Steering Group Meeting
Virtual, Thursday/14 July 2022

INDIAN OCEAN WAVE EXERCISE 20 (IOWave20)

-Report IOWave20 and Plan IOWave23-

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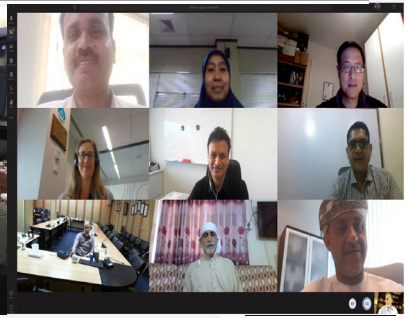
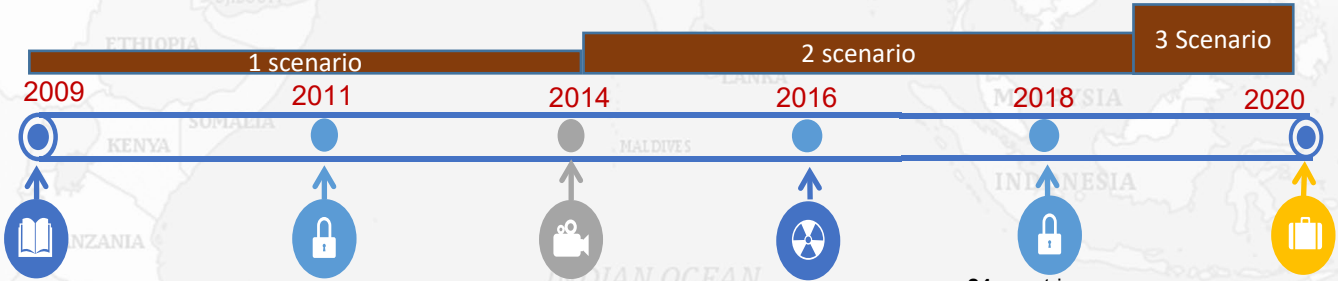
- **Ameer Hyder**, Pakistan - Member
- **Tariq Ibrahim** , Pakistan - Member



Milestone of IOWave



18 countries participate
3 counties involve community level

- **22** countries participate
- **4** counties involve community level

- **24** countries participate
- **2** counties involve community level

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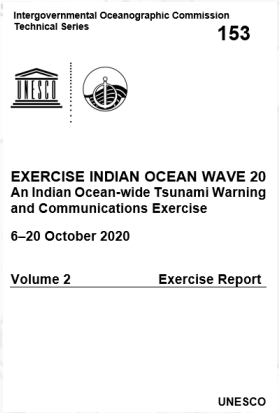
- **2** counties involve community level
- **60.000** communities

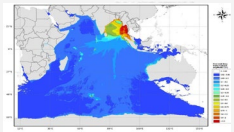
- **24** countries participate
- **11** counties involve community level
- **116.000** communities
- **2 IOTR**

- **20** countries participate
- **6** counties involve community leve

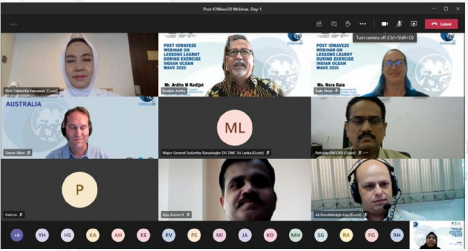
Summary of Achievement of IOWave20



- In the Indian Ocean, Six IOWave Exercises have been conducted in 2009, 2011, 2014, 2016, 2018 and 2020.
- 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**
- Exercise Indian Ocean Wave 2020 contained **three earthquake scenarios with all scenarios run in real-time (Java Trench, Andaman Trench and Makran Trench)--- Each scenario was held in real time over a 1-hour duration.**
- IOC-UNESCO conducted **on online assessment** that was coordinated in country by the IOWave20 National Contacts.
- To date **20 Indian Ocean Member States** reported their participation in the IOWave20 evaluation survey.



