

THE ESCAP/WMO

# Typhoon Committee

## NEWSLETTER

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**TC NEWSLETTER** is a publication of the Typhoon Committee Secretariat, Manila, Philippines. The expressed opinions, scientific or otherwise, do not necessarily reflect those of the Committee. The Editor reserves the right to edit and will exert every effort to publish articles received. TC Members are enjoined to send their contributions. Articles must be of relevance to TC activities and should not exceed 1,500 words.

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## Typhoon Committee marks 25th Year in Zhuhai, China



Participants at the 25th Session of the Typhoon Committee, Zhuhai, China, December 1992.

More than 50 international delegates convened at the 25th Session of the ESCAP/WMO Typhoon Committee in Zhuhai, China, from 8 to 14 December 1992, with a renewed resolve to advance further development in typhoon forecasting and mitigation of natural calamities.

The 25th Session, hosted by the Government of China and co-organized by ESCAP, WMO and TCS, was attended by ten members of the Typhoon Committee, including newly admitted Macau and the Democratic People's Republic of Korea. Also in attendance were the observers from Indonesia, USA, the International Civil Aviation Organization (ICAO), International Federation of Red Cross and Red Crescent Societies (IFRC) and the Commission for Atmospheric Sciences (CAS).

In his opening remarks, Mr. Zou Jingmeng, Administrator of the State Meteorological Administration (SMA), drew attention to the progress made by the Typhoon Committee since its estab-

lishment in 1968, with the guidance of ESCAP and WMO, in organizing, implementing and coordinating various meteorological and hydrological activities in the region. He cited the contributions made by the Committee in achieving the goals of IDNDR as cited likewise by all the relevant bodies of the United Nations.

For his part, Mr. Liang Guangda, Mayor of Zhuhai City, acknowledged the relevant tasks of meteorologists and hydrologists in disaster prevention as indispensable to the economic progress of their city. The Province of Guangdong, he said, is affected by about 70% of all the tropical cyclones which cross China. For this reason, he emphasized the importance of the Typhoon Committee and the support and cooperation of SMA, the Ministry of Water Resources and various levels of the People's Government, for the provision of accurate weather and flood forecasts and warnings which helped

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reduce significantly damages to property and loss of lives.

In a message read, Mr. Cengiz Ertuna, ESCAP Representative, noted the satisfaction expressed by the ESCAP Commission at its 48th Session on the considerable progress attained by the Committee. In reviewing the activities of ESCAP in support of TC, the past year, the Executive Secretary informed TC that project documents had been drafted to solicit extra budgetary funds for other disaster reduction activities. He expressed assurance that ESCAP was doing the necessary steps to restore its manpower resources in order to equal its achievements in the field of disaster reduction during previous years and provide high level of substantive service to its members.

Addressing the session on behalf of the WMO Secretary-General, Dr. James Rasmussen noted the Committee's significant contributions to the over-all WMO Tropical Cyclone Programme (TCP). He cited the hard work exerted by Members on both national and regional levels toward improved forecasting and warning of typhoons and associated floods as well as the necessary prevention and preparedness activities as demonstrated in 1992's successful completion of the operational season.

Mr. YanHong, China Meteorological Administration Deputy Administrator, and Mr. P. Markandan, Malaysia Meteorological Service Director-General, were elected Chairman and Vice-Chairman, respectively, of the Session.

The Committee in session made careful assessments of its activities in 1992 under its Regional Cooperation Programme with the support of WMO, ESCAP and TCS. It noted with pleasure WMO's sustained active role in support of the International Decade for Natural Disaster Reduction IDNDR activities, citing in particular the Comprehensive Risk Assessment project aimed at promoting a comprehensive approach to risk assessment leading to an enhanced effectiveness of efforts to reduce death toll and damage resulting from disastrous floods, violent storms and killer quakes.

At the same time, the Session expressed satisfaction to the WMO Secretariat for the noticeable progress made in both the general and regional components of the Tropical Cyclone Programme (TCP) in relation to IDNDR since the Pattaya session. It noted the stepping-up of the implementation of the Global Guide on Tropical Cyclone Forecasting (TCP Project 16). The Guide, intended for tropical cyclone forecasters in all tropical cyclone regions and  
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(Top to bottom) Mayor L. Guangda of Zhuhai City welcomes delegates to the session which included representatives of new members Korea DPR and Macao.



basins, will be completed by September 1993 for submission to the 3rd WMO/ICSU International Workshop on Tropical Cyclones in Mexico, in November 1993.

On the other hand, it was noted that a project proposal submitted by WMO on the reduction of natural disasters related to typhoons, within the context of IDNDR, had not met the approval of UNDP. The Committee requested WMO to bring the proposal up again to UNDP to reassert the importance of said project to the members of the Committee.

The Committee also stressed the need to enhance and accelerate further regional and inter-regional cooperation as well as encourage stimulation of close collaboration among research scientists and operational tropical cyclone forecasters.

The Session saw the need for a consolidated telecommunication system to standardize and integrate some of its operational activities in serving its less-developed Members. It requested WMO and TCS with the cooperation of ESCAP to prepare a project document on this matter for discussion at the 26th TC session.

Also noted with interest were the activities of the RA IV Hurricane Committee, as presented to the Session by its Chairman, Dr. R.C. Sheets, specifically those related to a satellite-based regional telecommunication network system and deployment of Doppler radars in the Caribbean region.

The Committee was informed of the Third Technical Conference on SPECTRUM in Shanghai in October 1993, to be organized by China with the support of WMO and TCS. The conference will focus on the presentations concerning the Tropical Cyclone Recurvature and Unusual Motion based on the data of SPECTRUM-90 and TYPHOON-90 field experiments.

The Members were again urged to use the Management Overview of Flood Forecasting System (MOFFS) within the region. Members which operate flood forecasting systems were advised to designate a flood forecasting system to be monitored using the MOFFS rating system.

The Typhoon Committee's Regional Cooperation Programme Implementation Plan was reviewed and updated in consideration of the Committee's Programme for 1993 and beyond.

