

REPORT OF INTERGOVERNMENTAL COORDINATION GROUP INDIAN OCEAN TSUNAMI WARNING & MITIGATION SYSTEM (ICG/IOTWMS)



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32nd IOC Assembly 23 June 2023

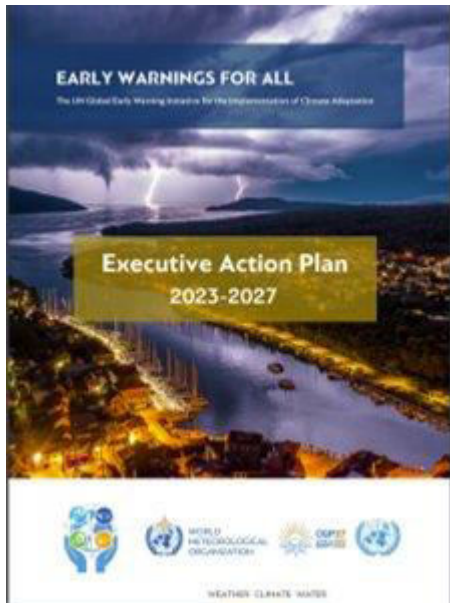
ICG/IOTWMS Work Programme



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In line with UN “**Early Warnings for All**” (EWS4ALL) initiative from COP-27, ICG/IOTWMS working groups and task teams continue to work across all four pillars:



Pillar 1
Disaster risk knowledge
Systematically collect data and undertake risk assessments

- Are the hazards and the vulnerabilities well known by the communities?
- What are the patterns and trends in these factors?
- Are risk maps and data widely available?

Pillar 2
Detection, observations, monitoring, analysis and forecasting of hazards
Develop hazard monitoring and early warning services

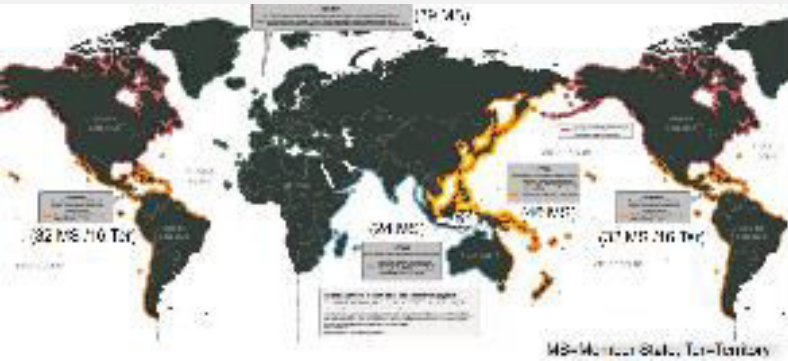
- Are the right parameters being monitored?
- Is there a sound scientific basis for making forecasts?
- Can accurate and timely warnings be generated?

Pillar 4
Preparedness and response capabilities
Build national and community response capabilities

