Platform for the Promotion of Early Warning
NEWSLETTER

International Strategy for Disaster Reduction

Issue 2005/1, March 2005

Welcome to the third issue of the Early Warning Newsletter!

In this issue: The 26 December 2004 Indian Ocean tsunami disaster - the most devastating tsunami on record, and the landmark World Conference on Disaster Reduction, held in Kobe, Japan, 18-22 January 2005.

The start of the year has been very turbulent for the disaster reduction and early warning community. The tsunami caused over 250,000 fatalities and left millions of people homeless. No tsunami early warning system for the region was in place, leaving millions of people without protection. A massive humanitarian emergency response followed, strongly supported by both governments and the general public. The World Conference on Disaster Reduction, held about three weeks later, was always going to be a major event but the tsunami greatly highlighted its importance and swelled international interest and participation. The conference provided an opportune platform to consider the tsunami in the full context of disaster risk reduction and to initiate necessary steps for the future. The two events put an intense spotlight on the need for early warning systems.

The great and tragic tsunami of 26 December 2004

A magnitude 9.0 earthquake, with its epicenter close offshore from the northwest of Sumatra, triggered a major tsunami, with a series of waves that quickly struck Sumatra and traveled through the Indian Ocean hitting adjacent countries over the next few hours. The travel time of the tsunami waves would have allowed enough time for warnings for many countries. But no tsunami early warning systems were in place. International centres recorded the major earthquake within minutes and foresaw the likelihood of a tsunami, but only limited contact could be made with the appropriate authorities in the countries at risk. Even where the signs of a coming tsunami were present, many people were unprepared and failed to take steps to escape and protect themselves.

This was an extreme failure in early warning, with serious failures in all four of the elements of effective early warning systems (knowledge about the risk, technical monitoring and warning service, dissemination of warnings, and public awareness and preparedness to act). National and international leaders immediately called for action to implement a tsunami early warning system for the Indian Ocean, as part of an overall effort to reduce disaster risk from all causes.

Tsunami Flash Appeal!

The UN made a “Flash Appeal” immediately after the 26 December tsunami in order to raise funds to support relief and recovery operations. The total request amounted to nearly a one US$ billion, and by 11 January, the promised help from donors amounted to nearly three-quarters of this total. PPEW played a small but important part in the process. With two days notice PPEW assembled a proposal to make the first preparatory steps toward developing a comprehensive tsunami early warning system for the Indian Ocean region. Based on information from tsunami experts in UNESCO-IOC and from others expert in disaster risk preparedness and development, the proposal attracted strong interest from the humanitarian donors, now with over $10M promised, from Japan, the European Commission, Sweden, Norway, Finland, and Germany.

Before and after the tsunami waves hit the coast of Aceh, Indonesia. (DigitalGlobe)

More on the Indian Ocean Tsunami see page 3

THE INTERNATIONAL EARLY WARNING PROGRAMME - IEWP

The IEWP was successfully launched at an evening event at Kobe on 19 January organized by the Platform for the Promotion of Early Warning (PPEW). Speeches of support were made by the heads or deputy heads of several organizations, including WMO, UNESCO, WFP, UNEP, OCHA, UN/ISDR, the German Disaster Reduction Committee (DKKV) and the German Government humanitarian agency that supports PPEW. The establishment of such a programme was a key recommendation of the Second International Conference on Early Warning held in Bonn, October 2003. The launch attracted about 200 people including television and other media representatives.

Mr. Murata (Government of Japan) Jan Egeland (OCHA) and Salvano Briceño (ISDR) at a press conference following the WCDR special session on the Indian Ocean tsunami.

The IEWP will provide an international mechanism by which organizations can cooperate and develop shared and systematic approaches to advancing early warning systems worldwide. PPEW is currently developing the formal basis for organizing the programme, including governance mechanisms and a timetable for action over 2005, in consultation with the sponsoring UN organizations and other partners. The brochure on the IEWP prepared for the launch event is available at the PPEW website: http://www.unisdr.org/ppew/iewp/IEWP-brochure.pdf

The United Nations World Conference on Disaster Reduction (WCDR)

The WCDR was an outstanding international event. It was widely acknowledged that the conference successfully responded to the urgent needs concerning the tsunami while maintaining a focus on the long-term goal of reducing disaster risk and vulnerability. The conference and its preparatory meetings led to the production of four important documents, now combined in the final **Report of the World Conference on Disaster Reduction** (http://www.unisdr.org/wcdr/official-doc/L-docs/Final-report-conference.pdf).

