

THE ESCAP/WMO

# Typhoon Committee

## NEWSLETTER

No. 3

1991

## 23rd Session of Typhoon Committee in Seoul, Korea

The government of Seoul played host to the 23rd Session of the ESCAP/WMO Typhoon Committee from November 13-19, 1990.

Representatives of member-countries from China, Hong Kong, Japan, Republic of Korea, Malaysia, the Philippines, Thailand and Viet Nam gathered at the Seoul Tower Hotel, site of the week-long session. They were joined by the observers from the USA, Germany, USSR, the Commission for Atmospheric Sciences (CAS), representatives of the ESCAP and WMO Secretariat, United Nations Development Programme (UNDP) and the League of Red Cross and Red Crescent Societies (LRCS).

In his welcome opening remarks, Mr. Yong-Dai Park, Administrator of Korea Meteorological Administration (KMA), stressed the importance of managing typhoon disasters through mitigation. He named three important factors: inter-governmental cooperation, accurate forecasting of typhoon's movement, intensity and effect and disaster prevention and preparedness, which must be integrated into one system to minimize typhoon impact.

Dr. Jin-Hyun Kim, Korea Minister of Science and Technology, spoke about the vital importance of international and regional cooperation for the early detection of disastrous weather phenomena and for coping with the recent concern on climate change. He also thanked the participants for their active endeavors in the mitigation of disasters caused by destructive typhoons.

S.A.M.S. Kibria, Executive Secretary of ESCAP, stressed the importance of further strengthening the activities of the Committee, considering the great losses experienced by member countries due to typhoons and floods. He informed the Committee that at its 46th Session, the Commission had directed that activities within the framework of the Interna-



Participants to the Typhoon Committee 23rd Session gather in front of Seoul Tower Hotel, with the elected Chairman, Mr. Yong-Dai Park, Administrator of Korea Meteorological Administration (seated 7th from right).

tional Decade for Natural Disaster Reduction be continued at a high level throughout and beyond the Decade. He gave the assurance that the ESCAP would continue to take an active role in the regional initiatives that would contribute towards achieving the goals of the Decade.

In behalf of the Secretary-General of the WMO, Mr. Ho Tong Yuen, WMO Secretariat representative, emphasized the need for continued vigilance and, in particular, the enhancement of disaster preparedness measures to mitigate the adverse impacts of typhoons which pose a major threat to lives and properties in the region. He singled out the Special Experiment Concerning Typhoon Recurrence and Unusual Movement (SPEC-TRUM) field experiment as a further demonstration of the members' seriousness for positive actions to minimize

typhoon damages.

Both the WMO and the ESCAP, through the session, expressed gratitude for host Republic of Korea and to the UNDP for its significant contributions and continued support to the Committee's work, particularly, in the context of the International Decade for Natural Disaster Reduction.

Mr. Yong-Dai Park (Republic of Korea) was elected Chairman of the Committee for its 23rd Session, with Mr. Luo Jibin (China) and Dr. Lim Joo Tick (Malaysia), elected Vice-Chairman and Chairman of the Drafting Committee, respectively.

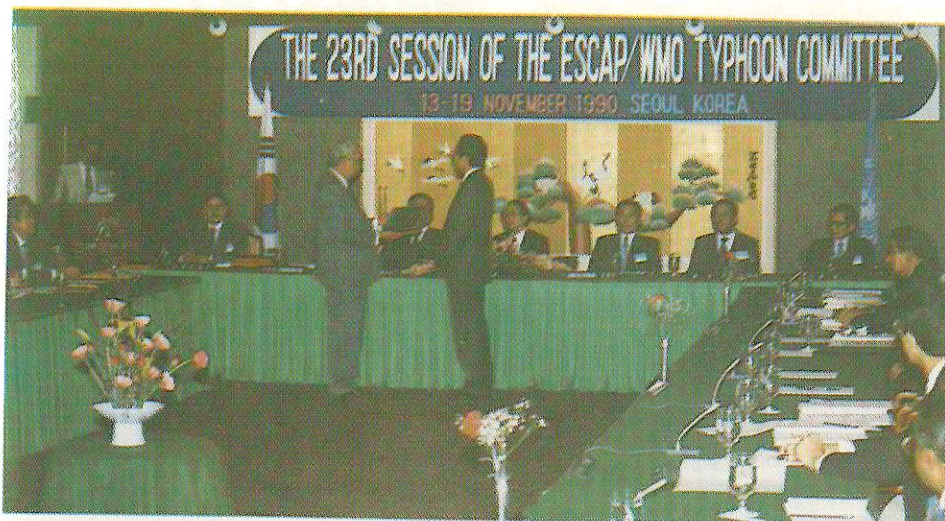
Major discussions were focused on the evaluation of the Committee's activities in 1990 and its role in the context of the International Decade on Natural Disaster Reduction (IDNDR) with the preparation

(Turn to page 12)



## Natural Disaster Prevention Award

### Central Anti-Calamity Headquarters, KBS & MBC Receive 1990 ESCAP/WMO Typhoon Committee Prize



The Central Anti-Calamity Headquarters, the Korean Broadcasting System (KBS) and the Munhwa Broadcasting Corporation (MBC) were chosen winners of the 1990 ESCAP/WMO Typhoon Committee Natural Disaster Prevention Award. They were presented of their cash prizes (\$1,200 each) and plaques at a special ceremony at the opening of the 23rd Session of the ESCAP/WMO Typhoon Committee (November 13-19, 1990) in host Seoul, Republic of Korea.

The Central Anti-Calamity Headquarters was cited for developing real-time Flood Forecasting Systems in the five Major River Basins in Korea, continuously upgrading the disaster prevention plan and for the publication of various Literatures on Disaster Preparedness for public information.

Both the Korean Broadcasting System (KBS) and the Munhwa Broadcasting Corporation (MBC) were recognized for their efficient and effective services in the dissemination of information and warnings on typhoons affecting Korea in close co-ordination with the Korea Meteorological Administration (KMA), and for their active participation in the information campaign on disaster prevention.

The ESCAP/WMO Typhoon Committee Natural Disaster Prevention Award is given annually and seeks to honor, recognize and promote achievements of individuals and/or institutions of the member-countries in strengthening disaster prevention and preparedness.



(From top to bottom) Dr. Roman L. Kintanar, Co-ordinator, Typhoon Committee Secretariat (TCS), hands out the 1990 Natural Disaster Prevention Award to the representatives of the Korean Broadcasting System, the Central Anti-Calamity Headquarters and the Munhwa Broadcasting Corporation.





