

UNESCO Intergovernmental Oceanographic Commission (UNESCO/IOC)

Title of initiative:	Toward the Development of an Indian Ocean Tsunami Warning and Mitigation System within a Global Framework
Countries primarily supported:	Indian Ocean countries
Duration:	From 1 February 2005 to 31 December 2007

Objectives

The initiative aimed to provide an overall integrated framework for strengthening early warning systems in the Indian Ocean region, primarily for tsunamis, but also recognizing the context of multiple hazards, risk management and risk reduction.

The UNESCO/IOC and its partners coordinated eight key activities described under the “Achievements” section below. These activities targeted:

- The rapid assessment of tsunami warning capacities in the region;
- Establishing interim networks among practitioners and authorities;
- Conducting regional meetings of relevant practitioners for both training and coordination aims;
- Developing interim information materials for practitioners and community leaders;
- Providing the necessary coordination and support for affected countries.

Achievements

- **International Coordination Meeting for the Development of a Tsunami Warning and Mitigation System in the Indian Ocean within a Global Framework**

The meeting was convened from 3-8 March 2005 in Paris, France. Governmental experts and organizations from 45 countries participated.⁵⁵ The 27 countries of the Indian Ocean Rim reached consensus on establishment of the Indian Ocean Tsunami Warning System (IOTWS).

On 1 April 2005, an interim IOTWS was established, relying exclusively seismic data from earthquake monitoring stations. Japan Meteorological Agency (Tokyo) and Pacific Tsunami Warning Center (Hawaii) have been providing tsunami advisory information as of this date. The required National Tsunami Focal Points have been established in 14 Indian Ocean nations to receive warnings.

- **Second International Coordination Meeting for the Development of a Tsunami Warning and Mitigation System in the Indian Ocean within a Global Framework and Scientific and Technical Follow-up Meetings**

A second meeting was held in April in Mauritius from 14-16 April 2005. The meeting adopted the Mauritius Declaration. The Declaration confirmed (1) the establishment of an Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS) under the UNESCO/IOC, (2) the lead coordinating role of UNESCO/IOC for establishing the IOTWS, and (3) the necessary financial mechanism for the coordination of donors. Belgium, Finland, Italy, and Norway pledged contributions for specific activities linked to the tsunami warning and mitigation system. Several others, including Australia, France, Japan, Germany and the United States of America, along with the European Commission, also indicated their continuing support and willingness to provide more financial aid as the plans for the system became more clearly defined. A series of scientific and technical meetings have been held to follow-up the outcome of the second coordination meeting.⁵⁶

⁵⁵ http://ioc.unesco.org/indotsunami/paris_march05.htm,

<http://ioc.unesco.org/indotsunami/mauritius05/mauritius05.htm>

⁵⁶ <http://ioc3.unesco.org/indotsunami/calendar.htm>

➤ **National Coordination Meetings and Expert Advisory Missions**

National assessments missions to the 16 interested countries⁵⁷ in the Indian Ocean have been carried out by international, interdisciplinary teams of experts from the UNESCO/IOC, UN/ISDR-PPEW, WMO and the Asian Disaster Reduction Centre (ADRC) from May 2005 to September 2005. The IOC of UNESCO also coordinated assessment missions to Iran and Yemen in 2006. The 18 national reports to date, along with a consolidated report are available for immediate use.⁵⁸

➤ **Distribution of Pamphlets to Promote Awareness and Preparedness**

Educational materials, books, brochures, posters and flyers explaining tsunami safety rules, the Tsunami Warning System and what people in coastal areas should do in times of emergency have been produced. These materials have been specially adapted for local communities and widely distributed throughout the Indian Ocean region in nine languages.⁵⁹ Translation into more languages have been in progress. Some materials have been also sent to the UN/ISDR's Africa Office for wider dissemination. Specific educational activities and material include:

- The Great Wave and the Tsunami Glossary (produced by IOC's International Tsunami Information Centre, Hawaii)
- Posters and flyers
- "Tsunami Warning!" awareness booklet (translated by ITIC with the support of Tsunami Warning Focal Points for Indonesia (10,000 copies), Maldives, Sri Lanka and Thailand (2000 each)). The booklets were distributed to affected schools in each country, in-country UN partners through UN Resident Coordinators' offices and key non-UN partners. A booklet about Japanese educational story on tsunami response, "Inamura no Hi" or "Fire of Rice Sheaves" (translated in nine languages and 16,000 copies have been distributed to 8 Indian Ocean countries.)
- Two 3-day workshops were organized in 2006 by the ADRC and the Government of Thailand in Phuket and Phang-Nga provinces in Thailand for school children.
- A one-day workshop was organized in 2006 for 123 teachers in Banda Aceh, Indonesia.
- In Bangladesh, 6,000 booklets were distributed to conduct workshops for community leaders.
- A further 30,000 English versions and 20,000 French versions of the materials were printed and delivered to the UN/ISDR Africa Office for wider dissemination.

