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**Review of issues pertinent to the subsidiary structure
of the Commission, including the work of the ESCAP
regional institutions: Disaster risk reduction**

Report of the Panel on Tropical Cyclones*

Note by the secretariat

The secretariat transmits to the Commission an executive summary of the report of the thirty-eighth session of the WMO/ESCAP Panel on Tropical Cyclones, held in New Delhi from 21 to 25 February 2011.

* The report is reproduced in its original language, which is English. Any queries concerning the report should be directed to the secretariat of the Panel on Tropical Cyclones.

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Introduction

The WMO/ESCAP Panel on Tropical Cyclones (PTC) is a regional body jointly established by World Meteorological Organization (WMO) and UNESCAP in 1972 and associated with the Tropical Cyclone Programme of WMO. Its first session was held in Bangkok, Thailand in 1973. The thirty-eighth Session of PTC was held in New Delhi, India, from 21 to 25 February, 2011.

The main objective of the WMO/ESCAP Panel on Tropical Cyclones is to promote measures to improve tropical cyclone warning systems in the Bay of Bengal and the Arabian Sea, including dissemination of technical information on tropical cyclone research and forecasting operations to mitigate the socio-economic impacts of tropical cyclone-related disasters. The Panel develops activities under five components: Meteorology, Hydrology, Disaster Prevention and Preparedness (DPP), Training and Research.

I. Review of technical activities

The Panel reviewed and evaluated in detail its activities undertaken at both national and regional level during 2010 under the meteorological, hydrological, disaster prevention and preparedness, training, and research components. The Panel also held extensive discussion about the way to develop the Annual Operating Plan (AOP) for 2011 for the five components to achieve the goals and objectives of the Coordinated Technical Plan (CTP) 2009-2011. The Panel stressed on the importance of the feedback from Members about their activities relevant to each of the Expected Results of CTP during annual sessions as most of the Members have already been performing various activities which could contribute to the achievement of the strategic goals of CTP.

Meteorology

Under the meteorological component, the Panel reviewed the activities of its Members, WMO and UNESCAP. The representatives of the Members reported the activities of their respective countries. In 2010, several important improvements in the meteorological component had been made in the Panel Members especially concerning weather forecasts, telecommunication system, numerical weather prediction etc.

The Panel was informed that the average availability of SYNOP reports ranged from 16% to 100% during 2010. The availability continued to be more than 70% for all countries, except for Myanmar and the Maldives, with the latter showing a significant decrease from 53% in the previous year to 16% in

2010. Overall, the total availability of reports also decreased slightly to 86% (in 2010) from 87% the previous year. The availability of expected TEMP reports on the MTN from a total of 53 upper-air stations (remained unchanged in 2009/2010) in the RBSN operated by Members of the WMO/ESCAP Panel on Tropical Cyclones according to the results of the IWM exercise carried out on a quarterly basis in 2009/2010. The average availability of TEMP reports ranges from zero to 57%. The availability is less than 25% for the Maldives with Myanmar not reporting as in the previous year.

Overall, in spite of a decrease in the number of reports received from a majority of Panel Members in 2010 compared to the previous year, the average percentage of the total number of TEMP reports received increased slightly from 43% to 45% per cent during the same period. Deficiencies in surface and especially upper-air data coverage over certain areas in the region continued to be caused mainly due to financial difficulties encountered by countries concerned to rehabilitate and operate both observational and telecommunication equipment. Inadequate funds also resulted in the lack of trained staff, essential instruments and consumables.

Noting the great significance of increasing the availability of upper-air data, the Panel also drew attention to the AMDAR Programme. As the Programme is conducted mainly on a regional basis, the Panel urged the Members to collaborate with the airlines for promoting the regional AMDAR programmes.

