

EXERCISE INDIAN OCEAN WAVE 16
An Indian Ocean-wide Tsunami
Warning and Communications
Exercise

7-8 September 2016

Volume 1

Exercise Manual

UNESCO

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1. BACKGROUND

The devastating impact of the 26 December 2004 Indonesia earthquake and Indian Ocean Tsunami tragically demonstrated what can happen without an effective tsunami warning system. Tsunamis may not occur often, but when they do they can affect coasts, sometimes across an entire ocean. The 2004 tsunami caused damage and casualties across the entire Indian Ocean basin – even as far away as South Africa. Following this event, UNESCO's Intergovernmental Oceanographic Commission (IOC) was requested to establish an Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS), to promote the exchange of seismic and sea level data for rapid tsunami detection and analysis, to provide warnings for such events, and to coordinate mitigation efforts among its Member States. An efficient and effective end-to-end warning system was needed, ready to react 24 hours a day to any potential tsunami threat, alert those at risk along coasts, and motivate them take immediate and appropriate steps to save their lives.

Under the guidance of the ICG/IOTWMS, Member States collaborated in the development of the IOTWMS, which was initially tested in the Indian Ocean-wide tsunami warning and response exercise IOWave09 (October 2009), and which then came into operation immediately following the subsequent IOWave11 (October 2011) exercise and was exercised again in IOWave14 (September 2014). Since 2011, the three Tsunami Service Providers (TSPs) of Australia, India and Indonesia have provided real-time tsunami products to the National Tsunami Warning Centres (NTWCs) of the IOTWMS Member States. The 10th Session of the ICG/IOTWMS in Muscat, Oman established a Task Team to organise the next Indian Ocean-wide tsunami exercise (IOWave16) in the second half of 2016.

Indian Ocean-wide tsunami exercises are effective tools for evaluating the readiness of the IOTWMS and for identifying changes that can improve its effectiveness. The ICG/IOTWMS notes the value of basin-wide tsunami exercises and drills such as IOWave16 and also encourages Member States to conduct further exercises and drills at the national and local levels.

Exercise IOWave16 will simulate Indian Ocean countries being put in a tsunami warning situation and require the National Tsunami Warning Centre (NTWC) and the National and/or Local Disaster Management Offices (NDMO/LDMO) in each country to implement their Standard Operating Procedures (SOPs). A significant observation from Exercise IOWave14 was that only two countries exercised community evacuation. A primary goal of IOWave16 therefore is to encourage more countries to involve coastal communities in the exercise to test the SOPs and communications links at all levels of the warning and response chain.

1.1 Previous IOWave Exercises

Eighteen (18) Indian Ocean Member States, out of an active twenty-four (24), participated in Exercise IOWave09, and twenty-two (22) participated in Exercise IOWave11 with four (4) countries exercising down to the community level. All twenty-four (24) Member States participated in Exercise IOWave14 with two (2) exercising down to the community level.

1.2 Exercise Dates and Scenarios

Exercise IOWave16 contains two earthquake scenarios on successive days, 7 and 8 September, with both scenarios run in real-time. The scenario details are provided in Table 1.

Table 1: Scenario Details

Scenario 1 – Sumatra		Scenario 2 – Makran Trench	
Date:	Wednesday 7 September 2016	Date:	Thursday 8 September 2016
Time:	0300 UTC	Time:	0600 UTC
Magnitude:	9.2 Mw	Magnitude:	9.0 Mw
Depth:	10 km	Depth:	10 km
Latitude:	1.93 S	Latitude:	24.8 N
Longitude:	99.22 E	Longitude:	62.2 E
Location:	Southern Sumatra, Indonesia	Location:	Off Coast of Pakistan

1.3 Exercise Involvement

The following organisations should be involved:

- Tsunami Service Providers (TSPs)
- National Tsunami Warning Centres (NTWCs)
- National Disaster Management Organisations (NDMOs)
- Local Disaster Management Organisations (LDMOs)
- Media Organisations
- Local communities, to the extent decided by each Member State, noting that this exercise has a focus on maximising community involvement.

1.4 Further Information

Further information for the exercise is available on the exercise website www.ioc-unesco.org/IOWave16.

