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اللجنة الدولية الحكومية لعلوم المحيطات

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IOC Circular Letter No 2945
(Available in English only)

IOC/VR/BA/RB/ah
4 May 2023

To : ICG/IOTWMS¹ Tsunami National Contacts

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ICG/IOTWMS Task Team IOWave23
ICG/IOTWMS Tsunami Warning Focal Points
ICG/IOTWMS National Tsunami Warning Centres

**Subject: Announcement of the Indian Ocean Tsunami Exercise (IOWave23)
on 4, 11, 18, and 25 October 2023**

The IOC Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS) at its 13th session (Bali, Indonesia, 28 November–1 December 2022), decided to organise an Indian Ocean Wave Exercise in 2023 (IOWave23) and established a Task Team to plan and conduct the exercise. At its most recent intersessional meeting, held online on 4 April, and after consultation with key stakeholders, the Task Team IOWave23 decided to conduct IOWave23 with four different scenarios on 8, 11, 18, and 25 October 2023. The four scenarios will allow individual Member States to decide the type and number of exercise scenarios to participate in. This letter provides background information and details of the IOWave23 in which all ICG/IOTWMS Member States are encouraged to participate.

To date six IOWave exercises have been conducted (2009, 2011, 2014, 2016, 2018 and 2020). The exercises have been designed to test the receipt and dissemination of tsunami notifications along national tsunami warning chains, as well as test appropriate responses aligned with pre-established Standard Operating Procedures (SOPs). Throughout the IOWave Exercises, the engagement of coastal communities in tsunami education campaigns, preparedness measures, and evacuation

¹ ICG/IOTWMS Member States include Australia, Bangladesh, Comoros, Djibouti, France, India, Indonesia, Iran (Islamic Republic of), Kenya, Madagascar, Malaysia, Maldives, Mauritius, Mozambique, Myanmar, Oman, Pakistan, Seychelles, Singapore, Somalia, South Africa, Sri Lanka, Tanzania, Thailand, Timor Leste, United Arab Emirates and Yemen.

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drills has grown. Moreover, awareness and adoption of the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP) guidelines have increased.

Key milestones in exercise participation were achieved during the IOWave16, where over 60,000 people participated in evacuation drills, and subsequently during the IOWave18 where the number of participants exceeded 119,000. The vast majority of community evacuations were conducted in India, with Australia, Comoros, Indonesia, Iran, Kenya, Mauritius, Oman, Pakistan, Seychelles, Sri Lanka, Tanzania, Thailand, and Timor Leste also involving at-risk coastal communities in one or both exercises.

During [IOWave20](#) held during the Covid-19 pandemic, Member States were encouraged to focus on testing communications protocols and conduct virtual tabletop exercises (as a minimum) to assess organisational Standard Operating Procedures, plans, and policies for tsunami warning and emergency response. Guidelines for tsunami response during the Covid-19 pandemic were published and the IOWave20 Task Team encouraged Member States to update and test their SOPs for a pandemic situation.

Objectives: IOWave23 will again simulate Indian Ocean countries being put in a tsunami threat situation. As a primary objective it will require the National Tsunami Warning Centre (NTWC) and the National and/or Provincial and/or Local Disaster Management Offices (NDMOs/PDMOs/LDMOs) in each country to implement their SOPs associated with their national tsunami warning chains. The exercise will test the preparedness for responding to tsunamis generated by seismic events (undersea earthquakes) and for the first time non-seismic events (e.g., tsunamis generated by volcanoes). SOP training workshops for Member States will be organised in July 2023. This will help ensure national tsunami warning chains and associated SOPs are reviewed and robust to help prepare Member States for IOWave23 and any future real tsunami events.

In addition to testing the SOPs and communication links at all levels of the national tsunami warning chain, another primary objective of IOWave23 is to enhance tsunami preparedness at the community level. To this end and where implemented, IOWave23 will also provide an opportunity for Member States to test the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP) indicators or other related national initiatives in at-risk communities. Guidelines and associated training resources for the TRRP can be [downloaded online](#) from the International Tsunami Information Center (ITIC) web site (<http://itic.ioc-unesco.org>). An introduction to the TRRP for ICG/IOTWMS Member States was also provided at the Indian Ocean Tsunami Ready Workshop, held in Bali, Indonesia, 22–26 November 2022 (<https://oceanexpert.org/event/3635>). Further training on TRRP will be provided to Member States of the ICG/IOTWMS in due course.