The Panel was informed that following the 2010 extraordinary meeting of the WMO Commission for Basic Systems (CBS) in Namibia, it is now clear that WMO Information System (WIS) has moved from its development stage into implementation. Three candidate GISCs (Offenbach, Beijing and Tokyo) along with 15 DCPCs are now in preoperational mode. These and several other GISCs, including New Delhi, will be operational following endorsement from Sixteenth World Meteorological Congress (Congress XVI) (to be held in Geneva, Switzerland from 16 May to 3 June, 2011). The project to upgrade the Main Telecommunication Network (MTN) component of the GTS has now completed, and this improved MTN will form the core network of WIS connecting all GISCs. The Manual on WIS (WMO No. 1060) was prepared by CBS, along with the draft amendments to include WIS in the Technical Regulations (WMO No. 49) which will all be presented to Congress XVI for approval. These combined with a Guideline to WIS (WMO No. 1061) and guidelines for WMO Metadata for WIS (<http://wis.wmo.int>) will allow all Members to begin to implement the new WIS functionality. It is expected that GISC New Delhi will take the leading role in ensuring Members of the Panel also implement and benefit from the new functionality of WIS. CBS Extraordinary 2010 also updated the Manual on GTS (WMO No. 386) and Manual on Codes (WMO No. 306) to allow the exchange of information in the form of Common Alerting Protocol (CAP) between WMO Members. This is in line with the decision of the WMO Council that recognized the benefits of using the Common Alerting Protocol (CAP, ITU Recommendation X.1303), which is a content standard designed for all-hazards and all-media public alerting, for the dissemination of weather, climate and water related alerts and warnings. Thus CAP will now be supported in the virtual all hazards network within the WIS-GTS.

To allow the Members to benefit fully from WIS, it is essential that NMHSs start to make plans to implement WIS functionality in their programme plans and that the Panel on Tropical Cyclones work with the GISCs and WMO secretariat to ensure their programmes include WIS

implementation as a priority activity over this coming WMO 16th financial period.

Hydrology

Under the hydrological component, the Panel reviewed the activities of its Members, WMO and UNESCAP. The representatives of the Members reported the activities of their respective countries.

The Panel especially reviewed the activities related to history's worst and exceptionally high floods during summer monsoon 2010 in Pakistan. The Panel was informed about the initiatives taken by UNESCAP and WMO in wake of 2010-floods in Pakistan. UNESCAP organized a one-day preparatory Meeting in Nanjing, China in September, 2010 for hosting a High-level Expert Group Meeting on Pakistan Floods in Islamabad. WMO established an ad hoc liaison office in Pakistan Meteorological Department (PMD) premises from 14 October to 13 November, 2010 with Dr. Jaser Rabadi (WMO Representative for West Asia) to work as liaison officer to facilitate close collaboration with PMD and Islamabad-located organizations including UN Country Team in damages need assessment (DNA) and other processes. WMO, in collaboration with UNESCAP, also sent a six-member fact-finding and needs-assessment Mission (headed by Dr. T. Toya, Director (Asia & southwest Pacific), WMO and with hydrological and DRR experts from UNESCAP, JMA, USA) to Pakistan from 4 to 8 November, 2010. The Expert Mission reported on its findings and recommendations to the High-level UNESCAP Expert Group Meeting on Reducing Flood Risk in Pakistan (9-10 November, 2010, Islamabad). In light of the recommendations of the WMO Expert Mission, it has been proposed to restore and strengthen the capacities of PMD with phased approach including: (i) short term needs (within a year), (ii) medium term needs (2-3 years) and (iii) long term needs (5-10 years). The draft Mission report is to be sent to the potential donors for funding.

The Panel was also informed that WMO Flood Forecasting Initiative (FFI) has progressed with regard to the specific activities that are outlined in the Strategy and Action Plan of the FFI, especially with regard to establishing Flash Flood Guidance Systems. The Flash Flood Guidance System project is of high importance for the region. In RA-II it is presently fully operational in the Mekong River Basin. The Panel was also informed that the Associated Programme on Flood Management (APFM) that promotes the concept of Integrated Flood Management practices has progressed largely and in particular the development of Tools on a wide variety of flood management issues and the HelpDesk established under the programme since June 2009.

The Panel noted that the Quantitative Precipitation Estimation (QPE) and the Quantitative Precipitation Forecasting (QPF) products are very important to improve hydrological service delivery. However, QPE/QPF has not been extensively used in real-time hydrological modeling. Therefore, Panel urged the Members that QPE and QPF could be strengthened through enhanced coupled modeling and an end-to-end evaluation on QPE/QPF quality and impacts on flood and streamflow products for basins of diverse size and topography. To improve QPE and QPF, hydrologists could be encouraged to work with QPE/QPF groups to ensure that hydrological requirements for precipitation (QPE/QPF) could be considered.

