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**WMO's Activities Related to Tsunami Early Warning System in the
Indian Ocean and Other Regions At-Risk**

(Submitted by the Secretariat)

Summary and purpose of document

This document review of WMO's activities related to Tsunami Early Warning System in the Indian Ocean and other regions at risk; the WMO information note on its activities and contributions to Tsunami Early Warning System, and, the report of the International Coordination Meeting for the development of a Tsunami Warning and Mitigation System for the Indian Ocean (Paris, 3-8 March 05)

Action proposed

None

1. Upon the occurrence of the tragic tsunami disaster in Asia, the Secretary General convened a Tsunami Task Team, to evaluate how WMO could contribute in this area and develop a strategy and a concept paper providing a summary of capabilities, goals and overall plans of the World Meteorological Organization (WMO) in relation to the development of an end-to-end Tsunami Early Warning System (TEWS) in the Indian Ocean and other regions at-risk. C/DPM with input from members of the task team developed the strategy and a concept paper, which served as the basis of WMO's follow up activities (ANNEX 3.4.1.I).
2. WMO has participated in several conferences and workshops and presented its potential contributions to TEWS. These events include the following:
 - U.N. Donor Meeting January 11, 2005, Geneva, Switzerland
 - SG statement during the tsunami special plenary session of World Conference on Disaster Reduction (WCDR) and WMO participation in the expert panels of two Tsunami Thematic Sessions at WCDR – January 18- 22, Kobe, Japan
 - Meeting in China, January 24 – 25, 2005
 - Ministerial Meeting hosted by Thailand, January 27 – 29, Phuket, Japan
 - TEWS meeting hosted by Government of Japan, February 22 – 24, Tokyo, Japan
 - International TEWS meeting coordinated by UNESCO-IOC, March 3-8, Paris France
3. As highlighted in the outcome document of the International TEWS meeting coordinated by UNESCO-IOC (Annex 3.4.1.II), this meeting has acknowledged the need for:
 - WMO's GTS to be upgraded for dissemination of information and warnings related to tsunamis, in the Indian Ocean
 - The need for a multi-hazard approach to the TEWS, particularly related to national alert and response mechanisms.
 - The need for utilization of those operational organizations within the national boundaries, which are involved in the multi hazard warning dissemination.
4. WMO is taking immediate action to ensure that its Global Telecommunications System (GTS), which is operational in the Indian Ocean, would accommodate various tsunami related data and early warnings during the interim period as well as longer term. WMO's GTS is currently utilized for data collection and dissemination as well as dissemination of tsunami early warnings for the Tsunami Warning System in the Pacific (TWSP). WMO in collaboration with Indonesian Meteorology and Geophysics Agency is holding a multi-disciplinary technical meeting, inviting experts from UNESCO-IOC and all interested countries, with the goal to develop a technical specification work plan to guide the necessary modifications to the GTS in the Indian Ocean region. This meeting is held from March 14-18 in Jakarta, Indonesia. WMO will work with UNESCO-IOC and other partners, who are operating observational networks in the Indian Ocean, to ensure that existing data is collected and transmitted via the GTS. In parallel, WMO has prepared a technical proposal for funding of necessary upgrades to the GTS within this target time. Implementation will start immediately upon the availability of funds. DPM together with WWW are working closely to mobilize extra budgetary resources for this undertaking.
5. WMO's other potential contributions include:
 - (a) Take a leadership role in ensuring a more coordinated and effective utilization of space technologies for addressing monitoring, data collection and dissemination, capacity building and training needs for disaster prevention, preparedness and response, with a multi-hazard approach. WMO proposes to convene regional

workshops within 2005/2006 timeframe with space agencies and multi-disciplinary user community (including tsunami and seismic experts). The goals of these workshops are to determine the range of requirements and develop a consolidated and integrated plan of action to be used by the space agencies to coordinate operational systems, and to address unsatisfied requirements through technological developments. WMO will ensure that these requirements are integrated within GEOSS.

(b) WMO will work towards promotion, development and implementation of multi-hazard end-to-end early warning systems with consideration for other hazards, which pose a more frequent risk, such as tropical cyclone and storm surge. For example, with the initiative of IOC, WMO and the International Hydrological Programme (IHP) through a group of international experts a project proposal on Storm Surge Disaster reduction was prepared. WMO proposes that this proposal be reviewed to include coastal flood management and considered as part of the multi hazard approach to reducing disaster risk in the Indian Ocean.

(c) As countries in the region are addressing the organizational issues related to alert and response mechanisms, WMO will raise awareness on, i) the critical role of the NMHSs as operational organizations, responsible for the issuance of *around-the-clock* early warnings for a wide range of hazards related to weather and water, such as tropical cyclone, storm surges and floods, and ii) with appropriate resources, technical and organizational capacity, and strong interface with their national risk management community, all NMHSs can make significant contributions to reducing risks of threatening natural hazards.

(d) Through training workshops and seminars of its scientific and technical programmes and as part of its educational and promotional activities targeted at NMHSs, the decision-makers and the public, WMO will work to promote ways to increase collaboration and partnership between NMHSs and end users and to raise awareness on the benefits of multi hazards alert and response mechanisms.

(e) DPM is following up on activities for development of TEWS in other regions around the world. WMO will host a tsunami scientific lecture as well as a side event, during the RA IV meeting to be held in Costa Rica, in April 2005.

(f) Ensure that all accomplishments are communicated with the media to raise WMO's and NMHSs' visibility.