SPECTRUM Technical Conference and Steering Group Evaluation Meeting participants, with Dr. Ryoza Tatehira, JMA Director-General (seated at center). Immediately beside him are C. Y. Lam, SPECTRUM Steering Group Chairman (left) and D. O. Vickers, WMO Secretariat representative (right).

## SPECTRUM Technical Conference and Steering Group Evaluation Meeting—A Success

The ESCAP/WMO Typhoon Committee SPECTRUM Technical Conference and Steering Group Evaluation Meeting, hosted by the Japan Meteorological Agency (JMA) at its Headquarters in Tokyo, Japan, from December 10-13, 1990, was an outstanding success.

The conference and meeting was participated in by 14 experts that included all the members of the Steering Group established by the Committee of the SPECTRUM. It was headed by Mr. C. Y. Lam, Chairman of the SPECTRUM Steering Group, Mr. D. O. Vickers, WMO Secretariat representative and Dr. Ryoza Tatehira, Director-General, Japan Meteorological Agency. Also in attendance were observers from the USA, USSR and the WMO's Commission for Atmospheric Sciences.

In the meeting, Mr. Shingo Osano (Japan) was unanimously elected Vice-Chairman of the technical conference and meeting.

The Technical Conference which was organized at the request of the Typhoon Committee by the World Meteorological Organization (WMO) in cooperation with the Typhoon Committee Secretariat (TCS) was tasked to conduct an evaluation of the planning and execution of the Field Experiment.

The SPECTRUM, which actually began as an experiment with the 20th

Session of the Typhoon Committee, has the overall objective of "obtaining enhanced meteorological observational data for studies by Typhoon Committee Members on the movement of tropical cyclones in the western North Pacific with a view to improving operational tropical cyclone forecasting."

At the closing of the conference and meeting, the Steering Group recognized that it had completed its tasks with respect to the planning, execution and evaluation of the Experiment. It also noted that with the completion of the field phase of SPECTRUM, the emphasis had shifted to a distinctly different task—the transformation of the observational data collected into knowledge applicable to operational tropical cyclone forecasting.

In this light, a new group, the SPECTRUM Research Coordinating Group was set up as recommended, with the approval of Mr. Yong-Dai Park, Chairman of ESCAP/WMO Typhoon Committee, to take over from the SPECTRUM Steering Group the coordination of follow-up activities with regard to data and research.

Other action plans that came out of the meeting were the organization of a technical conference in China late this year, and the coordination activities with other concurrent experiments such as TYPHOON-90 of the USSR and TCM-90 of the USA.

## Ohnishi Heads SPECTRUM Research Coordinating Group

The SPECTRUM Research Coordinating Group has been formed with Mr. Haruo Ohnishi, Chief Forecaster, RSMC, Tokyo-Typhoon Center, Japan Meteorological Agency, as Chairman, and Mr. C.Y. Lam, Senior Scientific Officer, Hong Kong Royal Observatory, Vice-Chairman.

Designated Members of the Group are as follows: Mr. Choi, Jung-Boo, Senior Forecaster, Korea Meteorological Administration; Mr. Chen Lianshou, Deputy Director of National Meteorological Center, State Meteorological Administration, China; Mr. Ooi See Hai, Assistant Director, Malaysian Meteorological Service; Dr. Patipat Patvivatsiri, Director of Studies and Research Division, Meteorological Department, Thailand; Mrs. Rosa T. Perez, Supervising Weather Specialist, PAGASA, Philippines and Dr. Ding Van Loan, Director, Hydrometeorological Forecast Department, Hydrometeorological Service, Socialist Republic of Viet Nam.

Mr. Mitsuru Ueno, Senior Scientific Officer, Numerical Prediction Division, JMA, will serve as Ex-officio member, being the Coordinator of the Typhoon Committee Research Correspondents of Meteorological Component.

The formation of the SPECTRUM Research Coordinating Group is primarily aimed at ensuring the availability of data to researchers and its promotion through research work.

As planned, the Members hope to accomplish the following:

- a) to oversee the transfer of SPECTRUM and related data sets to Members;
- b) to promote interests among researchers in the utilization of SPECTRUM data for tropical cyclone research;
- c) to organize activities contributing to the exchange of SPECTRUM research results or assist in similar activities organized by other bodies;
- d) to explore and pursue opportunities for international cooperative research efforts with participation from Typhoon Committee Members;
- e) to prepare and keep up-to-date lists of researchers and projects related to SPECTRUM and
- f) to devise an award scheme for the approval the Typhoon Committee, for outstanding SPECTRUM related research.



## SPECTRUM Continues in Guangzhou

The Technical Conference on SPECTRUM, organized by WMO in cooperation with the Typhoon Committee Secretariat (TCS) and host China, convenes in Guangzhou, China from November 25-29, 1991.

As early as the 22nd Session of the Typhoon Committee in Tokyo, China offered to host a technical conference which eventually became the technical conference on SPECTRUM as a sequel to the Field Experiment which was conducted in August-September of 1990. It was approved subsequently upon the recommendations of the SPECTRUM Steering Group during the SPECTRUM Review at the 23rd Session of TC in Seoul. Originally, this conference was not included in the list of EC-XLI approved activities to be organized by WMO in 1990 and 1991 but an amendment on the list was approved to include this Technical Conference.

Topics to be taken up included in the conference's tentative programme are Typhoon Motion Field Experiment, Operational Forecasting, Environmental Steering and Research and Numerical Modelling of Typhoons as well as WMO activities related to IDNDR.

Spearheading the conference are the members of the SPECTRUM Research Coordinating Group (SRCG). The group is also expected to hold an informal meeting during the conference.

## Vickers Holds Talks on RNDRT Project Document

Mr. Don O. Vickers of WMO Secretariat visited the Typhoon Committee Secretariat in Manila on 22 July 1991 to hold further discussions with Dr. Roman L. Kintanar, TCS Coordinator, on matters related to the project document on "Reduction of Natural Disasters Related to Typhoons" (RNDRT), which was taken up at the Twenty-third Typhoon Committee Session in Seoul, Korea (November 1990). The visit aimed to review and incorporate appropriate changes in the document wherein some suggestions were made particularly on things related to IDNDR, budget, inclusion of additional Members, and ESCAP subprojects through discussions with some Members, TCS and ESCAP.