➤ **Support for National Awareness and Preparedness Activities**

- An information kit "TsunamiTeacher"⁶⁰ has been developed by the UNESCO/IOC and its International Tsunami Information Centre (ITIC), and has been translated into Bhasa Indonesia, Thai and Bengali. Translation into five other languages⁶¹ is planned in future.
- Two issues of Tsunami Newsletter were published by the ITIC, and distributed to the readers in approximately 70 countries.

➤ **Establishment of Core Operational GLOSS Sea Level Gauges in the Indian Ocean Region**

- The initiative assisted the construction and installation of 6 sea-level stations in India, Indonesia, Malaysia, Myanmar, Sri Lanka and Thailand and up-grading of 15 existing real-time sea level sites in close coordination with Hawaii Sea-Level Centre to complete the upgrade of the Global Sea Level Observing System (GLOSS) network in the region. The sea-level stations deployed in countries of the Indian Ocean represent core elements of the GLOSS network, which constitutes a fundamental basis for the monitoring and detection of tsunamis in the Indian Ocean.

⁵⁷ Bangladesh, Comoros, Indonesia, Kenya, Madagascar, Malaysia, Mauritius, Mozambique, Myanmar, Oman, Pakistan, Seychelles, Somalia, Sri Lanka, Tanzania, and Thailand

⁵⁸ <http://ioc3.unesco.org/indotsunami/nationalassessments.htm>

⁵⁹ Thai, Bahasa Indonesia, Bengli, Hindi, Tamil, French, Urdu, Arabic, Malaysian

⁶⁰ "TsunamiTeacher" is available at: <http://ioc3.unesco.org/itic/>

⁶¹ French, Arabic, Urdu, Turkish, Spanish

- A sea level observation and data analysis-training course was conducted for participants from the Indian Ocean at the Japan Meteorological Agency, 15-26 May 2006. A second course took place at the IOC office in Oostende, Belgium in November 2006, primarily for Western Indian Ocean participants.

➤ **Training Courses and Support to the Establishment of a National Tsunami Assessment, Mitigation and Warning System.**

The UNESCO/IOC, in coordination with the WMO, UN/ISDR and the U.S. Geological Survey (USGS), has been organizing and sponsoring a number of educational seminars and scientific workshops to develop capacity in tsunami disaster education and preparedness in the Indian Ocean region. The educational seminars include “Train the Trainer” workshops using TsunamiTeacher teaching modules to target national meteorological services in charge of tsunami warning, national disaster management organizations responsible for tsunami emergency response and UN partner agencies. The scientific courses are related to each core area of the IOTWS (hazard assessment, hazard mitigation, and warning guidance). Specific scientific courses carried out are:

- One-week training course on Seismology and Tsunami Warning took place in Sri Lanka, (3-7 April 2005, 20 participants), Indonesia (8-17 May 2005, 47 participants), Thailand (15-22 May 2005, 27 participants), Malaysia (21-25 August 2005, 51 participants), Maldives (27-31 August 2005, 14 participants).
- Two-week training courses on GIS and Territorial Planning for Coastal Zones took place in Belgium (2-12 May 2005, 13 participants).
- Two-week training courses on Tsunami Numerical Modelling took place in Philippines (7-19 November 2005, 17 participants), Malaysia (8-19 May 2006, 39 participants) and Belgium (6-16 June 2006, 24 participants).

➤ **Regional workshop on strengthening of Standard Operating Procedures for Indian Ocean and Southeast Asian countries**

A Regional workshop on strengthening of Standard Operating Procedures for Indian Ocean and Southeast Asian countries was held in Bangkok, 12-16 May 2008. 35 participants from 17 countries attended plus 11 trainers and UNESCO IOC Secretariat staff. The participants were from National Tsunami Warning Centres and National Disaster Management Organizations and they received training in a broad range of topics concerning tsunami warning as well as in-depth workshoping of issues related to tsunami warning and emergency response.

➤ **Strengthening the UNESCO/IOC’s Coordination Role for the IOTWS**

The Tsunami Coordination Unit, consisting of ten experts, was created within the UNESCO/IOC secretariat including three seconded personnel supported by France, Germany and Japan. Australia, Ireland and Norway also contributed toward the reinforcement of the Unit. This team was able to respond rapidly to the considerable demand on UNESCO/IOC while maintaining other IOC priority activities during 2005.

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Photo 7: Education and awareness rising in a pilot-class in Thailand



Photo 8: Global Sea Level Observing System (GLOSS) network