



ESCAP/WMO TYPHOON COMMITTEE

NEWSLETTER

No. 15

August 2003

Contents

- *Thirty-fifth Session of the Typhoon Committee in Chiang Mai, Thailand*
- *Thai National Weather Service Wins 2002 TC Natural Disaster Prevention Award*
- *Meeting of Working Group on Hydrology in Kyoto*
- *Flood Days of the 3rd World Water Forum*
- *T Changes*
- *TC Members' News*

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

Coordinator: Dr. Roman L. Kintanar

4/F PAGASA Bldg., Science Garden Complex, Agham Road, Diliman, Quezon City 1101

PHILIPPINES

Telefax: (632) 4349026

E-mail: tcs@philonline.com

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

Editor: Martin F. Rellin, Jr.

Asst. Ed.: Hannibal B. Marayag

Layout: Bella U. Mendoza

Staff: Rosemarie Z. Anillo

Roman O. Mendoza

THIRTY FIFTH SESSION OF THE TYPHOON COMMITTEE IN CHIANG MAI, THAILAND



Participants in the thirty-fifth session of the Typhoon Committee pose at the Grand Ballroom of Chiang Mai Hill 2000 Hotel.

Officials and representatives of national meteorological services in Asia-Pacific pushed for the implementation of several uncompleted action plans at the conclusion of the 35th Session of the ESCAP/WMO Typhoon Committee, held in Chiang Mai, Thailand, from 19 to 25 November 2002.

The session, organized by the Thailand Meteorological Department (TMD) and co-sponsored by the World Meteorological Organization (WMO) and the Economic and Social Commission for Asia and the Pacific (ESCAP), was attended by representatives from 12 members of TC, as well as observers from the Russian Federation, International Civil Aviation Organization (ICAO), Mekong River Commission and Thai Red Cross Society.

Governor Pisit Ketphasook of Chiang Mai said the work of the Committee was of great interest to the province of Chiang Mai. He stressed the need for the experts to take all possible measures in order to reduce the incidence of weather-related disasters affecting the region.

Prapansak Buranaprapa, director-general of TMD, said the 2002 TC session coincided with the 60th anniversary of TMD as a government department. He highlighted in his message the importance of the close cooperation between members to minimize loss of lives and damage to properties caused by tropical cyclones.

Le-Huu Ti, ESCAP representative, said ESCAP has always accorded high priority on the importance of mitigating

cyclone and water-related disasters in the region in view of its annual social impact with more than 150,000 human loss, affecting nearly 1.5 billion people and annual economic loss exceeding US\$110 billion during the last decade (1990s).

Ti also gave importance to establishing effective regional, subregional and national strategies, and scientific and technical institutional support for disaster management as recommended in the action plan of the World Summit on Sustainable Development in September.

The ESCAP official lauded the TC members' commitment in leading cooperative efforts towards achieving the various targets set out in the new RCPIP. He also gave assurance of ESCAP's continued support for the Committee in the enhancement of sub-regional cooperation in cyclone-related disaster mitigation and water resources management.

Eisa H. Al-Majed, WMO representative, urged the Committee to assist its members in the common efforts to improve forecasting of floods which continued to be one of the most severe disasters in Asia. He added that WMO would not cease on giving top priority to issues related to the mitigation of natural disasters in line with the implementation of the International Strategy for Disaster Reduction (ISDR) and its relevant programs.

Al-Majed also urged TC members to strengthen the interaction between their National Meteorological and Hydrological Services and the national agencies concerned with disaster prevention and preparedness in order to increase the effectiveness of the warning system and national disaster mitigation measures.

At the session, the Committee noted the existing deficiencies in the implementation of the ICAO tropical cyclone warning system due to some designated Tropical Cyclone Advisory Centers (TCACs) and Meteorological Watch Offices (MWOs) which had not yet adopted the ICAO format in the issuance of tropical cyclone advisories

and SIGMETs. Also noted was the problem which surfaced in the dissemination of advisories and SIGMETs through ICAO telecommunication links due to incorrect WMO heading used by TCACs and MWOs. This has resulted in the automatic data handling systems at aeronautical meteorological communication centers and

of various centers are feasible and cost-effective before being implemented.

The Committee decided to carry out only the first stage because the second stage was deemed not feasible or effective for the members and it would be more appropriate for study themes of graduate students and research scientists. The Committee requested the RSMC-Tokyo Typhoon Center to work out details of the implementation plan of the first stage of the proposal and to circulate them among the members.

The working group on Regional Cooperation Programme Implementation Plan (RCPIP) noted the significant advances made by the members in many areas of meteorology, hydrology, disaster prevention and preparedness, training, and research. However, many of these advances were within the members' respective areas, and elements of regional cooperation needed for many of the RCPIP

objectives were not evident.

The working group on RCPIP added that only a few members had accomplished Regional Cooperation Objectives/Action Items. All the members were to identify additional tropical cyclone forecasting guidance requirements. As documented, only China and Hong Kong did while Malaysia said it was satisfied with the current guidance. RSMC Tokyo was to send a questionnaire on requirements to members to be reported during the 35th session, and to implement identified requirements from 2002 to 2006.

The working group noted several significant actions in meteorology that should be addressed which included the implementation of a central server for data exchange accessible by members with appropriate security measures; establishment and training of human weather spotter networks to report significant rainfall, flooding, storm surge and high surf; and provision of members of their prioritized list of requirements to RSMC Tokyo.

In hydrology, the Committee noted the improvements made by several members on real-time meteorological/hydrological networks and exchange of data among



At the Session. (From left) Dr. R.L. Kintanar, TCS Coordinator; Mr. Le -Huu Ti, ESCAP Representative; Gov. Pisit Ketphasook, Governor of Chiang Mai; Mr. Sombut Uthaisang, Adviser to Ministry of ICT; Mr. J. Weyman, Director; RSMC Honolulu; Mr. E. H. Al-Majed, WMO Representative; and Dr. P. Buranaprapa, Director-General, TMD.

airlines unable to recognize the messages related to tropical cyclones, and therefore not reaching aviation users.

In line with this, the Committee agreed with the proposal to amend the Typhoon Committee Operational Manual (TOM) to reflect the current ICAO provisions related to the TC advisories and warnings for aviation. Also, the Committee was informed that the TCAC Tokyo would revise the format of its tropical cyclone advisory for SIGMET, in accordance with the ICAO Annex 3/WMO Technical Regulations, beginning January 1, 2003.

A two-tiered strategy for the development of a unified best track data set was proposed at the meeting of the Working Group on a Unified North-West Pacific Tropical Cyclone Best Track Data Set. In the first stage, data which are useful for disaster mitigation activities, particularly, during the land-falling period, should be appended to the Regional Specialized Meteorological Center (RSMC) Tokyo Best Track data set. The second stage was to conduct a feasibility study to examine if re-analysis and unification of best track data sets

members, and on working towards developing and extending activities between forecasting agencies and user groups of flood information in cooperation with disaster prevention and preparedness organizations.

Japan had provided technical support to interested members in production of flood hazard maps and in establishing sediment disaster forecasting and warning system at pilot areas of each member. It was planned that

interested members would make flood hazard maps and implement public announcement of hazard maps in the pilot area by 2004.

The working group on RCPIP identified the activities under hydrology which the members should fulfill, among others, to develop and implement plans which included each member's meteorological/hydrological data requirements from other members, and methods to receive the required data; to establish, evaluate and improve the accuracy of flood forecasting and exchange information among all members; and to improve flood forecasting and warning systems through exchange of experts.

The Committee endorsed the recommendations made at the pre-session meeting of hydrologists, among others, to authorize a TC delegation at the 3rd World Water Forum in Japan in March 2003; to adopt a new format for reporting of the hydrology component to be discussed and finalized by the working group on RCPIP; to request technical assistance from Japan to provide training on flood hazard analysis and sediment-disaster forecasting and warning; to re-establish the working group on hydrology to continue its work in 2003; and to organize a Workshop on Implementation of the Hydrological Component of the New RCPIP of the Committee, in Beijing, China, in September 2003.

