

**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (of UNESCO)**  
**Online Meeting of the Steering Committee of the**  
**Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System**  
**for the Caribbean and Adjacent Regions**  
**(ICG/CARIBE-EWS)**

27 and 29 January 2025  
16:00-19:00 UTC

**REPORT**

**Draft v.1**

**Participants:** Alison Brome, Anthony Murillo-Gutierrez, Antonio R. Aguilar M., **Charles McCreery**, **Christa G. Von Hillebrandt-Andrade**, Christopher Moore, Daniel McNamara, **Elizabeth Vanacore**, Fabian Hinds, Frédéric Dondin, **Gerard Metayer**, **Gisela Baez-Sanchez**, Gloria Romero, **Jacob Ngumbah**, **Marie-Noëlle Raveau**, Matthieu Péroche, **Raphaël Paris**, Regina Browne, **Silvia Chacón-Barrantes**, Stacey Edwards, Susan Hodge, **Wilfried Strauch**

**Technical Secretary:** Öcal Necmioğlu

## **1. WELCOME AND OPENING**

### **1.1. REPORT OF THE CHAIR**

ICG/CARIBE-EWS XVII report was presented at the [57th IOC Executive Council](#) by Ms Regina Browne. Progress in the ICG/CARIBE-EWS was presented at [ICG/IOTWMS-XIV](#) and [ICG/NEAMTWS-XVIII](#). No presentation was delivered [IHO MACHC 25](#) due to unavailability of any ICG/CARIBE-EWS experts.

An abstract on ICG/CARIBE-EWS and Chair's Biography have been presented at the [2nd UNESCO-IOC Global Tsunami Symposium](#) "Two Decades After 2004 Indian Ocean Tsunami: Reflection and the Way Forward", organised in Banda Aceh 11-14 November 2024. Focus of this presentation was gaps, challenges, and priorities in tsunami risk, detection, warning and dissemination, awareness, and preparedness in the Caribbean and Adjacent Regions.

Dr Silvia Chacon Barrantes, Ms Alison Brome, Dr Charles Mc Creery and Elizabeth Vanacore will participate in the [TOWS-WG-XVIII](#) meeting in-person, whereas Mr Metayer will participate remotely.

No Host Country was identified for the ICG/CARIBE EWS XVIII, despite the statements of France (Martinique) and Panama at the ICG/CARIBE-EWS XVII.

The Chair supported the review of the CARIBE WAVE 25 Handbook and attended the preparatory webinars.

## **2. ORGANIZATION OF THE SESSION**

### **2.1. ADOPTION OF PRELIMINARY AGENDA**

The agenda was adopted by the SC with minor changes related to shifting the considerations of WG3 and WG4 reports to the 2<sup>nd</sup> day of the SC meeting.

### **2.2. CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION**

No additional comments were raised.

## **3. REVIEW OF IMPLEMENTATION STATUS OF THE ICG/CARIBE-EWS ACTIONS**

Dr. Ocal Necmioğlu, Technical Secretary of the ICG/CARIBE-EWS presented the current status of the [ICG/CARIBE-EWS Action Monitor](#). Completed actions will be archived after ICG/CARIBE-EWS XVIII. Number of actions are considerably high (64 vs 36 in the PTWS). It's highly recommended to adopt SMART (Specific, Measurable, Achievable, Relevant, and Time-Bound) principles for future actions. Also considering the limits in resources, a "priority" category may be assigned for the actions.

#### 4. REPORT OF TSPs and TICs INTERSESSIONAL ACTIVITIES

##### 4.1. TSUNAMI SERVICES PROVIDER REPORT (PTWC)

The Director of the Pacific Tsunami Warning Center (PTWC), Dr Charles McCreery, provided an overview of PTWC's current status and activities since the last ICG meeting (ICG/CARIBE-EWS XVII, May 2024). He noted that the PTWC Duty Staff positions are now fully filled following many years of unfilled vacancies. He reported that there has been only one CARIBE-EWS product issued by PTWC since the last ICG – a Tsunami Information Statement indicating no tsunami threat following a magnitude 6.8 earthquake on November 10, 2024, near Cuba. He relayed that the seismic and sea level data received by PTWC for Caribbean events has not changed significantly although there was an outage of Mexico's seismic network data that lasted for several weeks. He reminded about the updated PTWC User's Guide for the CARIBE-EWS that is pending approval at the next ICG meeting. There are many PTWC product improvements illustrated in the Guide that will be implemented after the Guide is approved. He noted that PTWC and the other US Tsunami Warning Center are continuing in the process of creating and implementing a new website, common messaging software for seamless backup, common analysis software with new capabilities, and a common management structure. More detail regarding these items was reported at the last ICG meeting.

There were two comments after his presentation. The IOC Technical Secretary, Ocal Necmioglu, requested that there be a way on the new website to view the current status of the seismic and sea level stations reporting to PTWC on a map. Dr Elizabeth Vanacore, Chair of Working Group 2, reported that the monthly reports she normally receives from PTWC regarding the status of seismic stations in the region had not been received for several months. Chip responded that he would follow up on both of these items. The Chair, Mr Metayer, inquired whether PTWC has access to seismic data outside of its Area of Responsibility. Dr McCreery responded that seismic data from all over the world is available to PTWC.

