



UNITED NATIONS ECONOMIC AND SOCIAL COMMISSION

FOR ASIA AND THE PACIFIC

AND

WORLD METEOROLOGICAL ORGANIZATION

REPORT OF THE TYPHOON COMMITTEE

ON ITS TWENTIETH SESSION

**Bangkok, Thailand
20 - 26 October 1987**

ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC
AND
WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
Twentieth session
20-26 October 1987
Bangkok

FINAL REPORT OF THE TYPHOON COMMITTEE
ON ITS TWENTIETH SESSION

I. ORGANIZATION OF THE SESSION

1. The twentieth session of the Typhoon Committee was held in Bangkok from 20 to 26 October 1987.

Attendance

2. The session was attended by representatives of China, Democratic Kampuchea, Hong Kong, Japan, Malaysia, the Philippines, the Republic of Korea, Thailand and Viet Nam. Observers from France, the United States of America and the Union of the Soviet Socialist Republics attended the session. Observers were also present from the United Nations Development Programme (UNDP), the Office of the United Nations Disaster Relief Co-ordinator (UNDRO), the Committee for Co-ordination of Investigations of the Lower Mekong Basin, the International Civil Aviation Organization (ICAO), the League of Red Cross and Red Crescent Societies (LRCS), the Technical Support Unit (TSU) of the WMO/ESCAP Panel on Tropical Cyclones and the Asian Disaster Preparedness Centre, Asian Institute of Technology (AIT).

Opening address

3. Opening addresses were made by the Executive Secretary of ESCAP and the representative of the Secretary-General of WMO.
4. In his statement the Executive Secretary welcomed the participants. He stressed that, considering the great losses experienced owing to typhoons and floods, it was essential that the Committee should urgently promote activities in all components of its work programme. He informed the Committee that ESCAP, in co-operation with other organizations concerned, has initiated two projects related to the hydrological component. He also expressed his gratitude to UNDP for its support to the Committee as well as to some of the Members of the Committee. He concluded by assuring the Committee of continuation of the substantive support of ESCAP.

5. The representative of WMO, on behalf of the Secretary-General, thanked ESCAP for hosting the twentieth session of the Typhoon Committee and for facilitating the excellent local arrangements. He also expressed his appreciation to the Government of Thailand for its kind hospitality extended to participants. He called upon Members to further strengthen regional collaboration and inter-agency co-operation to improve the effectiveness of the Committee and emphasized the need for continued vigilance and alertness against the potential threat of typhoons. He thanked UNDP for its support and urged Members to work towards attaining self-reliance through cash contributions to ensure the continuation of the good work of the Committee.

Election of officers

6. The Committee elected Mr. Luo Jibin (China) as Chairman and Mr. Crisostomo C. Reyes (Philippines) as Vice-Chairman. Mr. John A. Fortune (Hong Kong) was elected Chairman of the Drafting Committee.

Agenda

7. The Committee adopted the following agenda:

1. Opening of the session.
2. Election of officers.
3. Adoption of the agenda.
4. The Committee's activities during 1986:
 - (a) Meteorological component;
 - (b) Hydrological component;
 - (c) Disaster prevention and preparedness component;
 - (d) Training;
 - (e) Research.
5. Review of the 1986 and 1987 typhoon seasons/annual publication.
6. Co-ordination with other activities of the WMO Tropical Cyclone Programme.
7. Programme for 1988 and beyond.
8. Support required for the Committee's programme.
9. Consideration of the agenda for the twenty-first session.
10. Date and place of the twenty-first session.
11. Scientific lectures.
12. Adoption of the report.

II. THE COMMITTEE'S ACTIVITIES DURING 1987

8. The Committee reviewed and evaluated in detail its activities during 1987.

A. Meteorological component (Agenda item 4(a))

9. The Committee reiterated its appreciation to its rapporteur on the preparation of the Typhoon Committee Operational Manual, Dr. T. Nitta (Japan) and his colleagues and thanked the WMO for publishing the manual in the TCP series as requested by the Committee at the nineteenth session. It invited Japan to designate a rapporteur on the updating of the manual, who should be requested to submit proposals to its next session. The Committee requested WMO to provide a supplement service for the manual and invited its Members to make full use of the manual as an information source for the operational services.

10. The Committee noted with satisfaction the progress achieved by the Members, with the assistance of WMO, ESCAP and TCS, in implementing the Regional Co-operation Programme, in accordance with the guidelines established in March 1986 by the extraordinary session of the Committee. During the year a survey was undertaken by a WMO/UNDP consultant Dr. P. Li (Hong Kong) on the establishment of a regional computer network to link the RSMC with the NMCs in order to improve the timeliness and effectiveness of data collection, data processing and exchange of information including typhoon forecasts, warnings and advisories between Members. The Committee thanked the consultant for his excellent report which contained relevant and useful information and clearly enunciated conclusions and recommendations including proposals for installation by some Members of appropriate software with assistance provided by WMO. It was informed of an option wherein some Members might give consideration to the installation of a complete new system with dual micro-computers and software already under development with support from VCP. Several Members indicated a preference for adoption of the recommendations of the consultant and for giving consideration to installing the complete new system only when the existing hardware needs to be replaced. The Committee requested Members concerned to give consideration to the recommendations in the report and the option and to notify WMO of their decision and requirements for assistance, within the coming three months.

11. The Committee was informed that the planned changes in the new satellite data transmission scheme and the broadcasting schedule of GMS-3, with the introduction of Stretched VISSR and the Grid Point Value (GPV), were proceeding on schedule. Hourly transmission of polar stereographic projection pictures for the Far East region in low resolution form was implemented by the Japan Meteorological Agency (JMA) in March 1987 and provides essential information for improving typhoon and flood warning services. The Committee was pleased to note that the new computer system of JMA would start its operation in March 1988 and various improved NWP models, including typhoon model which would be needed for the function of the RSMC, would be operated from that time.

12. The Committee expressed its gratitude for the WMO/UNDP roving mission undertaken in March to the Typhoon Committee Members concerned, by a team of experts from Japan. The mission conducted a survey and prepared a report on the new upgraded GMS transmission scheme which included proposals and recommendations on the improvement and installation of new satellite receiving equipment by the Members concerned.

13. The Committee was also informed that most Members were now preparing to upgrade or procure the hardware as necessary in meeting the change of satellite receiving systems, either from their respective national funds or from external sources.

14. Several Typhoon Committee Members have been experiencing difficulties in maintaining existing satellite receivers, radars and upper-air observing systems in continuous effective operating condition, mainly due to the shortage of highly skilled maintenance personnel and/or to the lack of consumables or of essential spare parts in the local markets.

15. The Committee urged that appropriate measures required for overcoming these problems in the short term and in the long term be accorded high priority by those Members concerned.

16. The Committee was informed that several Members have effected replacement of ageing radars and were procuring additional units to improve typhoon and flood warning services by developing and extending high density radar coverage. It noted with satisfaction that radar information was being regularly exchanged amongst Members through the GTS circuit using the WMO format. It was also pleased to learn that the establishment of radar and upper-air observation stations at Cheju Island, the Republic of Korea, which has been on the priority list of the Typhoon Committee for a long time, would be realized by the end of 1987 (upper-air) and the end of 1988 (radar). It felt that the efforts made by the Korean Meteorological Service in this connection will undoubtedly contribute significantly towards the improvement of typhoon and flood forecasting and warning services in the region.

17. The Committee was pleased to note that Members have started to take necessary steps, within their available financial and personnel capabilities, to improve the telecommunication facilities in order to meet the requirements of the GTS and the Regional Co-operation Programme particularly to ensure speedy exchange of information on tropical cyclone movement and forecasting.

18. The Committee was informed that improvement of national data collection and dissemination in the Philippines was underway. The implementation of the plans and the installation of equipment was expected to begin in 1988 with financial assistance from the Government of Japan.

19. The Committee was also informed that the regional telecommunication circuits listed below are in need of urgent improvement since these circuits are still using either obsolete HF radio broadcast systems or communication links of inadequate capacity for the dissemination of meteorological data. These circuits remain to be upgraded in order to ensure speedy and effective data exchanges between key stations.

Regional Circuits

Bangkok - Hanoi	HF radio broadcast
Bangkok - Hong Kong	Satellite, 75 bauds
Bangkok - Phnom Penh	HF radio broadcast
Bangkok - Vientiane	HF radio broadcast
Beijing - Hong Kong	Cable, 75 bauds
Seoul - Tokyo	Cable, 200 bauds

Inter-regional circuits

Bangkok - Kuala Lumpur	Microwave, 75 bauds
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20. Improvements to the Beijing-Hong Kong and Bangkok-Hong Kong circuits were planned and the Bangkok-Hong Kong circuit was expected to be upgraded to 200 BPS from 1 January 1988. The Seoul-Tokyo circuit with 9600 BPS was also scheduled to be implemented in early 1988 in order to meet the demand for world-wide meteorological data in Korea. As regards the upgrading of the Bangkok-Kuala Lumpur circuit to a speed of 1200 BPS, it was considered necessary to provide additional devices such as modems and a micro computer for the Thai Meteorological Department and modems for the Malaysian Meteorological Service which cost up to about US\$ 25,000. The Committee endorsed the provision of these devices as soon as possible by WMO under the RAS/86/175 project fund for early implementation of the circuit to meet the requirement of the Regional Co-operation Programme.

21. The Committee was informed that the Thai Government has already invested a great deal of effort and resources to renew a number of facilities in the maintenance and operation of the RTH Bangkok. It needs, however, external support for additional equipment such as a more powerful computer and peripheral components, etc., to meet the rapidly growing demand for data exchange in the region. It was realized that transmission of surface and upper-air data to the RTH should also be regularly monitored and improved.

22. With a view to ensuring more reliable and accurate typhoon and flood forecasting and warning services, China, Malaysia and Thailand have each planned, with the assistance of TCS, to establish a type of radar-satellite-AMeDAS computer back-up consolidated storm detection and warning system. Early implementation of the plan is expected with external assistance.

23. The Committee was informed that the United States of America had ceased conducting meteorological reconnaissance flights in the Western Pacific from 1 October 1987. Earlier this year, the Committee strongly requested the United States to continue the flights until such time that alternative ways and means could be found to replace the invaluable information obtained from such flights for typhoon tracking and forecasting. However, due to budgetary constraints, this was not possible.

24. The Committee noted the increasing ability of global NWP models to represent and forecast tropical cyclones realistically and usefully. Further improvement in skill may be expected from improved resolution, from feedback from Members using the products and particularly from increased and improved inputs of information, on the cyclones, coming from the region. The Committee

requested its Members to send such information to the centres providing such products from global NWP models. It also requested WMO to look into the question of formatting to facilitate the entry of the data.