In order to enhance effectiveness of the Beijing workshop, the Committee would also request experts from Japan to prepare for the organization and program for follow-up actions based on the priority accorded in RCPIP; to request TCS to encourage focal



Mr. Sombut Uthaisang strikes the symbolic gong while officials look on during the opening of the 35th Typhoon Committee Session.

points on hydrology to prepare for the workshop; and to request ESCAP to assist TCS and China in the preparation of the technical programme of the workshop.

The Committee thanked the Japan Meteorological Agency (JMA) for the exemplary work of the RSMC Tokyo-Typhoon Center on its continued provision of numerical weather products to TC members. It noted JMA's upgrading of the RSMC Data Serving System in April 2002 to meet growing demand from users for enhancement of the data service.

China reported that its FY-1D satellite has been in full operation and would collect meteorological and environmental data and transmit CHRPT to users around the world. Japan informed the members on the JMA-NOAA agreement to establish a GMS-5/GOES-9 back-up procedure for the continuous space observations over the western Pacific, including enhancement of the ground facilities for data reception to begin in April 2003, and until the Multi-functional Transport Satellite (MTSAT)-1R starts operation by end of 2003. Japan would also provide GMS-5 images via the Internet starting 2 December 2002 prior to the GMS-5/GOES-9 backup to cope with possible decrease of signal level of the MDUS broadcast.

The Committee reviewed the developments on the activities on disaster prevention and preparedness (DPP) covering two categories, namely, public awareness, and disaster management. It noted the urgent need of some members for the preparation and improvement of hazard maps and

strengthening of related warning systems. Several members have expressed interest in learning from the Japanese experience in flood map preparation.

China, Hong Kong, Singapore, and the USA were noted to have made significant progress in maintaining an effective communication with the media, emergency management/ disaster response agencies, and non-governmental organizations (NGOs); and in the exchange of information on communications and significant tropical cyclone events.

The members were urged to direct their efforts to provide

a list of Internet websites for disaster preparedness and prevention information; exchange effective tropical cyclone resistant actions and members' building codes; and investigate the availability of amateur radio networks and implement procedures for their use to report significant weather events and as backup communications and dissemination systems.

The Committee lauded ESCAP for its well-appreciated re-implementation of the annual survey on socio-economic impacts of typhoons and requested for the members' active participation. The Committee also pushed for the setting up of a data base on the impact of typhoon-related disasters at the national level and requested ESCAP, in cooperation with TCS and WMO, to develop a regional project on this subject.

The Committee was informed that the two WMO pilot websites, Severe Weather Information Center, and World Weather Information Center, were operating smoothly. For the purpose of facilitating the members to present their city forecasts in the World Weather Information Center website, a variety of communication methods utilizing GTS, E-mail, FTP and web-forms were implemented for submission of forecasts.

At the session, the Asian Disaster Reduction Center (ADRC) circulated a draft list of Internet websites for the members' access on disaster prevention and preparedness information and invited the members of TC to provide additional information before the list is finalized by end of February 2003.

The Committee also lauded the members for making their national facilities

available for the training of meteorological and hydrological personnel of other members. It noted the important contribution to the training component of the Storm Surge Workshop in Hanoi, and the Workshop on Integration of Risk Analysis and Management of Water-related Disasters into the Development Process in Manila.

The Committee requested the production of CD-ROMs in all TC-sponsored workshops and seminars for distribution to members, particularly, those who could not participate in such training opportunities in order to maximize the use of its resources.

In training, there was an important need for members to prepare a separate, prioritized list of training requirements for meteorology and hydrology; and following completion of finalized list, to conduct a meeting on these priorities and sources for training, if necessary.

The Committee noted several important research activities undertaken by members on various aspects of tropical cyclones, including those related to meteorological, hydrological and DPP component. Actions needed included to organize an International Intensive Observing Experiment; conduct exchange of meteorological experts among members through the Typhoon Committee Research Fellowship Scheme; and organize workshops on typhoon forecasting research biennially.

The working group on RCPIP recommended, among others, to re-establish the working group on RCPIP to review and update the RCPIP based on the surveys from members; propose a new format and reporting system for the TC annual country reports; and consolidate the members' identified planned training, prioritized training needs, and prioritized research needs; and to hold a 3-day meeting of the new RCPIP working group in Japan.

The Typhoon Research Coordination Group (TRCG) recommended several topics related to research activities, such as to continue the TRCG fellowship scheme; to implement the visiting lecturer programme to promote research and development on tropical cyclone forecasting, hydrology component, and DPP component, while encouraging members to adopt cooperative activities to engage the interest of academic researchers; and to update the list of resource persons in the region for better interaction, encourage members to take part in the development work, share research results, and to assist other members in adopting the use of information through internet.

The Committee urged its members to implement these recommendations as much as possible and also requested TCS to provide the necessary support to the working group.

The Committee noted the study made by TCS to produce the Typhoon Committee Annual Review (TCAR) in CD-ROM format and thanked the USA for its offer to produce copies of the TCAR 2002 in CD-ROM.

The thirty fifth Committee session elected Dr. Prapansak Buranaprapa, Director of Meteorological Department of Thailand, as Chairman of the Typhoon Committee until its next session. It also accepted the offer made by the Government of Malaysia to host the next session scheduled from 15-20 December 2003.



Participants enjoy an elephant show in Chiang Mai during a break at the session.

Thai National Weather Service wins 2002 TC Award

The Thai Meteorological Department has another reason to be proud as the national weather service was awarded the Typhoon Committee Natural Disaster Prevention Award 2002 by the Typhoon Committee Foundation, Inc. (TCFI).

The Thai Department joined 1996 winner Smith Tumsaroach, former director general of TMD, as only the two recipients of the coveted TC award from Thailand.

In session ceremony last November 19, the award was presented to Prapansak Buranaprapa, director general of TMD, on behalf of the department, by TCFI chairman



Dr. P. Buranaprapa (right), Director-General of TMD, receives the TC Award Plaque, on behalf of the TMD, from Dr. Kintanar, Chairman of TCFI.

Roman L. Kintanar. The TC award was created by the TCFI in 1989 aimed at recognizing worthy endeavors in the improvement of natural disaster prevention strategies.

The TMD was cited for team effort emanating from the work of its staff; for its contributions as an entity for sixty years in the promotion of public safety; and for its valuable participation, as founding member, in the work program of both the Typhoon Committee and the Panel on Tropical Cyclones for the Bay of Bengal and the Arabian Sea, which has provided an important coordinating link between the two geographical areas covered.

T Changes

Kitade heads JMA

Takeo Kitade, 59, was appointed new director general of the Japan Meteorological Agency (JMA) last April succeeding Mr. Koji Yamamoto. Kitade was the director of the Forecast Department, JMA, prior to his appointment.

Kitade, who holds a PhD (A Numerical Study of Three-Dimensional Bénard Convection), University of Tokyo (1978), and BSc, Faculty of Science, Kyoto University (1996), joined JMA as researcher at the Typhoon Research Department in 1966 and gradually rose from the ranks. He served as director of the Sendai District Meteorological Observatory (1998-2000); Administration Division (1995-1996) and Numerical Prediction Division (1992-1995) of the Forecast Department; and Technical Department of the Sapporo District Meteorological Observatory (1990-1992).



Dr. T. Kitade

Kitade has worked extensively in the development of synoptic forecasting methods using numerical weather prediction models, and in the planning of modernization of the forecasting system, observing system, and the telecommunication and data processing system. He was a visiting scientist at the Florida State University in 1981-83 and was a member of the Commission for Atmospheric Sciences (CAS) in 1992-94 and 2001-2003.