Summary of Challenge and Gaps



- Technical **guide/manual** for exercise in **pandemic situation** needs to be developed.
- **Evacuation Response** in pandemic situation needs to be **standardize** and **applicable for all countries**;
- Virtual exercise proved to be **effective in maintaining the goal of IOWave20 in term of fulfilling objective**, but decrease in term of number participants and technical difficulties.
- IOWave should be **integrated with the implementation of Tsunami Ready Program in local community**;
- 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)**

Recommendations of IOWave20

- IOWave Exercises should use scenarios that are suitable for all Member States to participate, 3 scenarios worked well for coverage.
- Holding the scenarios 1-week apart worked well.
- The Exercise should be conducted in September to 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].
- Coordinate with PTWS to ensure Exercises occur in opposite years [Australia, Indonesia, Timor Leste].
- International observers should be included in future exercises (such as IORA) [India] and virtual observations should be utilised more widely.
- Consider informing more national leaders of the Exercise in addition to the Tsunami National Contacts.
- Document the lessons learnt and changes triggered from the Exercise (i.e. establish a monitoring mechanism).

The Recommendations of IOWave20

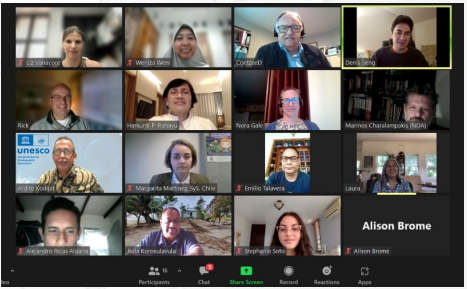
Downstream

- Member States should **update their SOPs for the pandemic situation** with support from WG1- IOTIC.
- Where possible, **communities should be encouraged to test/verify the UNESCO-IOC Tsunami Ready** Indicators during the Exercise.
- Encourage countries to conduct **regular exercises at least every year between IOWave**. They could align with communication tests.
- WG1-IOTIC should provide guidelines for **conducting virtual table-top exercises.**

Upstream

- Establish **a work mechanism between NTWCs and TSPs** to solve communication issues (i.e. non-receipt of messages).
- WG-2 to identify **reliable tide gauge stations with fast transmission rates**.
- Consider having the **TSPs send an SMS/email notification whenever there are tsunami product updates** (ex. Tide gauge observations).
- Conduct a **risk assessment of upstream tsunami warning including dissemination of tsunami warnings, reliable resources, etc.**

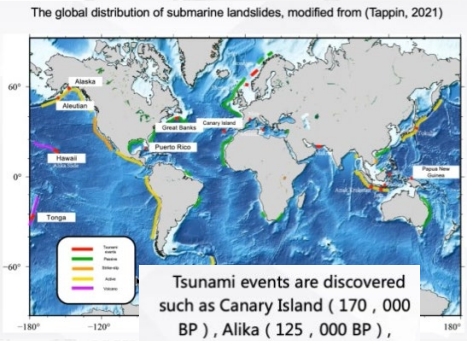
Plan of IOWave23



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)

Critical Issue for Non-Tectonic Tsunami Exercise



Tsunami events are discovered such as Canary Island (170 , 000 BP) , Alika (125 , 000 BP) , Storegga (8 , 150 BP) , Messina (1908) , Puerto (1918) , Grand Banks (1929) , Makran (1946) , Aleutians-Unimak (1946) , Alaska (1964) , Nice (1979) , Flores (1992) , Papua New Guinea (1998) , **Tohoku (2011) , Palu (2018) , Anak Krakatau (2018) , Tonga (2022)**

- Tsunami Non Tectonic caused by submarine volcanic eruption, landslide, submarine landslide, meteo-tsunami and atmospheric generated tsunami
- There is no instrumentation for triggering tsunami warning.
- Atmospheric generated tsunami – example of increase the speed of tsunami wave by the atmosphere eample Tonga Tsunami → It is not part of nomenclature of tsunami source → Need to be added to Tsunami Glossary.
- Need collaboration among tsunami monitoring institutions.

Thank You