



unesco

Intergovernmental
Oceanographic
Commission

Exercise IOWave25 and Scenarios

Dr Ajay Kumar B, INCOIS, India
ajay@incois.gov.in

Previous Indian Ocean-Wide Tsunami Exercises (IOWave)

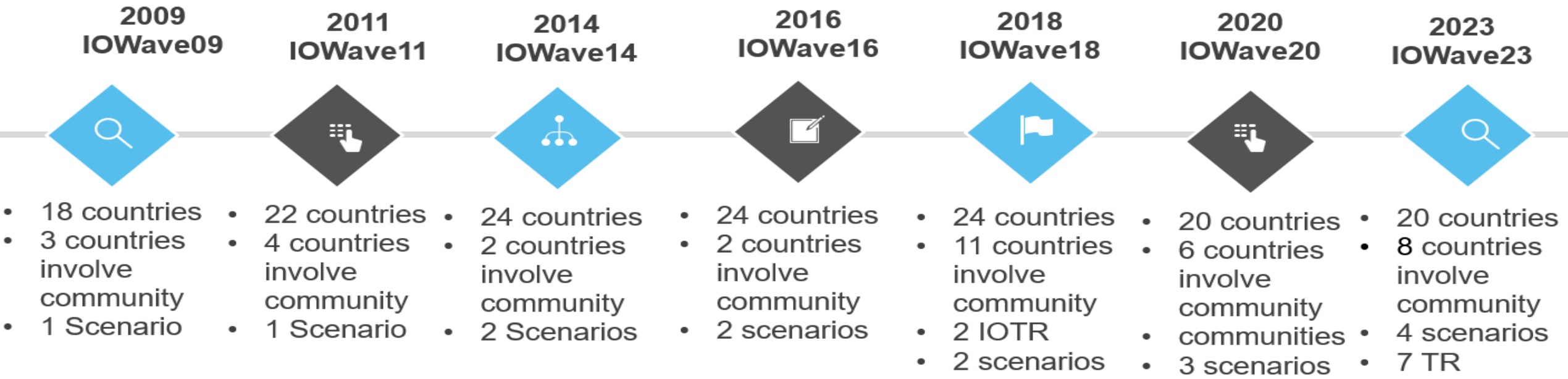


unesco

Intergovernmental
Oceanographic
Commission

Conducted by ICG/IOTWMS to test tsunami notification and response systems:

1. **IOWave09** (Oct 2009)
2. **IOWave11** (Oct 2011)
3. **IOWave14** (Sep 2014)
4. **IOWave16** (Sep 2016): Over 60,000 people participated in evacuation drills
5. **IOWave18** (Sep 2018): Participation exceeded 119,000
6. **IOWave20** (Oct 2020): Testing communication protocols during the pandemic
7. **IOWave23** (Oct 2023): ~45,000 people participated, including all genders, children, elderly, and persons with disabilities



- **Dr Ajay Kumar B**, INCOIS, India - Chair
- **Ms Septa Anggraini**, Indonesia – Vice Chair
- Ms Kate Parkey (tbc), Australia - Member
- Dr Nuraini Rahma Hanifa, Indonesia - Member
- Mr Zaidi Zainal Abidin, Malaysia - Member
- Mr Abdullah Al Busafi, Oman - Member
- Ms Doreen Ikula, Seychelles - Member
- Mr Chathura Liyanaarachchige, Sri Lanka - Member
- Mr Badr Alameri, UAE - Member
- Mrs Shamma Alneyadi, UAE - Member
- Mr Hadif Alshehhi, UAE - Member
- Mr Ali Almehrzi, UAE - Member
- Mr Abduallah Alymmahi, UAE - Member
- Mr Hilal Alkaabi, UAE - Member
- Dr Robert Greenwood (tbc) Australia, TSP Australia Representative
- Mr Yedi Dermadi (tbc), Indonesia, TSP Indonesia Representative
- Dr Weniza, Indonesia - WG1 Chair
- Mr Padmanabham Jijjavarapu, India - WG2 Chair / TSP India Representative
- Ms Suci Dewi Anugrah, Indonesia - WG3 Chair
- Mr Ardito Kodijat - IOTIC

