INTER-ICG TASK TEAM ON DISASTER MANAGEMENT AND PREPAREDNESS
REPORT TO THE TOWS-WG-IX MEETING
25-26 February 2016, Paris, France

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
UNESCO

Task Team Members
David Coetzee (Chair) – Ministry of Civil Defence & Emergency Management, New Zealand; ICG/PTWS
Laura Kong – International Tsunami Information Centre (ITIC), Hawaii, USA; ICG/PTWS
Harkunti Pertiwi Rahayu - Research Center for Disaster Mitigation, Institute of Technology Bandung, Indonesia; ICG/IOTWMS
Ardito Kodijat - Indian Ocean Tsunami Information Centre (IOTIC), Indonesia; ICG/IOTWMS
Gerassimos Papadopoulos - National Observatory of Athens, Greece; ICG/NEAMTWS
Amir Yahav - National Emergency Management Authority, Israel; ICG/NEAMTWS
Denis Chang Seng - ICG/NEAMTIC to NEAMSTWS Technical Secretary
Alison Brome - Caribbean Tsunami Information Centre (CTIC), Barbados; ICG/CARIBE-EWS
Patrick Tyburn - French West Indies Emergency Management Organisation, Prefecture de Martinique (France); ICG/CARIBE-EWS
Bernardo Aliaga - IOC Secretariat

1. BACKGROUND AND TERMS OF REFERENCE
The Terms of Reference (TORs) of the Inter-ICG Task Team on Disaster Management and Preparedness (TT-DMP) are to:
   • Facilitate in collaboration with organization such as UNISDR (United Nations Office for Disaster Risk Reduction), the exchange of experiences and information on preparedness actions, education/awareness raising campaigns and other matters related to disaster management and preparedness;
   • Promote preparedness in coastal communities through education and awareness products and campaigns;
   • Facilitate SOP training across ICGs to strengthen emergency response capabilities of Member States and their Disaster Management Offices;
   • Promote preparedness programs and assessment tools that have been successful in one regional Tsunami Warning and Mitigation System in the others as appropriate;
   • Facilitate the coordination of the TICs of the ICGs;
   • Report to the TOWS–WG.

The representatives to the TT-DMP are nominated by their respective Chairpersons of the Intergovernmental Coordination Groups (ICGs). The membership consists of two representatives from each ICG, one of which should represent the ICG’s Tsunami Information Center. The IOC Chair appoints the Chair of the Task Team.

The first meeting of the TT-DMP was held in December 2010 in Seattle, USA (IOC/TOWS-WG/TT2-I/3). Due to funding limitations on the part of both the IOC and task team members’ agencies or countries, the task team was only able to reconvene twice- in February 2014 in Paris, France (IOC/TOWS-WG/TT2-
II), and in March 2015 in Morioka, Japan (IOC/TOWS-WG/T2-III). However, the majority of ICGs were not represented at the Japan meeting. The task team subsequently has had to conduct most of its activities through electronic communication which proved less ideal.

Due to the limited representation at the 2015 meeting of the task team, this report covers the period 2014–2016.

2. UPDATES FROM ICG WORKING GROUPS RELEVANT TO DISASTER MANAGEMENT AND PREPAREDNESS

The task team collected updates on Disaster Management and Preparedness activities across basins over the last two years. This information is important to reflect the progress and identification of collective relevant issues to be addressed at global level.

2.1 ICG IOTWMS – WG 3 on Preparedness and Response

The 10th ICG IOTWS meeting at Muscat Oman in March 2015 agreed to merge the former WG1 Tsunami Risk Assessment and WG3 Tsunami Preparedness and Response into WG1 Tsunami Risk, Community Awareness and Preparedness. The name of ICG IOTWS has also been formally modified into ICG IOTWMS – Inter Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System. This emphasizes that the role of the new WG1 to bring science and socio technology into government, society and stakeholders in enhancing awareness and preparedness.

The new WG1 will interlink with WG2 to accomplish better strategy in reducing potential loss of lives as a result of natural hazards, particularly tsunamis. The new WG1 holds, in particular, the responsibility to ensure appropriate tsunami risk assessment, preparedness and response measures are taken by Member States, and to coordinate and share the best practices of tsunami risk assessment, preparedness, awareness and response initiatives with Working Groups from other ocean basins through the IOC/TOWS-WG-TT on Disaster Management and Preparedness.

Mainstreaming the tsunami risk assessment, warning and mitigation system into development planning is a key issue for WG1. The Working Group’s focus is supporting the understanding of Member States’ risks, including their capacity to assess their risks as the foundation of their development planning. To this purpose, WG1 has continued to conduct Training Workshop on Coastal Hazard Assessment: Application in Risk Assessment and Management for Member States at Colombo in June 2-5, 2015. This training workshop was conducted under UN Economic and Social Commission for Asia and the Pacific (UNESCAP) fund to look at how tsunami risk assessment is encouraged or mainstreamed in the planning of the Member States. About 40 participants from science, engineering, and government participated in the workshop. During this five days workshop, the revised version of IOC Manuals and Guide 52 – Tsunami Risk Assessment and Mitigation for the Indian Ocean was used as reference for the development of Training Manuals.

During 2015, WG1 conducted international research collaboration with Disaster Resilient Research Center of Huddersfields University - UK under Newton Fund in developing a training workshop on the Development of Disaster Resilience Coastal Communities to Enhance Economic Development and Social Welfare. This five-days training workshop conducted in Bandung Indonesia have been attended by 50
academics and researchers from both UK and Indonesia, who are actively engaged with coastal disaster risk reduction programmes in their home countries. The revised version of IOC Manuals and Guide 52 – Tsunami Risk Assessment and Mitigation for the Indian Ocean was used during the training workshop as reference.

WG1 collaborated with WG2, IOTIC and the Secretariat of ICG IOTWMS in conducting a regular Regional SOP Training Workshop for Tsunami Early Warning System at Hyderabad in November 2015. This training was aimed to update and ensure the implementation of tsunami warning system measures agreed in IOTWMS. Several Member States participated from both the eastern and western regions of the Indian Ocean.

There are several activities that will conducted by WG1 collaborated with IOTIC in 2016-2017, i.e. Tsunami Risk Assessment Training Workshops in Mauritius and Seychelles, and a Preparedness Training Workshop in Seychelles, under collaboration with MFIT.

2.2 ICG PTWS – WG 3 on Disaster Management, Preparedness and Reduction

The ICG/PTWS-XXV agreed in 2013 to align the previous terms of reference of its Working Group 3 on Awareness and Response (as determined in the PTWS Medium Term Strategy 2009-2013, ICG/PTWS-XXIII, Annex V), with the new terms of reference of the TOWS task team (as decided by the IOC/TOWS-WG-VI meeting in February 2013), as well as that its title be changed from the “Awareness and Response Working Group” to the “Disaster Management and Preparedness Working Group” so that the PTWS reflects the TOWS direction.