The 25th Session greeted with pleasure the newest members of the Typhoon Committee—Macau and the Democratic People's Republic of Korea. Macau and Malaysia expressed willingness to become host in future sessions. The 26th Session is slated late this year, in Manila, Philippines.

## MACAU Meteorological and Geophysical Service



Headquarters of the Macau Meteorological and Geophysical Service in Mont Fort.

Macau, a Portuguese Territory in the southeastern coast of China, was officially admitted as new member of the Typhoon Committee during its 25th Session in Zhuhai, China.

Meteorological service in Macau had its beginning in 1861 in a simple observation station near a hospital, with the observations made by a doctor. In 1881, Macau's Meteorological Service was established.

Located at Monte Fortress, the presently Macau Meteorological and Geophysical Service (MMGS) has a total of 70 staff members including 12 meteorologists and 2 geophysicists. It has an annual budget of US\$2.5 million, 25% of which allotted to development.

The MMGS' organizational structure is divided into two departments: the Meteorological and Geophysical Departments and three separate sectors: 1) Computer-Data-Processing-Archive and Management Sector 2) Maintenance Workshop and Technical Support Sector and 3) the Administrative Sector.

The Meteorological Department has four sectors namely: Weather Forecast Sector (WFS), Climatology and Observation Sector (COS), Air Quality Sector (AQS) and Information and Documentation Sector (IDS).

The WFS includes a 24-hour Weather Forecast and Telecommunication Center. The COS consists of Classic Surface, Telemetry, and Upper Air Observation Net-

work Stations. AQS is an observation network for daily TSP, RSP, SO<sub>2</sub>, BS, dust-fall, acid rain, etc., while IDS includes a library, meteorological training and technical publication workshop.

In 1985, the Air Quality Monitoring Project was developed to determine pollutants in the atmosphere at surface concentrations and study factors affecting air quality.

The Geophysical Department has a Geophysical and Seismological Sector that includes a geomagnetic cartography and seismological station located in remote Coloane Island which is linked to the main system in the Observatory of Macau.

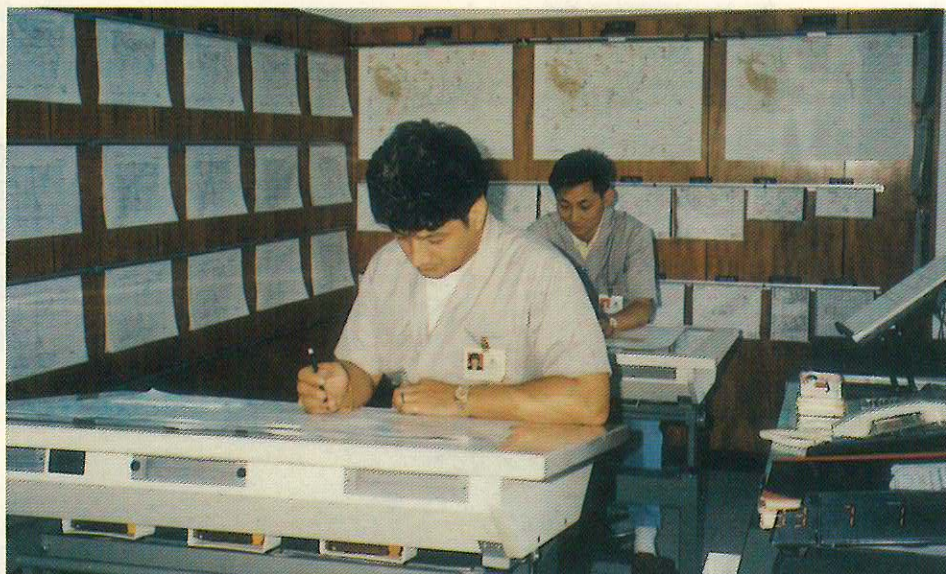
In January 1992, the Macau Meteorological Service was linked to the Guangdong Meteorological Bureau (GMB) of China's State Meteorological Administration on a 24-hour/9600 bps telecommunication circuit.

The Weather Forecast Center has for its facilities the following: basic meteorological data (GTS), automatic plotting charts, objective analysis system, meteorological processing data (GTS) from ECMWF model with a micromagic programme, a remote work station linked to the GMB-SMA computer center and a SDUS.

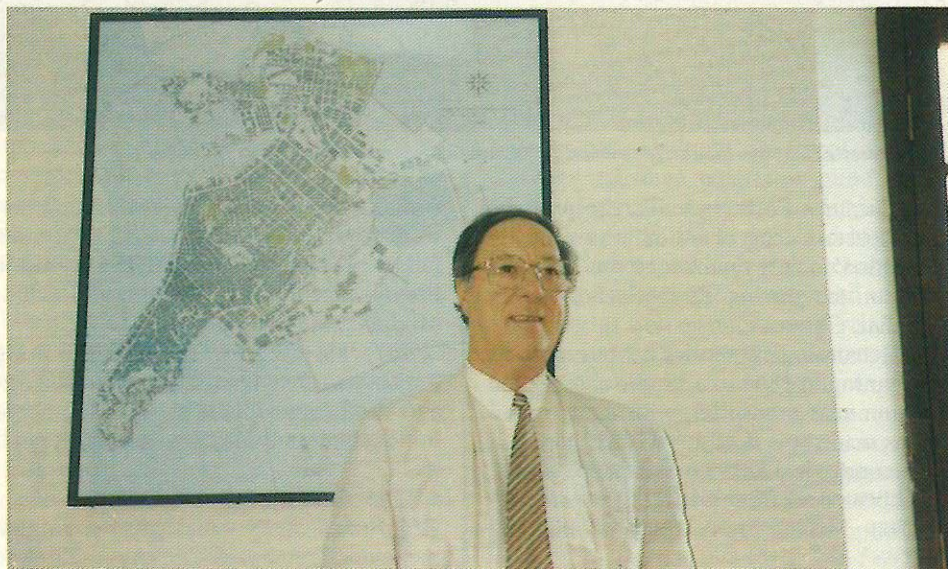
Fax and Teletype circuits are used to receive weather information from the Hong Kong Royal Observatory and Japan Meteorological Agency.