Kitade is a member of the Coordination Committee on Meteorology of the Science Council of Japan, and the

Tokyo Environmental Council. He has authored several publications in J. Met. Soc. Japan, among others, On the Convection in a Conditionally Unstable Atmosphere with Mean Vertical Motion (1972), A Numerical Study of Three-Dimensional Bénard Convection, The Evaluation of the Amplitude (1974) Numerical Experiments of Tropical Cyclones on a Plane with Variable Coriolis Parameter (1980), A Numerical Study of the Vortex Motion with Barotropic Models (1981), and Numerical Weather Prediction in JMA (1988).



Dr. C. Y. Lam

Lam succeeds Lam

C. Y. Lam was appointed director of the Hong Kong Observatory succeeding H. K. Lam in March 2003. Lam, who joined the Observatory in 1974, studied physics and mathematics at the University of Hong Kong, and meteorology at the Imperial College, University of London

Lam served as chairman of the steering group for the Special Experiment Concerning Typhoon Recurvature and Unusual Movement (SPECTRUM) 1990. He also served as the Chairman of the Typhoon Research Coordination Group from 1996 to 2000, during which time the fellowship scheme and the new list of typhoon names in the region were introduced.

Lam is currently involved in running the two WMO pilot websites on world city forecasts and severe weather information hosted by the Hong Kong Observatory.

Mannoji appointed NTC-JMA head

Nobutaka Mannoji, 46, was appointed new head of the National Typhoon Center, Japan Meteorological Agency (RSMC Tokyo- Typhoon Center),



Dr. N. Mannoji

succeeding Masashi Nagata on 1 April 2003.

Mannoji holds a M.Sc and B.Sc degree in Geophysics from the University of Tokyo. He joined JMA in 1984 as technical staff member of Sapporo District Observatory. He served as senior R/D staff member at the Numerical Prediction Division (1986-2001), mainly developing JMA's Regional Spectral Model, including a 2-year stint as a visiting scientist at the Florida State University (1991-1993), USA.

Mannoji, who has worked with WMO (1998-2002), was the winner of the Yamamoto Award of Japan Meteorological Society in 1984. He held the position as Senior Coordinator for Climate Modeling at the Climate Prediction Division, JMA (2001-2003) prior to his appointment as head of NTC, JMA.



M. Rellin, Jr.

Rellin named new TCS meteorologist

Martin F. Rellin, Jr. was appointed new Seconded Meteorologist of the Typhoon Committee Secretariat (TCS), succeeding Efigenia C. Galang on 16 May 2003.

Rellin, 42, is a BSME graduate of the University of Mindanao. He holds a M.Sc. in Mgt. Eng'g. from the University of Santo Tomas, and a Post graduate diploma Met. Eng'g. from the Meteorological Office College (U.K.).

Rellin, a Sr. Weather Specialist, also acts as chief of staff of the Office of the Director of PAGASA. He received the Model Employee of the Year award in December 2002.

Int'l symposium on climate change in Beijing

An international symposium on climate change was held in Beijing, China, from March 31 to April 3, 2003. The symposium attracted some 440 officials from 46 countries including representatives of various international scientific organizations.

Hui Liangyu, Vice-Premier of the State Council of China, graced the opening of the four-day meeting indicating the great importance the Chinese government attached to climate change issue. WMO Secretary General G. O. P. Obasi and other prominent scientists also attended the symposium.

The symposium covered a broad area on many aspects of science and sustainable development associated with climate change, under the topic "Climate Change: Science and Sustainable Development." A total of 260 papers were presented mostly on the latest world scientific findings in the field of climate change. In addition, 15 papers, with Young Scientist Award, were presented as an encouragement to young scientists.

Satellite data expert visits Shanghai Institute

Roger Edson of Quam University visited the Shanghai Typhoon Institute (STI) for a one-week lecture-seminar on the utilization of satellite data in tropical cyclone forecasting and positioning on 17-23 March 2003.

Edson introduced to the members of STI the up-to-date advancement in meteorological satellites and their utilization in areas concerning tropical cyclones. Participants to the lectures were forecasters from the Shanghai Meteorological Center, Guangzhou Tropical Meteorology Institute, Zhejiang Observatory and Jiangsu Observatory.

Edson's topics included 'Introduction to meteorological satellites', 'Operational evaluation of Quikscat over tropical cyclones', 'Evaluation of microwave imagery over tropical cyclones', and 'Tropical cyclone intensity estimation using



Opening ceremony of Beijing symposium



Vice-premier Hui Liangyu of the State Council of China, shares a light moment with Prof. G.O.P. Obasi, Secretary-General of WMO.

NOAA-KLM series AMSU warm core observations.'

Meteorological satellites have been proved to be indispensable in improving the ability in forecasting and understanding tropical cyclones' track, structure and intensity change. The lectures provided a good opportunity for the STI members to gain more knowledge that will be useful in their work in the future.

Workshop on landfalling tropical cyclone

The annual meeting of the national key project "Monitoring on Landfalling Tropical Cyclone Disasters of China and its Forecasting Techniques" was held on 2-4 March in Guangdong Province. Forty six experts who were involved in the project attended the meeting.

Chen Lianshou, the chief scientist of the project, gave a brief introduction on the field experiment and reported on its progress which consisted of 5 sub-projects with 30 topics covering several aspects on landfalling tropical cyclone including

structure, motion, intensity, database and field experiment.

The chiefs of each sub-project introduced new findings (in the past) as well as problems and future plans. The field experiment has chosen "Vongfong (2014)" as its target and has launched tracking monitoring with data on wind field, turbulence and planetary boundary layer features.

These valuable data filled in the gap in China's monitoring of landfalling tropical cyclones. Based on these data, some pioneer achievements have been made in the field of landfalling tropical cyclone PBL features.

Lianshou named WGTMR chairman

Prof. Chen Lianshou, academician of the Chinese Academy of Engineering (CAE), was designated chairman of the Working Group on Tropical Meteorology Research (WGTMR) as well as a rapporteur on Interaction between Tropical and Mid-latitude Weather Systems of the Working Group during the last session of the WMO Commission for Atmospheric Sciences (CAS) held in Oslo, on 12-20 February 2002.

China contributes to global meteorology training

The China Meteorological Administration Training Center (CMATC), the Beijing Component of the WMO Nanjing Regional Meteorological Training Center (RMTC) was inaugurated on April 1, 2003. The new training branch aims to provide better education and training services in the fields of meteorology and hydrology for developing countries in the Asia-Pacific region.

In 1994, China signed an agreement with WMO to set up RMTC Nanjing at the Nanjing Meteorological Institute in Jiangsu Province. In August 2002, WMO formally designated the China Meteorological Administration Training Center (CMATC) as the Beijing component of its RMTC in Nanjing.

In recent years, the CMATC has made great efforts in training high-level professionals for China's meteorological development. The training courses cover new weather radar principles and

operational applications, sandstorm forecasting and warning services, techniques for urban environment prediction and monitoring, latest findings of meteorological science for water resources and civil aviation sectors, and other related subjects.

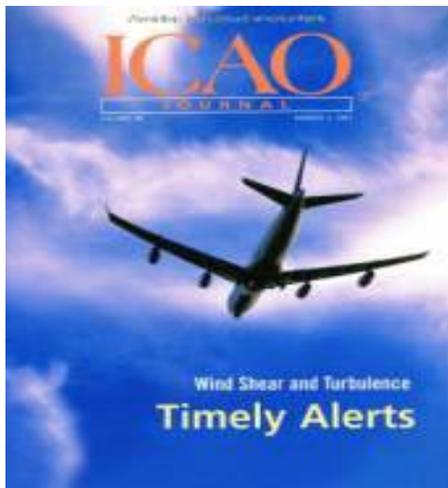


Dr. Qin Dahe (left), Administrator of CMA, and Prof. Obasi at the inauguration ceremony.

