

Briefing for RAN Hydrographer

13th Meeting of the IHO North Indian Ocean Hydrographic Commission (NIOHC) to be held in Yangon, Myanmar from 19-22 February 2013

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Australia is a founding member of the IOTWS and actively participates through the Intergovernmental Coordination Group (ICG). Mr Rick Bailey from the Australian Bureau of Meteorology is currently the Chair of the ICG. Australian representatives from Bureau and Geoscience Australia provide leadership roles and contributions to the Working Groups and Task Teams of the ICG. Australia also hosts and financially supports the ICG Secretariat at Bureau's Regional Office in Perth, staffed by Mr Tony Elliott (see following details). The ICG meets regularly. Reports from its nine Sessions can be downloaded from the site of the Intergovernmental Oceanographic Commission (IOC) of UNESCO at <http://www.ioc-tsunami.org/>. There are 28 countries involved in the IOTWS, being states in and bordering the Indian Ocean basin.

Transition Completed to New Service for Regional Tsunami Threat Information for Indian Ocean on 31 March 2013

The 9th Session of the ICG/IOTWS was hosted by the Indonesian Meteorological & Seismic Service (Badan Meteorologi, Klimatologi, dan Geofisika - BMKG) in Jakarta, 27-30 November 2012. A significant outcome was the endorsement by 28 Indian Ocean Rim Member States that the transition from the Interim Advisory Service (IAS - operated by the USA and Japan) to the enhanced system of three Regional Tsunami Service Providers (RTSPs - operated by Australia, India and Indonesia) will be completed by 31 March 2013. The IAS will then formally withdraw its services to member States in the Indian Ocean. This followed a thorough evaluation of the RTSP during the transition phase.

The new system of RTSPs had previously commenced formal operation on 12 October 2011 during an international tsunami warning exercise for the Indian Ocean (Exercise IOWave'11). Test bulletins were issued by the RTSPs to each country's National Tsunami Warning Centres (NTWCs) during the exercise, simulating the tsunami of 26th December 2004.

Since 12 October 2011 the RTSPs have been operating in parallel to the IAS as part of the transition and evaluation phase. Communication tests have been conducted every 3-6 months between RTSPs and NTWCs. The RTSPs successfully provided tsunami threat information to NTWCs for the North Sumatra earthquake and tsunami event of 11 April 2012. Although the earthquake mechanism was unusual and made exact tsunami generation information difficult to ascertain (for RTSPs and IAS), the IOTWS was publicly applauded for its ability to assess and disseminate the available tsunami threat information to NTWCs according to Key Performance Indicators (KPIs) established by the Member States of the ICG.

It's important to note that prior to 2005 there was no regional tsunami advisory service for the Indian Ocean at all. In comparison, the Pacific Tsunami Warning & Mitigation System became operational in 1962 following the 1960 Chilean earthquake and ocean-wide tsunami.

An Interim Advisory Service (IAS) for the Indian Ocean has been provided by the Pacific Tsunami Warning Centre (PTWC) in Hawaii and the Japan Meteorological Agency (JMA) in Japan since 2005. It was quickly established after the devastating Indian Ocean Tsunami of 26 December 2004, and has been supported by the US and Japan while Indian Ocean countries developed their own capability. The system of RTSPs now completely replaces the IAS, following an overlap and successful evaluation period.

The new RTSPs each provide much more detailed tsunami threat information for Indian Ocean countries than the IAS (see example in Figure 1 and 2). This helps countries to better prepare national tsunami warnings, save lives and reduce the frequency of false alarms. Although the assessments are independent, the three RTSPs have worked together under the ICG/IOTWS to ensure the information provided for agreed coastal zone for each country is the same type and in standard formats.

To avoid potential for conflicting information from the three RTSPs and the IAS, the RTSPs and IAS are not be responsible for deciding on national warning status for each country. That is the sovereign role of the nationally designated 28 National Tsunami Warning Centres (NTWCs), who will utilise the independent assessments to make their own decisions about the level of threat and inform their own communities. The RTSPs will only reflect on their web sites the warning status decided by each NTWC.