Main components of the official WCDR final report

The Report of the World Conference on Disaster Reduction comprises the outcome documents of the WCDR which represent a strong commitment of the international community to address disaster reduction and to engage in a determined, results-oriented plan of action for the next decade.

The Hyogo Declaration sets out a consensus view by the participating UN Member States on what were the most important issues in disaster reduction and how they intended to address these in future. For example, they emphasized the links of disaster risk to sustainable development and poverty eradication, and the need to foster a culture of disaster prevention and resilience at all levels.
http://www.unisdr.org/wcdr/official-doc/L-docs/hyogo-declaration-english.pdf

The Hyogo Framework for Action 2005 - 2015 provides the basis for specific action by states and organizations to reduce disaster risks. It is the culmination of months of discussion and negotiation, including two international preparatory meetings in Geneva during 2004. The core part of the document is the establishment of objectives and priorities for action, together with specific tasks to ensure implementation and follow-up.
http://www.unisdr.org/wcdr/official-doc/L-docs/programme-outcome-english.pdf

The Review of the Yokohama Strategy and Plan of Action for a Safer World provides the essential background to progress over the last ten years since the last world meeting on disaster reduction, in Yokohama, Japan in 1994. It identifies major remaining challenges in the areas of: governance; risk identification, assessment, monitoring and early warning; knowledge management and education; underlying risk factor reduction; and effective response and recovery preparedness. These five topics form the priority areas of the Hyogo Framework of Action.
http://www.unisdr.org/wcdr/official-doc/L-docs/Yokohama-Strategy-English.pdf

The Common Statement of the Special Session on the Indian Ocean Disaster: Risk Reduction for a Safer Future reflects a number of viewpoints that were expressed by countries, particularly concerning the need for a tsunami early warning system in the Indian Ocean and for strengthening regional capacities in early warning and risk reduction. Among other things it stresses the four-element framework promoted by PPEW, namely (a) knowledge about risk, (b) technical monitoring and warning service, (c) dissemination of warning information, and (d) public awareness and preparedness to act, and it noted the plan announced by Germany to host a third International Early Warning Conference in association with the United Nations through PPEW.
http://www.unisdr.org/wcdr/official-doc/L-docs/draft-statement-special-session-english.pdf

Scoping Meeting on the Development of Tsunami Early Warning Systems

This half-day meeting was held in Kobe directly after the WCDR at 22 January 2005. Organized by UN/ISDR Platform for the Promotion of Early Warning with inputs from UNESCO Intergovernmental Oceanographic Commission (IOC) and the Japanese authorities, the meeting of about 200 national representatives, UN organizations and experts considered initiatives being started or being planned to develop tsunami early warning systems, with particular reference to the countries of the Indian Ocean region over the next six month, but also with reference to the need for more effective tsunami early warning systems globally. Presentations described the necessary institutional and operational components of tsunami early warning systems, reviewed the results of the various relevant WCDR sessions, outlined current initiatives and sought views on the elements of a coordinated process for moving forward.

Relevant parts of the Thematic Segment of the WCDR

The thematic segment addressed five key clusters of issues:
1) Governance, institutional and policy frameworks for risk reduction,
2) Risk identification, assessment, monitoring and early warning,
3) Knowledge, innovation and education to build a culture of safety and resilience,
4) Reducing the underlying risk factors, and
5) Preparedness for effective response.

Most of the issues of interest to early warning were dealt with in Cluster 2, which comprised the following nine sessions. Detailed session reports are available at the WCDR website at the addresses shown below.