##### 4.2. REPORT OF THE CENTRAL AMERICA TSUNAMI ADVISORY CENTRE (CATAC)

Dr. Wilfried Strauch, the Director of CATAC introduced the agenda item available as a [presentation](#). As of December 2024, CATAC is a General Directorate at the level of the Director of INETER responsible for earthquake and tsunami warning for Nicaragua and interim TSP for Central America, with 24 dedicated personnel, distributed to Warning Center, Earthquake/Tsunami Sciences, Seismometry and Network Maintenance, Earthquake and tsunami Engineering Aspects of Early warning divisions.

Work on dissemination methods is ongoing through an IT consultancy to be finalized in March 2025. The communications methods include Telegram, WhatsApp, X, Facebook, Comp-to-Comp, such as SeisComp3, e-mail, digital tv (EWBS, CAP). EEW messages will be sent to the contacts in the region, but also to the public in Nicaragua.

The 2<sup>nd</sup> Course on the Strengthening in the use of Tsunami Warning Products, supported by JICA, took place during 18-22 Nov 2024 (2<sup>nd</sup> time). 6 representatives from Central America countries, mostly from seismological agencies participated. The course provided detailed briefings on CATAC procedures, EEW methods, dissemination methods, and SOPS for tsunami warning.

Dr Strauch also informed on the use of CAP in the Early Warning Broadcasting System of the digital TV in Nicaragua. Message can be retransmitted to the mobile phones in the local network and tests are continuing. CATAC's user guide is expected to be finalized in February 2025 to be presented to ICG/CARIBE-EWS XVIII and ICG/PTWS XXXI.

Mr Metayer inquired whether message dissemination through alternative channels, such as Global Telecommunication System (GTS), is difficult for CATAC. Dr Strauch confirmed the ongoing challenges.

Dr. Necmioglu informed the SC members that the GTS will be decommissioned by 2030 according to the [WIS 2.0 Implementation Plan](#), and National Meteorological and Hydrological Services NMHSs will use the WIS 2.0 platform for data exchange. During the transition period, there will be a mixture of centers operating WIS 2.0 and WIS/GTS. Furthermore, the revised version of the Global Service Definition Document (GSDD) does not provide any strict criteria on the use of the GTS and what matters most is to ensure redundancy if the message dissemination is in place. He asked how the EEW will be incorporated for tsunami warning, such as if the EEW message will include an advisory on staying away from the coastline. Dr. Strauch replied that an EEW system has been in place in Nicaragua since 2016, allowing to obtain information about a big earthquake in a very short time. The EEW message is planned to be disseminated to the seismological institutions and CPA's of Central America, which can help them to estimate the tsunami hazard for the given earthquake. At the moment,

location and magnitude of the earthquake is disseminated, together with an estimate of its tsunamigenic potential. The whole framework should be considered as experimental. Lastly, Dr Necmioglu reminded the SC on the recommendation from ICG/CARIBE-EWS XVII, which asks CATAAC to explore and inform at ICG/CARIBE-EWS XVIII the integration of EEW applications for disseminating its tsunami services and products to its TWFP and NTWCs.

#### 4.3. REPORT OF THE CARIBBEAN TSUNAMI INFORMATION CENTER (CTIC) (Brome)

Ms Alison Brome, National Programme Officer, introduced the agenda item, available as a [presentation](#). She provided a status of the Tsunami Ready Recognition Programme (TRRP) with 23 recognised communities in the region. The overview of the support provided by the CTIC in its implementation of TRRP was highlighted particularly in Barbados, Grenada, Jamaica and Trinidad and Tobago where these projects were delayed. The recognition of additional communities in Barbados through joint UNESCO and national funds as well as Dominica and Saint Lucia through ITIC-CAR and USAID-BHA funding was also showcased. On-going renewals or new nominations in Belize, Dominica, Honduras and Saint Lucia through ITIC-CAR were noted. Advancement of renewals in Antigua and Barbados and Barbados were noted in addition to the outstanding renewals in Grenada, Haiti, Nicaragua, St. Vincent and the Grenadines, and Trinidad and Tobago.

It was reported that the CTIC MOU with the Government of Barbados had been signed on 29 May 2024 and UNESCO signed a MoU with the Caribbean Disaster Emergency Management Agency (CDEMA) on 14 December 2024.

Efforts were in progress with national authorities to ensure the in-person conduct of ICG/CARIBE-EWS XIX in 2026 in Barbados. CTIC was continuing its support to the CARIBE WAVE 2025 exercise planning and webinars which were already underway. Regarding the joint training on Manuals and Guides 86 and CARIBE WAVE Task Team meeting, it was noted that a detailed report was to be provided under agenda item 7.2 but summarised that CTIC, ITIC-CAR & IOC had advanced planning in consultation with national authorities for a February 2025 activity but these dates were likely to be adjusted. The English and Spanish revisions of the CTIC brochure had been finalised since ICG/CARIBE EWS XVII and the English version of the CTIC Flyer was under testing and finalization in association with ITIC-CAR, IOC, WG4, World Institute on Disability and other partners.

The execution of the Tsunami Ready Evaluation Survey in association with ITIC-CAR, TR TT and IOC was noted. CTIC's joint participation with IOCARIBE in the 1st EW4All Regional Mechanism meeting on 20 September 2024 provided a critical opportunity to network with international and regional partners towards greater collaboration on the ICG/CARIBE EWS. Ms. Brome also expanded on her participation at the 13th Caribbean Comprehensive Disaster Management Conference 04-06, December 2024 which facilitated promotion of the TRRP and other IOC-led projects and initiatives among international, regional and national level stakeholders.

