1. WG2 Activities for 2016-2017

During the intersessional year 2016-2017 the following activities were held within WG2 framework:

1.1 Experts Meetings

Three Experts Meetings were held in 2016, organized by IOC/UNESCO with the goal of identifying worst case tsunami scenarios for specific regions within the Caribbean Sea. In all cases, Experts on Seismology, Tsunamis and Tsunami Modeling gathered to discuss the tectonic potential and propose the scenarios.

1.1.1 Honduras

It was held in February 2016, in Tegucigalpa, as part of TEMPP Pilot Course (Tsunami Evacuation Maps, Plans and Procedures). It focused on scenarios affecting Honduras (both Pacific and Caribbean coasts). Two moderate tsunami scenarios were chosen for the Caribbean Coast of Honduras at Roatán Island and Honduras Gulf, with magnitudes Mw 7.43 and 7.60.
1.1.2 Dominican Republic

It was held in May 2016 in Santo Domingo, Dominican Republic. The focus of this meeting was to assess the tsunami hazard of the southern coast of the Dominican Republic, specifically from Barahona on the west to La Romana on the east, with particular interest in the Greater Santo Domingo coastal region. The two-day meeting consisted of a formal presentation of the objectives of the meeting and the second day consisted on the discussion of potential sources. A total of 8 sources were identified and based on their proximity to the study area, the sources were then categorized into two main groups. Near-field sources were dominated by the Muertos Trough, whereas far-field sources such as the Northern Panama Deformed Belt (NPDB) and the Southern Caribbean Deformed Belt (SCDB) were also considered, being the latter event of a significant impact to the area of study. For more information please consult IOC Workshop Report No. 276.

1.1.3 Central America

It was held in San José, Costa Rica, in June 2016, and considered tsunami sources for both the Pacific and the Caribbean coasts of Central America. Three tsunami scenarios were defined for the Central America Caribbean Coast at the North Panama Deformed Belt (NPDB) with magnitudes Mw 7.93, 8.47 and 8.48. The two scenarios defined at the Dominican Republic meeting for the South Caribbean Deformed Belt (SCDB) were also considered for Central America, with magnitudes Mw 8.63 and 8.86.

1.2 Poster presented at scientific meeting

A sub-group of modelers of WG2 performed numerical simulations of the listed scenarios proposed at the mentioned Experts Meetings. Numerical models employed in this exercise included NEOWAVE, HySEA and ComMIT. Results of the modeling were presented in the form of a poster at the Fall 2016 American Geophysical Union (AGU) 2016 meeting. This is the second time in a roll that a subgroup of WG2 presents a poster at this yearly meeting.

1.3 Webmap

We created an interactive GIS Webmap with information collected at the various Experts Meetings and CaribeWave exercises. The type of information available in this interactive map includes: (i) rupture sources (rupture geometry, size, and fault parameters), (ii) maximum historic runup, and (iii) maximum modeled tsunami heights (when available). The map was developed at the RONMAC-UNA Program in Costa Rica using ESRI's ArcGIS tool and is available at: http://arcg.is/2kSajpI

The website is currently hosted by RONMAC-UNA and we are working on creating a mirror site at the Puerto Rico Seismic Network (PRSN).
1.4 Bathymetry repository

We have a list of countries owning and/or having access to local bathymetric data, its source and resolution. The list includes the name and contact information of the person providing the information. We do not have the bathymetric data but can share the list on request.

1.5 Proposal for workshop

We submitted a proposal to OFDA/USAID to fund a ComMIT workshop for 16 Caribbean Member States in September 2016. Unfortunately, they answered they were not able to support it at the moment. We are exploring other funding sources.

1.6 Non-tectonic sources

A subgroup of non-tectonic sources within WG2 has been formed by Hermann Fritz, Frederic Dondin, Natalia Zamora and Alberto López. This subgroup will attempt to define the worst-case scenarios for non-tectonic sources within the Caribbean Basin.