Integrated flood risk management through appropriate knowledge sharing and capacity building systems
http://www.unisdr.org/wcdr/thematic-sessions/thematic-reports/report-session-2-1.pdf

A seamless approach to the global problem of drought
http://www.unisdr.org/wcdr/thematic-sessions/thematic-reports/report-session-2-2.pdf

Reducing risks through effective early warnings of severe weather hazards
http://www.unisdr.org/wcdr/thematic-sessions/thematic-reports/report-session-2-3.pdf

Coping with multiple hazards in urban settings
http://www.unisdr.org/wcdr/thematic-sessions/cluster2.htm#c2-4

Visions of risk and vulnerability: patterns, trends and indicators
http://www.unisdr.org/wcdr/thematic-sessions/thematic-reports/report-session-2-5.pdf

Disaster reduction through efficient risk communication
http://www.unisdr.org/wcdr/thematic-sessions/thematic-reports/report-session-2-6.pdf

People-centered early warning systems
To be effective, EWSs must be embedded in, understandable by and relevant to the communities which they serve. Effectiveness of EWS depend on a combination of technology, and that warnings are understood, timely, and respected as legitimate und ultimate by the individuals at risk.
http://www.unisdr.org/wcdr/thematic-sessions/thematic-reports/report-session-2-7.pdf

Data for evidence-based policy making
http://www.unisdr.org/wcdr/thematic-sessions/thematic-reports/report-session-2-8.pdf

Reducing risk through effective use of earth observations
http://www.unisdr.org/wcdr/thematic-sessions/thematic-reports/report-session-2-9.pdf

For further information on the thematic segment please see:
http://www.unisdr.org/wcdr/

Tsunami Flash Appeal (*continuing from page 1*)

The project is titled "Evaluation and Strengthening of Early Warning Systems in Countries Affected by the 26 December 2004 Tsunami". It aims to secure public confidence in their security against further tsunami in the Indian Ocean, by supporting the coordination and planning needed develop tsunami early warning capacities and by rapidly boosting necessary awareness and capacities by public authorities in the region. Most of the funds will be used to support essential activities by other organization's, especially to ensure concerted and coordinated action by United Nations organizations.

Achievements to date include staff support provided to the series of high level regional meetings on the tsunami, the funding and organizing of meetings including: a half day scoping meeting on the development of a tsunami early warning system at the World Conference on Disaster Reduction, Kobe; a training and study tour of Japan's tsunami early warning system for high-level administrators from the region; and an international coordination meeting organized by UNESCO-IOC in Paris, 3-8 March, to secure necessary political and technical agreement on the development of the regional tsunami early warning system. An interim mechanism for exchanging tsunami advisory information has been established under these initiatives, which includes steps by UNESCO-IOC and WMO to upgrade existing data systems.

Current priorities:

The two main priorities at present are (i) to maintain the momentum of the process led by UNESCO-IOC to coordinate the establishment of the tsunami early warning system foundations, particularly the observation system and the national tsunami centers, and (ii) to plan and coordinate the more complex tasks of building awareness, preparedness and confidence in dealing with tsunamis in countries.

PPEW and the ISDR secretariat are working on arrangements to implement the project, through specific proposals required by donors, budgets required within the UN, memorandums of understanding with other organizations such as UNESCO, and the transfer of funds to partners. In addition, the ISDR is establishing a temporary office in Bangkok alongside other UN groups to enable closer interaction with countries and UN regional offices. The ISDR secretariat and its partners intends to promote the inclusion of disaster risk reduction initiatives within the longer term recovery and reconstruction activities.

Meanwhile, UNESCO/IOC is organizing the 2nd International Coordination Meeting for Mauritius, 14-16 April, where high-level delegations will consider and seek coordination of plans and activities for the tsunami warning system and will seek donor support for the next phases of development.

A global early warning system?

"One of the hopes for the next 10 years is that people-centered early warning systems targeting vulnerable communities are put in place in all disaster prone regions of the world"; said Jan Egeland, UN Under Secretary General for Humanitarian Affairs. "Disaster reduction is not simply a matter of sophisticated technology and hardware; at root, it is also a matter of communication and education. We need a global EWS, where people - not hardware, are at the centre of any successful disaster warning and preparedness measures. We have to have a new generation of awareness. We need better ways of communicating accurate information to the people in need of such information."

General information on tsunamis

A tsunami is an abnormal alteration in sea level that causes damage to coastal environments and infrastructure. Moving as a wave across the ocean, a tsunami can bring a terrifying wall of sea water several metres high and turbulent fast moving streams of water than can wash away people, vehicles and buildings. A tsunami is formed of a series of ocean waves generated by a rapid large-scale disturbance of the sea, usually by an undersea earthquake, but also from slumps of large masses of rocks into the ocean (landslides), undersea debris slides, and volcanic eruptions. The height of a tsunami (called the run-up) and the strength of flows of sea water are very dependent on the shape and contours of the coast and the nearby sea floor. With the right data, scientists can calculate the risks at different locations and can produce maps of tsunami risk for use in planning.

