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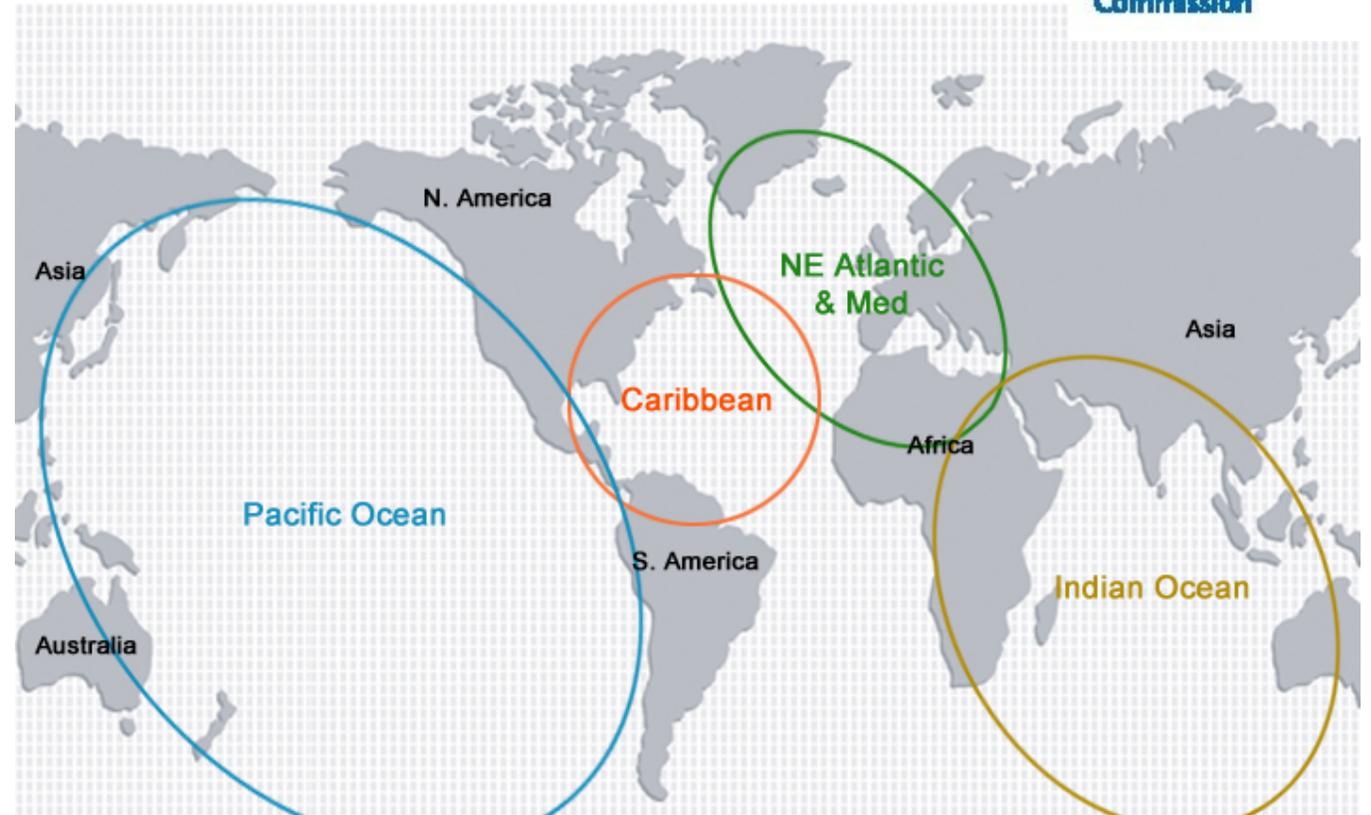
**Report on TOWS-WG
Intersessional Meeting of the
Intergovernmental Coordination
Group for Indian Ocean Tsunami
Warning & Mitigation System
(ICG/IOTWMS)**

