

**MEETING OF THE INTER-ICG TASK TEAM ON DISASTER MANAGEMENT AND PREPAREDNESS**

**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (IOC) - UNESCO**

*Sendai, Japan, 19 - 20 February 2024 – Hybrid*



**June 2024**

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**Day #1: Monday, 19 February 2024, 0900-1730 Local Time (UTC+9)**

# Joint Session of Task Team Tsunami Watch Operations and Task Team Disaster Management and Preparedness

# Welcome & Introductions

The session was jointly opened by Mr Yuji Nishimae (Chair, Task Team on Tsunami Watch Operations – TT TWO) and Dr. Harkunti Rahayu (Chair, Task Team on Disaster Management and Preparedness – TT DMP). Mr Yuji Nishimae expressed his appreciation to the International Research Institute of Disaster Science (IRIDeS) in Sendai, Japan, for hosting the meetings, seminar, field trip, and meeting of the Tsunami Information Centres (TICs). Dr. Harkunti Rahayu advised she was glad to see everybody, including some new faces, and was looking forward to fruitful discussions over the next few days.

Mr Bernardo Aliaga (Head, UNESCO-IOC Tsunami Resilience Section – TSR) welcomed everybody on behalf of UNESCO-IOC and the TSR. He also expressed appreciation to IRIDeS. He noted the tsunami warning and mitigation community was at a turning point, from the start in 2004 to a much bigger international community now, with scientists, warning specialists and disaster managers engaged and working together. Much progress has been made at each annual meeting of the TOWS-WG Task Teams over the years. TSR has had its budget doubled within IOC, allowing for some more activities to be supported. But many more challenges have also been identified that need addressing.

Dr. Yuichi Ono, Deputy Director of IRIDeS, gave a brief history of the institute, which was established following the devastating Tohoku earthquake and tsunami of 2011. He also gave a history of how Japan supported the development of the Indian Ocean Tsunami Warning and Mitigation System (IOTWMS) in its early stages.

Participants of both task teams introduced themselves.

# Session Organisation

The chairs noted the first day is a joint meeting between TT DMP and TT TWO and they would co-chair the sessions. On the second day the two task teams were to meet separately. The logistics for the meetings were explained, including how to join online, and information was provided on the local arrangements. The provisional agenda was tabled and approved.

# Wave Exercises and Significant Tsunami Events in each ICG

**CARIBE WAVE**

Dr. Silvia Chacón-Barrantes reported on the CARIBE Wave 23, held on March 23, 2023, to test the tsunami warning systems and promote tsunami preparedness. Member States and Territories participated in two earthquake tsunami scenarios. One scenario in the Gulf of Honduras and the second a volcano generated tsunami in Mount Pelée. In the Caribbean and Adjacent Regions, 43 Member States and Territories participated, with a total of over 430,000 people engaged. The participation of Member States decreased to 90% from 100% in 2022. The most common method from which Member States received a message was via email and fax. The World Meteorological Organization Global Telecommunication Information System (GTS) was also a method used in bulletin communication.

CARIBE EWS conducted a hot wash on 4 April 2023 to discuss outcomes and recommendations in the CARIBEWave exercise. Key lessons learned include competing activities; for example, the exercise was conducted on the same day as the World Meteorology Day. This was particularly a challenge, considering that about one-third of TWFPs are Meteorological Services. Key considerations include the integration of social science and community involvement, better engagement with social scientists, the disabled, the elderly, youth, and other vulnerable groups, and continuing to test the RTSP and national capacities for non-seismic tsunamis.

**NEAMWAVE**

Dr. Marinos Charalampakis reported on the regional tsunami exercise (NEAMWave23) conducted on November 6–7, 2023. The exercise was conducted using two joint scenarios by Tsunami Service Providers—one in the North-eastern Atlantic and the other in the Mediterranean. The North-eastern Atlantic scenario was conducted by IPMA (Portugal) and CENALT (France) on the 6th, and the Mediterranean Sea scenario was jointly conducted by INGV (Italy), NOA (Greece), and KOERI (Türkiye) on the 7th of November. The exercise was also a contribution to the WTAD on November 5, 2023.

A key objective of the exercise was the involvement of Member States of the IOC/EU DG ECHO CoastWAVE project and those of other non-project countries. This exercise was designed to test the efficiency and abilities of the pilot IOC-UNESCO Tsunami Ready communities to respond in a complex and realistic situation, overcoming any challenges that may arise. Among several products prepared for the exercise is the “NEAMWave Exercise Information Brief” leaflet, which explains the general objectives, benefits and outcomes of the exercise. The exercise had the participation of 18 Member States, from which 10 participated in Phase A (TSP Level) and 16 in Phase B (CPA Level). For the first time, NEAMWave 23 exercises were also conducted at the local community level in all seven pilot "Tsunami Ready" CoastWAVE project countries (Cyprus, Egypt, Greece, Malta, Morocco, Türkiye, and Spain). Tsunami exercises were also conducted in Italy, France, and Portugal (non-project countries). An exercise evaluation report is under preparation to be finalized and presented at the ICG/NEAMTWS-IXX session.

Early evaluation results highlight improvement of National tsunami warning messages, more active involvement of the Civil Protection Authorities, promotion of self-protection in sectors with activity on the coast and at sea, against tsunami risk and questioned the usefulness or not of old-fashioned dissemination messages, such as those via fax. Preliminary recommendations include disassociating NEAMWave exercise from WTAD, considering there are many activities organized during the WTAD and to target October 13th, the International Day for Disaster Risk Reduction, or in March as a semi-annual complimentary activity. An important recommendation is to continue with joint scenarios to strengthen cooperation among the five TSPs, as well as organizing targeted workshops for different types of participants.

**IOWAVE**

Mr. Ardito Kodijat reported on the IOWAVE23 exercise conducted on 4, 11, 18, and 25 October 2023. The exercise consisted of four scenarios, each conducted on separate dates. 19 Member States participated in the IOWAVE23. All National Tsunami Warning Centres (NTWCs) and Disaster Management Organizations (DMOs) were involved in the exercise. The exercise was also conducted down to the community level in 8 Member States, including specific testing of the UNESCO-IOC Tsunami Ready indicators in at least 7 Member States. Around 45,000 people participated in evacuation drills, including all genders, children, elderly, and people with disabilities. One of the three Tsunami Service Providers (TSP-Australia) issued new products for tsunamis generated by non-seismic sources (such as for the scenario of a tsunami generated by a Herard Island volcano). With a growing focus on making 100% of at-risk communities prepared and resilient to tsunamis by 2030 in line with the goals of the ODTP, Tsunami Ready training was undertaken in the Seychelles and Timor Leste.

**PACWAVE**

Dr. Laura Kong, National Oceanic and Atmospheric Administration (NOAA, USA) provided a report on the upcoming PacWave 2024 exercise. At the ICG/PTWS 30th Session, 11-15 September 2023, it was approved to conduct the Pacific Wave exercise in 2024 (PacWave 24) in the months of September through to November 2024 to support the International Disaster Risk Reduction Day (13 October) and World Tsunami Awareness Day (5 November).

The aim of the PacWave24 is to test PTWS Tsunami Service Provider (TSP) arrangements, and country preparedness arrangements and operational procedures to respond and recover from a destructive tsunami. The exercise objectives are to:

1. Test communications from the PTWS Tsunami Service Providers to Tsunami Warning.
2. Test Focal Points and National Tsunami Warning Centers of Member States.
3. Test national communication and cooperation, and readiness within the country.
4. Test regional communication and cooperation between Member States.

The possible scenarios will be up to the country or region. It may use past PacWave scenarios and TsuCAT (PTWC messages). The IOC Circular Letter Announcement is expected on 31 January 2024.

The ICG/PTWS reported four Regional Working Groups that conducted regional exercise in the period between WAVE exercises. Among the feedback and things to improve from PACWAVE22 include to encourage people evacuation and promotion of the event.

***Significant Tsunami Events in each ICG***

**CARIBE EWS**

Dr. Elizabeth Vanacore from the Intergovernmental Coordination Group (ICG) for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (CARIBE EWS) advised there were no significant tsunami events in the region during 2023.

**IOTWMS**

Mr Jijjavarapu Padmanabham from the ICG for the Indian Ocean tsunami warning and Mitigation System (IOTWMS) reported on two events in 2023 in the Indian Ocean region, which the three (3) Tsunami Service Providers (TSPs) operated by Australia, India and Indonesia successfully issued bulletins to all National Tsunami Warning Centres (NTWCs)s. The ICG/IOTWMS Key Performance Indicators (KPIs) for the TSPs showed all three were performing well. He also noted communications tests between TSPs and NTWCs using emails, Global Telecommunications System (GTS) of the World Meteorological Organisation (WMO), SMS, and faxes are held every six (6) months, but only for June in 2023 due to Exercise IOWave23 in Oct 2023. Feedback and any issues from all communications tests are followed up with the help of the ICG/IOTWMS Secretariat.

**NEAMTWS**

Dr. Helene Hubert from the ICG for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and connected seas (ICG/NEAMTWS) reported on monthly communication tests being undertaken by the five (5) TSPs (France, Greece, Italy, Portugal, Türkiye), but noted NTWCs of many Member States did not participate. Dr. Hubert noted concerns about the capacity to receive threat information for real events. The WMO GTS is not used very much to share information. During 2023 there were eleven (11) earthquakes that required a response by the TSPs mostly at information level, except the aftershock near Türkiye during February 2023. A lot of discussions then followed about the February 2023 Türkiye event, where watch level information was distributed by the TSPs. Italy was very concerned the decision matrix was not fully effective and this is currently under review by ICG/NEAMTWS.

**PTWS**

Mr Yuji Nishimae from the ICG for the Pacific Tsunami Warning and Mitigation System (PTWS) reported on events in the Pacific Ocean. The Pacific Tsunami Warning Centre (PTWC) operated by the USA issued 65 bulletins, of which 31 were at threat level and 34 at information level. The South China Sea Tsunami Advisory Centre (SCSTAC) operated by China issued bulletins for ten (10) events. The most serious event for the Pacific region occurred on 1 January 2024 due to a magnitude 7.6M earthquake near Japan (Noto Area, Ishikawa Prefecture) that resulted in a 5.8m runup and bulletins issued by the North-West Pacific Tsunami Advisory Centre (NWPTAC) operated by Japan. On 19 May 2023 a M7.7 earthquake resulted in seven (7) threat messages being issued by PTWC and a wave of 0.61m height was observed in Vanuatu. On 2 December 2023 a M7.6 earthquake resulted in the PTWC issuing five (5) bulletins including three (3) threat messages. Due to the Torishima Island high seismic activity, on 5 October a M.5M earthquake resulted in NWPTAC issuing advisories. A tsunami was observed on tide-gauges. It was a strange event, as P and S waves were not clear. NWPTAC found it difficult to determine the source parameters, including magnitude. A lot of T-Phase waves were observed (with matching and corresponding travel times of tsunami waves) that usually correspond to eruptions, but there was no evidence of underwater eruptions. Accordingly, the Japan Meteorological Agency (JMA) who operate the NWPTAC could not forecast tsunami height and arrival time, so issued tsunami advisories based on actual observations. PTWC on 8 October issued five (5) advisories due to an estimated M 5.0 earthquake, which is usually not expected to generate a tsunami.