Initial discussion on this matter was held with a UNDP team which visited WMO in April 1991. As gathered, UNDP was not amenable to the idea of making the new project a continuation of the completed project "Programme Support to the Typhoon Committee" (RAS/86/175). It favored the project to expand in regional scope so as to include non-Members, like, Brunei, Singapore and Indonesia, and not be restricted only to the Typhoon Committee itself.

Among the salient points gathered in the discussion were:

- 1) Retention of the immediate objectives which pertain to:
  - Upgrading the capabilities of National Meteorological and Hy-

drological Services (NMHS) for forecasting and warning;

- Provision of data and analyses; and
- Training

2) Scrapping of the immediate objective for the establishment of a "Regional Research Center" in favor of objectives in Disaster Prevention and Preparedness, dissemination, public education and information, which are all considered more in consonant with IDNDR-approved projects.

3) Retention of the first ESCAP subcontract, i.e., "Preparation of Manual and Guidelines for Integrated River System Development and Management with reference to Comprehensive Flood Loss Prevention and Management" and the replacement of its second subcontract, i.e., "Preparation of Guidelines for the Formulation of a Comprehensive Master Plan for Urban Flood Loss Prevention and Mitigation" with "Preparation of Guidelines for Storm Surge Mapping". A draft project document on this was prepared by ESCAP for the purpose of coming up with guidelines for techniques on storm surge risk mapping and increased knowledge through intensive exchange of information on the recent techniques of state-of-the-art on storm surge risk mapping. This subproject is planned for 1991-1993.

Dr. Kintanar, at one point during the  
(Turn to page 5)

## Dr. Tick Starts Terminal Report on RAS/86/175

In connection with the preparation of the draft terminal report on UNDP/WMO Regional Project RAS/86/175 (Programme Support to the Typhoon Committee), a visit was made by Dr. Lim Joo Tick of the Malaysian Meteorological Service to the Typhoon Committee Secretariat in Manila from June 3-9, 1991.

Dr. Tick's visit was arranged in consultation with WMO. He met and discussed with Dr. R. L. Kintanar, TCS Coordinator, Mr. G. S. Monroy, TCS Meteorologist and Mr. J. E. Lucas, former TCS Meteorologist, regarding the report.



Dr. L. J. Tick (right) on his courtesy call to Dr. R. L. Kintanar, Coordinator, TCS.



## VICKERS...

(From page 4)

discussion on meteorological matters, mentioned his preference for thunderstorm monitoring and tracking system, like one developed in France, which the Philippines is acquiring. With regards to Hong Kong's plan to use the optical disk system for storage and handling of data, he remarked that this new development could be adopted for use in the region as well.

There was also a lengthy discussion on the "Report on the Survey of Selected Member Countries of the Typhoon Committee on Disaster Prevention and Preparedness" proposed by Messrs. Victor R. Pagulayan, Jr., TCS part-time DPP expert, and Kunio Takase, JMA Expert on Disaster Preparedness, in August-September 1990.

Most queries directed to Dr. Kintanar were focused on how the recommendations to their problems could be passed with the support from the project under proposal.

Also, the panel on discussion, deemed as highly unlikely the 25th TC Session would be another joint session with the PANEL on Tropical Cyclone. They agreed that the host country to the 25th TC session, should be known before the 24th session, a joint session between TC and PANEL in Thailand in February 1992, is convened. China will be the first country to be asked for this purpose.

From Manila, Mr. Vickers proceeded to Japan to hold talks with officials of the Japan Meteorological Agency, then closed out his mission with a visit to the Meteorological Department in Bangkok, Thailand. Results from these talks will be studied and incorporated back in Geneva.



Mr. D. O. Vickers of WMO Secretariat (right) and Mr. Minoru Kuriki, Flood Loss Prevention Expert of ESCAP (second from left) pose with Dr. R. L. Kintanar, TCS Coordinator, in Manila. At left is Mr. Keigo Yanagiya, new TCS Hydrologist.

## ESCAP Expert in Hydrology Training

Mr. Minoru Kuriki, Flood Loss Prevention Expert of the Economic and Social Commission for Asia and the Pacific (ESCAP), served as lecturer in the Special Course in Hydrology under Flood Forecasting and Warning System for Dam Operation (FFWSDO) Project II, in Manila, held from July 21-27, 1991, with thirty participants, including seven hydrologists in attendance.

The advisory mission by Mr. Kuriki for the hydrology training was granted upon the invitation of Dr. R. L. Kintanar, Coordinator, TCS. Prior to this, informal consultations regarding the request were held with the local officials during the mission for the Roving Seminar in Manila in March 1991 and the Workshop on Forecasting, Preparedness and Other Operational Measures for Water-related

Natural Disaster Reduction in Bangkok in May 1991.

The hydrology training followed closely on the heels of the successful roving seminars on the preparation of Manual and Guidelines for Comprehensive Flood Loss Prevention and Management.

Mr. Kuriki's lecture included presentations related to the Manual and Guidelines such as flood vulnerability analysis and flood plain management.

Mr. Kuriki coordinated with TCS, Flood Forecasting and Warning System for Dam Operations (FFWSDO) and Flood Forecasting Branch (FFB) officials of PAGASA and Japanese hydrologists, Mr. Asada, Tutor (OJT), and Mr. Keigo Yanagiya, newly assigned TCS Hydrologist, who succeeded Mr. Atsushi Yoshii.

## Roving Seminars Wrap Up ESCAP Project

The series of roving seminars in eight Typhoon Committee Member countries (Thailand, Malaysia, Philippines, Rep. of Korea, Hong Kong, China, Lao PDR and Viet Nam) held from 25 February to 23 March 1991 brought to a successful conclusion the last planned activity of the project on the preparation of the Manual and Guidelines for Comprehensive Flood Loss Prevention and Management, which was finalized and published in February 1991.

Organized by the ESCAP Secretariat, in cooperation with the Typhoon Committee Secretariat and the eight Member countries, the seminars were the culmination of the Project to produce a manual and guideline which identifies the concepts and principles of comprehensive flood loss prevention and management. The Project, which spanned more than three years, from November 1987 to March 1991, was carried out under the auspices of ESCAP in cooperation with TCS and WMO, with financial support from the UNDP under its Project RAS/86/175, "Programme Support for the Typhoon Committee".