- Task Team established during **ICG/IOTWMS-XIV** (Nov 2024, Banten, Indonesia)
- Scheduled for **September – November 2025**
- Member States encouraged to ensure **broad participation**, including at community level

Purpose:

- To evaluate and improve **the effectiveness of the IOTWMS**, through its operational Tsunami Service Providers (TSPs), National Tsunami Warning Centres (NTWCs), National Disaster Management Organisations (NDMOs) and Local Disaster Management Organisations (LDMOs), and other relevant authorities in responding to a potentially destructive tsunami.
- To test **operational lines of communications, review tsunami warning and emergency response Standard Operating Procedures (SOPs) and promote emergency and community preparedness** in India Ocean countries.

There are nine (9) objectives of Exercise IOWave25. Each objective is designed to validate a part of the end-to-end tsunami warning and mitigation system.

Objectives 1 and 2 survey questions relate to the at-risk coastal communities.

- **Objective 1:** Validate procedures are in place to ensure tsunami warnings get to all in the community, including those with disabilities, all genders, elderly, and youth.
- **Objective 2:** Validate the level of community awareness, preparedness, and response.

Objective 3 and 4 survey questions relate to standard operating procedures at all levels in the national tsunami warning chain.

- **Objective 3:** Validate the Standard Operating Procedures associated with tsunami warning chains within countries for generating and disseminating tsunami warnings to their relevant emergency response agencies, other authorities, media, and the public.
- **Objective 4:** Validate the Standard Operating Procedures associated with tsunami warning chains within countries for the issuing of public safety messages, ordering evacuations and where possible issuing all-clear messages.

Objectives 5 to 9 survey questions relate to the National Tsunami Warning Center and NAVAREA stakeholders.

- **Objective 5:** Validate dissemination by TSPs of Tsunami Bulletin Notification Messages to NTWCs via Tsunami Warning Focal Points (TWFPs) of Indian Ocean countries and the reception by NTWCs of the TSP messages. Validate the access by NTWCs to the tsunami bulletins and other products on the TSP websites, and the use of that information to produce national warnings.
- **Objective 6:** Validate dissemination by TSPs of Tsunami Bulletin Notification messages for NAVAREA stakeholders to ensure navigational safety and security.
- **Objective 7:** Validate access by NTWCs to the tsunami bulletins and other products on the TSP websites, and the use of that information to produce national warnings. Validate the reporting by NTWCs to the TSPs of their National Tsunami Warning Status.
- **Objective 8:** Validate the reporting by NTWCs to the TSPs of their National Tsunami Warning Status.
- **Objective 9:** Validate receipt and understanding by NTWCs of new TSP service for tsunamis generated by non-seismic and complex sources.

IOWave25 Scenarios

Scenario	1. Sunda Trench	2. Makran Trench	3. Fani Maore Volcano	4. Sumatra Trench
Date	25 September 2025 (Thursday)	15 October 2025 (Wednesday)	25 October 2025 (Saturday)	05 November 2025 (Wednesday)
Time	01:00 UTC	06:00 UTC	15:00 UTC (eruption at 14:00 UTC)	03:00 UTC
Source	Earthquake	Earthquake	Volcano	Earthquake
Magnitude	~M9.0	~M9.0	n/a	~M9.2
Depth	10 km	10 km	n/a	10 km
Latitude	6.94S	24.80N	12.92S	3.30N
Longitude	104.70E	62.20E	45.72E	95.96E
Location	Sunda Strait, Indonesia	Off Coast of Pakistan	Mozambique Channel	Northern Sumatra, Indonesia