Dr. Srinivasa Kumar Tummala (Chair of the TOWS-WG) posed the question whether we need a procedure for issues like this with amplification by swarms of earthquakes. In a recent publication on the event, a piston-type phenomenon was suggested as the mechanism to amplify the tsunami wave to about 0.7m (i.e. above the 0.5m threshold for issuing threat bulletins).

Discussions then highlighted the need and value for extra monitoring of sea level changes in line with the Research and Development Implementation Plan (RDIP) of the Ocean Decade Tsunami Programme. (ODTP). Mr Rick Bailey drew attention to an earlier TOWS-WG Task Team on Sea Level for Tsunami, which he chaired and which previously recommended data formats and resolutions for monitoring and warning for tsunamis. Dr. Helene Hubert raised the question of how will Science Monitoring And Reliable Telecommunications (SMART) cable data be made available? The session noted that if in general we are successful in increasing the amount and type of data as per the RDIP, with more data there will be more costs associated with collection and data transmission in real-time. Discussions stressed the value of multi-hazard frameworks to help share costs, which requires enhanced collaboration at national and international levels. It was noted there will be a need to strengthen collaboration with other organisations in doing this, e.g. through the Joint WMO/IOC Collaboration Board (JCB) and TOWS-WG itself. John Parker (observer from WMO) supported the multi-hazard approach, which is also being supported by WMO.

**Recommendations to TOWS-WG**

**Appreciates** the exercises conducted in the Caribbean on March 23, 2023 (CARIBE WAVE), the Indian Ocean on 4, 11, 18, and 25 October (IOWave23) and the North-eastern Atlantic, the Mediterranean, and connected seas on November 5–6, 2023 (NEAMWave 23).

**Notes** that the regional/sub-regional exercise in the Pacific (PacWave24) is planned between 1 September 1 and 30 November 2024.

**Recommends** the CARIBE-EWS share methodology and documents concerning the registration of participants in CARIBE Wave exercises.

**Recommends** ICGs consider performing exercises during the night but being careful to take into consideration difficulties and possible issues of involving the public in night-time drills.

**Notes** the increasing challenges in receipt success and cost concerning the use of fax in disseminating and receiving tsunami threat information from TSPs.

**Requests** Secretariat advise all Member States via Circular Letter that TSP fax transmissions of tsunami threat information will cease from 6 months of CL date, unless Member States advise within 3 months that fax transmissions of tsunami threat information are essential for NTWC functions and there is no other back-up.

# Planning for Ocean Decade

## Planning for Ocean Decade

Dr. Srinivasa Kumar Tummala recalled in June 2021, UNESCO-IOC approved the Ocean Decade Tsunami Programme (ODTP) in response to the call to action by the Ocean Decade to reduce the uncertainty and warning time for the tsunami forecast and preparedness of coastal communities. Also, a Scientific Committee was constituted to develop a draft 10-year Research and, Development and Implementation Plan (RDIP) for the ODTP to achieve transformational advances in tsunami detection, measurement, and forecasting, and enhance community preparedness and resilience to tsunamis.

The joint session began discussions on how the UN Ocean Decade and the ODTP could be greater utilised to enhance tsunami warning and mitigation systems. This included the need for coordination within and across ICGs with regards to UN Ocean Decade Calls for Action to help ensure projects and programmes are developed and supported for the ODTP.

## Ocean Decade: Safe Ocean (Resilient Communities Actions)

Dr. Denis Chang Seng, Technical Secretary of ICG/NEAMTWS and Focal Point for ODTP and DCU provided a [report](https://oceanexpert.org/document/33770) on the Ocean Decade Endorsed Actions Related to Challenge 6 and the Ocean Decade Tsunami Programme (ODTP). He pointed out that the percentage of endorsed actions for challenge 6 on “Increase Community Resilience to Coastal Hazards” is 6.4 %, it represents the lowest number from all the Ocean Decade challenges. For instance Challenge 2 (14.8%) and Challenge 9 (14.9%) have the highest percentage of endorsed actions.

Small Island Developing States (SIDS) and Least Developed Countries (LDCs) have the lowest Decade Action leadership percentages. There have been six calls for Decade Actions, the last one focused on co-design ideas from Africa and Caribbean SIDS. However, the 6th call did not attract any new action proposals related to the ODTP. According to the analysis conducted by the TSR, there are 12 endorsed actions related to Challenge 6 and the ODTP.

Among the 12 endorsed actions, 6 are projects and 5 are contributions. The IOC UNESCO EU DG ECHO CoastWAVE project is one of the endorsed project ocean decade actions. He noted that some of the endorsed actions address mixed challenges. There are currently 5 endorsed actions targeting all the ocean basins, 2 in the NEAM and Indian ocean and 4 on connected basins (North Atlantic Ocean, Caribbean Sea, North Pacific Ocean, North Mediterranean and Red Sea). There is also a gap in endorsed actions by EWS elements.

Based on the recommendation of ODTP-RDIP, new analysis will be carried out in accordance with ODTP structure on: risk knowledge, detection, analysis and forecasting; warning and dissemination; communication, preparedness and response capabilities; and capacity development, and Governance.

## Ocean Decade Tsunami Programme

Mr Rick Bailey reminded the meeting that the ODTP does not represent all of the tsunami warning and mitigation system work coordinated and implemented under IOC. The ODTP concentrates on two value-added goals: 1) Enhanced timing and accuracy of tsunami warnings; and 2) 100% at-risk communities prepared and resilient to tsunamis.

Mr Bernardo Aliaga reported that the ODTP RDIP has been finalised and published, including a separate Executive Summary, in six (6) languages. A short video is also available on the IOC website. The Secretariat has started to communicate with several agencies to ensure everybody is aware and able to support the two goals of the ODTP.

## Actioning 10-Year Research and Development Implementation Plan for the ODTP

Dr. Srinivasa Kumar Tummala reported that the documents on the RDIP are available online, including the meeting website for this session. He described the role of the ODTP Science Committee (SC), its Terms-of-Reference (ToRs), and its members, which include two (2) representatives from each ICG and three (3) external experts. It acts as an advisory role for the ODTP. The RDIP is the most important delivery so far, looking at the four pillars, identifying gaps and what needs to be done, and what the indicators might be for measuring progress. Dr. Srinivasa Kumar Tummala reminded the meeting again of the two goals of the ODTP and some of the challenges for each pillar, what are the tools we need to have, as well as the governance and capacity building needs.

Dr. Dakui Wang asked how will the RDIP be harmonised and integrated within a MHEWS framework? Have any Member States achieved MHEWS? Dr. Srinivasa Kumar Tummala responded that the RDIP specifically mentions MHEWS but has of course a focus on tsunami. Tsunami warning and mitigation systems should feed into MHEWS, with for example each sensor deployment is useful for muti-hazard purposes. Capacity building could also have a multi-hazard focus. There are already centres that provide other services together with tsunami, e.g. INCOIS in India (tsunami, storm surge, and utilise CAP to issue multi-hazard products in similar formats, etc. Dr. Sarah Grimes (observer from WMO) reported the WMO Coastal Forecasting Initiative utilises multiple data and forecast sources, but importantly it’s the final public element warnings that need integration for all hazards, regardless of source.

## Report of last Science Committee Meeting

Dr. Srinivasa Kumar Tummala (Chair of the ODTP SC) reported on its last meeting in Paris in January 2024, where it reviewed how far we have progressed and how do we move forward. The meeting reviewed the OD Call for Actions, WG6 White Paper, and ICG relevant activities. The need was noted to utilise the strength of IOC to build capacity, including utilising ECOPS.

Dr. Srinivasa Kumar Tummala reviewed the Calls for Decade Actions that relate to ODTP and discussed how to leverage the Ocean Decade Capacity Development Facility (ODCDF). He noted the need to position and pitch requirements and resources to future OD Calls. The capacity assessments planned for the IOTWMS and PTWS should be shared with the ODCDF to help match activities.

The list of related and endorsed Decade Actions tabled under Challenge 6 was reviewed. It was deemed to be not very comprehensive. There is a need to identify gaps and work harder with Member States with regards to future Calls to help match needs and resources. Conversely, there are a number of national projects that already do exist and not necessarily listed as OD actions. Often Member States may not think some projects are transformative, such as installing two new tide-gauges. But this may add accumulatively to a transformation. A need was identified to improve communications between the Decade Collaborative Centres (DCCs), TRS, and ICGs to hopefully end up with more submissions.

A mechanism is required to monitor progress on related initiatives in ICGs and how to map onto and link with the ODTP RDIP. There is a further requirement to align with the Global KPI framework being developed by TOWS-WG. ICGs need to report progress against the RDIP through a portal that needs to be developed by the IOC TRS.

A Coastal Futures Resilient Side Event with tsunami presentations/contributions will be held at the next Ocean Decade Conference to be held in Barcelona in April 2024.

## Update on Tsunami Ready Coalition

Dr. Laura Kong provided an update on the Tsunami Ready Coalition. She is invited to deliver a talk at the 2024 Ocean Decade Conference Satellite event organized by the Tsunami Resilience Section on Coastal Cities and Communities Joining Tsunami Ready programme.

**Recommendations to TOWS-WG**

**Notes with appreciation** the continuing work of the Ocean Decade Tsunami Programme Science Committee (ODTP) led by Srinivasa Kumar Tummala.

**Notes** the ODTP does not include all aspects of the UNESCO-IOC Tsunami Programme, but focuses on the enhancements represented by the goals: 1) 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 ; and 2) 100 percent of communities at risk to be prepared and resilient to tsunamis by 2030 through efforts like the IOC-UNESCO Tsunami Ready Recognition Programme (TRRP),Enhanced timing and accuracy of tsunami warnings; and 2) 100% at-risk coastal communities prepared and resilient against the tsunami threat by 2030.

**Notes** the gaps identified by the Secretariat for Ocean Decade Challenge 6 on “Increase Coastal Resilience to Natural Ocean Hazards” and actions related to the ODTP.

**Recommends** the Secretariat work closely with the Decade Coordination Unit (DCU), keep track of future Ocean Decade calls, and improve communication with DCU on tsunami community needs and requirements.

**Requests** the Secretariat to facilitate socialization and advice to the ICGs on the Ocean Decade processes and opportunities, such as Calls for Action.

**Encourages** ICGs, Secretariat, and Member States to consider submitting coordinated Ocean Decade actions in future calls on Challenge 6 on Coastal Resilience to Natural Hazards that contribute to the goals of the Ocean Decade Tsunami Programme, including identification of and submission of existing projects that may align with the ODTP.

**Recommends** IOC collaborate more closely with WMO to connect tsunami activities with the MHEWS and EW4ALL initiatives, such as the WMO Coastal Inundation Initiative that is an example of a multi-activity addressing coastal inundation, no matter the source of the inundation.

**Requests** the IOC/WMO Joint Collaborative Board (JCB) explicitly explore opportunities for IOC and WMO to further collaborate on MHEW framework, noting TOWS-WG Terms-of-Reference cover tsunamis and other sea level related hazards.

**Notes** that a Draft Vision 2030 White Paper Challenge 6 on increasing community resilience to ocean hazards is now available for public review.

**Encourages** TOWS WG and TTs members to review the Ocean Decade Vision 2030 White Paper and provide comments by February 20242.

**Requests** the TT TWO and TT DMP to develop KPIs for the relevant sections of the ODTP Research & Development Implementation Plan (RDIP) to monitor progress.