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MMGS' Weather Forecast Center.



Mr. Costa Malheiro, Director of MMGS.

Mr. Antonio Pedro F. Da Costa Malheiro serves as Director of the Macau Meteorological and Geophysical Service since March 1991.

Mr. Costa Malheiro, 60, graduated in Geophysics from Lisbon University. He also attended postgraduate courses in weather forecast, hydrometeorology and tropical meteorology.

Mr. Costa Malheiro also serves as Principal Adviser of "Instituto de Meteorologia de Portugal" (I.M.P.) and Head of the Weather Forecast Department (I.M.P.).

From 1967 to 1972, Mr. Costa Malheiro was a WMO international expert and instructor of meteorological course (WMO-Class I) at the University of Rio de Janeiro. He was in-charge of the Meteorological Training Department (I.M.P.) from 1972 to 1982.

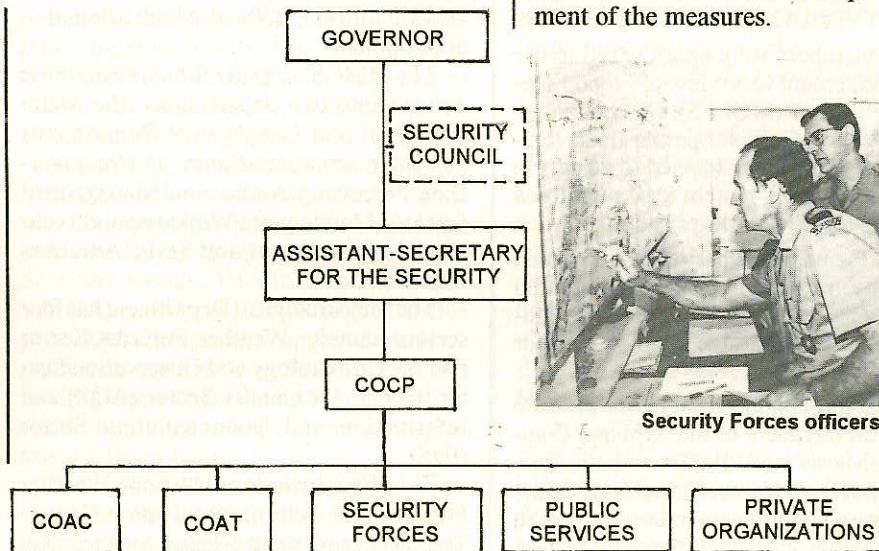
## Disaster Prevention Service in the Territory of Macau

The Civil Protection in Macau is regarded as the Disaster Prevention Service in the Territory, an activity developed by the Public Administration of the Territory and by the citizenry with the purpose of preventing collective risks inherent to the occurrence of serious accident, catastrophe or calamity, attenuating its effects and giving aid to persons in danger.

It is due to the Governor of the Territory the definition of the general lines of the policy of Civil Protection, as well as its execution, being delegated some of its functions to the Assistant-Secretary for the Security (ASS).

When a serious accident, catastrophe or calamity occurs or is in danger of occurring, the operations of Civil Protection are carried out according with the programmes and the plans, previously elaborated and approved, to put in action to the effect, all the structure of Civil Protection that conglombates a Center of Operations of Civil Protection (COCP), two Centers of Operations of Area, in the islands of Taipa (COAT) and Coloane (COAC), the Security Forces (Maritime and Customs Police, Public Security Police, Corps of Firemen and the Direction of Services of the Security Forces) and twenty-two more entities between Public and Private Services.

The COCP holds the responsibility to ensure the control of the operations of Civil Protection directly in the Peninsula of Macau and through the Center of Operations of Area in the islands, with view to give unity of the command of actions, to develop the technical and operational coordination of the means and adopt the adjustment of the measures.



Security Forces officers at COCP.



## ESCAP/WMO Typhoon Committee Natural Disaster Prevention Award China's Meteorological Center and Flood Control Headquarters chosen 1992 Winners



Two national agencies of the People's Republic of China (PROC) were the recipients of the 1992 ESCAP/WMO Typhoon Committee Natural Disaster Prevention Award in recognition of their outstanding contributions in furtherance of the objectives of the Typhoon Committee.

Awarded the TC Prize during the opening ceremonies of the 25th Typhoon Committee Session, in Zhuhai, China, were the State Flood Control and Drought Prevention Headquarters and the Chinese National Meteorological Center.

The Office of the State Flood Control and Drought Prevention Headquarters was cited for its important role in hydrological forecasting and flood control.

Since its establishment in China, 43 years ago, it has consistently undertaken activities toward improving its flood forecasting system and flood control services. It has also been actively involved in making serious efforts designed to strengthen their people's awareness in natural disaster prevention and preparedness.

The Headquarters is responsible in the planning and establishment of vital hydrological stations; the setting-up, control and operation of telemetering systems; and the formulation of measures and schemes for flood control in 7 major rivers in China.

The Chinese National Meteorological Center of the State Meteorological Administration (SMA) is highly regarded for its invaluable service as the center of meteorological operations and services in the PROC.

The Center provides highly-precise weather forecasts and typhoon warnings and other meteorological services. It strives for continued improvement of its operational system in line with its modernization program aimed towards upgrading its typhoon forecasting capabilities. It takes a leading role in the promotion of public awareness in typhoon disaster prevention and preparedness through its timely weather information.

The annual ESCAP/WMO Typhoon Committee Natural Disaster Prevention Award recognizes achievements of individual or organization which help promote disaster prevention and preparedness and strengthen people's awareness of natural calamities. Winners are chosen from the member country which is hosting the session.



Dr. Roman L. Kintanar, TCS Coordinator, poses with the representatives of the Office of the State Flood Control and Drought Prevention Headquarters (top) and the Chinese National Meteorological Center (above).