23 – 24 November 2021

**Rick Bailey
Head of Secretariat for
ICG/IOTWMS**

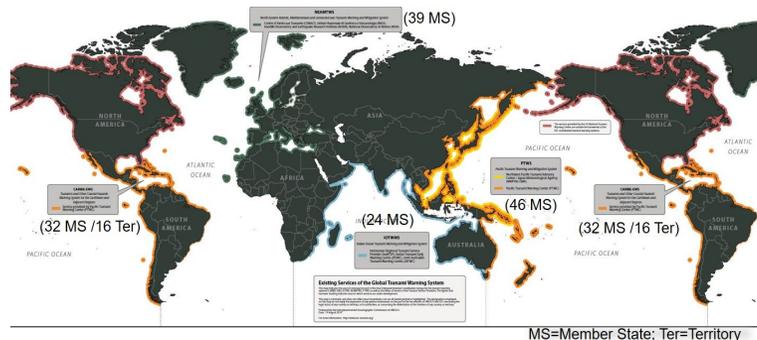
IOC Global Tsunami Warning System

- Pacific since 1965
- 2004 tsunami in Indian Ocean illustrated need for more
- In 2005, the IOC was mandated to establish three more TWS
 - ICG IOTWMS
 - ICG CARIBE EWS
 - ICG NEAMTWS





Governance



**UNESCO/IOC
Assembly/Executive Council**

WMO, IHO, IMO,
UNDRR, UNDP...

**Working Group for Tsunami & Other sea level
related Warning & mitigation Systems
(TOWS-WG)**
[4x ICG Chairs, WMO, UNISDR, UNDP, IMO, IHO]

**Task Team Tsunami
Watch Operations**

**Task Team Disaster Management
& Preparedness**

**ICG
Caribbean & Adjacent
Seas (CARIBE-EWS)**

**Intergovernmental Coordination Group
Indian Ocean Tsunami Warning & Mitigation System (IOTWMS)**
Chair: Prof Dwikorita Karnawati (Indonesia)
Vice Chairs: Mr Pattabhi Rama Rao Eluri (India)
Vice Chair: Prof Behrouz Abtahi (Iran)
Steering Group: Officers, WG Chairs/VCs

**ICG
Pacific Tsunami
Warning &
Mitigation System
(PTWS)**

**ICG
NE Atlantic &
Mediterranean
Seas (NEAMS-TWS)**

**WG1 Tsunami Risk, Community Awareness and
Preparedness**
Chair: Dr. Harkunti Rahayu (Indonesia)

**WG2 Tsunami Detection, Warning &
Dissemination**
Chair: Dr. Yuelong Miao (Australia)

1x Regional WG: NW Indian Ocean
Chair: Dr. Mohammad Mokhtari (Iran)

Task Team – IOWAVE20
Chair: Ms Weniza (Indonesia)

**Task Team – Tsunami Preparedness for a
Near-field Tsunami Hazard**
Chair: Dr. Mahmood Reza Akbarpour
Jannat (Iran)

**Task Team – Scientific Hazard Assessment
of the Makran Subduction Zone**
A/Chair: Dr Abdolmajid Naderi Beni (Iran)

IOC Tsunami Unit (Paris)
A/Head: Bernardo Aliaga
ICG/IOTWMS Secretariat (Perth)
Head: Rick Bailey
**Indian Ocean Tsunami
Information Centre (Jakarta)**
Head: Ardito Kodijat

IOC Secretariat, Tsunami Unit

- Past ICG/IOTWMS Chairs**
2017 - 2019: Dr Andi Eka Sayka (Indonesia)
2015 – 2017: Srinivasa Kumar Tummala (India)
2010 – 2015: Rick Bailey (Australia)
2007 – 2010: Jan Sopaheluwakan (Indonesia)
2005 – 2007: P. S. Goel (India)

Terms of Reference for TOWS-WG



(a) Advise on coordinated development and implementation activities on warning and mitigation systems for tsunamis and other hazards related to sea level of common priority to all ICG/TWSs, with special emphasis on:

- (i) Harmonization and standardization of relevant observation, data management and communication, forecast and warning practices
- (ii) Development of synergies in capacity-building and outreach activities
- (iii) Reinforcement of intergovernmental, international and national capabilities on hazard knowledge, vulnerability, and impact assessment
- (iv) Effective coordination with all related subsidiary bodies, experts groups, and partner organizations with relevant mandates.

(b) Report to the IOC Executive Council and Assembly on these common activities and propose new actions, as required. Advise the IOC Executive Council and Assembly regarding:

- (i) Instructions to the relevant subsidiary bodies responsible for coordinating the implementation of TOWS-WG actions
- (ii) Any liaison or consultation required with relevant international and intergovernmental stakeholders in implementing TOWS-WG actions not under the unique mandate of IOC.

The TOWS-WG shall review and provide guidance on establishing the framework mechanism for a comprehensive, sustained and integrated end-to-end global system covering tsunami and other hazards related to sea level, exploiting existing IOC mechanisms, capacities and capabilities, and facilitating priority projects and programmes, in alignment with the IOC Strategic Plan and IOC Executive Council decisions and in coordination with relevant stakeholders.