Hong Kong, China

Alerting service in ICAO journal

An article from HKO entitled “Ongoing research in Hong Kong has led to improved wind shear and turbulence alerts” was recently featured in March issue of ICAO Journal. The article gives an overview of the windshear and turbulence alerting service at the airport and describes the improvements that the HKO has made in recent years. It can also be viewed on ICAO’s website at <http://www.icao.int/> or on HKO’s website at http://www.weather.gov.hk/aviat/articles/ShunNo2A3_Final.pdf.



March 2003 issue of ICAO Journal

Use of radar-derived TREC winds in model initialization of tropical cyclones assessed

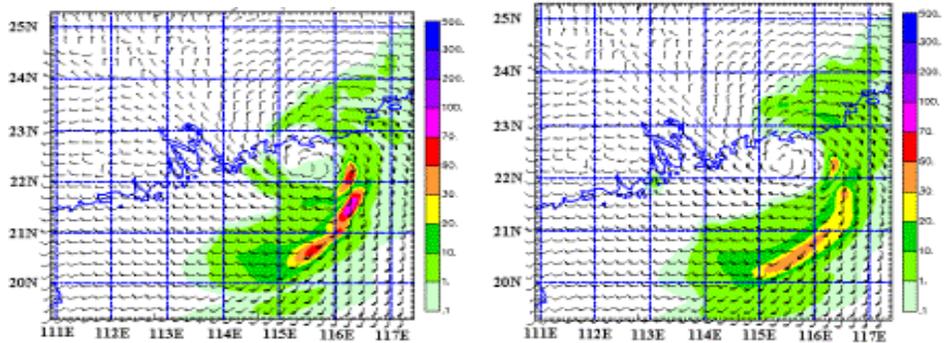
The potential of the application of TREC (Tracking Radar Echoes by Correlation) winds in initializing tropical cyclones was assessed using the case of tropical cyclone Kammuri (0212) in 2002. Numerical experiments on the assimilation of TREC winds were performed at the Hong Kong Observatory (HKO) using the hydrostatic Operational Regional Spectral Model (ORSM) and the non-hydrostatic Advanced Regional Prediction System (ARPS).

The ORSM was configured to run at a 20-km inner domain one-way nested inside a 60-km domain with 36 vertical levels. The ARPS was run at a 6-km inner domain one-way nested inside a 30-km outer domain with 40 levels. The boundary conditions of both outer models were provided by the Global Spectral Model (GSM) of Japan Meteorological Agency (JMA). The ORSM employed 3-dimensional multivariate optimal interpolation. The ARPS Data Assimilation

System (ADAS) used the Bratseth successive correction scheme. In the ADAS, radar velocity and reflectivity data were assimilated.

The impact of TREC winds on model rainfall forecasts was evaluated with and without the presence of tropical cyclone bogus data. TREC winds at 1 km and 3 km heights were assimilated in the models. With the assimilation of TREC winds, the ARPS predicted generally higher rainfall intensities in the first few hours. The impact was still observable in later forecast hours. For the ORSM, the impact of TREC winds was less prominent than that of ARPS. The ORSM was not very sensitive to the use of TREC wind data. Instead, the effect of TC bogus data was significant.

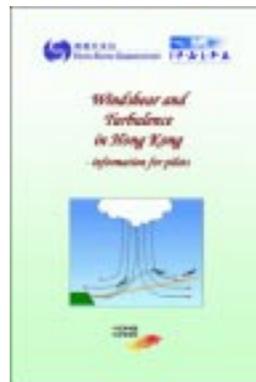
Indications are that additional radar derived wind data like TREC winds with finer vertical resolution may produce a more substantial impact on the rainfall forecasts of tropical cyclone upon landfall. Further experimentation with TREC winds with finer vertical resolution in addition to Doppler velocity data will be carried out.



6-km ARPS T+3 h forecast for 3 hourly accumulated rainfall (mm) and surface winds with TREC wind data (left) and without TREC wind data (right). The model valid time is 21 UTC 4 August 2002.

Windshear and turbulence awareness in HK

One of the main responsibilities of HKO is to provide alerts of windshear and turbulence to aircraft using the Hong Kong International Airport. The HKO, in collaboration with the International Federation of Air Line Pilots’ Associations (IFALPA), has recently published a booklet entitled ‘Windshear and

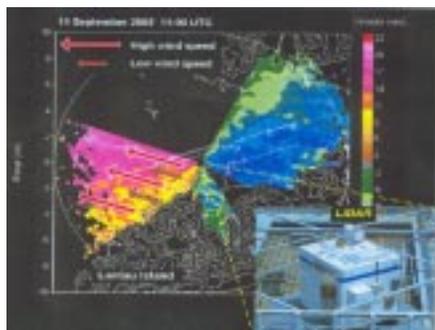


Turbulence in Hong Kong – information for pilots.’

The booklet provides pilots with basic information on windshear and turbulence, their causes and characteristics, and the windshear and turbulence alerting service in Hong Kong. It is available in both English and Chinese and can be viewed on HKO’s website (http://www.weather.gov.hk/education/edu04avimet_e.htm).

LIDAR installed in HK Int'l Airport - a first of its kind

The Hong Kong Observatory has installed a Doppler Light Detection And Ranging (LIDAR) system at the Hong Kong



LIDAR image at 11 UTC on 11 September 2002 during the passage of HAGUPIT. Alternating streak of high and low winds speeds were discernible respectively downwind of the valleys and hills on Lantau Island to the south of the airport.

International Airport. The first of its kind in the world for aviation weather alerting, the LIDAR detects movement of aerosols in the air to determine the wind flow under non-rainy weather.

The LIDAR has revealed the wind structure of a number of windshear-producing weather systems in rain-free conditions which cannot be clearly depicted by Terminal Doppler Weather Radar, ranging from sea-breezes, gust fronts ahead of severe thunderstorms, to complex flow behind hilly terrain.

A case in point occurred on 11 September 2002 when severe tropical storm HAGUPIT, over the northern part of the South China Sea, brought high winds in Hong Kong. With winds crossing the hills on Lantau Island south of the airport, alternating streaks of high and low wind speeds appeared over the airport. The LIDAR captured these streaks nicely and enabled early issuance of the windshear alert to aircraft. A total of 23 aircraft had to go around that day due to the windshear encounter.

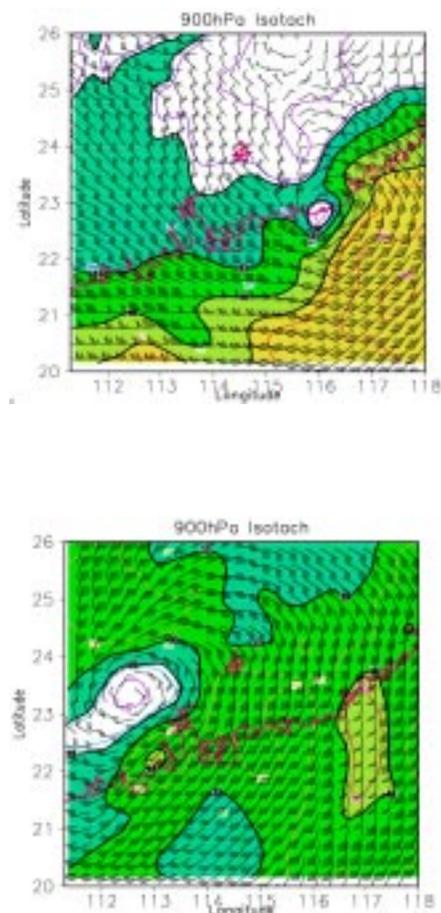
Near real-time analysis of the wind structure of tropical cyclones

Under the Typhoon Committee research fellowship scheme, Nathaniel T. Servando, a forecaster from the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), undertook a 2-month attachment programme at HKO, from 2 May-29 June 2002 to develop a rapidly updated analysis system

using the Local Analysis and Prediction System (LAPS) of the Forecast Systems Laboratory (FSL) in the US to produce 3-D tropical cyclone circulation analyses.