## Seminar on Tropical Cyclone Forecasting and Research in Nanjing

As committed by the Chinese officials at the First Joint Session of the Panel on Tropical Cyclones and the Typhoon Committee, in Pattaya, Thailand and the Technical Conference on SPECTRUM, in Guangzhou, China, the Seminar on Tropical Cyclone Forecasting and Research was held from 27 October to 7 November 1992, in Nanjing, China.

The Seminar, co-organized by WMO, was attended by some 54 participants from 13 East-Southeast Asian countries. Among the notable guests were Mr. Tyrone Sutherland, WMO Representative, who took charge of the seminar orientation and Prof. William M. Gray, Tropical Cyclone Specialist, USA, who was invited as lecturer.

Prof. Chen Lianshou, Chairman of the Seminar, opened the Seminar and spoke on the vital importance of forecasting and research in disaster prevention and preparedness.

Mr. Sutherland, in his message, also attached great importance to tropical cyclone forecasting and research in light of the International Decade for Natural Disaster Reduction. He cited China's sustained efforts and high-level involvement in WMO programmes including those related to tropical cyclones.

Prof. Tu Qipu, President of the Nanjing Institute of Meteorology, expressed hope that friendly relations among participants would develop during the formal discussions and academic exchange.

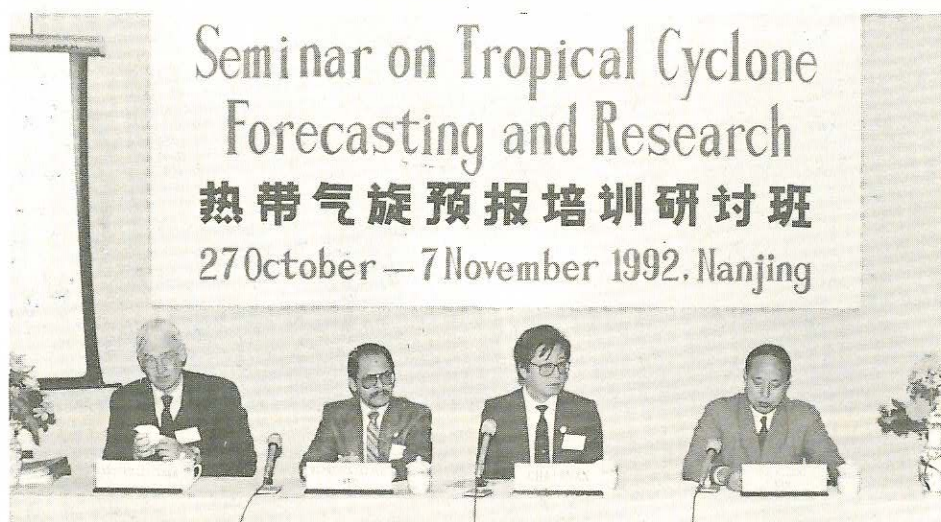
The Seminar consisted of two parts or phases: training courses on tropical cyclone forecasting and the SPECTRUM 90 research workshop.

The training courses included the following:

- State-of-the-Art of Research and Prediction of Tropical Cyclone Motion
  - CLIPER Model for Tropical Cyclone Motion Forecasting
  - Synoptic and Dynamic-Statistical Model for Tropical Cyclone Motion Forecasting
  - Numerical Prediction Model for Tropical Cyclone Motion and Its Structure
  - Empirical Diagnosis of Tropical Cyclone Motion
  - Tropical Cyclone Positioning
  - Evaluation of the Objective Forecasting Methods
  - Methods of Tropical Cyclone Rainfall Forecasting
  - Intensity and Intensity Change of Tropical Cyclone
  - Storm Surge Analysis and Forecasting
- The research workshop on SPECTRUM-



Participants gather in front of the Nanjing Institute of Meteorology.



Prof. Tu Qipu (right), President of NIM, reads welcome speech. With him are (from left to right) Prof. W. Gray (lecturer, USA), T. Sutherland (WMO representative) and Prof. Chen Lianshou (Chairman).

90 covered the following:

- Introduction to SPECTRUM Research Programme
  - SPECTRUM Data Analysis and Processing
  - Target Tropical Cyclone Motion and Environmental Steering flow
  - Impact of Asymmetric Structure on Tropical Cyclone Motion
  - Case Study on Target Cyclone Yancy
  - Primary Study Problems and Thoughts on the Recurring and Unusual Movement of Tropical Cyclone
  - Numerical Study and Simulation on Target Tropical Cyclones
  - Impact of Topography on Tropical Cyclone Motion and Intensity
- The major points reached at the end of

the seminar were:

- improvement of forecast capability on TC motion through increased data for running objective and subjective forecast models;
- general acceptance of empirical tools for forecasting TC with usual motion and numerical models in predicting unusual TC motion;
- more importance should be given to the role asymmetric structure plays on TC motion due to interaction between the environmental flow and TC structure;
- general consensus that the combination of subjective empirical methods and objective aids as the most effective operational forecasting techniques on TC motion and intensity.



## Seminar on Hazardous Weather



(From left to right) Directors Xie Guo Tao, Costa Malheiro and Patrick Sham at the 7th Seminar on Hazardous Weather.

The Seventh Seminar on Hazardous Weather between Macau, Hong Kong and Guangdong, China, was held for the first time in Macau, in December 1992.

The meteorological seminar, organized by the Macau Meteorological and Geophysical Service (MMGS) was participated in by the Directors and Meteorologists from the Royal Observatory of Hong Kong, Guangdong Meteorological Bureau and MMGS.

The seminar which was considered a big success, gave the participants good opportunity to share and discuss their valuable experience gained through direct observation of dangerous weather conditions in their areas and to permit in the future, through their contributions, further scientific improvement in this field.

## Seminar on Sabo River, Dam, Coastal Works and Flood Forecasting

A Seminar on Sabo River, Dam, Coastal Works and Flood Forecasting was held from 1 to 25 March 1993, at the PAGASA Weather and Flood Forecasting Center (WFFC), formerly Data Information Center (DIC) and the Department of Public Works and Highways (DPWH), conducted by the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) and the Japan International Cooperation Agency (JICA).