B. Hydrological Component (Agenda item 4(b))

25. The Committee reviewed the activities implemented under the hydrological component during 1987 on the basis of a document at the session.

26. The Committee noted with satisfaction the continued efforts made by Members in improving their existing flood forecasting and warning systems and installing new systems.

27. The Committee was pleased to note that a number of Members continued to carry out the monitoring of flood forecasting systems as an on-going activity under the hydrological component using the methodology developed during TOPEX and subsequently amended at the seventeenth session of the Committee. The Committee called on all Members who had monitored their systems under TOPEX to continue to do so to extend this monitoring to other flood forecasting systems.

28. The Committee was pleased to note that WMO had initiated a second series of exchange visits to hydrological forecasting systems by experts as proposed by the Typhoon Committee.

29. The Committee was informed that ESCAP, in co-operation with TCS, organized a mission on flood risk analysis and mapping to Thailand and Malaysia in March 1987. The mission identified the necessity for the preparation of a manual and guidelines for flood risk analysis and mapping as well as a manual and guidelines for comprehensive flood loss prevention and management. The mission recommended that the Eastern Suburban Bangkok area in Thailand be selected as the demonstration pilot area for flat plain basins, and the Upper Klang River basin in Malaysia as that for mountainous basins for the implementation of the project for comprehensive flood loss prevention and management as well as flood risk analysis and mapping. The mission also identified the necessity for sending an advisory mission to other Members of the Typhoon Committee to undertake a survey and investigation in the pilot area designated by respective Members.

30. The Committee was informed that ESCAP, in co-operation with WMO and TCS, had started a project on the preparation of a manual and guidelines for dissemination of the techniques for comprehensive flood loss prevention and management with financial support from UNDP. As a first step, a mission consisting of experts in flood loss prevention and flood forecasting and warning would be sent to Members of the Typhoon Committee from 15 November to mid-December 1987 to collect data and information related to comprehensive flood loss prevention and management and to provide technical assistance.

31. The Committee was informed that ESCAP, in co-operation with TCS and other international organizations concerned, had initiated a project on Improvement of the Flood Loss Prevention Systems based on Risk Analysis and Mapping with the financial support of the Government of Japan. As a first step

of this project, ESCAP had dispatched an advisory mission to the second demonstration pilot basin, the Eastern Suburban Bangkok area, Thailand, in August and September 1987. As a second step of the project, ESCAP had also planned to prepare a proposal on a manual and guidelines for flood risk analysis and mapping applicable to Typhoon Committee Members by mid-November 1987. It was also planned to organize an expert group meeting to review the proposal on flood risk analysis and mapping at Bangkok, tentatively from 25 to 29 January 1988.

32. The Committee was pleased to note that an international workshop on Urban Flood Protection and Drainage in East and South-East Asia had been organized by Chulalongkorn University, the Bangkok Metropolitan Administration (BMA) and the Asian Institute of Technology (AIT) at Bangkok from 22 to 25 June 1987. ESCAP and TCS had sent representatives to the workshop and presented a paper on flood plain management to the Typhoon Committee Members.

33. The Committee noted with satisfaction that the Malaysian Government had completed flood risk analysis and mapping in the Upper Klang River basin in Malaysia in 1987, which had been selected as a demonstration pilot area in the Typhoon Committee region.

34. The Committee noted that the Malaysian Government and the Thai Government expressed their appreciation for the technical assistance of ESCAP and TCS and requested their continuous technical support to implement respective projects in their demonstration pilot basins, such as the comprehensive flood loss prevention and management project and the flood risk analysis and mapping project.

C. Disaster prevention and preparedness (DPP) component
(Agenda item 4(c))

35. The Committee reviewed the activities of Members under this component of the programme and noted with satisfaction the high degree of implementation of the recommendations made at the nineteenth session to further improve mitigation of damages caused by typhoons and related floods.

36. The Committee expressed its appreciation to the Government of the Philippines for acceding to the designation of Col. V.R. Pagulayan, Jr., as part-time expert on DPP.

37. The Committee was pleased to know that LRCS concurred in the choice of Col. Pagulayan and of its assurance of continued support to the Committee's DPP activities. LRCS had extended financial support in the amount of M\$100,000 to the Malaysian Red Crescent Society for the conduct of disaster management training in the year under review. It had also earmarked US\$66,000 worth of radio communications equipment for disaster preparedness to the Philippine National Red Cross in 1988.

38. Members continued to submit damage survey reports in the standard format. In addition, TCS distributed a damage survey form that put particular emphasis on the most devastating phenomena experienced during a specific period.

39. The Committee noted UNDRO's request for improved collaboration in DPP, copies of typhoon damage survey reports and results of investigations, if any, and UNDRO's plan to publish a manual on disaster mitigation in 1988. The Committee noted the information provided by UNDRO on a proposal to establish an international decade for natural hazard reduction commencing in 1990 which will be considered by the forthcoming General Assembly of the United Nations.

40. The Committee was informed of the expanding activities of UNDRO's collaborating centre, the Asian Disaster Preparedness Centre, and its desire to be associated with DPP work of the Committee. Note was taken of the possible availability of computer back-up at AIT's Regional Computer Centre.

D. Training component (Agenda item 4(d))

41. The Committee reviewed the activities under this component of the programme.

42. The Committee was pleased to note that Members continued to take advantage of training opportunities for their staff in a variety of disciplines in the fields of meteorology, hydrology and disaster preparedness and prevention.

43. The Committee noted with appreciation the organization of the following seminars/training courses by the Government of Japan in which staff of Typhoon Committee Members participated:

- (a) Application of doppler radar data;
- (b) GMS data reception;
- (c) Meteorological telecommunications;
- (d) Radar and AMEDAS;
- (e) Objective analysis;
- (f) Climate data base.

44. An international seminar on the Prevention of Meteorological Disasters Caused by Tropical Cyclones was held in JMA in October 1986 and participants from the Committee Members attended. A similar seminar will be held in November 1987.

45. In accordance with the recommendations of the Committee at its nineteenth session an updated list had been prepared by TCS on the facilities offered, the requirements of Members for training, and the attachments and exchange of experts/scientists including study tours under TCDC arrangements. The list had since been sent to WMO for possible funding under the scheme. Members were advised to follow up, individually, their requests with WMO.

46. The Committee was pleased to learn that a study tour in tropical cyclone forecasting facilities and techniques organized by China under TCDC arrangements, in which scientists from Hong Kong, Japan, the Philippines, Malaysia, Thailand and a representative from WMO participated, had been successfully completed.

47. The regional meteorological training centre in the University of the Philippines, supported by WMO, had 18 scholars from Typhoon Committee Members enrolled in post-graduate degree courses in meteorology.

48. The Royal Observatory, Hong Kong, was conducting a training course for scientific assistants in which two staff members from PAGASA in the Philippines and two from the Thai Meteorological Department were attending.

49. The Committee noted the request of Malaysia for technical assistance in the training of disaster relief personnel, particularly social welfare officials, in the management of relief centres and the mitigation of the effects of disasters.

E. Research component (Agenda item 4(e))

50. The Committee noted with satisfaction Members' efforts in research, in close co-operation with the corresponding research co-ordinators, on the major components of its programme. It expressed its appreciation to Dr. T. Kitade (Japan) and Mr. C.H. Sea (Malaysia), Meteorological and Hydrological Research Co-ordinators, respectively, and the research correspondents of Members, for their progress reports.

51. It expressed the wish that Dr. Kitade and Col. Pagulayan will continue to serve as Research Co-ordinators in their respective fields and at the same time hoped that the Drainage and Irrigation Department, Malaysia will provide a Research Co-ordinator for the hydrological component. It also expressed its gratitude to these Governments for their co-operation.

III. REVIEW OF THE 1986 AND 1987 TYPHOON SEASONS
ANNUAL PUBLICATION

(Agenda item 5)

52. A summary report of the country papers was presented and distributed to all participants by TCS during the session.

53. The Committee noted with satisfaction that the second issue of the "ESCAP/WMO Typhoon Committee Annual Review 1986" had been successfully prepared by the Chief Editor from Hong Kong assisted by the national editors of Members. The Annual Review was distributed to Members of WMO, the Typhoon Committee and the agencies concerned. The Committee highly commended the high quality of the review and expressed its appreciation to the Chief Editor from Hong Kong and the national editors of Members for their painstaking efforts at accomplishing this difficult task. It thanked UNDP for its financial support for the production of this publication.

54. The Committee also expressed its appreciation to Hong Kong for agreeing to provide a Chief Editor for another year.

55. The Committee considered that in the preparation of the publication for 1987 account should be taken of the comments made by Members at the session.

IV. CO-ORDINATION WITH OTHER ACTIVITIES OF THE
WMO TROPICAL CYCLONE PROGRAMME

(Agenda item 6)

56. The Committee's discussion under this item was based mainly upon the information contained in the thirteenth status report on the implementation of the WMO Tropical Cyclone Programme (TCP) and supplementary information presented orally at the session by the representative of WMO.

57. In noting that the Tenth WMO Congress had adopted a Second WMO Long-Term Plan (SLTP) for the decade 1988-1997, including sections on the TCP, the Committee expressed its wish that there should be co-ordination, where appropriate, between its plans and the SLTP. It also felt that its plans should be structured to facilitate monitoring of implementation, review, updating and, where needed, revision. The Committee therefore requested the TCS in consultation with the WMO and ESCAP Secretariats to present proposals to its twenty-first session on consolidation and restructuring of its plans to meet the above requirements.

58. Noting that the next session of CBS (January-February 1988) is charged with elaborating procedures for the designation of RSMCs, the Committee reiterated its expressed wish that RMC Tokyo be formally designated as an RSMC with specialization in typhoons and requested WMO to take the necessary steps in 1988. It expressed its conviction that the requirements for services and products and the implementation programme have already been clearly defined under its Regional Co-operation Programme.

59. In regard to the wish expressed by the Panel on Tropical Cyclones to take full advantage of the experience gained by the Typhoon Committee in the implementation of the regional computer network, when formulating its own project for such a development, the Committee agreed that the report of its consultant on this subject may be submitted to the next session of the Panel for information.

60. The Committee expressed appreciation for the publication by WMO of the report on the story of TOPEX, as it had previously requested, and urged that its Members should ensure that the publication be widely disseminated to administrators, those concerned with mitigation of natural disasters, meteorologists, hydrologists and others as appropriate.

