



ICG/IOTWMS-XIII
Bali, Indonesia, Tuesday/29 July 2022



Indian Ocean Wave Exercise 20 (IOWave20)

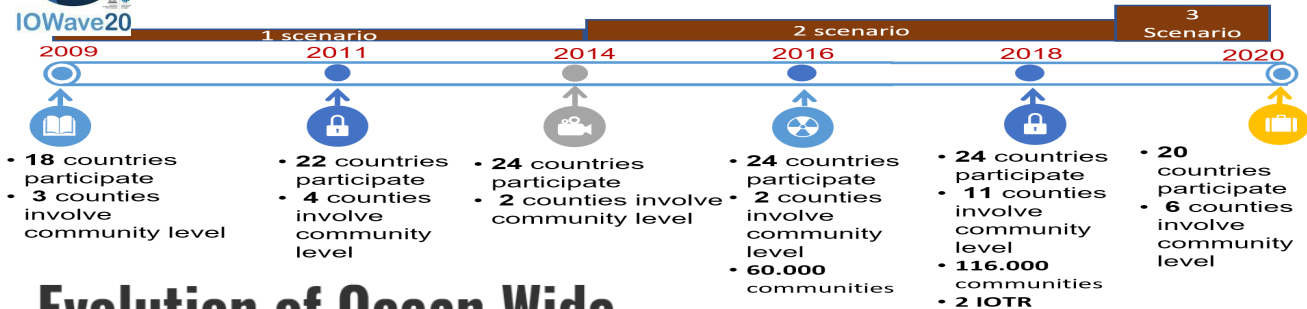
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Acknowledge : Secretariat ICG/IOTWMS – Mr. Rick Bailey, Ms. Nora Gale –



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History of Indian Ocean Exercise



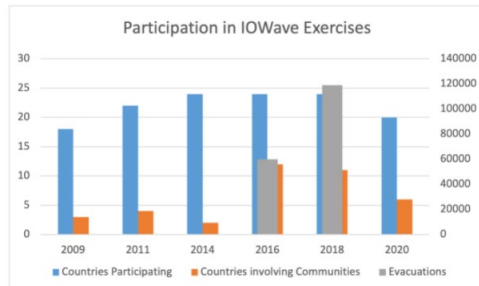
Evolution of Ocean Wide Exercises in the Indian Ocean

Nora Gale, Ardito M Kodijat, Weniza, Ali Khoshkholgh, Ajay Kumar Bandela, and Simon Allen

POSTED ON JULY 6, 2021



<https://www.ecomagazine.com/in-depth/featured-stories/evolution-of-ocean-wide-exercises-in-the-indian-ocean>



IOWave20 Task Team

- **Ms. Weniza**, BMKG, Indonesia – Chair
- **Dr. Ali Khoshkholgh**, INIOAS, Iran – Vice Chair
- **Dr. Simon Allen**, BoM, Australia - Member
- **Mr. Ajay Kumar**, INCOIS, India - Member
- **Badar Al-Rumhi**, Oman – Member
- **Khalid Al-Wahaibi**, Oman – Member
- **Alyaqdhan Al-Siyabi**, Oman – Member
- **Ameer Hyder**, Pakistan - Member
- **Tariq Ibrahim**, Pakistan - Member



Term of Reference (ToR) on IOWave20

- Plan and coordinate the next IOWave Exercise (IOWave20), taking on-board suggestions from **the post-IOWave18 lessons learnt workshop including an increased focus on LDMO down to community level and implementation of IOTR.**
- Prepare the Exercise Manual in accordance with the Guideline on "How to Plan, Conduct and Evaluate Tsunami Exercises" (IOC Manuals and Guides No. 58) **at least 6 months in advance of the exercise,**
- Prepare **the Exercise Report for ICG/IOTWMS-XIII.**

The Task Team will report to **the Steering Group and be composed of members nominated by Member States and representatives from TSPs, with a chairperson and vice-chairperson to be elected.**

Scale:

- Due to the ongoing Covid-19 pandemic, the scale of IOWave20 was **reduced in comparison with previous exercises**.
- Member States were encouraged to **test communication protocols and conduct a “virtual” table-top exercise (as a minimum)**
- Emphasis was placed on **updating organizational Standard Operating Procedures, plans and policies for tsunami warning and emergency response during a pandemic.**