ICG/PTWS-XXVI in 2015 agreed to reconstitute WG3 under the name of “Disaster Management, Preparedness and Risk Reduction”, and to revise its Terms of Reference accordingly, to:

1. Facilitate in collaboration with TOWS Task Team on Disaster Management and Preparedness and organizations such as UNISDR, the exchange of experiences and information on risk reduction and preparedness actions, and matters related to disaster management;
2. Promote preparedness in coastal communities through education and awareness products and campaigns;
3. Facilitate SOP training across regions to strengthen emergency response capabilities of Member States and their Disaster Management Offices;
4. Develop and promote best practice preparedness material, programs and assessment tools;
5. Develop and promote best practice tsunami risk reduction material, programs and assessment tools;
6. Support the ITIC of the ICG.

A primary focus of WG3 remained assisting Member States to prepare for and implement the new enhanced PTWC products that were commenced in October 2014 (IOC/2013/TS/105 REV.3).

Liaison with Working Groups of other ocean basins and within PTWS

The PTWS supported the following activities in the CARIBE-EWS:
The Vice-Chair of WG3 of PTWS, the International Tsunami Information Centre (ITIC) and the Caribbean Tsunami Warning Programme (CTWP) supported the Caribbean Tsunami Information Centre (CTIC) and the Chair of WG4 of ICG/CARIBE-EWS in organizing and conducting the Regional Tsunami Training Workshop on Strengthening Standard Operating Procedures (SOP) for Tsunami Warning and Emergency Response and the Development of the ICG/CARIBE-EWS PTWC New Enhanced Products ([ITIC Training Programme (ITP) – Meso America-Caribbean Countries 3](#)) from 1 to 5 April 2014 in Mexico City, Mexico.

This basic SOP training was the third following trainings in 2013 and 2014 in order to reach all CARIBE-EWS countries. The training provided simultaneous translation into Spanish and English for participants and trainers. Twenty-nine participants took part in the training, of which over half are PTWS Member States - including from Colombia (Dirección General Marítima [DIMAR], Unidad Nacional para la Gestión del Riesgo de Desastres [UNGRD]), Costa Rica (Red de Observación del Nivel del Mar en Costa Rica [RONMAC] de la Universidad Nacional, Comisión Nacional de Emergencias [CNE]), El Salvador (Ministerio de Ambiente y Recursos Naturales [MARN] / Dirección General del Observatorio Ambiental [DGOA]), Honduras (Comisión Permanente de Contingencias [COPECO]), Mexico (Unidad Estatal de Protección Civil y Bomberos de Jalisco, Centro de Alerta de Tsunami [CAT]), Nicaragua (Instituto Nicaraguense de Estudios Territoriales [INETER], Defensa Civil), Panama (Universidad de Panamá / Instituto de Geociencias [IGC-UPA], Sistema Nacional de Protección Civil [SINAPROC]).

The ITIC and PTWC supported the CTIC and CTWP to conduct the Regional Training Workshop on Pacific Tsunami Warning Center Enhanced Tsunami Products for ICG/CARIBE EWS, December 7-10, 2015, for Caribbean Member States in advance of the March 1, 2016, start of the PTWC Enhanced Products in the Caribbean. 41 participants representing 25 English-speaking countries, 1 Spanish-speaking (Colombia) and four organizations attended. The ITIC then participated to the CTIC Board Meeting on December 10, 2015.

**Training**

Since 2013, the ITIC and IOC have conducted tsunami warning decision support training on the PTWC Enhanced Products that were implemented in October 2014 for the Pacific. Regional trainings were conducted prior to the start, and following, in-country trainings have been conducted on request from individual countries.

Prior to the start, the following trainings were conducted:

- A Regional Training Workshop on the PTWC Enhanced Products for Pacific Island Countries ([ITIC Training Programme (ITP) – Pacific Islands Countries](#)) was held from 22 to 24 May 2014 in Nadi, Fiji.

- A Regional training on ICG/PTWS Pacific Tsunami Warning Center (PTWC) New Enhanced Tsunami Products ([ITIC Training Programme (ITP) – LAC PTWC New Products](#)) was also held in Guayaquil, Ecuador, from 2 to 4 June 2014. The training was attended by all South American and Central American member states; generally representing both TER and TWFP centres with the exception of Nicaragua (due to logistical problems).

- The ITP-Hawaii 2014 was conducted from 18 to 29 August 2014 and attended by 30 participants from 14 PTWS countries, including Nicaragua which could not attend the ITP – LAC PTWC New Products, and Oman representing Tsunami Warning Centres or Emergency
Management Agencies. The focus was on preparations for the PTWS enhanced products changeover. ITIC also provided training on the new products to Micronesia, Palau, and Marshall Islands.

- Between April and October 2014, the ITIC conducted PTWC New Products implementation missions to the Marshall Islands, Micronesia (Pohnpei, Kosrae, Chuuk, Yap), and Palau. Seismic (CISN) and Sea Level (Tide Tool) monitoring tools, Tsunami Travel Time software, and Warning Communication Flow Charts, Criteria Tables, Checklists, and Timeline SOPs were developed for each island state / country by its stakeholders, facilitated by the ITIC and NWS Guam Forecast Office.

Following the October 2014 implementation, the ITIC and IOC conducted in-country trainings that included review and strengthening of each country’s procedures for scenarios that affected them. For each training, country-customized tsunami hazard atlases of RIFT simulation products were provided. The following trainings were conducted:

- August – December 2015:
  - Tonga (August), Solomon Islands (September), Colombia (October), Cooks Islands (November), Peru (December)
- 2016 planned: Fiji (March), Vanuatu (April)

Supporting PTWS regional working groups and task teams

An Extraordinary Meeting on Strengthening Regional Coordination Mechanisms for Tsunami Early Warning Systems (Fortalecimiento de los mecanismos de coordinación regional sobre los sistemas de alerta temprana ante Tsunamis) was held in Guayaquil, Ecuador, on 5 and 6 June 2014, coordinated by the South East Pacific Working Group (SEP-WG) and hosted by Ecuador (Instituto Oceanográfico de la Armada [INOCAR]). Themes discussed were: Review of Chile’s April EQs and tsunamis; advances and projects of tsunami warning in Chile, Colombia, Ecuador and Peru; opportunities for cooperation; standardizing information bulletins; use of regional information platforms; exercises: lessons learned and future activities; SEP-WG as a global reference point. The Vice-Chair of PTWS WG3, ITIC and the Pacific Tsunami Warning Centre (PTWC) supported and attended the first day of the meeting.

The Central America Working Group (CA-WG) was supported by the WG3 Vice-Chair and the ITIC, which will be conducting its Pilot Tsunami Evacuation Maps, Plans, and Procedures (TEMPP) in Honduras inviting other Central America nations and Mexico to participate. The ITIC has also participated and/or directly supported the PTWS SCS Regional Working Group by providing a list of its awareness materials that are available for customization, and the PTWS WG 2 Task Team on Seismic Data Sharing for the Southwest Pacific, held in Vanuatu, in 2014.