The Seminar, a yearly PAGASA-JICA joint understanding, was attended by some

60 participants from several government agencies involved in river, dam, coastal works and flood forecasting services. It was complemented and lectured by Japanese and Filipino experts from PAGASA, DPWH and JICA.

With the Philippines lagging behind in terms of the great strides made by industrialized nations in river, dam and coastal engineering technologies, it is hoped that the seminar could help bring it at par with the highly developed countries.

The seminar included topics on the state of flood forecasting and warning system, flood prevention, and watershed management in the country.

Midway in the seminar, all the participants were treated to a three-day field trip to several provinces in the north for actual on-the-spot demonstrations in on-going river, dam and coastal works projects.

## 16th Meeting of the ASEAN Sub-Committee on Meteorology and Geophysics

The 16th Meeting of the ASEAN Sub-Committee on Meteorology and Geophysics was held in Manila and Corregidor Island, Philippines, from 19 to 23 July 1993.

The meteorological and geophysical meeting, attended by participants from ASEAN countries and representatives from WMO and EC, featured a meteorological, climatological, geophysical and International Decade for Natural Disaster Prevention Reduction (IDNDR) programme agenda.

Topics covered under the meteorological programme were marine meteorology, weather modification and ASEAN Specialized Meteorological Center. The climatological programme included assessment of solar energy and daylight resources, Tropical Urban Climate Experiment (TRUCE), monsoon climatology, climate issues, CLICOM in the ASEAN and regional rain acidification studies.

Seismology and volcanology and the ASEAN-EC Project entitled "Plate Motions and Crustal Deformations Deduced from Space Geodetic Measurement for the Assessment of Related Natural Hazards in Southeast Asia" were tackled under the geophysical programme. The IDNDR Programme took up the disaster profile within the ASEAN and the Drought Early Warning Network.

## KMA Strengthens Supercomputer Power

The Korea Meteorological Administration (KMA) is currently operating three limited area models namely the Far-east Limited Area Model (F-LAM), Korea Limited Area Model (K-LAM), and Ocean Forecast Model (OFM).

The F-LAM has 61x46 81km horizontal grid with 16 sigma layers, integrated up to 48 hours with JMA/GSM forecasts for first guess and boundaries. The high resolution version, K-LAM, has 59x59 40km grid with 16 vertical layers for 48-hour forecasts. The OFM calculates ocean surface wave heights from F-LAM wind forecasts.

In addition, a Typhoon Model (TYM), installed through KMA/JMA bilateral cooperation, is being tested for typhoon-track forecast this year to be modified to KMA version for operation in 1994.

The KMA has been sharing a supercomputer, CRAY 2S, with the System Engineering Research Institute (SERI) of the Korea Institute of Science and Technology in operating its numerical weather prediction models. A 56kbps direct line is linked between KMA and SERI. A new supercomputer, CRAY Y-MP C90/16512, contracted by SERI in March, will start operation in November replacing CRAY 2S. This new high-speed supercomputer CRAY, with its 16 CPU, 16 GFlops performance, 512 Mbytes memory and 200 Gbytes disk space, is ten times faster than CRAY 2S.

Preparing for the new CRAY Y-MP C90/16512, the KMA sees an improved room and better opportunity for developing larger domain, high horizontal and vertical resolution numerical model, to enhance its numerical weather prediction capability.

## WMD '93 observed in PAGASA

In observance of World Meteorological Day '93 on 23rd of March, the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), held a day-long activities on the importance of the celebration at the Weather and Flood Forecasting Center (WFFC).

Dr. Roman L. Kintanar, Director of PAGASA, delivered the keynote address before attending local officials and council members in the morning opening ceremony.

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nies, followed by a briefing on weather and flood forecasting, open forum and facilities tour. A fun-filled sports competition was getting underway simultaneously.

In the afternoon, a symposium got going at the WFFC Conference Room. Topics included "PAGASA into the 21st Century", "Technology Transfer in the Flood Forecasting Branch", and "Meteorology and Technology Transfer-Packaging and Information".

The WMO Executive Council had chosen "Meteorology and the Transfer of Technology" as this year's theme for World Meteorological Day.

A general assembly at the Science Garden led by the Philippine Meteorological Society and awarding of the winning entries in the On-the-Spot Essay-Writing, capped the day's celebration.

## Earth Day celebration

April 22nd 1993 marked the 23rd Earth Day celebration and the Philippines joined the rest of the world in the observance with new promises to deal with environmental issues through better understanding of the limits of nature while in pursuit of development and progress.

Week-long activities on the significance of Earth Day were lined-up by the Department of Environment and Natural Resources (DENR) climaxing in an inter-agency rally.

Non-governmental organizations (NGOs) and government agencies, PAGASA, among them, marched to the gathering to dramatize citizen concern on problems of pollution, degradation of rivers and destruction of natural wealth through illegal logging and indiscriminate fishing.

Prior to Earth Day, an international conference on disasters response and development issues, organized by the Citizens' Disaster Response Center (CDRC), was held (March 28-30) at the Development Academy of the Philippines in Tagaytay City and attended by foreign technical experts and representatives from government and development agencies, media, NGOs and people's organizations engaged in disaster response.

Key issues tackled included the government's responses to disasters, NGO experiences in empowering communities against disasters and the role of donor agencies in disaster response.

The worldwide observance of Earth Day is in line with the over-all objectives of the UN declared International Decade for Natural Disaster Reduction (IDNDR).

# T C h a n g e s



Dr. Kozo Ninomiya

## Ninomiya — at the helm of JMA

Dr. Kozo Ninomiya has been designated as Director-General of the Japan Meteorological Agency (JMA) and Permanent Representative of Japan with WMO, effective 1 April 1993, taking over from Dr. Takashi Nitta.

Dr. Ninomiya, 58, holds a doctorate (PhD) and bachelor's degree (BSc) in Faculty of Science from the University of Tokyo.