Dates and Scenarios: IOWave23 will comprise four scenarios with simulated tsunami waves travelling across the Indian Ocean basin. Member States are invited to participate in one or more events, which will be run in real-time:

- Scenario 1 starting at 04:00 UTC on Wednesday 4 October 2023: Magnitude ~9 earthquake in the Andaman trench off the west coast of Nicobar Islands, India.
- Scenario 2 starting at 06:00 UTC on Wednesday 11 October 2023: Magnitude ~9 earthquake in the Makran trench of the North-West Indian Ocean.
- Scenario 3 starting at 06:00 UTC (eruption at 05:00 UTC) on Wednesday 18 October 2023: Volcanic eruption on Heard Island in the Kerguelen Islands Region.
- Scenario 4 starting at 02:00 UTC on Wednesday 25 October 2023: Magnitude ~9 earthquake in the Java trench to the south of Java, Indonesia.

Specifics: The IOTWMS Tsunami Service Providers (TSPs) of Australia, India, and Indonesia will provide IOWave23 bulletins and detailed tsunami threat advice on their password-protected websites. Notification messages will be sent to the national Tsunami Warning Focal Points (TWFP)

as threat information is updated during the events. The IOWave23 Exercise Manual will be distributed by email in May 2023 with further details of the exercise scenarios and post-exercise evaluation. For your information, the guiding principles for the conduct of the exercise are provided in Annex 1. A checklist of activities to enable Member States to prepare for the exercise is provided in Annex 2.

Nomination of National Contact for IOWave23: To ensure that the commitment of participating Member States is fully coordinated, we seek your nomination of a National Contact for IOWave23 with whom the IOC Secretariat will communicate about planning and the conduct of the exercise, including distribution of the IOWave23 Exercise Manual, via email. The designated National Contact for IOWave23 will be expected to confirm the accuracy of existing tsunami warning arrangements within your country, including the identification of operational points of contact for receipt and dissemination of tsunami warnings downstream from the NTWC. The designated National Contact for IOWave23 will also be responsible for coordinating input to the post-exercise evaluation, details of which will be circulated as part of the IOWave23 Exercise Manual.

I would be grateful if you could please provide the details of your National Contact for IOWave23 by 31 May 2023 to the UNESCO-IOC ICG/IOTWMS Secretariat by email: iotwms@unesco.org.

I would also encourage you to disseminate copies of this letter to the appropriate organisations and authorities within your country.

I would like to thank you in advance for your Member State's participation and contributions to this important initiative to help prepare Indian Ocean communities for the next tsunami threat.

Yours sincerely,

[signed]

Vladimir Ryabinin
Executive Secretary

Enclosures:

Annex 1 – Guiding Principles for IOWave23 Exercise

Annex 2 – Checklist of activities to enable Member States' preparation for IOWave23 Exercise

Annex 1: Guiding Principles for IOWave23 Exercise

1. The exercise will simulate each IOTWMS Member State being placed in a tsunami threat situation and require the National Tsunami Warning Centre (NTWC) and the National and/or Provincial and/or Local Disaster Management Office (NDMO/PDMO/LDMO) to implement their Standard Operating Procedures (SOPs).
 2. Member States are encouraged to conduct the exercise to community level to test SOPs and communications at all levels of the national tsunami warning chain. To enhance community preparedness at community level, Member States are also encouraged to test the indicators of UNESCO-IOC Tsunami Ready Recognition Programme (TRRP) or similar national initiatives in communities, where implemented. However, it is recommended to only conduct the exercise to the level prepared for, which at a minimum should include testing the SOPs and operational lines of communication at the NTWC and DMOs.
 3. The four exercise scenarios are:
 - Scenario 1 starting at 04:00 UTC on Wednesday 4th October 2023: Magnitude ~9 earthquake in the Andaman trench off the west coast of Nicobar Islands, India. The simulated tsunami will take approximately 0 hours* to travel from its source to India; 1 hour to Indonesia; and 1.5 hours to travel to Thailand, Bangladesh, and Sri Lanka.
 - Scenario 2 starting at 06:00 UTC on Wednesday 11th October 2023: Magnitude ~9 earthquake in the Makran trench of the North-West Indian Ocean. The simulated tsunami will take approximately 0 hours* to travel from its source to Iran, Pakistan, and Oman; 0.5 hours to travel to the United Arab Emirates; and 2 hours to travel to India.
 - Scenario 3 starting at 06:00 UTC (eruption at 05:00 UTC) on Wednesday 18th October 2023: Tsunami generated by volcanic eruption on Heard Island in the Kerguelen Islands Region. The simulated tsunami will take approximately 1.5 hours to travel from its source to the French Islands; 6 hours to Madagascar, Mauritius, and Australia; and 6.5 hours to South Africa.
 - Scenario 4 starting at 02:00 UTC on Wednesday 25th October 2023: Magnitude ~9 earthquake in the Java trench to the south of Java, Indonesia. The simulated tsunami will take approximately 0 hours* to travel from its source to Indonesia; 0.5 hours to travel to Australia; and 1.5 hours to travel to Timor-Leste.
- * Note that the expected arrival times have been approximated to the nearest 0.5 hour (30 minutes). Therefore, a time of 0 hours can be interpreted as less than 15 minutes.*
4. Exercise bulletins and detailed tsunami threat advice will be generated in real-time by the IOTWMS Tsunami Service Providers (TSPs) (Australia, India, Indonesia) and made available on their password-protected websites. Notification Messages will be sent to the national Tsunami Warning Focal Points (TWFP) by the TSPs as the information is updated during the events.
 5. All Member States are strongly encouraged to participate to the extent possible in their country, particularly for the scenario that is "near-field" for them. Note that it may be very worthwhile to participate in multiple scenarios, if possible, because SOP issues identified for one scenario can be corrected and exercised again in a subsequent scenario, and because the tsunami arrival times will vary for each scenario requiring potentially different responses.