Terms of Reference for Task Team on Tsunami Watch Operations



1. Provide a mechanism to the ICGs for coordination of tsunami watch operations among the Tsunami Warning Systems;
2. Maintain an inventory of current and proposed products and their dissemination methods;
3. Recommend and promote harmonized terminology;
4. Maintain an inventory of areas of responsibilities, geographical coverage, system architectures, and other relevant characteristics;
5. Recommend operational standards, procedures and guidelines for regional and national providers of tsunami forecast information;
6. Share and harmonise methods of detection and characterization, forecasting techniques and dissemination to enhance the accuracy and effectiveness of tsunami forecast information for users;
7. Monitor status of the regional provision of tsunami forecast information; Report to TOWS-WG

Membership

The representatives to the Inter-ICG Task Team on Tsunami Watch Operations shall be nominated by their respective ICG Chairpersons. The membership shall consist of two representatives from each ICG, and include representatives from the regional providers of tsunami threat information. The IOC Chair will appoint the Chair of the Task Team.



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Terms of Reference for Task Team on Disaster Management and Preparedness

1. Facilitate in collaboration with organization such as UNISDR (United Nations Office for Disaster Risk Reduction), the exchange of experiences and information on preparedness actions, education/awareness raising campaigns and other matters related to disaster management and preparedness;
2. Promote preparedness in coastal communities through education and awareness products and campaigns;
3. Facilitate SOP training across ICGs to strengthen emergency response capabilities of Member States and their Disaster Management Offices;
4. Promote preparedness programs and assessment tools that have been successful in one regional Tsunami Warning and Mitigation System in the others as appropriate;
5. Facilitate the coordination of the TICs of the ICGs;
6. Report to the TOWS-WG

Membership

The representatives to the TT-DMP are nominated by their respective Chairpersons of the Intergovernmental Coordination Groups (ICGs). The membership consists of two representatives from each ICG, one of which should represent the ICG's Tsunami Information Center. The IOC Chair appoints the Chair of the Task Team.



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Outcomes from 14th Meeting of TOWS-WG

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



The United Nations
Decade of Ocean Science
for Sustainable Development
(2021-2030)



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- **The Group endorsed** the document “*Protecting Communities from the World’s Most Dangerous Waves: A Framework for Action under the UN Decade of Ocean Science for Sustainable Development*” (annex 1 to Circular Letter, 2825) as a guiding document to develop a Draft 10-Year Research and Development and Implementation Plan that will be registered as an Ocean Decade Action called the *Ocean Decade Tsunami Programme (the programme)* **and recommended** a governance structure for *the programme*.
- Science Committee in process of being established by TOWS-WG to develop the 10-year Plan
- Plan focus areas:
 - Expand existing monitoring systems to fill gaps
 - Utilise new novel technologies to fill monitoring gaps
 - Wide expansion of data access and accessibility
 - Increased access and collection of coastal topography data in collaboration Nippon Foundation-GEBCO Seabed 2030 project
 - Ensure NTWCS have access to data, tools and comms platforms, protocols and training to effectively warn coastal and maritime communities



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- **The Group further recommended** that the Draft 10-Year Research, Development and Implementation Plan for the *Ocean Decade Tsunami Programme (the programme)* contribute to achieving the societal outcome of “A Safe Ocean” with the aim of making 100% of communities at risk of tsunami prepared for and resilient to tsunamis by 2030 through the implementation of the UNESCO/IOC Tsunami Ready Programme and other initiatives to include, but not limited to:
 1. The adoption and continued implementation of the **UNESCO/IOC Tsunami Ready Guidelines and Indicators as the international standard** for evidence-based community preparedness for tsunamis;
 2. **Enhanced access and capacity development for high-resolution near shore bathymetric and topographic data** and identification of potential tsunami sources for accurate and improved inundation modelling and evacuation mapping and planning in support of Tsunami Ready communities;
 3. **Enhanced integration to minimize tsunami disaster impacts and to enable rapid restoration of socio-economic activities and critical infrastructure services** post tsunami impacts.