V. PROGRAMME FOR 1988 AND BEYOND

(Agenda item 7)

61. In considering its programme for 1988 and beyond, the Committee took into account the on-going programme of work, the modified medium- to long-term programme and the Regional Co-operation Programme it had adopted.

62. The Committee noted with appreciation the activities undertaken in the hydrological component and expected further technical exchanges including exchange visits for training and research to be performed in 1988 and beyond.

63. The Committee endorsed in general the programme for 1988 and beyond as discussed at this session and urged Members to make every effort to implement this in addition to their national programmes.

64. The Committee identified the order of priority under the meteorological component for the implementation of the programme as indicated in Appendix A and also urged Members to make every effort to implement these programmes.

65. The Committee also urged Members to monitor and make every effort to execute all observations regularly and to transmit the data to the RTHs concerned.

66. The Committee endorsed the ESCAP Secretariat's initiative to submit the subject of urban flood loss prevention and mitigation, including the topic of landslides/landslips, as an issue to be considered by the Commission at its next session in 1988.

67. The Committee was informed that the U.S. Government is planning to undertake a field experiment in the Western North Pacific during the 1990 typhoon season to provide a comprehensive data set to study Pacific tropical cyclone movement.

68. It was suggested that the Committee might consider the possibility of undertaking an activity similar to TOPEX to coincide with the U.S. field experiment. The Committee decided to refer this matter to its Working Group on implementation of the Regional Co-operation Programme. The Committee invited its Members to make full use of operational data and information to be gathered and disseminated by the U.S. field experiment.

VI. SUPPORT FOR THE COMMITTEE'S PROGRAMME

(Agenda item 8)

69. The Committee reviewed the requirements for support to carry out its programme activities on the basis of a document submitted by WMO and ESCAP.

70. In considering the staffing for the Typhoon Committee Secretariat (TCS) the Committee was informed that the Philippines would continue to provide a co-ordinator and a meteorologist as well as host facilities for another year. The Philippines also agreed, as an interim measure, to make available the services of Col. V.R. Pagulayan, Jr., Administrator of the Office of Civil Defense to serve as an expert on disaster prevention and preparedness on a part-time basis until the service of a full-time expert is available.

71. The Committee expressed its thanks and gratitude to the Philippine Government for its kind offers and its continued support to facilitate the smooth functioning of the TCS. It also recorded its deep appreciation to Dr. R.L. Kintanar for his contributions and guidance to the Committee during the past years.

72. The Committee welcomed the statement made by Japan that it would make efforts to continue its support of a hydrologist in the TCS. It thanked the Japanese Government for its kind gesture.

73. The Committee recorded its appreciation to Japan for making available the services of three experts on a mission to Members to advise on necessary actions for the reception of upgraded GMS transmissions. It also expressed its thanks to Hong Kong for the services of Dr. P. Li who visited Members and formulated a plan for the establishment of a regional network for the computerization of operational typhoon monitoring and forecasting services.

74. The Committee welcomed the announcement by some Members to make cash contributions to support its activities. China re-affirmed its pledge to contribute a sum of US \$12,000 per year to the Committee. Korea confirmed its contribution of US \$12,000 for 1987 by the end of 1987. Malaysia and Thailand both agreed in principle to the contribution of US \$12,000 each on the condition that other Members would also make similar pledges. Philippines stated it had already contributed in kind by providing local support to facilitate the functioning of the TCS. Japan indicated that it had already contributed in kind in support of the Committee's activities and would make greater efforts to increase this support in the future. It expressed the view that cash contributions from Japan to the Committee would be available only on a voluntary basis through the Japan-ESCAP Co-operation Fund (JECF). Hong Kong endorsed the view that cash contributions should be voluntary and pledged its continued support in kind whenever possible, especially in the provision of expert services.

75. The Committee noted the minimal budgetary requirement for its institutional functioning prepared by the TCS in compliance with the decisions of the nineteenth session.

76. The Committee reviewed and revised the amended Draft Rules for the ESCAP/WMO Typhoon Committee Trust Fund prepared by WMO in consultation with ESCAP and TCS. The Rules adopted by the Committee appear as Appendix B.

77. In the event that the ESCAP/WMO Typhoon Committee Trust Fund may be established before the next session, the Committee authorized the Chairman to approve the expenditures, as an interim measure, from contributions received for the Fund. It further agreed that any sharing between WMO and ESCAP of the 13% overhead cost for the management of the Trust Fund should be decided by the two Secretariats at the appropriate levels. The ESCAP Secretariat informed the Committee that ESCAP management charges would be applied to the contributions to be made through ESCAP to the Trust Fund.

78. The Committee requested the Secretary-General of WMO to initiate action to proceed with the establishment of the Trust Fund as soon as possible. However, in the event that the Trust Fund cannot be established due to the need for further deliberations on the Rules, Members of the Typhoon Committee will be informed accordingly. The Rules will then be referred to the next session of the Committee for consideration. The Secretary-General of WMO was requested to notify Members of the establishment of the Trust Fund, including the account number(s), name and address of the bank(s).

79. The Committee expressed its thanks and gratitude to UNDP for its programme support to the Typhoon Committee, under project RAS/86/175 amounting to US\$1,000,000 covering the period 1987-1990. The Committee welcomed the initiative of WMO for its submission of a project proposal entitled "Training Courses in Meteorology for Manpower Development in South-East Asia and the South Pacific" for consideration by UNDP to meet the expressed need for training in these areas.

80. The Committee agreed that the Voluntary Co-operation Programme (VCP) of WMO provides enormous potential for support of its activities, and Members were advised to take full advantage of this system of mutual assistance.

81. The Committee was informed that ESCAP would continue to provide substantive support to the Typhoon Committee in the framework of its own work programme. It appreciated the support from ESCAP extra-budgetary resources amounting to US\$61,472 from JECF in the implementation of the project on improvement of flood loss prevention systems based on risk analysis and mapping.

82. Technical Co-operation among Developing Countries (TCDC) is playing an increasingly significant role as a means to support the Committee's activities especially as an effective vehicle for technology transfer. The Committee thanked China for organizing a successful study tour in that country on tropical cyclone forecasting facilities and techniques for meteorologists from Members in 1987. The Committee was informed that China had agreed to accept two meteorologists from the Philippines for attachment to the Shanghai Meteorological Bureau for two weeks in order to familiarize them with typhoon forecasting techniques during the typhoon season in 1988. The Philippines would also be willing to consider requests from Members for attachment to the National Flood Forecasting Office of PAGASA under TCDC arrangements. The Committee was also informed that Thailand would like to send personnel on study tours on the topics of marine and radar observations as well as BAPMoN station observation in Members. Details of this matter were submitted to TCS.

83. The Committee noted other possible sources of support including bilateral assistance and the private sector. In this regard it thanked the Japan Foundation for Shipbuilding Advancement (JAFSA) for its sponsorship of an international conference on severe weather forecasting over the Western Pacific organized by the Japan Meteorological Agency. It hoped that similar conferences would be held in the future with the kind support of JAFSA. The Committee also expressed its thanks and appreciation to the Japan International Co-operation Agency (JICA) for providing equipment and training facilities on the basis of bilateral agreements and looked forward to the continuation of such support in the future. It also expressed its appreciation to the USSR for its offer of technical support to the Committee's activities, particularly in training through VCP fellowships.

84. The Committee agreed that support from the private sector to the TCS should be communicated to the Chairman who would consult Members to decide if such support could be accepted. It further agreed that Members should make greater efforts to publicize the activities of the Typhoon Committee in order to attract potential donors from the private sector. In this regard the Annual Review should be given wider circulation whenever possible.

85. The Committee stressed the need for greater efforts by Members to mobilize national resources to the extent possible for the implementation of its programme in meeting the requirements for meteorological, hydrological and DPP services.

86. The Committee agreed that TOPEX had laid a good foundation for more effective and closer co-operation among Members. It recommended that the functional aspect of TOPEX be maintained in order to further strengthen regional co-operation which formed the basis for the formulation of the Regional Co-operation Programme. It further agreed on the establishment of a Technical Working Group on the Implementation of the Regional Co-operation Programme to assist the activities of the Typhoon Committee for a period of one year in the first instance. The terms of reference of the Technical Working Group appear in Appendix C. The Committee requested WMO and ESCAP to explore the possibility of funding to support the meeting of the Technical Working Group before the next session in 1988.

87. The Committee was pleased to note the offer of the Government of Japan for technical assistance in the formulation of a manual and guidelines on comprehensive flood loss prevention and management as well as flood risk analysis and mapping.

VII. CONSIDERATION OF THE AGENDA FOR THE TWENTY-FIRST SESSION

(Agenda item 9)

88. The Committee requested the ESCAP and WMO Secretariats, in close consultation with the TCS, to prepare the detailed agenda for the twenty-first session. It was agreed that Members might propose to ESCAP, WMO and the TCS, by the end of February 1988 specific items which should be included in the agenda of the next session. The Committee also requested that the documents for the sessions be distributed to the Members in good time.

89. In regard to the provision of linguistic services, the Committee agreed that English be the working language of the Committee in the future as well as on this occasion.

VIII. DATE AND PLACE OF THE TWENTY-FIRST SESSION

(Agenda item 10)

90. The Committee requested the ESCAP and WMO Secretariats, in consultation with TCS, to decide on the date and venue of the twenty-first session, by mid-February 1988.

IX. SCIENTIFIC LECTURES

(Agenda item 11)

91. The following scientific lectures were presented:

- (a) Plans for a U.S. Tropical Cyclone Motion Field Experiment during 1990 by Prof. Russell L. Elsberry, Professor of Meteorology, Naval Post-graduate School, Monterey, California, USA;
- (b) Present Status of Nowcasting in JMA by Dr. Ryoza Tatehira, Director, Forecast Department, Japan Meteorological Agency, Tokyo, Japan;
- (c) Flood Forecasting and Warning Systems and Flood Fighting in Japan by Mr. Masao Hayashi, Director, Planning Division, Shikoku Regional Construction Bureau, Ministry of Construction, Japan;
- (d) Training and Utilization of the Community in Preparation for a Natural Disaster by Mr. John A. Fortune, Deputy Commissioner (Operations) and Chief Staff Officer, Civil Aid Services, Hong Kong;
- (e) Some Results of Soviet Investigations on Physics of Tropical Cyclones by Prof. V.M. Volostchik, Deputy Director, Scientific Research Institute of Experimental Meteorology, USSR Goschomhydromet, Moscow, USSR;
- (f) Recent Development of Flood Prevention Activities in Bangkok and the Vicinity by Dr. Ksemsan Suwarnrat, Director, Policy and Planning Division 1, Bangkok Metropolitan Administration, Thailand;
- (g) Storm Warning Radar Calibration (video tape presentation) by C.H. Tang, WMO/UNDP consultant.

