

Executive Summary

The Eighteenth Meeting of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG-XVI) was held in hybrid format (in-person and online), during 24-25 February 2025 under the Chairpersonship of Mr Amr Zakaria Hamouda (IOC Vice-Chair). The meeting evaluated the progress made in respect to the IOC Assembly Decision A-32/4.3.1. and the Decision IOC Executive Council Decision EC-57/3.2.1.

The Group reviewed reports by the IOC Intergovernmental Coordination Groups (ICGs), the Ocean Decade Tsunami Programme Scientific Committee (ODTP-SC) as well as the Task Team on Disaster Management and Preparedness (TT-DMP) and Task Team on Tsunami Watch Operations (TT-TWO) reports.

The Group noted with appreciation the progress made during the intersessional period, including:

- Coordination of the Wave exercises PacWave 24 (September to November 2024), the CARIBEWAVE 24 (21 March 2024), the NEAMWave 23 (6–7 November 2023) and the IOWave23 (4-25 October 2023);
- the continuous engagement of the TT-TWO in developing specialized TSP bulletins for the maritime community in consultation with the International Hydrographic Organisation (IHO) Sub-Committee on the World-Wide Navigational Warning Service (WWNWS-SC);
- the ongoing project of the Atlantic CAM Science Monitoring And Reliable Telecommunications (SMART) Subsea cable off Portugal, TAM TAM SMART cable between New Caledonia and Vanuatu, undersea cable installations being deployed and planned by Indonesia and India, the deployment of the Western Ionian Sea Infrastructure in 2023 in the Mediterranean.
- the number of Member States and communities joining the UNESCO-IOC Tsunami Ready Recognition Programme, with 100 communities from 31 countries already recognized, of which 15 are SIDS;
- publication of the Reports “*Monitoring and Warning for Tsunamis Generated by Volcanoes*. 2024. Paris, UNESCO. ([IOC Technical Series No.183](#)) and “*Meteotsunamis: definition, detection and alerting services investigation*”.2025. Paris, UNESCO. ([IOC Technical Series No.200](#)), and the Summary Statement from the 2nd UNESCO-IOC Global Tsunami Symposium on Two Decades After 2004 Indian Ocean Tsunami: Reflection and Way Forward, Banda Aceh, 11–14 November 2024. Paris. UNESCO ([IOC Brochure 2025-1](#))
- Launch of the UNESCO-IOC Tsunami Awareness and Tsunami Ready online trainings through the [Ocean Teacher Global Academy](#) (OTGA) platform.
- the [Tsunami: Sea Change for Resilience](#), exhibition prepared in partnership with the United Nations Office for Disaster Risk Reduction (UNDRR) and Nautilus, featuring portraits by Matt Porteous and inspiring stories together with the historical and contemporary artworks which commemorate the 20th anniversary of the 2004 Indian Ocean Tsunami; organization of the [20th Anniversary of the 2004 Indian Ocean Tsunami Commemoration Event](#) at the UNESCO Headquarters on 26 November 2024 to reflect on resilience, honour those affected, and reaffirm our commitment to disaster preparedness;

The Group accepted the invitation by UNDRR to co-develop the World Tsunami Awareness Day 2025 Theme connecting the Tsunami Ready Recognition Programme, the Making Cities Resilient Program and the [#GetToHighGround](#) and [#TsunamiReady](#) hashtags to engage citizens on tsunami awareness;

The Group appreciated the development of Inclusive SOP and Inclusive Warning Tools for disabled children in Indonesia and the Caribbean, **recommended** the Indonesian inclusive SOPs to be translated to English and **encouraged** further development of inclusive SOP as official guidelines of UNESCO IOC.

The group noted the revisions on the *Tsunami Watch Operations. Global Service Definition Document*. [IOC Technical Series No. 130](#). Paris: UNESCO. (English) and endorsed the publication of a revised version of the IOC Technical Series No 130, with the updates suggested by the TT-TWO;

The group expressed its strong appreciation to the Government of Indonesia for having successfully co-hosted and organised the 2nd UNESCO-IOC Global Tsunami Symposium on Two Decades After 2004 Indian Ocean Tsunami: Reflection and Way Forward, Banda Aceh, 11–14 November 2024;

The Group recognized that the advancement of Common Alerting Protocols (CAP) implementation globally represents a significant milestone in the Early Warnings for All (EW4All) initiative, and the fact that CAP can be considered as the bridge connecting “observations, monitoring, analysis and forecasting” to “warning dissemination and communication”, and that WMO is able to provide any assistance that may be required in this regard;

The Group instructed the TT-DMP to:

- Prepare a guideline for inclusive Standard Operating Procedures (SOP) building on the development of inclusive SOP and inclusive warning tools for disabled children in Indonesia and the Caribbean;

The Group instructed the TT-TWO to:

- include tsunamis generated by the submarine and subaerial landslides in its work programme and engage with the landslide hazard and early-warning scientific and operational community to address the requirements of the first objective of the ODTP to develop the warning systems’ capability to issue actionable and timely tsunami warnings for tsunamis from all identified sources to 100 percent of coasts at risk;
- develop in collaboration with the WMO a global CAP template for TSPs to facilitate dissemination of bulletins from TSPs to NTWCs, between TSPs of different basins, and for public TSP bulletins, to be presented and approved by the TOWS-WG at its next session;

The Group recommended the IOC Assembly at its 33rd Session in 2025 to **approve** the Tsunami Ready Coalition Implementation Plan as reviewed by the ODTP-SC and the TT-DMP and TT-TWO including:

- The Coalition mandate and terms of reference,
- The Coalition structure, and
- The identified key Coalition Partners.