2. CONCEPT OF EXERCISE IOWave16

2.1 Purpose

The purpose of Exercise IOWave16 is to evaluate and improve the effectiveness of the IOTWMS, through its operational TSPs, NTWCs, NDMOs and LDMOs, in responding to a potentially destructive tsunami. The exercise will provide an opportunity for Indian Ocean countries to test their operational lines of communications, to review their tsunami warning and emergency response SOPs, and to promote emergency preparedness. Regular exercises are important for maintaining staff readiness for real events. This is especially true for tsunamis, which are infrequent but require rapid response when they occur. The pre-exercise planning and post-exercise evaluation process is as important as the actual exercise, because it brings together all stakeholders to closely coordinate their actions. Every Indian Ocean country is encouraged to participate, down to the community level wherever possible.

2.2 Objectives

The objectives for Exercise IOWave16 are:

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.
4. Validate the SOPs within countries for generating and disseminating tsunami warnings to their relevant emergency response agencies, media and the public.
5. Validate the SOPs within countries for the issuing of public safety messages, ordering evacuations and where possible issuing all-clear messages.
6. Validate the level of community awareness, preparedness and response.

Within the above framework, each country should develop its own specific objectives for the exercise.

2.3 Exercise Success Criteria

The exercise will be a success when the core objectives above have been exercised, performance evaluated and an exercise report produced. The broad success criteria, depending on the level of involvement of each country, are:

- The communication protocols between the TSPs, NTWCs, TWFPs and information dissemination points within countries are tested and understood.
- Areas of improvement in the tsunami warning and response chain are identified.
- Local communities participate in the exercise to the extent possible and increase their knowledge of tsunami preparedness and response.

2.4 Types of Exercise

Exercises stimulate the development, training, testing and evaluation of Disaster Plans and SOPs. Exercise participants may use their own past multi-hazard drills (e.g. flood, typhoon, earthquake, etc.) as a framework to conduct Exercise IOWave16.

Exercise IOWave16 should be conducted to a level of readiness that involves communication and decision making at government level, without disrupting or alarming the general public. Individual countries are encouraged to extend the exercise down to the level of public notification and community evacuation.

Exercises can be conducted at various scales of magnitude and sophistication. The types of exercises that can be conducted are:

1. Orientation Exercise
2. Drill
3. Tabletop Exercise
4. Functional Exercise
5. Full-scale Exercise

See Appendix IV for a more detailed description of each type of exercise.

For Exercise IOWave16, individual Member States should decide what type of exercise they are going to undertake, and whether they will participate in one or both scenarios. Participation in both scenarios, at least at the NTWC and NDMO level, has the advantage of

allowing SOP issues identified on the first day to be corrected and exercised again on the second day, and testing different elements of the SOPs because the tsunami arrival times will vary for each scenario.

Member States are encouraged to conduct a functional or full-scale exercise down to community level. If this is not possible, it is recommended that a tabletop exercise should be conducted as a minimum. Functional or full-scale exercises require an increasing level of planning and preparation, particularly when involving community evacuation. Due care should be taken not to inadvertently alarm the public.

3. SPECIFICS OF CONDUCTING EXERCISE IOWAVE16

3.1 Overview

The exercise will comprise two scenarios on successive days that will generate simulated tsunami waves travelling across the whole Indian Ocean basin. The first scenario simulates a magnitude 9.2 earthquake south of Sumatra, Indonesia and will commence at 0300 hours UTC on 7th September. The second scenario simulates a magnitude 9.0 earthquake in the Makran Trench south of Pakistan and will commence at 0600 hours UTC on 8th September.

Member States are invited to participate in either or both events, which will run in real-time. The scenario start times have been chosen to be more convenient for the "near field" (i.e. local) countries for each scenario. TSPs Australia, India and Indonesia will make exercise bulletins and detailed tsunami threat advice available on their password-protected websites during the events, and will send Notification Messages to NTWCs as the data is updated during the events.

The timelines for issuance of TSP bulletins for both events are given in Tables 2 and 4 below. Note that the actual bulletin issue times on the exercise days may be slightly different because the TSPs will be operating in a real-time simulation mode. Participant countries should use the timelines as a guide for planning their involvement in the exercise.

Coverage: All Member States are encouraged to participate. Estimated tsunami arrival times and wave amplitudes to all threatened IOTWMS countries are included in the TSP bulletins and products (refer to Appendix 2 and Section 3.2).

Messages: The TSPs will issue an initial Exercise Announcement Message to start the exercise on each day. Thereafter, NTWCs will receive Notification Messages from the TSPs according to the timelines shown in Table 2 (Sumatra) and 4 (Makran Trench), which will direct NTWCs to the TSP password-protected websites to view the detailed exercise bulletins and detailed threat information. Examples of the TSP Notification Messages are given in Appendix 1.