92. The Committee expressed its thanks to the lecturers.

X. ADOPTION OF THE REPORT

(Agenda item 12)

93. The Committee adopted its report on 26 October 1987.

Priority list as revised by the Typhoon Committee
at its twentieth session

(Meteorological component)

Observing facilities

(a) Upper-air stations

98223 Laoag (Philippines)	)	12 GMT radiosonde/rawin/ national/external assistance needed
98645 Cebu (Philippines))	
47187 Cheju (Republic of Korea)	)	National/external assistance needed

(b) Weather radar

Cheju (Republic of Korea)	National
Tanay (near Manila, the Philippines)	National project
Haiphong (Viet Nam)	External assistance needed
Vientiane (Lao People's Democratic Republic)	External assistance needed
Bangkok, Khon Kaen and Chanthaburi (Thailand)	National/external assistance needed

(c) Satellite receiving equipment (GMS/TIROS-N Satellite)

Hanoi (Viet Nam)	External assistance needed
Bangkok (Thailand)	National/external assistance needed

Telecommunication

(a) Improvement of national data collection facilities

Lao People's Democratic Republic	)	National/bilateral
Philippines	)	projects/external
Viet Nam	)	assistance needed

(b) Regional telecommunication links

Bangkok-Hanoi (new circuit)	National project/external assistance needed
Beijing-Guanghou-Hong Kong	National/bilateral project

(c) Other telecommunication facilities

Thailand - Strengthening of
RTH, Bangkok

National/external
assistance needed

Malaysia - Improvement of
Kuala Lumpur-
Bangkok, Kuala
Lumpur-Singapore

External assistance needed

Rules of the ESCAP/WMO Typhoon Committee Trust Fund

Establishment of the Fund and its purpose

1. The ESCAP/WMO Typhoon Committee Trust Fund (hereinafter referred to as the Fund) will be established to provide support to the Typhoon Committee to facilitate the implementation of its programme. The Fund shall assist in the provision of institutional support to the Typhoon Committee's programme or other support to its activities or activities of its Members related to its objectives.
2. The Fund will be established from voluntary cash contributions by, or through, the Governments of the Typhoon Committee Members and from voluntary cash contributions through ESCAP, WMO or the Typhoon Committee Secretariat. Acceptance of contributions, other than those directly from Governments, shall be subject to the approval of the Typhoon Committee. Contributions shall normally be made in US dollars or any other readily convertible currency. Contributions in other currencies may be accepted subject to the conditions and limits specified in Annex I to the present rules. Contributions may include awards, grants and donations.

Administration of the Fund

3. The Secretary-General of WMO, or his authorized representative, shall be responsible for the management of funds contributed by or through the above-mentioned donor Governments or through ESCAP, WMO or the Typhoon Committee Secretariat.
4. The Fund shall be administered by the Secretary-General of WMO in accordance with the financial regulations of the WMO, supplemented by the provisions of the present rules and any supplementary directives or interpretation of these rules that may be decided upon by the Executive Council of WMO.
5. The accounting of the expenditures of the Fund shall be as provided for in Rule 1 above as well as for any other directly identifiable charges related to the administration of the Fund (e.g. bank charges and/or commissions, communication charges, etc.). For its costs which are not directly identifiable (stationery, drafting, typing, registry, mailing, preparation of reports and accounts, external audit, etc.) WMO will receive, in convertible currency, 13% of the expenditure made from the Fund. Interest accrued from any investment of the principal of the Fund will constitute an income to the Fund.
6. Financial reports on the Fund will be made in US dollars. The UN rate of exchange prevailing on the date of the transaction or report will apply for the conversion into US dollars of contributions or income received and payments made or charges incurred in any other currency. WMO shall submit a financial report, annually, to ESCAP and to the Typhoon Committee.

7. The biennial statement of income and expenditure of the Fund will be incorporated in the overall audited financial statements submitted by the Secretary-General of WMO to the WMO Executive Council for approval. External audit will be conducted only as provided for in the WMO Financial Regulations. The audit report will be submitted to ESCAP and the Typhoon Committee.

Procedures for the utilization of the Fund

8. The utilization of the Fund shall be based upon decisions of the Typhoon Committee and, within this limitation, upon written requests from Members of the Typhoon Committee or ESCAP or the Co-ordinator of the Typhoon Committee Secretariat.

9. Each request shall be prepared on a special request form (see Annex II) and shall specify the details as required thereon.

10. The Secretary-General of WMO shall ensure that the order of priority of requirements established by the Typhoon Committee is followed in the allocation of funds.

11. The approving authority for granting support from the Fund shall rest with the Typhoon Committee, or, on its behalf, by the Chairman of the Typhoon Committee. However the Secretary-General of WMO, on behalf of the Typhoon Committee, is authorized to approve provision of support not exceeding US\$5,000 or 10% of the available fund, whichever is the lesser amount, for each project, and he shall inform, without any delay, the Executive Secretary of ESCAP of such approval. The Secretary-General of WMO will not enter into any financial commitments unless he has received the funds required.

12. After approval of the request the WMO Secretariat shall make the necessary arrangements for the provision of support requested. In this connection the beneficiary shall abide by the Financial Regulations and internal rules of WMO and render the accounts to the WMO in good time.

13. Copies of the approved requests shall be returned to the requesting authority with a copy being forwarded to the Resident Representative of the UNDP office concerned, if any. If the request cannot be met, the requesting Member or organization or office shall be so advised.

Legal Responsibilities

14. Under no circumstances will the Fund be made liable to pay and/or reimburse any taxes on emoluments or honorarium, or any customs and import duties, value added taxes or similar charges, demurrage and inland transportation costs for goods procured and imported under the Fund.

15. WMO will not be held responsible for:

- (i) late execution of the requests received;
- (ii) delays by the suppliers in the execution of the orders placed;

- (iii) damages or losses at the place of destination, including incidents which may result from inspection by the local customs authorities.

16. At no time will the WMO, or the Secretary-General of WMO acting on its behalf, be held accountable or legally liable for any acts of omission or commission, or for failure to act on the part of the Typhoon Committee and to any third party resulting from WMO activities under this agreement.

Closure of the Fund

17. The Typhoon Committee can decide at any time to close the Fund established under the present Rules. Such a decision will have to be taken by the majority of all the Members of the Committee. The decision will be notified in writing to the Secretary-General of WMO together with the designation of the entity to which any cash balance of the Fund is to be transferred.

18. Upon notification of the decision to close the Fund, the Secretary-General of WMO will not enter any more into further financial commitments and will proceed with the settlement of any unliquidated obligations recorded against the Fund.

19. When the Secretary-General of WMO is satisfied that all known obligations have been liquidated by disbursement or by cancellation within the limit of time specified in the WMO Financial Regulations for such liquidation, he will prepare the final statement of account for submission to the Executive Council as specified in Rule 7 above.

20. Upon approval of the final account by the WMO Executive Council, the Secretary-General of WMO will proceed with the transfer of any cash balance as provided for in Rule 18.

21. Should it be found that at the close of any accounting period, the cash balance amounts to less than US\$1,000, the Secretary-General of WMO may decide without consultation to proceed with the closure of the Fund and to notify the Typhoon Committee accordingly.

Review of these rules

22. The Typhoon Committee, in consultation with ESCAP and WMO, may review these rules in the light of experience gained and make any changes as appropriate.

Annex to the Rules of the ESCAP/WMO
Typhoon Committee Trust Fund

Provisions governing the acceptance by the
Secretary-General of WMO of contributions to the Fund
other than in readily convertible currencies

Should the Secretary-General of WMO be informed by a donor or a prospective donor of its intention to make a contribution of a given amount to the Fund in its own national non-freely convertible currency, the following procedure will apply:

The Secretary-General of WMO will establish the needs for the pledged contribution.

The Secretary-General of WMO will seek through the appropriate channels the assurance that no information on the financial transactions made in local currency, other than that contained in the audited financial accounts submitted to the Executive Council of WMO, will be requested by the donor.

Acceptance of contributions in non-convertible currencies will be subject to limits specified by the Typhoon Committee or, on its behalf, by the Chairman of the Typhoon Committee.

Upon formal notification to the Secretary-General of WMO of the donor's acceptance without any reservation or time limitation of the above conditions, the Secretary-General of WMO will make the appropriate banking arrangements and notify the donor of the particulars of the bank account to be credited with the pledged contribution in local currency.

Acceptance of contributions in non-convertible currencies will be recorded by the Secretary-General of WMO in his report on the financial accounts to the WMO Executive Council together with the indication of the use which will be made of such contributions.

Request for temporary support under the ESCAP/WMO
Typhoon Committee Trust Fund

Reference No.:
(To be completed by WMO)

Request made by: 1)

Your reference:

Activity/facility to which the request is related:

Name and address of supplier:

Item No.	Period/ Quantity	Description of Services/ Merchandise	Rate/ Unit Price	Estimated cost: Currency and amount
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Total amount of temporary support is not to exceed (currency and amount).....

Name and address to which payment is to be made (after receipt of certified invoices) if other than that given above:

Signature:

Representative of Member government to the Typhoon
Committee
or ESCAP
or Co-ordinator, TCS

1) Member of Typhoon Committee or ESCAP or Co-ordinator, TCS.

TECHNICAL WORKING GROUP ON THE IMPLEMENTATION OF
THE REGIONAL CO-OPERATION PROGRAMME

AIM

To form a Technical Working Group to assist the Typhoon Committee in the implementation of its programmes.

TERMS OF REFERENCE

TITLE "Technical Working Group on the Implementation of the Regional Co-operation Programme"

1. To keep under review the development of the Regional Co-operation Programme.
2. To effect liaison amongst Members in respect of the establishment of the RSMC and interaction between the RSMC and NMC's with a view to strengthening co-operative arrangements.
3. To recommend to the Typhoon Committee a research programme covering all the components.
4. To study the financial implications of any recommendations of the Technical Working Group and make proposals regarding resources in this respect.
5. To recommend to the Typhoon Committee measures on the practical implementation of all other aspects of the regional co-operation programme.
6. To table a report to the Typhoon Committee Secretariat by 30 June 1988 on the progress made and results achieved.