The programme of the roving seminars was designed for the purpose of introducing and promoting the concepts and principles of comprehensive flood loss prevention and management contained in the Manual and Guidelines to administrators, flood plain managers and technologists involved in preventing and reducing flood catastrophes in Asia and Pacific countries. It was reviewed at the Third Expert Group Meeting on Comprehensive Flood Loss Prevention and Management in Bangkok (24-27 July 1990) and at the 23rd TC Session in Seoul (13-19 November 1990) as well as at the preceding pre-session meeting of the Hydrological Component on 12 November.

The mission members sent to the roving seminars were composed of Messrs. Cengiz Ertuna, Chief, Water Resources Section, NRD, ESCAP; Minoru Kuriki, Flood Loss Prevention Expert, Natural Resources Division, ESCAP; George Whitehouse, Consultant (Flood Plain Management) ESCAP and Atsushi Yoshii, Hydrologist, Typhoon Committee Secretariat.



## 30th WMD Celebration

With this year's theme "The Atmosphere of the Living Earth", the 30th World Meteorological Day (WMD) was celebrated March 23 by planet earth with 159 member-nations around the world monitoring the composition of the atmosphere from 140 ground based ozone stations.

WMD was first celebrated on 23 March 1961 to commemorate the inauguration of the WMO Convention on that day in 1950 with its transformation of the former International Meteorological Organization (IMO), in existence since 1873, into the intergovernmental World Meteorological Organization (WMO).

The WMD recently discovered that human activities are rapidly changing the chemical composition of the atmosphere resulting in the depletion of the stratospheric (upper atmosphere) ozone layer, the increase in the tropospheric (lower atmosphere) ozone, and a rise in carbon dioxide and methane concentrations as well as higher levels of acidity in the rain.

In his World Meteorological Day

message, Dr. Godwin Obasi, WMO Secretary-General, said the Global Ozone Observing System (GOOS) has more than 140 ground-based ozone stations supplemented by satellites which are operated by 60 World Meteorological Organizations (WMO) and manned by hundreds of scientists. On the other hand, he added, the Background Air Pollution Monitoring Network (BAPMON), which was started in the 1960's, is a worldwide network of stations where scientists and technicians take samples and make chemical analyses of rain, snow and the air. The main greenhouse gases which contribute to global warming are also monitored. These gas measurements provide evidence of changes in the global atmosphere, resulting from human activities.

Dr. Obasi also said the GOOS and the BAPMON were integrated in 1989 into the WMO's Global Atmosphere Watch. It will serve as a framework to plan, design, advise, coordinate and later scientifically evaluate global atmospheric-composition monitoring activities.

## Symposium on IDNDR

A symposium on the present UN International Decade for National Disaster Reduction (IDNDR) was held from 29 April to 3 May 1991, in two separate venues, Manila Hotel and Puerto Azul Beach Hotel, in Cavite, Philippines.

In a joint message to the participants, Mr. Gotz Link of DSE Development Policy Forum and Mr. Peter Sotje, Deputy Director-General, German Foundation for International Development (DSE), underscored the importance of finding universal application for scientific research and new technologies, which in recent years, have brought significant progress in identifying the causes of natural disasters and in limiting the havoc they wreak.

The statement in part follows: In its Resolution 42/169 of December 1987, the General Assembly of the United Nations placed the causal relationship between the immense damage caused by

*(Turn to page 7)*

## World Marks Earth Day

Next to WMD was the global observance of EARTH DAY 1991 which fell on 22 April. The peoples of planet earth, ecology protectionists, conservation activists, etc., celebrated Earth Day 1991 with a series of events and activities focusing on the international campaign to protect and preserve our environment from such hazards as pollution, habitat destruction, overfishing, etc., to stop and reverse the effects of man's unabated assault on Mother Earth.

In London, a small group of individuals got together for an ambitious undertaking to collect 100 million signatures for a cause they have called "The Mandate for Life on Earth". The collective power of 100 million signatures would be the base, the breakthrough in "tackling international environmental problems".

To be presented to the United Nations Conference on the Environment to be held in Brazil in 1992, the MANDATE campaign seeks to establish a set of international environmental standards, set up an International Court of Justice with powers to fine individuals, organizations



Paul Clark, Earth Day International president, leads an ecology project's signature drive in Manila.

and governments that breach the newly instituted regulations, and facilitate the sharing of resources that will enable all countries to take part in safeguarding the resources common to all men such as air and water. It is based on the principles of the Hague Declaration of March 1989 which has been endorsed by 43 countries from all over the world.

The press conference launching of MANDATE, held at St. James Court Hotel in Buckingham Palace Road, was led by Dr. Paul Clark, Mandate founder and President, Mr. James Cameron, Director of the Centre for International

Environmental Law in London and legal Adviser to Cook Islands, the Caribbean Community and the Alliance of Small Island States on the Climate Change Convention and Mr. Ian MacPhail, leading member of the conservation movement and one of the founders of the World Wildlife Fund. Mr. MacPhail was appointed as international campaign director.

In his opening remarks, Dr. Clark said that the call of MANDATE is in response to the deplorable situation in which the world finds itself today when governments seem unable to act to protect the environment. "These institutions are not only needed but vital. Nature does not acknowledge political boundaries yet at present it is impossible to get governments together to tackle urgent environmental problems. The MANDATE is not just another petition or request to the UN, it's the people of the world granting the UN, governments and major businesses the authority to take specific action in their name. The MANDATE will be the first opportunity for people as far apart as attorneys and peasant farmers to lend their voices to the same cause. Everyone who endorses the MANDATE is also pledging themselves to start taking the actions in their own lives that will help to protect the futures of us all", says Dr. Clark.



## SYMPOSIUM...

(From page 6)

natural disasters and the lack of adequate prevention early warning and resources at the centre of its call for long-term and integrative natural disaster management, a concept which is to be consolidated in the course of the present UN International Decade for Natural Disaster Reduction (IDNDR).

The goals of the Decade underline above all political and moral responsibility of governments for developing and implementing a national strategy which, if it is to be more than a mere response, entails the integration and coordination of all state agencies, be they concerned with risk prevention, social security, development planning or environmental protection.