Scenario 4

Sumatra Trench, M9.2, 05 November 2025, 03:00 UTC

Country	T2 (UTC)	MAX BEACH (m)
Australia	04:06	7.7
Bangladesh	05:56	3.7
Comoros	11:16	2.6
Djibouti	12:34	2.7
France	09:00	7.2
India	03:02	29.9
Indonesia	03:00	43.3
Iran	10:42	2.0
Kenya	11:08	4.6
Madagascar	10:24	8.8
Malaysia	05:58	4.0
Maldives	06:02	17.1
Mauritius	08:40	10.7
Mozambique	11:42	3.2
Myanmar	04:14	6.1
Oman	09:32	3.9
Pakistan	10:06	2.5
Seychelles	09:06	5.4
Singapore	-	-
Somalia	10:00	6.8
South Africa	13:32	6.8
Sri Lanka	04:36	15.6
Tanzania	11:28	2.8
Thailand	04:11	11.9
Timor-Leste	07:50	0.7
United Arab Emirates	11:36	1.2
Yemen	09:40	6.1

Scenario 4 starting at 03:00 UTC on Wednesday 05 November 2025: Magnitude 9.2 earthquake in Northern Sumatra, Indonesia. The simulated tsunami will take approximately 0 hours to travel from its source to Indonesia; 0.5 hours to travel to India; 1.0 hours to travel to Thailand & Myanmar, and 2.0 hours to travel to Sri Lanka.

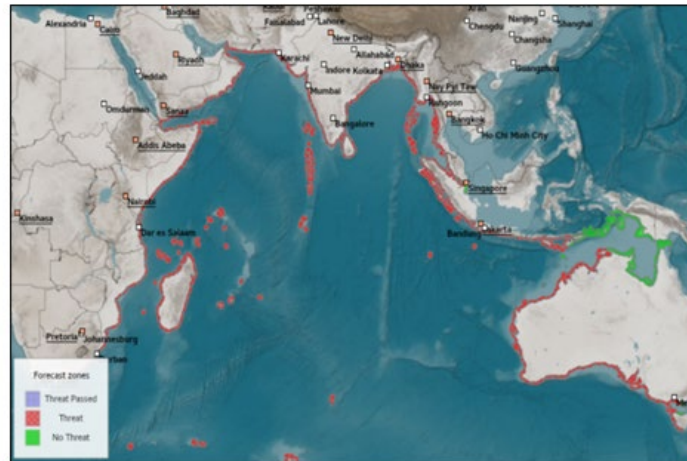


Figure 10. Threat Map example for Scenario 4, Sumatra Trench, for a magnitude ~9.2 earthquake.

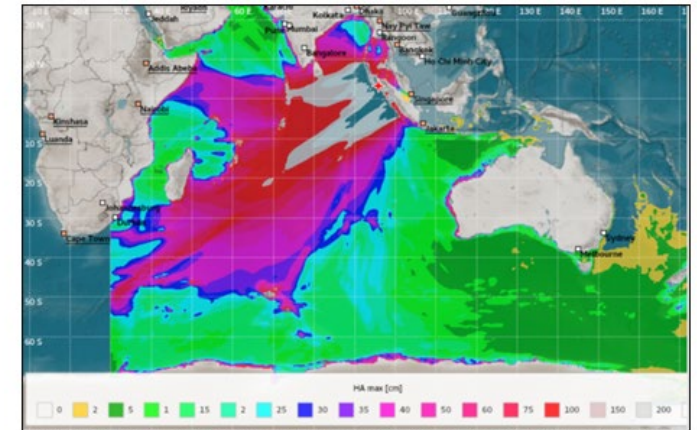


Figure 11. Maximum Wave Amplitude Map example for Scenario 4, Sumatra Trench, for a magnitude ~9.2 earthquake.

