

ICG/CARIBE-EWS XVII RECOMMENDATIONS

Recommendation ICG/CARIBE-EWS-XVII.1

ICG/CARIBE-EWS Governance

The Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS),

Having reviewed the progress made in the implementation of the CARIBE-EWS since the 16th Session of the ICG/CARIBE-EWS,

Having considered the reports of:

Working Group 1 on Risk Knowledge
Working Group 2 on Tsunami Detection, Analysis and Forecasting
Working Group 3 on Tsunami Warning Dissemination and Communication
Working Group 4 on Preparedness and Response Capabilities
Task Team on CARIBE WAVE
Pacific Tsunami Warning Center (PTWC)
Central American Tsunami Advisory Center (CATAC)
Caribbean Tsunami Information Center (CTIC)
Reports of the ICG/PTWS, ICG/NEAMTWS and ICG/IOTWMS
Chair's Report
Secretariat Report

Having further considered the reports on

Tsunami Ready Recognition Programme (TRRP)
UNESCO-IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE)
United Nations Office for Disaster Risk Reduction (UNDRR)
World Meteorological Organization (WMO)
NOAA National Centers for Environmental Information (NCEI) World Data Service (WDS) for Geophysics NCEI/WDS
Puerto Rico Seismic Network (PRSN)
ITU/WMO/UNESCO-IOC Joint Task Force on SMART Cables
UNESCO-IOC Second Global Tsunami Symposium

Having reviewed the recommendations of the TOWG-WG-XVII

Noting that other ICGs have Steering Committees,

Recognizing the value of having a Steering Committee as an efficient instrument of results-based management, especially in providing an oversight in the execution of its decisions and recommendations,

Further noting the cross-cutting elements of the ICG/CARIBE-EWS work programme closely connected with EW4All and guided by strategic elements such as the UNODTP and TRRP,

Further recognizing that the establishment of an ICG/CARIBE-EWS Steering Committee will mark another step towards harmonization of global ICG governance structures,

Decides to establish an ICG/CARIBE-EWS Steering Committee with the Terms of Reference as attached in Appendix 1 to Recommendation ICG/CARIBE-EWS-XVII.1.

Decides to continuation of the

Working Group 1 on Risk Knowledge

Working Group 2 on Tsunami Detection, Analysis and Forecasting

Working Group 3 on Tsunami Warning Dissemination and Communication

Working Group 4 on Preparedness and Response Capabilities

Task Team on CARIBE WAVE

with the Terms of References as provided in Appendix 1 to Recommendation ICG/CARIBE-EWS-XVII.1,

Recalling the second objective of the ODTP that 100 percent of communities at risk to be prepared and resilient to tsunamis by 2030 through efforts like the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP),

Noting the need to further focus on the identification and employing corresponding strategies in the Caribbean and Adjacent Regions,

Decides to establish Tsunami Ready Task Team (TT-TR) under the ICG/CARIBE-EWS with the Terms of Reference as provided in Appendix 1 to Recommendation ICG/CARIBE-EWS-XVII.1,

Notes the progress made in the implementation of the UN Ocean Decade endorsed SMART Cable initiative in the Pacific and Atlantic,

Recognizing the need to investigate the implementation of similar technology in the Caribbean and its Adjacent Regions,

Decides the formation of a sub-group under Working Group 2 to specifically address the implementation of such technology in the CARIBE-EWS.

Noting the need for the ICG/CARIBE-EWS to better position tsunami activities within the Multi Hazard Early Warning Systems (MHEWS) and UN Secretary General Early Warning for All Initiative (EW4All) initiative,

Recalling its decision at its 12th Session on the establishment Group of Experts (GoE) on work and implementation plan to enhance the warning system by including other coastal hazards and adopted Recommendation ICG/CARIBE-EWS-XII.7,

Also recalling that the ICG at its 14th Session noted the report of the GoE on work and implementation plan to enhance the warning system by including other coastal hazards,

Noting that the Chair of the GoE stepped down before the 14th Session of the ICG,

Further noting that one of the priority areas of IOCARIBE is early warning systems for regional hazards, there is a need and benefit to strengthen cooperation between IOCARIBE and ICG/CARIBE-EWS,

Requested the Steering Committee to revamp this initiative during the intersessional period in the coordination with of the IOCARIBE Secretariat and the regional offices of WMO and UNDRR, supported by the ICG/CARIBE-EWS Steering Committee and Technical Secretary.

Noting the ICG/CARIBE-EWS Action Monitor prepared by the Technical Secretariat as a useful tool to monitor the execution of the Decisions and Recommendations of the ICG/CARIBE-EWS and relevant Ocean Decade Tsunami Program Research and Development Implementation Plan (ODTP-RDIP) milestones,

Further noting the work executed by the Secretariat on the revamping of the TNC/TWFP/NTWC Database proving a standard format and ease in maintenance,

Reminds again Member States to communicate any changes in TNC/TWFP/NTWC information to the Secretariat and the TSPs as soon as these changes takes place,

Noted the nominations for Working Groups and Task Teams in response to CL-2965 circulated on 9 October 2023,

Underlines the importance of the active participation of all Working Group and Task Team members,

Invites Member States to support and encourage the members to actively engage in the Working Groups and Task Teams,

Further invites Member States to inform the Secretariat in case of any updates or additional nominations to the Working Groups and Task Teams.