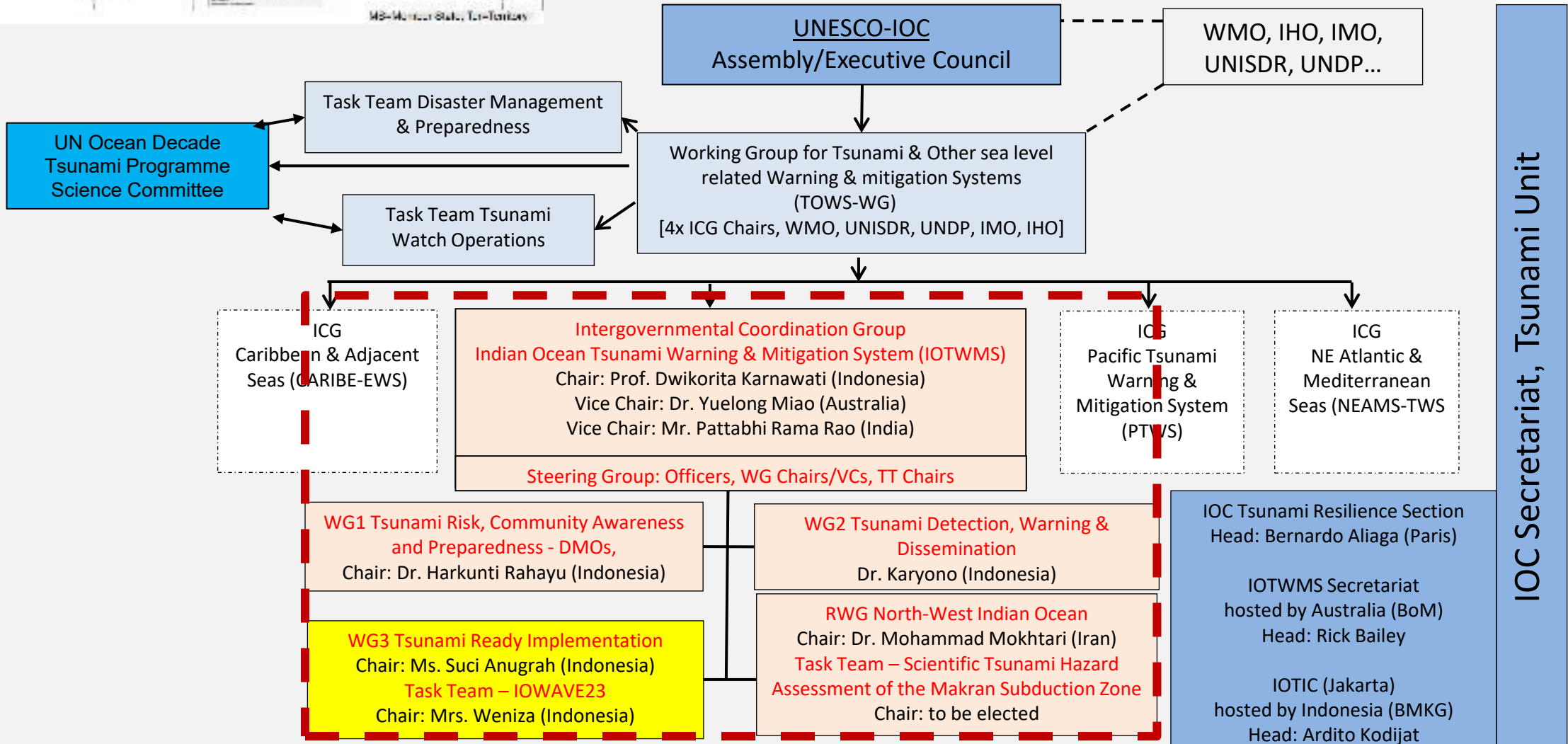
- Are response plans up to date and tested?
- Are local capacities and knowledge made use of?
- Are people prepared and ready to react to warnings?

Pillar 3
Warning dissemination and communication
Communicate risk information and early warnings

- Do warnings reach all of those at risk?
- Are the risks and warnings understood?
- Is the warning information clear and usable?



ICG/IOTWMS GOVERNANCE



IOC Secretariat, Tsunami Unit

Support provided for 25 IOTWMS Member States

<p>1. ICG/IOTWMS Secretariat Support for further two years (2023-2024)(USD\$310K per year) from Government of <u>Australia</u>, through Australian Bureau of Meteorology in negotiation</p>	<p>2. Indian Ocean Tsunami Information Centre (IOTIC) Support for further five years (2022-2027) (USD\$130K per year + office, staff and activities) from Government of <u>Indonesia</u>, through BMKG agreed</p>	<p>4. <u>UNESCAP</u> funded Project “Strengthening tsunami warning in the North-West Indian Ocean through regional cooperation” Phase 2b completed Mar23, Phase 2c start Jul23 (USD\$240K)</p>
<p>4. BMKG OTGA Specialized Training Center Support by <u>Indonesia</u> for competency training from for Tsunami Ready (2021), Tsunami Community Preparedness (2022), and Ocean Forecast Systems (2021 and 2022)</p>	<p>5. Tsunami Service Providers Support by <u>Australia, India, Indonesia</u> in providing tsunami threat information to all Member States to help develop <i>sovereign</i> national tsunami warnings</p>	<p>6. NWIO Probability Tsunami Hazard Assessment (PTHA) archive and access Support by <u>India</u> (computing facilities and staff)</p>



ICG/IOTWMS Major Activities in 2022



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1. 13th Session ICG/IOTWMS

Bali, Indonesia, 28 Nov - 1 Dec 2022
17 Member States

(75 participants, 17 countries)

2. Indian Ocean Tsunami Ready Workshop

Bali, Indonesia, 22 – 26 Nov 2022

(84 participants, 12 countries)

