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INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

Thirty-first Session of the Assembly
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ADOPTED DECISIONS & RESOLUTIONS

ADOPTED DECISIONS

IOC Decision A-31/3.4.1

Warning Mitigation Systems for Ocean Hazards

The Assembly,

Having examined the executive summary reports of the recent sessions of the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS-XV), the North-Eastern Atlantic, the Mediterranean and Connected Seas Tsunami Warning and Mitigation System (ICG/NEAMTWS-XVI), and the reports of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (IOC/TOWS-WG-XIII and XIV),

Accepts the reports by the IOC/ICGs and TOWS-WG;

Notes with satisfaction the progress made during the intersessional period, including:

- Instituto Português do Mar e da Atmosfera (IPMA, Portugal) accredited as a Tsunami Service Provider in NEAMTWS;
- five exercises carried out (CARIBE WAVE 20, PacWave20, IOWave20, CARIBE WAVE 21 and NEAMWave21) including testing plans for tsunami response in backdrop of a pandemic, and regular communication tests performed;
- timely issued Best Practice documents and Guidelines for Tsunami Warning Services, Evacuation and Sheltering during COVID-19;
- IOTWMS Capacity Assessment of Tsunami Preparedness in the Indian Ocean – Status Report 2018 (IOC/2020/TS/143) published based on results of an online survey responded by 21 Member States;
- published Summary Statement (IOC/BRO/2020/1) of the International Symposium on lessons learnt from the 2018 tsunamis in Palu and Sunda Strait organized by UNESCO-IOC during 26–28 September 2019;
- publication of the IOC Manuals and guides 82 "Preparing for community tsunami evacuations: from inundation to evacuation maps, response plans and exercises" (IOC/2020/MG/82);
- four communities in the Caribbean and Adjacent Regions (St. John's City, Antigua and Barbuda; Shermans, St. Lucy to Mullins, St. Peter, Barbados; Union Island, St. Vincent and the Grenadines; and Carenage, Trinidad and Tobago), two communities in the Pacific Ocean (Samara and Tamarindo, Costa Rica), and two communities in the Indian Ocean (Venkatraipur and Noliasahi, Odisha province, India) achieved UNESCO/IOC Tsunami Ready recognition, and growing interest for piloting Tsunami Ready expressed in NEAMTWS;
- successful and widely attended UNDRR IOC World Tsunami Awareness Day (WTAD) 2020 campaign consisting of high-level events, regional webinars, social media visuals, videos, and eyewitness accounts, as well as the creation of 15 videos highlighting countries joining the global Tsunami Ready community;

- designation of ITIC and the Indonesia BMKG as Ocean Teacher Global Academy Specialized Training Centres (OTGA STC) in 2020;

- Progress by Indonesia in their application for ISO certification of a Community Based Early Warning System;

- European Commission's support to the 3-year project project "Strengthening the Resilience of Coastal Communities in the North East Atlantic, Mediterranean Region to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards" contributing to NEAMTWS, UNESCAP funding for the project "Strengthening Tsunami Early Warning in the North West Indian Ocean Region", and ongoing renewal for an additional two years of the support provided by the Government of Australia to the Indian Ocean Tsunami Warning and Mitigation System (IOTWMS) Secretariat Office, hosted by the Bureau of Meteorology.

Welcomes the appointment of the new ICG/NEAMTWS officers for the biennium 2020–2021.

I.

Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (CARIBE-EWS)

Notes the successful conduct of the CARIBE WAVE 20 and CARIBE WAVE 21 exercises with the participation of 98 percent of the Member States and Territories and almost 400,000 people in total despite the COVID-19 pandemic,

Welcomes the decision of organising CARIBE WAVE 22 with 3 scenarios that include (1) a tsunamigenic earthquake along the Muertos Trough south of Dominican Republic, (2) a flank collapse of the Cumbre Vieja Volcano (La Palma, Canary Island), and (3) an off shore event north of Panama along the Northern Panama Deformed Belt,

Recommends that ICG/CARIBE-EWS communities prone to tsunami risk, aspire to become Tsunami Ready, as this recognition includes many aspects of preparedness essential for an effective local tsunami response,

II.

Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas

Endorses the accreditation of the Instituto Português do Mar e da Atmosfera (Portugal) as a fifth Tsunami Service Provider (TSP) in the NEAM region;

Encourages Member States to explore the adaptation of community preparedness and recognition programmes such as Tsunami Ready for the NEAM region, including Tsunami Hazard and Tsunami Evacuation Maps, Plans, and Procedures (TEMPP);

Further encourages Member States to increase the number of seismic and sea-level stations available in North Africa and to share data using bilateral agreements whenever possible;

III.

Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG)

Reiterates that the UN Decade of Ocean Science for Sustainable Development provides a once-in-a-generation opportunity to address and potentially fill capability gaps by leveraging novel sensing platforms, techniques and/or infrastructures in order to more quickly detect, measure, forecast and warn for tsunamis, even from the near-instant they form, and to enhance the preparedness of coastal communities for tsunamis though the UNESCO/IOC Tsunami Ready Programme;

Approves the establishment of the Ocean Decade Tsunami Programme (the programme) and a Scientific Committee to prepare the Draft 10-Year Research, Development and Implementation Plan for this programme with Terms of Reference included as Annex 1;

Approves also the following governance structure for the UN Decade Tsunami Programme:

(i) the TOWS-WG will perform Global Steering Committee functions for the programme;

(ii) a Scientific Committee with an advisory role for the duration of the programme will be established;

(iii) the Scientific Committee will be tasked to develop a Draft 10-Year Research, Development and Implementation Plan for the programme for endorsement by the TOWS-WG at its next meeting;

(iv) the four Intergovernmental Coordination Groups (ICGs) will perform regional Steering Committee functions, including implementing coordinating roles for the regional aspects of the programme;

(v) a special Coalition for Tsunami Ready will be established in collaboration with other critical stakeholders across the UN structure as well as national civil protection agencies and will report to the TOWS-WG on Tsunami Ready aspects of the programme;

Decides that the Draft 10-Year Research, Development and Implementation Plan for the UN Decade Tsunami Programme is dedicated to achieving transformational advances in tsunami detection, measurement and forecasting, including tsunamis generated by non-seismic sources. The programme includes the following focus areas related to tsunami warning capabilities:

- expansion of existing observational systems including seismometers, coastal tide gauges, and deep ocean tsunameters to fill identified gaps;

- deploy new technologies to address observational gaps that cannot be covered by existing networks embracing. This would include the widespread implementation of scientific instrumentation on deep-ocean telecommunications cables as developed by the ITU/WMO/UNESCO-IOC Joint Task Force (JTF) SMART Subsea Cables effort; and submission of a Programme to the UN Decade of Ocean Science for Sustainable Development;

- wide expansion of data access and availability and development of capability for real-time and near-real time sea level, seismic and GNSS-derived land motion data at an appropriate sampling rate and relevant tools to forecast tsunamis from all sources;

- increase access and regularly update the collection of coastal topographic and bathymetric data, in collaboration with the Nippon Foundation-GEBCO Seabed 2030 project, as well as high performance computational capabilities to enable more timely,

accurate and comprehensive tsunami and other coastal hazard forecasts to better advise community response;

- ensure all National Tsunami Warning Centres have access to data, tools and communication platforms, protocols and training to timely and effectively warn coastal and maritime communities threatened by tsunamis and other coastal hazards and are integrated into a multi hazard framework;

Further decides that the Draft 10-Year Research, Development and Implementation Plan for the Ocean Decade Tsunami Programme contribute to achieving the societal outcome 'A Safe Ocean' of the Ocean Decade with the aim of making 100% of communities at risk of tsunami prepared for and resilient to tsunamis by 2030 through the implementation of the UNESCO/IOC Tsunami Ready Programme and other initiatives to include, but not limited to:

- the adoption and continued implementation of the UNESCO-IOC Tsunami Ready Guidelines and Indicators as the international standard for evidence-based community preparedness for tsunamis;

- enhanced access and capacity development for high-resolution near shore bathymetric and topographic data and identification of potential tsunami sources for accurate and improved inundation modelling and evacuation mapping and planning in support of Tsunami Ready communities;

- enhanced integration to minimize tsunami disaster impacts and to enable rapid restoration of socio-economic activities and critical infrastructure services post tsunami impacts;

Encourages Member States to:

(i) provide voluntary financial contributions to the IOC special account and in-kind contributions to support the Ocean Decade Tsunami Programme;

(ii) densify sea level networks capable of Tsunami detection as well as seismic network particularly nearby tsunamigenic sources;

(iii) implement a sample rate of 1 sample/sec. or higher on sea level gauges in order to record and transmit tsunami wave-form data from all seismic and non-seismic sources;

(iv) register National Tsunami Warning Centres (NTWCs) and Tsunami Warning Focal Points (TWFPs) as alerting authorities in the "WMO Alerting Authority Register" via the WMO National Permanent Representative and in follow-up to WMO circular letters;

(v) use best practices in engineering design and construction of evacuation shelters, especially where local tsunami hazards exist;

