



INDIA

Webinar:
**Lessons Learnt during
Exercise IOWave 2023**

12 - 13 December 2023

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Scenarios Exercised



INCOS



Andaman Trench (4 Oct) - Conducted for East Coast of India Provinces



Makran Trench (11 Oct) - Conducted for West Coast of India Provinces

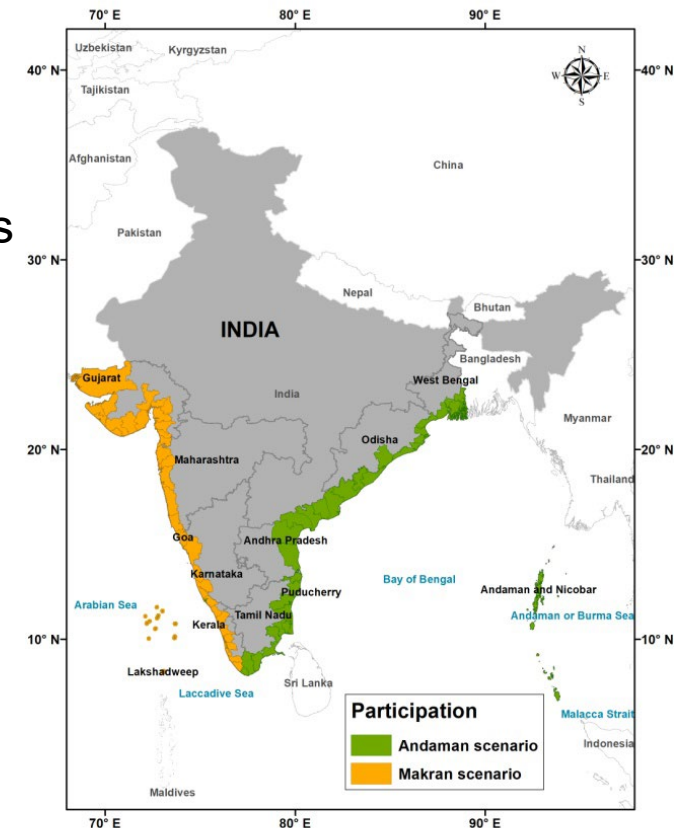


Heard Island (18 Oct)