LAPS was configured to use HKO's Operational Regional Spectral Model (ORSM) output as the background field. In addition to conventional data, data from the local automatic weather station network, QuikSCAT, Doppler radar velocity and TREC (Tracking Radar Echoes by Correlation) winds were also ingested. Hourly analyses were produced for a 125x105 horizontal grid of 10, 5, and 2 km resolutions centred over Hong Kong. Case studies of tropical cyclones Sam (9910), Utor (0104) and Nari (0116) were carried out using LAPS.

Results of the case studies were encouraging. LAPS analysis was in general agreement with observations in Hong Kong



The 900-hPa level LAPS wind field and isotach analysis at 00 UTC (top) and 12 UTC (above) on 6 July 2001, before and after the landfall of UTOR, respectively. Shaded areas correspond to wind speeds of 41-62 km/h (bluish green), 63-87 km/h (bright green), 88-117 km/h (yellowish green) and 118 km/h or above (yellow).

and neighbouring areas. In the case of UTOR, for instance, LAPS analysis indicated that the wind structure was highly asymmetric throughout its passage, with high winds confined mostly to a band of southwesterly running more or less parallel to the coastline. Just before landfall, winds to the south over the sea reached a maximum speed of around 165 km/h while winds to the north over land were only around 55 km/h. After landfall, winds weakened and apparently the radius of maximum wind of UTOR increased. Gales remained quite extensive within UTOR's large circulation. Most of the damage was associated with the southwesterly gales sustained over a prolonged period in the wake of UTOR.

HKO plans to implement LAPS and to test the system operationally in a frequently updated manner. The ultimate goal is to enable forecasters to make timely operational decisions based on the location of the wind maxima and the extent of violent winds before and after TC making landfall.

72-Hour tropical cyclone position forecast

The Hong Kong Observatory (HKO) commenced issuing 72-hour tropical cyclone forecast positions in its warning for shipping for the area bounded by 10N to 25N, 105E to 125E, last June 2003. This has been a major expansion of the HKO tropical cyclone warning service since 1978 which was prompted by the progress in the performance of numerical models as well as the adoption of the multiple model ensemble technique in forecasting the movement of tropical cyclones.

In the eighties, subjective skill was close to that of CLIPER (climatology and persistence). The subjective skill gained over CLIPER gradually in the following decade or so by some 30% as global operational models (received by the HKO) improved in accuracy.

As seen in Fig. 1, the annual average track error of subjective 24- and 48-hour forecasts of HKO relative to CLIPER over the years.

The recent jump (about another 20%) in the skill of subjective forecasting of tropical cyclone track against CLIPER could be attributed to the use of the multiple model ensemble technique in which the average of predicted positions by the global models of ECMWF, JMA as well as UKMO was utilized as the principal basis of the subjective track

forecast.

Based on the performance of the model ensemble prediction in 2002 (see Fig. 2), the mean track error for the HKO 72-hour forecast is expected to be about 300km to 350km, roughly equal to the 84-hour ensemble error (taking into account the time lag in the availability of model data for formulating forecasts).

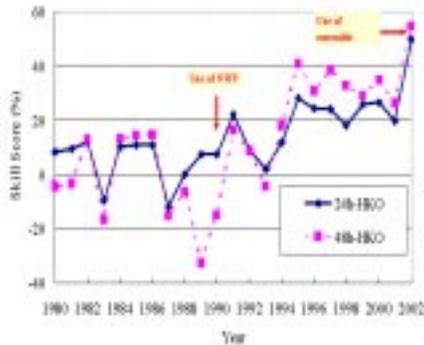


Fig. 1 Skill relative to CLIPER of the 24-and 48-hour HKO subjective track forecast in 2002.

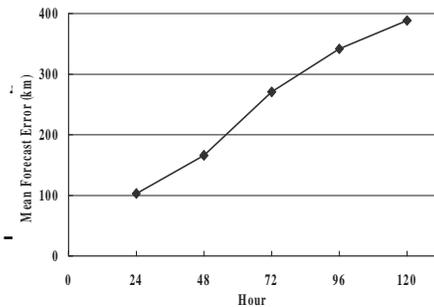


Fig. 2. Mean track error of the ensemble of (ECMWF, JMA and UKMO) forecast in 2002.

Macao, China

WMD 2003 marked

The Macao Meteorological and Geophysical Bureau (SMG) joined the worldwide celebration of World Meteorological Day 2003 with several activities promoting this year's theme "Our Future Climate." A series of lectures on three topics "El Niño and La Niña and its Impact," "Air Pollution and Health" and the WMD theme were conducted in 19 high schools, from 10-21 March and to the public on 23



WMD Ceremony

March. A total of 5335 students attended the lectures.

A brand-new SMG website (<http://www.smg.gov.mo>) was introduced during the ceremony. The website provides new arrangement of the main page and a wealth of new added information such as knowledge on meteorology, meteorological instruments, weather information for cities around the world, and aviation weather information.

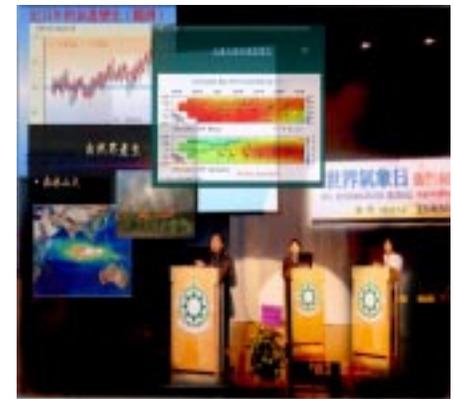
W. M. Ma, a Hong Kong Observatory official, was invited to introduce two other websites developed by the Observatory under the auspices of WMO. The World Weather Information Services (WVIS) <http://www.worldweather.org/> will provide the media and the international community with an authoritative source (i.e., information issued by the National Meteorological and Hydrological Services (NMHSs) of up-to-date weather forecast and climatological information around the world). While Severe Weather Information Center (SWIC) <http://severe.worldweather.org/> to provide official forecasts and warnings of tropical cyclones in the western North Pacific region.

After a period of collection, arrangement and calculation of data recorded, a CD-ROM named "100-year of Macao Climate data" was published by SMG on the same day, making SMG one of the NMHSs in the world with 100-year record of climatic data. The practice of meteorological observations has a relatively long history in Macao and did not cease even during World War II.

The CD-ROM, currently in Chinese version, consists of 4 main data on temperature, pressure, wind and precipitation. Observed weather and sunshine duration are also included and more data information will be added in the future. Also the CD-ROM contains a paper introducing the main climatic feature of Macao.



Mr. W.M. Ma introduces the two website WWIS and WIC.



Lecture presentation



"100-year of Macao Climate data" CD-ROM



Main page of new SMG website

Thailand

Female meteorologist attends OJT in typhoon operation

Chongkolnee Yusabye, a senior meteorologist of the Thai Meteorological Department, will attend an On-the-Job training in Typhoon Operation at the RSMC-Tokyo Typhoon Center in Tokyo, Japan, from 23 July to 1 August 2003.

Y u s a b y e conducts study researches on tropical cyclone movement and intensify forecasting, meteorological satellite



C. Yusabye

imagery, and severe weather forecasting. She works on how to apply the products from numerical weather prediction in daily weather forecast.

The lady meteorologist also conducted a case study in "Typhoon Vamei" in 2001 as well as a case study in "Severe weather during the hot season in Thailand" conducted during the period 2000-2003.