The considerations and challenges for the CTIC which were raised in the presentation included financial and human resource constraints which were impacting performance and service levels to Member States and partners and sustainability in respect to implementation of TR projects and mobilizing interests, development of public awareness and education materials, evaluations. The need for enhanced CTIC Governance and collective ownership including through revamped meetings of the CTIC Board was identified to support improvement on performance and service levels to Member States and partners and foster sustainability. The need for a strategic review of the staffing resources to ensure adequate capacity at the CTIC to effectively execute and implement the programmatic and project activities to support the ICG/CARIBE EWS and EW4All frameworks was emphasised.

Mr Metayer informed that the TRRP renewal of Fort-Liberté is in progress, during which tsunami signs will be reinstalled at the end of March, followed by an evacuation exercise. He will talk to the Director General of the Civil Protection and is expected to be able to provide some more news in the next couple of weeks.

Dr Necmioglu reminded the SC that some strategic issues related to CTIC still require actions by the SC. Mr Metayer responded that noting that this is the first SC meeting, these considerations will hopefully take place prior to the ICG/CARIBE-EWS XVIII.

#### 4.4. REPORT OF THE INTERNATIONAL TSUNAMI INFORMATION CENTER - CARIBBEAN TSUNAMI OFFICE (ITIC-CAR)

Ms Christa von Hillebrandt-Andrade introduced the agenda item, available as a [presentation](#). UNESCO/IOC Tsunami Ready Recognition Programme implementation is continuing with USAID Funding. Recently Completed (2023-2024) Projects were in Barbados, Dominica, Saint Lucia, Saint Vincent and the Grenadines, Cayman Islands (Hazard Assessment and Training). Current Projects are in Anguilla, Antigua and Barbuda, Belize, Dominica, Honduras and Saint Lucia

CARIBE EWS Tsunami Ready Pilot Survey was implemented with the support of NOAA Lapenta Scholar. The concept for the 2<sup>nd</sup> Tsunami Ready Summit has been developed, but so far no funding has been approved and no timelines has been determined. A Regional Tsunami Ready Facilitator to be based at CTIC will be in place soon, with the in-kind support of USAID.

CARIBE WAVE and Tsunami Exercises have been supported through the development of handbooks, presentations, reports, surveys, and promotion since 2011. Work is in progress to conduct the proposed MG 86 Training in 2025 with USAID funding. ITIC-CAR also plays a critical role in the update process of Member States TNC/TWFP/NTWC Contact information.

Dr Necmioğlu thanked ITIC-CAR for its critical role in the implementation of IOC tsunami programme in the Caribbean and expressed its hope that the USAID support will continue

## **5. WORKING GROUP PROGRESS REPORTS**

### **5.1. WORKING GROUP 1: RISK KNOWLEDGE (Paris)**

Dr Raphael Paris presented the agenda item, including agenda item 7.1 on the Report on Expert Meetings on Seismic Sources in the Northwest Caribbean and on Non-Seismic Sources of Tsunamis for the Caribbean and Adjacent Regions, Costa Rica, 3-5 December 2024 (EMCR-2024), available as a [presentation](#). 21 experts from 6 countries, selected based on their area of specialization, have participated in EMCRC-2024. Two separate groups in parallel focused on seismic and non-seismic components. For the seismic part, the experts reviewed the literature and the scenarios currently implemented in the CATSAM and proposed new and/or updated scenarios of seismic ruptures for 6 subregions: the Cuba Southern Deformation Belt, Jamaica, the Mid-Cayman Spreading Center, the Oriente and Swan Faults, the Montagua Fault and Roatan, the San Andres Rift, and the Hess Escarpment. Some preliminary numerical simulations were run during the meeting.

For the non-seismic part, experts reviewed the list of non-seismic tsunami scenarios found in the literature (and simulated) and they proposed to implement a scenario of landslide offshore Mount Pelée (Martinique, Poulain et al., 2023) in the CATSAM database, together with a landslide in the Mona Passage (Lopez-Venegas et al., 2008). Moreover, experts designed a list of new scenarios of non-seismic tsunamis to be simulated in the future: 3 scenarios of non-volcanic landslides (with 3 sub-scenarios corresponding to different volumes), and 5 scenarios of volcanic tsunamis (see table below). Most of them will be simulated before the final report is delivered.

The experts discussed the feasibility of a probabilistic framework for tsunamis generated by submarine landslides in the Caribbean, taking as an example the study realized on the East Coast of the US (Grilli et al., 2009). To reach this goal, the experts underlined the need for a Caribbean-scale dataset of bathymetric grids to derive slope maps. Other useful data include sediment mechanical properties (inferred from core drilling), and seismic profiles. The experts reviewed the different opportunities of external funding to address the challenge of building a submarine landslide PTHA for the Caribbean. For the volcanic sources of tsunamis, a Bayesian Event-tree approach is proposed, as developed by Paris et al. (2019) in the Campi Flegrei caldera (Italy).

Both seismic and non-seismic experts agreed to propose a hybrid scenario combining earthquake and landslide along the Muertos Trough -> CATSAM and future CaribeWave scenario. Discussions took place on the relevance of a meeting between volcano observatory staff and a selection of members of WG1, WG2, and WG3, to be tentatively organized during the second half of 2025.