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IOC-UNESCO Tsunami Ready Programme



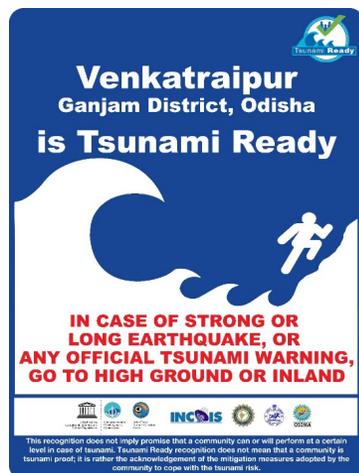
1. The community has designated and mapped tsunami hazard zones.
2. The community has information of the estimate number of people that live in the tsunami hazard zone.
3. The community has an inventory of available economic, infrastructural, political and social resources to reduce tsunami risk at the community level.
4. The community has a public display of tsunami information.
5. The community has easily understood tsunami evacuation maps as determined to be appropriate by local authorities in collaboration with communities.
6. Development and distribution of outreach and public education materials
7. Hold at least three outreach or education activities annually
8. Conduct a biennial tsunami community exercise.
9. Has a tsunami emergency operations plan (EOP) for the community.
10. Has the capacity to manage emergency response operations during a tsunami.
11. Has redundant and reliable means to receive 24-hour official tsunami alerts
12. Has redundant and reliable means to disseminate 24-hour official tsunami alerts to the public.

Part of the end-to-end tsunami early warning and mitigation system with a particular **focus on community awareness and preparedness.**

A **community performance-based programme** as an active collaboration of the public (community), community leaders, local and national emergency management agencies and the national warning centre.



Based on 12 Indicators
Developed from best practices and lessons learnt worldwide.



Venkatraipur
Ganjam District, Odisha
is Tsunami Ready

IN CASE OF STRONG OR
LONG EARTHQUAKE, OR
ANY OFFICIAL TSUNAMI WARNING,
GO TO HIGH GROUND OR INLAND



This recognition does not imply promise that a community can or will perform at a certain level in case of tsunami. Tsunami Ready recognition does not mean that a community is tsunami proof; it is rather the acknowledgement of the mitigation measures adopted by the community to cope with the tsunami risk.

Tsunami Coalition Proposal

Goal of the **Coalition** should be linked to the ‘**safe ocean**’ Societal Outcome of the Decade, “...whereby human communities are much better protected from ocean hazards and where the safety of operations at sea and on the coast is ensured...”. In this context, the goal of the Coalition should be:

Grow the number of Tsunami Ready communities as part of the Ocean Decade

This goal should be achieved through the following objectives:

1. Raising the profile of Tsunami Ready
 2. Increasing funding resources for the implementation of Tsunami Ready
 3. Advising the TOWS-WG and TTDMP on the implementation of Tsunami Ready, i.e:
 - flexibility with regards to accomplishing the indicators to allow for circumstances where formal bureaucratic frameworks/requirements may pose barriers
 - consideration of unique regional and/or local circumstances
 - recognition of similar standards already in place in some countries
- Membership: International, regional and national stakeholders



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The Group recommended to the IOC Assembly at its 31st session in 2021 to encourage Member States to:

- **Use best practices in engineering design and construction of evacuation shelters**, especially where local tsunami hazards exist;
- Include the Indian Ocean Tsunami Information Center (IOTIC) compilation of **school Disaster Risk Reduction and preparedness materials as a resource**, and especially as part of Tsunami Ready pilots that include schools.

The Group recommended the IOC Assembly at its session in 2021 to instruct the regional Intergovernmental Coordination Groups to:

- **Urgently complete the Tsunami Ready Guidelines** (IOC Manuals and Guides, 74) for widespread distribution to Member States;
- Include **local source tsunami Standard Operating Procedures** as an important component of the UNESCO/IOC Tsunami Ready programme;
- **Develop standardized trainings that can be delivered online** or in person, in particular through the Ocean Teacher Global Academy (OTGA).



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The Group requested the Secretariat to:

- Organize a virtual meeting on WAVE exercises and coordinate it so as to minimize date conflicts and share best practices for exercise evaluation and the use of online tools;
- Arrange a virtual meeting of the TOWS-WG Task Team on Disaster Management & Preparedness (TT DMP) on key performance indicators (KPIs) in the near future to discuss a work plan for harmonizing performance monitoring frameworks across all the Intergovernmental Coordination Groups (ICGs), that include KPIs for integrating international cooperation into the KPIs of CARIBE-EWS, IOTWMS, and NEAMTWS.
- Support a Task Force working under the TT Tsunami Watch Operations examining atypical / non-seismic generated tsunamis and the development of SOPs to enable NTWCs to respond to this type of threat and issue warnings



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- **The Group recommended** to the IOC Assembly at its session in 2021 to encourage **Member States to provide voluntary financial loans to IOC** special accounts and in-kind contribution to support the Ocean Decade Tsunami Programme



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