Objective:

1. Validate **the 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.
2. Validate **the access by NTWCs to the tsunami bulletins and other products on the TSP websites**, and the use of that information for the production of national warnings.
3. Validate **the reporting by NTWCs to the TSPs of their National Tsunami Warning Status.**



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Intergovernmental Oceanographic Commission
Technical Series

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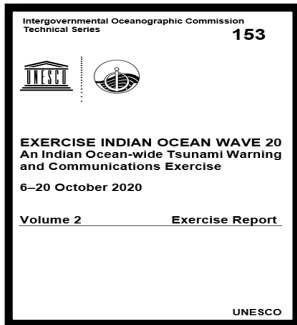


EXERCISE INDIAN OCEAN WAVE 20
An Indian Ocean-wide Tsunami
Warning and Communications Exercise
6–20 October 2020

Volume 1 Exercise Manual

Summary of Achievement

- IOWave20 was held **during the Covid-19 pandemic**, which is affecting countries around the world and in the Indian Ocean region
- Exercise Indian Ocean Wave 2020 was held over two-weeks, **6-20 October 2020 --- 1 week intervals on 6, 13 and 20 October**
- To date **20 Indian Ocean Member States** reported their participation in the IOWave20 evaluation survey.
- At least **6 active Indian Ocean Member States** involve **Communities** with health Covid-19 protocol.
- Exercise Indian Ocean Wave 2020 contained **three earthquake scenarios with all scenarios run in real-time (Java Trench, Andaman Trench and Makran Trench)**
- **For Each scenari, the TSPs issued four tsunami bulletins in real time over a 1-hour period.**
- IOC-UNESCO conducted **on online assessment** that was coordinated in country by the IOWave20 National Contacts.





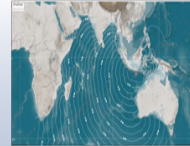
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Scenarios

1. Java Trench

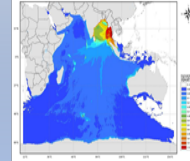
6 October 2020; 03:00 UTC; M9.1; 10 Km; 10.40 S,
112.80 E, South of Java, Indonesia



20 countries under threat

2. Andaman Trench

13 October 2020; 04:00 UTC; M9.2, 10 Km, 12.65 N,
93.50 E, Off West Coast of Andaman Islands, India



18 countries under threat

3. Makran Trench

20 October 2020; 06:00 UTC; M9.0, 10 Km, 24.8 N,
62.2 E, Off Coast of Pakistan



21 countries under threat

Participation (1)

✓ 20 IOTWMS active Member States participated

✓ 12 Member States participated in one scenario

Australia, Comoros, Madagascar, Malaysia, Mauritius, Mozambique, Myanmar, Oman, Singapore, South Africa, Sri Lanka and United Arab Emirates

✓ 4 Member States participated in two scenario

Bangladesh, India, Seychelles and Yemen

✓ 4 Member States participated in two scenario

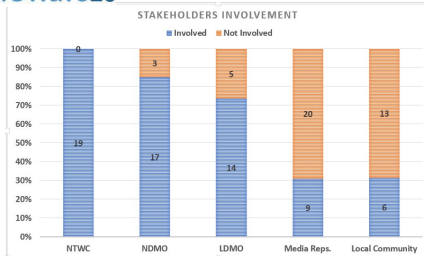
Indonesia, Kenya, Pakistan and Thailand



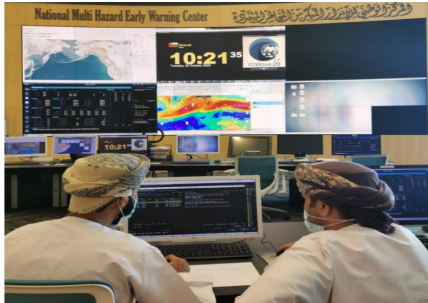


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Participation (2)



- ✓ **19 countries** (100%) included the National Tsunami Warning Center in the exercise,
- ✓ **17 countries** (89%) included national disaster management organizations;
- ✓ **14 countries** (74%) included local disaster management organizations;
- ✓ **9 countries** (47%) involved the media,
- ✓ **6 countries** (32%) involved the community but not necessarily in evacuations.