**Requests** the Secretariat develop a reporting mechanism to allow ICGs to report progress on related projects within the Ocean Decade and against the ODTP RDIP KPIs, aligning this with the proposed Global KPI Framework for the UNESCO-IOC Tsunami Programme.

# Local Source SOPs (Status and coordination of advice each ICG)

Mr Rick Bailey advised the report of the *Ad Hoc* Task Team on Tsunamis Generated by Volcanoes has been published in the UNESCO-IOC Technical Series (TS183). A copy is available on the meeting web site. He presented the recommendations from the report. A research paper based on the report has also been submitted to the Journal of Pure and Applied Geophysics (PAGEOPH).

**Recommendations to TOWS-WG**

**Notes** **with appreciation** the UNESCO-IOC Technical Report 183 published by the TT TWO Ad Hoc Team on Tsunamis Generated by Volcanoes (TGV) led by Francois Schindele and the research paper submitted to the Journal of Pure and Applied Geophysics (PAGEOPH)

**Requests** the Secretariat:

**a.**    Provide the TGV Report, including the List of Tsunamigenic Volcanoes to Volcano Observatories

**b.**    Provide the TGV Report, including the List of Tsunamigenic Volcanoes to UNESCO/IOC Member States

**c.**    Organize online webinars for each ICG and involving relevant Volcano Observatories and VAACs to:

·       Brief on the TGV report and its recommendations,

·       Highlight the hazard and vulnerable Member States,

·       Initiate the required partnerships between NTWCs and volcano observatories and VAACs,

·       Initiate consideration of whether TSPs may also need provide services where TGV hazard may impact several Member States

**Requests** the TT TWO to review existing SOPs and develop general guidelines on SOPs to warn for TGVs for NTWCs and TSPs.

**Notes** the progress of the *Ad Hoc* Team on Meteotsunamis led by Mike Angove in consultation with representatives from WMO and work still required to complete the report.

**Requests** the *Ad Hoc* Team on Meteotsunamis complete a Draft of the report for offline review by the TOWS-WG to be utilized as background information for consideration of the recommendations by the next meeting of IOC/WMO JCB in September third quarter of 2024.

# Training Update on PTWS NTWC Competency Framework and Development of Global Framework

Dr. Laura Kong gave a history of how the PTWS NTWC competency framework has developed and endorsed recently by the ICG/PTWS at its last meeting. Competencies are based on 1) Knowledge of science; 2) Operations (core and advanced operations); 3) National requirements (relative to what’s required nationally to deliver a service). Existing schema were researched from several countries (US, Australia, Chile, NZ, and India).

TOWS-WG XVI recognised competencies were important and recommended a pilot be undertaken (given resources available) in the PTWS prior to possible global implementation of the framework. Resources have been acquired and a pilot will go ahead for the ICG/PTWS in 2024/25. With regards to TOWS-WG recommendation to follow WMO processes for certification, it is considered potentially beyond IOC’s current capability and resources. ICG/PTWS is looking to utilise existing training materials of the UNESCO-IOC Ocean Teacher Global Academy (OTGA) and PTWC to develop competency training modules. An implementation timeline was tabled, which includes the piloting of one country from PTWS Pacific Island Countries and Territories Working Group (PICT WG) in 2025.

Dr. Harkunti Rahayu asked who this competency training is targeted for, and how does this relate to the proposed capacity assessments to be undertaken by IOTWMS and PTWS. Dr. Laura Kiong responded it was originally focused on PICT meteorological services, who’s meteorologists are used to competency training for provision of meteorological services.

Dr. Denis Chang Seng asked what does global mean, as it may be a challenge for NEAMS to implement? Mr Rick Bailey recalled TOWS-WG and IOC Executive Council have instructed a framework be implemented globally.

Dr. Sarah Grimes (observer from WMO) mentioned the Marine Weather Services competency framework at WMO, which provides a tool kit for getting Member States to utilise and implement it (e.g. PICTs). This could be a touch point where IOC and WMO can support each other.

Dr. Srinivasa Kumar Tummala noted the UNESCO-IOC OTGA specialised centres have much of the capability, along with TICs to make a course. What is required is a database of what’s been done so far.

Mr Rick Bailey reminded the meeting that competencies are not about what you know, but what you do with what you know, especially in a warning situation. Within IOC it would be about providing guidance to TSP and NTWCs globally about best practice, building on the experience of WMO. It is guidance, not IOC certification of TSP and NTWCs.

**Recommendations to TOWS-WG**

**Notes** the importance of NTWC staff competency frameworks and training in support of the efficient and effective development and dissemination of tsunami threat information and warnings.

**Notes with appreciation** the work of Laura Kong of ITIC and the ICG/PTWS in the development of a PTWS NTWC Competency Framework.

**Recommends** the TT TWO contributes to the evaluation of the pilot training to be provided to Pacific Island Countries and Territories (PICTs) by ICG/PTWS and ITIC in 2025 to facilitate development of a global framework for endorsement by TOWS-WG.

**Acknowledging** the OTGA Specialized Regional Training Centre operated by INCOIS in India has already developed and delivered competency training for NTWC staff from Oman.

**Recommends** ITIC and the OTGA Regional/Specialized Training Centres support the development and delivery of curated course content training programmes in support of the global framework for NTWC staff competencies.

**Notes** IOC will not be looking in the first instance to use the PTWS or Global NTWC Competency Framework for IOC certification of NTWC competencies.

# Tsunami Glossary Update

Dr. Laura Kong, NOAA USA, provided a report on the update of the Tsunami Glossary. The Glossary was first published in 1991 (IOC TS 37) and has gone through several revisions in 2004, 2008, 2016, and 2019. TOWS WG XVI meeting in 2023 at UNESCO Headquarters in Paris, France approved to conduct another revision of the document. IOC is currently completing the final layout of the Tsunami Glossary document for publishing.

Key updates to the document include a clarification of definitions to meteotsunami and arrival time. The revised document includes maps and tables for global, regional, and deadly tsunamis. It has simplified the tsunami generation theory and tsunami numerical modeling. It includes new definitions such as lamb wave, Tsunami Ready Recognition Programme (TRRP), and volcanic tsunamis.

The IUGG JTC and ITIC will undertake a review of the Tsunami Glossary once the final layout is completed by the IOC. The review will define if the existing 2023 tsunami glossary is sufficient to meet the needs of the scientific community, tsunami stakeholders, and other practitioners, or if a new version is required.

**Recommendations to TOWS-WG**

**Notes** the progress achieved in the revision concerning the Tsunami Glossary 2023 (IOC/2008/TS/85 rev 5) concerning clarifying definitions (e.g., meteotsunamis, arrival time) and updates (e.g., global, regional, deadly tsunami maps, tables, tsunami service provider, edits, and simplifying), as well as addressing new terms, including Lamb Wave, Tsunami Ready Recognition Programme, and volcanic tsunamis, and that the IOC is working to finalize the layout for publishing in 2024.

**Recommends** two versions be developed for future publications, including a more general level version for public stakeholder use.

**Notes** the concerns of WMO on the term and definition of meteotsunami.

**Requests** the TT TWO *Ad Hoc* Team on Meteotsunamis in consultation with WMO to review the term and definition of meteotsunami for endorsement consideration by TOWS-WG and to inform discussions on this topic in consideration by the IOC/WMO JCB, taking into account the historical derivation and use of the term, any potential confusion with other existing products/services, and the public understanding of any associated warnings, with a view to updating the Tsunami Glossary. before publication in 2024.

# IUGG Update

Dr. Laura Kong, NOAA USA, provided an update on the International Union for Geodesy and Geophysics (IUGG). The IUGG aims to promote the exchange of scientific and technical information about tsunamis among nations concerned with the tsunami hazard. Members of the IUGG Joint Tsunami Commission (JTC) have been involved in several activities and meetings in the tsunami community including the OTDP Scientific Committee meeting (January 2024), the PTWS Tsunami Symposium (ICG/PTWS-XXX, Tonga, 2023), and the 8th Joint ICG/PTWS-IUGG/JTC Technical Workshop (Sept 2023). The later highlighted lessons learned about the tsunami generated by the Hunga Tonga-Hunga Ha'apai volcano eruption on 15 January 2022 for the development of a Tsunami Warning and Mitigation System for tsunamis generated by volcanoes and other non-seismic sources.

The IUGG JTC have been active in the Drafting of two important TOWS Ad Hoc TT reports such as the Tsunami Generated by Volcanoes (TGV) and the Meteotsunami reports. Important publications of the IUGG JTC include: (1) Tonga Volcanic Eruption 2022: Topical collection in Pure and Applied Geophysics (PAGEOPH); and (2) Turkey-2023 Earthquake and Tsunami: Topical collection in Pure and Applied Geophysics (PAGEOPH).

Upcoming events of IUGG include the 3rd World Conference on Meteotsunamis, 13-17 October 2024, Türkiye and the IOC 2nd Global Tsunami Symposium, 11-14 Nov 2024, Banda Aceh.

At the JTC Business Meeting in July 2023, Dr. T. Srinivasa Kumar (Director, Indian National Centre for Ocean Information Service, INCOIS), announced their candidacy for hosting the next International Tsunami Symposium in 2025 at Hyderabad, India. The candidacy was voted favorably by the JTC members.

**Recommendations to TOWS-WG**

**Appreciates** the update on the IUGG meetings organized in 2023-2024, including the participation of IUGG members on the UN Ocean Decade Tsunami Programme Scientific Committee in Paris on January 25, 2024, collaboration in organizing the 8th Joint IOC ICG/PTWS - IUGG JTC Technical Workshop on Understanding and Lessons Learned from Tsunami Generated by the Hunga Tonga - Hunga Ha’apai Volcano Eruption on 15 January 2022, expected participation in the 2nd Global Tsunami Symposium in November 2024, and contributions towards several reports, including UNESCO-IOC Tsunami Generated by Volcanoes Report.

**Notes** that Srinivasa Kumar Tummala (Director, Indian National Centre for Ocean Information Service, INCOIS) announced India’s candidacy for hosting the ITS 2025 in Hyderabad, India.

# Update UN Sec General “Early Warnings For All” Initiative Public Warning Systems

Dr. Ocal Necmioglu discussed how the IOC Tsunami Programme can contribute to EW4ALL.

It was noted that the focus of EW4ALL is on meteo-climate services, but TWS can contribute to understanding of the challenges, solutions, infrastructure, etc. This demonstrates the need for ongoing and closer collaboration between IOC and WMO.

Mr Rick Bailey mentioned the forensic review of national tsunami warning chains of 24 Member States of the IOTWMS will support EW4ALL by helping make sure enhancements to processes and warnings communications/infrastructures- for tsunami can benefit hydro-meteo services. Vice versa, large funding for EW4ALL may help address issues for tsunami warning chains.

Mr Jiuta Korovulavula reported during 29 February – 1 March there will be two-day consultation in Fiji led by UNDP and facilitated by UNDRR, with support Global Climate Fund (GCF), across the four (4) pillars that include WMO and International telecommunications Union (ITU). Learnings for all from this on the process.

Dr. Denis Chang Seng advised there are many other countries not on the EW4ALL priority list, so we can help support those.

**Recommendations to TOWS-WG**

**Notes** the UN EW4ALL initiative currently focuses on meteorological and climate warning systems, although inclusion of geophysical related hazards like tsunami may be possible.