Philippines

Building inauguration highlights WMD celebration



New building of PAGASA

PAGASA marked the celebration of World Meteorological Day 2003 with the inauguration of its newly built four-storey main office building located at the Science Garden Complex in Quezon City. A

walkathon, led by PAGASA director Leoncio Amadore, kicked off the whole-day activities which included an exhibit, open forum, video showing, games and poster-making contest. The theme for this year's WMD celebration, "Our Future Climate", was the focus of the lecture and open forum.

Guest officials, led by Philippine science secretary, Estrella F. Alabastro, graced the inaugural ceremonies. The launching of a new PAGASA homepage capped the WMD commemoration.

Japan

JMA extends 72-hour intensity forecast of tropical cyclone

The RSMC Tokyo Typhoon Center of the Japan Meteorological Agency (JMA) has extended the forecast period for tropical cyclone (TC) intensity from 48 hours to 72 hours in June 2003.

The 72-hour intensity forecast (10-minute average maximum sustained wind and central pressure of a TC) is provided in the RSMC Tropical Cyclone Advisory (WTPQ20-25 RJTD) in addition to its previous contents.

The extension of the period is based on the improvement of numerical weather prediction (NWP) models and data assimilation system of JMA after the replacement of the computer system for NWP in March 2001. The forecast period of TC position provided by the RSMC Tokyo Typhoon Center was extended from 48 hours to 72 hours in July 1997, while the forecast period of TC intensity was extended from 24 hours to 48 hours in June 2001.

JMA starts GMS-5/GOES-9 back-up, postpones MTSAT-1R launch

JMA has started the back-up of GMS-5 with GOES-9 in May 2003 in cooperation with the US National Oceanic and Atmospheric Administration /National Environmental Satellite Data and Information Service (NOAA/NESDIS) as a measure for continuation of earth observations over the western Pacific. GMS-5 has been in operation for over 8 years far

beyond its designated life time (5 years).

Earth observations were handed over from GMS-5 to GOES-9 on 22 May after GMS-5 made its final observation on that day. Since the take over, GVAR data from GOES-9 has been converted to S-VISSR data for the GMS-5 users; the broadcasting service of WEFAX has been continuously performed by GMS-5, while S-VISSR data (IR-1 channel) has been made available only from the RSMC Data Server of JMA via Internet for the National Meteorological and Hydrological Services (NMHSs) registered to JMA.

GMS-5 has also maintained its function of data collection from the Data Collection Platforms (DCPs). During the back-up operation, GOES-9 is stationed at 155E above the equator and GMS-5 is stationed at 140E above the equator.

The launch of MTSAT-1R, the successor to GMS-5, will be postponed from the summer of 2003 to early 2004 due to the delay in the manufacturing process of the spacecraft. The new plan for the launch and operation of MTSAT-1R will be announced as soon as it is finalized.

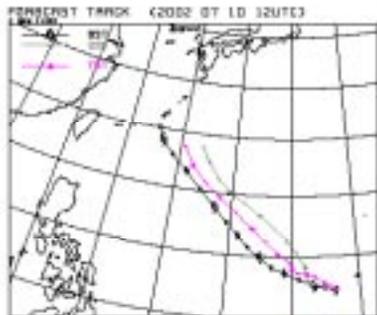
QuikSCAT/SeaWinds improves typhoon track forecasts

The Japan Meteorological Agency (JMA) has been utilizing QuikSCAT/SeaWinds ocean surface wind data in the operational global 3D-Var data assimilation system since May 2003. Observation system experiments (OSEs) conducted with the global data assimilation system prior to the implementation showed remarkable improvements in typhoon track forecasts.

The QuikSCAT satellite, which carries a scatterometer called SeaWinds, was launched by the US NASA in June 1999. The scan range of QuikSCAT/SeaWinds is 3 times wider than that of European ERS2/AMI and the data obtained by QuikSCAT/SeaWinds was expected to give large impacts on numerical weather predictions.

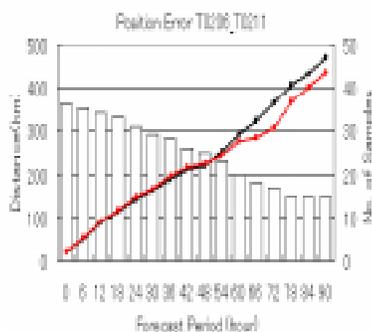
The OSEs were conducted with and without SeaWinds data for two months in July 2002 and December 2001. SeaWinds data were assimilated every six hours. Positive impacts of the SeaWinds data were recognized in the standard forecast scores (RMSEs of 500 hPa geopotential height and sea level pressure) in the northern hemisphere. However, the impacts were neutral and slightly negative after four days forecast in the southern hemisphere.

Shown in Fig. 1, the example of typhoon track forecasts for T0207 (HALONG) by the JMA global model from 12 UTC 10 July 2002 with and without SeaWinds data as compared to the best tracks. By using SeaWinds data, the position error of forecasted typhoon track is reduced by as much as 100km.



The results of forecast tracks of typhoon T0207 (HALONG). Initial time is 12 UTC 10 July 2002. Black line: the best track, gray line: without Sea Winds data and red line: with Sea Winds data.

Fig. 2 shows the mean position error of typhoon track forecasts with and without SeaWinds data in 36 cases for six tropical cyclones during July 2002. The position error is significantly reduced after 66 hour forecast.



The mean position distance error of forecasted track of typhoons in July 2002. Black line: without Seawinds data, red line: with SeaWinds data and bar: number of samples.

In addition to the QuikSCAT/SeaWinds data, JMA is planning to use ADEOS-II/SeaWinds data in order to extend the data coverage in the near future.

Flood days of the 3rd WWF

Flood Days of the 3rd World Water Forum, a 2-day event with 10 parallel sessions, was held at the Kyoto International Conference Hall, on 18-19 March 2003,

attended by experts in various fields of space and earth sciences. The opening plenary was graced by Dr. Askew, former chief of WMO Hydrology and Water Resources Department, and Prof. G.O.P. Obasi, Secretary General of WMO.

Roman L. Kintanar, coordinator of TCS, and Liu Jinping, vice-chairman of the Working Group of the Typhoon Committee hydrological component, represented TC in one of the sessions of Flood Days aimed at increasing TC's visibility in the fields of water resources and disaster reduction.

In the flood mitigation session of Flood Days, Kintanar spoke on the history of TC and the continuing commitment on flood mitigation through regional cooperation among TC members under its hydrological component. Liu talked on the flood hazard mapping project, its role and objectives in flood mitigation in the region.

In the International Flood Network (IFNet) session of Flood Days, Junji Miwa, chairman of WG of TC Hydrological Component, presented a paper on the Global Flood Alert System of Japan. Ryosuke Kikuchi, director general of the Japan Water in Rivers Secretariat, introduced the concept of IFNet and its importance as a conduit for the interaction between organizations, research institutes, GOs and NGOs in flood mitigation.

Finally, the outcome of the individual sessions, particularly, key issues identified from the discussions, were presented to the delegates during the wrap-up session of Flood Days.

Meeting of WG on hydrology in Kyoto

The Working Group (WG) on hydrological component, composed of Japan, China, Malaysia, Republic of Korea and Thailand, held a meeting in Kyoto, Japan, on 20 March 2003. The meeting, organized by ESCAP and TCS, in cooperation with the Infrastructure Development Institute (IDI) of Japan, was attended by the members' representatives, headed by Junji Miwa, chairman of the WG, together with experts from ESCAP and TCS. Discussions included the program of activities for the implementation of RCPIP, and the provisional schedule and preparatory activities for the workshop on implementation of the hydrological component of the new RCPIP set in Beijing in September 2003.



Working Group on Hydrology meeting.

The participants gave an assessment on the progress of their national activities on the implementation of RCPIP. They were requested to identify their goals and inform ESCAP on this matter. ESCAP would circulate a questionnaire on RCPIP to all the members before the Beijing workshop to know the readiness of each member to implement the plan.