Regarding the regional training on the development of digital elevation models (DEMs) for tsunami inundation modelling, discussions with NOAA and University Colorado are underway to define the arrangements for the workshop (number and selection of participants, tentative period, technical needs, etc.).

One outcome of the Expert Meeting was to aim for a future Expert Meeting in 2026 that will focus on the seismological modelling of the earthquake sources defined in this Expert Meeting and use the results to identify strong ground motion threshold parameters to trigger submarine landslides, followed by the tsunami modelling

of them. In this regard, it was also emphasized the need to enhance efforts towards establishing a regional DEM database and consider the DEM training currently being planned for 2025 as the preliminary step towards successful realization of this planned Expert Meeting in 2026.

Another outcome of the Expert Meeting was to aim for organizing a Workshop in 2025 that would bring representatives of volcano observatories and TSPs/NTWCs of the Caribbean to review the requirements recommendations of the “Monitoring and warning for tsunamis generated by volcanoes (IOC/2024/TS/183)”, initiate the required partnerships between NTWCs and Volcano Observatories and investigate possible synergies between two hazard groups in an operational setting, most specifically to follow-up on the recommendation of the ICG/CARIBE-EWS XVI to initiate contacts with the identified volcano observatories and/or institutes responsible for monitoring volcanoes threatening the Caribbean basin and to implement an agreement concerning the use of the VONUT.

Ms Christa von Hillebrandt-Andrade inquired whether 1) the source parameters discussed during the EMCR-2024 could be made available for the purposes of the evacuation mapping for Honduras and Belize, and 2) landslide potential in the Nicaragua rise was discussed.

Dr Paris responded that the report is expected to be available in September and the main earthquake parameters are already available which can be provided by Dr Vanacore. The landslides in Nicaragua rise were not specifically addressed.

Dr BarranChacon tes pointed out that in some expert meetings in the past maximum earthquake magnitudes considered for the scenarios have been revised by a 0.1 magnitude, but it is more important to pay attention to the changes in the geometry proposed.

Mr Metayer inquired whether the sources in the south were considered. Dr Paris responded that the sources derived from the EMCR-2024 will be integrated into CATSAM (all seismic sources and a selection of non-seismic sources).

## 5.2. WORKING GROUP 2: TSUNAMI DETECTION, ANALYSIS AND FORECASTING

Dr Liz Vanacore introduced the agenda item, available as a [presentation](#). She presented the initial results of a study to demonstrate improvement in tsunami early warning times with two to four variations on SMART Cable designs. A code has been written to determine improvements in detection time for seismic sources. Several cable geometries were tested. If all cables would be SMART, then the detecting time is <1min. Dr Vanacore is planning to create a GitHub to share code and run more test scenarios for optimization. She reminded the SC on the need to engage industry to understand which telecommunications cables are scheduled for replacement or new installations, which remains as an outstanding issue as she does not have the necessary contacts. Dr Necmioglu informed the SC that he will put Dr Vanacore in contact with the SMART Cables Joint Task Force representatives, which could also facilitate the organization of a SMART Cable webinar targeting the Caribbean Region. On that, however, it's important to identify to whom these webinars would target (policy makers of science/technology experts). Mr Metayer suggested organizing the webinar for Universities/Research institutes in the region to promote members for the WG2 sub-group dedicated to this specific technology. Ms Christa von Hillebrandt-Andrade reminded the group that Dr Laura Kong is a member of the Smart Cable JTF and can facilitate the outreach to the educational sectors.

## 5.3. WORKING GROUP 3: TSUNAMI WARNING DISSEMINATION AND COMMUNICATION

Ms Christa von Hillebrandt-Andrade introduced the agenda item, available as a [presentation](#). Inventory of communication methods was prepared. > 30 methods available for the reception of TSP products and dissemination and reception of tsunami warnings and other related products. Overview of the methods and mechanisms used at different level and agencies from TSP's through national authorities down to the private sector, media and communities and local governments. In terms of dissemination methods, number one for both reception and dissemination is still e-mail. In dissemination, phone calls play an important role, followed by websites and social media. CISN was also noted as a suitable platform for the receipt of warning. Training priorities showed the big need for CAP and GEONETcast training. A table will be added to inventory showing which communication method is available to which Member State and the full report will be presented to the ICG/CARIBE-EWS XVIII.

Mr Metayer inquired whether the inventory could also be translated to ES and FR. Ms Christa von Hillebrandt-Andrade responded that ITIC-CAR does not have the possibility to translate the document, and she emphasized that it's most important to have this available as an online document even if it is in English only.



UNDRR informed that as part of EW4ALL initiatives regional and national CAP training have taken place, but the focus has been Hydromet offices. Given that 60% of tsunami warning authorities in the Caribbean are not Hydromet offices, WG3 requests the UNESCO-IOC Tsunami Resilience Sector to enhance coordination with UNDRR, International Telecommunications Union (ITU) and WMO on CAP.

Regarding the revision of the Technical, Logistical and Administrative Requirements of a Regional Tsunami Service Provider for CARIBE EWS, WG3 suggests that this task be taken up by the Steering Committee, given that document goes beyond the purview of just WG3. A dedicated WG3 meeting on this issue will be organized in March 2025.