3. Nine (9) new communities receive Tsunami Ready Recognition

- ## 4. UNESCAP funded NW Indian Ocean Project Phases 2a and 2b
- held 15 regional
and national workshops, including
NWIO Science Exchange Workshop,
Abu Dhabi, UAE, 16 – 22 Nov 2022
(52 participants, 7 countries)



13th Session of ICG/IOTWMS



Indian Ocean Tsunami Ready
Workshop



Tsunami Ready Recognition

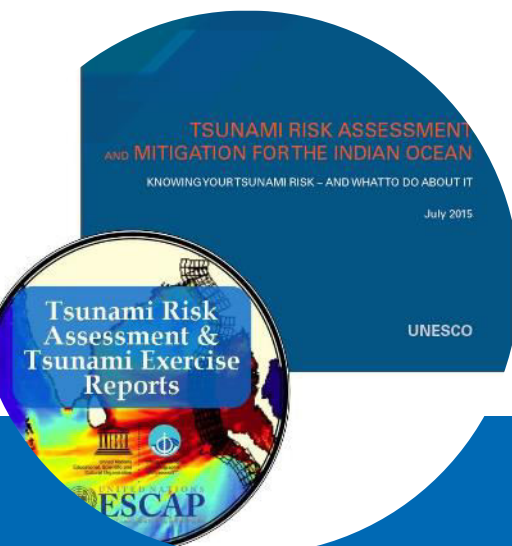
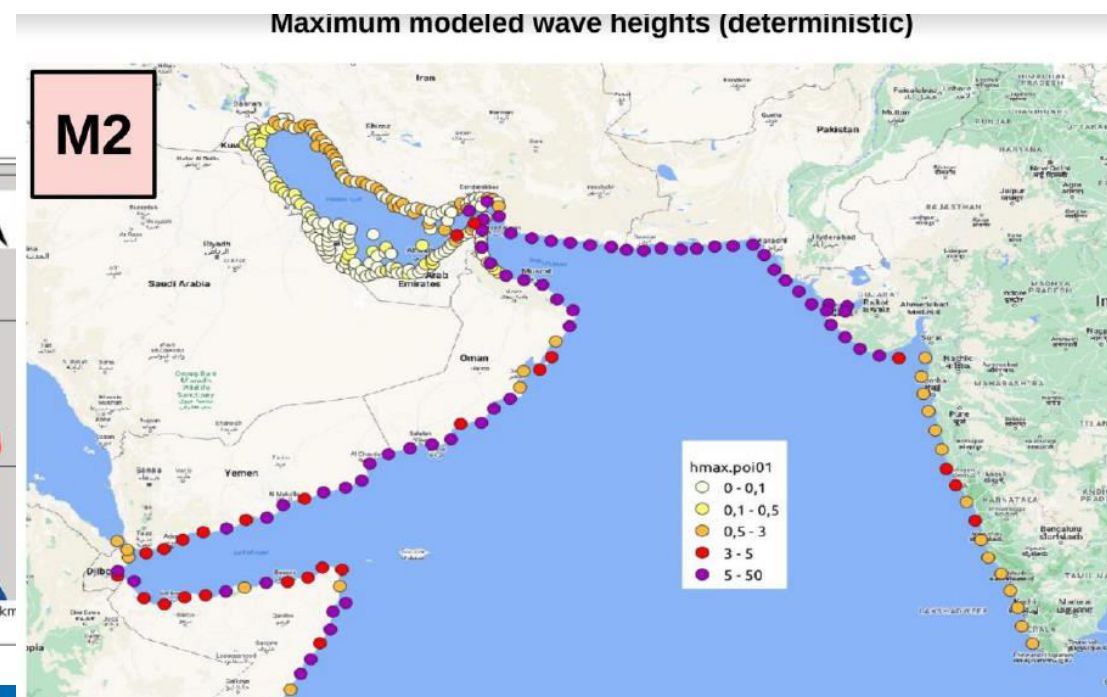
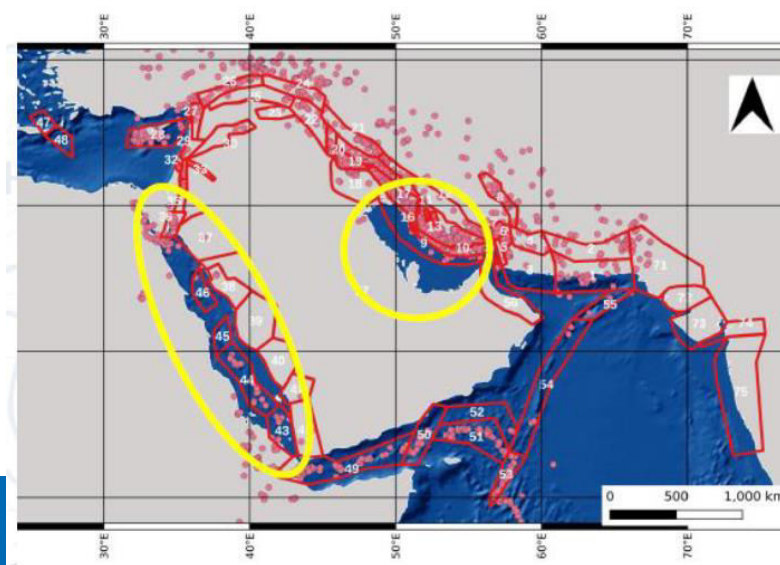
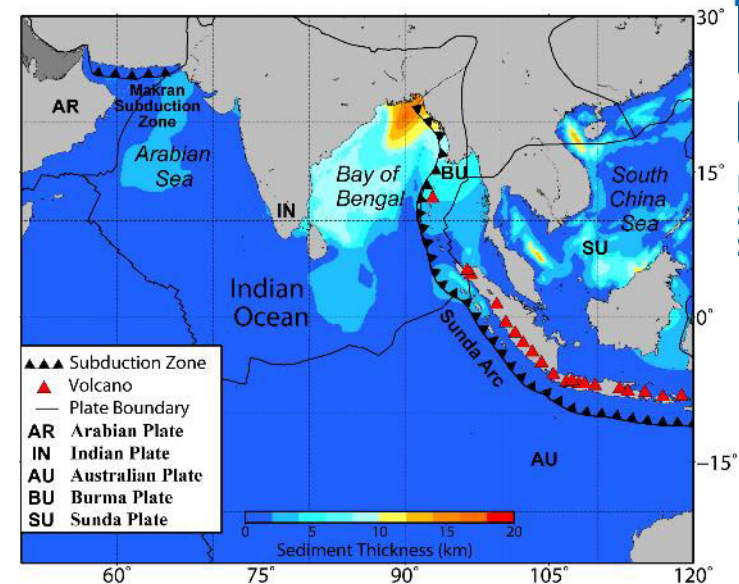


