



INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
COMMISSION OCÉANOGRAPHIQUE INTERGOUVERNEMENTALE
COMISIÓN OCEANOGRÁFICA INTERGUBERNAMENTAL
МЕЖПРАВИТЕЛЬСТВЕННАЯ ОКЕАНОГРАФИЧЕСКАЯ КОМИССИЯ

اللجنة الدولية الحكومية لعلوم المحيطات

政府间海洋学委员会

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(Available in English only)

IOC/VR/BA/ah
20 November 2023

To : Chairperson of TOWS-WG
Chairpersons of ICG/CARIBE-EWS, ICG/IOTWMS, ICG/NEAMTWS, ICG/PTWS
Chairpersons of GOOS, JCB and IODE
Tsunami National Contact in Chile
Tsunami National Contact in the United States of America
Organizations cooperating with UNESCO/IOC in the field of tsunami warning systems:
CTBTO, FDSN/GSN, GEBCO, IHO, IMO, UNDRR, WMO

Cc. : Chairpersons of Inter-ICG Task Teams
IOC Officers

Subject: Seventeenth Meeting of the Working Group on Tsunamis and Other Hazards related to Sea Level Warning and Mitigation Systems (TOWS-WG-XVII), 22–23 February 2024, Sendai, Japan

Through Resolution XXIV-14, the IOC Assembly at its 24th session (2007) decided on the establishment of a Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG). The group is tasked primarily to advise the IOC Governing Bodies on coordinated development and implementation activities of warning and mitigation systems for tsunamis and other hazards related to sea level of common priority to all Intergovernmental Coordination Groups of Regional Tsunami Warning and Mitigation Systems.

By its Decision [IOC A-32/3.4.1](#) on Warning and Mitigation Systems for Ocean Hazards, the IOC Assembly in June 2023 reaffirmed the need for continued inter-ICG coordination through TOWS and the extended tenure of its two inter-ICG Task Teams on:

- Disaster Management and Preparedness (DMP), and
- Tsunami Watch Operations (TWO).

Both Task Teams are holding meetings on 19–20 February 2024 and will report immediately to TOWS-WG, which in turn will report back to the forthcoming IOC Executive Council in June 2024. Agendas for the two Task Team meetings will be sent out separately to members of the Task Teams.

At this TOWS-WG meeting, the Scientific Committee of the Ocean Decade Tsunami Programme (SC-ODTP), established by the IOC Assembly at its 31st session in 2021, will report on contributions, programmes, projects and activities proposed in the context of the Research, Development and Implementation Plan for the Ocean Decade Tsunami Programme ([IOC Technical Series, 180](#)).

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The Working Group on Tsunamis and Other Hazards related to Sea Level Warning and Mitigation Systems (TOWS-WG) will meet at the [International Research Institute of Disaster Science \(IRIDeS\)](#), Tohoku University, Sendai, Japan, Rooms: 1F - Seminar Room and Multipurpose Hall, on Thursday 22 and Friday 23 February 2024 from 9:00 to 17:00. The working language of the meeting will be English.

Further information and documents will be made available online on the meeting's webpage: <https://oceanexpert.org/event/4016>

You are invited to communicate your availability to attend TOWS-WG-XVII by 20 December 2023 to the IOC Secretariat (attention of a.haidar@unesco.org and cc: b.aliaga@unesco.org).

With the assurances of my highest consideration, I remain,

Yours sincerely,

[signed]

Vladimir Ryabinin
Executive Secretary

Enclosures (3): 1/ Decision IOC A-32/3.4.1 on Warning and Mitigation Systems for Ocean Hazards
2/ TOWS-WG-XVII Provisional Agenda
3/ TOWS-WG-XVII Practical Information Note

IOC Decision A-32/3.4.1 (2023)

Warning and 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-XVI/3s), the IOC Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS-XIII/3s), and the report of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG-XVI),