The Panel was informed about the progress made in the implementation of WHYCOS projects, and in particular the Mekong-HYCOS and the Hindu Kush Himalayan (HKH) HYCOS projects that are currently implemented. The

objective of both HYCOS projects is the establishment of regional flood information systems.

The Panel was also informed that the Coastal Inundation Forecasting Demonstration Project (CIFDP) is in full development with the objective to improve capacity for coastal flood forecasting and management (including deltas and estuaries). Major output of this project will be end-to-end integrated software, coupling meteorological (tropical cyclone), hydrological (river) and ocean (storm surge) forecasting models to meet institutional end-users requirements. The project aims to enhance NMHSs capabilities to produce and provide coastal inundation forecasting and warning services and to improving interactions between NMHSs, partners and end-users (Government, Disaster Management and Civil protection Agencies, Media, etc). Bangladesh has been chosen as the regional candidate to implement this demonstration project.

Disaster Prevention and Preparedness (DPP)

Under this agenda item, the Panel reviewed the activities of its Members and discussed the related activities of WMO and UNESCAP. In view of the importance of DPP for effective impacts of the Panel's activities, the Panel urged Members to send their DPP experts to take part in the sessions of PTC.

The Panel was informed by the Chair of PTC Working Group on DPP (WG-DPP) that Thailand, in cooperation with UNESCAP and WMO, hosted WG-DPP Meeting to finalize the Annual Operation Plan (AOP) on 18 August 2010, at United Nations Conference Center, Bangkok and training on Preparation of Disaster Management Drills and Observance of DDPM National Crisis Management Drill 2010 (C-MEX 10) in Chantaburi Province on 19-20 August 2010.

The Panel also organized a brief parallel meeting of the WG-DPP during the plenary session to review progress and challenges in DPP component and discuss a realistic action plan for the year of 2011. The Meeting was attended by the delegates from three Members (Oman, Thailand and India), the ESCAP representative and the PTC Secretariat. Based on the discussion at the Meeting, Mr Adthaporn Singhawishai, Chair of the WG-DPP, reported to the Panel on the activities of the WG-DPP and stressed that activities on a national level should be reported based on Annual Operating Plan (AOP) of CTP. He also emphasized the needs of conducting WG-DPP activities on a regional level according to the AOP. The Panel recognized the need to establish a complete list of the WG-DPP focal points to be facilitated by PTC Secretariat. It was also agreed that Oman, Thailand and India will identify at least one item for AOP, respectively, and implement it within the regional scope during 2011. The three countries will coordinate and inform the PTC Secretariat of their decisions. The UNESCAP representative mentioned that UNESCAP would explore potential sources of funding to support the WG-DPP activities and that it could be joint activities with the Typhoon Committee. The PTC Secretariat agreed to develop the work space for the WG-DPP in the Panel website to share information effectively.

Training and Research

The Panel expressed appreciation to its Member countries, which offered their national training facilities to other Members under bilateral and cost-sharing arrangements. These national training institutions in the Region contribute significantly to the training of meteorological personnel and the cooperative efforts by the Panel Members have been found by the recipient

countries to be very useful. The Panel strongly recommended that such endeavors should continue in the future and be strengthened. The Panel urged its Members to make maximum use of such training facilities.

The Panel also reviewed the involvement of its Members in various education and training activities supported under WMO Voluntary Cooperation Programme (VCP), Regular Budget (RB), UNDP and TCDC arrangements. The Panel noted the training events and workshops which were organized in 2010 and the forthcoming training events planned for 2011 for the benefit of its Members and the Members were encouraged to make maximum benefit of the training seminars, workshops and courses to be organized or co-sponsored by WMO.

The Panel noted that WMO fellowships for long-term and short-term training continued to be granted to the Member countries of the Panel under the various WMO programmes.

The attachment of tropical cyclone forecasters at the RSMC New Delhi and the attachment of storm surge experts at IIT, New Delhi is a regular annual programme of the Panel and two participants for each of the training programme are invited from the Panel Members on rotational basis. The Panel expressed appreciation to RSMC New Delhi and IIT Delhi for providing Members with such valuable opportunities of training during 2010-2011. It requested the RSMC New Delhi and IIT Delhi to continue this training activity for the Members. RSMC and IIT New Delhi agreed to the request by the Panel.