(Alternative text to above paragraph if WMO Geneva confirms tsunami are included:

**Notes** that the UN EW4All development approach is to focus and adapt to specific country needs engagement and ownership with regards to their priority hazards and areas of work).

**Noting further** that tsunami hazard was already identified by a number of countries, especially SIDS, as part of their priority hazards.

**Noting further** that tsunami warnings should be disseminated in CAP format.

**Notes** capacity development and enhancement ofmeteorological and climate warning systems, for example in national warning infrastructure of the identified priority countries, will also benefit national tsunami warning systems.

**Notes** forensic review and enhancements to national tsunami warning chains, through activities such as undertaken by the ICG/IOTWMS for all its 24 Member States, will be beneficial to MHEWS and contribute to the UN EW4ALL initiative.

**Urges** Member States to work with the UN EW4All partners in addressing any gaps in consideration of tsunami where required as part of their National MHEWS.

# Galileo Emergency Warning Satellite Service (EWSS): Report on Demonstration and Latest Developments

Dr. Denis Chang Seng, Technical Secretary of ICG/NEAMTWS provided a report on the Galileo Emergency Warning Satellite Service (EWSS) based on Eric Guyader presentation at the ICG/NEAMTWS XVII session. The European Commission’s Directorate General for Defense, Industry and Space (EC DG DEFIS) has made progress towards introducing the Galileo EWSS infrastructure, as a multi-hazard alert dissemination satellite system to EU national civil protection authorities in complement to existing terrestrial alert systems. For such a purpose, it has completed a demonstration campaign conducted in 2023/2024 with national Civil Protection Authorities (CPAs) in France, Germany, Cyprus, Belgium, and Luxembourg. The demonstrations had the objective to allow CPAs to experience the characteristics and performance of the service, and provide feedback on performance, interface design and functionalities, and coherence with national doctrine, systems, and protocols. The Galileo Emergency Warning Satellite Service Declaration of initial service is planned in 2025, which will then be adopted by EU Member States Civil Protection Service (Connection to Galileo, observation phase, integration in national PWS) and then eventual adoption by end users.

He underlined that the ICG/NEAMTWS Secretariat intends to explore possible adoption and usage of Galileo Emergency Warning Satellite Service on a pilot community level in NEAMWave exercise planned in 2025.

**Recommendations to TOWS-WG**

**Notes** the progress made by the European Commission’s DG DEFIS towards introducing in the Galileo infrastructure the “Emergency Warning Satellite Service” (EWSS) as a multi-hazard alert dissemination means by satellite offered to EU national civil protection authorities to complement existing terrestrial alert systems, as well as the completion of the demonstration campaign conducted in 2023/2024 with national civil protection authorities in France, Germany, Cyprus, and BE/LU, and the intended declaration of the initial service in 2025, for adoption by EU MS civil protection services, and eventual adoption by end users.

# Planning for WTAD 2024

Ms. Rosalind Cook, Head of Campaigns of the United Nations Disaster Risk Reduction, provided a report on World Tsunami Awareness Day 2023 and the planning for the 2024 edition. A major highlight in 2023 was the global exhibition bringing the story of eyewitness survivors, progress since 2004, art and hope for a resilient future. In addition, several Member States continued with the #GetToHighGroundCampaing with evacuation walks conducted in Member States such as Seychelles, Tonga, Barbados, Fiji, Cook Islands, Indonesia, Samoa, and Ecuador.

The WTAD 2024 edition theme is “Empowering Children and Youth, Ensuring the next Generation is Tsunami Prepared”, with hashtags #TsunamiDay and #OurResilientFuture. This year will be the 20th anniversary of the Indian Ocean tsunami, and there will be a global media engagement on tsunami documentaries; innovative tools, games and stories for disaster risk reduction; a social and digital activation toolkit with customizable cards, videos, and a dedicated WTAD webpage; video collaboration with UNESCO IOC; and Early Warning for All Initiative interlinkages.

The UNDRR will be following up closely on several upcoming events in 2024 including: the 57th Session of the Intergovernmental Oceanographic Commission Executive Council, Paris, 24-28 June; Asia-Pacific Ministerial Conference on Disaster Risk Reduction, Manila, Philippines, 14-17 October; Africa Regional Platform on Disaster Risk Reduction, October; ASEAN ministerial and commemorative event in October or December; the UNESCO IOC Scientific Conference, November; and the UNDRR High Level Advocacy WTAD event, 5 November. Equally for 2025, it will be the 10th anniversary of the Sendai Framework for Disaster Risk Reduction in March and the Global Platform for Disaster Reduction during the month of May, in Geneva, Switzerland.

Dr. Denis Chang Seng pointed out that the new CoastWAVE project Phase II has one of its core activities focused on creating dialogues with stakeholder and youth on High Impact Low Probability (HILP) events within a Multi-Hazard Early Warning Framework. There are opportunities to explore any potential connection with the WTAD theme.

# Update on Planning for the next Global Tsunami Symposium in Indonesia in November 2024

Dr. Harkunti. Rahayu, Co-Chair Programme Organising Committee (POC) (Mr Yuiji Nishimae is the other co-chair) provided updates on the planning. The symposium will be held 11-14 November 2024 in Banda Aceh, Indonesia. The objectives are to:

* + Commemorate two decades after 2004 Indian Ocean Tsunami.
  + Reflect what has been achieved in two decades for all four warning and mitigations systems.
  + Identify gaps, challenges, and priorities for tsunami early warning.
  + Identify synergy with global challenges and coherence with global commitments.
  + Gather global tsunami community.

The POC now needs to finalise a list of invited speakers. There will also be side events that include Ignite Stages, Booths, and a Poster Exhibition. There will also be a Pre-Event International Scientific Workshop, 9-10 November 2024.

**Recommendations to TOWS-WG**

**Notes with appreciation** the extensive work to-date of Harkunti Rahayu and the Programme Organising Committee (POC), Suci Anugrah and the Local Organising Committee (LOC), and the support of the Government of Indonesia in hosting the symposium.

**Endorses** the programme outline and proposed 8 sessions, which align with the four pillars of EWS and the objectives and focus of the ODTP and its RDIP.

**Encourages** the POC to ensure the programme takes into consideration UNESCO priorities with regards African States, SIDS, and LDCs

**Requests** the POC to next identify invited speakers inclusively, especially taking into account gender balance and region representation.

# JOINT TT DMP and TT TWO Session List of Decisions and Recommendations

**19 February 2024**

**Tsunami Exercises and Significant Tsunami Events**

**Appreciates** the exercises conducted in the Caribbean on March 23, 2023 (CARIBE WAVE), the Indian Ocean on 4, 11, 18, and 25 October (IOWave23) and the North-eastern Atlantic, the Mediterranean, and connected seas on November 5–6, 2023 (NEAMWave 23).

**Notes** that the regional/sub-regional exercise in the Pacific (PacWave24) is planned between September 1 and November 30 2024.

**Recommends** the CARIBE-EWS share methodology and documents concerning the registration of participants in CARIBE Wave exercises.

**Recommends** ICGs consider performing exercises during the night but being careful to take into consideration difficulties and possible issues of involving the public in night-time drills.

**Notes** the increasing challenges in receipt success and cost concerning the use of fax in disseminating and receiving tsunami threat information from TSPs.

**Requests** Secretariat advise all Member States via Circular Letter that TSP fax transmissions of tsunami threat information will cease from 6 months of CL date, unless Member States advise within 3 months that fax transmissions of tsunami threat information are essential for NTWC functions and there is no other back-up.

**Planning and Contributions to UN Ocean Decade**

**Notes with appreciation** the continuing work of the Ocean Decade Tsunami Programme Science Committee (ODTP) led by Srinivasa Kumar Tummala.

**Notes** the ODTP does not include all aspects of the UNESCO-IOC Tsunami Programme, but focuses on the enhancements represented by the goals: 1) 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 ; and 2) 100 percent of communities at risk to be prepared and resilient to tsunamis by 2030 through efforts like the IOC-UNESCO Tsunami Ready Recognition Programme (TRRP),Enhanced timing and accuracy of tsunami warnings; and 2) 100% at-risk coastal communities prepared and resilient against the tsunami threat by 2030.

**Notes** the gaps identified by the Secretariat for Ocean Decade Challenge 6 on “Increase Coastal Resilience to Natural Ocean Hazards” and actions related to the ODTP.

**Recommends** the Secretariat work closely with the Decade Coordination Unit (DCU), keep track of future Ocean Decade calls, and improve communication with DCU on tsunami community needs and requirements.

**Requests** the Secretariat to facilitate socialization and advice to the ICGs on the Ocean Decade processes and opportunities, such as Calls for Action.

**Encourages** ICGs, Secretariat, and Member States to consider submitting coordinated Ocean Decade actions in future calls on Challenge 6 on Coastal Resilience to Natural Hazards that contribute to the goals of the Ocean Decade Tsunami Programme, including identification of and submission of existing projects that may align with the ODTP.

**Recommends** IOC collaborate more closely with WMO to connect tsunami activities with the MHEWS and EW4ALL initiatives, such as the WMO Coastal Inundation Initiative that is an example of a multi-activity addressing coastal inundation, no matter the source of the inundation.

**Requests** the IOC/WMO Joint Collaborative Board (JCB) explicitly explore opportunities for IOC and WMO to further collaborate on MHEW framework, noting TOWS-WG Terms-of-Reference cover tsunamis and other sea level related hazards.

**Notes** that a Draft Vision 2030 White Paper Challenge 6 on increasing community resilience to ocean hazards is now available for public review.

**Encourages** TOWS WG and TTs members to review the Ocean Decade Vision 2030 White Paper and provide comments by February 2024.

**Requests** the TT TWO and TT DMP to develop KPIs for the relevant sections of the ODTP Research & Development Implementation Plan (RDIP) to monitor progress.

**Requests** the Secretariat develop a reporting mechanism to allow ICGs to report progress on related projects within the Ocean Decade and against the ODTP RDIP KPIs, aligning this with the proposed Global KPI Framework for the UNESCO-IOC Tsunami Programme.

**Tsunami Glossary Update**

**Notes** the progress achieved in the revision concerning the Tsunami Glossary 2023 (IOC/2008/TS/85 rev 5) concerning clarifying definitions (e.g., meteotsunamis, arrival time) and updates (e.g., global, regional, deadly tsunami maps, tables, tsunami service provider, edits, and simplifying), as well as addressing new terms, including Lamb Wave, Tsunami Ready Recognition Programme, and volcanic tsunamis, and that the IOC is working to finalize the layout for publishing in 2024.

**Recommends** two versions be developed for future publications, including a more general level version for public stakeholder use.

**Notes** the concerns of WMO on the term and definition of meteotsunami.

**Requests** the TT TWO *Ad Hoc* Team on Meteotsunamis in consultation with WMO to review the term and definition of meteotsunami for endorsement consideration by TOWS-WG and to inform discussions on this topic in consideration by the IOC/WMO JCB, taking into account the historical derivation and use of the term, any potential confusion with other existing products/services, and the public understanding of any associated warnings, with a view to updating the Tsunami Glossary. before publication in 2024.

