

World Meteorological Organization (WMO)

Title of initiative:	The WMO'S Global Telecommunication System (GTS) for exchange and distribution of Indian Ocean tsunami warning system alerts and related information
Countries primarily supported:	Indian Ocean Countries
Duration:	From 1 March 2005 to 31 December 2006

Objectives

- The objective of the initiative was to ensure the most effective use of the WMO's Global Telecommunication System (GTS), including its satellite-based and data-collection sub-systems, which interconnects all National Meteorological and Hydrological Services (NMHSs), for supporting the exchange and distribution of Indian Ocean Tsunami Warning System (IOTWS) alerts and related information, including for the interim Tsunami Watch arrangements.
- The project also aimed to support upgrading the national GTS components where needed, on a priority basis, for NMHSs of developing and less-developed countries to enable all countries of the Indian Ocean Rim to participate and take benefit from the GTS as part of multi-hazard alert and response mechanisms, including the IOTWS.

Achievements

- **Regional/International Multidisciplinary workshop and expert meeting**
The WMO Multidisciplinary Workshop and Expert Meeting on the Exchange of Early Warning and Related Information including Tsunami Warning in the Indian Ocean was held in Jakarta, 14-18 March 2005. The workshop endorsed the WMO Action Plan and developed the technical and operational plan. It also identified the countries' need for GTS upgrade.
- **Experts team missions to developing and less-developed countries for on-site assessment of upgrading/strengthening of national GTS components**
Missions of WMO Expert team were carried out to Sri Lanka, Bangladesh, Maldives, Myanmar, Pakistan, Djibouti, Kenya and Tanzania. Survey and projects information that was developed in the framework of the Tropical Cyclone Programme in the Southwest Indian Ocean was used for Comoros, Madagascar and Seychelles.
- **Technical development of national projects proposals for sustainable upgrade of GTS components, where needed**
 - A Coordination meeting on GTS upgrade in the Indian Ocean to support multi-hazard early warning systems, including Tsunami warning system was organized from 17-19 October 2005 in Geneva to review and consolidate the proposed projects for ensuring a consistent GTS upgrade and implementation plan for the whole Indian Ocean Rim. Some donors announced their firm or imminent decision to fund several projects including France and USA.
 - Two missions of GTS experts were carried out to GTS/ Regional Telecommunication Hubs (RTH), New Delhi and RTH Bangkok, respectively to upgrade the GTS circuit (New Delhi – Bangkok) of critical importance for the Indian Ocean.

➤ **Procurement and installation of data-communication equipment at National meteorological Centres to alleviate the most serious shortcomings (the initiative supports initial highest priority needs)**

The competitive procurement process for GTS upgrades for Bangladesh, Myanmar and Pakistan was completed. The equipment became functional at NMCs of Bangladesh and Pakistan. Some administrative arrangements still need to be made in Myanmar in 2007 including factory training and equipment acceptance test.

➤ **Training seminar on GTS procedures and practices specific to IOTWS**

Operational procedures on GTS have been further developed and agreed by WMO bodies (ref. Commission for Basic Systems, November 2006) to enhance the operational exchange of Tsunami watch and warning messages and related information (e.g. sea-level data and seismic data) in support of the EWS/TWS. With some complementary funding from WMO, operation and technical personnel (three each) from NMCs of Bangladesh, Myanmar and Pakistan have been trained (factory training and on-site training).

➤ **Organization/coordination of operational tests and monitoring exercises on the exchange of IOTWS alerts and information**

- "Tsunami Watch Information (TWI)" bulletins from Japan Meteorological Agency (JMA) and Pacific Tsunami Warning Center (PTWC) have been routed over the GTS to Indian Ocean rim countries, including via its satellite-based data distribution systems, RETIM-Africa and EUMETCast (West Indian Ocean), CMA PCVSAT (Northeast Indian Ocean), ISCS and EMWIN (East Indian Ocean). Operational tests have been routinely performed.
- The GTS demonstrated its effectiveness for the 17 July 2006 Tsunami in Java, with the interim tsunami advisory information issued from PTWC and JMA after the earthquake and received by several national warning centres in the Indian Ocean region, including the one in Jakarta.

➤ **Regional implementation-coordination meeting on GTS support to IOTWS and multi-hazard warning system**

A Workshop "Multi-Hazard Early Warning Centres' Concept of Operations for the Indian Ocean Tsunami Warning System" was held in November 2005 in Singapore to share knowledge and experience of the established WMO Regional Specialized Meteorological Centres, and those of existing tsunami warning centres (TWS) to further promote and develop the concept of operations of multi-hazard multi-purpose early warning systems supported by the GTS.

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