In the open ocean, the tsunami waves are less than a metre high and travel about 750 km/h over long distances, resulting in damage in distant continents. These are called "tele-tsunamis". Fortunately, the travel time for tele-tsunamis allows for early warnings to be generated and send ahead of the arrival of the waves.

Major tsunamis

Compared to other natural hazards, tsunamis are a rare phenomenon. But the impacts can be immense. The Peruvian/ Chilean coast, Japan, and parts of Indonesia are the most affected areas, but European coastal regions (Portugal and Sicily) have suffered from tsunamis. Only the Pacific region has a tsunami early warning system. Other regions such as the Atlantic, Mediterranean, and Caribbean are at risk and are dusting off old plans or developing new plans for implementing early warning systems.

Tsunami early warning activities in the Pacific

The Pacific Tsunami Warning Center (PTWC) in Hawaii was established in 1949 (http://www.prh.noaa.gov/ptwc/) and other countries took initiatives to set up centres following the great 1960 Chilean earthquake and tsunami, which killed people as far away as Japan. About 80% of tsunamis occur in the Pacific basin.

In 1965, the International Tsunami Information Center (ITIC) was established, while in 1968 an International Coordination Group for the Tsunami Warning System in the Pacific (ICG/ITSU) was formed, both under the Intergovernmental Oceanographic Commission (IOC) of UNESCO.

ITIC supports ICG/ITSU by monitoring the activities of the Tsunami Warning System in the Pacific, coordinating tsunami technology transfer among the 26 Member States, and supporting tsunami preparedness and mitigation activities (http://www.prh.noaa.gov/itic/).

Technical tsunami warning methods

Tsunami early warning systems depend on very rapid detection of earthquakes and ocean disturbances. Earthquakes cause reverberations through the Earth's crust that are detected minutes later at other parts of the world. With real-time detectors (seismometers) and immediate data transfers, the location and strength of an earthquake can be determined. If the earthquake was under the sea and was very strong, a tsunami is likely.

But sometimes a tsunami does not result, and some tsunamis occur for other reasons. So in addition, the system needs sea level gauges, to detect whether tsunamis have occurred. NOAA's Pacific Marine Environmental Laboratory (PMEL) developed deep-ocean buoys with instruments for this purpose (the DART - Deep-ocean Assessment and Reporting of Tsunamis).

.

News

A magnitude 8.7 earthquake occurred 28 March, 2005 in northern Sumatra, Indonesia.
In contrast to the 26 December tsunami event, when Indian Ocean nations were not part of a tsunami warning network, this time the warning was immediately transferred by the PTWC and distributed across the region at risk. The population was warned by police, soldiers, and ordinary residents of coastal areas across the Indian Ocean. They used megaphones, radio, telephones and temple bells to warn of the possibility of another tsunami.

Tsunami quake raises risk of another tremor
According to a scientific study the devastating earthquake that triggered the Indian Ocean tsunami has raised the likelihood of further major earthquakes by putting more stress on other active faults in the area. The risk of another major earthquake reinforces the need for a warning system.
http://www.alertnet.org/thenews/newsdesk/L1567112.htm

Atomic agency agrees to share data on tsunamis
The Comprehensive Nuclear Test Ban Treaty Organizations has decided to share sensitive seismic data with nongovernmental organization to advance efforts to construct an early warning system to prevent the kind of destruction the December 2004 Tsunami caused. International Herald Tribune, 9 March 2005

Indonesia decided for a EWS developed by German research institute
The technique will be financed with money of the disaster aid pledged by the German government. The installation of the warning system will start as early as autumn 2005; the basis of the system could be in operation by the end of this year. Rolf Emmerman, head of the Potsdam-based research institute said "the German technology differs from the American; the buoy is on the water surface and detects variations within the magnitude of millimeters. False alarms are very rare. The € 45 million system is flexible and decentralized and it is compatible with other technologies." Some US scientists doubt the aimed time frame to implement a warning system. Marie Eble said that American scientists needed 8 years to develop the pressure sensor measurement. False alarms demotivated the population, but a successful warning in 2003 brought back their confidence.
http://www.dw-world.de/dw/article/0,1564,1475511,00.html