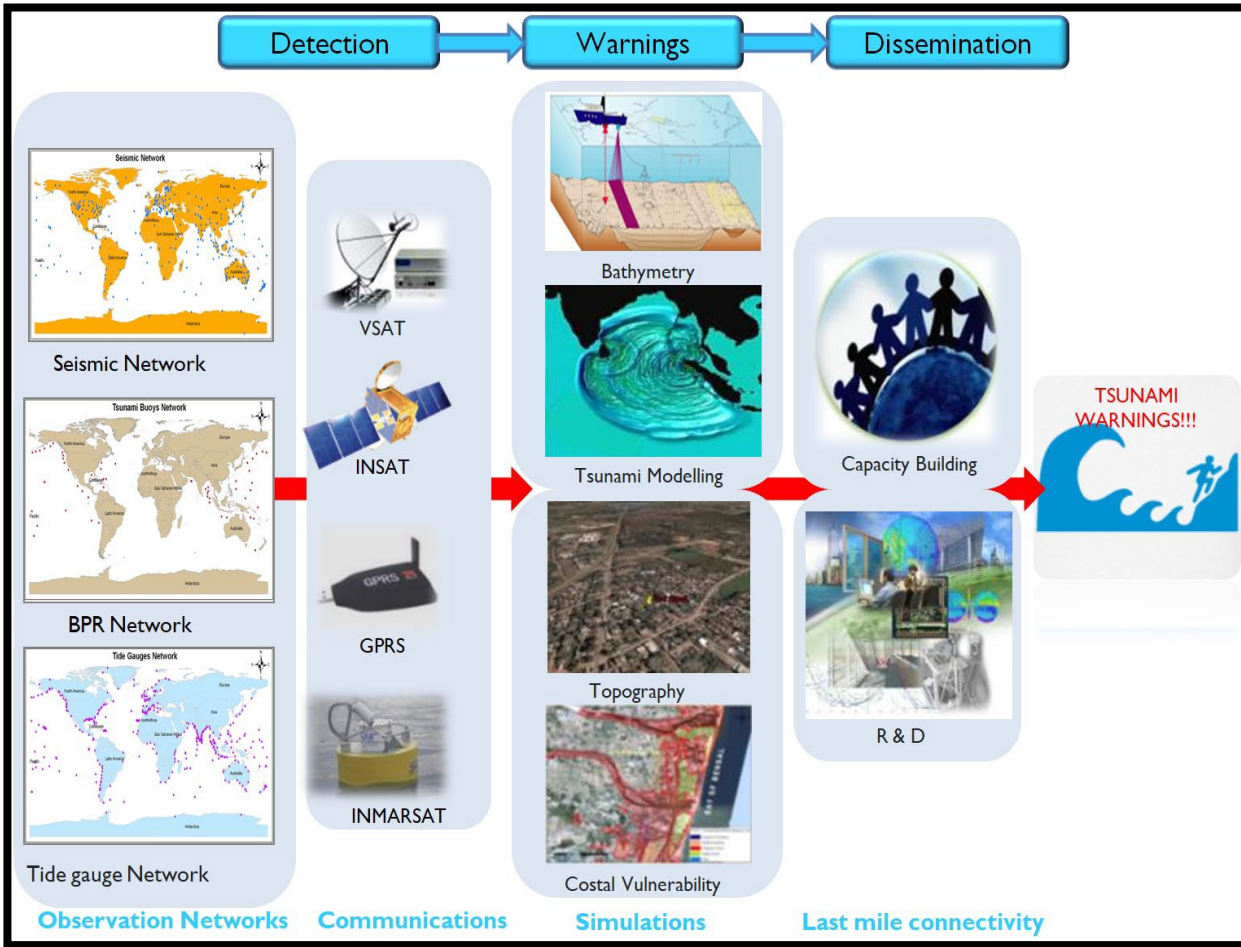


Java Trench (25 Oct)

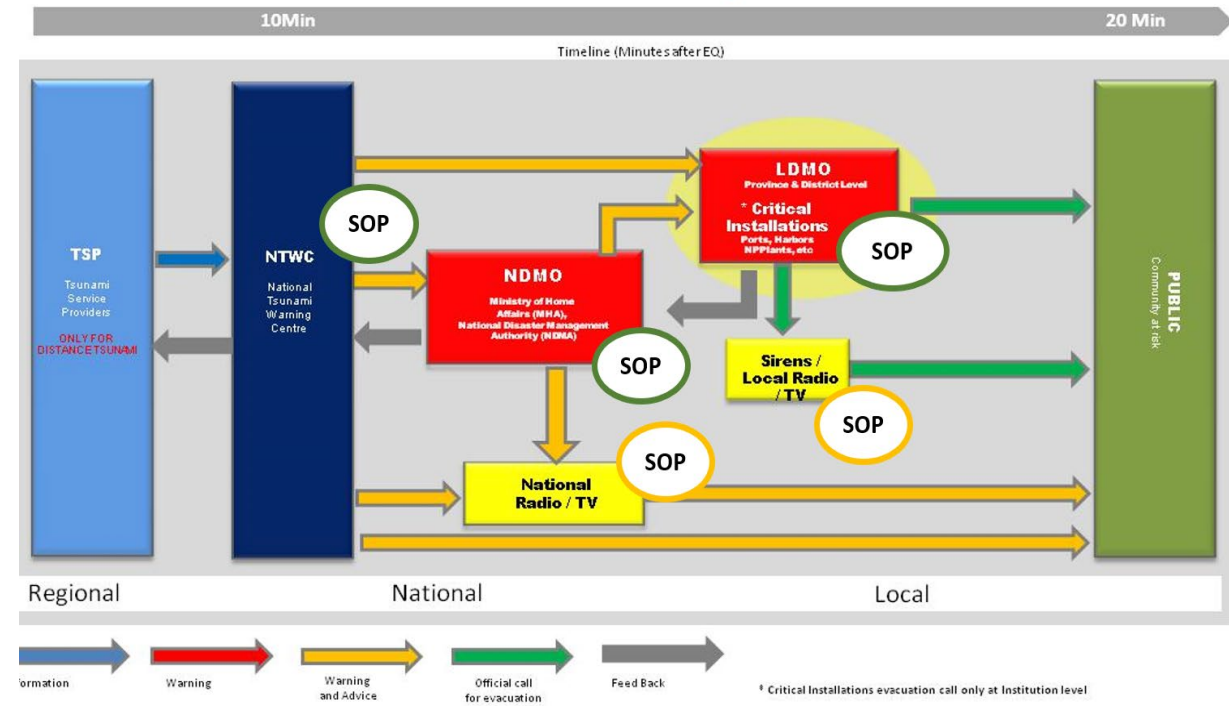
- As a TSP, ITEWC issued bulletins to all NTWCs in Indian Ocean Region for 3 Scenarios on 04th, 11th, 25th October 2023.
- 15 bulletins issues in 12 hours duration for each scenario, and Bulletins issued through Email, Fax, SMS, GTS and Website.
- At National level, India participated the exercise for Andaman Trench & Makran Trench scenarios



