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Paper for consideration by IRCC

Proposal for the extension of the scope of the IHO Resolution 1/2005 as amended (IHO response to disasters) to prevention and contingency plans

Submitted by:	FR as EAtHC, MACHC, MBSHC, NIOHC, SAIHC and SWPHC member (or associate member)
Executive Summary:	This paper suggests to extend the scope of the IHO Resolution 1/2005 as amended (former K4.5) to include some prevention measures such as the exchange in near real-time of sea-level data. Additional recommendations are made to make sure these data are correctly sampled to meet tsunami warning systems requirements.
Related Documents:	IHC18 – Red Book – Comments made by FR to PRO 1. CL 73/2012 and CL 94/2012. IHO M-3, Resolution 1/2005 as amended.
Related Projects:	IOC Committee on International Oceanographic Data and Information Exchange www.ioc-tsunami.org PTWS, IOC/ICG/IOWTS, IOC/ICG/CARIBE-EWS, IOC/ICG/NEAMTWS

Introduction / Background

1. An important proposal was made by Japan at the XVIIIth IHC in order to improve the IHO response to disasters. It was followed by 2 CLs issued by the IHB (CL73/2012 and CL 94/2012) and Resolution 1/2005 has been amended accordingly.
2. In the comments made to the XVIIIth IHC – PRO1 and to CL 73/2012, France suggested that the IRCC should investigate further the extension of Resolution 1/2005 to include prevention and alert systems. The IHB Directing Committee then noted that the IHO response to disasters was covered by task IRCC4 09/2013 - *Contribute to improving the framework of IHO response to marine disasters* - in the IRCC Work Programme, and invited the Regional Hydrographic Commissions and Member States to submit proposals to extend the scope of Resolution 1/2005 for consideration by IRCC.
3. This paper is submitted following up this IHB DC's guidance.

Analysis/Discussion

4. In many Coastal States, HOs are responsible for, or involved in continuous tidal measurements, as sea-level data are needed for tidal predictions and hydrographic surveys. This activity is often considered from a national perspective only. Though, as depicted in strategic recommendations for tsunami prevention plans and warning systems, these data, together with seismic data, are very relevant for improving the efficiency of tsunami warning systems especially when the earthquake source is far beyond the coasts. It has therefore a significant importance to share these data, across the boundaries, subject to some technical provisions.
5. Sea-level data need to be sampled and integrated much more frequently than the current practice for tidal gauges when used for hydrographic surveys only (typically 1 min versus 15 min or 1 h). In fact, they need to be transmitted in near-real time to meet tsunami warning systems requirements. As an example, in the Eastern and North-Eastern Indian Ocean, a tsunami wave can hit the shore in about 30 min and then can propagate throughout the whole basin. Increasing the transmission frequency provides more time and information for national warning authorities to alert coastal populations at risk.
6. One of the consequences of this high frequency sampling and transmission rate is that tide gauges hardware and software upgrades have to be considered. Some HOs can share their own experience and provide technical guidance for specifications. There are also opportunities to raise funding issues for such upgrades and operational/maintenance costs of equipments at the relevant IOC meetings (see *Related Projects*).

7. It is worth noting that UNESCO encourages coastal states to transmit their near-real time sea level data through the Global Telecommunication System implemented by the WMO, and that can provide transmission frequencies up to once every 5 minutes. In this simple way, national meteorological agencies, regional tsunami warning centres, as well as national civil protection agencies, have then direct and free access to critical sea level data. These data are also made available on the IOC Sea Level Station Monitoring Facility web portal (http://www.ioc-sealevelmonitoring.org/map.php).
8. The current Resolution 1/2005 as amended deals mainly with the IHO response *after* marine disasters. It seems as important for the IHO to become a key player as well, for marine disasters *prevention and contingency plans* as they may save lives.
9. One could raise that other ideas might be suggested for developing a more comprehensive IHO prevention plan (information on available assets in the RHC areas of responsibility, deployable survey teams (time to be on duty, and to reach the hit area, shallow water gridded bathymetry developed by GEBCO for simulation, etc.). However, as indicated by the US in the response made to CL 94/2012, operational organizations are very different from one country to another. Therefore, it seems more realistic to focus, at the first stage, on real-time sea-level data exchange only.

Recommendations
10. The recommendations of this paper are therefore to amend the actual 1/2005 as follows:

Title of the Resolution
Instead of: **IHO Response to Disasters**
Should read: **IHO Response to Marine Disasters, and Contribution to Prevention and Alert Systems**

In the main part of the Resolution, in the Introduction paragraph

Instead of: "…. It is also very important for Coastal States to collect relevant coastal and bathymetric data in their areas of responsibility and to make this available to the appropriate organizations to support the establishment and improvement of tsunami early warning systems, protection of coastal areas and relevant simulation studies. Any necessary regional cooperation for the collection of shallow and deep-water bathymetry can be coordinated through the IHB in cooperation with other States in the Region and International Organizations as appropriate."

Should read: It is also very important for Coastal States to collect relevant coastal and bathymetric data in their areas of responsibility and to make this available to the appropriate organizations to support the establishment and improvement of tsunami early warning systems, protection of coastal areas and relevant simulation studies. **Coastal States must also cooperate to set up sea-level and tide gauges networks, procedure and systems for the exchange and transmission, in near real time (1 to 5 min), of sea-level data, properly sampled (~ 1 min rather than 15 min or 1 h), likely to provide early warnings of tsunamis and storm surges.** Any necessary regional cooperation for the collection of **data** ~~shallow and deep-water~~ ~~bathymetry~~ can be coordinated through the IHB **in liaison with the Regional Hydrographic Commissions**, ~~cooperation with~~ other States in the Region and International Organizations as appropriate **such as the IOC (www.ioc-tsunami.org)**.

Action required of IRCC
10. The IRCC is invited to consider this proposal and provide further guidance:
i. to the IHB, for the submission by CL of amendments to Resolution 1/2005 for the approval of MS;
ii. to the IHB, RHCs, and MS, for improving the co-ordination with the IOC tsunami programme of work, if and wherever it is needed (EAHC, EAtHC, MACHC, MBSHC, NIOHC, SAIHC, SEPHC, SWPHC).