The meeting also pushed for members participating in the workshop to discuss in detail their experiences on their respective activities; summarize their procedures on how to conduct the project at the regional level, including the project's time frame; and to discuss the responses from other participating countries.

On the agenda and preparatory activities for the workshop, the meeting agreed that the project on flood hazard mapping would be tackled on day one, while day 2 would cover the project on sediment disaster forecasting and warning system.



New typhoon model developed

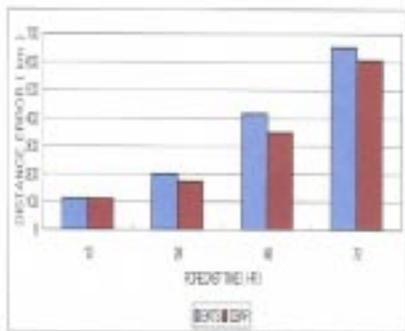
The Korea Meteorological Administration (KMA) has implemented the new Double Fourier Series BARotropic typhoon model (DBAR) jointly developed by the Pukyong National University and Kongju National University in 2002. The DBAR consisted of two major parts- dynamic framework and vortex utilization.

The dynamic framework of DBAR is a global spectral frame employing the 'Double Fourier' series as a spectral transform method. For the algorithm of vortex initialization in DBAR, the bogus

technique developed by the Geophysical Fluid Dynamics Laboratory is employed in the analyzed vortex obtained from the Global Data Assimilation and Prediction System (GDAPS) at KMA. DBAR produces 72-hour track predictions of typhoons over the northwestern Pacific at 00, 06, 12, and 18 UTC.



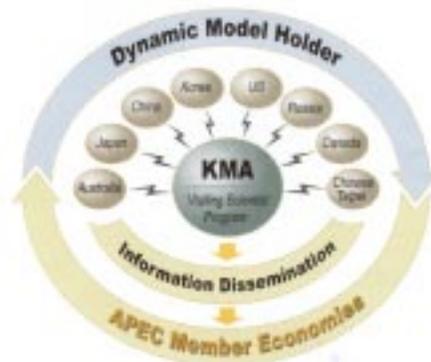
An example of a 72-hour track prediction of DBAR is given for the typhoon "RUSA" initiated at 00 UTC August 29, 2002. The solid line with typhoon symbols indicates observed typhoon locations obtained from the Regional Specialized Meteorological Centre in Tokyo every 6 hours. The green, blue and brown lines indicate GDAPS, Regional Data Assimilation and Prediction System (RDAPS), BATS, and DBAR, respectively.



The graph shows the typhoon track prediction errors (km) of DBAR and BATS in 2002. The DBAR shows better results than BATS in the track prediction of typhoons. Distance errors of DBAR are 110 km, 173, 173 km, 348 km, and 606 km for 12, 24, 48, and 72 forecasting hours, respectively.

Compared to the framework and vortex initializations of the currently operational typhoon model at KMA, the Barotropic Adaptive-grid Typhoon Simulation model (BATS), those of DBAR are more realistic. DBAR shows better results than BATS in the track predictions of typhoons occurring in 2002 at all forecasting times.

KMA will conduct a trial run of DBAR with BATS in 2003 to confirm if DBAR can show better results in operation than BATS.



APCN Multi-model Ensemble System

APCN project

The APEC Climate Network (APCN) project is aimed at reducing natural disasters and developing a regional economy through the exchange of climate information among neighboring countries. In line with this, an annual APCN Working Group Meeting and APCN Steering Committee Meeting have been organized.

The 2nd APCN Working Group Meeting was held at the KMA headquarters, on 11-13 June 2002, in conjunction with the 1st APCN Steering Committee Meeting. There were 38 participants from 23 institutes in 14 APEC Member countries. The APCN Working Group discussed various matters, including initial plans and parameters for the development and dissemination of experimental near real-time seasonal forecasts. It agreed on research program in multi-model ensemble seasonal prediction.

The APCN Secretariat, which opened on the 7th floor of the KMA headquarters in January 2003, is responsible for the processing of dynamic ensemble data and making it available to the participating members through the provision of access to the APCN website (<http://www.apcn21.net>).

The APEC Secretariat approved the APEC Central Fund to support an international symposium on the APCN project at the APEC ministerial meeting (October 2002, Singapore). "The APCN Symposium on Multi-Model Ensemble for Climate Prediction" is scheduled to be held on 7-10 October 2003 in Jeju Island, Korea.

The objective of the APCN Symposium is to derive suggestions for the future direction of research development for better SI forecasts underscoring the limitations of the current state-of-the-art climate dynamic prediction system, optimum way of constructing MMES, and other

essential science issues relevant to climate information services. The APCN Symposium, which is co-sponsored by WMO, will be held jointly with the APCN Steering Committee and Working Group meetings.

NCIO established

The basis for reducing uncertainties in predicting mesoscale severe weather systems needs intensive observation. Thus, the Meteorological Research Institute (METRI) of KMA has conducted the KEOP (Korea Enhanced Observing Period) project since 2001.



Arrangement of meteorological instruments installed at the National Center for Intensive Observation of Severe Weathers.

As part of KEOP, the National Center for Intensive Observation of Severe Weathers (NCIO) was established at the Haenam Weather Observatory (34°33N, 126°35E). It is located in the southwestern part of Korea where heavy rainfall is mainly caused by typhoons approaching the Korean peninsula and a mesoscale convective system developing along the Changma front during the rainy season.

The main objective of NCIO is to identify the structure, genesis and development mechanism of such mesoscale severe weather systems in Korea based on high-resolution temporal and spatial data from intensive field-based observation. The present high-tech meteorological equipment at NCIO are Autosonde, 1.3 GHz wind profiler, micro rain radar, optical rain gauge, and a 20m flux tower.

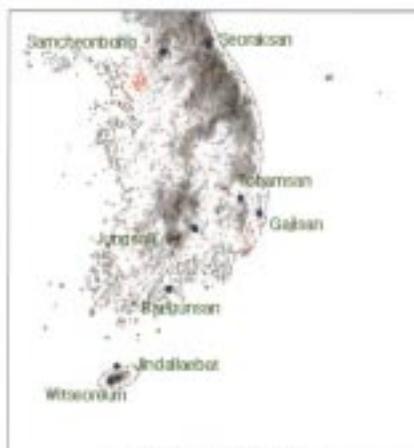
The NCIO was registered as the 6th CEOP (Coordinated Enhanced Observing Period) Reference Site. The opening ceremony was held at the Haenam Weather Observatory on 29 April 2003.

No	Meteorological Instrumentation	Observation Elements	Application	Installation Date
1	1.3GHz-WPR (Sumitomo, Japan)	Wind direction, Wind speed	Producing one-minute profiles of vertical and horizontal wind	December 2002
2	Autosonde (Vaisala, Finland)	Pressure, Temperature, Relative humidity, Wind	Producing three-hourly upper-air observation data	January 2002
3	Micro Rain Radar (Met-Tech, Germany)	Reflectivity, Rain rate, Liquid water content(LWC), Drop size distribution	Producing vertical profiles of rain rate, LWC and drop size distribution	May 2002
4	Optical Rain Gauge (STCI, USA)	Rain rate	Producing information to distinguish between rain and snow and precipitation intensity	May 2002
5	20m Flux Tower (ADTEC, Korea)	Net radiation, Wind, CO ₂ and H ₂ O concentration, Soil temp.	Producing sensible, latent, radiative fluxes over the land surface	July 2002
6	X-Band Doppler Weather Radar (EEC, USA)	Reflectivity, Radial velocity, G-DR(Differential reflectivity)	Producing reflectivity and wind data	November 2002

Meteorological instruments installed at the National Center for Intensive Observation of Severe Weathers.