Threat Details: The following Section 3.2 provides the essential scenario details to facilitate the exercise plan. They include the estimated tsunami arrival times of the first significant wave above threat level and the maximum wave amplitudes for each affected country (Tables 3-Sumatra and Table 5-Makran Trench). Also provided are the sample threat map, the maximum wave amplitude map and/or the tsunami travel time map of the first detectable wave in the Indian Ocean (Figs 1&2 for Sumatra and Figs 3&4 for Makran Trench).

Countries are encouraged to conduct the exercise in real time and use the TSP websites to access the bulletins and other threat information available there. To facilitate the conduct of tabletop exercises and for planning the evacuation exercises, Appendix 2 provides sample TSP confirmed threat bulletins with tsunami wave observations for each scenario. Additional exercise sample bulletins will be available for download from the exercise website: www.ioc-unesco.org/IOWave16 approximately 1 month prior to the exercise.

3.2 Exercise Specifics

3.2.1 Scenario 1, Sumatra

This is the scenario of a magnitude 9.2 earthquake South of Sumatra, Indonesia (epicentre at 1.93S 99.22E), starting at 0300 UTC on Wednesday 7 September 2016. The simulated tsunami will take approximately 7.5 hours to travel from its source to the coasts of Iran and Pakistan, and 11 hours to travel to the southern coast of South Africa.

Table 2: Bulletin Timelines for Scenario 1, Sumatra

Magnitude 9.2 Earthquake, South of Sumatra, 0300UTC Wednesday 7 September 2016

TSP AUSTRALIA			TSP INDIA			TSP INDONESIA		
Time (UTC)	Bulletin Number	Bulletin Type	Time (UTC)	Bulletin Number	Bulletin Type	Time (UTC)	Bulletin Number	Bulletin Type
0300		<i>Announcement Message</i>	0300		<i>Announcement Message</i>	0300		<i>Announcement Message</i>
0309	1	Earthquake Bulletin (M8.1)	0305	1	Earthquake Bulletin (M8.5)	0307	1	Earthquake Bulletin (M 8.5)
0311	2	Potential Threat (M8.1)	0310	2	Potential Threat (M8.8)	0310	2	Potential Threat (M8.8)
0325	3	Confirmed Threat (M8.8)	0345	3	Confirmed Threat (M9.2)	0317	3	Confirmed Threat (M9.0)
0335	4	Confirmed Threat (M9.2)	0400	4	Confirmed Threat (M9.2)	0400	4	Confirmed Threat (M9.2)
0435	5	Confirmed Threat (M9.2)	0500	5	Confirmed Threat (M9.2)	0500	5	Confirmed Threat (M9.2)
0535	6	Confirmed Threat (M9.2)	0600	6	Confirmed Threat (M9.2)	0600	6	Confirmed Threat (M9.2)
0635	7	Confirmed Threat (M9.2)	0700	7	Confirmed Threat (M9.2)	0700	7	Confirmed Threat (M9.2)
0735	8	Confirmed Threat (M9.2)	0800	8	Confirmed Threat (M9.2)	0800	8	Confirmed Threat (M9.2)
0835	9	Confirmed Threat (M9.2)	0900	9	Confirmed Threat (M9.2)	0900	9	Confirmed Threat (M9.2)
0935	10	Confirmed Threat (M9.2)	1000	10	Confirmed Threat (M9.2)	1000	10	Confirmed Threat (M9.2)
1035	11	Confirmed Threat (M9.2)	1100	11	Confirmed Threat (M9.2)	1200	11	Confirmed Threat (M9.2)
1135	12	Confirmed Threat (M9.2)	1200	12	Confirmed Threat (M9.2)	1400	12	Confirmed Threat (M9.2)
1235	13	Confirmed Threat (M9.2)	1300	13	Confirmed Threat (M9.2)	1600	13	Final Bulletin
1335	14	Confirmed Threat (M9.2)	1400	14	Confirmed Threat (M9.2)			
1435	15	Final Bulletin	1500	15	Final Bulletin			

Table 3: The Estimated Tsunami Arrival Times and the Maximum Wave Amplitudes for Scenario 1, Sumatra.