National Tsunami Warning & Mitigation System



Tsunami Warning Chain



State/Local DMOs are responsible for public evacuations.

India implemented Tsunami Ready programme, and two villages of Odisha recognised as Tsunami Ready communities by UNESCO

India Participation in Exercise

➤ Objectives of IOWave23 Exercise:

- Validate the Warning Centre [dissemination process](#) for issuing Tsunami Bulletins to various disaster management authorities and other participating agencies.
- Validate the [reception](#) of the notification messages by DMOs.
- Validate the [access to password-protected website](#) containing bulletins, threat maps and tables of arrival times and maximum wave amplitudes relating to the tsunami scenario chosen for the test.
- [Validate the SOPs for generating and disseminating tsunami warnings](#) to their relevant emergency response agencies, media and the public.
- [Validate the SOPs for the issuing of public safety messages](#), ordering evacuations and where possible issuing all-clear messages.
- Validate the level of [community awareness, preparedness and response](#) (including focused on Tsunami Ready Community)

➤ Previous IOWave Exercises

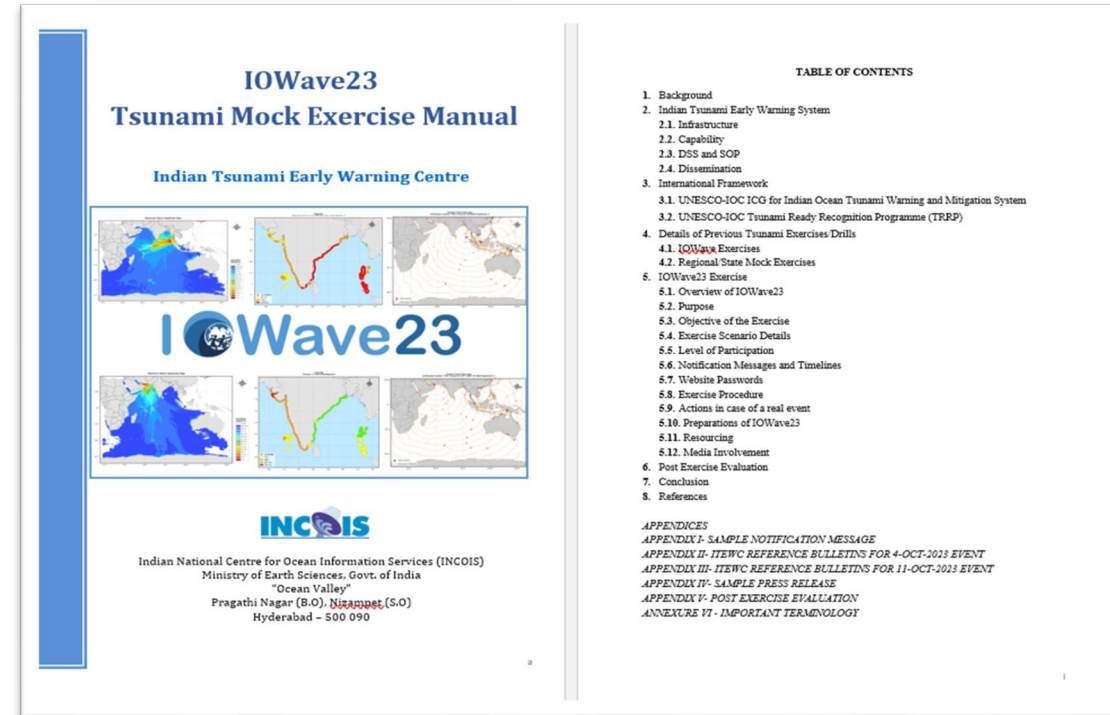
- IOWave09 on October 14, 2009
- IOWave11 on October 12, 2011
- IOWave14 on September 9 & 10, 2014
- IOWave16 on September 7 & 8, 2016
- IOWave18 on September 4 & 5, 2018
- IOWave20 on October 6, 13 & 20, 2020