Expresses its gratitude to the Government of Nicaragua for kindly hosting the 17th session of the ICG/CARIBE-EWS in Managua, Nicaragua,

Acknowledging the UNESCO recommendation reported by the Secretariat to the ICG on May 8, 2024, to hold statutory meetings and recurring conferences in-person only every second time, and online every other, in order to reduce UNESCO's carbon footprint to meet its set target of reducing its emissions by 31 per cent by 2030, in line with the goals of the Paris Agreement,

Also noting that during the challenging times of the Covid-19 pandemic many tasks and meetings were managed, albeit less effectively, through online and virtual tools,

Notes that 2025 will be the 20th anniversary of the establishment of the ICG/CARIBE-EWS, 2026 will be the 20th anniversary of the first ICG/CARIBE-EWS and 2027 will be the 20th Session of the ICG/CARIBE-EWS,

Further notes that these anniversaries had already been noted as an important opportunity for raising awareness on the achievements and remaining challenges in ensuring tsunami resilience in the Caribbean and its Adjacent regions within the broader context of MHEWS framework and UNSG's EW4All initiative and the post-pandemic resumption of tsunami preparedness activities,

Additionally notes that the ICG has been meeting regularly annually in-person (except during the pandemic), and that the in-person meetings have been instrumental in advancing the ICG/CARIBE-EWS and the cooperation between Members States especially the SIDS and LDCs,

Further notes the variety of challenges experienced in recent years associated with wholly online and with hybrid meetings that include both numerous delay-causing technical issues and reduced participation, attention, and engagement,

Especially notes the importance of in-person meetings providing opportunities for informal exchange of outside of the formal meeting sessions to address issues that facilitate the work of the ICG,

Decides to hold the ICG/CARIBE-EWS XVIII in-person in the week of 5 May 2025 and to consider organizing back-to-back the 2nd Tsunami Ready Summit to review the benefits and lessons learned and establish a road map towards 100% communities prepared for and resilient to tsunamis through efforts like Tsunami Ready,

Further recommends that for in-person meetings virtual participation will be accommodated in extenuating circumstances and when it does not interfere with the smooth running of the session,

Recommends that interpretation for in-person meeting to be performed in-person to avoid interference,

Notes with appreciation the considerations expressed by France (Martinique) or Panama to host ICG/CARIBE-EWS XVIII,

Decides 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,

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,

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

Recognising the need to directly engage with the stakeholders of UNESCO-IOC tsunami programme's stakeholders in the Caribbean and Adjacent Regions,

Further decides to consider conducting a back-to-back in-person Steering Committee Meetings with Capacity Building Activities as needed.

Recommendation ICG/CARIBE-EWS-XVII.2

Risk Knowledge

The Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS),

Acknowledges that a Joint Expert Meeting on Seismic Sources in the Northwest Caribbean and on Non-Seismic Sources of Tsunamis for the Caribbean and Adjacent Regions has been scheduled for 2-5 December 2024 in Heredia, Costa-Rica.

Underlines the need to conduct a regional Digital Elevation Model (DEM) Training, identification of its venue, experts, and the tools to be used for this training (open-source software vs license-based software),

Encourages Member States to gather their most recent elevation data, at a minimum to provide status availability including extent, resolution, access, format, etc...) for data sharing,

Notes the current discussion aiming at Caribbean Marine Atlas 2 for hosting these data.

Recognizing the efforts of NOAA/IOC International Tsunami Information Center (ITIC) to include of CATSAM scenarios in the Tsunami Coastal Assessment Tool,

Requests CARIBE WAVE Task Team to provide Working Group 1 with the parameters, including associated files (e.g., shapefiles, geotiff, etc.) of the corresponding scenarios once they are available for future CARIBE WAVE exercises,

Reconfirms the need to keep updating the Caribbean and Adjacent Regions Tsunami Sources and Models (CATSAM) with new scenarios,

Acknowledges that Working Group 1 should consider vulnerability and exposure of communities exposed to tsunami hazard,

Invites Members States to nominate tsunami risk specialists to Working Group 1 since currently its members are composed of mainly of hazards specialists but has no risk specialists,

Encourage the creation of a sub-group within the Working Group 1 in the future to address vulnerability and exposure themes and related challenges.

Recommendation ICG/CARIBE-EWS-XVII.3

Tsunami Detection, Analysis and Forecasting

The Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS),

Considering the report of Working Group 2 on Tsunami Detection, Analysis and Forecasting and having reviewed the status of the observational data availability in the Caribbean and Adjacent Regions,

Notes the Member States role of network operators in the region for the installation, maintenance, and data transmission from seismic, sea level and GNSS stations in the region;

Appreciates the NOAA ITIC-CAR and PTWC for improving the automated processing and continued reporting on the status of seismic and sea level stations,

Notes that a high percentage of the stations in the CARIBE-EWS sea level network and seismic network are currently non-operational and therefore can delay the proper assessment of tsunami events and the issuance of timely and accurate tsunami alerts,

Urges Member States and operators of seismic and sea-level stations contributing to CARIBE-EWS to maintain their stations in an operational status and regularly review and update the status of its stations, in the IOC Sea Level Monitoring Facility and in PTWC monthly maps posted on the ITIC website, and inform ITIC-CAR and Secretariat on plans for repair,

Recommends Working Group 2 performs a quantitative study of the impact of station outages in the Caribbean,

Further recommends Working Group 2 to work with partners to develop a tool to include the impact of these outages in the monthly reports.

Notes the progress made in the implementation of the UN Ocean Decade endorsed SMART Cable initiative in the Pacific and Atlantic,

Recalls its recommendation from CARIBE-EWS ICG XVI that a study be conducted to demonstrate improvement in tsunami early warning times with two to four variations on SMART Cable designs for the CARIBE-EWS,

Further recalls its recommendation from CARIBE-EWS ICG XVI that Working Group 2 on tsunami detection, analysis and forecasting engage industry stakeholders to understand which telecommunications cables are scheduled for replacement or new installations in the CARIBE-EWS,

Recommends the formation of a sub-group under Working Group 2 to specifically address the implementation of such technology in the CARIBE-EWS.