Post-Event Assessment

The 16 September 2015 M8.3 Northern Chile tsunami triggered PTWC Enhanced Product wave forecasts of 1 m or more in two countries, thus triggering conduct of a post-tsunami event assessment (PEA). The tsunami was observed all over the Pacific and caused damage locally in Chile (4.75 m on Coquimbo sea level gauge; 1-2 meeting elsewhere in Chile). The PTWC issued its 1st threat information in six minutes,
and continued for the next 24 hours. The ITIC, in coordination with the IOC, implemented the ‘Post-Event Assessment of the Performance of the Pacific Tsunami Warning and Mitigation System (PTWS) during the 16 September 2015 Chile Central Earthquake and Tsunami Event’ through IOC Circular Letter 2603 on 13 October 2015, using assessment questions approved by TOWS-WG-VIII (March, 2015). The 2015 Chile PEA Report will be available for the IOC Executive Council in June 2016.

Guidelines
New Zealand has developed a technical standard for the use of sirens in tsunami warnings (Tsunami Warning Sirens: Technical Standard [TS03/14]). While this standard is not an official endorsement of the use of sirens for tsunami warnings, the work has been conducted in view of the reality that sirens are being used by local authorities for this purpose. The standard describes the required signal, the meaning of sirens, the public education required, the maintenance requirements and other important considerations. New Zealand also reviewed its 2008 guideline on Tsunami Evacuation Zones (DGL08/08). The revised version represents better guidance on evacuation mapping and includes information on land use planning and vertical evacuation. The revised guideline will be published on www.civildefence.govt.nz within the next month.

New Preparedness focus
The Steering Group of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS) agreed in July 2014 that that the next priority of the PTWS after the implementation of the PTWC New Products in October 2014, should be on Preparedness, e.g., that in the end-to-end tsunami warning chain, once a forecast is provided and a warning alert issued, communities must know what to do and where to go. The ‘where to’ answer would be a tsunami evacuation map that has been developed by, and therefore, owned by the community.

The Steering Committee subsequently agreed that ITIC would lead the development of a standardized process and training course to enable the production of reliable and practical community-level tsunami evacuation maps. The new course will include processes for preparing tsunami evacuation maps and associated response plans that are based on international practices and guidelines developed by IOC, TOWS-WG, and ICG Working Groups and Task Teams. The outcome (a general course curriculum and methodology that is usable in all ICGs) is expected to have global applicability and impact.

The intent is to cover planning, maps, and response procedures for evacuation through a series of training workshops and community engagements over a 1 to 2-year time period. The process will consider cases where modelling is and is not available; demonstrate the application of different levels of tsunami modelling to construct scenario worst case inundation maps; work through the process of creating a community-owned evacuation map, with appropriate routing, safe area assembly, signage; and finally, use an exercise to test emergency response operational readiness of communities. Where applicable, tsunami inundation modelling training can be conducted to enable the science studies needed to support evacuation mapping. Community training-of-trainers approaches for evacuation map creation will be built into the final course considering the needs exceed by far the capacity of a single
institution or group. Targeted course trainees will include Tsunami National Contacts (TNCs) and Tsunami Warning Focal Points (TWFPs), other governmental institutions staff (local and national), NGOs members, and civil society organizations leaders. Tsunami modelling training will target physical scientists and oceanographers in governmental institutions and universities.

The ITIC will pilot the course and process in the period 2015–2016. Upon the pilot’s completion, the course and process will be formalized and offered widely. The IOC issued the pilot announcement letter on May 11, 2015 inviting interested Central America countries to complete a questionnaire – the results were used to identify a host country for the pilot course.

Honduras was selected as the Pilot country, and five trainings are planned between July 2015 and September 2016. The first training on tsunami inundation modelling (using ComMIT/MOST) was conducted July 27-31, 2015. A Course Development Team has been constituted and met in June 22-26, 2015, hosted by ITIC. The PTWS Task Team on Evacuation Mapping and Planning, chaired by the ITIC Director, is providing guidance on the Project. A meeting of the Task Team and Development Team, and inviting TOWS Inter-agency TT on DMP and TWO members and the PTWS Officers, was conducted on February 23, 2016, in Paris, France.

This initiative will directly support the TT’s objective agreed during the Eighth meeting of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems held in Morioka, Japan in March 2015, which is to develop tsunami evacuation mapping guidelines.

2.3 ICG NEAMTWS – WG 4 Public Awareness, Preparedness and Mitigation

After the execution of the Exercise NEAMWave 14 that was based on several tsunami scenarios (28-30 October 2014, v. I: manual. IOC. Technical series; 114 (IOC/2014/TS/114VOL.1): the Tsunami Exercise NEAMWave14 final workshop: From Early Warning to Early Response was organized in IOC, Paris, on 23 June 2015. The objectives and main outcomes of NEAMWave14 were presented and discussed from the perspective of both the Candidate Tsunami Service Providers and the Civil Protection Authorities. In addition, the role of the European Response and Coordination Centre (ERCC) in NEAMWave14 was included in the discussions. The final evaluation report is being prepared.

During 2015 it was decided to produce a special “10th Anniversary Book on ICG/NEAMTWS/IOC/UNESCO Activities” in close collaboration with NEAMTIC and with the co-authorship of several contributors. The volume is in the final stage of preparation and contains, among others, a Chapter dedicated to “Education and Awareness”.

2.4 ICG CARIBE-EWS

The CARIBE-EWS fully transitions to the new PTWC products on 1 March 2016. Several webinars and a training workshop were held in Barbados in December 2015 to support TFPs and NTWCs in the implementation of the new products and the roles of the PTWC and MS (TFP & NTWC) respectively.
Guidelines for the Community Performance Based Tsunami Recognition Programme for the Caribbean and Adjacent Regions were completed and translated into French, Spanish and Dutch.

Working Group 4 is conducting a survey among Member States to evaluate the implementation of the tsunami awareness programmes at national levels, in alignment with the provisions of the Regional Tsunami Public Awareness and Education Strategy. A questionnaire will be enclosed in the evaluation form of exercise CARIBE WAVE 16.

Working Group 4 is also developing a technical guideline on the planning and implementation of community tsunami exercises.

3. UPDATES FROM TSUNAMI INFORMATION CENTRES

3.1 INTERNATIONAL TSUNAMI INFORMATION CENTRE (ITIC)
The International Tsunami Information Centre (ITIC) continued to host and deliver training in Hawaii (called ITP-Hawaii) and in-region (called ITP-International) for National Tsunami Warning Centres (NTWCs) and National Disaster Management Offices (NDMO) staff in 2014 and 2015 to PTWS and CARIBE-EWS Member States (see section 2.2 ICG PTWS). The ITIC also participated to IOTWS Regional Workshop on Standard Operating Procedures (SOPs) for Tsunami Warning and Emergency Response for Northern and Western Indian Ocean Countries (IOTWS Regional SOP Workshop) held in Hyderabad, India, from 23 to 26 June 2014. The training focused on SOPs for tsunami warning and tsunami emergency response in the context of planning, conducting, and evaluating tsunami exercises as a best practice for increasing country readiness. Specific attention was given to the preparation for tsunami exercises and the introduction and feedback on new experimental PTWC tsunami products.

