Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS)

Working Group 2
Tsunami Detection, Warning and Dissemination

Version: 6 August 2024

Chair: Dr Karyono (Indonesia)

Vice Chair: Dr Robert Greenwood (Australia)

Vice Chair: Mr Jijjavarapu Padmanabham (India)

Terms-of-Reference

Liaise with other working group(s) and task team(s) within the ICG/IOTWMS and with working groups from the other ocean basins through the TOWS-WG to:

1. Coordinate and strengthen the operational implementation of tsunami detection, warning and dissemination, including for tsunamis generated by non-seismic and complex sources.
2. Support the Tsunami Service Providers (TSPs) delivery of interoperable regional tsunami threat information products to Member States.
3. Support Member States in the development of their national tsunami warning capabilities.
4. Monitor the performance of key observational, warning and communication system components.
5. Support implementation of IOWave Exercises.
6. Identify areas of priority for action following assessments, communications tests, exercises, and real tsunami events.
7. Provide advice on further development of IOC-UNESCO TRRP.
8. Provide advice to the Indian Ocean Tsunami Information Centre (IOTIC) on educational materials about the warning systems and services.
9. In collaboration with IOC-UNESCO IOTIC and IOC-UNESCO Secretariat for ICG/IOTWMS, help strengthen the capacity and capability of Member States.

Activities may include:

1. Help coordinate and facilitate the development and operational implementation of tsunami detection, warning and dissemination systems and procedures within Multi-Hazard Early Warning System (MHEWS) frameworks and systems.

2. Monitor, assess and routinely report to the Steering Group and ICG on the performance of Tsunami Service Providers (TSPs), observational seismic and sea level monitoring networks, communication systems and procedures.

3. Consult with Working Group 1 "Tsunami Risk, Community Awareness and Preparedness" on the requirements and suitability of threat information and warning products.

4. Work closely with Working Group 1 "Tsunami Risk, Community Awareness and Preparedness", Working Group 3 "Tsunami Ready Implementation", IOC-UNESCO IOTIC and IOC-UNESCO Secretariat for ICG/IOTWMS, to help develop the capacity of Member

States across the Indian Ocean to implement the IOC-UNESCO Tsunami Ready Recognition Programme (TRRP) or similar initiatives.

5. Work closely with Working Group 1 "Tsunami Risk, Community Awareness and Preparedness", Working Group 3 "Tsunami Ready Implementation", IOC-UNESCO IOTIC and IOC-UNESCO Secretariat for ICG/IOTWMS, to develop effective national tsunami warning chains, warning products, services, Standing Operating Procedures, and warning chains.

6. Monitor existing international and national arrangements and provision of real-time data required for tsunami monitoring and warning with regards to seismic, GNSS, sea level and other kinds of measurements and data exchange.

7. Undertake studies to determine warning requirements for seismic and sea level data.

8. Facilitate the ongoing development and benchmarking of tsunami modelling, forecast and verification systems.

9. Contribute to the conduct of regular exercises and communication tests of the IOTWMS.

10. In collaboration with Working Group 1 " Tsunami Risk, Community Awareness and Preparedness ", Working Group 3 "Tsunami Ready Implementation", IOC-UNESCO IOTIC and IOC-UNESCO Secretariat for ICG/IOTWMS, help to develop, coordinate, and implement training and capacity building programmes for NTWCs, DMOs and Broadcast Media in the Tsunami Warning Services.

11. Develop and maintain relevant documentation, such as the IOTWMS Service Definition and IOTWMS NTWC Users Guide.

The Working Group will be composed of members nominated by Member States, Member State representatives for each ICG-designated TSP, at least two representatives of non-TSP National Tsunami Warning Centres, and invited observers, with a chairperson and one or two vice-chairpersons to be elected by the ICG.

Criteria for Working Group Membership

In addition to a good working knowledge of the operation of the IOTWMS, specific criteria for Working Group 2 Tsunami Detection, Warning and Dissemination membership include **significant experience in one or more criteria listed below**.