➤ Previous National level mock exercises

- Andaman & Nicobar Islands on 22 November 2013
- East Coast of India on September 26, 2015
- Kerala on March 11, 2016
- East Coast of India on November 24, 2017
- Mock drill to Odisha on November 05, 2021
- Mock drill to Odisha on November 05, 2022
- Mock drill to A&N Islands on February 09, 2023
- Mock drill to Odisha on November 05, 2023

Exercise Preparations

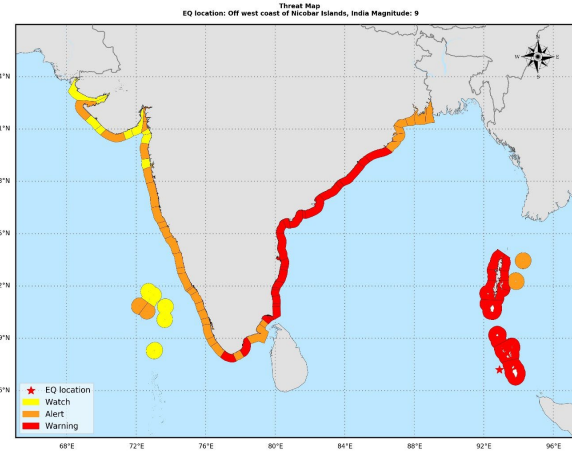
- Conducted Pre IOWave workshop on Tsunami SOP and tabletop exercise on 13-14 September 2023
- Around 60 officials participated from National/State/Local Disaster Management Organisations, Ministry of Defence, Indian Navy, Indian Coast Guard, Indian Army, Airports Authority of India, Directorate General of Shipping, Reliance Foundation, Maritime Board, Fisheries and Fishermen welfare organisations.
- Prepared National Tsunami Exercise manual for IOWave23
- Province level DMOs organised trainings and coordination meetings at Province/District Level



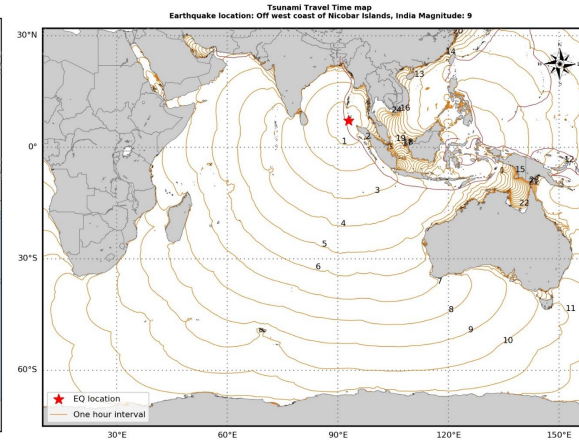
Exercise Participation

Scenario-1 (Andaman Trench)

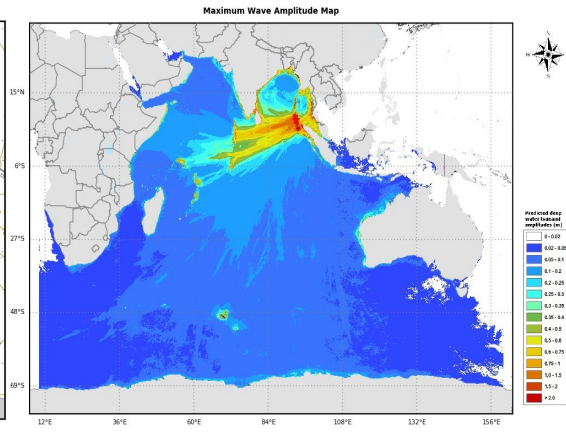
- Date: 4 October 2023 (Wednesday)
- Time: 9:30 IST (4:00 UTC)
- Magnitude: 9.0 Mw
- Depth : 10 km
- Latitude : 7.20 N
- Longitude : 92.90 E
- Region: Nicobar, India