A researcher and scientist, Dr. Ninomiya started at the Niigata Local Meteorological Observatory in 1958. He went on to become JMA director of a Technical Department, the Numerical Prediction Division, Niigata Meteorological Observatory and Tokyo Aviation Weather Service Center (1983-1990). He was Director-General at the Sapporo District Meteorological Observatory, Marine Department and Forecast Department (1990-1993), prior to his heading JMA.

A lecturer at the University of Tokyo, Dr. Ninomiya has written three books and countless papers in various aspects of meteorology. He won the Prize of Meteorological Society of Japan in 1969 and the Minister of Transport Prize in 1974. He is married to Sumiko Ninomiya and has three children, Akiko, Yoko and Reiko.

## Jon-Hon Bong tapped as head of KMA

Dr. Jon-Hon Bong succeeded Mr. Yong-Dai Park in March 1993 as Administrator of the Korea Meteorological Administra-



Dr. Jon-Hon Bong

tion (KMA).

Dr. Bong, 51, holds a doctorate (DSc) in Geophysics from the University of Paris VI in France.

A one time Instructor of Meteorology at the University of Pusan (1967-68), Dr. Bong was also an Oceanographic Researcher at National Fisheries Research & Development Agency (1967-69), Head of Marine Research Laboratory, Korea Ocean Science & Engineering Corp. (1969-74) and as Principal Research Scientist of Korea Ocean Research & Development Institute (1974-85).

Dr. Bong was also Researcher at Laboratoire de Physique et Chimie Marines, University of Paris VI (1980-84) while serving as President of the Korean Scientists and Engineers Association in France (1980-81).

In 1985, Dr. Bong became Director-General of Meteorological Research Institute, KMA. He held on to the position until his appointment as Administrator of KMA.

## Uthaisang succeeds Tumsaroach

Mr. Sombut Uthaisang was appointed Director-General of the Thailand Meteorological Department (TMD) in September 1992, succeeding Mr. Smith Tumsaroach.

Mr. Uthaisang, 56, has a master's degree in Business Administration from the National Institute of Development Administration and a bachelor's degree in Law from Thammasart University.

A virtual outsider in the meteorological service, Mr. Uthaisang started with the Ministry of Education (1959-1961). He

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Mr. Sombut Uthaisang

transferred at the Department of Land Transport (1961-1976), then at the Office of Permanent Secretary for Transport and Communications (1976-1988) where he served as Director, Administrator and Inspector-General.

Mr. Uthaisang also became Director-General at the Post and Telegraph Department from 1988 to 1992 before he took up his post at TMD. He is, presently, President of the Alumni of School of Business Administration and member of the Telecommunications Association of Thailand.

## Yanagiya leaves TCS



Mr. Yanagiya (second from left) with TCS staff at his farewell party.

Mr. Keigo Yanagiya bid goodbye to the Typhoon Committee Secretariat (TCS) after completing his two-year assignment as Hydrologist and Flood Forecasting Expert on 22 April 1993.

Perfectly respectable and hard-working, Mr. Yanagiya made important contributions and accomplishments to TC activities among which were:

- took charge on TC Pre-session Meetings of Hydrologists in Pattaya (February 1992) and Zhuhai (December

1992);

- organized the JICA co-sponsored Sabo, River, Dam, Coastal Works and Flood Forecasting Seminar (Manila, 1991 & 1992);
- proposed methods of improving flood forecasting and warning system and the adoption of the Manual and Guidelines for Comprehensive Flood Loss Prevention and Management in Member-countries; and
- initiated work on the project-document "Improvement of Reservoir Op-

eration System"

Mr. Yanagiya had been pursuing to revive the project-proposal on the installation of "Radar Raingauge System" in the Philippines as countermeasure against lahar flows and heavy floods in the provinces near Mt. Pinatubo in Central Luzon, until his departure from the Philippines.

A new assignment awaited Mr. Yanagiya with the Hokkaido Development Bureau in Sapporo, Japan. He had expressed his desire to thank all who had supported him during his assignment.

## Royal Observatory Hong Kong: The Facts

(condensed from Hong Kong Government Information Services Publication)

The Royal Observatory is a department of the government of Hong Kong. It operates weather forecasting, tropical cyclone warning and various other meteorological and geophysical services to meet the needs of the public, shipping, aviation, industry and engineering.

**HISTORY:** A century has elapsed since the establishment of the Hong Kong Observatory in 1883. The elegant rectangular two-storeyed brick building, located on top of previously known Mt. Elgin, was first proposed by the Royal Society in 1879. The first plan by Major H.S. Palmer in 1881 was considered too costly. A less elaborate design by Surveyor-General J.M. Price in 1882 was approved by the Secretary of States for the Colonies after referring to the Astronomer Royal. The building was com-

pleted the following year with Dr. Doberck and Mr. F.G. Figg appointed as Government Astronomer and First Assistant, respectively.

Early programme of operations included meteorological and magnetic observations, a time service based on astronomical observations and a tropical cyclone warning which commenced on 1 January 1884. Initially, tropical cyclone warnings were issued by firing a cannon situated at the Tsim Sha Tsui police station. The value of the department's services was soon recognized and in 1912 King George V granted the new title Royal Observatory, Hong Kong.

**THE OLD AND NEW BUILDING:** More than a hundred years on, the 1883  
(Turn to next page)



1883 Building



Building appears to be overwhelmed by the relentless pace of urbanization. Even within the original site, it is now dwarfed by a new neighboring block built in 1983, appropriately named the Centenary Building as a commemoration of the occasion.

With the completion of the Centenary Building, the technical and operational functions have since moved to the new block. The role of the Observatory has simply outgrown the best that the 1883 Building can offer. Nevertheless, the old building continues to house the offices of the directorate and serves as a center of administrative support.

In recognition of its historical value, the 1883 Building was declared a historical building under the Antiquities and Monuments Ordinance in 1983.