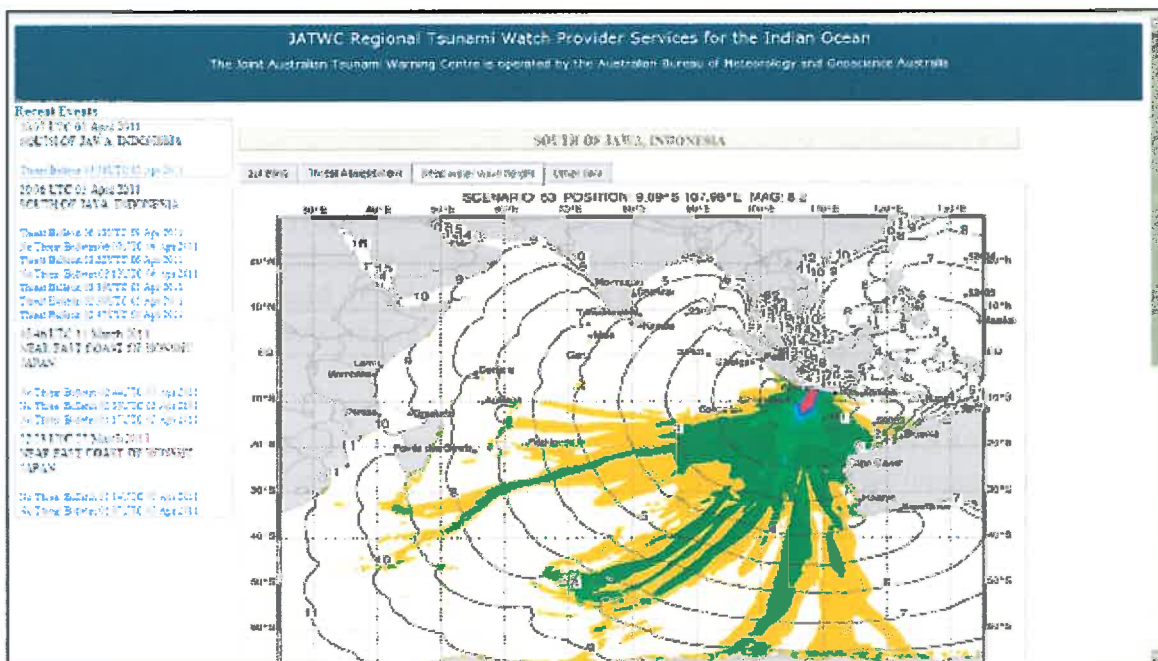


Figure 1: Example of more detailed tsunami threat information being provided to National Tsunami Warning Centres (NTWCs) in the Indian Ocean by Regional Tsunami Service Providers (RTSPs).

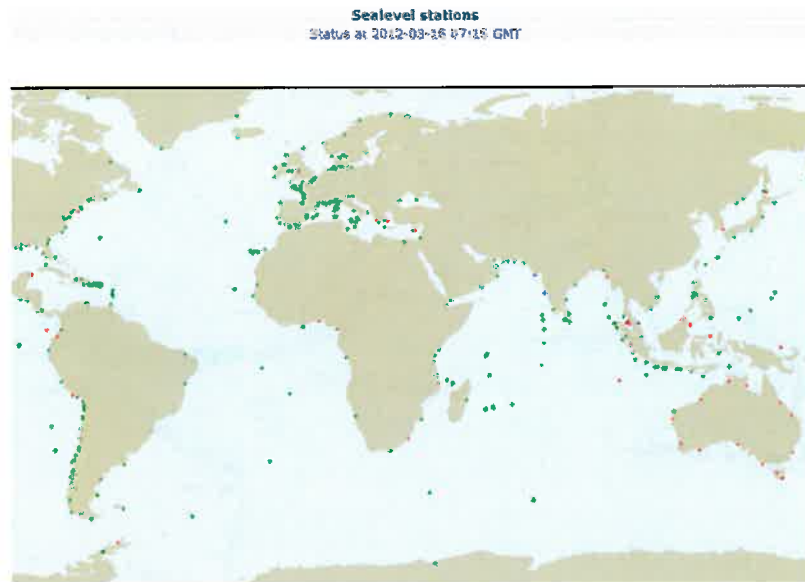


Figure 3: Coastal sea level stations reporting in real-time to RTSPs and NTWCs on the Global Telecommunication System (GTS) of the World Meteorological Organisation (WMO)

Vandalism of Deep-Ocean Tsunami Monitoring Buoys

Damage to ocean observing systems takes many forms including ship impact damage, incidental damage (e.g., fouling from fishing lines, nets or cables), damage from direct exploitation of moorings as fish aggregation devices, intentional damage, and theft of entire systems or component parts.

The tsunami warning community are deeply concerned that the rate of damage continues to be high in the Indian Ocean, with over half of the tsunameters in the newly established Indian Ocean Tsunami Warning System and Adjacent Seas network suffering at least one damage event in the last four years, resulting in over 18 platform-years of data loss. The damaged ocean observing systems cause loss of critical ocean data, degraded weather and marine forecast capabilities, high cost of repair or replacement, and undermined confidence in the tsunami warning system, which could result in significant loss of life and property as well as costly evacuations in response to false tsunami warnings. Most recently the deep-ocean tsunami buoy, which was jointly deployed by Indonesia and Australia to the south of Bali, was towed by an unidentified vessel off its mooring location and rendered inoperable.