A set of general awareness materials are available free-of-charge from the ITIC, publishing in collaboration with the IOC. In 2014, the ITIC updated and printed Tsunami: the Great Waves (IOC/BRO/2012/4, rev.only in English); translated and added 2010 tsunami information to create a reviewed version of the publication Surviving a tsunami: lessons from Chile, Hawaii, and Japan, eyewitness accounts of the Pacific Ocean tsunami associated with the giant Chilean earthquake in 1960 and 2010 (IOC/BRO/2014/2, rev.only in English) based on the USGS Circular 1187; updated the poster Tsunami Sources (1610 B.C.– A.D. 2014) from earthquakes, volcanic eruptions, landslides, and other causes and the Tsunami Sources: icosahedron Globe. Low-resolution copies of documents are available from the ITIC web site (www.tsunamiwave.info) and high-resolution copies are distributed by DVD by the ITIC. The IOC and ITIC will published Tsunami Glossary 2016 that includes 2015 updates approved by TOWS WG.

To assist warning centres and response agencies, ITIC also distributes free-of-charge tsunami warning decision support tools, which include: CISN (earthquake display), Tide Tool (sea level monitoring display), TTT (tsunami travel time calculation software), and TsuDig (global tsunami, earthquake, and volcano offline GIS database tool). In addition, the ITIC hosts the Tsunami Bulletin Board (list serve for tsunami professionals). Due to RANET Project staff changes and since the changeover to the PTWC
enhanced products, the RANET heads-up courtesy SMS texts of PTWC messages has been down, and may be discontinued unless there is significant request from customers.

ITIC also supported Exercise Pacific Wave exercises in 2015 and 2016 as co-chair of the PTWS Exercise Task Team. ITIC noted the creation of the TsunamiZone.org website by the USA (California, USGS, NOAA) as an excellent outreach tool that is now reaching out to international audiences, such as the Caribbean for CARIBEWAVE 2016. The web site includes tabs on ‘Know Your Zone’ (Maps for all coastal areas to know if you are in a tsunami inundation zone), ‘Tsunami Preparedness Week’ (Register activities to be counted), ‘Event Calendar’ (Learn about drills, presentations, and other events near you), and ‘Resources’ (Movies, manuals, posters, etc).

ITIC is finishing the IOC Tsunami Warning and Emergency Response SOP Manual and Guide in collaboration with New Zealand and the IOC IOTWS Secretariat. In 2013 and 2014, ITIC developed a 1-day Business SOP Short Course aimed at preparing small business and hotels to effectively respond to a local and distant tsunami. The Course was piloted in Guam and CNMI prior to finalization.

For the 50th Anniversary of PTWS, ITIC published a 50 year historical book on the PTWS. Chapters covered important tsunami events, the history of the PTWS, science & technology, disaster management & tsunami preparedness, warning centers and key organizations, and the PTWS today & tomorrow. The ITIC, in collaboration with Chile and the USA, also produced a 5 minute video Tsunami Warning! showing the warning and response actions of Peru, Chile, Hawaii, USA, Samoa, Australia, Indonesia, Japan, and the PTWC for a M9.5 northern Chile scenario.

The ITIC shared information on the progress of the US National Tsunami Hazard Mitigation Program in marine preparedness and post-tsunami survey protocols at the state levels. Overall, State and partners are developing guidelines for the creation of harbor hazard maps based on empirical and modeled current vs. damage relationships, minimum offshore boat safety water depths, and playbooks for operational planning and response in communities and harbours.

In order to prepare for a coordinated post-tsunami damage and impact assessment, especially for the collection of perishable scientific data, ITIC, Hawaii, and California are leading the efforts for embedding data collection plans and procedures within each State’s emergency response. A US Protocol for States was approved in 2014 (Natural Hazards, 75:2153–2165, 2015) in response to the incomplete coordination and data collection in American Samoa after the 2009 Samoa tsunami. At the US Federal Agency level, the ITIC and NOAA are developing the Tsunami Protocol to be included in the US National Plan for Disaster Impact Assessments for Weather and Water; active agencies have been NOAA, USGS, Federal Emergency Management Agency (FEMA), and the National Science Foundation (NSF).

3.2 INDIAN OCEAN TSUNAMI INFORMATION CENTER
The Terms of Reference of IOTIC has been endorsed by Member States at the 10th ICG/IOTWS meeting in Muscat, Oman from 24 to 26 March 2015. This endorsement provides a solid mandate to IOTIC to:
• support Member States in tsunami disaster risk reduction;
• help strengthen national and community tsunami preparedness; and
establish itself as a key source of tsunami Disaster Risk Reduction information for the Indian Ocean region.

The IOTIC is currently housed in UNESCO Office Jakarta under the coordination of the Disaster Risk Reduction and Tsunami Information Unit (DRRTIU). To ensure the sustainability of IOTIC, the Indonesia Meteorological, Climatological and Geophysical Agency (BMKG) offered to host the IOTIC for the first 5 years (2016-2021) with the support of office space, staff, and programme funding.

In 2015 IOTIC and the ICG/IOTWS secretariat completed two UNESCAP projects:

(i) “Enhancing Tsunami Risk Assessment and Management, Strengthening Policy Support and Developing Guidelines for Tsunami Exercises in Indian Ocean Countries”; and

(ii) “Investigation of the written and oral history of tsunami events in the Makran Coastal Region”.

The outputs of these projects were:

- A revised version of *Tsunami Risk Assessment And Mitigation For The Indian Ocean* (English)
- A training module on Policy Support for Tsunami Risk Reduction (English)
- A training Module on Tsunami Exercises (English)
- A Tsunami Exercise Guidebook: *How to Plan, Prepare, Conduct and Evaluate National and Local Tsunami Exercises* to improve tsunami preparedness in Timor L’este (English and Tetun)
- A recommendation for Policy Support for Tsunami Risk Reduction and a Tsunami Exercise in Timor L’este (English and Tetun)
- A Tsunami Exercise Guidebook: *How to Plan, Prepare, Conduct and Evaluate National and Local Tsunami Exercises* to improve tsunami preparedness in Myanmar (English and Myanmar)
- A Myanmar Tsunami Preparedness and Risk Reduction (TPPR) Programme 2015-2020
- Publication of *Remembering 1945 Makran Tsunami* (English, Arabic, Urdu, and Farsi)

Currently the IOTIC is also implementing two other projects:

(i) IOTIC is supporting Indonesia through the self-benefiting programme under the Indonesian Funds in Trust through a project: “Building Model Disaster Resilient Cities funded by the Indonesia: Tsunami Hazard”. This project will end in April 2016. Several outputs of the projects are:

- ADDRESS (Adopting Disaster Risk Reduction in Education Sector for Safer Schools) and Adaptation of VISUS Methodology (Visual Inspection for defining the Safety Upgrading Strategies) to assess structural and infrastructure of schools from 5 hazards, earthquake, flood, landslide, typhoon, and tsunami.
- Creating education and preparedness animation videos on:
  - Tsunami Hazards
  - Tsunami Early Warning System
  - Tsunami Preparedness
  - Strategies in surviving tsunami
• Tsunami Early Warning Chain for Local Government
  • Production of preparedness and awareness materials on Remembering 1950 Tsunami Ambon
  • Developing Standard Operating Procedures for tsunami warning in Moluccas Province, Ambon City, Pandeglang District and local broadcasting media

(ii) IOTIC received funding from the Malaysian Funds in Trust that will allow IOTIC to start having activities and engagement with the member states of the Western region of the Indian Ocean. The project called “Fostering Tsunami Preparedness, Response and Mitigation in the Indian Ocean Small Island Developing States and Developing Countries”. The activities of the project will involve:
  • Supporting capacity building through training/workshops on tsunami early warning, preparedness and awareness in two SIDs countries in western Indian Ocean and two Indian Ocean African Coast countries. Training/workshops are planned for:
    o Mauritius in March 2016
    o Seychelles in March 2016
    o Tanzania in June 2016
    o Mozambique in June 2016
  • Development of Tsunami Education and Preparedness Materials:
    o Distance tsunami in Indian Ocean
    o Tsunami Hazard in South China Sea Region

In 2015, through funding of the IOC UNESCO Regular Programme, IOTIC supported India, Iran, Oman and Pakistan to commemorate the 70th year of 1945 Makran Tsunami through the design, translation, and production of exhibition panels in English (India), Farsi (Iran), Arabic (Oman) and Urdu (Pakistan). In addition, IOTIC also supported Pakistan in developing a public awareness video on remembering 1945 Makran Tsunami in Urdu Language to be aired in Pakistan Television.

3.3 NEAMTWS TSUNAMI INFORMATION CENTRE
The NEAMTIC was initially staffed under the European Commission Project. It was then managed by the previous Technical Secretary of ICG/NEAMTWS on a part-time basis, partly funded under the NEAMWave 14 activities. Currently, NEAMTIC is not staffed, and there are no dedicated funds. At the ICG/NEAMTWS XII session Member States agreed that NEAMTIC is an important element of NEAMTWS. Further issues discussed at the ICG/NEAMTWS XII session include who the website was targeting and how to further simplify the information presented to the general public and schools. Countries were invited to support NEAMTIC through funding and secondments to maintain and further develop the website.

Currently the NEAMTIC web-portal is functioning as repository of ICG/NEAMTWS documents and information. NEAMTIC products include educational posters, updated information on NEAMTWS, virtual library, good practices and educational online course on tsunamis and other sea-level related hazards. Examples of resources and outreach products include:
  • NEAMTIC brochure
The NEAMTIC educational and awareness raising products are being translated into ICG/NEAMTWS Member States' languages.

### 3.4 CARIBBEAN TSUNAMI INFORMATION CENTRE

Steady progress was achieved during the February 2015 – 2016 period within the Caribbean and its adjacent regions, despite the strained financial situation. Some extra-budgetary financial resources were secured for the operations of the CTIC, PAE tools and materials continue to be developed and distributed by the CTIC, the regional CARIBE WAVE tsunami warning exercise was convened, enhanced capacities for early warning at the community and national levels continue to be developed and ICG Member States and working group members have benefited from a range of technical trainings.

In relation to the development of outreach materials, CTIC experienced significant challenges in the finalization of its website due to human resource constraints. The inception report, website concept, design template, kid's mascot design and site map have been finalized and the final sections of content were referred to the consultant in February 2016. The consulting team is currently reviewing with the aim of providing a revised schedule for the development process. With the support of the Coastal Zone Management Unit (CZMU), Barbados, the official logo and branding materials of the CTIC are currently being revised by the CTIC website consultants to reflect the design of the other tsunami information centres and the current hosting arrangements for CTIC. These activities are being supported by Working Group 4 of the ICG/CARIBE EWS.

CTIC has also advanced discussions with the United States Agency for International Development, Office for Foreign Disaster Assistance (USAID/OFDA) to secure US $100,000 to support the development of tsunami education materials for schools. This initiative is to be supported by the Seismic Research Centre of the University of the West Indies (SRC) and the Caribbean Disaster Emergency Management Agency (CDEMA). The formal proposal is to be submitted within the second quarter of 2016.

The Tsunami Public Awareness and Education Strategy for the Caribbean and Adjacent Regions, published as No. 107 of the UNESCO/IOC Technical Series has been referred to the representatives of Curacao for official translation into Dutch. Multi-lingual bulk CTIC PAE materials were distributed to at least fifteen (15) ICG/CARIBE EWS Member States through the ICG/CARIBE EWS meetings, CTIC trainings and visiting representatives attending partner meetings in Barbados. Materials were also provided for use to CDEMA, SRC and the United Nations Development Programme for Barbados and the OECS (UNDP).
CTIC facilitated the arrangements for the second Tsunami Recognition Programme Task Team Meeting on 8 April 2015 in Puerto Rico. The meeting was attended by thirteen (13) participants. The key outcomes of this meeting were the draft guidelines and requirements including the Programme’s application process. The tenth session of ICG/CARIBE EWS in May 2015 adapted the outcomes of the task team meeting in consideration of the experiences of Anguilla (UK), British Virgin Islands and Puerto Rico (USA). ICG/CARIBE EWS X further recommended the approval of the guidelines for the Community Performance Based Tsunami Recognition Programme for the Caribbean and Adjacent Regions (short name: Tsunami Ready Programme) on a pilot basis and decided that Task Team continues its work on the development of the strategy for a Performance Based Recognition Programme. The ICG recommended additional support from Working Groups through the execution of surveys and development of guidelines.

In accordance with the recommendations of the ICG/CARIBE EWS X, CTIC was successful in securing US $5,000 through the UNDP Resource Assignment from the Core (TRAC) Resources to support the piloting of the Tsunami Ready Programme in St. Kitts and Nevis during the period October – November, 2015. These co-resources were utilised to develop preliminary evacuation maps for both St. Kitts and Nevis and will complement additional funds (approximately US $25,000) already committed by USAID/OFDA to support the full roll-out of the programme in the country. Antigua and Barbuda, Dominica and Grenada have indicated a strong interest in pursuing the initiative and CTIC will be seeking to mobilise resources towards this end.

In addition to the Tsunami Ready country-specific activities in St. Kitts and Nevis, a feature on CTIC was developed in conjunction with the Barbados Government Information Service. CTIC also participated in a press launch, public lecture and school visits to support the DEM-led Tsunami and Earthquake Smart Month in Barbados during March 2015. CTIC supported SRC’s Barbados mission to provide public awareness after the Kick em’ Jenny Heightened Activity in July 2015. In association with the SRC, CTIC facilitated US $10,000 in support to Grenada to execute Tsunami Smart Teacher workshop, the Tsunami Smart “Train the Trainers” Workshop as well as other public awareness activities (radio and TV call in shows, and public promotional activities) during Earth Science Week November 2 to 6, 2015. Through CTIC-led initiatives, Antigua and Barbuda received US $5,000 to purchase a server to enhance the national tsunami early warning system. Funds for Antigua and Barbuda, and Grenada were also sourced through the UNDP TRAC system but those earmarked for Dominica were deflected to the Tropical Storm Erika Recovery process. Unfortunately St. Lucia was unable to meet the deadline for submission of the proposals to access the committed resources. CTIC will seek to pursue follow-up activities in 2016.