Now that the hub of activity has shifted to the new block, the 1883 Building resembles a grand old lady reclining in her late years and enjoying the fruits of her toil and strife. Restoration work was carried out in an attempt to recapture the building's former splendor. The timelessness of its classical appearance, blending perfectly with its environment, is a lasting testimony to the way it has steadfastly weathered the many years of searing heat and punishing rainstorms in its service to the community.

**TROPICAL CYCLONE WARNINGS:** The tropical cyclone warning service is an important function of the Royal Observatory. Warning bulletins with recommended precautionary actions are broadcast at frequent intervals to the public, shipping and aviation.

To provide the warning service, the Royal Observatory uses information collected from all available sources over a wide area including ships, weather buoys, aircraft, land stations, and weather satellites.

When the center of a well-developed tropical cyclone comes within about 500 kms of Hong Kong, it can be located and tracked continuously by the Royal Observatory's radar at Tate's Cairn.

**WEATHER SERVICES:** The Central Forecasting Office routinely issues local weather forecasts to the press, radio and television broadcasting stations and relevant government departments. To alert the public to hazardous weather conditions and related phenomena, the Office also issues warnings of fire danger, frost, thunderstorm, strong monsoon, landslip, flooding and storm surge. Specialized weather forecasts are prepared for utility companies, public transport operators, engineering contractors and offshore oil rigs. Forecasts of up to five days ahead are made to



Centenary Building

meet the needs of special users.

The Dial-a-Weather service which provides a weather bulletin in the form of a pre-recorded message entertains more than four million calls a year. A wide range of weather information is provided to commercial databases which are accessible by the public using telephones, telex and telefax machines as well as microcomputers.

Twenty-four hour marine weather forecasts are issued twice daily by the Central Forecasting Office for 17 maritime areas covering the China Seas and the western Pacific. These forecasts are broadcast by the coast station for reception by ships plying in the region. Weather information for south China coastal waters is also prepared and broadcast by local radio stations.

The Royal Observatory maintains close contact with a fleet of selected voluntary observing ships based in Hong Kong. Instruments and publications are supplied to these ships which transmit weather reports to the Royal Observatory.

A Royal Navy officer is attached to the Royal Observatory to liaise with the armed services. His prime function is to ensure the safety of Royal Navy ships in the China Seas and western Pacific. The Royal Observatory's Airport Meteorological Office provides information on upper winds, temperatures, significant weather systems and landing forecasts for destination airports to aid the planning and operations for flights leaving Hong Kong.

The office also maintains a continuous watch on the weather in the region and broadcasts warnings of any thunderstorms, icing, wind shear, severe turbulence or any

other hazards for aircraft coming to Hong Kong. Landing forecasts of weather conditions are prepared and broadcast.

**METEOROLOGICAL OBSERVATIONS:** Surface observations of various meteorological elements are made by trained observers at the Royal Observatory headquarters in Kai Tak Airport and King's Park. Automatic weather observing stations have been set up in 12 different locations with automatic wind measurements made at 4 places including the Star Ferry piers on both sides of the harbor. A solar-powered automatic weather observing station is also in operation at Huangmao Zhou in cooperation with the Guangdong Meteorological Bureau (GMB).

Regular upper-air soundings of wind, temperature, pressure and humidity up to about 30 kms are made at King's Park using balloon-borne instruments.

Radar pictures which enable forecasters to locate rain areas, estimate rainfall intensity and track tropical cyclones close to Hong Kong are transmitted by microwave link from Tate's Cairn to the Royal Observatory headquarters. The system is equipped with advanced data processing capability. Radar images from Hong Kong and Guangzhou are exchanged operationally in real time via an image exchange and display system developed jointly by the Royal Observatory and GMB.

A microwave receiving system enables high resolution pictures of cloud systems to be received from the Japanese Geostationary Meteorological Satellite.

**COMMUNICATIONS AND DATA**  
(turn to next page)



**PROCESSING:** Hong Kong is connected to meteorological centers in Tokyo, Bangkok and Beijing by point-to-point links. Everyday, about four million digits of incoming coded messages are extracted from the telecommunication circuits and decoded for further analysis.

The Royal Observatory operates three mini-computers which handle the data from the point-to-point links, the Aeronautical Fixed Telecommunication Network (AFTN) and remote automatic reporting stations in Hong Kong. Computers also plot charts, produce objective guidance material for forecasters, record the data on magnetic tapes for climatological and research purposes and disseminate local weather information and warning messages.

**RECORDS AND CLIMATOLOGICAL SERVICES:** Daily, monthly and annual summaries of weather observations are published for use in research and planning by overseas meteorological services and institutes as well as by local engineering and construction firms.

The Royal Observatory is designated by the World Meteorological Organization as the center for marine meteorological data for the South China Sea. Advice on marine climatological conditions is given to companies involved in petroleum prospecting and production drilling in off-shore waters.

**CLIMATE CHANGE:** The Royal Observatory participates in international programmes on the study of climate change, and conducts geophysical monitoring to collect the necessary data. An inter-departmental Coordination Group on Global Climate Change was formed in 1991 to monitor developments and advise Government on all aspects of climate change, their likely impact, and appropriate response strategies to them.

**APPLIED METEOROLOGY:** The Royal Observatory conducts a series of micrometeorological surveys to study sea and land breezes and assess the effect of terrain on wind flow. A numerical model has been developed and is used to simulate the air flow over the territory to provide the necessary information for investigating atmospheric dispersion, wind shear and other local phenomena.

**HYDROMETEOROLOGY:** The Royal Observatory maintains about 90 rain gauge stations which report daily or monthly rainfall. More than 40 years of rainfall data are recorded on magnetic tapes. Royal Observatory at remote sites complete a territory-wide network providing instant rainfall information to the Central Forecasting Office.

Information required for the development of water resources and the design of drainage systems is provided to engineers. Efforts are also devoted to the development of flood forecasting models.

