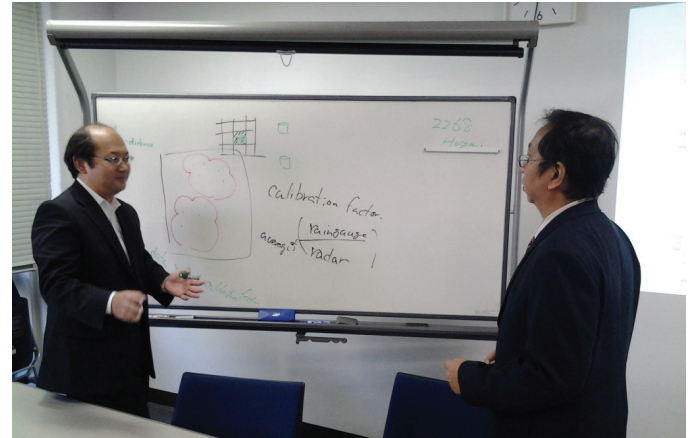
In 2014, TMD has a plan to work with JMA on application of the JMA's radar composite techniques to the nationwide radar network in Thailand, and to preliminary work with JMA on application of QPE techniques by TMD. During the year, TMD could develop the nationwide radar composite map of Thailand radar network successfully and sent the progress report for JMA's consideration.

In consideration to the progress made by TMD on nationwide radar composite map and the 2014 Annual Operating Plan (AOP) of the Working Group of Meteorology (WGM), item 7 endorsed by the 46th TC session held in Bangkok in February 2014, JMA kindly held the Technical meeting among the radar experts from JMA and TMD at its headquar-

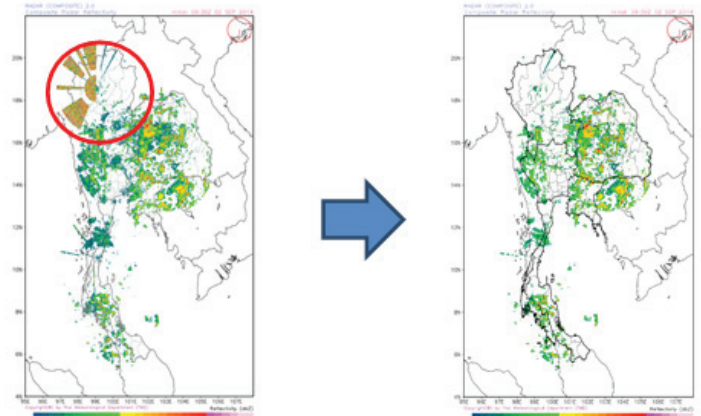
ters in Tokyo, Japan, 25-28 November 2014 to discuss the issue on the technical support for applying the QC for nationwide radar composite map and to also provide training on the QC and QPE techniques for TMD experts. In this regard, TMD sent two experts working for Radar Composite Map, Mr. Boonlet Archevarahuprok and Mr. Fatah Masthawe, to participate in the meeting and training.



During the meeting, JMA experts gave a series of presentations covering information necessary for the creation of a high-quality radar composite map, such as methodical quality management and statistical quality control. As a result of the practical training in quality control provided at this meeting, TMD experts were able to improve radar data quality in their nationwide composite map.



Presentations on quantitative precipitation estimation (QPE) focused on a two-dimensional calibration method applied to radar monitoring based on rain gauge observations. Typical cases of quality deterioration in QPE were also highlighted. The attendees further discussed the implementation of quality management in TMD radar operation and ideas for QPE development in TMD.



Radar quality improvement based on discussions held during the meeting

Furthermore, JMA had provided the source codes and application programs, relevant manuals and data used in the above meeting to TMD in order for TMD experts to demonstrate essential techniques for the production of a nationwide composite map of radar echo intensity and QPE acquired through the said meeting. TMD noted the conditions of using such the source codes and application programs and would like to cordially thank the JMA for the kind cooperation and its great support which significantly contribute to the success of radar composite map's implementation by TMD, Thailand.



## 4. TMD conducted a training course on Synoptic and Agricultural Observations for staff of DMH of Lao PDR from 10 November to 1 December 2014 at its headquarters in Bangkok, and at many meteorological stations in provinces.