CTIC hosted two (2) key training activities during the reporting period; both in association with funding support from UNESCO/IOC, and USAID/OFDA; with the latter being facilitated through the University Corporation for Atmospheric Research (UCAR).

The Regional Emergency Managers Weather Information Network (EMWIN) Training was convened 25 – 30 May 2015 in Barbados with logistical and technical support from UCAR, the Caribbean Institute for Meterology and Hydrology (CIMH) and the DEM. The training was divided into English and Spanish
versions and was attended by 32 participants. The training was conducted through multi-media approach aimed at orienting participants to the EMWIN software and hardware, and providing a working knowledge in the utility and applicability of the EMWIN System including trouble-shooting. The target audience was personnel from the National Tsunami Warning Centre (NTWC), Tsunami Warning Focal Point (TWFP), National Disaster Management Office (NDMO) or another tsunami emergency response (TER) agency.

For the Caribbean and adjacent regions, the changeover to PTWC’s new enhanced forecast products was approved by the ICG/CARIBE EWS VIII (2013), and the changeover to solely the new products is planned to take place on 1 March 2016. Against this background, the Regional Training Workshop on Pacific Tsunami Warning Center Enhanced Tsunami Products for ICG/CARIBE EWS 7–10 December 2015 was hosted by the CTIC in Barbados. This workshop was attended by forty (40) participants mainly from the Tsunami Warning Focal Points (TWFP), Tsunami National Contacts (TNC), Emergency Management and first responder agencies from twenty (20) small island developing states (SIDs) Member States of the ICG/CARIBE EWS. Representatives from partner organisations - Caribbean Disaster Emergency Management Agency (CDEMA), Caribbean Institute for Meteorology and Hydrology (CIMH), CTWP, and the Puerto Rico Seismic Network (PRSN) also participated in the training workshop.

This workshop was facilitated under the UNESCO–IOC/NOAA International Tsunami Information Center (ITIC) Training Programme International (ITP-INTL) and financing was provided by UNESCO/IOC and USAID/OFDA. The training was organised by CTIC, UNESCO/IOC, ITIC and PTWC with logistical and coordination support also provided by the CZMU, UCAR and the NOAA Caribbean Tsunami Warning Program (CTWP), Puerto Rico.

The intent of this four-day training workshop was to enable tsunami warning focal points (TWFPs), national tsunami warning centers (NTWC), and tsunami emergency responders (TERs) to effectively receive, analyse and take appropriate action in response to the Pacific Tsunami Warning Center (PTWC) enhanced tsunami forecast products for the Caribbean and its adjacent regions. This training workshop covered tsunami warning operations and the use of the PTWC Enhanced Products for tsunami threat decision-making, with specific attention on the tsunami warning chain and their standard operating procedures (SOPs). Topics included warning and response SOPs and challenges, warning decision support tools, warning messages and alerting, evacuation concepts and planning, and awareness strategies. UNESCO/IOC and CTIC have committed to identifying additional

The 2nd Meeting of the CTIC Board was convened 11 December 2015 in Barbados. The meeting was attended by thirteen (13) Member State and partner representatives with logistical support led by CTIC in association with the CZMU. The meeting was convened to update Board Members on the activities of the CTIC, CTIC resource mobilisation, and the new hosting arrangements by the Government of Barbados. The CTIC Board also supported the restructuring of the CTIC through its review of the work (proposed revisions to the CTIC terms of reference [TOR] and CTIC Board TOR as well as a new business model for the CTIC) of the CTIC Task Team established by ICG/CARIBE EWS X. The CTIC January – June 2016 Work Plan was also reviewed and critical recommendations received towards the sustainability of
the CTIC. The outcomes of the 2nd CTIC Board meeting will be presented at ICG/CARIBE EWS XI for full ratification by Member States.

In respect of supporting partner organisations, UNESCO/IOC and CTIC facilitated the participation of Belize, St. Kitts and Nevis and Suriname at the Reducing Tsunami Risk in the Western Indian Ocean: a Regional Conference in Muscat, Oman. The Conference was held 22 - 23 March, 2015 and the participation costs were covered by the organisers. The objective of the conference was to facilitate scientific and technical collaboration on diverse monitoring systems and multi-disciplinary research to yield a better understanding of tsunami generation in the western Indian Ocean and greater efficacy of the region’s early warning systems. The conference dovetailed with a regular session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS). CTIC also supported proposal development and execution of the UNDP-led Strengthening Resilience and Coping Capacities in the Caribbean through Integrated Early Warning Systems, DIPECHO (Phase II) Project up to December 31, 2015. The Project seeks to strengthen national preparedness mechanisms through improved hazard monitoring and alert dissemination, targeting vulnerable communities and groups to create a regional framework for facilitating multi-hazard EWS.

4. **WAVE EXERCISES**

Every ICG maintains a programme of international tsunami exercises to test and improve their products as well as processes and readiness of regional warning centres and Member States.

**Indian Ocean**

Exercise IOWAVE16 (IOC/2015/TS/121) represents ongoing preparation by Member States. The ICG encourages that the IOWAVE 16 be conducted with an End to End approach by Member States, i.e. from regional to national and local until reaching the last mile. Therefore is advised that Member States will also include community evacuation in the IOWAVE 16. This exercise is expected to not only test the ability of member States to conduct an End to End tsunami exercise but will also serve to observe the effectiveness of Member States’ tsunami warning and mitigation systems. Indonesia has agreed to have 6 cities participating in IOWAVE16. WG1 collaborated with NDMO to encourage cities in West Sumatera to participate in the exercise. About 7 cities and regions have indicated enthusiasm to conduct the exercise to the level of people evacuation.

**Pacific**

Exercise Pacific Wave 2015 (PacWave15) was the fifth Pacific-wide drill of the regular schedule of Pacific wide exercise, and was conducted from 2-6 February 2015. The exercise evaluated the new enhanced tsunami products of the PTWC, which started on October 1, 2014. A total of 41 countries participated. The exercise report on Exercise Pacific Wave 2015 has been finalised and is available on the ICG/PTWS XVI meeting and PacWave exercise web site (http://itic.ioc-unesco.org/index.php?option=com_content&view=category&layout=blog&id=2151&Itemid=2597).

Exercise Pacific Wave 2016 (PacWave16) was conducted from 1-5 February 2016 as a regional exercise for the sixteen countries that receive tsunami products from Japan’s Northwest Pacific Tsunami Advisory
Center’s (NWPTAC). The exercise introduced and sought feedback on the enhanced text and graphical forecast products of the NWPTAC. Official implementation of these products is expected in 2018, and follows from the 2014 implementation of enhanced graphical forecast products by the Pacific Tsunami Warning Centre (PTWC). Six scenarios were available to allow countries to select a destructive distant or regional source. Information can be found on the PacWave16 web site (www.pacwave.info).

