Progress in building an “end-to-end” Tsunami Early Warning and Mitigation System

International Forum on Tsunami and Earthquake Progress from the Hyogo Framework for Action 15/16 Jan 2007 Kobe, Japan

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Geotectonic sources for major destructive tsunamis
After the big Tsunamis of 1960 (Chile) and 1964 (Alaska), in 1965 the IOC established the ICG/ITSU International Coordination Group for the Tsunami Warning System in the Pacific (PTWC).

This is a successful experience of an operational Tsunami Warning & Mitigation system, based on proved and robust technologies.
Establishment of an Indian Ocean Tsunami Warning System

In the aftermath of the greatest tsunami recorded in history on Dec 26th 2004, IOC organized two International Coordination meetings: March (Paris) and April (Mauritius), to define the terms for the development of an Indian Ocean Tsunami Warning and Mitigation System (IOTWS)
In June 21-30, 2005: the 23rd IOC General Assembly approved resolutions for the establishment of a **global program and three additional regional** Intergovernmental Coordination Groups on TEWS (XXIII-12 to XXXIII-15) for

- **Global multi-hazard system (GOHWMS)**
- **the Indian Ocean (ICG/IOTWS)**
- **the Caribbean (ICG/CARTWS)**
- **the NE Atlantic and Med (ICG/NEAMTWS)**
Three more regions to coordinate
Global coordination

GOHWMS provides the necessary oversight function for the regional EWS, ensuring commonalities and good practice to define a common

- Structure
- Strategy
- Standards
- Resources
IOTWS time line and milestones in 2005/2006

- Implementation Interim System IOC-JMA-PTWC
- 18 National Assessment Missions IOC/ISDR/WMO
- Sea level stations being deployed
- Initial IOTWS established
- Core Regional System build up
- Focus on National Plans

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- Focus on National Plans
19 out of 22 requested assessment missions by IOC/ISDR/WMO on tsunami warning and mitigation capacity to Indian Ocean member states, have been finalised.

These reports, by identifying deficits, provide clear guidelines for the design of national plans.

The 3 final missions to Timor Leste, South Africa and Djibouti are scheduled for the first half of 2007.
Since July 2006 an Initial System is in place

Based on Existing:
• 26(28) National 24x7 Information Centres slowly evolving into a
• Network of Tsunami Warning Centres in charge of National Plans

Need to improve Regional Instrumental Networks:
• Improved Seismographic network (faster and more accurate) detection of earthquakes
• Real-time (1-5min transmission interval) network of sea-level stations near tsunami source zones
28 new real time sea level stations
Agreed upgrade of the Seismographic network
4 DART-like systems deployed
Status and achievements in the ICG/IOTWS process
(mainly funded through the ISDR flash appeal project)

• 28 real-time sea level stations
• 25 new broadband seismometers
• more than 12 technical training courses on tsunami modelling and seismic analysis
• 19 TW capacity assessment missions
• Emergency Standard Operations Procedures for Indonesia (January 2007)
• TsunamiTeacher: multi-purpose educational toolkit in English and Bahasa Indonesia (5 more languages under way)
• various educational material on tsunamis massively reproduced and disseminated
A perfect warning will be useless if people do not know what to do in case of an emergency.

Awareness and preparedness at the country level is essential.
Governments and donors already know what is needed at the country level in 18 countries.

Indian Ocean countries, through the ICG, requested and endorsed (July 2006) a comprehensive Implementation Plan.

Plan is a “living document”, to be harmonized and constantly updated with national and regional commitments and contributions.

IOC directly assists with the development of National Plans.
Beyond immediate response: Multi-Hazard Platforms for Ocean generated Hazards

- Storm – surges (IOC, WMO)
- Tropical storms (WMO, IOC)
- Improving Storm and cyclones track forecasts (IOC, WMO)
- Ice Hazard (IOC, WMO)
- Oil Spills (IOC, WMO, UNEP, IMO)
For further information:

http://ioc3.unesco.org/ptws
http://ioc3.unesco.org/icg-iii
http://ioc3.unesco.org/neamtw
http://ioc3.unesco.org/cartws