#### **5.4. WORKING GROUP 4: PREPAREDNESS AND RESPONSE CAPABILITIES**

Dr Chacon Barrantes introduced the agenda item. WG4 was unfortunately not able to advance in its work programme. Ms Stacey Edwards, responsible for Mitigation topics as the WG-4 vice-chair, and Mr Fabian Hinds, chair of the Tsunami Ready Task Team, have both stepped down from their positions during the intersessional period. Dr Chacon Barrantes announced also that she will have to step down because of competing priorities and the current workload. He informed the Steering Committee that she will set up a WG4 meeting and will provide suggestions for revised ToR

Mr Jacob Ngumbah, WG-4 vice-chair responsible for Preparedness and Response Capabilities, presented a concept paper focusing on building a community centric approach in the activities of WG-4. He underlined the need to actively engage rather than dissemination only, investigate creative mediums, engaging with artists and considering digital storytelling.

Dr Necmioglu suggested to e-introduce Mr Ngumbah to Mr. Ardito Kodijat, National Professional Officer of the IOC/TSR at the Indian Ocean Tsunami Information Center (IOTIC), who has been pioneer of similar efforts in the Indian Ocean region, starting with the "Tsunami Ready Board Game", which was developed and produced jointly between UNESCO-IOC and BMKG (The Indonesian Meteorology, Climatology and Geophysics) with the target audience of disaster workers, tsunami warning centres, disaster management offices, and communities who are interested in implementing the UNESCO-IOC Tsunami Ready Recognition. Recently, again thanks to his efforts, "RUNAMI" (Run from Tsunami) was launched at the 2nd Global Tsunami Symposium on 11-14 November 2024 as a new educational board game for children aged 12 and older, which simulates the process of creating tsunami evacuation routes to save as many lives as possible in the shortest time.

### **6. TASK TEAMS REPORTS**

#### **6.1. TASK TEAM EXERCISE CARIBE WAVE**

Ms Gisela Baez Sanches introduced the agenda item. The transition to the new website is ongoing; the manual has been revised; it now has two components: a general version and a second one dedicated to the scenario. The report of the previous exercise has been published. Caribe Wave 25 will take place on 20th of March based on two scenarios: namely Jamaica and 1755 Portugal. The first round of webinars has been completed in January. Unfortunately, some problems were experienced in the Spanish webinar. The second round of webinars are scheduled to take place during February 25 to 27. Member states are invited to select the scenarios. Draft report of CARIBE WAVE 25 is expected to be made available late April. Even though tsunami zone registrations will be used for overall reporting, the number of participants as reported by the Member States will be used for official purposes. If no such reporting takes place by the Member States, numbers as reflected through the Tsunami Zone will be used only if such reporting from member states does not take place

#### **6.2 TASK TEAM TSUNAMI READY**

Ms Christa von Hillebrandt-Andrade introduced the agenda item, in place of Mr Matthieu Péroche due to his unavailability.

The Tsunami Ready Task Team (TT TR) has undertaken a series of strategic actions aimed at enhancing the recognition, sustainability, and effectiveness of the UNESCO-IOC Tsunami Ready Recognition Program. These actions are crucial for improving community preparedness and resilience to tsunami hazards across the Caribbean and adjacent regions. The following summary outlines the key actions carried out and the proposals formulated to guide the program's future developments. Information on the actions taken are presented below:

### *1. Pilot Survey on the Tsunami Ready Recognition Program*

A pilot survey was conducted to evaluate the experiences of communities that have achieved Tsunami Ready recognition. The objective was to collect feedback to identify strengths and weaknesses of the program and improve the recognition process. The survey was implemented and analyzed by Ms. Grace Lemoine, an ITIC-CAR intern, under the supervision of the CTIC and the TT TR, with findings presented in August 2024. Follow-up discussions on recommendations from the survey findings will continue.

### *2. Discussion Meeting on Survey Results and Future Perspectives*

A virtual meeting was held on August 13, 2024, to review the survey results and other related initiatives. The meeting addressed the implementation of an annual reporting mechanism, the designation of national focal points, and the feasibility of organizing a Tsunami Ready Summit. Next steps involve the implementation of decisions made during the meeting.

### *3. Mapping of tsunami Risk Ranking at the Community Level in the Caribbean Basin*

A mapping study was conducted to identify the communities most exposed to tsunami risks and assess their evacuation needs. This work provides data-driven insights to prioritize communities for Tsunami Ready recognition and establish vulnerability indices. Conducted by the University of Montpellier Paul-Valéry in collaboration with the IOC-UNESCO Tsunami Unit, the study serves as a proof of concept for a replicable methodology. An update is scheduled for February 2025, followed by the development of a web-based mapping platform

Key Proposals are provided below:

#### *1. Establishment of an Annual Reporting Mechanism*

The TT TR recommends implementing an annual reporting mechanism based on post-recognition surveys to monitor progress and measure program effectiveness. The CTIC will serve as the centralized repository for survey data, and a qualified social scientist will be required for data analysis and recommendations. Defining qualifications, securing sustainable funding, and aligning national reports with survey timelines remains as major challenges.

#### *2. Designation of a National Tsunami Ready Contact for Each Country*

To enhance coordination and communication, it is recommended that each country appoint a permanent National Tsunami Ready Contact affiliated with a stable institution rather than an individual. This will ensure continuity and support effective program implementation. Selection criteria for institutions and integration into existing disaster risk management frameworks remains as major challenges.