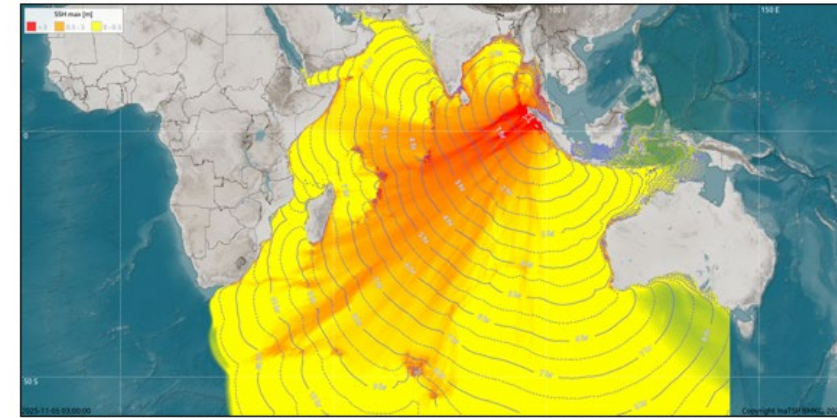


Figure 12. First detectable wave Tsunami Travel Time contour map example for Scenario 4, Sumatra Trench.

Participation Level

- Member States are invited **to participate in at least one scenario** or all scenarios (if country fall under threat);
- Member States are encouraged **to conduct community evacuations**;
- All Member States, particularly those piloting the Programme, are encouraged **to use the UNESCO-IOC Tsunami Ready guidelines and indicators to guide their community preparation for IOWave25 exercise.**

Intergovernmental Oceanographic Commission
Technical Series

216



EXERCISE INDIAN OCEAN WAVE 25
An Indian Ocean-wide Tsunami
Warning and Communications Exercise