Encourages nominations from Member States to this subgroup,

Recognizing the importance of digital technologies for capacity building,

Suggests that Working Group 2 explore developing quarterly webinars on topics regarding Tsunami Detection, Analysis and Forecasting,

Acknowledging the success of the Tides Training Course in Spanish during 13-17 November in 2023, Costa Rica, jointly organized and funded by the International Hydrographic Organization (IHO), the International Maritime Organization (IMO), the Intergovernmental Oceanographic Commission of UNESCO (UNESCO-IOC) and NOAA

Encourages the Secretariat with Working Group 2 to 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 (IHO) and the International Maritime Organization (IMO).

Recommendation ICG/CARIBE-EWS-XVII.4

Tsunami Warning Dissemination and Communication

The Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS),

Recognizes the actions of the Working Group 3 towards the advancement of tsunami warning dissemination and communication,

Notes the approval by the IOC Executive Council of the ODTP-RDIP and its recommended actions and milestones for advancing Tsunami Warning, Dissemination and Communication,

Additionally notes the reports of UNDRR and WMO on UN EW4ALL,

Further notes in CARIBE WAVE reports, the strong dependency of Tsunami Service Providers and Member States on alerting systems based on landlines/submarine cable internet,

Acknowledges the Working Group 3 Inventory of Tsunami Warning Dissemination and Communication Methods for the Caribbean and Adjacent Regions,

Appreciates the support that the International Tsunami Information Centre Caribbean Office (ITIC-CAR) has provided to prepare this document as well as the contributions of other stakeholders,

Recommends Working Group 3 to finalize and submit the Inventory document including the results of the CARIBE WAVE 24 exercise.

Further recommends the UNESCO-IOC Tsunami Resilience Section to promote and make available the final document to ICG/CARIBE-EWS Member States and other stakeholders.

Additionally recommends Working Group 3 to use the Inventory and EW4ALL initiatives to document the dissemination capabilities, existing alert guidance and capacity enhancement needs in each of the Member States of the ICG/CARIBE-EWS, especially best practices, including traditional and technological solutions to expand methods and systems for the reception of products from the TSPs and dissemination of warnings, define warning authorities and competencies, and address local tsunamis.

Recalls the recommendation from ICG CARIBE-EWS XII for Working Group 3 to review and revise Technical, Logistical and Administrative Requirements of a Regional Tsunami Service Provider for CARIBE-EWS

Requests Working Group 3 to review and revise Technical, Logistical and Administrative Requirements of a Regional Tsunami Service Provider for CARIBE-EWS and present at its XVIII session at the latest,

Noting advances by CATAAC in Earthquake Early Warning (EEW), and potential applications for Tsunami warning and communication.

Recommends 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.

Notes the importance of SOPs being up to date, include timelines, define warning authorities, and address local tsunamis,

Further notes the findings of CATAC and through the implementation of Tsunami Ready that many member states have out of date Tsunami Response Plans and SOPs,

Urges Member States to have up to date Tsunami Response Plans and SOPs, including addressing local tsunamis, as well as designated and trained warning authorities,

Recognizes Climate Change as well as multiple recent, ongoing, and future emergencies and disasters and their cascading effects as a manifestation of the systemic nature of risks, and its impact on investments in warning dissemination and communication,

Urges the IOC Secretariat to work with the ICG/CARIBE-EWS Steering Committee to develop a strategic plan to mobilize funding and in-kind support for more effective Tsunami Warning and Dissemination with a particular focus for LDCs and SIDS.

Recommendation ICG/CARIBE-EWS-XVII.5

Preparedness and Response Capabilities

The Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS),

Considering the reports of the Caribbean Tsunami Information Center (CTIC), the United Nations Office for Disaster Risk Reduction (UNDRR) and Working Group 4,

Notes with appreciation the strong cooperation between the CTIC, ITIC-CAR, Working Group 4, CARIBE WAVE Task Team and UNDRR for advancement of preparedness, readiness and resilience to mitigate the impacts of tsunamis and other coastal hazards in the CARIBE-EWS, particularly in relation to the implementation of the Tsunami Ready programme, the dissemination and development of outreach and educational resources, support to the United Nations Decade of Ocean Science for Sustainable Development including the work of the Tropical Americas and Caribbean Decade Safe Ocean Working Group,

Acknowledges the Workshop on Tsunami Evacuation held in Costa Rica in April 2024 with the participation of seven ICG/CARIBE-EWS Member States: Dominican Republic, Mexico, Guatemala, Nicaragua, Costa Rica, Panama, Colombia and USA (Puerto Rico).

Appreciates the leadership by the Extreme Events Institute of the Florida International University, the funding provided by United States Agency for International Development Bureau of Humanitarian Assistance (USAID-BHA) and ICG/CARIBE-EWS Secretariat, and the support of SINAMOT Program of the National University Costa Rica, ITIC-CAR and PRSN to organize this workshop.

Notes that during that workshop it was detected that among the participants only Costa Rica and Puerto Rico calculate the evacuation times and use those results to build Tsunami Evacuation Maps and Plans,

Further notes that evacuation times are necessary to determine the feasibility of tsunami evacuation maps and plans,

Further notes that the US has a method to calculate evacuation times that has been used by the PRSN and that it is willing to train other Member States,

Additionally notes the offer of the PRSN to host a workshop on Evacuation Mapping Modelling,

Recommends the Secretariat with Working Group 4 to seek funding and organize a workshop on estimation of evacuation modelling.