#### *3. Improvement of the Tsunami Ready Evaluation Process*

The evaluation form should be translated into Spanish and French to facilitate broader adoption and should be adapted to reflect local challenges. There is also an opportunity to expand its use to other ICG regions. Aligning the form with regional requirements and training focal points for consistent application remain as a challenge.

#### *4. Organization of a Tsunami Ready Summit*

Exploring the feasibility of hosting a Tsunami Ready Summit to share best practices, review survey and mapping results, and strengthen commitments from member states. Securing funding and defining clear objectives with key stakeholders continues to be a challenge.

#### *5. Resource Mobilization and Funding*

Efforts should be made to secure additional funding from international organizations (UN, World Bank, humanitarian agencies) and the private sector, while strengthening partnerships with existing donors such as USAID and DIPECHO. Timely access to funds and establishing transparent financial tracking mechanisms continues to remain as a challenge.

Ms Christa von Hillebrandt-Andrade elaborated on the challenges and future needs for the Tsunami Ready Task Team (TT TR). Currently, the TT TR consists of only a few active members. While significant progress has been made in advancing the objectives of the UNESCO-IOC Tsunami Ready Recognition Program, the

ambitious targets outlined in the Ocean Decade Tsunami Programme (ODTP) call for a substantial increase in the number of actively engaged members within the Task Team. Achieving the program's goal of ensuring that 100% of at-risk communities are prepared and resilient to tsunamis by 2030 requires a robust and well-resourced team capable of driving key initiatives forward.

The current reliance on voluntary contributions presents a major challenge in scaling up efforts to meet the growing demand for recognition and capacity-building across the region. Expanding the Task Team with additional active members is crucial to enhance its operational capacity. However, beyond recruiting volunteers, it is essential to consider the establishment of a dedicated, funded position to provide consistent leadership and coordination for the Task Team's activities.

A dedicated coordinator could significantly strengthen the TT TR by focusing on:

- Content development: Creating materials and resources to support communities in their journey towards Tsunami Ready recognition.
- Meeting facilitation: Organizing regular working group meetings, tracking progress, and ensuring continuity in decision-making.
- Community engagement: Assisting communities in understanding and fulfilling the Tsunami Ready requirements, providing technical guidance, and facilitating their application process.
- Stakeholder coordination: Strengthening collaboration between national authorities, regional organizations, and international partners to ensure alignment with the program's objectives.

Funding a dedicated position would enable the Task Team to move from a reactive approach, limited by the availability of voluntary efforts, to a proactive, strategic, and structured framework that supports a larger number of communities in achieving Tsunami Ready recognition.

Dr Necmioglu asked what the specific added value of a possible Tsunami Ready Focal Point/Champion (TRFP/TRC) in addition to the TNCs, especially in Member States/Territories with limited human resources, also noting the challenges in maintaining a sustainable contact list database. Ms Raveau asked if the TRFP/TRC should be a member of the NTRB. Ms Hodge informed that Anguilla created a generic e-mail address to ensure that changes in the personnel does not have an impact on the flow of the communication of information. Dr Necmioglu welcomed this move but underlined the need to still be informed about the changes in the personnel. Mr Metayer supported the idea to have a TRFP/TRC with a focus specific to the implementation of the Tsunami Ready. Dr Necmioglu stressed the need to ensure effective collaboration between TRFP/TRC and TNC, as the TNC has the prime responsibility in coordinating the tsunami mitigation efforts in the international domain. He also highlighted the fact that this scheme is pioneered in the Indian Ocean especially by Indonesia, which has a robust tsunami mitigation programme supported by several institutions, and he also pointed out that WG4 lost significant of its leadership during the intersessional period. Ms Christa von Hillebrandt-Andrade stated that this issue requires a consideration at the ICG.

## **7. EXPERT MEETINGS / WORKSHOPS / TRAININGS**

### **7.1 REPORT ON EXPERT MEETINGS ON SEISMIC SOURCES IN THE NORTHWEST CARIBBEAN AND ON NON-SEISMIC SOURCES OF TSUNAMIS FOR THE CARIBBEAN AND ADJACENT REGIONS, COSTA RICA**

An expert meeting organized by the UNESCO-IOC Tsunami Resilience Section and hosted by the Sistema Nacional de Monitoreo de Tsunamis (SINAMOT) of Costa Rica brought together 16 in-person and 4 remote experts from Costa Rica, France, Spain, Trinidad and Tobago, and USA to discuss the source properties of earthquakes in the Northwest Caribbean and non-seismic sources of tsunamis for the Caribbean and Adjacent Regions. 3 experts from Italy and Norway as representatives of the Global Tsunami Model also attended the Expert Meeting specifically to contribute to the discussion on the use of probabilistic methodologies in tsunami risk assessment of both seismic and non-seismic origin. The Expert Meeting was also attended by several observers from SINAMOT. As a result of intense discussions in a laboratory type of setting, source parameters for volcanic and earthquake origin tsunamis in the respective regions were identified and preliminary modelling results were cross-examined during the joint session on the last day of the Expert Meeting. Experts will continue with the tsunami modelling of the sources defined with the aim of providing the results available within the first half of 2025 to be included in the report of the Expert Meeting. Further information on this expert meeting is available under section 5.1 of this report.