The Panel noted that the book “Global Perspectives on Tropical Cyclones: From Science to Mitigation”, edited by Johnny C.L. Chan (HK, China) and Jeffrey D. Kepert (Australia) was published in April 2010. The book is a completely rewritten, updated and expanded new edition of “Global Perspectives on Tropical Cyclones” (published in 1995) which in turn was a revision of “A Global View of Tropical Cyclones” (published in 1988). It presents a comprehensive review of the state of the science and forecasting of tropical cyclones together with the application of this science to disaster mitigation.

The Panel was informed that WGTMR’s Expert Team on Climate Change Impacts on Tropical Cyclones is organizing the Second International Conference on Indian Ocean Tropical Cyclones and Climate Change tentatively in New Delhi, India in September 2011. The broad thematic areas of the conference includes: current status of the operational tropical cyclone forecasting and warning system, progress on the understanding of tropical cyclone genesis, climate change and tropical cyclone activity, tropical cyclone risk and vulnerability assessment and tropical cyclone disaster preparedness, management and reduction.

Publications

Panel News

Panel News is a biennial newsletter published by PTC Secretariat (formerly Technical Support Unit of the Panel). Two issues of Panel News (No.29 and 30) were published during 2010 and were distributed among the PTC Members, WMO, UNESCAP and other concerned during thirty-eighth session of the PTC (New Delhi, India, 21-25 February, 2010). The Panel News issues No. 31 and 32 are scheduled to be published during 2011. The Panel therefore, requested the Members to kindly provide their contributions to PTC Secretariat through their Panel News Correspondents more actively. The Panel

also requested the Members to consider provision of news material for Panel News in more pictorial format and having policy information and development activities in order to target the policy makers and planners more effectively and to make the Panel News more informative and attractive.

II. Review of the tropical cyclone operational plan

The Tropical Cyclone Operational Plan (TCOP) contains an explicit formulation of the procedures adopted in the Bay of Bengal and the Arabian Sea region for the preparation, distribution and exchange of information and warnings pertaining to tropical cyclones. Experience has shown that it is a great advantage to have an explicit statement of the regional procedures to be followed in the event of a cyclone and this document is designed to serve as a valuable source of information to be readily available for reference by the forecasters and other users.

TCOP is reviewed by the Panel on regular basis. Mr. B. K. Bandayopadhyay, Director, RSMC, New Delhi and rapporteur of TCOP, presented a comprehensive review to the Panel about the 2010 version of TCOP. He suggested that along with the naming of cyclones, its meaning should also be given by the respective countries. Further, he made a few comments to make the TCOP more effective. The Panel appreciated Mr. Bandayopadhyay for his devotion to the TCOP during the last year and requested him to continue to serve as the rapporteur for 2011 as well. The 2010 Edition of TCOP is available on the WMO website.

A proposal was made by the WMO Secretariat to include in the TCOP a summary of the study on suitable conversion factors between the wind speeds of different time ranges. The study was undertaken by the Systems Engineering Australia Pty Ltd (SEA) to arrive at suitable conversion factors between the WMO 10-minute standard average wind and 1-minute, 2-minute and 3-minute "sustained" winds. Arrangement has been made by WMO/TCP to include the summary in the regional tropical cyclone operational plans and manuals. Noting the significance of setting guidelines for converting the maximum wind speeds of tropical cyclones, the Panel endorsed the proposal and decided to include the summary in the Chapter I as an appendix.

III. Panel on tropical cyclones trust fund (PTCTF)

The establishment of the Panel on Tropical Cyclones Trust Fund (PTCTF) indicated a step towards achieving self-reliance of the Panel. At the moment, the Fund is being used not only for the provision of institutional support but also as funding support to the representatives of Panel Members attending training events and conferences.

The Panel endorsed the use of the PTCTF for 2011 for the specific activities. Members were urged to continue to enhance their contributions to the PTCTF as a substantial support for the Panel's activities.

IV. Issues for consideration

The Commission may wish to provide the Panel with advice for further improvement in risk management of tropical cyclone-related disasters to contribute to the overall objectives of UNESCAP in disaster risk reduction.