Threat Map



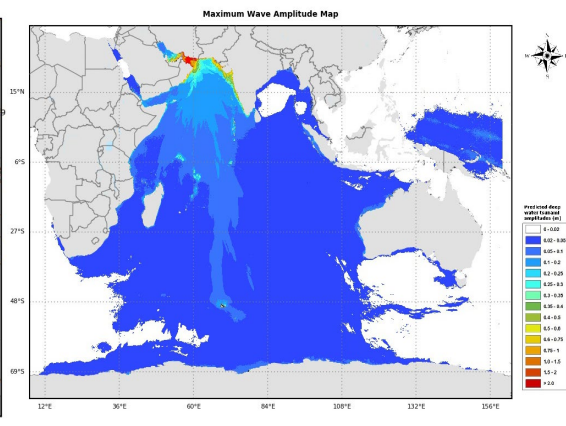
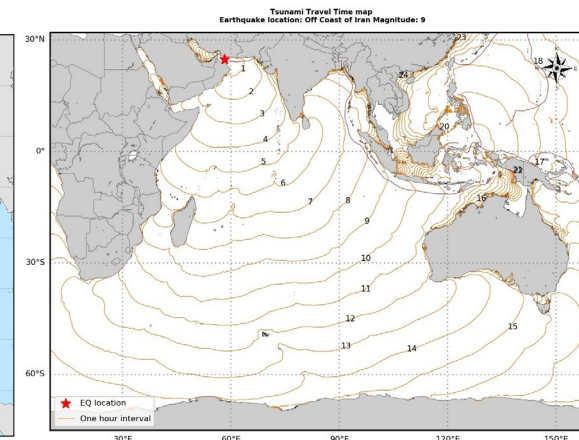
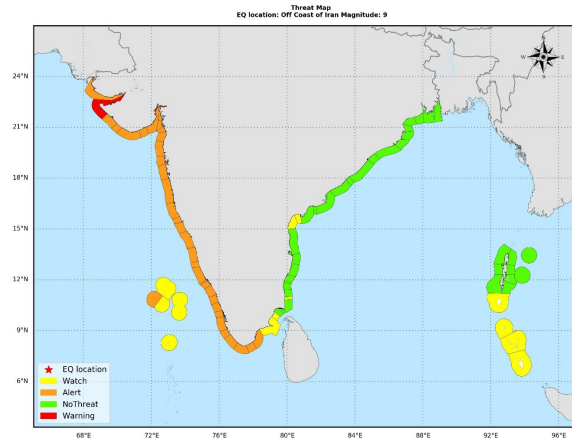
Travel Time Map



Max. Wave Amplitude Map

Scenario-2 (Makran Region)

- Date: 11 October 2023 (Wednesday)
- Time: 11:30 IST (6:00 UTC)
- Magnitude: 9.0 Mw
- Depth : 10 km
- Latitude : 24.80 N
- Longitude : 58.20 E
- Region: Off Coast of Iran



Exercise Participants

- Disaster Management Organisations (DMOs) of east coast India participated **on 4 October** and west coast of India participated on 11 October scenarios.
- 44 coastal villages from 13 districts of 4 coastal States/UTs** of Odisha (32 villages), Andaman (5), Puducherry (4) and Tamil Nadu (3) were involved and evacuated during the exercise on 4 Oct 2023. **About 40,000 people were evacuated** to shelters/safe places during mock exercise.
- Community people, school students, elderly personnel, etc. were involved in the evacuations.
- NDMA, Navy, Coast Guard, National Disaster Response Force, Nuclear power plants, Port and Harbors, Fisheries departments, etc. were also participated