25 September – 05 November 2025

Volume 1

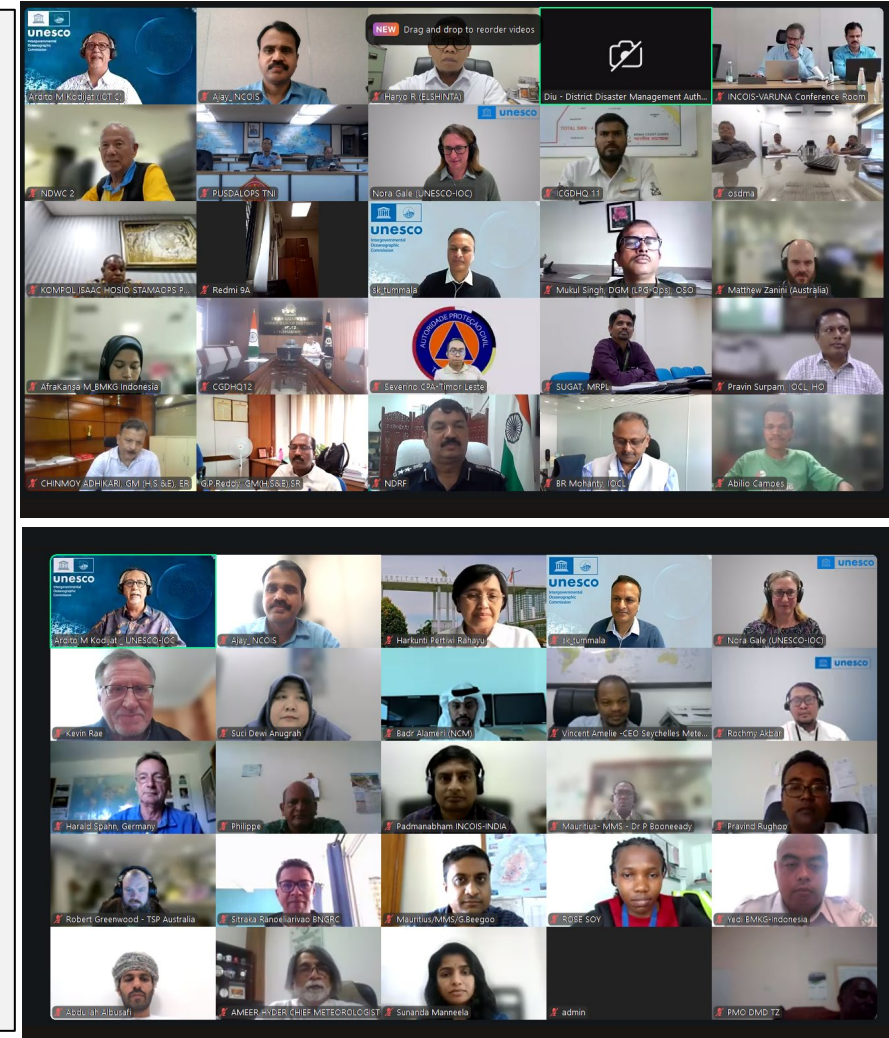
Exercise Manual

UNESCO

- The IOWave25 **Exercise Manual** is complete.
- The **supplements** are under preparation.
- The manual will provide an overview including:
Purpose, Objective, Scope, Exercise Success Criteria, Type of Exercise, Scenario, Date, Checklist Activities Member, Exercise Evaluation (Exercise Survey, Exercise Observer), Checklist of Activities for Member States
- The supplements will contain all TSP bulletins and products.
- The Task Team anticipates **completion and circulation by Secretariat in August 2025.**
- All information and documents will **be made available on the exercise website:**
<https://oceanexpert.org/event/4786>

Pre-IOWave25 Workshops

- IOTWMS secretariate & IOTIC incoordination with TT-IOWave25 conducted two pre-IOWave25 hybrid SOP workshops for Easter and Western Indian Ocean member states
- For Eastern Indian Ocean Member States, conducted during 4-6 August 2025 for 11 member states i.e. Australia, Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Singapore, Sri Lanka, Thailand, and Timor Leste.
- For Western Indian Ocean Member States, conducted during 11-13 August 2025 for 14 member states i.e. Comoros, France Indian Ocean Territories, Iran, Kenya, Madagascar, Mauritius, Mozambique, Oman, Pakistan, Seychelles, South Africa, Tanzania, United Arab Emirates and Yemen.
- Overall, the pre-IOWave25 workshops were grate success, about 400 participated in the hybrid workshops.



- Basen on the feedback received from member states during pre-IOWave workshops, at least 18 Member States of the IOTWMS have indicated plans to participate in Exercise IOWave25, i.e. Australia, Bangladesh, India, Indonesia, Madagascar, Maldives, Mauritius, Mozambique, Oman, Pakistan, Seychelles, Singapore, South Africa, Sri Lanka, Tanzania, Thailand, Timor Leste and UAE.
- **Scenario 4: Sumatra Trench - 5 November 2025 (World Tsunami Awareness Day)**
 - Participating Countries (13): Australia, Bangladesh, India, Indonesia, Madagascar, Maldives, Mozambique, Seychelles, Singapore, South Africa, Sri Lanka, Tanzania and Timor Leste

Evacuation Plans:

- India: Evacuations are planned along the east coast of India.
- Indonesia: Community evacuations are planned, targeting Tsunami Ready communities and participating in Earthquake Field School.
- Madagascar: May conduct evacuations; decision is still pending.
- Mozambique: Plans to conduct school evacuations for World Tsunami Awareness Day (independent of IOWave25).
- Seychelles: Table-top or functional exercise is being planned; evacuation activities are under discussion.
- Sri Lanka: Three school evacuations are planned—one each in the Northern, Eastern, and Southern Provinces.
- Timor Leste: A community/school evacuation is planned in Kampung Marinir, Bebonuk, Dili, in observance of WTAD (independent of IOWave25).



unesco

Intergovernmental
Oceanographic
Commission

THANK YOU



unesco

IOWave25