### **7.2 PLANS FOR MULTI-ANNUAL COMMUNITY TSUNAMI EXERCISE PROGRAMME GUIDELINES FOR ICG/CARIBE-EWS (MG-86) TRAINING**



Alison Brome, Programme Officer, CTIC provided a short presentation on the status of planning for the Multi-Annual Community Tsunami Exercise Programme Guidelines Training for ICG/CARIBE EWS. Ms. Brome reported that a draft budget and co-sharing arrangement had been agreed to in principle by CTIC, ITIC-CAR (USAID-BHA funds) and IOC. Antigua and Barbuda had been strategically selected to host given the principle of rotating host locations and the good airlift linkages offered for targeted Member States and Territories. The ability for dovetailing with current TRRP renewal and nomination initiatives in Antigua and Barbuda was also viewed as highly advantageous.

Quotes from potential venues were delayed and the costs received exceeded the daily subsistence allowances of IOC and ITIC-CAR in various seasons so expansion of the pool of venues was necessary. None of the venues could not offer all-inclusive (accommodation, meeting arrangements, meals, ground transport) in compliance with standard IOC contractual practices and alternate options for facilitation via UNESCO Cluster Office in Kingston and ground transport by national authorities were being explored. Due to the aforementioned logistical challenges and based on discussions with national authorities, the initial November 2024 dates, followed by January 2025 were now alternated by 23-25 April 2025 or 28-30 April 2025.

### 7.3 PLANS FOR DIGITAL ELEVATION MODELS FOR TSUNAMI INUNDATION MODELLING TRAINING

Dr Necmioglu introduced the agenda item, available as a [presentation](#). This training was a request from ICG/CARIBE-EWS XVI, justified on the need to establish a baseline so that MS representatives can develop an understanding of the data, associated quality requirements, and its basic use. Tentative period for the training course is end November/early December 2025. Training to be provided by the University of Colorado, Boulder (USA) / National Earthquake Information Center (NEIC). A total of 12 participants are foreseen, with 2 tutors from NEIC, plus 1 expert from IOC. Training software will be open source. A minimum 6-months in advance notification required. All funding to be tentatively provided by the IOC, but IOC will investigate the possibility of co-funding with the WMO framing the workshop as "Digital Elevation Model Development Training for Coastal Inundation Hazards". Required software should be ready to be utilized right at the onset of the training. Some online sessions prior to the training may be necessary for this purpose. Member States experts may not necessarily have the required background/hardware/software, including IT elements such as installing a virtual machine or basic Linux skills. IOC will investigate possible e-learning modules on the web which may be used as a prerequisite for participation. Participants could be encouraged to bring their own dataset preferably with a specified format, but this is not a requirement. Training may focus on developing a joint DEM for a portion of the Caribbean. Synergies with (but not limited to) West Indies University (GIS/coastal hazards experts), University of Guadeloupe, Collectivité Territoriale de Martinique and University of Puerto Rico-Mayaguez Campus should be explored. Dr Vanacore informed the group on Puerto Rico's availability to host this training and proposed engagement with CARICOOS to support the logistics. Ms Raveau also informed that a meeting with the French delegation will take place in February in which the possibility to host this training will be discussed.

### 7.4 PLANS FOR TRAINING ON SEA-LEVEL STATION AND TIDE-GAUGE DATA ANALYSIS

Dr Necmioglu introduced the agenda item, available as a presentation. He reminded the Steering Committee Request on the related Decision and Recommendation from ICG/CARIBE-EWS XVII:

*Organize sea level training courses in English and Spanish languages in alternating years with the support of NOAA and the Secretariat, and in close collaboration with the International Hydrographic Organization*

The purpose of the course is to provide hydrographers, surveyors and entry level oceanographers with knowledge of tidal theory, the different uses of water level data, how water level data is used in support of hydrographic surveys, water level quality control, installation, troubleshooting, and maintenance of tide gauges, levelling and ensuring sensor vertical control. Specific elements for tsunami data analysis will be included. Training to be provided by NOAA and funding from International Hydrographic Organization (IHO) is secured. PRSN and CARICOOS will joint host this training in Puerto Rico (tentatively during 7-11 July 2025, in San Juan or Mayagüez). CL is expected to be issued by the end of 2025/02. The training will host a max of 30 participants (including instructors) and will involve 4 days classroom – 1 day field training. Trainees will not be provided with a DSA, but work is in progress to have an all-inclusive arrangement (catering, flights, accommodation, catering, all transfers in Puerto Rico) to be covered by the IOC and IHO.

## 8. POLICY MATTERS

### 8.1 REVIEW OF OUTCOMES OF THE 2ND GLOBAL TSUNAMI SYMPOSIUM

Dr Necmioglu introduced the agenda item, available as a [presentation](#). The [Summary Statement](#) of the 2nd UNESCO-IOC Global Tsunami Symposium “Two Decades After 2004 Indian Ocean Tsunami - Reflection and the Way Forward” is available. The report summarizes Current Status, Gaps, and Future Priorities for the 7 sessions of the Symposium, as follows

- 1) Review of the Tsunami Warning and Mitigation System over Past two Decades
- 2) Tsunami Generated by Non-seismic and Complex Sources
- 3) Tsunami Hazard and Risk Assessment
- 4) Tsunami Detection, Warning, Dissemination and Response
- 5) Achieving 100% Communities at Risk to be Prepared and Resilient to Tsunami by 2030
- 6) Other Critical Issues for Building Community Resilience
- 7) Contributions of Tsunami Early Warning to Global Initiatives

### 8.2 TSUNAMI READY SUMMIT

Ms Christa von Hillebrandt-Andrade informed the Steering Committee that a funding request to USAID has been made, but no official responses yet so far. Request will be evaluated by the new administration.