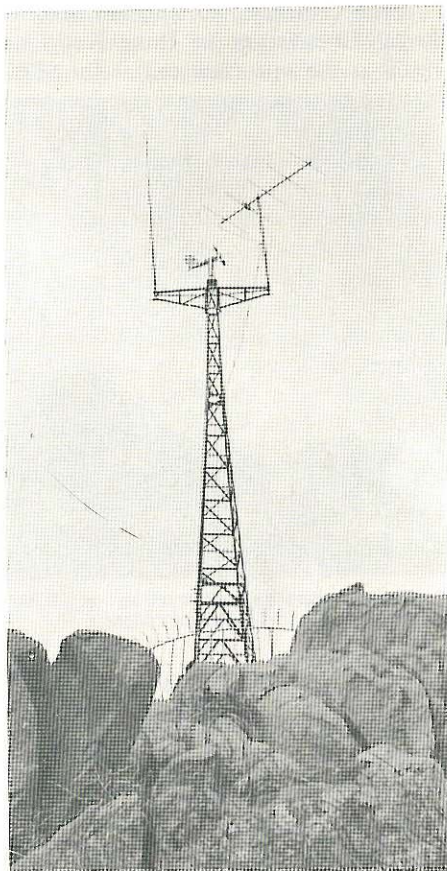
With this in mind, the Round Table aims to initiate a policy-level dialogue on an adequate governmental framework for natural disaster prevention, to match the goals of the IDNDR to the needs and resources of individual Asian countries, and to discuss the possibilities of international cooperation.

The session's programme had for its opening the DSE Development Policy Forum. Addresses were given by Messrs. Fidel V. Ramos, Secretary, Department of National Defense and Chairman, National Disaster Coordinating Council (NDCC); Peter Scholz, Ambassador of the Federal Republic of Germany; Neelam S. Merani, Director, IDNDR Secretariat and M'hamed Essaafi, United Nations Disaster Relief Coordinator (UNDRO). Mr. Brian Ward, Director, Asia-Disaster Preparedness Center, participated in the session.

Six working sessions followed namely: (I) No Winners, All Losers: A cost approach to impact of disasters on development; (II) Policy and Politics: the issue of political will and responsibility for disaster mitigation in the context of national development, risk minimization and sustainability; (III) The Instruments of Disaster Mitigation and their Coordination; (IV) Human Resources Development; (V) International Cooperation in the International Decade for Natural Disaster Reduction (IDNDR) and Group Session on Implementing National, Regional and International Policies and Measures: a brainstorming among the groups on the next steps to be taken.

## CHINA

### China Sets Up Automatic Anemometer Stations



An Automatic Anemometer Station in China.

The setting up of automatic anemometer stations in China was started in early 1980 by the Changchun Meteorological Instrument Research Institute to provide for accurate detection of strong winds caused by tropical cyclones.

The samples of the first generation were installed on the off-shore oil Platforms in Bohai sea and were tested for 18 months. The maximum wind speed detected was 38 m/s. Specifications of the sensors were good and stable after a test of wind tunnel at 90 m/s. By using microcomputers and new digital telecommunication techniques in 1988, the problem of low power dissipation in high and low temperature was eliminated.

On this basis the automatic anemometer graph was finalized as WZDF and put into production by small amount for the utilization of meteorological and marine departments. So far, 10 automatic anemometer stations were set up and fully functioning on the islands.

The setting up of these automatic anemometer stations (shown in photo) is an important component of the plan of marine meteorology in China. It will provide valuable information for the marine meteorological forecast and research.

## SPECTRUM & Research

In 1990, China not only finished the Special Typhoon Experiment (SPECTRUM) in cooperation with the countries and regions concerned but also organized the domestic experiments, and thus has laid down the basis for the typhoon research work after the experiments with the great amount of densified observing data received. The themes defined in February 1991 were as follows:

- 1) The influences of structural change of tropical cyclone on its track;
- 2) Diagnosis and analysis on the complication of the tracks of typhoon 9012;
- 3) Research on the relationship between the multiple-layer environmental flow field and the abnormal movement of typhoon;
- 4) The interaction between circulation system in the westerly belt and subtropical high;
- 5) Research on the relation between the structures and the tracks of tropical

cyclones;

6) Diagnosis & analysis as well as numerical modeling on the influences of the asymmetric structure of typhoon on its abnormal track;

7) The interaction between two tropical cyclones and its impact on the tracks;

8) Influence of the topography of Taiwan on movement and structure of tropical cyclones.

Presently, all of the data exchanged through SPECTRUM have been distributed to the relevant operational and scientific research departments; all of the research works are being undertaken and the primitive summary report is expected to be finished by August, 1991. This is also in preparation for the seminar on SPECTRUM to be held in Autumn 1991, which China is hosting with the hope that more contributions from experts will be made to research work on SPECTRUM.



## First Expert Working Group Meeting on Tropical Cyclones and Marine Meteorology

The first Expert Working Group Meeting on Tropical Cyclones and Marine Meteorology was held on 4 December 1990 in Qingdao, Shandong Province. Fifty-four experts from 16 provinces (or autonomous regions and municipalities) attended the session.

The session summarized the work China has conducted, both international and domestic, on SPECTRUM. It came to the approval that the experiments were successful and that great amount of densified observation data are extremely valuable for future research on typhoon track anomalies and storms. The session also proposed working plans after the experiments and exchanged views on the preparation of the international seminar on SPECTRUM which will be held in China in late 1991. Furthermore, the session assessed and evaluated the forecast operations and services on tropical cyclones in 1990, discussed and commented on the advances in tropical cyclone warning benefit and disaster analysis and studies with the aim of improving the work of tropical cyclone forecast and warning.

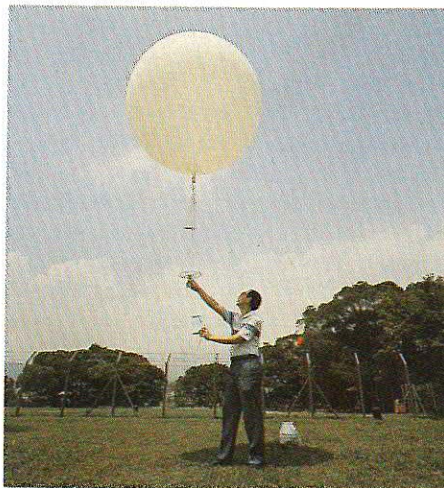
## Eight National Conference on Tropical Cyclones

The Eight National Conference on Tropical Cyclones was held in Shanghai in May 1990. The conference included 66 papers, covering tropical cyclone motion, structure and structure variation, genesis and impact of tropical cyclones, numerical forecasting, operational systems, etc. A summary was reached on the conference, assessing the operational and research achievements in the past 5 years, indicating the future direction and stressing the importance of field experiments for tropical cyclone study. The conference called for a collaboration of experts in different areas for combined researches, such as synthetic analysis, understanding of tropical cyclone mechanisms.