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

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

- (i) Tsunami exercises conducted in the Caribbean (CARIBE WAVE 22 and CARIBE WAVE 23), and Pacific (PacWave 22) regions;
- (ii) Work of the TOWS-WG *Ad hoc* Teams on Meteotsunamis and Tsunamis Generated by Volcanoes under the Task Team on Tsunami Watch Operations (TT TWO);
- (iii) Continuing expansion of capabilities and services of the Tsunami Service Providers (TSPs) for each region, especially with regards to tsunami events, and including development of new products and capabilities, such as for the maritime community and growing capability in response to tsunamis generated by non-seismic and complex events;
- (iv) Enhancements to monitoring and detection capabilities, such as growing use of GNSS data globally and installation of undersea cable systems (SMART) in the North-eastern Atlantic and Southwest Pacific Oceans;
- (v) the appointment of Dr Laura Kong, Director, International Tsunami Information Center (ITIC as the Chair of the UNESCO/IOC Tsunami Ready Coalition);
- (vi) Continued progress in the implementation of UNESCO/IOC Tsunami Ready in the North-eastern Atlantic, the Mediterranean and connected seas, Indian Ocean, Pacific Ocean, and Caribbean and Adjacent regions;
- (vii) Efforts of the Indian Ocean Tsunami Information Center (IOTIC) and International Tsunami Information Center (ITIC) in preparing Tsunami Awareness, UNESCO/IOC Tsunami Ready and Tsunami Evacuation Maps, Plans and Procedures (TEMPP) training through the Ocean Teacher Global Academy (OTGA) platform and hybrid training workshops and training videos;
- (viii) Initiatives like Hotel Resilient, as a benchmarking and certification of hotels and resorts for disaster risk management (multi-hazard including tsunami) and climate change adaptation, as well as the example for a major hotel in Waikiki, Hawaii, United States;
- (ix) Work of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS) to develop a National Tsunami Warning Centre (NTWC) Competency Framework (2019), and the ITIC's leadership to pilot training courses based on the Framework;

- (x) Activities undertaken by the respective regions for World Tsunami Awareness Day (WTAD) 2022, and as part of this, the strong engagement in the #GetToHighGround Initiative, and the success achieved through United Nations Office of Disaster Risk Reduction (UNDRR) and IOC collaboration;
- (xi) Efforts of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS) and the IOC Secretariat to coordinate and contribute to global initiatives related to Multi-Hazard Early Warning Systems (MHEWS);
- (xii) Continuing collaboration with the International Union of Geodesy and Geophysics (IUGG), World Meteorological Organization (WMO), United Nations Office of Disaster Risk Reduction (UNDRR), International Hydrographic Organization (IHO), and International Maritime Organization (IMO);
- (xiii) The ICG/PTWS for quick implementation of the Interim Hunga Tonga-Hunga Ha'apai (HTHH) Volcano Tsunami Response Procedures by 15 March 2022 (cf. IOC Circular Letter 2882).

Welcomes the appointment of the new ICG/CARIBE EWS Officers for the biennium 2023–2025;

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

Notes with appreciation:

- (i) the planned hosting of a five-day Tides Training Course to be taught in Spanish for both oceanographic and hydrographic organizations jointly organized and funded by the International Hydrographic Organization (IHO), the International Maritime Organization (IMO), and the Intergovernmental Oceanographic Commission (IOC) of UNESCO, 13–17 November 2023, hosted by Costa Rica;
- (ii) NOAA's support to the Puerto Rico Seismic Network (PRSN) for hosting a training workshop for GNSS network operators in the region during the second week of August 2023;
- (iii) the strong cooperation between the Caribbean Tsunami Information Center (CTIC), the Caribbean Office of the International Tsunami Information Center (ITIC-CAR), CARIBE-EWS WG4, Task Teams CARIBE WAVE and Tsunami Ready 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 America and Caribbean Decade Safe Ocean Working Group;
- (iv) the consideration of the Central America Tsunami Advisory Center (CATAC) as a Tsunami Service Provider (TSP) in its 17th Session in 2024 to enable the IOC Executive Council to consider the final admission of CATAC as TSP in June 2024;
- (v) the decision to hold CARIBE WAVE 24 on Thursday 21 March 2024, commencing at 15:00 UTC with two scenarios: (a) an earthquake along the Puerto Rico Trench; and (b) an earthquake along the North Panama Deformed Belt based on the 1882 event;
- (vi) the decision to realign the ICG/CARIBE-EWS Working Groups (WG) around the Sendai Framework for Disaster Risk Reduction, the EW4ALL and the ODTP pillars, including capacity development functions for all;

II. Indian Ocean Tsunami Warning and Mitigation System (IOTWMS)

Notes with appreciation:

- (i) the successful completion and outcomes of Phases 2a and 2b of the UNESCAP funded project “Strengthening tsunami early warning in the North-West Indian Ocean through regional cooperation” and the commencement in 2023 of the Phase 2c of the project;
- (ii) the hosting of the Indian Ocean Tsunami Ready Workshop in Bali, Indonesia, 22–26 November 2022 and the UNESCO/IOC Tsunami Ready recognition of a further nine communities in Indonesia in 2022;
- (iii) IOTWMS plans to undertake a full Capacity Assessment of Tsunami Preparedness in the Indian Ocean in 2024 to evaluate progress of the IOTWMS since the Indian Ocean Tsunami of 2004;
- (iv) IOTWMS plans to hold the 14th session of the ICG/IOTWMS in late 2024 to coincide with the 20th Commemoration of the Indian Ocean Tsunami of 2004 and the offer from the Government of Indonesia to host it;
- (v) the decision to hold the Exercise IOWAVE23 in October of 2023;