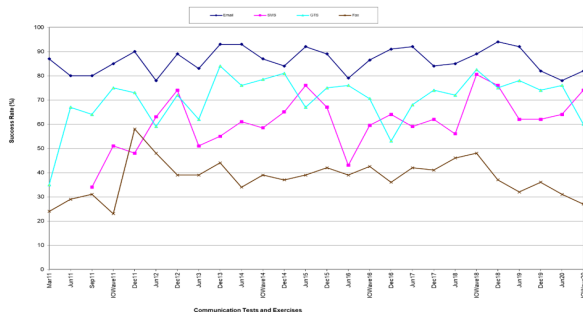


Scientists at the Oman National Multi Hazard Warning Center participate in Exercise IOWave20 (October 2020).

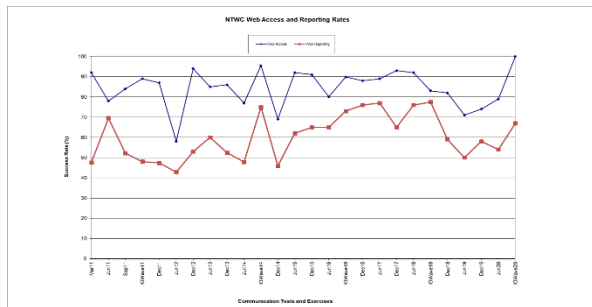
TSP to NTWC Message Delivery, Web Access and Status Reporting

Message Delivery

TSP to NTWC Message Delivery Success Rates



Comparison with Previous Exercise and Tests Web access



The above findings of the relative strength of each delivery method → **averaging improvement trend across the past exercises and communication tests**, particularly with regard to the SMS delivery method

All of the reporting Member States (100%) accessed at least one TSP website → **highest access rate achieved to date when examining previous exercises and IOTWMS communication tests**

Community Involvement



✓ **Indonesia** → evacuation drill at the New Yogyakarta International Airport involving 120 people → to practice evacuation in a tsunami emergency situation, to test the new dissemination mode, WRS New Generation, and to evaluate the airport infrastructure preparedness in case of a tsunami emergency.

✓ **Kenya** → involved 3 coastal communities (Kwale, Mombasa, Kilifi). Communities were involved in tsunami → awareness activities and interviews with key community stakeholders on their tsunami response

✓ **Mauritius** → limited simulation exercise at the level of the National Disaster Risk Reduction and Management Centre for a small coastal locality

✓ **Seychelles** → community stakeholders Indian Ocean Tuna (staff residence), Eden Island (tourism, marina, commercial), Seychelles Maritime Academy and Seychelles Petroleum Company in a full scale exercise.

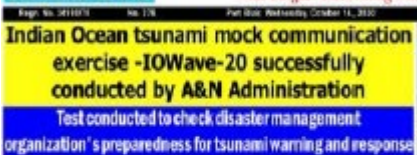
✓ **Mozambique** and **Thailand** responded to the survey that communities were involved, but did not provide details.





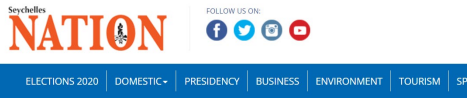
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Social Media Engagement



Tingkatkan Kesiapan Hadapi Tsunami di Masa Pandemi, BMKG Gelar IOWave20

by Ibrahim / 07 Okt 2020



DOMESTIC

DRDM conducts tsunami exercise | 14 October 2020



Malagasy Youth for Sustainable Development (MY SD)

7,7 rb suka • 8,3 rb pengikut

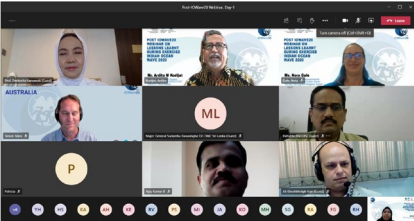
INCOIS participates in mock Tsunami drill

Hyderabad: The Indian Tsunami Early Warning Centre (ITEWC) of Hyderabad-based National Centre for Ocean Information Services (NCOIS) on Tuesday took part in '20 the Indian Ocean-wide mock tsunami drill.

The INCOIS participated in the Tsunami exercise, both in its capacity as a National Tsunami Warning Centre (NTWC) for India as well as a Tsunami Service Provider (TSP) for the Indian Ocean region. During the exercise, ITEWC generated and issued four tsunamis to both its national and regional contacts through GTS, email, fax, SMI as well as webchat.