Appreciates the offer of ITIC-CAR to provide an intern for 10 weeks to support the implementation of the Tsunami Ready survey in the ICG/CARIBE-EWS,

Notes the challenges on administering and evaluating the data retrieved from the survey within this time period,

Further notes TOWS request to Task Teams "(xiii) TT-DMP consider the introduction of a Tsunami Ready Evaluation Form in the other ICGs than ICG/CARIBE EWS, its translation to Spanish and French and its administration by the IOC Tsunami Resilience Section",

Recommends its Steering Committee and the Secretariat to evaluate the implementation process in ICG/CARIBE-EWS and informs the ICG/CARIBE-EWS in the implementation of this effort in other ICGs in accordance with the TOWS-WG-XVII recommendation,

Recalls that World Tsunami Awareness Day (WTAD) is observed annually on 5 November,

Further recalls the #GetToHighGround hashtag proposed by UNDRR and #CARIBEWAVE and #TSUNAMIREADY used by ICG/CARIBE-EWS,

Notes the 2024 theme for the WTAD is “Empowering Children and Youth, ensuring the next generation is tsunami prepared” which complemented CARIBE WAVE 2024 efforts,

Further notes that recent changes in social media changed the way to track hashtags,

Recommends Member States to adapt the hashtag of the campaign to their specifications, when necessary,

Acknowledges the leadership of CTIC in organizing activities leading to increased participation and visibility of WTAD in 2021, 2022 and 2023,

Encourages Member States to observe WTAD and to share their activities with CTIC,

Recommends CTIC to continue engaging with UNDRR, Working Group 4 and Member States to engage, plan and take action for WTAD 2024,

Notes that in the intersessional period the Spanish version of the Manual and Guides 86 on Multi-Annual Community Tsunami Exercise Programme Guidelines for the ICG/CARIBE-EWS was finalized and published,

Recalls the recommendation of ICG CARIBE-EWS XVI that a workshop be convened on the MG 86 Multiannual Exercise Guidelines together with a meeting of CARIBE WAVE Task Team to discuss enhancements to facilitate and streamline the execution of and reporting on the exercise, as well as integrating gradual flexibility and complexities in CARIBE WAVE Exercises and synergies with the Tsunami Ready Programme,

Further recalls that the workshop was to be co-organized by CTIC and ITIC-CAR and has not been conducted yet,

Notes the possibility that this workshop be held in Antigua and Barbuda with partial funding from United States Agency for International Development Bureau of Humanitarian Affairs (USAID/BHA) as part of Tsunami Ready projects,

Recommends CTIC and ITIC-CAR in coordination with Working Group 4 and CARIBE WAVE Task Team to organize a joint training on Manuals and Guides 86 and CARIBE WAVE Task Team meeting in Antigua and Barbuda during the following intersessional period,

Notes the continuing efforts of the Indian Ocean Tsunami Information Centre (IOTIC) and ITIC in preparing Tsunami Awareness, UNESCO-IOC Tsunami Ready and Tsunami Evacuation Maps, Plans and Procedures (TEMPP) trainings through the Ocean Teacher Global Academy (OTGA) platform and hybrid training workshops and training videos,

Further notes that the Working Group on Tsunamis and Other Hazards (TOWS-WG) has encouraged the completion of the OTGA Tsunami Awareness and Tsunami Ready courses by the ITIC and IOTIC as a key contribution to building capacity for implementation of the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP) globally,

Recommends that once the modules are available, Working Group 4 with CTIC to facilitate the testing and use of the trainings.

Recommendation ICG/CARIBE-EWS-XVII.6

Tsunami Ready

The Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS),

Notes the Ocean Decade Tsunami Programme Goal that 100% of at-risk communities are prepared for and resilient to tsunamis through efforts like UNESCO-IOC Tsunami Ready Programme

Congratulates the Member States and communities that have been recognized as Tsunami Ready in the Intersessional Period: Saint George, Saint Vincent and the Grenadines, Christ Church West, Barbados, and Deshaies, France (Guadeloupe),

Recognizes the many Tsunami Ready recognition projects that have and are being implemented across the Caribbean and Adjacent Regions,

Acknowledges the funding from United States Agency for International Development Bureau of Humanitarian Assistance (USAID/BHA), Australia, Norway, and European Commission Humanitarian Aid Department's Disaster Preparedness Programme (DIPECHO) for the implementation of the Tsunami Ready program.

Further acknowledges Member States, CTIC and ITIC-CAR for the implementation of Tsunami Ready projects,

Notes the transverse nature of the UNESCO-IOC Tsunami Ready Programme to all working groups of the ICG/CARIBE EWS

Further notes that in the restructuring of the governance structure of the ICG/CARIBE-EWS the Task Team on Tsunami Ready was replaced with a subgroup on Tsunami Ready within Working Group 4 on Preparedness and Response Capabilities

Recognizes that the TR sub-group has a lead and members who have begun working on actions relating to Tsunami Ready implementation,

Further recognizes that the placement limits the input and interaction of other key stakeholders for Assessment, Tsunami Detection, Analysis and Forecasting and Warning Dissemination and Communication,

Recommends that a Task Team of Tsunami Ready be established under the ICG/CARIBE-EWS with the Terms of Reference as provided in Appendix 1 to Recommendation ICG/CARIBE-EWS-XVII.1,

Notes the excellent work of Mr. Fabian Hinds as the current chair of the sub-group and **recommends** him to be named the Chair of the Tsunami Ready Task Team supported by Matthieu Péroche as Vice-Chair,

Invites all Member States to implement or to support the implementation of Tsunami Ready in their communities, or that of another Member State

Appeals to donors to provide funding for the implementation of the Tsunami Ready Programme in the Caribbean and Adjacent Regions.

Recommendation ICG/CARIBE-EWS-XVII.7

Exercise CARIBE WAVE

The Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS),

Notes the CARIBE WAVE 24 draft final, media, supplement reports and presentation,

Further notes the successful conduct of the CARIBE WAVE 24 Exercise with the participation of 100% of the Member States and over 475,000 people registered,

Congratulates all the Member States who promoted, participated, and provided feedback on the CARIBE WAVE 24 exercise.