- Seismology, oceanography, sea-level and/or seismic monitoring, or tsunami wave modelling in relation to tsunami generation and propagation.
- Principles and operations of a National Tsunami Warning Centre and the generation of tsunami warnings.
- Dissemination of tsunami warnings via multiple communications systems and media

Rules and Conditions for

ICG/IOTWMS Working Groups and Task Teams

The following rules and conditions apply to all working groups and Task Teams of the Intergovernrmental Coordination Group of the Indian Ocean Tsunami Warning & Mitigation System (ICG/IOTWMS):

- Working language: English
- Frequency of meetings: During inter-sessional period of the ICG/IOTWMS
- Coordination and elections: Following the rules of procedures applying to IOC subsidiary bodies, unless elected by the ICG/IOTWMS, a chair and at least one vice-chair will be elected by the members of the working group or task team for two years with possible re-election of one term in the same position
- Members and appointment: Nominated by Heads of ICG/IOTWMS National Delegations and/or Tsunami National Contacts of Member States in accordance with the rules of procedures applying to IOC subsidiary bodies. Technical experts and observers can be invited at the discretion of the chair
- Duration of the working group and task teams: Two years, renewable subject to review by the ICG/IOTWMS
- Programme of inter-sessional work is guided by its Terms-of-Reference decided by the ICG/IOTWMS and actions requested by the ICG/IOTWMS
- Inter-sessional work is generally conducted by email and teleconference, in addition to at least one face-to-face meeting subject to availability of members and budget
- Reports: A progress report must be submitted to the Secretariat two months before each ICG session and within two months of each working group or task team meeting with the assistance of the Secretariat.
- Financial resources: Participation in the working groups and task teams, including attendance at meetings, will be at national expense.

ICG/IOTWMS Requests Working Group 2 to:

1. Address the recommendations of the 2018 Capacity Assessment of Tsunami Preparedness in the Indian Ocean.

2. Follow up the recommendations contained in the IOWave20 Exercise Report;

3. Investigate methods of detection and threat assessment of non-seismic and complex source tsunami events, including volcanoes and landslide events.

4. Explore possible new tsunami-detection technologies such as pressure sensors attached to undersea communications cables.

5. Extend the TSP services to include tsunamis generated by non-seismic and complex sources.

6. Adopt the updated IOTWMS TSP Service Definition Document (Version 5) and request the TSPs to conform to it.

7. Implement further the TOWS-WG request on TSP messages for the maritime community.

8. Assist the implementation of the IOC-UNESCO TRRP.

9. Replace the task to assist TSPs with the task to assist NTWCs with their implementing CAP, mobile applications, and social media for effective dissemination of national tsunami warning information.

10. Develop guideline of best practice to share with NTWCs about how to integrate tsunami into the multi-hazard early warning approach or system for mutual benefits.

11. Include an additional one-day session on Tsunami Warning Centre and Seismic Network Operations as part of all future Standard Operating Procedure (SOP) training.

ICG/IOTWMS Steering Group requests Working Group 2 to action (Hyderabad, 5-6 February 2024):

1. WG2 to prioritise the actions associated with its work programme.

2. TSP-India and TSP-Indonesia to continue work on also developing products for tsunamis generated by non-seismic and complex sources like those developed and implemented by TSP-Australia.

3. WG2 to develop a TSP Cyber Protection Policy to mitigate against any potential threats.

4. WG2 (Mr Jijjavarapu Padmanabham) with the help of the Secretariat (Ms Nora Gale) to finalise the IOTWMS Standard Services Documentation Document and associated NTWC User Guide for distribution to Member States through a Circular Letter.

5. WG2 to coordinate with Secretariat and TOWS-WG TT TWO in the development of training materials and training workshops for NAVAREA operators for trial implementation of TSP Maritime Products in 2024 (including trial dissemination via IOTWMS Communications Test in December 2024) and full implementation sometime in 2025.

6. WG2 in collaboration with OTGA Training Facility operated by INCOIS to develop seismic and sea level data analysis training workshop for Member States in 2025/26.

7. WG2 in collaboration with TSP-India develop training at the next IOTWMS SOP Workshops for NTWCs in the dissemination of national tsunami warnings by the Common Alerting Protocol (CAP).

8. Secretariat to issue Circular Letter to all Member States to advise that dissemination of TSP products via Fax will cease after three (3) months of the Circular Letter unless Member States advise still required.

9. Secretariat to distribute Report of TOWS-WG Ad Hoc Team on Tsunamis Generated by Volcanoes to all WG2 members for consideration and development of detection and warning system advice for Member States.

10. WG2 to work in collaboration with TOWS-WG TT TWO and the Pacific Tsunami Warning Centre (PTWC) to develop automatic alerting procedures to help detect sea level anomalies associated with tsunamis generated by non-seismic and complex sources.

11. WG2 to prioritise SIDS, LDCs and Africa in its work programme.

12. WG2 to prepare its report to ICG/IOTWMS, including update on progress and recommendations to ICG/IOTWMS-XIV, for review and consideration at the next Steering Group meeting prior to ICG/IOTWMS-XIV