Exercise Pacific Wave 2017 (PacWave17) will again focus on the entire Pacific (all member States), and will be the last exercise before the 2018 start of the NWPTAC enhanced products. Planning has not commenced

Caribbean

The regional Exercise CaribeWave/Lantex 2015 was convened on 25 March 2015. Two regional tsunami exercises took place in the Caribbean and adjacent regions, the Caribe Wave/Lantex (Panama Scenario) and the Lantex (Florida Scenario). Thirty-two (32) Members States and 16 territories participated in this fourth regional tsunami exercise. This represents a participation rate of 100% of all the Member States of the ICG/CARIBE-EWS, for the first time in the history of the exercises increasing from 98% participation in 2014, 75% in 2011, and 94% in 2013. Registered participants included designated UNESCO CARIBE-EWS Tsunami Warning Focal Points (TWFPs) and National Contacts, in addition to more than 1,000 other international, state, territorial, and local Emergency Management Organizations, government agencies, academic institutions, private businesses and organizations, health facilities, media, as well as communities and individuals.

Through participation of people throughout the Caribbean, #CaribeWave2015 was the #11 top trending topics on Twitter for over five hours.

Through the exercise it has been possible to:

i. Validate the issuance of tsunami products from the PTWC and U.S. NTWC which currently serve as the tsunami service providers for the region.

ii. Validate the receipt and dissemination of tsunami products by TWFP’s. Most TWFP’s continue to be strongly dependent on fax and email, with a few indicating receipt of messages thru EMWIN, GTS and AISR. Email and fax were also used predominantly to disseminate information to the Disaster Management Organizations. In 38% of the MS and Territories, messages were also disseminated to the public; the principal mechanism for this dissemination was radio, TV and Police.

iii. Continue with the exposure to proposed enhanced PTWC products, which include graphics. The Member States continue to support these products.

iv. Validate the readiness of the CARIBE-EWS countries to respond to a distant tsunami.

Most countries also indicated that they had emergency response plans for distant tsunamis, as well as local and regional events. Nevertheless, most countries indicated that they do not have tsunami inundation, nor evacuation maps or mass evacuation plans.
Planning for the Exercise Caribe Wave/Lantex was coordinated by a Task Team led by the US NWS CTWP and included the CTIC, ICG/CARIBE-EWS Officers, the PTWC, the U.S. NTWC, the PRSN, the International Tsunami Information Center (ITIC), regional emergency management organizations, Tsunami National Contacts and TWFPs over a year period. Feedback on the exercise was received from 47 CARIBE-EWS Member States and Territories through an online questionnaire. This represents feedback from a total of 43 TNCs/TWFPs, in addition to four other officials from a total of 47 countries and territories in the region (46 ICG/CARIBE-EWS Member States and Territories, as well as Brazil).

CaribeWave 2016 will be conducted on March 17, 2016. The purpose of this exercise is to advance tsunami preparedness efforts in the Caribbean and Adjacent Regions, based on Venezuela and Northern Hispaniola scenarios. Two exercise scenarios will be available. The exercise is using the US TsunamiZone.org web site for registration and outreach.

The Task Team noted that CARIBE-EWS a guideline on planning for community based tsunami exercises. This guideline should be available by the next meeting of the Task Team.

**North-East Atlantic & Mediterranean**
A tsunami preparedness exercise “Exercise Blue Wave – From Earthquake to Assembly Zones” will be held in Israel in April 2016. The exercise is being developed with the support of NEAMTWS stakeholders.

**TsunamiZone**
The Task Team noted with interest the existence and use of TsunamiZone, a website, a collaborative effort of California (Office of Emergency Services, Southern California Earthquake Center, Dept. of Conservation), USGS, and NOAA, for the promotion of tsunami preparedness and public participation in tsunami exercises. The website is modelled on the ShakeOut concept, and is being used by the CARIBE-EWS for their exercise in March 2016. Task Team members were encouraged to acquaint themselves with this very valuable source.

**Future reporting on exercises**
The chair noted that most of the above reporting on exercises involves the fact that exercise was or will be held, and the aim of the exercise. While this information is acknowledged, he encouraged the Task Team members to in their future reporting, also focus on the lessons identified in the exercises as that is where we might be able to identify common issues that could assist the Task Team in identifying focus areas.

4. **TASK TEAM ACTIVITIES**
The table below reflects the activities decided by the Task Team on Disaster management and Preparedness in March 2015 and the progress against each:

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finalizing SOP Manual</td>
<td>A draft has been completed and was discussed by the TT-DMP and</td>
</tr>
<tr>
<td>ACTIVITY</td>
<td>PROGRESS</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>TT-TWO at their meetings in Paris in February 2016. Comments were received by both Task Teams and further opportunity to comment was extended to 4 March 2016. These comments will be taken on board by the document writers in finalising the document by the end of March 2016.</td>
<td></td>
</tr>
</tbody>
</table>

**The Activity is on-going**

<table>
<thead>
<tr>
<th>Development of Tsunami Evacuation Mapping Guidelines</th>
<th>The Task Team noted the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• PTWS-WG3 and ITIC have developed a training package for evacuation mapping and planning <em>Tsunami Evacuation Maps, Plans and Procedures - TEMPP</em>;</td>
<td></td>
</tr>
<tr>
<td>• New Zealand has updated its Tsunami Evacuation Zone guidelines;</td>
<td></td>
</tr>
<tr>
<td>• The Greece Institute of Geodynamics has developed (and presented on) a methodology for evacuation mapping under EU FP7 Research Project ASTARTE; and</td>
<td></td>
</tr>
<tr>
<td>• The Task Team also noted a comprehensive evacuation guideline is being developed by the Indonesian Agency for Disaster Management (BNPB).</td>
<td></td>
</tr>
</tbody>
</table>

The Task Team agreed that the guideline for evacuation mapping that will be established under the TEMPP project, will deliver the desired output under this Activity.

**The Activity is on-going**

| Promote tsunami preparedness recognition programmes | The CARIBE-EWS provided a report on the implementation of the “Tsunami Ready” programme. This programme is now established and is being piloted. The CARIBE-EWS made all documents available to the Task Team. |

The Task Team agreed that the CARIBE-EWS Tsunami Ready material provide a sufficient basis for ICGs to consider adoption of similar programmes. It was noted that implementation under the auspices of an ICG is important, as it brings the status of UNESCO-IOC which is an important recognition incentive for participating jurisdictions.