Further information on tsunami waves

Science of tsunamis, hazards and risk:
http://www.prh.noaa.gov/ptwc/abouttsunamis.htm
http://www.prh.noaa.gov/itic/tsunami_events/media/graphics/general_maps/eq_can_generate_tsu.pdf.
http://www.pmel.noaa.gov/tsunami/Dart/
Major tsunami events:
http://www.prh.noaa.gov/itic/tsunami_events/media/factsheets/major_world_wide_tsunamis.pdf, or http://www.em-dat.net/documents/Trends/toptsunamis3.pdf
USGS tsunami detection and prediction:
http://earthquake.usgs.gov/eqinthenews/2004/usslav/
Photos, animation, film, reading material:
http://www.prh.noaa.gov/itic/library/reading_list.html
UNESCO/IOC: http://ioc.unesco.org/indotsunami/
For more information, see the new PPEW tsunami section:
http://www.unisdr.org/ppew/

Major Caribbean earthquakes and tsunamis a real risk
A dozen major earthquakes of magnitude 7.0 or greater have occurred in the Caribbean in the past 500 years, and several have generated tsunamis. The most recent major earthquake, a magnitude 8.1 in 1946, resulted in a tsunami that killed a reported 1,600 people. Now with nearly 20 million people living in this tourist region and a major earthquake occurring on average every 50 years, scientists are calling for the establishment of tsunami EWSs in the Caribbean Sea, Gulf of Mexico and Atlantic Ocean, and better public education about the real tsunami threats in these regions.
http://poseidon.uprm.edu/Caribbean-Tsunamis-Risk.pdf

The International Flood Initiative (IFI) - for better preparedness of communities living in flood affected areas was launched at the WCDR in Kobe. The main objective is to minimize the loss of life and reduce property damage associated with flood disasters, while enabling maximization of the social, environmental and economic benefits of floods. The planned International Centre for Water Hazard and Risk Management (CHARM) by UNESCO and hosted by the Public Works Research Institute (PWRI) in Tsukuba, Japan, is expected to be a global facility contributing to the initiative.

IRIN News launches web special on locusts at the WCDR
"The Eighth Plague: West Africa's locust invasion" - The web special includes articles, analyses and video on the invasion that hit North and West Africa in 2004.
http://www.irinnews.org/webspecials/Locust/default.asp

Upcoming Meetings

The second International Coordination Meeting for the Development of an Indian Ocean Tsunami Warning System in Port Louis, Republic of Mauritius, from 14-16 April.
http://ioc.unesco.org/indotsunami/mauritius05/mauritius05.htm
European Geosciences Union General Assembly 2005 in Vienna, Austria, from 24 - 29 April 2005. The Session NH 6.01 "Tsunamis" at the 2nd General Assembly of the European Geosciences Union.
http://www.copernicus.org/EGU/ga/egu05/
22nd International Tsunami Symposium in Chania, Greece, 27- 29 June is organized in the framework of the Tsunami Commission of the International Union of Geodesy and Geophysics (IUGG).
http://www.gein.noa.gr/English/tsunamis.htm
15th World Conference on Disaster Management in Toronto, Ontario, Canada from 10 -13 July.
http://www.wcdm.org/main.html

Publications

NOAA, IOC, ITIC & Laboratoire de Geophysique, France (2002): **The Great Waves.** This 13 page awareness brochure provides information on the origin, propagation and mitigation of tsunami waves. It also advises what to do in case of a tsunami event.
For free download see:
http://www.prh.noaa.gov/itic/library/pubs/great_waves/great_waves_en_2002.pdf

Write to us

We welcome any feedback on the Early Warning Newsletter, and any early warning news material to include in future issues. The newsletter is prepared and disseminated in electronic and print forms. Please email us to get your name on the email list or for selected mailing of the print version. Write to Newsletter Editor at: isdr-ppew@un.org

Platform for the Promotion of Early Warning
Görresstrasse 30
D-53113 Bonn
Germany
Tel: +49 228 249 88 10
Fax: +49 228 249 88 88
Email: isdr-ppew@un.org
www.unisdr-earlywarning.org

UN/ISDR Secretariat
Palais des Nations, 8-14
Avenue de la Paix
CH 1211 Geneva 10
Switzerland
Tel: +41 22 917 2529
Fax: +41 22 917 0563
Email: unisdr@un.org
www.unisdr.org