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

Decides that warning systems for tsunamis generated by volcanoes should be considered and coordinated as part of the UNESCO/IOC Global tsunami and other Ocean-related Hazards Warning and Mitigation System (GOHWMS), and also when possible be part of a MHEWS;

Acknowledges the WMO request to the WMO-IOC Joint Collaborative Board to review tsunami issues as they relate to meteotsunamis, to clarify the roles and responsibilities for the WMO and UNESCO-IOC, and to determine how best to strengthen collaboration in support of Member States;

Welcomes the organisation of a Global Scientific Symposium and establishment of an Organizing Committee composed of two Co-chairs nominated by the TT-TWO and TT-DMP, the Chair of the ODTP Scientific Committee, a representative from the Indonesian Agency for Meteorology, Climatology and Geophysics (BMKG), a representative of the IUGG-Joint Tsunami Commission, and a representative of each of the Tsunami Information Centres to be hosted by the Government of Indonesia in December 2024 as part of the plans by the ICG/IOTWMS to commemorate the 20th Anniversary of the Indian Ocean Tsunami of 2004;

Decides to endorse the 10-Year Research, Development and Implementation Plan of the Ocean Decade Tsunami Programme as presented in document IOC/A-32/3.4.1.2.Doc(1);

Instructs the regional Intergovernmental Coordination Groups (ICGs) to:

- (i) encourage sea level data is sampled at one second intervals and with the highest available accuracy and transmitted in real-time as a matter of priority, given the critical need to resolve and understand the near-field threat to high at-risk communities where a tsunami generated by non-subduction earthquake sources as well as non-seismic sources (e.g. generated by volcanoes) may arrive in minutes;
- (ii) encourage sea-level network operators to undertake regular and routine calibration of their sea-level monitoring instrumentation, following recommendations of IOC Manuals & Guides 3 and 14 (Volumes I–V);

- (iii) routinely monitor the status of seismic and sea level related observing networks to identify and better help rectify gaps in coverage and free and open data exchange;
- (iv) Consider and implement the recommendations of the Ad Hoc Team on Tsunamis Generated by Volcanoes with respect to the hazard assessment, monitoring and warning requirements, including costs of deploying and maintaining such systems. Where identified tsunamis generated by volcanoes may impact multiple Member States, TSPs for the relevant ocean basin tsunami warning and mitigation systems should consider if they need to be involved in monitoring and provision of threat advice;
- (v) TSPs in collaboration with NAVAREA operators of the International Hydrographic Organization (IHO) test the tsunami maritime safety products in 2023/24, with a view to operationally implementing them in 2024-2025;
- (vi) add the task to the Terms of Reference of the ICGs and TICs to facilitate the implementation and functioning of the UNESCO/IOC Tsunami Ready Recognition Programme;
- (vii) add the role of ICGs as regional Steering Committees for the ODTP in their Terms of Reference;
- (viii) undertake sub-regional exercises as part of WAVE Exercises as an efficient way to further engage Member States on exercises as appropriate;
- (ix) follow the initiative of ICG/PTWS to enable sub-regional live information sharing during tsunami events to inform neighbouring country decision-making;
- (x) investigate mechanisms for recognition of standards mechanisms similar to UNESCO/IOC Tsunami Ready Recognition Programme already in place in some countries and inform the TOWS-WG TT-DMP;
- (xi) Caribbean Tsunami Information Center (CTIC) to share UNESCO/IOC Tsunami Ready survey questionnaire and feedback forms on implementation process to receive information from the UNESCO/IOC Tsunami Ready communities;
- (xii) encourage the standard text in the UNESCO/IOC Tsunami Ready signage for vertical evacuation, such as "Go to the designated building for vertical evacuation";
- (xiii) properly inform the public on the validity of the recognition, as indicated on the UNESCO/IOC Tsunami Ready signage and certificate under the UNESCO/IOC Tsunami Ready logo;
- (xiv) ITIC to pilot the draft PTWS National Tsunami Warning Centre (NTWC) Competency Framework (2019) for endorsement by ICG/PTWS with the goal to develop a global framework for all ICGs to use;

Encourage Member States to provide voluntary financial contributions to the IOC special account and in-kind contributions to support the Ocean Decade Tsunami Programme and UNESCO/IOC Tsunami Ready Recognition Programme;

Requests the IOC Secretariat:

- (i) provide a timelier update of the UNESCO/IOC Tsunami Ready database;
- (ii) explore how to develop an automated application system for UNESCO/IOC Tsunami Ready application and renewal;

- (iii) enhance the renewal process of UNESCO/IOC Tsunami Ready and learning about the renewal experience in the United States TsunamiReady® program;
- (iv) facilitate the finalization of the OTGA basic tsunami training materials as soon as possible to support the UNESCO/IOC Tsunami Ready Recognition Programme;
- (v) develop a paper on the tsunami threat on coasts along the Southern Atlantic Ocean to assist concerned Member States of IOC on the decision to be part of the global Tsunami Warning and Mitigation System;
- (vi) help inform Member States widely on the potential tsunami hazard from volcanoes by distributing the Tsunamis Generated by Volcanoes Report, including the List of Tsunamigenic Volcanoes, to:
 - Volcano Observatories;
 - UNESCO/IOC Member States.