Participants Details

Sl. No	State/Province Name	District/Divison Name	Village Name	Number of People evacuated	
1	Andaman & Nicobar Islands		Mayabunder	35	
2		North & Middle Andaman	Nimbutala (Rangat Bay)	30	
3		CampBell Bay	Durgapur LCT Jetty	56	
4			Nemo Beach (Govind Nagar)	15	
5		Nicobar	Kamal Basti (Campbell Bay)	150	
6	Odisha	Balasore/ Bahanaga	Brajadeuli	2974	
7			Avana	528	
8		Bhadrak/ Basudevapur	Mohanpur	769	
9			Muladiha	295	
10			Padhuan	6945	
11		Kendrapada/ Rajnagar		Gobardhanpur	1420
12				Praharajpur	952
13				Bhanj Prasad	276
14				Jyoti Prasad	413
15				Rajpatana	444
16				Rajendranagar	1094
17				Rajeswarnagar	419
18				Sikharpai	670
19				Talchua	843
20				Tikayat Nagar	1064
21				Birabhanjapur	568
22			Jagatsinghpur/ Erasama	Harispurgarh	4236
23		Puri/ Astaranga		Badasirei	792
24				Belanga	345
25				Chhenua	170
26				Katakana	119
27				Keutajanga	219
28				Tandahar	418
29		Ganjam/ Ganjam		Udayakani	136
30				Gokharakuda	1101
31				Kantiagada	2726
32				Mayuarpada	1678
33				Pallibandha	2858
34				N Barapalli	366
35				Raghunathpur	621
36				Podagadajhatipadar	1219
37			Prayagi	1275	
38	UT of Puducherry	Puducherry/Revenue South Sub Division/ Bahour	Murthikuppam Pudukuppam of Manapet Revenue	100	
39		Karaikal	Karukalacherry; Akkaraivattam	100	
40		Mahe	Mahe	50	
41		Yanam	Francetippa; Old Rajiv Nagar; Kursampeta	50	
42	Tamil Nadu	Thuthukudi (Tiruchendur & Kovilpatti Division)	Siluvaipatti in Mappillaiyurani	200	
43			Kombudurai in Kayalpattinam S.	110	
44			Tharuvaikulam Village	120	
			Total	38969	

National Organisation of Exercise IOWave23

- The IOWave23 exercise organized well at each level such as NTWC, NDMO, SDMO and LDMO level
- The objectives were exercised, and performance evaluated.
- Trainings and awareness campaigns conducted prior to exercise
- All line departments were participated
- Province level DMOs organised trainings and coordination meetings at Province/District Level
- On 4th October, 44 villages from 13 districts of 4 coastal provinces of east coast of India were participated in the exercise and around 40,000 people evacuated to safe shelters. Other coastal provinces participated upto DMOs/Organisation levels with tabletop and functional exercises.
- On 11th October, west coast of India provinces were participated upto DMOs/Organisation levels with tabletop and functional exercises. No public evacuations done on 11th October.
- Overall, different modes of communications used such as SMS, email, mobile app, social media, sirens, VHF, etc.
- Tsunami Ready Indicators evaluated at 32 villages of Odisha

Lessons Learnt

- Overall, IOwave23 tsunami mock exercise was great success, and which enhanced the awareness and preparedness among the coastal people of India.
- Response time to notify the public was varying from 5-30 minutes. Email was found to be most effective way of communication, followed by SMS and Fax.
- Dedicated Siren systems to be installed in the most vulnerable regions by DMOs.
- Tsunami Ready programme need to be implemented in vulnerable coastal villages.
- Regular awareness and preparedness programs required at community level.

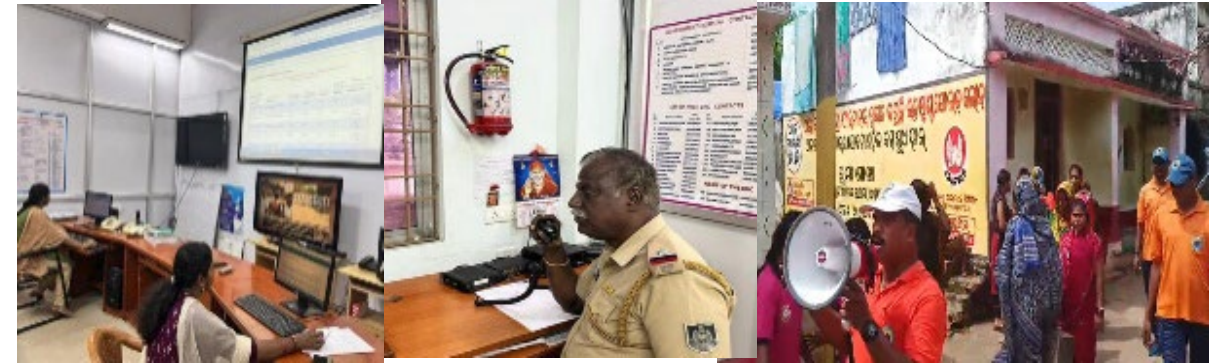
Future exercises:

- Most recipients agreed that the execution of the exercise was very satisfactory and requested to conducts regular mock exercises.
- Exercise duration can be reduced from 12 hours to 4- 5 hours to involve more communities.
- Exercise can be conducted non monsoon season.

Images



IOWave23 Bulletins Dissemination at ITEWC



SEOC/DEOC Operations & Public announcement



Public evacuations and rescue operations



Tsunami awareness activities in relief shelters

News Links



IOWave23 exercise News Links:

- <https://www.thehindu.com/news/national/telangana/incois-to-simulate-earthquakes-on-either-coast-to-test-tsunami-preparedness/article67304350.ece>
- <https://newsroomodisha.com/iowave23-32-tsunami-prone-villages-across-six-coastal-districts-of-odisha-participate-in-tsunami-mock-exercise/>
- <https://timesofindia.indiatimes.com/city/hyderabad/incois-to-hold-tsunami-mock-drill-on-oct-4/articleshowprint/104118314.cms>
- <https://telanganatoday.com/incois-conducts-tsunami-mock-exercise-along-the-indian-ocean>
- <https://nicobartimes.com/local-news/tsunami-communication-exercise-iowave23-to-be-held-on-4th-october-citizens-asked-not-to-panic/>
- <https://news.knowledia.com/IN/en/articles/mock-tsunami-exercise-on-east-coast-tomorrow-1a37efd0be4ce632714361eccadac332e4ceff>
- <https://hyderabadnow.in/2023/10/02/mock-tsunami-exercise-on-east-coast-tomorrow/>
- <https://www.icsf.net/newss/india-incois-to-simulate-earthquakes-on-either-coast-to-test-tsunami-preparedness/>
- <https://www.thehindu.com/news/national/telangana/incois-conducts-tsunami-mock-exercise-on-west-coast/article67408980.ece>
- <https://dip.goa.gov.in/2023/10/10/indian-ocean-wave-23-tsunami-mock-exercise-on-oct-11/>

INCOIS to lead tsunami mock exercise tomorrow

IOWave23 to finetune tsunami preparedness

CITY BUREAU
Hyderabad

Hyderabad-based Indian National Centre for Ocean Information Services (INCOIS), along with several other countries in the Indian Ocean, is all set to take part in a tsunami mock exercise titled 'IOWave23' on October 4.

As part of the mock exercise, the tsunami early warning system of INCOIS will issue test tsunami bulletins through various modes of communication channels to all its stakeholders at national and regional levels, a press release said.

IOWave23, which is being coordinated by Indian Ocean Tsunami Warning and Mitigation System (IOTWMS) of Intergovernmental Oceanographic Commission (IOC)-UNESCO, is aimed at finetuning tsunami preparedness, eval-

“These exercises will help us fix any gaps in warning chains and be fully prepared for future events”
Dr T Srinivasa Kumar, Director, INCOIS

uate response capabilities in each State and improve coordination throughout the region. The drill will facilitate exercising the standard operating procedures (SOPs) of the emergency services and evaluating their state of readiness to handle tsunami-like emergency situations. The aim is to exercise all levels of the tsunami warning and response

chain, with primary focus on local coastal communities. In India, the IOWave23 mock exercise is being coordinated by INCOIS in association with the National Disaster Management Authority (NDMA). All the disaster management organisations (DMOs) of coastal States/Union Territories, Navy, Coast Guard, and National Disaster Response Force (NDRF), personnel from critical installations such as nuclear power plants, port and harbours will participate in the exercise. “These exercises will provide a great opportunity for all stakeholders to test their tsunami warning procedures and enhance public awareness and preparedness. It will help us fix any gaps in warning chains and be fully prepared for future events,” said Dr T Srinivasa Kumar, Director, INCOIS.