NWIO Science Exchange
Workshop

PILLAR I: TSUNAMI RISK ASSESSMENT

Tsunami Hazard Assessment

- Underpins better understanding of the risk and guide preparedness by authorities and communities
- Probabilistic Tsunami Hazard Assessment (PTHA) V1.0 developed for NW Indian Ocean by UNESCAP funded project
- Future versions to include other sources, such as splay faulting, submarine landslides, etc



PILLAR II: TSUNAMI DETECTION AND WARNING

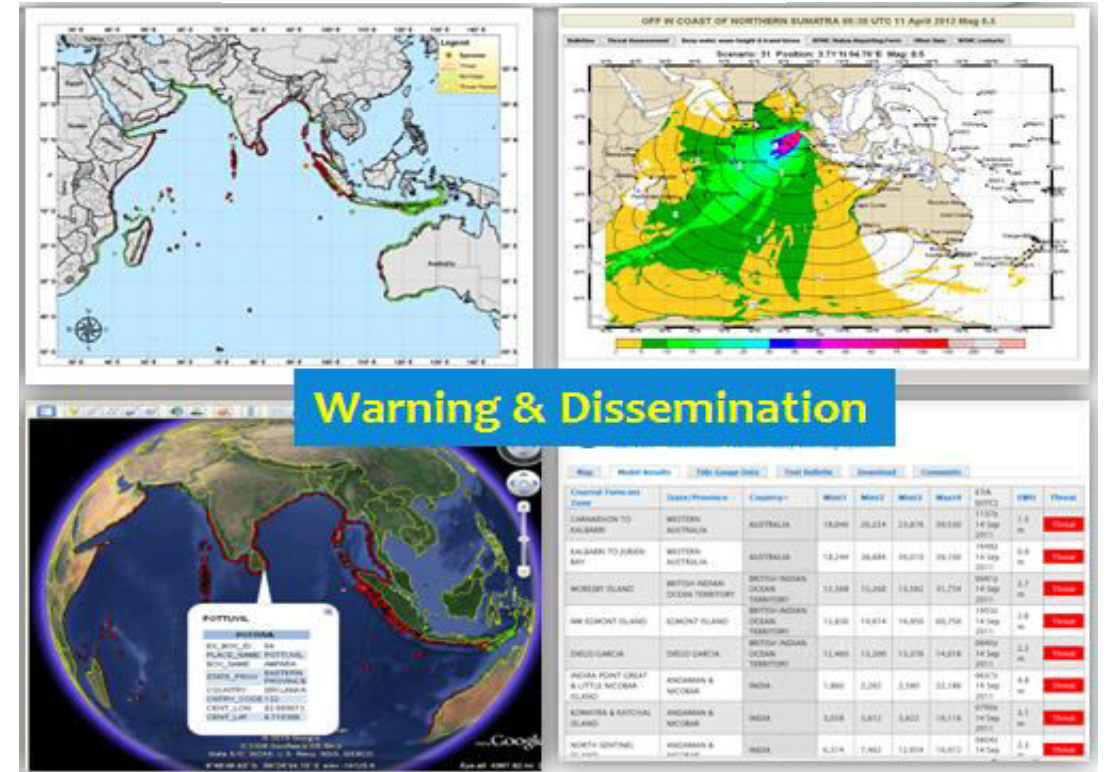
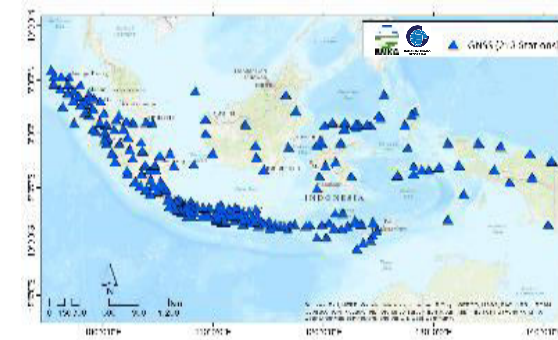


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Tsunami Service Providers

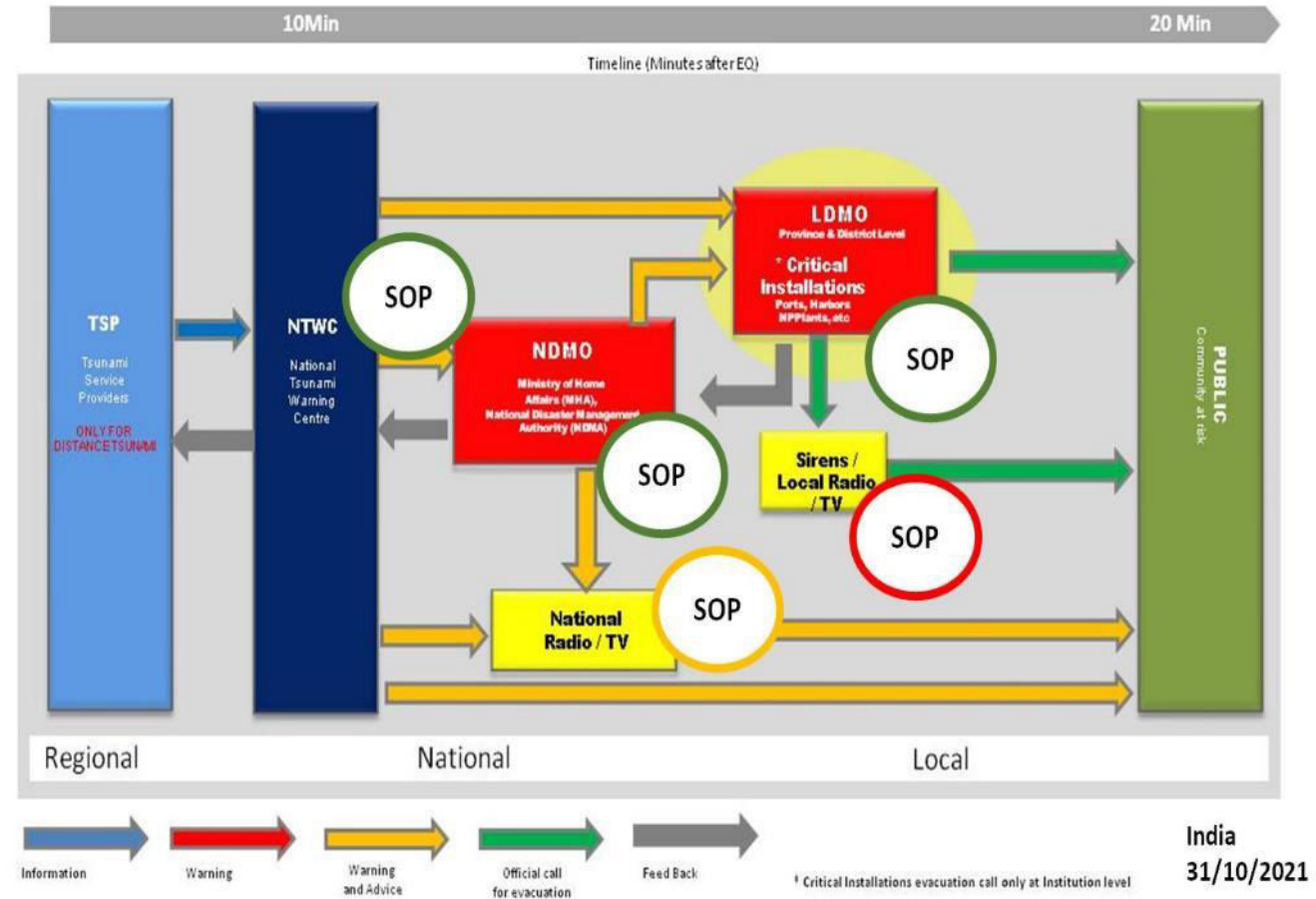
- Operated by **Australia, India, and Indonesia**
- Developing within **multi-hazard** environments
- **ISO compliant:** ISO 9001 (Australian and India) and ISO 22328-3 (Indonesia)
- Threat information provided for **non-seismic source tsunami** by Australia from 2023
- **Maritime products for NAVAREAs** to be trialed in 2023 and implemented from 2024
- **Piloting the local tsunami observation** through the deployment of **Ocean Bottom Unit** in the **Labuan Bajo**. The sensor had been examined well by the Tsunami Flores 2021 (Indonesia)
- **More support observations required reach Ocean Decade Goal increased accuracy and timeliness of tsunami warnings**