**OCEANOGRAPHY:** Storm surge effects are studied by computer simulation of storm-driven currents from the open sea to the coastal waters. Such analyses give useful guidance to engineers in the design of optimal reclamation levels, and enable warnings to be issued for impending sea level rises when tropical cyclones approach Hong Kong. Tide-gauges monitor tide heights which are recorded and analyzed to determine the tidal constituents for the preparation of tide tables. Numerical models and an ultrasonic wave recorder are used to forecast wave and swell conditions in the South China Sea and in Hong Kong waters.

**TIME SERVICE:** Hong Kong's time standard is kept at the Royal Observatory and is based on a Caesium Beam Atomic Clock, the accuracy of which is maintained within fractions of a microsecond a day of the international time standard kept by the International Bureau of Weights and Measures in France. Time signals are broadcast by radio stations.

**SEISMOLOGY:** The Royal Observatory operates a network of three short-period seismometers to monitor earthquake activity in the vicinity of Hong Kong. Signals from the seismometers are transmitted through telephone lines to the Observatory and stored on magnetic disks. Locations of earthquakes are computed using a micro-processor-based system. The Observatory also operates long-period seismographs in addition to two strong motion accelerographs installed on geological sites to collect acceleration data which will be useful in structural design.

**ASTRONOMY:** Astronomical computations are made and the results published annually in the Royal Observatory Almanac. The department also issues press releases on significant astronomical events and answers various astronomical inquiries.

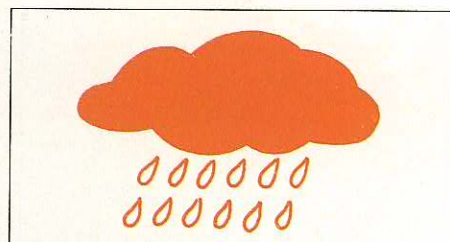
**RADIOACTIVITY MONITORING AND ASSESSMENT:** Under an Environmental Radiation Monitoring Programme, the monitoring of radioactivity levels in air, water, soil and food is done through their regular samplings and measurements.

A Monitoring and Assessment Center (MAC) was established to perform the task of radiation monitoring and accident assessment in the event of incidents at the Guangdong Nuclear Power Plant at Daya Bay.

## Hong Kong's rainstorm warning system

Following the heavy rainstorms in Hong Kong in 1992, a colour-coded Rainstorm Warning System was devised and put into operation immediately. The system would allow better coordination among government departments and public utility companies to provide speedier response to the general public so it could cope better with flash floods, landslips and ensuing traffic disruptions.

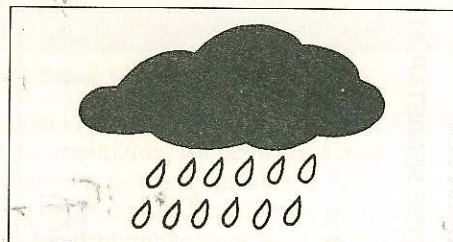
### Rainstorm Warning System



#### Rainstorm Red Warning

50 millimetres of rain have been recorded generally over Hong Kong during any one-hour period or less.

- Heavy rain has caused or could cause serious road flooding and traffic congestion.
- Normal school operations and examinations are likely to be disrupted.



#### Rainstorm Black Warning

100 millimetres or more of rain have been recorded during the immediate past two-hour period or less.

- You are advised to stay home because the inclement weather conditions have caused serious road flooding.
- If you are not at home, you should take shelter in a safe place until conditions have improved.

**Listen to announcements on TV and radio.**



ESCAPWMO TYPHOON COMMITTEE SECRETARIAT

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PRINTED MATTER

## Computer graphics system for press briefings

The Royal Observatory conducts central press briefings for the media whenever tropical cyclones, severe rainstorms or intense cold-surges affect Hong Kong. Recently, work has begun on the development of a PC-based graphics system for presenting tropical cyclone tracks, synoptic charts and maps on regional variations in temperature and rainfall during the press briefings.

Apart from enhanced visual impact, the Graphics System can provide animation on graphics as well as satellite and radar imageries, thus allowing the public deeper appreciation and better understanding of the weather conditions affecting them.



Graphics system for media.

## Contingency plan for natural disaster coordination

As a result of concerted effort among a large number of government departments and organizations in the Crown Colony, a contingency plan for natural disaster coordination was formulated for government-wide usage in June 1992. The Contingency Plan enumerated and elaborated on all existing natural disaster warnings, responsibilities of message issuance and dissemination, means of contact, and the recommended and required course of action.

## Beijing hosts International Conference on Disaster Management

An International Conference on Disaster Management was held in Beijing, China, on June 25, 1993, attended by representatives from UNDP and other international organizations.

Mr. Luo Gan, State Councilor and Director of China's IDNDR Committee, made the opening address and led government

heads and experts from 13 departments and two provinces of China who presented their present status report on disaster management.

A high-level training course on disaster management was also conducted, from 28 June to 3 July 1993, co-sponsored by China's IDNDR Committee and UNDP. A total of 56 participants representing eight international organizations, 15 government departments and 12 provinces of China, joined the training course.

## NMC installs Galaxy-II

The National Meteorological Center of China has installed for testing the supercomputer Galaxy-II, the first one of its type ever produced in China. The computer will enhance and strengthen the timeliness of medium range numerical weather prediction, which may reach 5-7 day forecasts within a few years.

## New typhoon warning broadcast

A new practice for issuing tropical cyclone warning to public has been approved jointly by the Guangzhou Meteorological Office, Search and Rescue Center of Guangdong Province and Radio Guangdong.

Under the new practice, tropical cyclone or typhoon warnings will be broadcast every 3 hours if the typhoon is considered to hit the coast area in 48 hours, and every hour or half-an-hour if the typhoon is to strike within 12 to 24 hours.

## Training course on application of new wind-finding equipment

A special technical training course on the application of a new automatic island-based wind-finding equipment, developed by the Changchun Meteorological Instrument Research Institute, was held from 24 to 31 August 1992, in Changchun, Jilin Province.

The smaller and lighter wind-finding equipment, used mainly at sea and suitable in sparsely-populated areas, has a measuring range 2-60 m/s for wind speed, and 0-360 for wind direction.