The Government of Thailand has approved to support the project entitled “Improvement of Meteorological Information Communications and IT Infrastructure by Web based Portal System for Effective Weather & Climate Service” for Lao PDR, under the bilateral technical cooperation between Thailand and Lao PDR. In this regard, TMD is the main governmental agency to be responsible to implement the project in cooperation with the Thailand International Development Cooperation Agency (TICA), Ministry of Foreign Affairs.

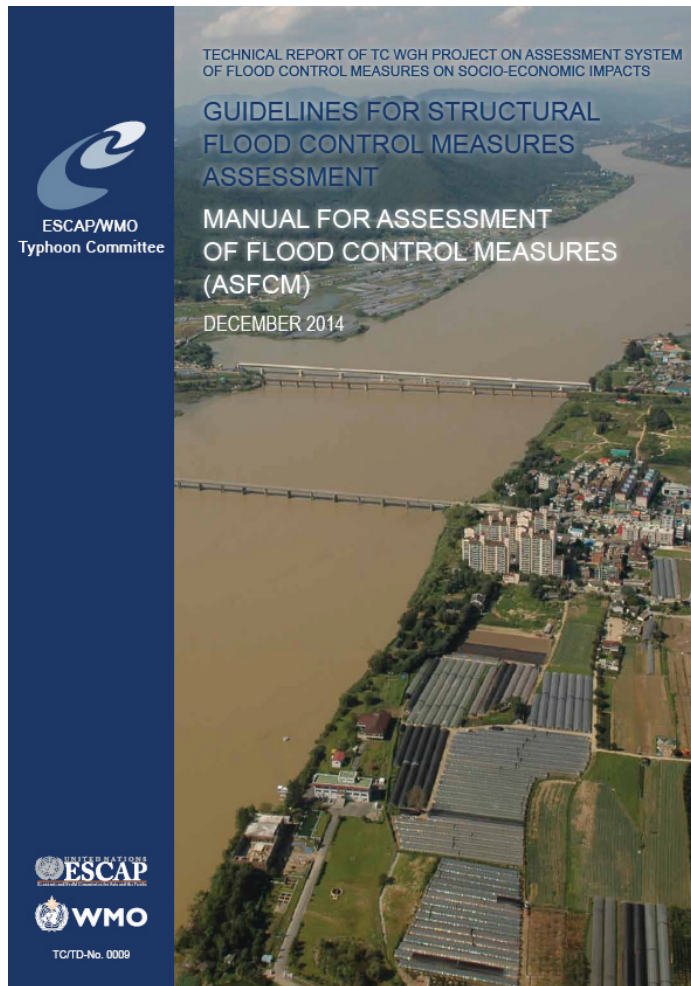
Capacity building of human resources is one of the main areas to be implemented under the project. It is planned that a series of training courses on meteorological and seismological observations and monitoring, and data transmission will be conducted during 2015 fiscal year for the participants from Department of Meteorology and Hydrology (DMH) of Lao PDR.

To this end, TMD conducted the first training course on Synoptic and Agricultural Observations, during 10 November - 1 December 2014 at TMD headquarters, in Bangkok. The training was participated by 10 meteorological observers from the DMH of Lao PDR and was conducted successfully with the theory lectures in classroom and field practices at many meteorological stations in Bangkok and in provinces in eastern part of Thailand, in order for the participants to familiar with TMD’s meteorological observations instruments and all kinds of observations made by

TMD according to WMO standard measurement. It is also hope that the participants can share their knowledge and experiences gained from the training course with their colleagues when returning home and further make application of such the knowledge and experiences for their best practices in meteorological observations in their country.



# Typhoon Committee Publications



The ESCAP/WMO Typhoon Committee Newsletter is published in English by the Typhoon Committee Secretariat

Avenida 5 de Outubro, Coloane, Macau-China  
Phone: +853 88010531  
Fax: +853 88010530  
Email: [info@typhooncommittee.org](mailto: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  
Lei Pun Chi, Barrie • DRR Expert  
Denise Lau • Senior Secretary  
Kou Meng Kit, Lisa • Finance Assistant



"Who's your meteorologist?"