Notes only 80% of the Member States provided the feedback which is essential for assessing the functionality including warning, response and preparedness capabilities of CARIBE EWS and future actions,

Urges Member States to complete survey evaluations in a timely manner,

Acknowledges the good collaboration between the CARIBE WAVE Task Team, CTIC and ITIC-CAR in planning, promoting, executing, and evaluating the annual CARIBE WAVE Exercises.

Appreciates the International Tsunami Information Centre Caribbean Office (ITIC-CAR) for their support in generating the handbook, reports and overall coordination and the Pacific Tsunami Warning Center (PTWC) and the Central America Tsunami Advisory Center (CATAC) for providing and disseminating dummy message and simulated products for the CARIBE WAVE 24,

Further appreciates the United States Geological Survey (USGS) for their continued support in generating simulated ShakeMap and PAGER products for each of the scenarios of CARIBE WAVE 24,

Instructs the CARIBE EWS Working Groups and the CARIBE WAVE Task Team to identify actions arising from CARIBE WAVE 24 and past CARIBE WAVE Exercises and identify follow up actions in coordination with CTIC and the CARIBE-EWS Secretariat,

Reconfirms that CARIBE WAVE 25 will use the 2 CARIBE WAVE 20 scenarios 1) 1692 Jamaica scenario, and 2) the 1755 Lisbon scenario,

Decides that the CARIBE WAVE 25 exercise will take place on Thursday, March 20, 2025, commencing at 15:00 UTC with one dummy message for the communication test from PTWC and CATAC to the TWFPs and NTWCs, and the 1st message for the scenarios coming shortly after according to PTWC and CATAC simulated procedures for the respective scenarios they are supporting. Member States are encouraged to execute activities at times deemed convenient based on national procedures and circumstance,

Reminds Member States to consider alternative dates and times for running of CARIBE WAVE 25, if the agreed date is not feasible, and that information on conducting the exercise on alternative dates be shared in the Handbook,

Requests that Member States consider conducting all or part of their exercise response activities during non-working hours, particularly at night, to be better prepared for tsunami events that are more likely to occur during non-working hours,

Recommends following a coordination process, timetable, and benchmarks for CARIBE WAVE 25, similar to what has been used in prior CARIBE WAVE exercises, and that this includes a series of preparatory webinars,

Further recommends that the registration process remains at www.tsunamizone.org and that Member States promote registration and participation among their stakeholders,

Recalls again the importance of including vulnerable and marginalized groups, including persons with disabilities, in CARIBE WAVE 25,

Recommends continuation of the Task Team for CARIBE WAVE,

Recommends the Secretariat to inform the UNDRR on the date of CARIBE WAVE 25 and request the theme of the WTAD 25 in advance of the exercise,

Further recommends that Task Team CARIBE WAVE and Member States consider the theme of WTAD 2025 in the conduct and reporting of the exercise,

Noting that CATSAM is a tool for identifying tsunami sources and their associated threat for exercise planning purposes,

Reminds Task Team CARIBE WAVE to assist Working Group 1 in prioritizing scenarios to be included in CATSAM,

Additionally reminds Member States to consider including their selected CARIBE WAVE 25 scenario within a multi-hazard framework wherever possible,

Additionally recommends that Task Team CARIBE WAVE reviews and considers updates to the CARIBE WAVE Post-Exercise Questionnaire,

Suggests again that Task Team CARIBE WAVE explores opportunities to further involve tourists and tourism organizations such as the Caribbean Tourism Organisation (CTO), in CARIBE WAVE exercises, with the aim to develop multi-lingual guidelines/resources for the involvement of tourists in CARIBE WAVE Exercises,

Further suggests that Task Team CARIBE WAVE explores opportunities to further involve national and regional maritime and port authorities so they may exercise their plans and procedures,

Recommends that Member States consider UN agencies operating in their countries for receipt of products and relevant information and **further notes** the IOCARIBE agreement to support UN Country Teams by encouraging them to engage with emergency management practitioners in their countries of operation,

Acknowledges the consistent support of ITIC-CAR to the work of the TT CARIBE WAVE and looks forward to its continued support to TT CARIBE WAVE,

Suggests that the CARIBE WAVE 26 exercise consist of 2 scenarios that include 1) an earthquake generated tsunami based on historical events and, 2) a volcanic generated tsunami, considering the results of the joint experts meeting to be convened in Costa Rica in December 2024.

Recommendation ICG/CARIBE-EWS-XVII.8

Central America Tsunami Advisory Center (CATAC)

The Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS),

Appreciates the report and advances performed by CATAC during the intersessional period.

Appreciates the studies carried out by CATAC on the possible occurrence of local tsunamis in parts of Central America which might arrive to the nearest coasts in only a few minutes after the associated source earthquake.

Also appreciates the continuous efforts of CATAC to improve further its seismological system and be able to identify the source and send out timely and actionable tsunami products in case of slow earthquakes (tsunami earthquakes) which occur in Central America and to enhance the capacity of and inform its users about these possible events.

Recognizes the continuing support for CATAC provided by the Japan International Cooperation Agency (JICA) especially the funding of a project on "Strengthening the use of Central American Tsunami Advisory Center (CATAC) Tsunami Warning products." being executed from 2023-2025.

Notes that in the preparation of this project CATAC with support from CEPREDENAC and JICA conducted 17 Webinars of 2 hours duration each with all related scientific and civil protection agencies of Central America, and additionally Belize, and Dominican Republic, to identify the status of the use of CATAC products. The findings were presented at a conference during the third Central American disaster exercise on June 13-16, 2023, in the city of Panama organized by CEPREDENAC.