CONSTITUTION OF THE TECHNICAL WORKING GROUP

Membership of the Technical Working Group will comprise representatives designated by Typhoon Committee Members, a representative of TCS, ESCAP and WMO.

A Chairman to be elected from amongst Members of the Technical Working Group.

ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC
AND
WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
Twentieth session
20-26 October 1987
Bangkok

FINAL REPORT OF THE TYPHOON COMMITTEE
ON ITS TWENTIETH SESSION

I. ORGANIZATION OF THE SESSION

1. The twentieth session of the Typhoon Committee was held in Bangkok from 20 to 26 October 1987.

Attendance

2. The session was attended by representatives of China, Democratic Kampuchea, Hong Kong, Japan, Malaysia, the Philippines, the Republic of Korea, Thailand and Viet Nam. Observers from France, the United States of America and the Union of the Soviet Socialist Republics attended the session. Observers were also present from the United Nations Development Programme (UNDP), the Office of the United Nations Disaster Relief Co-ordinator (UNDRO), the Committee for Co-ordination of Investigations of the Lower Mekong Basin, the International Civil Aviation Organization (ICAO), the League of Red Cross and Red Crescent Societies (LRCS), the Technical Support Unit (TSU) of the WMO/ESCAP Panel on Tropical Cyclones and the Asian Disaster Preparedness Centre, Asian Institute of Technology (AIT).

Opening address

3. Opening addresses were made by the Executive Secretary of ESCAP and the representative of the Secretary-General of WMO.
4. In his statement the Executive Secretary welcomed the participants. He stressed that, considering the great losses experienced owing to typhoons and floods, it was essential that the Committee should urgently promote activities in all components of its work programme. He informed the Committee that ESCAP, in co-operation with other organizations concerned, has initiated two projects related to the hydrological component. He also expressed his gratitude to UNDP for its support to the Committee as well as to some of the Members of the Committee. He concluded by assuring the Committee of continuation of the substantive support of ESCAP.

5. The representative of WMO, on behalf of the Secretary-General, thanked ESCAP for hosting the twentieth session of the Typhoon Committee and for facilitating the excellent local arrangements. He also expressed his appreciation to the Government of Thailand for its kind hospitality extended to participants. He called upon Members to further strengthen regional collaboration and inter-agency co-operation to improve the effectiveness of the Committee and emphasized the need for continued vigilance and alertness against the potential threat of typhoons. He thanked UNDP for its support and urged Members to work towards attaining self-reliance through cash contributions to ensure the continuation of the good work of the Committee.

Election of officers

6. The Committee elected Mr. Luo Jibin (China) as Chairman and Mr. Crisostomo C. Reyes (Philippines) as Vice-Chairman. Mr. John A. Fortune (Hong Kong) was elected Chairman of the Drafting Committee.

Agenda

7. The Committee adopted the following agenda:

1. Opening of the session.
2. Election of officers.
3. Adoption of the agenda.
4. The Committee's activities during 1986:
 - (a) Meteorological component;
 - (b) Hydrological component;
 - (c) Disaster prevention and preparedness component;
 - (d) Training;
 - (e) Research.
5. Review of the 1986 and 1987 typhoon seasons/annual publication.
6. Co-ordination with other activities of the WMO Tropical Cyclone Programme.
7. Programme for 1988 and beyond.
8. Support required for the Committee's programme.
9. Consideration of the agenda for the twenty-first session.
10. Date and place of the twenty-first session.
11. Scientific lectures.
12. Adoption of the report.

II. THE COMMITTEE'S ACTIVITIES DURING 1987

8. The Committee reviewed and evaluated in detail its activities during 1987.

A. Meteorological component (Agenda item 4(a))

9. The Committee reiterated its appreciation to its rapporteur on the preparation of the Typhoon Committee Operational Manual, Dr. T. Nitta (Japan) and his colleagues and thanked the WMO for publishing the manual in the TCP series as requested by the Committee at the nineteenth session. It invited Japan to designate a rapporteur on the updating of the manual, who should be requested to submit proposals to its next session. The Committee requested WMO to provide a supplement service for the manual and invited its Members to make full use of the manual as an information source for the operational services.

10. The Committee noted with satisfaction the progress achieved by the Members, with the assistance of WMO, ESCAP and TCS, in implementing the Regional Co-operation Programme, in accordance with the guidelines established in March 1986 by the extraordinary session of the Committee. During the year a survey was undertaken by a WMO/UNDP consultant Dr. P. Li (Hong Kong) on the establishment of a regional computer network to link the RSMC with the NMCs in order to improve the timeliness and effectiveness of data collection, data processing and exchange of information including typhoon forecasts, warnings and advisories between Members. The Committee thanked the consultant for his excellent report which contained relevant and useful information and clearly enunciated conclusions and recommendations including proposals for installation by some Members of appropriate software with assistance provided by WMO. It was informed of an option wherein some Members might give consideration to the installation of a complete new system with dual micro-computers and software already under development with support from VCP. Several Members indicated a preference for adoption of the recommendations of the consultant and for giving consideration to installing the complete new system only when the existing hardware needs to be replaced. The Committee requested Members concerned to give consideration to the recommendations in the report and the option and to notify WMO of their decision and requirements for assistance, within the coming three months.

11. The Committee was informed that the planned changes in the new satellite data transmission scheme and the broadcasting schedule of GMS-3, with the introduction of Stretched VISSR and the Grid Point Value (GPV), were proceeding on schedule. Hourly transmission of polar stereographic projection pictures for the Far East region in low resolution form was implemented by the Japan Meteorological Agency (JMA) in March 1987 and provides essential information for improving typhoon and flood warning services. The Committee was pleased to note that the new computer system of JMA would start its operation in March 1988 and various improved NWP models, including typhoon model which would be needed for the function of the RSMC, would be operated from that time.

12. The Committee expressed its gratitude for the WMO/UNDP roving mission undertaken in March to the Typhoon Committee Members concerned, by a team of experts from Japan. The mission conducted a survey and prepared a report on the new upgraded GMS transmission scheme which included proposals and recommendations on the improvement and installation of new satellite receiving equipment by the Members concerned.

13. The Committee was also informed that most Members were now preparing to upgrade or procure the hardware as necessary in meeting the change of satellite receiving systems, either from their respective national funds or from external sources.

14. Several Typhoon Committee Members have been experiencing difficulties in maintaining existing satellite receivers, radars and upper-air observing systems in continuous effective operating condition, mainly due to the shortage of highly skilled maintenance personnel and/or to the lack of consumables or of essential spare parts in the local markets.

15. The Committee urged that appropriate measures required for overcoming these problems in the short term and in the long term be accorded high priority by those Members concerned.

16. The Committee was informed that several Members have effected replacement of ageing radars and were procuring additional units to improve typhoon and flood warning services by developing and extending high density radar coverage. It noted with satisfaction that radar information was being regularly exchanged amongst Members through the GTS circuit using the WMO format. It was also pleased to learn that the establishment of radar and upper-air observation stations at Cheju Island, the Republic of Korea, which has been on the priority list of the Typhoon Committee for a long time, would be realized by the end of 1987 (upper-air) and the end of 1988 (radar). It felt that the efforts made by the Korean Meteorological Service in this connection will undoubtedly contribute significantly towards the improvement of typhoon and flood forecasting and warning services in the region.

17. The Committee was pleased to note that Members have started to take necessary steps, within their available financial and personnel capabilities, to improve the telecommunication facilities in order to meet the requirements of the GTS and the Regional Co-operation Programme particularly to ensure speedy exchange of information on tropical cyclone movement and forecasting.

18. The Committee was informed that improvement of national data collection and dissemination in the Philippines was underway. The implementation of the plans and the installation of equipment was expected to begin in 1988 with financial assistance from the Government of Japan.

19. The Committee was also informed that the regional telecommunication circuits listed below are in need of urgent improvement since these circuits are still using either obsolete HF radio broadcast systems or communication links of inadequate capacity for the dissemination of meteorological data. These circuits remain to be upgraded in order to ensure speedy and effective data exchanges between key stations.

Regional Circuits

Bangkok - Hanoi	HF radio broadcast
Bangkok - Hong Kong	Satellite, 75 bauds
Bangkok - Phnom Penh	HF radio broadcast
Bangkok - Vientiane	HF radio broadcast
Beijing - Hong Kong	Cable, 75 bauds
Seoul - Tokyo	Cable, 200 bauds

Inter-regional circuits

Bangkok - Kuala Lumpur	Microwave, 75 bauds
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20. Improvements to the Beijing-Hong Kong and Bangkok-Hong Kong circuits were planned and the Bangkok-Hong Kong circuit was expected to be upgraded to 200 BPS from 1 January 1988. The Seoul-Tokyo circuit with 9600 BPS was also scheduled to be implemented in early 1988 in order to meet the demand for world-wide meteorological data in Korea. As regards the upgrading of the Bangkok-Kuala Lumpur circuit to a speed of 1200 BPS, it was considered necessary to provide additional devices such as modems and a micro computer for the Thai Meteorological Department and modems for the Malaysian Meteorological Service which cost up to about US\$ 25,000. The Committee endorsed the provision of these devices as soon as possible by WMO under the RAS/86/175 project fund for early implementation of the circuit to meet the requirement of the Regional Co-operation Programme.

21. The Committee was informed that the Thai Government has already invested a great deal of effort and resources to renew a number of facilities in the maintenance and operation of the RTH Bangkok. It needs, however, external support for additional equipment such as a more powerful computer and peripheral components, etc., to meet the rapidly growing demand for data exchange in the region. It was realized that transmission of surface and upper-air data to the RTH should also be regularly monitored and improved.

22. With a view to ensuring more reliable and accurate typhoon and flood forecasting and warning services, China, Malaysia and Thailand have each planned, with the assistance of TCS, to establish a type of radar-satellite-AMeDAS computer back-up consolidated storm detection and warning system. Early implementation of the plan is expected with external assistance.

23. The Committee was informed that the United States of America had ceased conducting meteorological reconnaissance flights in the Western Pacific from 1 October 1987. Earlier this year, the Committee strongly requested the United States to continue the flights until such time that alternative ways and means could be found to replace the invaluable information obtained from such flights for typhoon tracking and forecasting. However, due to budgetary constraints, this was not possible.

24. The Committee noted the increasing ability of global NWP models to represent and forecast tropical cyclones realistically and usefully. Further improvement in skill may be expected from improved resolution, from feedback from Members using the products and particularly from increased and improved inputs of information, on the cyclones, coming from the region. The Committee

requested its Members to send such information to the centres providing such products from global NWP models. It also requested WMO to look into the question of formatting to facilitate the entry of the data.