**IUGG update**

**Appreciates** the update on the IUGG meetings organized in 2023-2024, including the participation of IUGG members on the UN Ocean Decade Tsunami Programme Scientific Committee in Paris on January 25, 2024, collaboration in organizing the 8th Joint IOC ICG/PTWS - IUGG JTC Technical Workshop on Understanding and Lessons Learned from Tsunami Generated by the Hunga Tonga - Hunga Ha’apai Volcano Eruption on 15 January 2022, expected participation in the 2nd Global Tsunami Symposium in November 2024, and contributions towards several reports, including UNESCO-IOC Tsunami Generated by Volcanoes Report.

**Notes** that Srinivasa Kumar Tummala (Director, Indian National Centre for Ocean Information Service, INCOIS) announced India’s candidacy for hosting the ITS 2025 in Hyderabad, India.

**Public Warning Systems - Galileo Emergency Warning Satellite Service (EWSS)**

**Notes** the progress made by the European Commission’s DG DEFIS towards introducing in the Galileo infrastructure the “Emergency Warning Satellite Service” (EWSS) as a multi-hazard alert dissemination means by satellite offered to EU national civil protection authorities to complement existing terrestrial alert systems, as well as the completion of the demonstration campaign conducted in 2023/2024 with national civil protection authorities in France, Germany, Cyprus, and BE/LU, and the intended declaration of the initial service in 2025, for adoption by EU MS civil protection services, and eventual adoption by end users.

**Local Source SOPs (Status and coordination of advice each ICG)**

**Notes** **with appreciation** the UNESCO-IOC Technical Report 183 published by the TT TWO Ad Hoc Team on Tsunamis Generated by Volcanoes (TGV) led by Francois Schindele and the research paper submitted to the Journal of Pure and Applied Geophysics (PAGEOPH).

**Requests** the Secretariat:

**a.** Provide the TGV Report, including the List of Tsunamigenic Volcanoes to Volcano Observatories

**b.** Provide the TGV Report, including the List of Tsunamigenic Volcanoes to UNESCO/IOC Member States

**c.** Organize online webinars for each ICG and involving relevant Volcano Observatories and VAACs to:

Brief on the TGV report and its recommendations,

* Highlight the hazard and vulnerable Member States,
* Initiate the required partnerships between NTWCs and volcano observatories and VAACs,
* Initiate consideration of whether TSPs may also need provide services where TGV hazard may impact several Member States

**Requests** the TT TWO to review existing SOPs and develop general guidelines on SOPs to warn for TGVs for NTWCs and TSPs.

**Notes** the progress of the *Ad Hoc* Team on Meteotsunamis led by Mike Angove in consultation with representatives from WMO and work still required to complete the report.

**Requests** the *Ad Hoc* Team on Meteotsunamis complete a Draft of the report for offline review by the TOWS-WG to be utilized as background information for consideration of the recommendations by the next meeting of IOC/WMO JCB in September third quarter of 2024.

**Update on PTWS NTWC Competency Framework and Development of Global Framework**

**Notes** the importance of NTWC staff competency frameworks and training in support of the efficient and effective development and dissemination of tsunami threat information and warnings.

**Notes with appreciation** the work of Laura Kong of ITIC and the ICG/PTWS in the development of a PTWS NTWC Competency Framework.

**Recommends** the TT TWO contributes to the evaluation of the pilot training to be provided to Pacific Island Countries and Territories (PICTs) by ICG/PTWS and ITIC in 2025 to facilitate development of a global framework for endorsement by TOWS-WG.

**Acknowledging** the OTGA Specialized Regional Training Centre operated by INCOIS in India has already developed and delivered competency training for NTWC staff from Oman.

**Recommends** ITIC and the OTGA Regional/Specialized Training Centres support the development and delivery of curated course content training programmes in support of the global framework for NTWC staff competencies.

N**otes** IOC will not be looking in the first instance to use the PTWS or Global NTWC Competency Framework for IOC certification of NTWC competencies.

**Update UN Secretary General “Early Warnings For All” Initiative Public Warning Systems**

**Notes** the UN EW4ALL initiative currently focuses on meteorological and climate warning systems, although inclusion of geophysical related hazards like tsunami may be possible.

(Alternative text to above paragraph if WMO Geneva confirms tsunami are included:

**Notes** that the UN EW4All development approach is to focus and adapt to specific country needs engagement and ownership with regards to their priority hazards and areas of work).

**Noting further** that tsunami hazard was already identified by a number of countries, especially SIDS, as part of their priority hazards.

**Noting further** that tsunami warnings should be disseminated in CAP format.

**Notes** capacity development and enhancement ofmeteorological and climate warning systems, for example in national warning infrastructure of the identified priority countries, will also benefit national tsunami warning systems.

**Notes** forensic review and enhancements to national tsunami warning chains, through activities such as undertaken by the ICG/IOTWMS for all its 24 Member States, will be beneficial to MHEWS and contribute to the UN EW4ALL initiative.

**Urges** Member States to work with the UN EW4All partners in addressing any gaps in consideration of tsunami where required as part of their National MHEWS.

**Update on Planning for the next Global Tsunami Symposium in Indonesia in November 2024**

**Notes with appreciation** the extensive work to-date of Harkunti Rahayu and the Programme Organising Committee (POC), Suci Anugrah and the Local Organising Committee (LOC), and the support of the Government of Indonesia in hosting the symposium.

**Endorses** the programme outline and proposed 8 sessions, which align with the four pillars of EWS and the objectives and focus of the ODTP and its RDIP.

**Encourages** the POC to ensure the programme takes into consideration UNESCO priorities with regards African States, SIDS, and LDCs.

**Requests** the POC to next identify invited speakers inclusively, especially taking into account gender balance and region representation.



**Day #1: Monday, 19 February 2024, 0900-1730 Local Time (UTC+9)**

# Agenda of Joint Session of Task Team Tsunami Watch Operations and Task Team Disaster Management and Preparedness

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Local time (UTC+9)** | **Topic** | **Lead** |
| 1 | 0900 - 0915 | **Welcome & Introductions** | Head, IOC-TRS  Chairs TTs Members |
| 2 | 0915- 0930 | **Session Organisation**  Logistics and agenda | Chairs TTs Moderate  Secretariat |
| 3 | 0930 - 1030 | **Wave Exercises and Significant Tsunami Events in each ICG**  (share outcomes, lessons learned, and coordination on exercise surveys) | Chair TT TWO Moderate Joint presentations by  TT reps each ICG |
|  | 1030 - 1130 | ***Break and photo*** |  |
| 4 | 1130 - 1300 | **Planning for Ocean Decade**   * Ocean Decade: Safe Ocean (Resilient Communities Actions) * Ocean Decade Tsunami Programme * Actioning 10-Year Research and Development Implementation Plan for the ODTP * Report of last Science Committee Meeting * Update on Tsunami Ready Coalition * Roles for TT TWO and TT DMP | Chair TT TWO Moderate Head, IOC-TRS  Secretariat Chairs TTs  Chair, UNODTP Science Committee |
|  | 1300 - 1430 | ***Lunch*** |  |
| 5 | 1430 - 1450 | **Local Source SOPs**   * Status and coordination of advice each ICG * Training | Chair TT TWO Moderate  All |
| 6 | 1450 - 1510 | **Update on PTWS NTWC Competency Framework and Development of Global Framework** | Chair TT TWO Moderate |
| 7 | 1510 – 1530 | **Tsunami Glossary Update** | Chair TT DMP Moderate  Laura Kong |
|  | 1530 - 1600 | ***Break*** |  |
| 8 | 1600 - 1615 | **IUGG update** | Chair TT DMP Moderate  Laura Kong/IUGG Officers |
| 9 | 1615 - 1630 | **Update UN Sec General “Early Warnings For All” Initiative** | Chair TT DMP Moderate  Bernardo Aliaga Ocal Necmioglu  WMO, UNDRR |
| 10 | 1630 - 1645 | **Public Warning Systems - Galileo Emergency Warning Satellite Service (EWSS):** report on demonstration and latest developments | Chair TT TWO Moderate  DG DEFIS |
| 11 | 1645 - 1700 | **Planning for WTAD 2024** | Chair TT DMP Moderate |
| 12 | 1700 - 1730 | **Update on Planning for the next Global Tsunami Symposium in Indonesia in November 2024** | Organising Committee Chairs/ Harkunti Rahayu  Yuji Nishimae |
|  | 1730 | ***Day close*** | Chairs TTs |



**Day#2: Monday, 20 February 2024, 0900-1730 Local Time (UTC+9)**

# TOWS Task Team on Disaster Management and Preparedness (TT-DMP)

# Session Organization

Dr. Harkunti Pertiwi Rahayu, Chairperson of the TOWS Task Team on Disaster Management and Preparedness (TT-DMP), opened the meeting and warmly welcomed all participants.

Dr. Denis Chang Seng, IOC Programme Specialist and Technical Secretary of TT-DMP briefed the group regarding documentation and meeting logistics. All members were encouraged to contribute to the online TT-DMP Decisions and Recommendations and summary report.

The Chairperson then introduced the provisional agenda. The group examined and adopted the TT - DMP agenda with one additional item to agenda (4) proposed by Dr. Laura Kong on Tsunami Ready Recognition Sign Guidance.

# Discuss Outcomes of the Joint Meeting with TT TWO

The TT DMP participants did not further elaborate on the Joint Task Team DMP and TT TWO agenda items discussed the day before on 19 February 2024.

# Review Action Items

Dr. Harkunti Pertiwi Rahayu requested members to review the Decision and Recommendations of TT DMP meeting in February 2023. These mainly focused on the following:

* **Requests** the Secretariat to provide a timelier update of the UNESCO IOC Tsunami

Ready database.

* **Further recommends** considering for the future to integrating into the UNESCO -IOC Tsunami Ready Recognition Programme other options to recognize entities other than Communities.
* **Requests** Working Group 3 (PTWS) to explore, in cooperation with the TOWS Task

Team on Disaster Management and Preparedness, ways to recognize communities that choose not to implement the UNESCO-IOC Tsunami Ready Recognition Programme, as compliant with the Tsunami Ready indicators.

All past actions were discussed and addressed during the meeting.

# Tsunami Ready Implementation Status

**CARIBE EWS**

Dr. Silvia Chacon Barrantes provided a report on the status of Tsunami Ready implementation in the Caribbean. There are 18 Tsunami Ready Recognized Communities in 13 Member States. In addition, there are 12 Communities in the nomination / renewal process. There are different projects contributing towards TRRP implementation in the region, such as:

1. “Strengthening Capacities for Tsunami Early Warning in Grenada” focused on St George to Point Salines and TR ceremony scheduled for week of 25 March 2024.
2. “Towards a Safer Ocean in the Caribbean through Tsunami Ready Communities” (NORAD) project on communities in Barbados, Jamaica and Trinidad and Tobago.
3. “UNESCO-IOC EWS” in the Dominican Republic.
4. ITIC-CAR USAID/BHA project in four communities (Barbados, Dominica, Saint Lucia and Saint Vincent and the Grenadines, Dominica).

According to an evaluation survey conducted by CARIBE EWS on the implementation of Tsunami Ready in the region, it was highlighted that 71% of the countries are interested in implementing Tsunami Ready. New interested countries include Aruba, Colombia, Cuba, Honduras, and Sint Marteen.

The CARIBE EWS reported the completion and approval at the ICG-CARIBE EWS XVI Session of the IOC-UNESCO Tsunami Ready survey questionnaire and feedback forms for Tsunami Ready recognized communities. It aims to evaluate the effectiveness of the TRRP and provide insights to strengths and gaps to collectively improve and promote the programme.