## 9. NEXT SESSIONS

### 9.1. STATUS OF ICG/CARIBE-EWS XVIII (INCLUDING ELECTIONS)

Dr Necmioglu introduced the agenda item, available as a [presentation](#). He reminded the group on the decisions and recommendations of the last ICG, as below:

- *The ICG decided to hold the ICG/CARIBE-EWS-XVIII in-person in the week of 5 May 2025 and to consider organizing a back-to-back Tsunami Ready Summit to review the benefits and lessons learned and to establish a road map towards 100 percent communities prepared for and resilient to tsunamis through efforts like Tsunami Ready.*
- *The ICG decided to conduct ICG/CARIBE-EWS-XVIII virtually if no official communication from neither France (Martinique), Panama or any other Member State interested in hosting ICG/CARIBE-EWS-XVIII is officially communicated to the Secretariat by 9 August 2024.*

Neither Panama nor Martinique (France) was able to host the ICG/CARIBE-EWS XVIII. As a result of this, in consultation with the Officers of the ICG/CARIBE-EWS, the Secretariat announced on 9 January 2025 that the ICG/CARIBE-EWS XVIII will have to take place online.

Dr Necmioglu further reminded the Steering Committee that the 57th Session of the IOC Executive Council (2024/06) noted the need for both ICG/PTWS and ICG/CARIBE-EWS to engage closely with Argentina. Argentina has been invited to the [ICG/PTWS XXXI](#) (7-11 April 2025, Beijing-China) as an observer. Accordingly, Argentina is also expected to be invited to the ICG/CARIBE-EWS XVIII. ICG/PTWS during its 31<sup>st</sup> session will most likely recommend Argentina to become a permanent Observer to the ICG/PTWS and a similar recommendation from the ICG/CARIBE-EWS at its 18<sup>th</sup> session could be considered. These recommendations will be considered at the 33<sup>rd</sup> Session of the IOC General Assembly (25 June – 3 July 2025). The Steering Committee is requested to approve the invitation of Argentina to ICG/CARIBE-EWS XVIII as an Observer.

Mr. Anthony Murillo Gutierrez (ES) will not be endorsed as a Vice-Chair of the ICG/CARIBE-EWS as he has changed his affiliation. If needed, the voting for the new Officers will have to take place through the Permanent Delegations, in this case. If, however, there would be only one nomination for the Chair position, and 3 nominations for the Vice-Chair positions, no voting would be necessary. In this regard, Dr Necmioglu reminded the Steering Committee that the IOC general practice is working and deciding by consensus. Should voting be necessary, decisions shall be made by a simple majority of the members present and voting, by secret ballot. Dr Necmioglu underlined the need to receive feedback from the current Chair and remaining two Vice-Chairs on their availability to serve another term and pointed out the need to have a candidate for the vacant Vice-Chair position. Furthermore, a new Chair for WG4 is needed. Last but not least, SC is required to advise the Chair on the simultaneous interpretation needs and, on the days/times of the ICG/CARIBE-EWS XVIII.

The Steering Committee noted the availability of Mr Gerard Metayer to continue as a chair for another term and requested the Secretariat to provide ES and FR simultaneous interpretation services at the ICG/CARIBE-

EWS XVIII. The Steering Committee also agreed to invite Argentina as an Observer to ICG/CARIBE-EWS XVIII.

## 9.2 PREPARATIONS OF ICG/CARIBE-EWS XIX

Dr Necmioglu introduced the agenda item, available as a [presentation](#). He reminded the group on the decisions and recommendations of the last ICG, as below:

- *Further notes that 2026 will be the 20th anniversary of the first session of the ICG/CARIBE- EWS which took place in 2006 in Barbados*
- *Recommends conducting the ICG/CARIBE-EWS XIX in-person tentatively in the week of 20 April 2026,*
- *Further notes with appreciation the possibility of Barbados to host the ICG/CARIBE-EWS XIX,*
- *Further decides to organize an event back-to-back with ICG/CARIBE-EWS XIX in close coordination with IOCARIBE, WMO, UNDRR and other stakeholders in the Caribbean and Adjacent Regions to promote accomplishments of the ICG/CARIBE-EWS, focus on current and remaining challenges and provide an outlook within the MHEWS framework and aligned with the objectives of EW4All,*

A letter has been sent to CZMU (Barbados) on 14 October 2024 inviting the Government of Barbados to officially communicate to IOC on its hosting of ICG/CARIBE-EWS by 30 March 2025. Several meetings were organized with CZMU and CTIC is in the process of finalizing the draft of the Cabinet Paper to support the CZMU in its internal administrative process. The Secretariat remains hopeful that the official communication will take place by the end of April, if not by the end of March.

## 9.3 OUTLOOK TO ICG/CARIBE-EWS XX

Dr Necmioglu introduced the agenda item, available as a [presentation](#). He reminded the group on the decisions and recommendations of the last ICG, as below:

*“Decides to consider conducting its future sessions from 2026 onwards in-person only every second year, and online every other”*

Noting the recent challenges experienced in identifying host countries, it's highly recommended to adopt this scheme above.

## 10. ANY OTHER BUSINESS

## 11. CLOSE OF THE SESSION

The meeting was closed on 29 January 2025 at 19:00 UTC.