B. Hydrological Component (Agenda item 4(b))

25. The Committee reviewed the activities implemented under the hydrological component during 1987 on the basis of a document at the session.

26. The Committee noted with satisfaction the continued efforts made by Members in improving their existing flood forecasting and warning systems and installing new systems.

27. The Committee was pleased to note that a number of Members continued to carry out the monitoring of flood forecasting systems as an on-going activity under the hydrological component using the methodology developed during TOPEX and subsequently amended at the seventeenth session of the Committee. The Committee called on all Members who had monitored their systems under TOPEX to continue to do so to extend this monitoring to other flood forecasting systems.

28. The Committee was pleased to note that WMO had initiated a second series of exchange visits to hydrological forecasting systems by experts as proposed by the Typhoon Committee.

29. The Committee was informed that ESCAP, in co-operation with TCS, organized a mission on flood risk analysis and mapping to Thailand and Malaysia in March 1987. The mission identified the necessity for the preparation of a manual and guidelines for flood risk analysis and mapping as well as a manual and guidelines for comprehensive flood loss prevention and management. The mission recommended that the Eastern Suburban Bangkok area in Thailand be selected as the demonstration pilot area for flat plain basins, and the Upper Klang River basin in Malaysia as that for mountainous basins for the implementation of the project for comprehensive flood loss prevention and management as well as flood risk analysis and mapping. The mission also identified the necessity for sending an advisory mission to other Members of the Typhoon Committee to undertake a survey and investigation in the pilot area designated by respective Members.

30. The Committee was informed that ESCAP, in co-operation with WMO and TCS, had started a project on the preparation of a manual and guidelines for dissemination of the techniques for comprehensive flood loss prevention and management with financial support from UNDP. As a first step, a mission consisting of experts in flood loss prevention and flood forecasting and warning would be sent to Members of the Typhoon Committee from 15 November to mid-December 1987 to collect data and information related to comprehensive flood loss prevention and management and to provide technical assistance.

31. The Committee was informed that ESCAP, in co-operation with TCS and other international organizations concerned, had initiated a project on Improvement of the Flood Loss Prevention Systems based on Risk Analysis and Mapping with the financial support of the Government of Japan. As a first step

of this project, ESCAP had dispatched an advisory mission to the second demonstration pilot basin, the Eastern Suburban Bangkok area, Thailand, in August and September 1987. As a second step of the project, ESCAP had also planned to prepare a proposal on a manual and guidelines for flood risk analysis and mapping applicable to Typhoon Committee Members by mid-November 1987. It was also planned to organize an expert group meeting to review the proposal on flood risk analysis and mapping at Bangkok, tentatively from 25 to 29 January 1988.

32. The Committee was pleased to note that an international workshop on Urban Flood Protection and Drainage in East and South-East Asia had been organized by Chulalongkorn University, the Bangkok Metropolitan Administration (BMA) and the Asian Institute of Technology (AIT) at Bangkok from 22 to 25 June 1987. ESCAP and TCS had sent representatives to the workshop and presented a paper on flood plain management to the Typhoon Committee Members.

33. The Committee noted with satisfaction that the Malaysian Government had completed flood risk analysis and mapping in the Upper Klang River basin in Malaysia in 1987, which had been selected as a demonstration pilot area in the Typhoon Committee region.

34. The Committee noted that the Malaysian Government and the Thai Government expressed their appreciation for the technical assistance of ESCAP and TCS and requested their continuous technical support to implement respective projects in their demonstration pilot basins, such as the comprehensive flood loss prevention and management project and the flood risk analysis and mapping project.

C. Disaster prevention and preparedness (DPP) component (Agenda item 4(c))

35. The Committee reviewed the activities of Members under this component of the programme and noted with satisfaction the high degree of implementation of the recommendations made at the nineteenth session to further improve mitigation of damages caused by typhoons and related floods.

36. The Committee expressed its appreciation to the Government of the Philippines for acceding to the designation of Col. V.R. Pagulayan, Jr., as part-time expert on DPP.

37. The Committee was pleased to know that LRCS concurred in the choice of Col. Pagulayan and of its assurance of continued support to the Committee's DPP activities. LRCS had extended financial support in the amount of M\$100,000 to the Malaysian Red Crescent Society for the conduct of disaster management training in the year under review. It had also earmarked US\$66,000 worth of radio communications equipment for disaster preparedness to the Philippine National Red Cross in 1988.

38. Members continued to submit damage survey reports in the standard format. In addition, TCS distributed a damage survey form that put particular emphasis on the most devastating phenomena experienced during a specific period.

39. The Committee noted UNDRO's request for improved collaboration in DPP, copies of typhoon damage survey reports and results of investigations, if any, and UNDRO's plan to publish a manual on disaster mitigation in 1988. The Committee noted the information provided by UNDRO on a proposal to establish an international decade for natural hazard reduction commencing in 1990 which will be considered by the forthcoming General Assembly of the United Nations.

40. The Committee was informed of the expanding activities of UNDRO's collaborating centre, the Asian Disaster Preparedness Centre, and its desire to be associated with DPP work of the Committee. Note was taken of the possible availability of computer back-up at AIT's Regional Computer Centre.

D. Training component (Agenda item 4(d))

41. The Committee reviewed the activities under this component of the programme.

42. The Committee was pleased to note that Members continued to take advantage of training opportunities for their staff in a variety of disciplines in the fields of meteorology, hydrology and disaster preparedness and prevention.

43. The Committee noted with appreciation the organization of the following seminars/training courses by the Government of Japan in which staff of Typhoon Committee Members participated:

- (a) Application of doppler radar data;
- (b) GMS data reception;
- (c) Meteorological telecommunications;
- (d) Radar and AMEDAS;
- (e) Objective analysis;
- (f) Climate data base.

44. An international seminar on the Prevention of Meteorological Disasters Caused by Tropical Cyclones was held in JMA in October 1986 and participants from the Committee Members attended. A similar seminar will be held in November 1987.

45. In accordance with the recommendations of the Committee at its nineteenth session an updated list had been prepared by TCS on the facilities offered, the requirements of Members for training, and the attachments and exchange of experts/scientists including study tours under TCDC arrangements. The list had since been sent to WMO for possible funding under the scheme. Members were advised to follow up, individually, their requests with WMO.

46. The Committee was pleased to learn that a study tour in tropical cyclone forecasting facilities and techniques organized by China under TCDC arrangements, in which scientists from Hong Kong, Japan, the Philippines, Malaysia, Thailand and a representative from WMO participated, had been successfully completed.

47. The regional meteorological training centre in the University of the Philippines, supported by WMO, had 18 scholars from Typhoon Committee Members enrolled in post-graduate degree courses in meteorology.

48. The Royal Observatory, Hong Kong, was conducting a training course for scientific assistants in which two staff members from PAGASA in the Philippines and two from the Thai Meteorological Department were attending.

49. The Committee noted the request of Malaysia for technical assistance in the training of disaster relief personnel, particularly social welfare officials, in the management of relief centres and the mitigation of the effects of disasters.

E. Research component (Agenda item 4(e))

50. The Committee noted with satisfaction Members' efforts in research, in close co-operation with the corresponding research co-ordinators, on the major components of its programme. It expressed its appreciation to Dr. T. Kitade (Japan) and Mr. C.H. Sea (Malaysia), Meteorological and Hydrological Research Co-ordinators, respectively, and the research correspondents of Members, for their progress reports.

51. It expressed the wish that Dr. Kitade and Col. Pagulayan will continue to serve as Research Co-ordinators in their respective fields and at the same time hoped that the Drainage and Irrigation Department, Malaysia will provide a Research Co-ordinator for the hydrological component. It also expressed its gratitude to these Governments for their co-operation.

III. REVIEW OF THE 1986 AND 1987 TYPHOON SEASONS
ANNUAL PUBLICATION

(Agenda item 5)

52. A summary report of the country papers was presented and distributed to all participants by TCS during the session.

53. The Committee noted with satisfaction that the second issue of the "ESCAP/WMO Typhoon Committee Annual Review 1986" had been successfully prepared by the Chief Editor from Hong Kong assisted by the national editors of Members. The Annual Review was distributed to Members of WMO, the Typhoon Committee and the agencies concerned. The Committee highly commended the high quality of the review and expressed its appreciation to the Chief Editor from Hong Kong and the national editors of Members for their painstaking efforts at accomplishing this difficult task. It thanked UNDP for its financial support for the production of this publication.

54. The Committee also expressed its appreciation to Hong Kong for agreeing to provide a Chief Editor for another year.

55. The Committee considered that in the preparation of the publication for 1987 account should be taken of the comments made by Members at the session.

IV. CO-ORDINATION WITH OTHER ACTIVITIES OF THE WMO TROPICAL CYCLONE PROGRAMME

(Agenda item 6)

56. The Committee's discussion under this item was based mainly upon the information contained in the thirteenth status report on the implementation of the WMO Tropical Cyclone Programme (TCP) and supplementary information presented orally at the session by the representative of WMO.

57. In noting that the Tenth WMO Congress had adopted a Second WMO Long-Term Plan (SLTP) for the decade 1988-1997, including sections on the TCP, the Committee expressed its wish that there should be co-ordination, where appropriate, between its plans and the SLTP. It also felt that its plans should be structured to facilitate monitoring of implementation, review, updating and, where needed, revision. The Committee therefore requested the TCS in consultation with the WMO and ESCAP Secretariats to present proposals to its twenty-first session on consolidation and restructuring of its plans to meet the above requirements.

58. Noting that the next session of CBS (January-February 1988) is charged with elaborating procedures for the designation of RSMCs, the Committee reiterated its expressed wish that RMC Tokyo be formally designated as an RSMC with specialization in typhoons and requested WMO to take the necessary steps in 1988. It expressed its conviction that the requirements for services and products and the implementation programme have already been clearly defined under its Regional Co-operation Programme.

59. In regard to the wish expressed by the Panel on Tropical Cyclones to take full advantage of the experience gained by the Typhoon Committee in the implementation of the regional computer network, when formulating its own project for such a development, the Committee agreed that the report of its consultant on this subject may be submitted to the next session of the Panel for information.

60. The Committee expressed appreciation for the publication by WMO of the report on the story of TOPEX, as it had previously requested, and urged that its Members should ensure that the publication be widely disseminated to administrators, those concerned with mitigation of natural disasters, meteorologists, hydrologists and others as appropriate.

V. PROGRAMME FOR 1988 AND BEYOND

(Agenda item 7)

61. In considering its programme for 1988 and beyond, the Committee took into account the on-going programme of work, the modified medium- to long-term programme and the Regional Co-operation Programme it had adopted.