**NEAMTWS**

Mr. Ignacio Aguirre Ayerbe, co-chairperson of ICG/NEAMTWS Task Team on Tsunami Ready provided a report on Tsunami Ready implementation in NEAM region. On January 19, 2024, the municipality of Cannes, France became the first Tsunami Ready Recognized community of mainland France, NEAM region. An additional 14 communities in 10 countries are progressing towards recognition. One of these communities, Büyükçekmece in Türkiye, has completed the 12 Tsunami Ready indicators. A ceremony of recognition is planned on 15th March 2024.

The EU DG ECHO CoastWAVE project supports the implementation of TR in 6 other communities, namely in El Jadida (Morocco), Chipiona (Spain), Marsaxlokk (Malta), Samos (Greece), Larnaca (Cyprus), and Alexandria (Egypt). The remaining communities are non-project related and implemented in Loulé (Portugal); Marzamemi, Minturno, Palmi, Otranto, and Stromboli volcano (Italy). It should be noted that Israel had earlier applied for the entire coastline of Israel to be TR. Secretariat engaging with Israel on the matter.

At the Eighteenth Session of the ICG/NEAMTWS, held in Paris, France from 6-8 February 2024, the Manual and Guide 74 on “Standard Guidelines for the Tsunami Ready Recognition Programme” was adopted by the Member States as the official reference document for Tsunami Ready implementation in NEAM region.

**PTWS**

Dr. Laura Kong provided a report on Tsunami Ready implementation in the Pacific region. A total of 19 communities in 7 countries (Costa Rica, Honduras, El Salvador, Fiji, Guatemala, Panama, and Samoa) have official recognition. A further 8 communities in 4 countries (Ecuador, Federal States of Micronesia, Marshall Islands, and Palau) are expecting to be recognized in 2024, while 9 countries (France - French Polynesia, New Caledonia, Guatemala, Kiribati, Mexico, Nicaragua, Samoa, Solomon Islands, Tonga, Vanuatu) are implementing Tsunami Ready in 2024-2025. Additionally, 6 countries (Cook Islands, Indonesia (PTWS), Niue, Philippines, Thailand (PTWS), Vietnam) are planning to implement Tsunami Ready.

At the 29th Session of the ICG/PTWS held on 1, 2, 7, and 8 December 2021, a ‘Task Team on Tsunami Ready’ under Working Group 3 was established to provide better coordination and governance of Tsunami Ready in the PTWS. Working Group 3 was also recommended to ‘develop a formal guidance for ICG/PTWS on the application of the proposed ‘Tsunami Ready Equivalency Approach’. The approach seeks to enable reporting on tsunami preparedness in a manner compatible with TRRP, using existing national frameworks and requirements.

**IOTWMS**

Mr. Ardito Kodijat provided a report on the status of Tsunami Ready implementation in the Indian Ocean region. Presently, the IOTWMS is supporting the process of application and field verification of Tsunami Ready recognition in 16 villages in Indonesia, 381 villages in India through Cyclone –prepared initiatives, 1 community in the Seychelles, and 1 more community in Timor Leste.

The IOTWMS with the support of the Indian Ocean Tsunami Information Centre (IOTIC), conducted an online Tsunami Ready training for facilitators in Indonesia from 10 January to 24 February 2023. The training consists of 11 lecture meetings, quizzes and work assignments. Tsunami Ready trainings were also conducted in Timor Leste in July 2023 and the Seychelles in November 2023. A Tsunami Ready field verification took place in Nagari Tapakih in Indonesia for improvement of the 12 TR indicators. On 20 December 2023 Nagari Tapakih received UNESCO-IOC Tsunami Ready Recognition.

In 2024, the Meteorology, Climatology, and Geophysical Agency (BMKG, Indonesia) in collaboration with IOTIC will conduct National Tsunami Ready Trainings focused on Small Island Developing States (SIDs) in Maldives during August; further TR training for facilitators (online), and a field verification in Indonesia.

**Recommendations to TOWS-WG**

**Appreciates** the continued progress in the implementation of UNESCO-IOC Tsunami Ready Recognition Programme in the Caribbean, Indian Ocean, Pacific region, and in the NEAM region,

**Appreciates** Cannes Municipality (Alpes Maritimes), France, as the first UNESCO-IOC Tsunami Ready recognized community in France, the North-Eastern Atlantic, the Mediterranean, and the connected seas region, and new communities in Indonesia (Nagari Tapakih) in the Indian Ocean, Barbados (Christ Church West), Guadeloupe (Deshaies), and St. Vincent and the Grenadines (Saint George) in the Caribbean, and Costa Rica (Dominical, Dominicalito and Barú; Playa Hermosa; Puerto Jiménez and Tivives), Fiji (Navuevu, Sila) in the Pacific,

**Further appreciates** the training programmes of IOTIC for the Indian Ocean Member States on National Tsunami Ready Training, Training for UNESCO-IOC Tsunami Ready Facilitators, and Training for Field Verification for the UNESCO-IOC Tsunami Ready Recognition,

**Encourages** 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 Tsunami Ready Recognition Programme globally,

**Recognises** the importance of building UNESCO-IOC Tsunami Ready on existing capacities and strengths and **encourages** ICGs and Member States to explore these synergies,

**Notes** the existence of National Tsunami Ready Focal Points in the ICGI-OTWS and their participation in the TR-WG,

**Welcomes** the Evaluation Form prepared by CARIBE-EWS TR-TT for recognized UNESCO-IOC Tsunami Ready communities, and the CARIBE WAVE Exercise evaluation conducted in the Caribbean on the interest of countries in implementing the UNESCO-IOC Tsunami Ready Programme,

**Recommends** the introduction of TR Evaluation Form in the other ICGs, its translation to Spanish and French and its administration by TRS/IOC/UNESCO,

**Requests** the IOC, led by the TICs, to develop and share a Tsunami Ready Toolkit to assist Member States in implementing the Tsunami Ready Recognition Programme. The toolkit can include a standard and clear procedure, format, and method for submitting the Tsunami Ready application and its supporting documentation, including clarification on the definition of community in the frame of UNESCO-IOC Tsunami Ready Recognition Programme.

**Notes** that IOC UNESCO/TSR is developing a new website, and the importance of ensuring the Tsunami Ready components, such as the community pages hosted by the ITIC, are continued and with high visibility,

**Recommends** Secretariat to inform Member States on the Toolkit’s availability via IOC Circular Letter to the Tsunami National Contacts, National Tsunami Ready Board, and widely through the attaching this as an appendix of the Manual and Guide 74,

# Synergy with Local and National Resilient Programmes, including Tsunami and Critical Infrastructures, and ISO 22328-3 (Community-based Early Warning Systems for Tsunamis)

***Synergy with Local and National Resilient Programmes***

Dr. Harkunti Rahayu led a discussion on how to explore possible mechanisms and synergies for recognizing UNESCO-IOC Tsunami Ready indicator standards and align them to those already implemented in certain countries.

Ms. Ashleigh Fromont provided further details on the Tsunami Ready ‘Equivalency’ approach in line with the request of Working Group 3 (PTWS) to explore, in cooperation with the TOWS Task Team on Disaster Management and Preparedness, ways to recognize communities that choose not to implement the UNESCO-IOC Tsunami Ready Recognition Programme, as compliant with the Tsunami Ready indicators.

In principle, the Tsunami Ready ‘equivalency’ approach should include countries that have a strong motivation to ensure that their communities at risk of tsunami are prepared for and resilient to tsunamis by 2030. The Member States reporting on progress towards global preparedness targets needs to be consistent with the Tsunami Ready Framework (12 indicators), be concentrated at the national level, and support ICG/PTWS KPI’s.

The implementation workflow is the following: 1) Define the most appropriate level of ‘community’; 2) Undertake a cross-reference process at the national level by reviewing existing resources that contribute to community preparedness outcomes (e.g. frameworks, strategies, plans, legislation) and identifying where Tsunami Ready indicators are being met as a standard approach across communities; 3) Utilise existing community reporting where existing reporting requirements should be identified to consider whether these are already reported on at a national level or reporting considerations could be added within the existing reporting; and 4) empower community participation through governance, for such purpose. A National Tsunami Ready Board should be established or an existing body that may be able to meet the requirements to act as a NTRB.

In the case of New Zealand, the country is unable to roll-out formal TR recognition as a national programme. However, there is interest at a national level to encourage the measurement of Tsunami Ready Recognition Programme, in support of the Ocean Decade Goal to prepare 100% of all communities at risk. This would be preferentially undertaken at the Civil Defense Group Level - committees of local authorities within regional boundaries.

Some indicators can be met “as standard” across the entire country as they are either national capabilities or legislatively required to be reported in Regional Group Plans. Groups could then apply with supplemental information on remaining indicators, where these are optional national activities. New Zealand’s Tsunami Reference Group (or subset) can be designated as a NTRB.

The meeting discussed that several big countries, including Japan will benefit from the Tsunami Ready Equivalency approach.

**Recommendations to TOWS-WG**

**Notes** the recommendation of TOWS-WG-XVI for **“**ICGs to explore and inform on mechanisms for recognition of UNESCO-IOC Tsunami Ready similar standards already in place in some countries”,

**Appreciates** theprogress made by ICG/PTWS concerning exploring mechanisms of how to include national tsunami preparedness and readiness programmes and initiatives in the UN Ocean Decade Programme “tsunami readiness goal”, and that Tsunami Ready ‘Equivalency’ framed under other similar initiatives approach seeks to enable reporting on tsunami preparedness in a manner compatible with TRRP, using existing national frameworks and requirements,

**Requests** ICG/PTWSTask Team Tsunami Readyto share the development of formal ICG/PTWS guidance on “***Tsunami Ready Parity***” with TT-DMP, as a potential mechanism for reporting toward this goal.

**Tsunami Ready Recognition Sign Guidance**

**Noting** that both local and distant tsunamis can cause damaging and deadly tsunami impacts to communities, and specifically, that strong or long shaking from earthquakes will not be felt by distant communities, **recommends** implementation of the Public Safety Instruction of the UNESCO-IOC Tsunami Ready recognition sign, and other signs, most appropriate to the local context to ensure maximum understanding in order to save lives,

**Recommends** that Member States adopt a standard for their Tsunami Ready Recognition signage,

**Further recommends** that Tsunami Ready Recognition Sign, and other sign guidance, including for text content, sign shape and size and color, will be included in the Tsunami Ready Implementation Toolkit to be developed under the guidance of the IOC TICs,

**Notes with appreciation** the role of the Tsunami Information Centres (TICs) in the efforts of the Task Team Disaster Management Preparedness and Task Team Tsunami Warning Operations,

**Further notes** the appreciation at ICG/PTWS-XXX for the long contributions of the ITIC to PTWS Member State capacity development, awareness-raising and warning and emergency response SOP training in the Pacific and Indian Ocean, appreciation of Indian Ocean Member States to the IOTIC to support their implementing Tsunami Ready, and to the CTIC for advocating the implementation of tsunami warning systems in a multi-hazard context,

**Recognizes** the critical support and contribution that the Tsunami Information Centres (TICs) provide to Member States in facilitating tsunami preparedness and resilience, and the advancement of the work programmes of the TOWS-WG and its Inter-ICG Task Teams,

**Appreciates** the important commitments of Barbados, Indonesia, and USA to host the CTIC, IOTIC, and the ITIC to support the ICGs,

**Requests** the Tsunami Information Centres to continue to do their work in coordination with the ICGs’ working groups in the region,

**Tsunami and Critical Infrastructures**

Dr. Harkunti Rahayu delivered a presentation on Tsunami and Critical Infrastructure as a key aspect to respond to the Sendai Framework on Disaster Risk Reduction (SFDRR) to substantially reduce by 2030 the “*Disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience.*”

To protect airports, the GetAirportReady for Disaster (GARD) Programme in Indonesia was developed to focus on surge capacity increase as part of national disaster-risk-reduction programmes and it is conducted at the airport in close cooperation with all relevant authorities to assess and improve their surge capacity. This is done through risk assessment, contingency planning, increased airport preparedness, and networking exposure to relevant agencies in airport management. Several activities have been conducted at the Yogyakarta International Airport, including intervention on the structural design of the airport, as well as tsunami tabletop, and drill exercises.