## HONG KONG

### Hong Kong Participates in 1990 SPECTRUM

"The Central Forecasting Office of the Royal Observatory in Hong Kong was made as the operation center for SPECTRUM.



Enhanced upper-air observation at King's Park during the IOPs of SPECTRUM.

TRUM. Six-hourly radiosonde ascents were made at King's Park (45004) during all the IOPs. Three-hourly surface observations made at the Royal Observatory (45005) were transmitted through GTS. A total of 510 bulletins containing 686 ships' weather reports were compiled and transmitted through GTS. Although none of the IOP tropical cyclones came close enough for radar surveillance, hourly GMS imageries during IOPs were stored on magnetic and video tapes. SPECTRUM was also publicized among the local scientific community. A tentative list of researchers and SPECTRUM-related topics has been drawn up. The experiment also received wide media coverage, including a filming visit from the production crew of BBC's "Tomorrow's World" in September 1990. The programme was broadcast in the United Kingdom in early 1991".

### Professional Presentation on TV Weather Programme

"Since July 1987, professional meteorologists from the Royal Observatory have been involved in TV weather presentation on a weekly basis. From February 1991 onwards, the frequency of appearance has increased to include all evening TV weather programmes on weekdays. Favorable comments have been received

from a recent audience survey. A dedicated video link has also been set up between the Royal Observatory and the TV station for daily transmission of the latest satellite and radar imageries. There are also plans ahead to provide more frequent transmission in the event of an approaching tropical cyclone".

### Radar Imageries Archival and Retrieval on PCs

"The commencement of radar data exchange between Guangzhou (China) and Hong Kong has provided a more comprehensive coverage of the precipitation systems in the vicinity of the Pearl River estuary. Armed with the extra real-time information, forecasters can readily make

operational decisions on flood, landslide and thunderstorm warnings. Softwares have also been developed to store and retrieve radar imageries from floppy disks. Forecasters, from their PC terminals, can now make quick references and draw on experience from past events".

## KOREA

### Korea Meteorological Service Reorganizes

The Korean Assembly approved the proposal of raising the Korea Meteorological Service to the status of administration as part of the Government Reorganization Proposition in December 1990. They officially celebrated the opening of the Korea Meteorological Administration on 27th of December 1990 with top

man Mr. Yong-Dai Park, now as the first Administrator. The organization is still attached to the Ministry of Science and Technology, but it acquires authority in budgetary and personnel business as an administration. This reflects that the Korean Government recognizes the

(Turn to page 9)



## KOREA...

(From page 8)

importance of meteorology and its services in modern society.

In opening ceremony, the Administrator emphasized effectiveness of services, modernization of equipment and their operating systems, strengthening international cooperation and improving quality of weather forecast to support the needs of modern society.

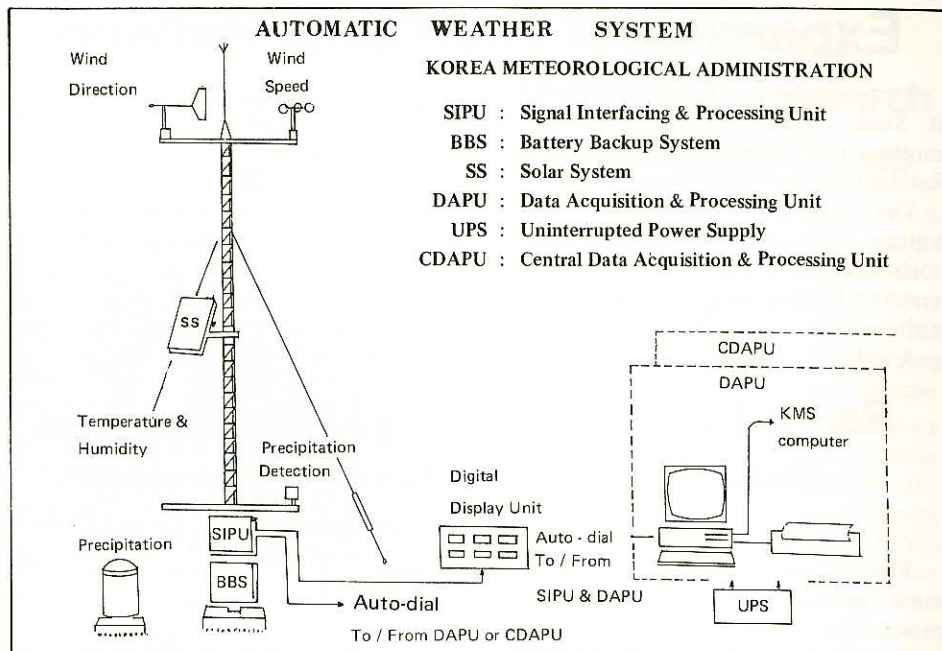
Two new divisions in the administration were established, namely the Numerical Weather Prediction Division and the



Mr. Yong-Dai Park, KMA Administrator (left) and Dr. Jin-Hyun Kim, Minister of Science and Technology (right) hang new KMA board in ceremony.

Administrative Management Division. At present, efforts on reorganization of the group and its structure are on-going to fit as an independent government organization and possibly more divisions will be established by the end of 1991.

The history of modern meteorological office in Korea started with four (4) observing stations in 1904. It became the Central Meteorological Office under the Ministry of Education in 1945. It transferred to the Ministry of Transportation in 1962 and to the Ministry of Science and Technology in 1969. It was renamed the Korea Meteorological Service in 1982.



## KMA Sets Up AWS Stations

A most significant development concerning KMA's long term plan for the modernization of its meteorological facilities is the installation of a network composing of 100 Automatic Weather Systems (AWS) Stations (See photo & diagram), projected to be set up from 1991 to 1993.

The System provides for the acquisition of valuable data appearing on display on the CRT monitor which will be automatically collected by telecommunication networks.

The System also enhances KMA's capability for disaster prevention. It can also be used for research works for radar calibrations, among others, as well as for nowcasting.



An Automatic Weather Station (AWS) being put up by KMA.

## THAILAND

### Unocal Radar Station

The Thai Meteorological Department (TMD) in cooperation with UNOCAL Thailand has established a new offshore weather radar station located in the Saturn field in the Gulf of Thailand.