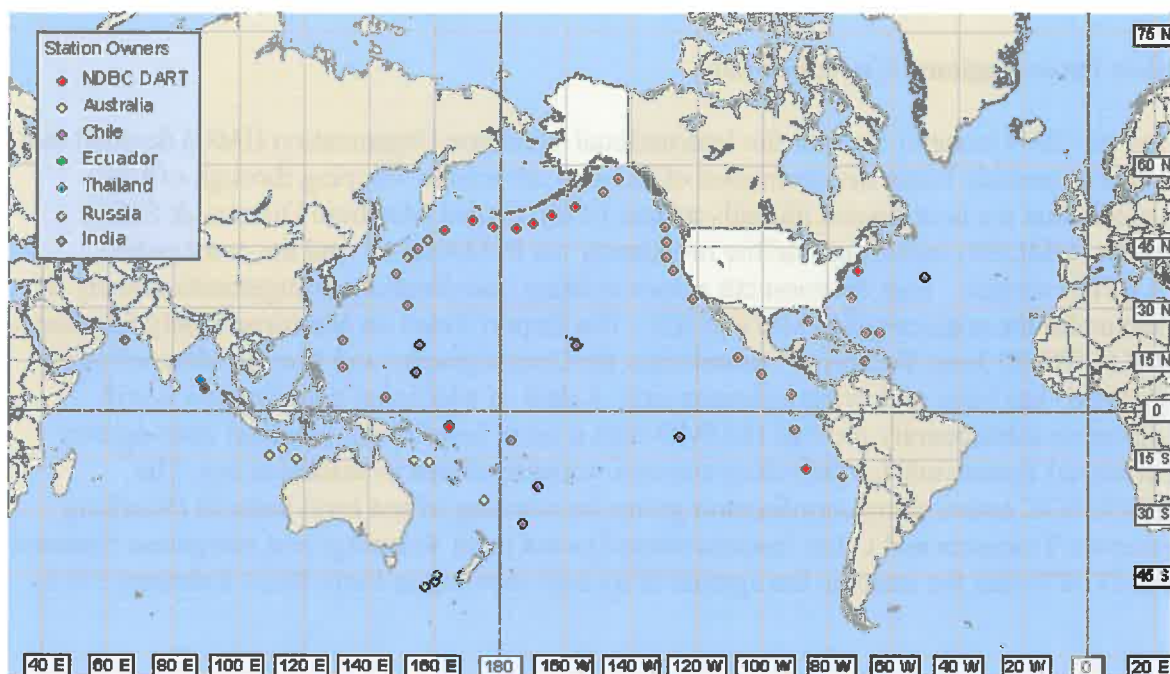


Figure 4: Locations of deep-ocean tsunami buoys providing critical sea level data in real-time to RTSPs and NTWCs to assist tsunami warning decisions

The 2009 UN General Assembly Resolutions on Oceans and Law of the Sea (64/71, para 172) and on Sustainable Fisheries (64/72 para 109) called on States and appropriate UN agencies to take appropriate action to address intentional and unintentional damage to ocean observing systems. The community is encouraged by recent action of the Western and Central Pacific Fisheries Commission and the Inter-American Tropical Tuna Commission to protect moored ocean observing systems.

The IOC of UNESCO has urged Member States to recognize damage to ocean observing systems in national statutes, harmonize their approaches as appropriate, and cooperate to prevent, detect, deter, report, investigate and prosecute such acts of damage. The 26th Session of the IOC Assembly, Paris, 22 June - 5 July 2011 invited:

- The IOC and WMO to promote the systematic capture and exchange of records of damage to ocean observing systems and to conduct comprehensive cost benefit assessments taking into account both economic and social impacts of damage to ocean observing system;
- The FAO and regional fisheries management organizations, especially those with the competence to manage highly migratory fisheries, to adopt binding measures to prevent and minimize damage to ocean observing systems;
- The FAO, IOC and WMO to cooperate directly to develop means to promote effective enforcement of measures adopted by regional fisheries management organizations to protect ocean observing platforms, and to develop education and outreach programs to bring greater awareness to fishing communities of this problem.
- UN agencies, including IOC, WMO, IMO, and FAO, working with Member States and industry, to share information and foster education and outreach to safeguard human lives and property through protecting the ocean observing system.

Other Inter-Regional Coordination

After the 2004 tsunami disaster the International Maritime Organization (IMO) decided that it needed to provide better dissemination of tsunami advices to shipping through official channels that are coordinated globally as part of the Global Maritime Distress & Safety System (GMDSS) including satellite broadcasts via INMARSAT and the coast radio NAVTEX service. That decision cut across existing coordination arrangements already in place under the auspices of WMO and IOC. The Expert Team on Maritime Safety Services of the IOC/WMO Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) has been reviewing arrangements. A deal of additional coordination is still required to subsequently provide the IMO with a more helpful and practical inter-agency operational framework for providing tsunami warning advice to vessels at sea. The UESCO/IOC overarching coordination group for warning of sea level hazards (Working Group on Tsunamis and Other hazards related to sea level Warnings and mitigation Systems WG-TOWS) has the issue on the agenda of its next meeting in Paris 20-21 February 2013.

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