Appreciates that within this project CATAC organized from 13-17 Nov 2023 a virtual course on the use of CATAC products for personnel from Civil protection agencies as a preparation for the Third Country Course "Strengthening the use of the Tsunami Warning Products of the Central American Tsunami Advisory Center (CATAC)" which was held from 19-24 Nov 2023 at CATAC/INETER in Managua. The participants were trained on CATAC's methods and products but also presented the Standard Operation Procedures for tsunami warning used in their organizations and discussed them thoroughly with CATAC.

Notes that CATAC identified during this work with emergency management organizations in Central America that most participating institutions have not updated their SOP's since 2017, the SOP's do not mention the use of CATAC's products and do not consider the new graphical products of PTWC, have no clear timelines and are largely not adequate for the cases of possible local tsunamis which might arrive in only a few minutes after the associated source earthquake.

Appreciates that CATAC has started to support the countries of Central America in the improvement of this situation, that CATAC visited in February-March 2024 Guatemala, Honduras, and Panama to discuss these matters with NTWC's, civil protection agencies and related institutions. In Honduras and Panama, multidisciplinary working groups were formed to work on the problems. Multiple tsunami simulations are carried out, and proposals on the improvement of the SOP's are elaborated. The findings of these groups will be presented at

the meeting of the Latin American and Caribbean Seismological Commission (LACSC) at the end of June 2024.

Appreciates the support since 2016 of the Swiss Seismological Service for the introduction of Earthquake Early Warning (EEW) in Central America and **notes** the advancement of Nicaragua, El Salvador, Costa Rica, and Guatemala in the implementation of public EEW in their countries and

Recommends CATAC to continue with the implementation of EEW methods for the acceleration and improvement of the tsunami warning for Central America.

Notes that CATAC has presented and discussed at the Congress “Cities on Volcanoes” in Antigua, Guatemala, in February 11-17, 2024, a concept for a warning system on tsunamis generated by volcanic phenomena in the large lakes of Nicaragua.

Notes the recent improvements in the CATAC processing system including the implementation of new workstations with Graphical Processing Cards of latest generation which accelerate the tsunami simulation for the CATAC products by a factor of about 20. Laptops with potent GPU’s are also used by CATAC for the tsunami simulations to be carried out in its training efforts in Central American Region.

Recognizes the achievements of CATAC in updating its Servers and Workstations running the Seismological and Tsunami Processing System SeisComP PRO with TOAST to the latest versions 4,5 or 6 and assuring that way its compatibility with the rest of the SeisComP systems operated by the NTWCs of Central America.

Notes that the fast technical advancement of CATAC during the intersessional period and the shortcomings found by CATAC in the functioning of the civil protection agencies hindered CATAC in the updating of its User’s Guide (last version elaborated in 2021) as new approaches seem to be necessary and possible.

Further notes the challenges of CATAC during CARIBE WAVE 24 where all planned messages were sent out timely via email according to the programmed schedule, but 2 messages arrived with delays to the international recipients possibly due to reputation-based deferral or other temporary error, or connection problem with the used mail server,

Additionally notes that CATAC will provide the updated users guide by March 2025 for the consideration of ICG/CARIBE EWS XVIII,

Recommends the use of additional methods for the transmission of CATAC’s products to its users.

Notes that CATAC has tested, implemented and used in Nicaragua, and selected institutions in Honduras, Guatemala and Panama, the following new methods for the transmission of its products from its SeisComP system to institutions and persons as NTWCs and TWFPs: which are computer-to-computer transmission, sending out messages via Telegram, Whatsapp, Cellphone App and will implement them in the near future for all its regional users.

Recommends that CATAC continues full functionality in an interim manner to be able to support the National Tsunami Warning Centers (NTWCs), Tsunami Warning Focal Points

(TWFPs), and emergency management authorities of Central America in addressing those challenges,

Notes that the CARIBE EWS XI in 2016 approved Technical, Logistical and Administrative Requirements of a Regional Tsunami Service Provider for CARIBE-EWS which defines TSPs as centres that provide services to the whole CARIBE-EWS region.

Further notes the update to the Tsunami Watch Operations Global Service Definition Document (2016, TS 130) is in its final stages,

Requests the Technical Secretariat to share as soon as available the updated GSDD with CATAAC, PTWC and Working Groups 3 and 4,

Further recommends the consideration of CATAAC as a TSP in its XVIII Session in 2025 to enable the IOC Assembly to consider the final admission of CATAAC as TSP in June 2025.

Recommendation ICG/CARIBE-EWS-XVII.9

Caribbean Tsunami Information Center

Notes the renewal of the memorandum of understanding between the Government of Barbados and UNESCO-IOC regarding CTIC which has been strengthened by the extension of the duration from 3 to 5 years.

Appreciates the expanding mandate of the CTIC since establishment due to the alignment with Strategic Policy Frameworks and programmes such as the UN Sustainable Development Goals, the Sendai Framework for Disaster Risk Reduction, the UN Ocean Decade, UN EW4ALL Initiative, CDEMA-led Comprehensive Disaster Management Strategy & Framework, and the UNESCO-IOC Tsunami Ready Programme which has resulted in increased workload and opportunities for integration of the full scope of the role and functions of the CTIC (including other coastal hazards) regionally and globally,

Further appreciates the emerging policy matters such as the need for integration of social science, behavioural change, disabled and vulnerable (youth, women, indigenous groups, poor),

Also notes the contents of the document ICG/CARIBE-EWS-II/12 8 March 2007 regarding provision of financial and human resources from IOC, Member States, donors and partners and the constraints being considered which impacts on the performance and service levels to Member States, partners, and the sustainability of CTIC.