The purpose of each exercise is to evaluate the ability of warning centre and national or disaster offices to respond to a tsunami. The drills not only emphasize the testing of communications from warning centre to its stakeholders, but also provide an opportunity testing national state local chains of command and decision-making, including the alert evacuations of people from selected coastal communities, INCOIS said. Due to Covid-19 pandemic, the exercise was limited to test communication channels instead of full-scale exercise which involves public evacuation.

Post IOWave20 Regional Workshop



- The aim of the workshop was **to serve as a platform to share experiences and lessons learned during Indian Ocean Tsunami Wave Exercise 2020**
- **All Indian Ocean Member States** were invited to the workshop, particularly countries that took part in IOWave20
- **23 Member States of the IOTWMS attended** the workshop with 37 participants attended the workshop.
- **1 international exercise observer from Germany**, and 2 international exercise observers from the Global Disaster Resilience Center (GPDR) at the University of Huddersfield, United Kingdom

Summary of Challenge and Gaps

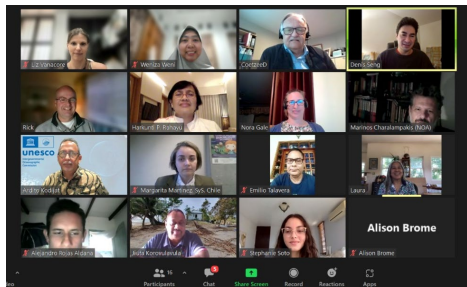


Member States expressed the difficulty of holding the exercise during the pandemic

- Technical **guide/manual** for exercise in **pandemic situation**
- Virtual exercise proved to be **effective in maintaining the goal of IOWave20 in term of fulfilling objective** but there is no guidance on virtual table top exercise → decrease in term of number participants and technical difficulties
- Pre and post IOWave evaluation which consist of **capacity examination of each countries** → to **design the future IOWave (may refer to 12 indicators tsunami ready)**

Benefits and Enhancement for Future Exercise

- ✓ Improved preparedness for real earthquakes and tsunami events;
- ✓ Refined and tested standard operating procedures of for the pandemic situation;
- ✓ Validated the NTWC timeline standard operating procedures, tested communication channels and protocols;
- ✓ Exercised tsunami response plans, capacity building of key stakeholders (including first responders);
- ✓ Increased communication and collaboration between related organisations (NTWC-DMO);
- ✓ Event information exchange with neighbouring countries;
- ✓ Evaluation of Tsunami Ready indicators in pilot villages (Odisha State, India).



TTDMP Meeting, September 16, 2021

- After coordinating with Pacific (through TTDMP Meeting) next IOWave will be conducted in 2023.
- IOWave Exercises will use 3 scenarios which cover all Indian Ocean Member State and holding the scenarios 1-week a part and conduct in September.
- IOWave will integrate with the implementation of Tsunami Ready Program in local community;
- IOWave technical guide/manual will provide scenario for non tectonic event (related with exercise mechanism etc)



IOWave20

Recommendations for Consideration

- ❑ **To consider to use scenarios that are suitable for all Member States** to participate → 3 scenarios worked well – choose one with major impact
- ❑ **To consider the period time of exercise** → 1 week apart rather than on consecutive days and **conducted in September/October** → avoid the cyclone season [Australia; India] However, after IOWave18 it was noted that September is inconvenient for some countries due to Monsoon and Floods [Pakistan, India, Sri Lanka] and hot weather [Oman].
- ❑ **To Coordinate with PTWS** → to ensure Exercises occur in opposite years [Australia, Indonesia, Timor Leste] PTWS 2022, IOTWS 2023
- ❑ **To include International observers** → should be included in future exercises (such as IORA) and virtual observations should be utilized more widely.

Recommendations for Consideration

- ❑ To consider informing more to **national leaders of the Exercise in addition to the Tsunami National Contacts.**
- ❑ To consider to **implement Technical guide/manual** for exercise in pandemic situation.
- ❑ To **encourage to test/verify the UNESCO-IOC Tsunami Ready** Indicators during the Exercise.
- ❑ To encourage countries to conduct **regular exercises at least every year between IOWave.** They could align with communication tests.
- ❑ To consider guidelines for **conducting virtual table-top exercises.**



Terimakasih