IOWave23 Tsunami Mock Exercise



Hyderabad, 02 October. The Indian National Centre for Ocean Information Services (INCOIS) is all set to participate in a major Indian Ocean-wide tsunami mock exercise on 4 October, India, along with several other Ocean Nations, is participating in this tsunami mock exercise. During the mock exercise, the Indian Tsunami Early Warning Centre (ITEWC) will issue test tsunami bulletins to both national and regional stakeholders through Global Telecommunication System (GTS), email, fax, SMS as well as share the bulletin on INCOIS website. Due care will be taken to ensure the public is not alarmed. The purpose of the mock exercise is to increase tsunami preparedness, evaluate response capabilities in each state and improve coordination throughout the region. The drill will facilitate exercising the standard operating procedures (SOPs) of the emergency services and evaluating their state of readiness to handle tsunami-like emergency situations. The aim is to exercise all levels of the tsunami warning and response chain, with primary focus on local coastal communities. In India, the IOWave23 mock exercise is being coordinated by INCOIS in association with the National Disaster Management Authority (NDMA). All the disaster management organisations (DMOs) of coastal States/Union Territories, Navy, Coast Guard, and National Disaster Response Force (NDRF), personnel from critical installations such as nuclear power plants, port and harbours will participate in the exercise. “These exercises will provide a great opportunity for all stakeholders to test their tsunami warning procedures and enhance public awareness and preparedness. It will help us fix any gaps in warning chains and be fully prepared for future events,” said Dr T Srinivasa Kumar, Director, INCOIS.

HYDERABAD

EDITORIAL

Tuesday, October 3, 2023

IOWAVE23 TSUNAMI MOCK EXERCISE

The Indian National Centre for Ocean Information Services (INCOIS) is all set to participate in a major Indian Ocean-wide tsunami mock exercise on 4 October, India, along with several other Ocean Nations, is participating in this tsunami mock exercise. During the mock exercise, the Indian Tsunami Early Warning Centre (ITEWC) at Hyderabad will issue test tsunami bulletins to both national and regional stakeholders through Global Telecommunication System (GTS), email, fax, SMS as well as share the bulletin on INCOIS website. Due care will be taken to ensure the public is not inadvertently alarmed. The purpose of the mock exercise is to increase tsunami preparedness, evaluate response capabilities in each state and improve coordination throughout the region. The drill will facilitate exercising the standard operating procedures (SOPs) of the emergency services and evaluating their state of readiness to handle tsunami-like emergency situations. The aim is to exercise all levels of the tsunami warning and response chain, with primary focus on local coastal communities. In India, the IOWave23 mock exercise is being coordinated by INCOIS in association with the National Disaster Management Authority (NDMA). All the disaster management organisations (DMOs) of coastal States/Union Territories, Navy, Coast Guard, and National Disaster Response Force (NDRF), personnel from critical installations such as nuclear power plants, port and harbours will participate in the exercise. “These exercises will provide a great opportunity for all stakeholders to test their tsunami warning procedures and enhance public awareness and preparedness. It will help us identify and fix any gaps in warning chains and be fully prepared for future events” said Dr T Srinivasa Kumar, Director, INCOIS.

The IOWave23 mock exercise will comprise four scenarios: 1. Simulate an earthquake with a magnitude of 5.0 in Andaman Trench of India on 0930 IST. 2. Simulate a volcanic eruption of magnitude 9.1 in Java Region, Indonesia on 29th October 2023 at 0730 IST. Each scenario will run in real-time for a period of 12 hours. Out of the four scenarios, India is participating at the national level with Scenario-1 & Scenario-2. DMOs of East coast of India and Lakshadweep Islands will participate in Scenario-1, and DMOs of West coast of India and Lakshadweep Islands will participate in Scenario-2. DMOs of East coast of India and Lakshadweep Islands will participate in Scenario-1, and DMOs of West coast of India and Lakshadweep Islands will participate in Scenario-2. DMOs of East coast of India and Lakshadweep Islands will participate in Scenario-1, and DMOs of West coast of India and Lakshadweep Islands will participate in Scenario-2. DMOs of East coast of India and Lakshadweep Islands will participate in Scenario-1, and DMOs of West coast of India and Lakshadweep Islands will participate in Scenario-2.

Webinar: Lessons Learnt during Exercise IOWave 2023



THANK YOU