PILLAR III: TSUNAMI WARNING DISSEMINATION

National Tsunami Warning Chains and SOPs

- National tsunami warning chains involve National Tsunami Warning Centres (**NTWCs**), Disaster Management Organisations (**DMOs** at national, provincial, and local level), and **Broadcast Media**
- **Extend UNESCAP funded project outcomes to provide SOP Training Workshops for all MS Jul23**
- **Routine 6-monthly communication tests Jun and Dec every year** (email, GTS, SMS, Fax)
- Test national tsunami warning chains and SOPs in **Exercise IOWave23 in Oct23**



PILLAR IV: COMMUNITY AWARENESS & PREPAREDNESS

Tsunami Ready Recognition in the Indian Ocean



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INDIA:

1. Venkatraipur
2. Noliasahi

INDONESIA:

1. Tanjung Bena Village - Badung
2. Glagah Village - Kulonprogo
3. Kemadang Village - Gunung Kidul
4. Pangadaran Village - Pangadaran
5. Panggarangan Village - Lebak
6. Desa Tambakrejo - Malang
7. Kuta Mandalika Village - Lombok Tengah
8. Purus Village - Padang Barat
9. Lolong Belanti Village - Padang Utara

✓ 11 communities now Tsunami Ready recognized

✓ Australia, Iran, Maldives, Oman, Pakistan, Seychelles, Sri Lanka, Thailand, and Timor Leste planning to implement

✓ **More support required reach Ocean Decade Goal 100% communities at risk Tsunami Ready**

PILLAR IV: COMMUNITY AWARENESS & PREPAREDNESS

Tsunami Ready Recognition in the Indian Ocean



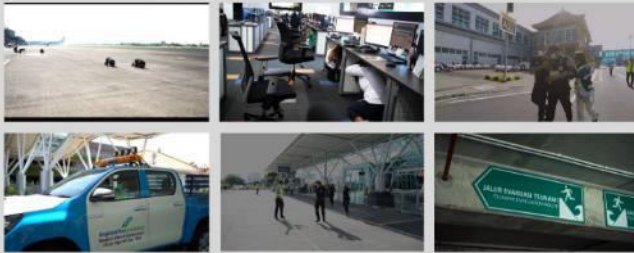
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Implementing Tsunami Ready to the Critical Infrastructures