62. The Committee noted with appreciation the activities undertaken in the hydrological component and expected further technical exchanges including exchange visits for training and research to be performed in 1988 and beyond.

63. The Committee endorsed in general the programme for 1988 and beyond as discussed at this session and urged Members to make every effort to implement this in addition to their national programmes.

64. The Committee identified the order of priority under the meteorological component for the implementation of the programme as indicated in Appendix A and also urged Members to make every effort to implement these programmes.

65. The Committee also urged Members to monitor and make every effort to execute all observations regularly and to transmit the data to the RTHs concerned.

66. The Committee endorsed the ESCAP Secretariat's initiative to submit the subject of urban flood loss prevention and mitigation, including the topic of landslides/landslips, as an issue to be considered by the Commission at its next session in 1988.

67. The Committee was informed that the U.S. Government is planning to undertake a field experiment in the Western North Pacific during the 1990 typhoon season to provide a comprehensive data set to study Pacific tropical cyclone movement.

68. It was suggested that the Committee might consider the possibility of undertaking an activity similar to TOPEX to coincide with the U.S. field experiment. The Committee decided to refer this matter to its Working Group on implementation of the Regional Co-operation Programme. The Committee invited its Members to make full use of operational data and information to be gathered and disseminated by the U.S. field experiment.

VI. SUPPORT FOR THE COMMITTEE'S PROGRAMME

(Agenda item 8)

69. The Committee reviewed the requirements for support to carry out its programme activities on the basis of a document submitted by WMO and ESCAP.

70. In considering the staffing for the Typhoon Committee Secretariat (TCS) the Committee was informed that the Philippines would continue to provide a co-ordinator and a meteorologist as well as host facilities for another year. The Philippines also agreed, as an interim measure, to make available the services of Col. V.R. Pagulayan, Jr., Administrator of the Office of Civil Defense to serve as an expert on disaster prevention and preparedness on a part-time basis until the service of a full-time expert is available.

71. The Committee expressed its thanks and gratitude to the Philippine Government for its kind offers and its continued support to facilitate the smooth functioning of the TCS. It also recorded its deep appreciation to Dr. R.L. Kintanar for his contributions and guidance to the Committee during the past years.

72. The Committee welcomed the statement made by Japan that it would make efforts to continue its support of a hydrologist in the TCS. It thanked the Japanese Government for its kind gesture.

73. The Committee recorded its appreciation to Japan for making available the services of three experts on a mission to Members to advise on necessary actions for the reception of upgraded GMS transmissions. It also expressed its thanks to Hong Kong for the services of Dr. P. Li who visited Members and formulated a plan for the establishment of a regional network for the computerization of operational typhoon monitoring and forecasting services.

74. The Committee welcomed the announcement by some Members to make cash contributions to support its activities. China re-affirmed its pledge to contribute a sum of US \$12,000 per year to the Committee. Korea confirmed its contribution of US \$12,000 for 1987 by the end of 1987. Malaysia and Thailand both agreed in principle to the contribution of US \$12,000 each on the condition that other Members would also make similar pledges. Philippines stated it had already contributed in kind by providing local support to facilitate the functioning of the TCS. Japan indicated that it had already contributed in kind in support of the Committee's activities and would make greater efforts to increase this support in the future. It expressed the view that cash contributions from Japan to the Committee would be available only on a voluntary basis through the Japan-ESCAP Co-operation Fund (JECF). Hong Kong endorsed the view that cash contributions should be voluntary and pledged its continued support in kind whenever possible, especially in the provision of expert services.

75. The Committee noted the minimal budgetary requirement for its institutional functioning prepared by the TCS in compliance with the decisions of the nineteenth session.

76. The Committee reviewed and revised the amended Draft Rules for the ESCAP/WMO Typhoon Committee Trust Fund prepared by WMO in consultation with ESCAP and TCS. The Rules adopted by the Committee appear as Appendix B.

77. In the event that the ESCAP/WMO Typhoon Committee Trust Fund may be established before the next session, the Committee authorized the Chairman to approve the expenditures, as an interim measure, from contributions received for the Fund. It further agreed that any sharing between WMO and ESCAP of the 13% overhead cost for the management of the Trust Fund should be decided by the two Secretariats at the appropriate levels. The ESCAP Secretariat informed the Committee that ESCAP management charges would be applied to the contributions to be made through ESCAP to the Trust Fund.

78. The Committee requested the Secretary-General of WMO to initiate action to proceed with the establishment of the Trust Fund as soon as possible. However, in the event that the Trust Fund cannot be established due to the need for further deliberations on the Rules, Members of the Typhoon Committee will be informed accordingly. The Rules will then be referred to the next session of the Committee for consideration. The Secretary-General of WMO was requested to notify Members of the establishment of the Trust Fund, including the account number(s), name and address of the bank(s).

79. The Committee expressed its thanks and gratitude to UNDP for its programme support to the Typhoon Committee, under project RAS/86/175 amounting to US\$1,000,000 covering the period 1987-1990. The Committee welcomed the initiative of WMO for its submission of a project proposal entitled "Training Courses in Meteorology for Manpower Development in South-East Asia and the South Pacific" for consideration by UNDP to meet the expressed need for training in these areas.

80. The Committee agreed that the Voluntary Co-operation Programme (VCP) of WMO provides enormous potential for support of its activities, and Members were advised to take full advantage of this system of mutual assistance.

81. The Committee was informed that ESCAP would continue to provide substantive support to the Typhoon Committee in the framework of its own work programme. It appreciated the support from ESCAP extra-budgetary resources amounting to US\$61,472 from JECF in the implementation of the project on improvement of flood loss prevention systems based on risk analysis and mapping.

82. Technical Co-operation among Developing Countries (TCDC) is playing an increasingly significant role as a means to support the Committee's activities especially as an effective vehicle for technology transfer. The Committee thanked China for organizing a successful study tour in that country on tropical cyclone forecasting facilities and techniques for meteorologists from Members in 1987. The Committee was informed that China had agreed to accept two meteorologists from the Philippines for attachment to the Shanghai Meteorological Bureau for two weeks in order to familiarize them with typhoon forecasting techniques during the typhoon season in 1988. The Philippines would also be willing to consider requests from Members for attachment to the National Flood Forecasting Office of PAGASA under TCDC arrangements. The Committee was also informed that Thailand would like to send personnel on study tours on the topics of marine and radar observations as well as BAPMoN station observation in Members. Details of this matter were submitted to TCS.

83. The Committee noted other possible sources of support including bilateral assistance and the private sector. In this regard it thanked the Japan Foundation for Shipbuilding Advancement (JAFSA) for its sponsorship of an international conference on severe weather forecasting over the Western Pacific organized by the Japan Meteorological Agency. It hoped that similar conferences would be held in the future with the kind support of JAFSA. The Committee also expressed its thanks and appreciation to the Japan International Co-operation Agency (JICA) for providing equipment and training facilities on the basis of bilateral agreements and looked forward to the continuation of such support in the future. It also expressed its appreciation to the USSR for its offer of technical support to the Committee's activities, particularly in training through VCP fellowships.

84. The Committee agreed that support from the private sector to the TCS should be communicated to the Chairman who would consult Members to decide if such support could be accepted. It further agreed that Members should make greater efforts to publicize the activities of the Typhoon Committee in order to attract potential donors from the private sector. In this regard the Annual Review should be given wider circulation whenever possible.

85. The Committee stressed the need for greater efforts by Members to mobilize national resources to the extent possible for the implementation of its programme in meeting the requirements for meteorological, hydrological and DPP services.

86. The Committee agreed that TOPEX had laid a good foundation for more effective and closer co-operation among Members. It recommended that the functional aspect of TOPEX be maintained in order to further strengthen regional co-operation which formed the basis for the formulation of the Regional Co-operation Programme. It further agreed on the establishment of a Technical Working Group on the Implementation of the Regional Co-operation Programme to assist the activities of the Typhoon Committee for a period of one year in the first instance. The terms of reference of the Technical Working Group appear in Appendix C. The Committee requested WMO and ESCAP to explore the possibility of funding to support the meeting of the Technical Working Group before the next session in 1988.

87. The Committee was pleased to note the offer of the Government of Japan for technical assistance in the formulation of a manual and guidelines on comprehensive flood loss prevention and management as well as flood risk analysis and mapping.

VII. CONSIDERATION OF THE AGENDA FOR THE TWENTY-FIRST SESSION

(Agenda item 9)

88. The Committee requested the ESCAP and WMO Secretariats, in close consultation with the TCS, to prepare the detailed agenda for the twenty-first session. It was agreed that Members might propose to ESCAP, WMO and the TCS, by the end of February 1988 specific items which should be included in the agenda of the next session. The Committee also requested that the documents for the sessions be distributed to the Members in good time.

89. In regard to the provision of linguistic services, the Committee agreed that English be the working language of the Committee in the future as well as on this occasion.

VIII. DATE AND PLACE OF THE TWENTY-FIRST SESSION

(Agenda item 10)

90. The Committee requested the ESCAP and WMO Secretariats, in consultation with TCS, to decide on the date and venue of the twenty-first session, by mid-February 1988.

IX. SCIENTIFIC LECTURES

(Agenda item 11)

91. The following scientific lectures were presented:

- (a) Plans for a U.S. Tropical Cyclone Motion Field Experiment during 1990 by Prof. Russell L. Elsberry, Professor of Meteorology, Naval Post-graduate School, Monterey, California, USA;
- (b) Present Status of Nowcasting in JMA by Dr. Ryoza Tatehira, Director, Forecast Department, Japan Meteorological Agency, Tokyo, Japan;
- (c) Flood Forecasting and Warning Systems and Flood Fighting in Japan by Mr. Masao Hayashi, Director, Planning Division, Shikoku Regional Construction Bureau, Ministry of Construction, Japan;
- (d) Training and Utilization of the Community in Preparation for a Natural Disaster by Mr. John A. Fortune, Deputy Commissioner (Operations) and Chief Staff Officer, Civil Aid Services, Hong Kong;
- (e) Some Results of Soviet Investigations on Physics of Tropical Cyclones by Prof. V.M. Volostchik, Deputy Director, Scientific Research Institute of Experimental Meteorology, USSR Goschomhydromet, Moscow, USSR;
- (f) Recent Development of Flood Prevention Activities in Bangkok and the Vicinity by Dr. Ksemsan Suwarnrat, Director, Policy and Planning Division 1, Bangkok Metropolitan Administration, Thailand;
- (g) Storm Warning Radar Calibration (video tape presentation) by C.H. Tang, WMO/UNDP consultant.