To protect coastal buildings, Indonesia is adapting best practices from Sanur, Bali by making hotels Tsunami Ready. A survey was conducted about the satisfaction of guest on the preparedness of the hotels and 100 % of surveyors would like to come back to the TR hotels. In addition, some hotels (e.g. Kesiapsiagaan hotel) have conducted tsunami evacuation exercises.

Mr. Ardito Kodijat provided a report on Making Cities Resilient (MCR) following the initial progress reported last year by Dr. Denis Chang Seng, where it was mentioned that the IOC has become an official partner of MCR 2030 and that all TICs should participate as coordination centers. Mr. Ardito pointed out that the MCR is implemented in three stages (A to C). The objective is to enhance cities’ understanding on risk reduction and resilience to improve assessment and diagnostic skills, increase alignment between local strategies with national and regional strategies, and improve early-stage strategies and policies to support cities in the implementation of risk reduction and resilience actions. A total of 1659 cities have joined MCR from 85 countries and territories.

A link between the TRRP and MCR is key because it opens the possibilities to capitalize on the cities’ effort in making cities resilient; supports the increase in visibility of Tsunami Ready; and TRRP can serve as an example of good practice in the Making Cities Resilience Programme.

Dr. Denis Chang Seng reported that CoastWAVE Project –II intends to implement UNESCO-IOC Tsunami Ready in Portugal within coastal cities already part of the Resilient Cities Network.

**Recommendations to TOWS-WG**

**Notes** the need for Tsunami Ready Disaster Risk Reduction approach (Assessment, Prevention, Mitigation, Emergency Response, and Recovery) to critical Coastal Infrastructures, including Tsunami Ready Airports, Tsunami Ready Hotels, Tsunami Ready Ports,

**Request** Secretariat to follow up on the MCR ISO requirements,

**Appreciates** the presentation of Mr. Ardito Kodijat for reviewing and analyzing the UNESCO-IOC Tsunami Ready link to the Making Cities Resilient elements and stages,

**Notes** that linking Tsunami Ready with Making Cities Resilient is an opportunity to capitalize on the cities’ efforts in making cities resilient, support to increase the visibility of Tsunami Ready, and UNESCO-IOC Tsunami Ready Recognized Community is an example of good practice in the Making Cities Resilience,

**Recommends** ICGs and TICs to advocate Member States implementing Tsunami Ready to link with MCR,

**Encourages** the National Tsunami Ready Board of Member States to include national agency work on MCR to be member of the NTRB meeting, and to see the possibilities for ICGs and TICs to promote Tsunami Ready in MCR events i.e. hold Tsunami Ready workshop as MCR events in the MCR regions.

**Appreciates** the presentation of Dr. Harkunti P. Rahayu on the initiatives done in Indonesia on several type of critical infrastructures: (1) NYIA Airport Ready Tsunami, (2) Bali Tsunami Ready Hotel, and (3) the needs of Industrial Zone Ready for Tsunami learning from Cilegon Industrial Estate. These are useful for the development of guideline for Tsunami Ready Critical Infrastructure as an effort to achieve goal no 2 of the UN ODTP on achieving 100% people at risk to be ready and resilience to tsunami by 2030,

**Recommends** the development of guideline for Tsunami Ready Critical Infrastructure as an effort to achieve goal no 2 of UN ODTP on achieving 100% people at risk to be ready and resilience to tsunami by 2030,

**Appreciates** the presentation of Ms. Suci Dewi, BMKG on progress and status of ISO 22328-3 (Community-based Early Warning Systems for Tsunamis) which is targeting large-scale private sectors to be Tsunami Ready,

# Education and World Tsunami Awareness Day 2023 and Planning for 2024

***WTAD***

Ms. Rosalind Cook, Head of Campaigns of the United Nations Disaster Risk Reduction (UNDRR), provided a report on World Tsunami Awareness Day 2023 and the planning for the 2024 edition. Several Member States continued with the #GetToHighGround Campaign with evacuation walks conducted in Member States such as Seychelles, Tonga, Barbados, Fiji, Cook Islands, Indonesia, Samoa, and Ecuador.

For the WTAD 2024 edition, the theme will be ‘Empowering children and youth, ensuring the next generation is tsunami prepared’, with hashtags #TsunamiDay and #OurResilientFuture. This year will be the 20th anniversary of the Indian Ocean tsunami, and there will be a global media engagement on tsunami documentaries; innovative tools, games and stories for disaster risk reduction; a social and digital activation toolkit with customizable cards, videos, and a dedicated WTAD webpage; video collaboration with UNESCO IOC; and Early Warning for All Initiative interlinkages.

The UNDRR will be following up closely these upcoming events in 2024 including: the 57th Session of the Intergovernmental Oceanographic Commission Executive Council, Paris, 24-28 June; Asia-Pacific Ministerial Conference on Disaster Risk Reduction, Manila, Philippines, 14-17 October; Africa Regional Platform on Disaster Risk Reduction, October; ASEAN ministerial and commemorative event in October or December; the UNESCO IOC Scientific Conference, November; and the UNDRR High Level Advocacy WTAD event, 5 November. Equally for 2025, it will be the 10th anniversary of the Sendai Framework for Disaster Risk Reduction in March and the Global Platform for Disaster Reduction during the month of May, in Geneva, Switzerland.

A major highlight in 2024 planned with IOC is the global exhibition bringing the story of eyewitness survivors, progress since the 2004 tsunami, art and hope for a resilient future.

***Education / Training***

Mr. Ardito Kodijat provided a presentation on the Tsunami Ready Training to be conducted through the Ocean Teacher Global Academy (OTGA). The course will be delivered through a test consisting of registration, pre-quiz, modules with activities, post-test, grading, and reception of a certificate of completion. There are currently developments on two more courses:

1. Introduction to UNESCO-IOC Tsunami Ready Recognition; and

2. Facilitating Tsunami Ready.

The next steps in the development of the courses includes updating images and diagrams with high quality version; develop task and assignments; review the scripts; review the quizzes; complete a video or voice recording of the script; and convert format to Moodle.

**Recommendations to TOWS-WG**

**Appreciates** the continued collaboration between the UNDRR and IOC UNESCO on the World Tsunami Awareness Day (WTAD) in 2023, and the success achieved in scaling up the #GetToHighGround Campaign mobilizing action globally,

**Notes** that the 2024 theme on the WTAD is *Empowering Children and Youth, ensuring the next generation is tsunami prepared,*

**Further notes** the planned collaboration between IOC-UNESCO and UNDRR on Eyewitness and Survivors Project and the Indian Ocean Youth Tsunami Conversation and Campaign of IOTIC

**Welcomes** the major events and activities planned by the UNDRR in partnership with IOC includes:

* the commemoration of the 20anniversary of the 2004 tsunami and engaging children and youth,
* the Asia Pacific Ministerial Conference on DRR and the Africa Regional Platform on DRR,
* Global Exhibition bringing the story of eyewitness survivors, progress since 2004, art and hope for a resilient future, schools and community dialogues, youth advocates, engagement and #GetToHighGround activations.

**Further Welcomes** other activities planned by the UNDRR, encompassing the Global media engagement on tsunami documentaries, innovative tools, games and stories for reduction (Stop Disasters Game), Social and Digital Activation toolkit with social cards, customizable cards, videos, dedicated WTAD webpage, video collaboration UNESCO-IOC and reinforcing interlinkages with Early Warning for All Initiative,

# Creating Conversations / Dialogues on challenging issues to attract greater stakeholder engagements (vulnerable groups and social integration

Dr. Harkunti Rahayu discussed about the importance of fostering dialogues on challenging issues to increase stakeholder engagement, particularly among vulnerable groups, recognizing the significance of overarching institutional frameworks and policy initiatives like the United Nations Sustainable Development Goals, UN Ocean Decade for Sustainable Development etc., as well as donor requirements, in bolstering engagement with vulnerable groups. It is recommended to formally involve trained Social Science experts from the Tsunami Resilience Section of IOC/UNESCO. Their expertise can support the development of guidance aimed at enhancing stakeholder engagement strategies.

**Recommendations to TOWS-WG**

**Notes** the importance of creating dialogues on challenging issues to attract greater stakeholder engagements (vulnerable groups), and social integration and technical support needed to bridge and facilitate effective engagement and social integration,

**Further notes** the overarching institutional frameworks and policy initiatives such as United Nations Sustainable Development Goals, UN Ocean Decade for Sustainable Development, UN Early Warning for All, WAVE Exercises, World Tsunami Awareness Day and the IOC/UNESCO Tsunami Ready Programme, as well as donor requirements which support enhanced engagement of vulnerable groups,

**Recommends** formal engagement of trained social science experts by Tsunami Resilience Section IOC/UNESCO to support the production of guidance for enhancing stakeholder engagement.

# Discussion on Local Response Systems to Other Sources of Tsunamis (Volcanoes and Meteo- tsunamis)

Agenda 8 was not discussed at the TT DMP meeting due to the ongoing work of the TT TWO on the topic and specific discussions on meteo-tsunamis.

# Support for Ocean Decade Tsunami Programme Research & Development Implementation Plan

Agenda 9 was discussed mainly under the joint TT DMP and TT TWO agenda items on Planning for the Ocean decade (4), and there were no further discussions during the TT DMP meeting.

# Develop TT DMP Work Plan

TT DMP plans to hold meetings, when possible, to discuss key action items e.g. Toolkit’s and the preparation of the IOC Circular Letter. In addition, TT DMP will meet in advance in preparation for the next TOWS TTs meetings.

**Recommendations to TOWS-WG**

**Notes** the time limitations experienced during the past two meetings of the TT-DMP that hindered important discussions,

**Recommends** extending the TTs meeting to a 3-days meeting, including the Joint meeting with TT-TWO, in order to cover all the subjects and allow enough time to discuss,

**Notes** that many advances have been made, and new needs have been identified since TT DMP ToR was prepared,

**Recommends** revising the TT DMP Terms of Reference.

# Close of TT DMP Meeting

The Chairperson, Dr. Harkunti Rahayu thanked all members and observers for their contributions to the TT DMP meeting. The TT DMP meeting closed at 18:00hrs on 20 February 2024.

# TT DMP Session List of Decisions and Recommendations

**20th February 2024**

**Tsunami Ready Implementation Status**

**Appreciates** the continued progress in the implementation of UNESCO-IOC Tsunami Ready Recognition Programme in the Caribbean, Indian Ocean, Pacific region, and in the NEAM region.