I Gusti Ngurah Rai Airport, Bali



Yogyakarta International Airport



Cilegon Industrial Area

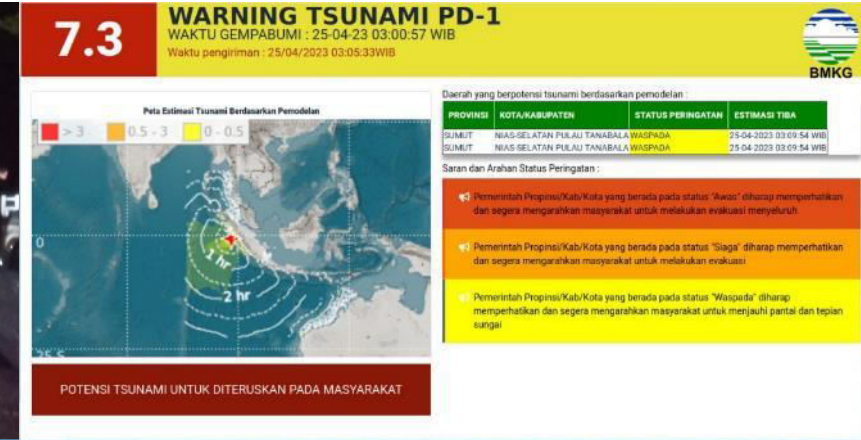


Port Of Benoa, Bali



- ✓ Tsunami Ready for critical infrastructure eg Airport Tsunami Ready in Indonesia, port, and industrial zones

Lesson Learnt from Recognized Tsunami Ready Communities (Purus and Lolong Belanti) in responding to the recent 25 Apr23 Mentawai Earthquake



BMKG issued the tsunami warning for the Mentawai Earthquake M7,3, 25th April 2023

- Responded well based on capacities built through 12 Tsunami Ready indicators
- Conducted self-evacuation protocols
- Well-aware of tsunami evacuation plans, routes, and evacuation sites
- Vulnerable people evacuated by their family and assisted by Local Disaster Ready Group
- Understanding of official warnings issued by National Tsunami Warning Centre and able to take action accordingly
- Understanding about hazard in their area reduced panic.
- Although there was no significant tsunami (detected only 11 cm), community accepted action taken was necessary

ISO 22328-3 : COMMUNITY BASED EARLY WARNING SYSTEM FOR TSUNAMI BUILDING A RELIABLE EARLY WARNING SYSTEM



- ISO 22328-3 considered public-private based instrument to accelerate achievement of Tsunami Ready Society (beyond the community, such as businesses, critical infrastructures, etc).
- Developed by Indonesia based on 12 indicators of UNESCO-IOC Tsunami Ready and various lessons learned, with objective to engage and involve private sector and government.
- Private sector can benefit from applying ISO for better market exposure



The 6th Plenary Meeting of ISO/TC 292, Sydney, 11-16 March 2018



The 11th Plenary Meeting of ISO/TC 292, Virtual, 10 June 2022



ICG/IOTWMS FUTURE WORK PLANS



- 1) Implement **Ocean Decade Tsunami Programme Research & Development Implementation Plan**
- 2) Implement outcomes from Multi-Hazard Early Warning Conference (MHEWC) Indonesia, May22
- 3) Translate Words-into-Action in support UN Sec General call for **all communities have access early warning systems by 2027.**
- 4) **Exercise IOWAVE23** Oct23
- 5) Review national tsunami warning chains and **develop SOPs for seismic, non-seismic, and complex source tsunamis** with training workshops Jul23
- 6) **UNESCAP funded NWIO Tsunami Project Phase 2c** with focus on inundation mapping and evacuation planning, including training workshops Oct23
- 7) Develop awareness and preparedness **Western Indian Ocean Workshop** Nov23
- 8) **Tsunami Ready training Seychelles** Nov23
- 9) **Third IOTWMS Capacity Assessment in 2024** guide future development
- 10) Tsunami Symposium to commemorate **20th anniversary Indian Ocean Tsunami 2004**, back-to-back in Indonesia with **14th Session ICG/IOTWMS**

2nd UNESCO-IOC Global Tsunami Symposium

“Reflection Of The Two Decades Post Indian Ocean Tsunami 2004 And Way Forward”



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Venue and Date: Banda Aceh, 10-14th November 2024

Host: Indonesia (BMKG)