(vi) include the IOTIC compilation of school Disaster Risk Reduction and preparedness materials as a resource, and especially as part of Tsunami Ready pilots that include schools;

Instructs the regional Intergovernmental Coordination Groups (ICGs) to:

(i) continue the strong collaboration between the IOC and UNDRR for World Tsunami Awareness Day (5 November), noting that the 2021 WTAD will highlight Target F of the Sendai Framework on international cooperation to developing countries through

support to the implementation of their national and local strategies for disaster risk reduction;

(ii) urgently complete the IOC Manual & Guides 74 on the guidelines for the Tsunami Ready recognition programme for widespread distribution to Member States;

(iii) include local source tsunami Standard Operating Procedures as an important component of the UNESCO-IOC Tsunami Ready programme;

(iv) develop standardized trainings that can be delivered online or in person, in particular through the Ocean Teacher Global Academy (OTGA);

(v) with regard to the next Tsunami Symposium, incorporate more diversity in the organizing committee by inclusion of all regions; consider a venue that can accommodate a hybrid meeting that would enable the most people to successfully participate and engage; and explore funding opportunities;

Accepts the reports from the Task Teams on Disaster Management and Preparedness and Watch Operations and instructs them to continue efforts for monitoring and responding to tsunamis generated by non-seismic sources and possible integration into tsunami watch operations;

Extends the tenure of the Working Group on Tsunamis and Other Hazards related to Sea-Level Warning and Mitigation Systems and its Task Teams on: (i) Disaster Management & Preparedness (TTDMP), and (ii) Tsunami Watch Operations (TTTWO), with terms of reference as given in IOC Resolution XXIV-14 [for TOWS-WG], report IOC/TOWS-WG-VI/3, Annex II [for TTDMP] and report IOC/TOWS-WG-X/3, Annex II (Appendix 1) [for TTTWO].

Agrees that the regular budget for these activities will be identified as part of the Resolution on Governance, Programming and Budgeting Matters of the Commission (IOC Resolution A-31/2).

Annex to Dec. A-31/3.4.1

Terms of reference
of the Scientific Committee for the Ocean Decade Tsunami Programme

The Scientific Committee has an advisory role for the duration of the Ocean Decade Tsunami Programme (referred to as the programme).

Membership:

- Four (4) members nominated by the each of the TOWS-WG Task Teams;
- Three (3) members nominated by the TOWS-WG on the basis of their scientific expertise;
- All members will serve for a period of two years and would be eligible for renewal once.
- In selecting Expert Members, due consideration will be given to geographic, generational and gender balance.

The Scientific Committee will:

(i) Develop a Draft 10-Year Research, Development and Implementation Plan for the Ocean Decade Tsunami Programme based on the concept paper “Protecting Communities from the World's Most Dangerous Waves: A Framework for Action under the UN Decade of Ocean Science for Sustainable Development”;

(ii) Identify and address gaps in global tsunami hazard assessment as follows:

a. comprehensive assessment to include all potential tsunamis, anywhere in the world, regardless of their source,

b. strategies to validate historical tsunami sources, through the application of paleotsunami techniques and historical seismology

(iii) Identify gaps in tsunami detection, measurement, forecasting, with a special emphasis on tsunamis generated close to populated coastlines;

(iv) Propose to enhance sensing and analysis strategies to enable the rapid characterization of tsunami sources through the combined use of land-based seismic and geodetic sensors, GNSS terminals, coastal sea level gauges, deep-ocean tsunameters, SMART repeaters on deep-ocean fiber-optic cables and satellite-based observations;

(v) Propose a roadmap for collaboration with the ITU/WMO/IOC SMART Joint Task Force cable initiative to fully explore the feasibility of widespread deployment of scientific instrumentation on deep-ocean fiber-optic cables to improve capability to rapidly detect and characterize tsunami sources as well as propagating tsunami wave fields;

(vi) Consider and propose strategies, programmes and content to enhance societal resilience for tsunami and other ocean hazards;

a. build the framework needed to ensure the training and development of the next generation of technical-scientific expertise,

b. identify strategies that allow to characterize structural and social vulnerability in tsunami hazard zones

(vii) Overview the consolidation of inputs received to IOC Circular Letter 2825 on Inventory of actions being considered under the United Nations Decade of Ocean Science for Sustainable Development (2021–2030) in the field of Tsunamis and Other Sea-Level Related Hazards warning and mitigation;

(viii) Submit a Draft 10-Year Research, Development and Implementation Plan for endorsement by the TOWS-WG at its 15th meeting.