**The Activity is now considered completed.**

<p>| Finalizing a tsunami guide for hotels | The Task Team noted that Indonesia has developed a compliance guide for hotels in partnership with the Bali Hotel Association. It was found that only the 4 &amp; 5 star hotels could afford compliance, while hotels outside of the Hotel Association and local government did not |</p>
<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>adopt the guideline. It was also not accepted in areas other than Bali. The project was deemed unsuccessful.</td>
</tr>
<tr>
<td></td>
<td>Washington State created a simple response guidebook in 2006, that was updated in 2009. It provides practical information about what hotel and motel operators should know and do.</td>
</tr>
<tr>
<td></td>
<td>The NEAMTWS-TIC developed guidelines in 2005.</td>
</tr>
<tr>
<td></td>
<td>The ITIC used the Washington State and NEAMTWS material to develop a half-day training workshop and accompanying templates. The material was used in Guam, CNMI, and other countries.</td>
</tr>
<tr>
<td></td>
<td>The Task team also noted that large hotel chains develop their own material and procedures, being responsible for their guests.</td>
</tr>
<tr>
<td></td>
<td>The Task Team agreed that given the focus is on the private sector, guidance for hotels should not be compliance-based but guidance and supporting instead. It was agreed that the ITIC &amp; NEAMTWS TIC material establish a sufficient basis in this regard.</td>
</tr>
<tr>
<td></td>
<td><strong>The Activity is now considered completed.</strong></td>
</tr>
<tr>
<td>Business continuity planning</td>
<td>The Task Team noted that Israel is working with national infrastructure (power, gas and oil industries) to establish BCP guidelines with a focus on tsunami. None of the ICGs have invested in this topic, while the general trend among Member States appear to be the development of generic, all hazard BCP guidelines.</td>
</tr>
<tr>
<td></td>
<td>The Task Team questioned the value in moving away from the already existing all-hazards approach, and agreed to await the guidelines developed by Israel before re-considering this Action at its next meeting.</td>
</tr>
<tr>
<td></td>
<td><strong>The Activity remains open, for re-consideration at the next meeting of the Task Team.</strong></td>
</tr>
<tr>
<td>Maritime and Ports Guidance</td>
<td>The Task Team noted several existing material and guidelines under development:</td>
</tr>
<tr>
<td></td>
<td>New Zealand included a chapter on maritime and ports in their recently reviewed Evacuation Zones Guideline, while Chile has developed standard text to accompany warnings to ships and</td>
</tr>
</tbody>
</table>
Several US states, including Hawaii and Oregon have dedicated guidelines for boaters. The USA is also preparing Maritime Preparedness guidelines for operations response in harbours and for communities. ITIC has published, “Tsunami Safety for Boaters” on its website.

Israel, Martinique and Indonesia are currently working with ports and will have their respective material available to share at the next meeting of the Task Team.

The Task Team noted that the Task Team on Tsunami Watch Operations also addressed the topic in its meeting, with a focus on TSP communication with Navareas (who in turn broadcast warnings to mariners). It was agreed that the focus of the Task Team on Disaster Management and Preparedness should therefore be on guidance to ports.

The Task Team agreed to compile a ‘best practice’ draft using the existing sources, to be finalised at the next meeting when the material developed by Israel, Martinique and Indonesia are also available.

The Activity is on-going

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>harbours.</td>
<td></td>
</tr>
<tr>
<td>Several US states, including Hawaii and Oregon have dedicated guidelines for boaters. The USA is also preparing Maritime Preparedness guidelines for operations response in harbours and for communities. ITIC has published, “Tsunami Safety for Boaters” on its website.</td>
<td></td>
</tr>
<tr>
<td>Israel, Martinique and Indonesia are currently working with ports and will have their respective material available to share at the next meeting of the Task Team.</td>
<td></td>
</tr>
<tr>
<td>The Task Team noted that the Task Team on Tsunami Watch Operations also addressed the topic in its meeting, with a focus on TSP communication with Navareas (who in turn broadcast warnings to mariners). It was agreed that the focus of the Task Team on Disaster Management and Preparedness should therefore be on guidance to ports.</td>
<td></td>
</tr>
<tr>
<td>The Task Team agreed to compile a ‘best practice’ draft using the existing sources, to be finalised at the next meeting when the material developed by Israel, Martinique and Indonesia are also available.</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Progress on Activities decided by the Task Team on Disaster Management Preparedness in March 2015.

5 PLANNED ACTIVITIES

Based on the reports received and progress made with actions agreed in 2014 and 2015, the Task Team considered its future activities:

5.1 SOP Manual
The Task Team will finalize the SOP Manual, taking the comments received from the two Task Teams on board. The aim is to provide a final draft to the Secretariat by the end of March 2016 for translation and publishing.

5.2 Evacuation Mapping
The Task Team will produce a draft of a generically applicable tsunami evacuation mapping guideline to support the TEMPP project by the end of 2016.
5.3 Guidance to Ports
The Task Team will consolidate current guidance to ports into a single document, for comparison with the material under development by individual countries at the next meeting of the Task Team.

6 OTHER MATTERS CONSIDERED BY THE TASK TEAM
6.1 Real-time communications with TSPs
The Task Team was requested to communicate, for consideration, with the Task Team on Tsunami Watch Operations a need for real-time communication between NTWCs and TSPs during tsunami threats. Such communications is currently accommodated by TSPs on a best-effort basis.

6.2 KPIs for Disaster Management and Preparedness
The Task Team considered a presentation provided by the Task Team on Tsunami Watch Operations (TT-TWO) on the establishment of KPIs. It was recognized that the establishment of consistent KPIs fit well with the focus of the TT-TWO, but it does not seem to be covered by the Terms of Reference of the Task Team on Disaster Management & Preparedness (TT-DMP). It was decided to seek guidance from the TOWS-WG in this regard, and if the topic was to be addressed by the TT-DMP, it was felt that the focus of the Task Team should be on the development of high-level policy advice to ICGs on the establishment of KPIs for Disaster Management & Preparedness.

7. RECOMMENDATIONS TO THE TOWS WG-IX
As an outcome of its meeting on 23 and 24 February 2016, the Task Team recommends that the TOWS-WG-IX:

7.1 Notes the Task Team has met on 24 & 25 February 2016 and considered:
• reports from the respective ICG working groups and TICs
• progress with regards to activities agreed in March 2015
• planned activities for the next year

7.2 Notes that the some of the planned Activities of the Task Team on Disaster Management and Preparedness have been completed, such as Tsunami Ready as a community performance-based community recognition programme, while the following Activities are still in progress:
• Finalizing the SOP Manual by the end of March 2016, noting comments received by 4 March 2016
• Development of an Evacuation Mapping Guideline through the TEMPP Project
• Development of BCP guidelines with a tsunami focus
• Consolidation of tsunami guidance to ports

7.3 Notes that to complete the above, the Task Team consciously agreed not to include any additional initiatives for the next year. It is expected that all the above activities will be completed by the time of the next meeting of the Task Team, and therefore, the Task Team:

7.4 Recommends that it meets again prior to the next meeting of the TOWS-WG so that the current activities can be consolidated and further activities can be considered.

7.5 Requests that the TOWS-WG:
a) **Advises** the Task Team on the development of guidance with regards to KPIs for Disaster Management & Preparedness, considering the current Terms of Reference of the Task Team;

and

b) **Facilitates** a discussion with the TT-TWO on the matter of communication between TSPs and NTWCs during tsunami threat events.