92. The Committee expressed its thanks to the lecturers.

X. ADOPTION OF THE REPORT

(Agenda item 12)

93. The Committee adopted its report on 26 October 1987.

Priority list as revised by the Typhoon Committee
at its twentieth session

(Meteorological component)

Observing facilities

(a) Upper-air stations

98223 Laoag (Philippines)	)	12 GMT radiosonde/rawin/ national/external assistance needed
98645 Cebu (Philippines))	
47187 Cheju (Republic of Korea)	)	National/external assistance needed

(b) Weather radar

Cheju (Republic of Korea)	National
Tanay (near Manila, the Philippines)	National project
Haiphong (Viet Nam)	External assistance needed
Vientiane (Lao People's Democratic Republic)	External assistance needed
Bangkok, Khon Kaen and Chanthaburi (Thailand)	National/external assistance needed

(c) Satellite receiving equipment (GMS/TIROS-N Satellite)

Hanoi (Viet Nam)	External assistance needed
Bangkok (Thailand)	National/external assistance needed

Telecommunication

(a) Improvement of national data collection facilities

Lao People's Democratic)	
Republic	)	National/bilateral
Philippines	)	projects/external
Viet Nam	)	assistance needed

(b) Regional telecommunication links

Bangkok-Hanoi (new circuit)	National project/external assistance needed
Beijing-Guanghou-Hong Kong	National/bilateral project

(c) Other telecommunication facilitiesThailand - Strengthening of
RTH, BangkokNational/external
assistance neededMalaysia - Improvement of
Kuala Lumpur-
Bangkok, Kuala
Lumpur-Singapore

External assistance needed

Rules of the ESCAP/WMO Typhoon Committee Trust FundEstablishment of the Fund and its purpose

1. The ESCAP/WMO Typhoon Committee Trust Fund (hereinafter referred to as the Fund) will be established to provide support to the Typhoon Committee to facilitate the implementation of its programme. The Fund shall assist in the provision of institutional support to the Typhoon Committee's programme or other support to its activities or activities of its Members related to its objectives.

2. The Fund will be established from voluntary cash contributions by, or through, the Governments of the Typhoon Committee Members and from voluntary cash contributions through ESCAP, WMO or the Typhoon Committee Secretariat. Acceptance of contributions, other than those directly from Governments, shall be subject to the approval of the Typhoon Committee. Contributions shall normally be made in US dollars or any other readily convertible currency. Contributions in other currencies may be accepted subject to the conditions and limits specified in Annex I to the present rules. Contributions may include awards, grants and donations.

Administration of the Fund

3. The Secretary-General of WMO, or his authorized representative, shall be responsible for the management of funds contributed by or through the above-mentioned donor Governments or through ESCAP, WMO or the Typhoon Committee Secretariat.

4. The Fund shall be administered by the Secretary-General of WMO in accordance with the financial regulations of the WMO, supplemented by the provisions of the present rules and any supplementary directives or interpretation of these rules that may be decided upon by the Executive Council of WMO.

5. The accounting of the expenditures of the Fund shall be as provided for in Rule 1 above as well as for any other directly identifiable charges related to the administration of the Fund (e.g. bank charges and/or commissions, communication charges, etc.). For its costs which are not directly identifiable (stationery, drafting, typing, registry, mailing, preparation of reports and accounts, external audit, etc.) WMO will receive, in convertible currency, 13% of the expenditure made from the Fund. Interest accrued from any investment of the principal of the Fund will constitute an income to the Fund.

6. Financial reports on the Fund will be made in US dollars. The UN rate of exchange prevailing on the date of the transaction or report will apply for the conversion into US dollars of contributions or income received and payments made or charges incurred in any other currency. WMO shall submit a financial report, annually, to ESCAP and to the Typhoon Committee.

7. The biennial statement of income and expenditure of the Fund will be incorporated in the overall audited financial statements submitted by the Secretary-General of WMO to the WMO Executive Council for approval. External audit will be conducted only as provided for in the WMO Financial Regulations. The audit report will be submitted to ESCAP and the Typhoon Committee.

Procedures for the utilization of the Fund

8. The utilization of the Fund shall be based upon decisions of the Typhoon Committee and, within this limitation, upon written requests from Members of the Typhoon Committee or ESCAP or the Co-ordinator of the Typhoon Committee Secretariat.

9. Each request shall be prepared on a special request form (see Annex II) and shall specify the details as required thereon.

10. The Secretary-General of WMO shall ensure that the order of priority of requirements established by the Typhoon Committee is followed in the allocation of funds.

11. The approving authority for granting support from the Fund shall rest with the Typhoon Committee, or, on its behalf, by the Chairman of the Typhoon Committee. However the Secretary-General of WMO, on behalf of the Typhoon Committee, is authorized to approve provision of support not exceeding US\$5,000 or 10% of the available fund, whichever is the lesser amount, for each project, and he shall inform, without any delay, the Executive Secretary of ESCAP of such approval. The Secretary-General of WMO will not enter into any financial commitments unless he has received the funds required.

12. After approval of the request the WMO Secretariat shall make the necessary arrangements for the provision of support requested. In this connection the beneficiary shall abide by the Financial Regulations and internal rules of WMO and render the accounts to the WMO in good time.

13. Copies of the approved requests shall be returned to the requesting authority with a copy being forwarded to the Resident Representative of the UNDP office concerned, if any. If the request cannot be met, the requesting Member or organization or office shall be so advised.

Legal Responsibilities

14. Under no circumstances will the Fund be made liable to pay and/or reimburse any taxes on emoluments or honorarium, or any customs and import duties, value added taxes or similar charges, demurrage and inland transportation costs for goods procured and imported under the Fund.

15. WMO will not be held responsible for:

- (i) late execution of the requests received;
- (ii) delays by the suppliers in the execution of the orders placed;

- (iii) damages or losses at the place of destination, including incidents which may result from inspection by the local customs authorities.

16. At no time will the WMO, or the Secretary-General of WMO acting on its behalf, be held accountable or legally liable for any acts of omission or commission, or for failure to act on the part of the Typhoon Committee and to any third party resulting from WMO activities under this agreement.

Closure of the Fund

17. The Typhoon Committee can decide at any time to close the Fund established under the present Rules. Such a decision will have to be taken by the majority of all the Members of the Committee. The decision will be notified in writing to the Secretary-General of WMO together with the designation of the entity to which any cash balance of the Fund is to be transferred.

18. Upon notification of the decision to close the Fund, the Secretary-General of WMO will not enter any more into further financial commitments and will proceed with the settlement of any unliquidated obligations recorded against the Fund.

19. When the Secretary-General of WMO is satisfied that all known obligations have been liquidated by disbursement or by cancellation within the limit of time specified in the WMO Financial Regulations for such liquidation, he will prepare the final statement of account for submission to the Executive Council as specified in Rule 7 above.

20. Upon approval of the final account by the WMO Executive Council, the Secretary-General of WMO will proceed with the transfer of any cash balance as provided for in Rule 18.

21. Should it be found that at the close of any accounting period, the cash balance amounts to less than US\$1,000, the Secretary-General of WMO may decide without consultation to proceed with the closure of the Fund and to notify the Typhoon Committee accordingly.

Review of these rules

22. The Typhoon Committee, in consultation with ESCAP and WMO, may review these rules in the light of experience gained and make any changes as appropriate.

Annex to the Rules of the ESCAP/WMO
Typhoon Committee Trust Fund

Provisions governing the acceptance by the
Secretary-General of WMO of contributions to the Fund
other than in readily convertible currencies

Should the Secretary-General of WMO be informed by a donor or a prospective donor of its intention to make a contribution of a given amount to the Fund in its own national non-freely convertible currency, the following procedure will apply:

The Secretary-General of WMO will establish the needs for the pledged contribution.

The Secretary-General of WMO will seek through the appropriate channels the assurance that no information on the financial transactions made in local currency, other than that contained in the audited financial accounts submitted to the Executive Council of WMO, will be requested by the donor.

Acceptance of contributions in non-convertible currencies will be subject to limits specified by the Typhoon Committee or, on its behalf, by the Chairman of the Typhoon Committee.

Upon formal notification to the Secretary-General of WMO of the donor's acceptance without any reservation or time limitation of the above conditions, the Secretary-General of WMO will make the appropriate banking arrangements and notify the donor of the particulars of the bank account to be credited with the pledged contribution in local currency.

Acceptance of contributions in non-convertible currencies will be recorded by the Secretary-General of WMO in his report on the financial accounts to the WMO Executive Council together with the indication of the use which will be made of such contributions.

Request for temporary support under the ESCAP/WMO
Typhoon Committee Trust Fund

Reference No.:
 (To be completed by WMO)

Request made by: 1)

Your reference:

Activity/facility to which the request is related:

Name and address of supplier:

Item No.	Period/ Quantity	Description of Services/ Merchandise	Rate/ Unit Price	Estimated cost: Currency and amount
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Total amount of temporary support is not to exceed (currency and amount).....

Name and address to which payment is to be made (after receipt of certified invoices) if other than that given above:

Signature:

Representative of Member government to the Typhoon
 Committee
 or ESCAP
 or Co-ordinator, TCS

1) Member of Typhoon Committee or ESCAP or Co-ordinator, TCS.

TECHNICAL WORKING GROUP ON THE IMPLEMENTATION OF
THE REGIONAL CO-OPERATION PROGRAMME

AIM

To form a Technical Working Group to assist the Typhoon Committee in the implementation of its programmes.

TERMS OF REFERENCE

TITLE "Technical Working Group on the Implementation of the Regional Co-operation Programme"

1. To keep under review the development of the Regional Co-operation Programme.
2. To effect liaison amongst Members in respect of the establishment of the RSMC and interaction between the RSMC and NMC's with a view to strengthening co-operative arrangements.
3. To recommend to the Typhoon Committee a research programme covering all the components.
4. To study the financial implications of any recommendations of the Technical Working Group and make proposals regarding resources in this respect.
5. To recommend to the Typhoon Committee measures on the practical implementation of all other aspects of the regional co-operation programme.
6. To table a report to the Typhoon Committee Secretariat by 30 June 1988 on the progress made and results achieved.

CONSTITUTION OF THE TECHNICAL WORKING GROUP

Membership of the Technical Working Group will comprise representatives designated by Typhoon Committee Members, a representative of TCS, ESCAP and WMO.

A Chairman to be elected from amongst Members of the Technical Working Group.