Organiser: UNESCO-IOC

Partner: International Union Geodesy & Geophysics

Co-Chairs:

- Dr. Harkunti Rahayu
- Mr. Yuji Nishimae
- Ms. Suci Dewi Anugrah

Day 1 Opening and Session 1 (Panel Discussion and poster session)

- Welcoming Remarks by Government of Indonesia (Ministry of Maritime)
- Remarks UNESCO-IOC and UNDRR
- Moment of Silence
- Presidential Speech
- Keynote from ICG/IOTWMS

Day 2 Panel Discussions, Poster Sessions

- Enhancing warning accuracy and timeliness
- 100% at-risk communities prepared and resilient to tsunami threat

Day 3 Drill and Field Trip

- Tsunami Aceh Museum and Tsunami Ready community in Aceh
- Tsunami Ready Recognition ceremony

Day 4 Wrap Up and Closing

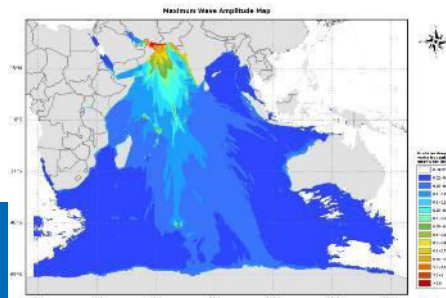
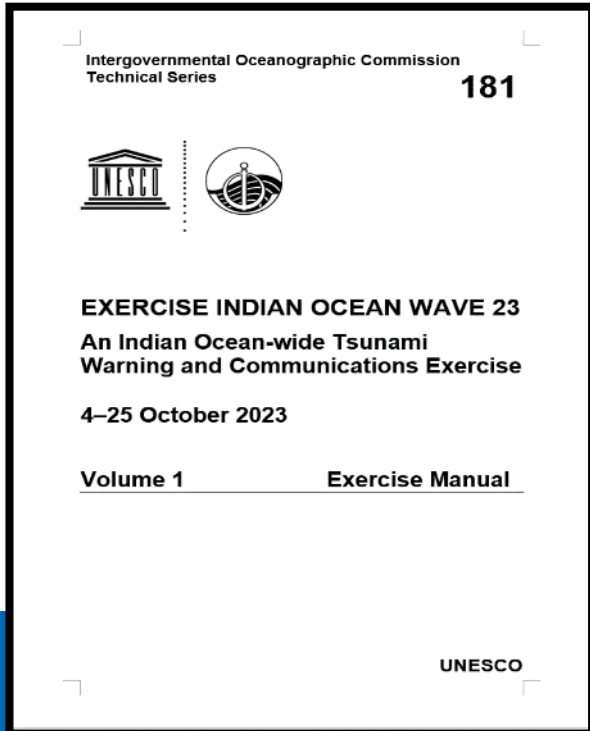
- UN Ocean Decade proposals
- Wrap up, summary and recommendations
- Closing ceremony, announcement of competition on *Tsunami Documentaries*



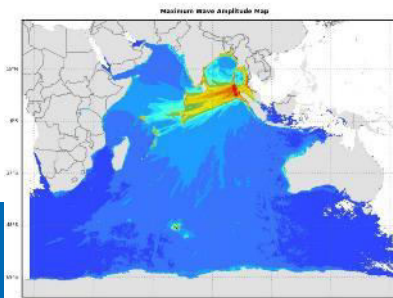
Exercise Indian Ocean Wave 2023 (IOWave23)



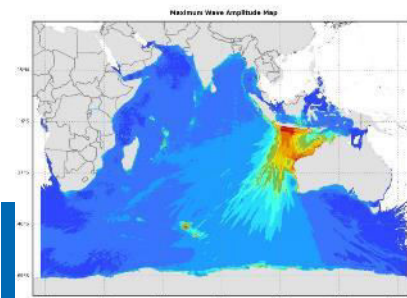
- **Four different scenarios** affecting different regions will be exercised on four different days **4, 11, 18, and 25 October**
 - **Three earthquake scenarios and one non-seismic scenario**
- Indian Ocean TSPs (Australia, India, and Indonesia) will issue tsunami bulletins in real-time
- Member States can decide how many scenarios they want to exercise and to what extent (eg if include evacuation drills)
- UNESCO-IOC Secretariat will conduct an online assessment that will be coordinated in country by the designated IOWave23 National Contacts.



Makran Trench



Andaman Trench



Java Trench



Heard Island



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THANK YOU