Further notes the CTIC Governance and Collective Ownership required to enhance support and improvement on performance and service levels to Member States and partners and foster sustainability,

Notes the work of the CTIC since establishment, the coordination forged within the ICG/CARIBE EWS organizational structure and partners,

Recommends a strategic review of the staffing resources needed 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,

Urges ICG/CARIBE EWS Member States to continue to make contributions to the IOC and provide human resources under various arrangements including long- and short-term internships to support the work of the CTIC,

Recommends that CTIC continues to work with the Secretariat, Steering Committee, CARIBE EWS Member States and partners to develop a strategic plan to guide the resource mobilization and staffing efforts of the CTIC,

Recommends a strategic review by the CARIBE EWS Steering Committee of the CTIC Governance structure in identifying and supporting the implementation of resource mobilization, staff, partnerships, and other frameworks to enhance the ownership and sustainability of the CTIC,

Further recommends the integration of the work and role of the CTIC and the CTIC Governance Structure review process with previous assessments, and current considerations

within the ICG CARIBE-EWS including the integration of Other Coastal Hazards, EW4All, relevant policy frameworks and programmes and the CARIBE-EWS Steering Committee.

Appendix 1 to Recommendation ICG/CARIBE-EWS-XVII.1

Terms of Reference

ICG/CARIBE-EWS Steering Committee

1. The Steering Committee shall act in an advisory capacity to the Chair of the ICG/CARIBE-EWS during the inter-sessional period.

2. The Steering Committee shall coordinate and integrate the work of ICG/CARIBE-EWS in the inter-sessional periods, as implemented through the various working groups and task teams, including but not limited to:

- Maintain the ICG/CARIBE-EWS Organizational Structure and Governance
- Monitor, maintain and update the CARIBE-EWS Implementation Plan
- Oversee the execution of the Decisions and Recommendations of the ICG
- Develop a Strategy for funding CARIBE-EWS activities
- Monitor performance and examine continuing compliance of Tsunami Service Providers (TSPs) with the adopted operational and organizational function and requirements
- Guide the work and direction of the CARIBE-EWS to help deliver the goals of the UN Ocean Decade Tsunami Programme (ODTP) in support of its 10-year Scientific Research Implementation and Development Plan (RDIP).
- Report ICG/CARIBE-EWS progress against the ODTP-RDIP KPIs
- Develop a strategy for effective coordination with IOCARIBE, UNDRR, WMO, and other regional stakeholders
- Revamp the Group of Experts (GoE) work and implementation plan to enhance the warning system by including other coastal hazards during the intersessional period in coordination with the IOCARIBE Secretariat considering WMO and UNDRR EW4ALL,
- Provide oversight and strategic guidance to CTIC on its implementation of tsunami awareness and capacity building activities
- Organize events and other actions and activities associated with the occasion of the 20th anniversaries of the ICG/CARIBE-EWS

3. The Steering Committee will be composed of the ICG/CARIBE-EWS Officers (Chair and the Vice-Chairs), Chairs and Vice-Chairs of the Working Groups and Task Teams, Directors/Coordinators of the TSPs, CTIC, and other members by invitation of the Chair.

Modus operandi

The Steering Committee will mainly work by correspondence and through virtual meetings and may hold in-person meetings as needed.

Terms of Reference

Working Group 1: Risk Knowledge

Purpose: To advise the ICG on the identification and characterization of the risk associated with tsunami and other coastal hazards, and their assessment and required modelling.

Chair: Frederic Dondin (France)

Vice-Chair: Raphaël Paris (France)

Tasks:

- Review and evaluate required methods and data sets, including bathymetry and coastal topography for determining coastal hazards.
- Advise the Member States on the requirements for operating the appropriate models for risk assessment.
- Advise and build capacity for risk assessments and their interpretation.
- Present a progress report based on the Key Performance Indicators related to the United Nations (UN) Ocean Decade Tsunami Programme (ODTP)
- Advise and seek advice from Member States about other coastal hazards that can be included into the warning system.
- Promote the sharing of experience and expertise, and capacity building essential to effective tsunami risk knowledge.

Terms of Reference

Working Group 2: Tsunami Detection, Analysis and Forecasting

Purpose: To review and recommend to the ICG priorities and actions required to ensure and enhance existing capabilities as well as explore new technologies to improve tsunami detection and forecasting capability.

Chair: Elizabeth Vanacore (USA - Puerto Rico)

Vice Chairs for Subgroups:

1. Tsunami Source Identification and Characterization (Dan McNamara, USA)
2. Tsunami Detection (Gloria Romero, Venezuela)
3. Tsunami Forecasting (Chris Moore, USA)
4. SMART Cables (TBD)

Tasks:

General:

- Support the operations of a fully interoperable regional tsunami warning system.
- Support and integrate the work of the subgroups.
- Present a progress report based on the Key Performance Indicators related to the UN ODTP.
- Establish strategies to enhance the warning system by including the detection, analysis and forecasting of other coastal hazards.
- Promote the sharing of experience and expertise, and capacity building essential to effective tsunami source characterization, detection, and forecasting.

2.1 Tsunami Source Detection, Identification and Characterization

- Ensure the effectiveness of the observational system by promoting the open exchange of seismic and other relevant data in real time.
- Advise member states on the monitoring and detection capabilities of tsunamigenic sources needed for operating national tsunami warning centres.
- Assure the compliance with the agreed standards for the detection systems.

2.2 Tsunami Wave Detection

- Ensure the effectiveness of the observational system by promoting the open exchange of sea level data in real time.
- Advise member states on the tsunami monitoring and detection capabilities needed for operating national tsunami warning centres.
- Assure the compliance with the agreed standards for the tsunami detection systems.

2.3 Tsunami Forecasting

- Define the operational requirements for the monitoring and forecasting systems.
- Provide guidance on tsunami forecasting tools to TSPs, NTWCs and provide actionable information to emergency managers.