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].

Notes that the regular budget for these activities will be identified as part of the overall Resolution on Governance, Programming and Budgeting matters of the Commission.

Seventeenth Meeting of the Working Group on Tsunamis and Other Hazards related to Sea Level Warning and Mitigation Systems (TOWS-WG-XVII)

22–23 February 2024

PROVISIONAL AGENDA

1. OPENING AND WELCOME

- 1.1 OPENING
- 1.2 ADOPTION OF AGENDA
- 1.3 WORKING ARRANGEMENTS

2. REPORTS FROM PARTICIPANT BODIES

- 2.1 REPORT FROM IOC BODIES
- 2.2 REPORT OF NON-IOC BODIES
 - 2.2.1 World Tsunami Awareness Day (UNDRR)
 - 2.2.2 World Meteorological Organization (WMO)

3. REVIEW OF PROGRESS

- 3.1 STATUS OF IMPLEMENTATION OF IOC DECISION A-32/4.3.1

4. REPORTS OF THE INTER-ICG TASK TEAMS

- 4.1 INTER-ICG TASK TEAM ON DISASTER MANAGEMENT AND PREPAREDNESS
- 4.2 INTER-ICG TASK TEAM ON TSUNAMI WATCH OPERATIONS

5. UN OCEAN DECADE TSUNAMI PROGRAMME

- 5.1 RESEARCH, DEVELOPMENT AND IMPLEMENTATION PLAN FOR THE ODTP
- 5.2 PROGRESS REPORT OF THE SPECIAL TSUNAMI COALITION
- 5.3 PLANS FOR THE 2ND IOC UNESCO SCIENCE SYMPOSIUM ON ADVANCES IN TSUNAMI WARNING TO ENHANCE COMMUNITY RESPONSES

6. OTHER ISSUES

7. DATE AND PLACE OF THE NEXT MEETING

8. CLOSURE

Seventeenth Meeting of the Working Group on Tsunamis and Other Hazards related to Sea Level Warning and Mitigation Systems (TOWS-WG-XVII)

22–23 February 2024

PRACTICAL INFORMATION NOTE

1. Venue:

International Research Institute of Disaster Science (IRIDeS), Tohoku University, Sendai, Japan
Access: <https://irides.tohoku.ac.jp/eng/access/>
Rooms: 1F - Seminar Room and Multipurpose Hall

2. Recommended Hotels

This brief list of easy-to-access hotels, from higher to lower rates per night. There are, of course, more options like [Holiday Inn](#) or [APA](#), etc., but I think the ones below are good options

1. [The Westin Sendai](#)
(600m walk from Sendai Station; from there, it is ~10 min by the subway to IRIDeS. [Rooms](#))
2. [Hotel Metropolitan Sendai](#)
(Right next to Sendai Station, minimum walk)
3. [Hotel Monte Hermana Sendai](#)
(Very close to Sendai Station, ~200m walk, need to cross only one street. [Rooms](#))
4. [Hotel Monterey Sendai](#)
(In front of Sendai Station, ~100m walk. [Rooms](#))
5. [Daiwa Roynet Hotel Sendai-Nishiguchi](#)
(Next to the entrance to Subway Station near Sendai Station. [Rooms](#))
(The same option on the other side of Sendai Station, near Yodobashi Camera, is also possible at [Daiwa Roynet Hotel Sendai](#))
6. [Comfort Hotel Sendai West](#)
(Close to subway entrance near the West Exit of Sendai Station. [Rooms](#))

3. Weather

As Ono Sensei suggested, February is among the coldest months in Sendai, with snow and cold breeze.

You can check a comparison with Paris (or change to other cities) [here](#).



4. Meals

Near IRIDeS for regular meals, the following options are close:

- a. Cafe restaurant ([Buddy's Table](#)) - two buildings next to IRIDeS on the first floor. (best option)
- b. Small Ramen restaurant ([Kotaro](#)) - two buildings next to IRIDeS on the second floor
- c. University Cafeteria ([Midori Shokudo](#)) - in front of IRIDeS
- d. [Univ. COOP Lunch Box & HALAL](#) (Lunch box to order, eating at IRIDeS)