**Appreciates** Cannes Municipality (Alpes Maritimes), France, as the first UNESCO-IOC Tsunami Ready recognized community in France, the North-Eastern Atlantic, the Mediterranean, and the connected seas region, and new communities in Indonesia (Nagari Tapakih) in the Indian Ocean, Barbados (Christ Church West), Guadeloupe (Deshaies), and St. Vincent and the Grenadines (Saint George) in the Caribbean, and Costa Rica (Dominical, Dominicalito and Barú; Playa Hermosa; Puerto Jiménez and Tivives), Fiji (Navuevu, Sila) in the Pacific.

**Further appreciates** the training programmes of IOTIC for the Indian Ocean Member States on National Tsunami Ready Training, Training for UNESCO-IOC Tsunami Ready Facilitators, and Training for Field Verification for the UNESCO-IOC Tsunami Ready Recognition.

**Encourages** 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 Tsunami Ready Recognition Programme globally.

**Recognises** the importance of building UNESCO-IOC Tsunami Ready on existing capacities and strengths and **encourages** ICGs and Member States to explore these synergies.

**Notes** the existence of National Tsunami Ready Focal Points in the ICGI-OTWS and their participation in the TR-WG.

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**Recommends** the introduction of TR Evaluation Form in the other ICGs, its translation to Spanish and French and its administration by TRS/IOC/UNESCO.

**Requests** the IOC, led by the TICs, to develop and share a Tsunami Ready Toolkit to assist Member States in implementing the Tsunami Ready Recognition Programme. The toolkit can include a standard and clear procedure, format, and method for submitting the Tsunami Ready application and its supporting documentation, including clarification on the definition of community in the frame ofUNESCO-IOC Tsunami Ready Recognition Programme.

**Notes** that IOC UNESCO/TSR is developing a new website, and the importance of ensuring the Tsunami Ready components, such as the community pages hosted by the ITIC, are continued and with high visibility.

**Recommends** Secretariat to inform Member States on the Toolkit’s availability via IOC Circular Letter to the Tsunami National Contacts, National Tsunami Ready Board, and widely through the attaching this as an appendix of the Manual and Guide 74.

**Synergy with Local and National Resilient Programmes, including Tsunami and Critical Infrastructures, and ISO 22328-3 (Community-based Early Warning Systems for Tsunamis)**

**Notes** the recommendation of TOWS-WG-XVI for **“**ICGs to explore and inform on mechanisms for recognition of UNESCO-IOC Tsunami Ready similar standards already in place in some countries”.

**Appreciates** theprogress made by ICG/PTWS concerning exploring mechanisms of how to include national tsunami preparedness and readiness programmes and initiatives in the UN Ocean Decade Programme “tsunami readiness goal”, and that Tsunami Ready ‘Equivalency’ framed under other similar initiatives approach seeks to enable reporting on tsunami preparedness in a manner compatible with TRRP, using existing national frameworks and requirements.

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**Tsunami Ready Recognition Sign Guidance**

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**Recommends** that Member States adopt a standard for their Tsunami Ready Recognition signage.

**Further recommends** that Tsunami Ready Recognition Sign, and other sign guidance, including for text content, sign shape and size and color, will be included in the Tsunami Ready Implementation Toolkit to be developed under the guidance of the IOC TICs.

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**Appreciates** the important commitments of Barbados, Indonesia, and USA to host the CTIC, IOTIC, and the ITIC to support the ICGs.

**Requests** the Tsunami Information Centres to continue to do their work in coordination with the ICGs’ working groups in the region.

**Tsunami Ready and Making Cities Resilient**

**Notes** the need for Tsunami Ready Disaster Risk Reduction approach (Assessment, Prevention, Mitigation, Emergency Response, and Recovery) to critical Coastal Infrastructures, including Tsunami Ready Airports, Tsunami Ready Hotels, Tsunami Ready Ports.

**Request** Secretariat to follow up on the MCR ISO requirements.

**Appreciates** the presentation of Mr. Ardito Kodijat for reviewing and analyzing the UNESCO-IOC Tsunami Ready link to the Making Cities Resilient elements and stages.

**Notes** that linking Tsunami Ready with Making Cities Resilient is an opportunity to capitalize on the cities’ efforts in making cities resilient, support to increase the visibility of Tsunami Ready, and UNESCO-IOC Tsunami Ready Recognized Community is an example of good practice in the Making Cities Resilience.

**Recommends** ICGs and TICs to advocate Member States implementing Tsunami Ready to link with MCR.

**Encourages** the National Tsunami Ready Board of Member States to include national agency work on MCR to be member of the NTRB meeting, and to see the possibilities for ICGs and TICs to promote Tsunami Ready in MCR events i.e. hold Tsunami Ready workshop as MCR events in the MCR regions.

**Education and World Tsunami Awareness Day 2023 and Planning for 2024**

**Appreciates** the continued collaboration between the UNDRR and IOC UNESCO on the World Tsunami Awareness Day (WTAD) in 2023, and the success achieved in scaling up the #GetToHighGround Campaign mobilizing action globally,

**Notes** that the 2024 theme on the WTAD is *Empowering Children and Youth, ensuring the next generation is tsunami prepared.*

**Further notes** the planned collaboration between IOC-UNESCO and UNDRR on Eyewitness and Survivors Project and the Indian Ocean Youth Tsunami Conversation and Campaign of IOTIC

**Welcomes** the major events and activities planned by the UNDRR in partnership with IOC includes:

* the commemoration of the 20anniversary of the 2004 tsunami and engaging children and youth,
* the Asia Pacific Ministerial Conference on DRR and the Africa Regional Platform on DRR,
* Global Exhibition bringing the story of eyewitness survivors, progress since 2004, art and hope for a resilient future, schools and community dialogues, youth advocates, engagement and #GetToHighGround activations.

**Further Welcomes** other activities planned by the UNDRR, encompassing the Global media engagement on tsunami documentaries, innovative tools, games and stories for reduction (Stop Disasters Game), Social and Digital Activation toolkit with social cards, customizable cards, videos, dedicated WTAD webpage, video collaboration UNESCO-IOC and reinforcing interlinkages with Early Warning for All Initiative.

**Creating Conversations / Dialogues on challenging issues to attract greater stakeholder engagements (vulnerable groups and social integration)**

**Tsunami Ready Critical Infrastructure**

**Appreciates** the presentation of Dr. Harkunti P. Rahayu on the initiatives done in Indonesia on several types of critical infrastructures: (1) NYIA Airport Ready Tsunami, (2) Bali Tsunami Ready Hotel, and (3) the needs of Industrial Zone Ready for Tsunami learning from Cilegon Industrial Estate. These are useful for the development of guideline for Tsunami Ready Critical Infrastructure as an effort to achieve goal no 2 of the UN ODTP on achieving 100% people at risk to be ready and resilience to tsunami by 2030.

**Recommends** the development of guideline for Tsunami Ready Critical Infrastructure as an effort to achieve goal no 2 of UN ODTP on achieving 100% people at risk to be ready and resilience to tsunami by 2030.

**ISO 22328-3 (Community-based Early Warning Systems for Tsunamis)**

**Appreciates** the presentation of Ms. Suci Dewi, BMKG on progress and status of ISO 22328-3 (Community-based Early Warning Systems for Tsunamis) which is targeting large-scale private sectors to be Tsunami Ready.

**TT-DMP organization**

**Notes** the time limitations experienced during the past two meetings of the TT-DMP that hindered important discussions.

**Recommends** to extend the TTs meeting to a 3-days meeting, including the Joint meeting with TT-TWO, in order to cover all the subjects and allow enough time to discuss.

**Notes** that many advances have been made, and new needs have been identified since TT DMP ToR was prepared.

**Recommends** revising the TT DMP Terms of Reference.



Day #2: Tuesday, 20 February 2024, 0900–1730 local time (UTC+9)

# Agenda of Task Team Disaster Management and Preparedness Session

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Local Time (UTC+9)** | **Topic** | **Lead** |
| 1 | 0900 - 0915 | **Session Organisation**  Logistics and agenda | Harkunti Rahayu Secretariat |
| 2 | 0915 - 0930 | **Discuss Outcomes of the Joint Meeting with TT TWO** | All |
| 3 | 0930 - 1030 | **Review Action Items** | Secretariat |
|  | 1030 - 1100 | ***Break*** |  |
| 4 | 1100 - 1200 | **Tsunami Ready Implementation Status** | Presentations by TT reps each ICG |
| 5 | 1200 - 1230 | **Synergy with Local and National Resilient Programmes, including Tsunami and Critical Infrastructures, and ISO 22328-3 (Community-based Early Warning Systems for Tsunamis),** | Harkunti Rahayu  Indonesia BMKG or Laura Kong (on their  behalf) |
| 6 | 1230 - 1300 | **Education and World Tsunami Awareness Day 2023 and Planning for 2024** | Rosalind Cook All |
|  | 1300 - 1430 | ***Lunch*** |  |
| 7 | 1430 - 1500 | **Creating Conversations / Dialogues** on challenging issues to  attract greater stakeholder engagements (vulnerable groups and social integration) | Alison Brome |
| 8 | 1500 - 1530 | **Discussion on Local Response Systems to Other Sources of Tsunamis (Volcanoes and Meteo- tsunamis)** | All |
|  | 1530 - 1600 | ***Break*** |  |
| 9 | 1600 - 1630 | **Support for Ocean Decade Tsunami Programme Research & Development Implementation Plan** | Harkunti Rahayu |
| 10 | 1630 - 1730 | **Develop TT TMP Work Plan** | Harkunti Rahayu Secretariat |
| 11 | 1730 | **Close of TT DMP Meeting** | Harkunti Rahayu Secretariat |

# Members and Observers of TOWS Task Team on Disaster Management

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Country** | **Organisation** | **Region/Role** |
| Denis Chang Seng | France | IOC | TT- DMP Technical Secretary ICG/NEAMTWS/NEAMTIC/ CoastWAVE |
| **Task Team Members** | | | |
| Harkunti Pertiwi Rahayu | Indonesia | Research Center for DM Institute of Technology | ICG/IOTWMS/ Chair TT DMP |
| Ardito Kodijat | Indonesia | IOC | IOTIC, ICG/IOTWMS |
| Ignacio Aguirre Ayerbe | Spain | IH Cantabria | ICG/NEAMTWS Vice-Chair |
| Marinos Champalakis | Greece | NOA | ICG/NEAMTWS |
| Laura Kong | USA | ITIC | ITIC, ICG/PTWS |
| Ashleigh Fromont | New Zealand | NEMA | ICG/PTWS |
| Alison Brome | Caribbean | CTIC | CTIC, ICG/CARIBE-EWS |
| Silvia Chacon | Costa Rica | National Tsunami Monitoring System | ICG/CARIBE-EWS |
| Derya Vennin | France | IOC | ICG/NEAMTWS / CoastWave Project |
| **Invited Experts and Observers** | | | |
| Rosalind Cook | Geneva | UNDRR | (Head Campaigns and Community Unit, UN Office for DRR |
| Sarah Grimes | Geneva | WMO | Head, Marine Services Division; Coordinator, WMO Ocean Activities |
| Prof Amr Hamouda | Egypt | NIOF | ICG/NEAMTWS Vice-Chair |
| Eric Guyader  **Online** |  | EC | Engineer at European Commission - Galileo Programme |