6. Due care should be taken not to inadvertently alarm the public.
7. Participating Member States are requested to share information following the exercise regarding the procedures applied and the lessons learned, via the Exercise Evaluation (details to be provided in the IOWave23 Exercise Manual). The outcomes and performance measures to be reported will include:
 - Dissemination by TSPs of Tsunami Bulletin Notification Messages to NTWCs via TWFPs of Indian Ocean countries and the reception by NTWCs of the TSP messages;
 - Access by NTWCs to the tsunami bulletins and other products on the TSP websites, and the use of that information in the production of national warnings;
 - Reporting by NTWCs to the TSPs of their National Tsunami Warning status;
 - Validate the SOPs for generating and disseminating tsunami warnings to emergency response agencies, media, and the public;
 - Validate the SOPs for issuing of public safety messages, ordering evacuations and where possible issuing all-clear messages;
 - Validate the level of community awareness, preparedness, and response;
 - Media response (if applicable).

Annex 2: Checklist of activities to enable Member States' preparation for IOWave23 Exercise

No	Activity	Timeline
1	Announcement by IOC Circular Letter	May 2023
2	Set up IOWave23 Exercise National Coordination Committee involving NTWC, LDMOs, NDMOs, and all other important stakeholders including private industry participants.	May 2023
3	Decide on level of participation and identify communities for evacuation (where applicable).	May 2023
4	Assign agency roles including exercise controller, key participants, and observers.	May 2023
5	Nominate a National Contact for IOWave23.	May 2023
6	Issue of IOWave23 Exercise Manual by the Secretariat.	May 2023
7	Secure funding and support for community activities.	Ongoing
8	Develop a National IOWave23 Exercise Manual to plan/guide activities, including those at community level.	May 2020
9	Address indicators of UNESCO-IOC Tsunami Ready Recognition Programme or similar national initiative (where appropriate).	Ongoing
10	Share IOWave23 Exercise in-country participation plans with the ICG/IOTWMS Secretariat.	June 2023
11	UNESCO-IOC Standard Operating Procedure (SOP) Training Workshops (regionally online and nationally face-to-face).	July 2023
12	Organise and hold pre-exercise national workshop(s) and meeting(s) with key stakeholders including media.	August – September 2023
13	Ensure Standard Operating Procedures are in place and up to date.	August – September 2023
14	Prepare a media press release.	One week before the exercise
15	Participate in IOWave23 Exercise.	4 / 11 / 18 / 25 Oct. 2020
16	Hold post-exercise hot and cold debriefs.	After the Exercise
17	Complete the IOWave23 online post-exercise evaluation.	November 2023
18	Revise and improve SOPs in accordance with lessons learnt during the Exercise.	After the Exercise
19	IOC-UNESCO Post-IOWave23 Exercise Lessons Learnt Workshop (online).	November 2023

Note: This checklist is intended to serve only as a broad reference and is not all-inclusive.