2. Goals for next intersessional period

During the intersessional period 2017-2018 the WG2 will work with the following items:

2.1 Modeling results on Webmap

WG2 seeks to continue updating the Webmap tool to incorporate modeling results. The Webmap was created using ESRI's ArcGIS software. Unfortunately, we have found a limitation with the capability to include maximum wave amplitudes because of the data type not being supported by the platform. WG2 will consider incorporation of the NOAA/NCEI historical tsunami events and runups onto the Webmap tool with assistance of NOAA/NCEI.

2.2 Evacuation maps

It is of great interest of the WG2 to boost the importance of developing evacuation maps for the ICG/CARIBE-EWS region. For those purposes, the WG2 has prepared a proposal to be presented and discussed in plenary at the ICG session, all with the ultimate goal of prioritizing Tsunami Evacuation Maps. If it is approved we will seek funds to organize workshop on tsunami modeling and evacuation maps, with the support of WG4.

2.3 Global Tsunami Model

The WG2 has been in contact with representatives of the Global Tsunami Model (GTM) initiative (http://globaltsunamimodel.org). One of our members, Natalia Zamora, has
experience with PTHA (Probabilistic Tsunami Hazard Assessment) and is assisting in this task.
Some of the people working on GTM is also working on TSUMAPS-NEAM (Probabilistic Tsunami Hazard Maps for the NEAM Region) project and are willing to share their experiences with us.
It is important to note that significant work must be done to adjust it to the Caribbean region. Also EDANYA group (Málaga University) has offered its numerical model HySEA to perform numerical simulation of earthquake and landslide generated tsunamis.

3. Updated WG2 members list

WG2 Chair created a Google Group for WG2, with the objective of facilitating the email exchange, tracking WG2 activities, and to keep WG2 member list updated.

4. Recommendations

- **Acknowledge** a list of tsunami scenarios from tectonic origin had been obtained as result of three Experts Meetings held during 2016.
- **Acknowledge** that the propagation of that list of tsunami scenarios had been numerically modeled and presented at the 2016 Fall Meeting of the American Geophysical Union.
- **Acknowledge** a Webmap has been created including that list of tsunami scenarios and the past CaribeWave scenarios.
- **Recommends** that Member States use the scenarios included in the Webmap as part of their tsunami hazard assessment.
- **Recommends** that Member States use the scenarios included in the webmap as part of the scenarios considered when creating tsunami evacuation maps.
- **Recommends** to perform a bibliographic research on additional tsunami scenarios to be included in the Webmap.
- **Acknowledge** that the Webmap includes fault parameters, maximum tsunami height modeled, date of historical events in the region and maximum runup of those historical events.
- **Recommends** that energy plots as result of tsunami propagation modeling to be included in the Webmap.
- **Recommends** that NOAA/NCEI historical tsunami data be incorporated into the WebMap to complement the modeled scenarios and results.
- **Acknowledge** that the inclusion of non-tectonic sources had been recommended in the past.
- **Note** that non-tectonic sources are much less common than tectonic sources.
- **Note** that non-tectonic sources require high resolution bathymetric data and particular expertise.
- **Recognise** the list of non-tectonic tsunami sources in the Caribbean basin and adjacent regions is a task that would last several years.
- **Recommends** to continue working on the list of tectonic and non-tectonic tsunami sources.
- Acknowledge that Tsunami Evacuation Maps are a powerful tool on tsunami preparedness.
- Acknowledge that Tsunami Evacuation Maps are part of the requirements for Tsunami Ready certification.
- Acknowledge that TEMPP (Tsunami Evacuation Maps, Plans and Procedures) Pilot Course successfully finalized in Honduras in February 2016.
- Acknowledge that several initiatives for Tsunami Evacuation Maps had emerged worldwide that can also be applied in the Caribbean Region, such as in the European Union, Chile and the US.
- Recommends that the capacity building to create Tsunami Evacuation Maps be declared as a priority for ICG/CARIBE-EWS.
- Acknowledge the work currently ongoing by the Global Tsunami Model (GTM) initiative and TSUMAPS-NEAM (Probabilistic Tsunami Hazard Maps for the NEAM Region).
- Recommends to strengthen the links between those initiatives and ICG/CARIBE-EWS.
- Recommends to explore the means for ICG/CARIBE-EWS to benefit from the knowledge and experience of both initiatives.