Explore, experiment and test novel approaches for tsunami forecasting.

2.4 SMART Cables

- Conduct a study to demonstrate improvement in tsunami early warning times with two to four variations on SMART Cable designs for the ICG CARIBE-EWS
- Engage industry stakeholders to understand which telecommunications cables are scheduled for replacement or new installations in the CARIBE-EWS.

Terms of Reference

Working Group 3: Tsunami Warning Dissemination and Communication

Purpose: To examine current and developing capacities and advise the ICG about the definition and composition of early warnings and tsunami products and the methods and best practices for effective end-to-end dissemination and communication.

Chair: Christa von Hillebrandt-Andrade (USA – Puerto Rico)

Vice-Chair: Susan Hodge (Anguilla)

- Explore and document the dissemination capabilities and existing alert guidance in the countries of the region.
- Identify the difficulties and challenges existing in the region that hinder the impact of “end to end” dissemination and communication of early warnings.
- Establish strategies for the development and implementation of methods and technologies to strengthen the interaction with the media and dissemination of early warnings within the countries of the region.
- Evaluate communication tests and tsunami exercises, in order to identify weaknesses and make recommendations to help strengthen these delivery systems.
- Create communication protocol and standardized information identifying the minimum acceptable levels for communication and dissemination of tsunami early warning in all countries for approval by the IGC.
- Provide feedback to the Tsunami Service Providers on its products and communication procedures.
- Serve as a reviewing and approving body for proposed changes to TSP products for the CARIBE-EWS or determine if proposed changes warrant going to the ICG for review and approval.
- Present a progress report based on the Key Performance Indicators related to the UN ODTP
- Promote the sharing of experience and expertise, and capacity building essential to effective tsunami warning dissemination and communication

Terms of Reference

Working Group 4: Preparedness and Response Capabilities

Purpose: To advise and recommend to the ICG strategies to enhance awareness, education, preparedness, response capabilities and mitigation and to develop the necessary recommendations, tools and procedures.

Chair: Silvia Chacon (Costa Rica)

Vice Chairs for Subgroups:

1. Preparedness and Response capabilities (Jacob Ngumbah, St Kitts and Nevis)
2. Mitigation (Stacey Edwards, Trinidad and Tobago)

Tasks:

General

- Consider UN Ocean Decade Tsunami Programme and other relevant decade actions, the Regional Action Plan for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in the Americas and the Caribbean and the UN Early Warnings for All Initiative (EW4ALL)
- Present a progress report based on the Key Performance Indicators related to the UN ODTP
- Support the development of guidelines and capacity development on preparedness, response and recovery planning for Member States, communities and organizations, which should include sharing of training and evacuation best practices.

4.1 Preparedness and Response capabilities

- Identify the public awareness and education strategies and tools that the Member States can integrate into their risk reduction and emergency management programs.
- To closely cooperate with the Caribbean Tsunami Information Centre (CTIC) in carrying out its mandate and in the implementation of its program.

4.2 Mitigation

- Identify mitigation best practices related to plans, structural and nature-based solutions
- Advise Member States on measures to minimize impacts to critical infrastructure and marine assets from tsunamis and other coastal hazards.
- Identify and employ strategies to support mainstreaming disaster risk reduction into urban planning

Terms of Reference

Task Team on CARIBE WAVE

Purpose: Coordinate planning, running, and follow-up of CARIBE WAVE Exercises.

Chair: Antonio Aguilar (Venezuela)

Vice Chair: Gisela Baez Sanchez (USA – Puerto Rico)

Tasks:

- Propose and coordinate development of scenarios agreed by ICGs.
- Coordinate and collaborate with the preparation of CARIBE WAVE activities, including establishing a timeline, publishing of Exercise Manuals, and organization of relevant informational materials and events.
- Follow-up on CARIBE WAVE outcomes including coordinating post-event surveys and reporting
- Propose future exercise scenarios to ICG

Membership: ICG Chair, Working Group Chairs, TR Task Team Chair, Technical Secretary of ICG CARIBE-EWS, CTIC, ITIC-CAR, PTWC, CATAC, CEPREDENAC, CDEMA, EMIZA, other invited experts.

Terms of Reference

Task Team Tsunami Ready

Purpose: To identify and employ strategies to ensure 100% of at-risk communities achieve UNESCO-IOC Tsunami Ready recognition.

Chair: Fabian Hinds (Barbados)

Vice-Chair: Matthieu Péroche (France)

Tasks:

- Consider Standard Guidelines for the Tsunami Ready Recognition Programme UNESCO-IOC Manual and Guides 74, 2022
- Consider UN Ocean Decade Tsunami Programme Ocean Decade Tsunami Programme Research & Development Implementation Plan (2023) and other relevant decade actions, the Regional Action Plan for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in the Americas and the Caribbean and the UN Early Warnings for All Initiative (EW4ALL).
- Assist the Secretariat on determining the target number of communities in the CARIBE-EWS for Tsunami Ready recognition by 2030
- Identify communities with a priority for action in the Tsunami Ready recognition process.
- Identify, develop, and recommend a road map to ensure an effective implementation and sustainability of the Tsunami Ready Programme.
- Evaluate the implementation of the Tsunami Ready and its effectiveness in reducing the risk and vulnerability to tsunamis.
- Support the development of guidelines and capacity development on assessment, preparedness and response planning for Member States, communities and organizations, which should include sharing of training and evacuation best practices.
- Present a progress report to the ICG CARIBE EWS based on the Key Performance Indicators related to the UN ODTP.

Members:

Members of the previous Tsunami Ready subgroup of Working Group 4

Chair or his/her designee of each of ICG/CARIBE-EWS Working Group

Programme Officer of CTIC (ex-officio)

Chair of CARIBE-EWS (ex-officio)