Named the UNOCAL Thailand Weather Radar Station, radar observations began on November 19, 1990 with 24-hour coverage from eight TMD officials working two at a time on a shift basis. Data

codes interpreted at the station were transmitted to the headquarters in Bangkok where the information is incorporated into the department's national forecasting network.

UNOCAL Radar Station was officially opened by the Deputy Minister of Transport and Communications on February 22, 1991.



## Expansion of Thai Radar Network

Two new S-band systems were set up at Surat Thani and Khon Kaen and another two C-band systems at Ubon Ratchathani and Sakon Nakhon.

The installation of a new S-band doppler radar at the Bangkok International Airport to replace the unit transferred to Rayong will be completed within the year.

Another C-band doppler radar in the

Gulf of Thailand belongs and being operated regularly by the UNOCAL Radar Station.

In a related development, the procurement of high resolution NOAA and GMS satellite receiving systems is proceeding in the four Regional Meteorological Centers in Chiang Mai, Ubon Ratchathani, Songkhla and Phuket.

## Rainfall Criteria Causing Flash Floods In Amphoe Muang Nakhon Si Thammarat

*(Abstract of a study made by Watcharee Virapun)*

Flash floods occur in Nakhon Si Thammarat province almost every year. This province in Thailand is affected by both south-west and north-east monsoons which produce rainfall in the area exceeding 10 months each year. Rainfall is normally heavy in a short period of time (less than 1 hour) but continuous heavy rainfall for 1-3 hours can cause flash floods in the province where the existing drainage system has limited capability. This study is to find rainfall criteria causing flash floods in urban area. Amphoe Muang Nakhon Si Thammarat has been chosen for a pilot area of the study because of its sufficient data which are suitable for the study.

The method of studying was made by distributing thirty-seven years (1951-1987) of yearly extreme value of rainfall data at Nakhon Si Thammarat observation station. Three theories of probability distribution were used in the study, namely: 2 Parameter Lognormal, General Extreme Value and Gumbel and tests of

goodness of fit are done by using Chi-square and Kolmogorov-Smirnov methods. Then, only one suitable theory of probability distribution was selected. The results of the distribution were plotted in the Gumbel paper and the lines were drawn. The extreme value of rainfall data which were chosen from seventeen years (1971-1987) of past flood damage data were also plotted on Gumbel lines. Thereafter, rainfall criteria causing flash floods had been determined from the graph.

The final results are rainfall criteria causing flash floods in Amphoe Muang Nakhon Si Thammarat. These criteria are based on urbanization, land use, forest area, drainage system, etc., of Amphoe Muang Nakhon Si Thammarat in 1987. If there are great changes from the 1987 conditions, the criteria will be adjusted accordingly. The rainfall criteria are as follows: The amount of rainfall for 1, 2 and 3 days are 130, 180 and 235 millimeters, respectively, with a return period of 1.5 years.

## A Data Information Center for PAGASA

The Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) is nearing completion of its Data Information Center (DIC) building in Diliman, Quezon City, under the Flood Forecasting and Warning System for Dam Operations (FFWSDO) Project. The DIC is being established with the objective of attaining high efficiency in the operation of the proposed flood forecasting and warning system. When fully operational, the DIC will greatly enhance PAGASA's work in the following:

(1) Timely data collection, analysis, flood

forecasting and dissemination of flood warning by means of real-time system operation;

- (2) Data collection, compilation, storage and retrieval for further effective utilization of meteorohydrological data to be collected by the Project system and Meteorological Telecommunication System;
- (3) Educational demonstration for flood forecasting and warning to the public through exhibitions, public information, etc.

The DIC was primarily designed for the Project to perform effectively the role of flood forecasting and warning for the major rivers in the Philippines. However, since PAGASA handles voluminous weather data that include meteorological and hydrological data directly related to the FFWSDO Project, the DIC can be developed to an integrated data center for PAGASA.

The existing flood forecasting and warning system for the Agno, Bicol and Cagayan river basins (ABC system) and the Pampanga river basin (Pampanga system) will be incorporated in the DIC together with the system proposed in the Project, since these systems are to be operated with close relations in line with their objectives.

In line with the objectives of the DIC and considering the functions of each office in PAGASA, the DIC building is planned to be facilitated with the following equipment:

Central computer system which can be used as on-line operation to be connected with the proposed meteorological telecommunication system (MTS)'s mini-computer as well as the proposed telemetering system of the project; such computer system would be able to respond to the needs and demands of analyzing and processing of all data collected.

Optical disk document filing system which executes all the operations required in storage, retrieval and printing, is needed for speedy and efficient data treatment.

Telemetering equipment consisting of telemetry monitor equipment, telemetry supervisory equipment, graphic and digital display panels, teleprinter, facsimile and telephone equipment.

Video projector system which can display schematic diagram of FFWSDO system, meteorological data, dam

*(Turn to page 12)*

**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.

**GABRIEL S. MONROY**  
Editor

**HANNIBAL B. MARAYAG**  
Editorial Assistant

**FELICITAS C. PUNSALAN**  
Publication Officer



## The Philippine-Australia Remote Sensing Project (PAGASA AVHRR System)

The Bureau of Meteorology (BoM) of Australia is the prime contractor for the supply to the BHP Remote Sensing Project (RSP) of the PAGASA AVHRR (Advanced Very High Resolution Radiometer) System.

The RSP, which was launched on 4 May 1990 with BHP Engineering International as managing agent, aims to maximize the application and utilization of the remote sensing technology in the Philippines. It consists of four components namely: 1) archiving, processing and application center; 2) education, training, research and development; 3) NOAA reception and processing facility and 4) project administration.

The PAGASA AVHRR system comprises an integrated NOAA based AVHRR & TOVS processing and archiving facility for weather forecasting, which conform to the Philippine-Australia RSP Implementation Document of July 1990. It is a tracking facility with the ability to program track, receive, record and archive data from the NOAA satellite. It consists of the following components:

- antenna mount complete with

motor controller. A steerable parabolic-reflector complete with a RH polarized feed and a low noise down converter;

- antenna control system with terminal and manual override unit;
- signal processing chain consisting of a demodulator (receiver & Manchester decoder) and formatter;
- testing system comprising: a NOAA Simulator, test signal generator/modulator, signal injection/radiator subsystem for short/long loop system integrity testing.