Installation of AWS for weather monitoring of mountainous areas

In 2002, the KMA designed eight new AWSs employing new wind sensors, solar electric power systems, and satellite telecommunications for monitoring extreme



Map of the new AWS network



Wisoreum site

environments such as high-altitude mountainous areas.

In general, KMA AWSs can detect temperature, wind speed, wind direction, precipitation, and precipitation detection in 10-minute intervals. KMA has introduced ultrasonic wind sensors from the Vaisala WAS425 in eight sites. It has no moving parts (e.g. cup and vane) and is resistant to contamination and corrosion.

In addition, the AWSs can eliminate on-demand and periodic maintenance requirements while improving the accuracy and reliability of data in almost all wind conditions and in all climates. The system will be applied to the real-time unmanned weather monitoring system in the future.

Roving seminar, workshop moved

The roving seminar on interpretation of typhoon forecasts and analysis, originally set in Seoul in May, has been rescheduled on 20-21 October 2003, the organizing local committee announced.

Woo-Jin Lee, chairman of the Typhoon Research Coordination Group (TRCG), said the decision was prompted by the outbreak of the Severe Acute Respiratory Syndrome (SARS) in Asia which severely affected two of the participating members, namely, China and Hong Kong.

The Seoul roving seminar, which is intended to strengthen the exchange of knowledge and expertise on typhoon forecasting centered on the utilization of typhoon information from RSMC Tokyo, is one of three roving seminars lined up under the visiting lecturer program of TRCG.

In a related development, the Second Workshop on South China Sea Storm Surge, Wave, and Ocean Circulation Forecasting, organized by TCP and JCOMM (Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology, also fell victim to the SARS scare as it was moved from 7-11 July to 15-19 September 2003 in Kuantan, Malaysia.

The workshop aims to familiarize participants with the Production Line (PL) of operational forecasting. The PL is a chain of elements coming from field observation, via data collection, acquisition of forcing fields and initial/boundary conditions, numerical model forecasting, forecast validation and final dissemination to users. It is designed to hold a hands-on exercise of numerical forecasting using a set of different cyclone forcing field and a set of wave/storm surge forecasting models.



Meeting of TC's IWG on RCPIP slated

A meeting of the Typhoon Committee's Interim Working Group (IWG) on the Regional Cooperation Programme Implementation Plan (RCPIP) will be held on 16-18 September 2003 in Tokyo, Japan at the very kind invitation of the Japanese Government and the Japan Meteorological Agency (JMA). The core members of the IWG on RCPIP are: Jim Weyman (USA), Chairperson; Tian Cuiying (China), Focal Point for Meteorology; Junji Miwa (Japan), Chairperson, Working Group on Hydrology; Surapol Pongtadsirikul (Thailand), Focal Point for DPP; Jean Galang (Philippines), Focal Point for Training; Woo-Jin Lee (Republic of Korea), Chairperson, TRCG; and Nobutaka Mannoji (Japan), Director, RSMC Tokyo.

The Typhoon Committee's Thirty-fifth Session Report (Appendix XVIII), provided the Terms of Reference of IWG on the RCPIP. As part of these Terms of Reference, the TC asked the IWG to deliver the following items at the thirty-sixth session:

- ◆ A document on options and proposals on changes to the

methodology and implementation of new technologies which may lead to efficiencies of the Typhoon Committee, Typhoon Committee Secretariat (TCS) and TCS Coordinator.

- ◆ A document on overall options for the framework of priorities for activities the TC.
- ◆ A document on options for reporting formats for the five components of the RCPIP for the TC together with the mechanisms aimed at improving the implementation of the RCPIP.
- ◆ A document on options for collaborative activities among the five components of the RCPIP and priority options.
- ◆ A document, which describes the actions taken by the Interim Working Group on the RCPIP to assist in mobilizing resources to achieve the goals and objectives, as determined by the TC at its thirty-fifth session.

RSMC Honolulu expects below average Central Pacific hurricane season

In May 2003, hurricane experts from RSMC Honolulu, USA National Weather Service (NWS), forecasted below normal hurricane activity within the Central Pacific during the 2003 hurricane season.

James Weyman, director of RSMC Honolulu, said the 2002 moderate El Nino episode was nearly dissipated. The outlook from USA NWS's Climate Prediction Center indicated a cold event (La Nina) was much more likely to occur in sea surface temperatures in the tropical areas of the Pacific Ocean by summer. This along with several other factors contributed to the forecast of below average number of tropical cyclones to affect the Central Pacific.

RSMC Honolulu also announced that they would provide a 96-hour and a 120-hour tropical cyclone position and intensity forecast as part of their routine forecasts/advisories for the 2003 season. This was done in response to customers' requirements and the increase in hurricane forecasting accuracy in the last 10 years.

Hurricane preparedness in Hawaii

The RSMC Honolulu personnel conducted extensive hurricane preparedness activities in Hawaii prior to the start of the Central Pacific hurricane season which extends from June 1 to November 30.

◆ May 9-16, 2003, RSMC Honolulu and the State of Hawaii Civil Defense Agency (disaster preparedness/emergency management agency) held their annual Makani Pahili (Hawaiian for "strong wind") statewide hurricane exercise. All county civil defense agencies, state departments, and US Department of Defense service branches participated in this realistic exercise.

◆ In the exercise scenario, a hurricane south of the Hawaiian Islands recurves and strikes Maui County causing extensive damage. The various agencies exercise the wide range of decisions required during this type of disaster, such as evacuation, closing schools and government offices, pre-positioning equipment and supplies, and the many decisions required after the disaster has occurred.

◆ On May 19-23, 2003, RSMC Honolulu held a press conference to kick off the USA and State of Hawaii National Hurricane Awareness Week. Personnel from the American Red Cross, Hawaii State Civil Defense, and Oahu Civil Defense participated as partners in the press conference.

◆ The press conference was given extensive local television, radio, and newspaper coverage. Given the below average forecast for the upcoming central Pacific, RSMC Honolulu made the theme of the press conference, "It Only Takes One - Are You Prepared?" to emphasize that it could be a below average year but if one hurricane hits the Hawaiian Islands, the results could be devastating.

◆ During the end of May and the beginning of June 2003, RSMC Honolulu personnel provided briefings on hurricane preparedness and awareness to all four counties in Hawaii. These were hosted by the county Civil Defense Administrators and attended by representatives of the various county, state, and federal agencies in the county.

First phase of meteorologist training for Pacific Region Weather Service Offices nears completion

The National Weather Service (NWS) Pacific Region program which aims to educate and train meteorologists for the Weather Service Offices (WSO) in the Republic of Palau, Federated States of Micronesia and the Republic of the Marshall Islands (RMI) is reaching a milestone. Currently, there are Meteorologists-in-Charge (MIC) at the WSOs at Palau, Yap, Chuuk and Pohnpei.

Reginald White, who completed his meteorology degree at the University of Hawaii, arrived at NWSFO (WFO) Guam. After successfully completing six months of intern training in Guam, he will return to Majuro in the RMI for on-the-job training before becoming their first MIC. At that time, the five Micronesian WSOs will all have MICs.

Meteorology Courses

Tom Yoshida, a former MIC for the Guam office, conducted a Basic Meteorology Course and Refresher Tropical Meteorology courses at the WFO Guam in April. Personnel from WSO Koror, Chuuk, Yap, Pohnpei and Majuro attended.

Tropical cyclone preparedness workshops

The Warning Coordination Meteorology from the WFO Guam held tropical cyclone preparedness workshops for the Micronesian WSOs, local Emergency Managers, and other government agencies at Chuuk, Pohnpei and Kosrae, Federated States of Micronesia, Majuro, Republic of the Marshall Islands, and Saipan and Tinian in the Commonwealth of the Northern Mariana Islands.

These workshops aim to provide attendees with an overview of the WFO Guam tropical cyclone program and the basics of tropical cyclones, while addressing the issues of closer coordination, changes in tropical cyclone support and new products.