The Group recommended the IOC Assembly at its 33rd session in 2025 instruct the regional ICGs:

- Establishing arrangements among Tsunami Service Providers (TSP) within each ICG to ensure that service provision is ensured at all times for the full Area of Service of the ICG;
- to develop SOPs for volcanoes with a tsunamigenic potential within their Earthquake Source Zone (ESZ);
- that dissemination of the specialized TSP bulletins for the maritime community is tested in CARIBE-EWS, IOTWMS and NEAMTWS by at least one TSP either through the planned communication tests or tsunami exercises;
- that full operational implementation of TSP bulletins for the maritime community by at least one TSP in each ICG takes place in 2025;

The Group recommended the IOC Assembly at its 33rd session in 2025 recommend the regional ICGs:

- To create relationships between National Meteorological and Hydrological Services (NMHS) and TSPs/NTWCs in order to ensure that tsunami-specific instrumentation including Tsunameters/DART® and ocean cable systems are correctly monitored and utilized for detection of meteotsunami;
- continuation of the investigation and the possibility to adopt tsunami forecasting methods, including probabilistic methodologies, toward impact-based forecasting, that could also assist post-disaster response, recovery and needs assessment processes;
- to prioritize regional Tsunami Ready workshops or summits in 2025 and conduct further workshops or summits before 2030;

The Group recommended the IOC Assembly at its 33rd session in 2025 to **request** the IOC Member States to prioritize installation/deployment of additional coastal tide gauges and tsunami detection/observation systems in regions under high tsunami risk with priority areas with known coverage gaps (in alphabetical order: Aegean Sea, Caribbean Sea (West, North and South-East), Indian Ocean (East and North), North Africa, Philippine Sea, Solomon Sea, South China Sea, Timor Sea, and Yellow Sea), to ensure tsunami detection and verification as early as possible;

The Group further recommended the IOC Assembly at its 33rd session in 2025 to encourage the IOC Member States to monitor the health of their sea level gauges that are used for detecting and monitoring tsunamis, to restore them as quickly as possible when they fail, add sea level gauges when possible and share their data in real time, in places identified by their ICG as gaps;

The Group recommended Member States to invest more in offshore seismic and sea-level detection and observation instrumentation, such as Tsunameter/DART®/GPS buoys/cabled systems (e.g. SMART Cables), where possible, with multi-hazard observational capabilities, serving the needs of earthquake seismology, meteorology and oceanography;

The Group further recommended the IOC Assembly at its 33rd session in 2025 to encourage Member States to provide voluntary financial contributions to the IOC special account and in-kind contributions to support the Ocean Decade Tsunami Programme, the IOC Tsunami Ready Recognition Programme and the Tsunami Ready Coalition.

The Group recommended the IOC Assembly at its 33rd session in 2025 to **request** the IOC Secretariat to:

- inform Member States on the *Tsunami Ready Toolkit* availability via IOC Circular Letter to the Tsunami National Contacts, National Tsunami Ready Boards, and widely through the attaching this as an appendix of the UNESCO-IOC Standard Guidelines for the Tsunami Ready Recognition Programme (IOC MG 74);
- disseminate to the Member States the final version of the below basic tsunami warning product/template for use by the radio amateurs, as a guidance;

At <u>_(XX:XX)_</u> local time a magnitude <u>_X.X_</u> earthquake occurred at <u>_Lat, Lon_</u> with a depth of <u>_X_</u> km, <u>_X km_</u> <u>Direction of (Place)</u> . The <u>_(NTWC)_</u> has issued a tsunami <u>_(level)_</u> for <u>_(Place)_</u> .
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- to finalize the Tsunami Ready Coalition Implementation Plan in consultation with the Tsunami Ready Coalition Chair the Coalition Partners, 'Ambassadors' or similar namesake, and Coalition Co-Chair;
- extend invitations to the proposed Coalition Partners and 'Ambassadors' or similar namesake, and a Coalition Co-chair, and urgently address needed resources;

The Group recommended the IOC Assembly at its 33rd session in 2025 to extend the tenure of the Inter-ICG TT-DMP and TT-TWO and recommended the approval of updated Terms of Reference for the Task Team on Tsunami Disaster Management and Preparedness as included under **Appendix 1**;