As a processing system, it comprises of the following:

- an ingest & scheduling computer with a time standard providing the functions: scheduled automatic spacecraft acquisition; the reception, storage and archiving (on Exabyte in HRPT format) of AVHRR and TOVS data; provision of predict and tracking data for the antenna control system; AVHRR images, navigation, calibration and TOVS extraction; communication

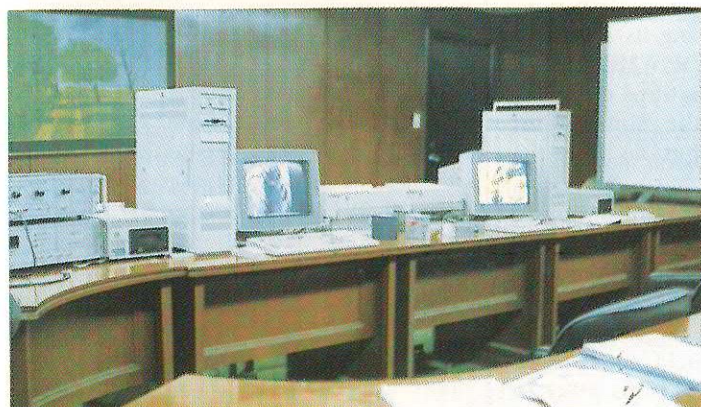
and transfer of data between the ingest computer, the operational workstation and the remote terminal in the Director's office; appropriate testing and diagnostics capabilities, and time reference receiver and computer interface.

- a Meteorological Workstation configured as the Operational Workstation for AVHRR image processing also providing operational back-up for the ingest computer, equipped with an NTSC television interface for the press media.
- a Remote Terminal in the Office of the Director at the Data Information Center which will display a near real time image of the current pass.

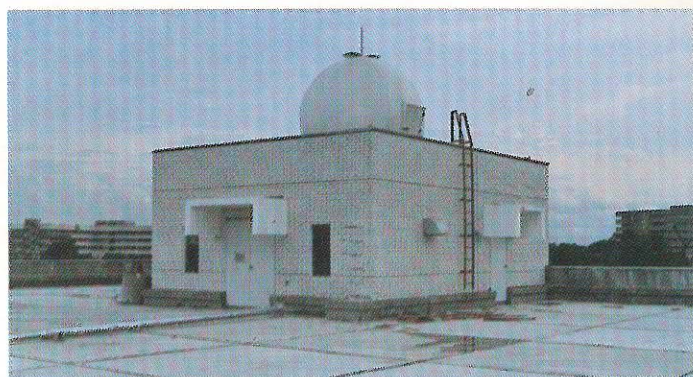
The Australia-Philippine RSP is envisioned to provide a national remote sensing archive or data depository and for the advancement of the country's technical capability to process the data for utilization in weather forecasting, disaster monitoring, mineral exploration, agricultural statistics and production and forestry management.



The almost finished DIC building of PAGASA.



PAGASA equipment system for processing NOAA polar orbiting satellite pictures (shown here prior to its final installation).



The dome-antenna at the DIC's rooftop, for receiving NOAA polar orbiting satellite pictures, recently acquired to augment the GMS satellite system.



PAGASA's equipment system for receiving and processing GMS-4 satellite pictures.



## A DATA INFORMATION CENTER...

(From page 10)

operation data, flood forecasting and warning data, is ventured into the Project in order to control and operate the FFWS Project more efficiently. Among others, the DIC will have the following room spaces:

Flood Forecasting Branch (FFB) operation and control/display room; telemetering equipment will be installed in the room with enough spaces for the operation.

Weather Branch (WB) operation room; the existing equipment installed in the WB office at PAGASA central office will be transferred to the DIC building; this room will be able to accommodate remote radar scope display for the proposed radar raingauge system and ground receiver for Polar Orbiting

### 23rd SESSION...

(From page 1)

of the launching of the project proposal related to the IDNDR, as part of its programme for 1991 and contribution to the Decade.

The preparation of a project document, under the hydrological component, on dam safety monitoring, was requested to the TCS in consultation with the ESCAP and WMO for consideration in the next TC Session.

The project document on "Reduction of Natural Disasters Related to Typhoons", by Mr. Patrick Sham, Director of Royal Observatory Hong Kong, submitted jointly by WMO and ESCAP for the approval of UNDP for its 1992-1996 Program Cycle, was also considered by the Committee. The project included two ESCAP sub-projects on the preparation of a manual on integrated river system development and management and a master plan for urban flood loss prevention.

With the UNDP closing its assistance to the TC under the UNDP/WMO Regional Project RAS/86/175, the Committee agreed on the need for the promotion of voluntary annual contributions from the Members as a move towards increasing self-reliance to meet institutional support for its programme of work.

The Committee has accepted the offer of Thailand to host the 24th TC Session. As what have been decided upon, the next session will be held in Pattaya, Thailand on February 11-20, 1992, a joint session with the Panel on Tropical Cyclones.

Meteorological Satellite in the future. Computer room; for the on-line central computer with necessary auxiliary equipment for the analysis of data to determine flood forecasted and required flood warning dissemination taking into account the other weather conditions whereby the weather forecast will be made by WB.

Data Bank room; for Optical disk document filing system with necessary auxiliary equipment.

Telecommunication equipment room; for telemetering support equipment, multiplex terminal and digital telephone exchange.

Meteorological communication room; to contain terminal equipment of the proposed Meteorological Telecommunication Project and two mini-computers to control the collection and dissemination of data and to process data from the station network.

Central supervisory board room; for the integrated security console, which can be assembled from components required for the building security.

Storage & maintenance room; conference & exhibition hall.

Under the PAGASA component of the RP-Australia Remote Sensing Project (RSP), the NOAA Satellite Receiving and Processing Facility will be set up upon completion of the DIC building. The receiving station was recently completed by the Australian Bureau of Meteorology and commissioned in Melbourne, Australia. The satellite antenna assembly is being installed at the DIC while the computer processing system will be located in a nearby building the FFB Operations Center will vacate.

The Data Information Center was designed in response to the specific needs of a meteorological agency moving upward in high technology of computer and telecommunication. The Center structure called for a high performance capable of accepting change both in organization structure and technical hardware for its life cycle and the need for more developed technology to provide a comfortable environment and efficient working conditions.

ESCAP/WMO TYPHOON COMMITTEE SECRETARIAT

c/o UNDP

P.O. Box 7285

Domestic Airport Post Office Lock Box

1300 Domestic Rd., Pasay City

Metro Manila, Philippines

PRINTED MATTER