T2 in UTC is the Estimated Tsunami Arrival Times (ETAs) for the first wave above the Threat Level of 0.5m. The earliest T2 out of the three TSPs is used for each listed country. MAX BEACH in metres is the estimated Maximum Wave Amplitude at the beach. The largest out of the three TSPs is used for each listed country. Not listed in the Table are those countries assessed by any of the three TSPs as not under threat.

No	Country Name	T2 (UTC)	MAX BEACH (m)
1	Australia	0348	7.44
2	Bangladesh	0724	3.25
3	British Indian Ocean Territory	0641	7.71
4	Comoros	1125	1.77
5	Djibouti	1251	2.97
6	French S & Antarctic Lands	0848	9.41
7	India	0409	6.27
8	Indonesia	0300	32.97
9	Iran	1048	2.12
10	Kenya	1120	3.19
11	Madagascar	1027	10.23
12	Malaysia	0652	1.24
13	Maldives	0626	5.56
14	Mauritius	0840	11.46
15	Mozambique	1155	3.11
16	Myanmar	0542	3.77
17	Oman	1002	3.49
18	Pakistan	1035	2.08
19	Reunion	0947	5.24
20	Seychelles	0923	5.96
21	Somalia	1020	3.46
22	South Africa	1324	8.48
23	Sri Lanka	0523	7.75
24	Tanzania	1142	2.49
25	Thailand	0520	3.02
26	Timor Leste	0735	0.71
27	UAE	1150	1.35
28	Yemen	0958	4.55

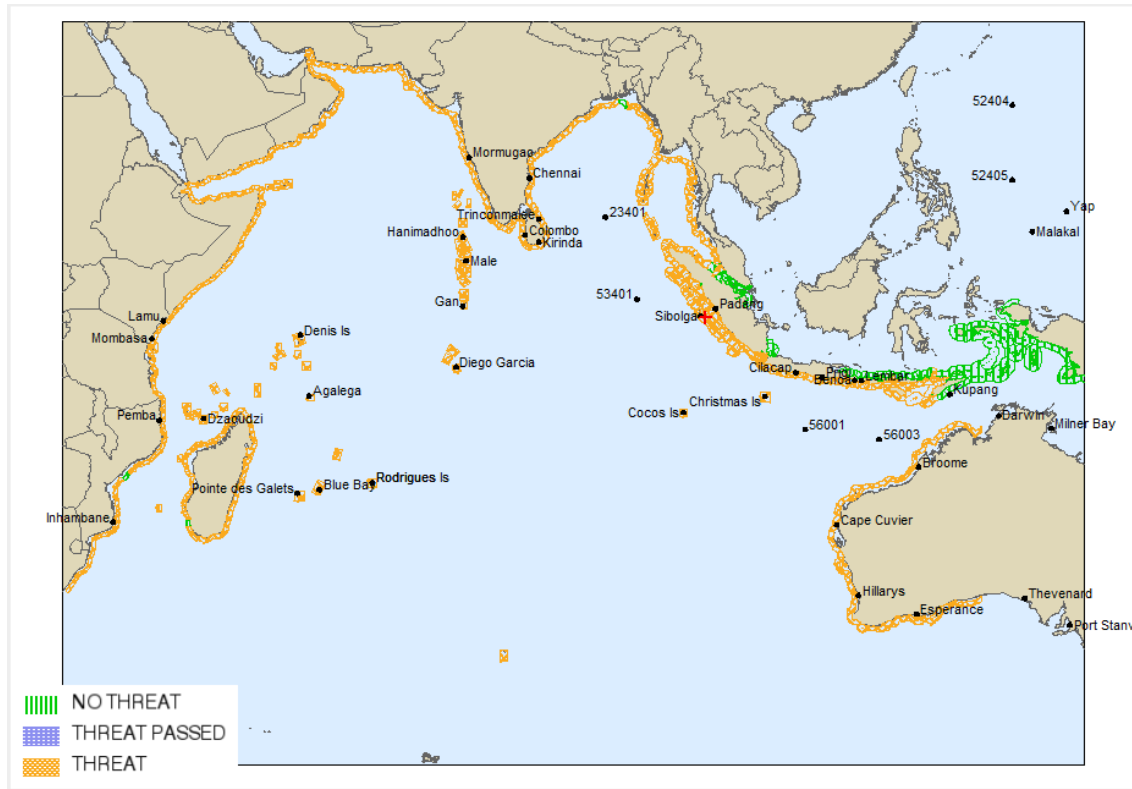


Figure 1. Threat Map produced by TSP Australia for Scenario 1, Sumatra.

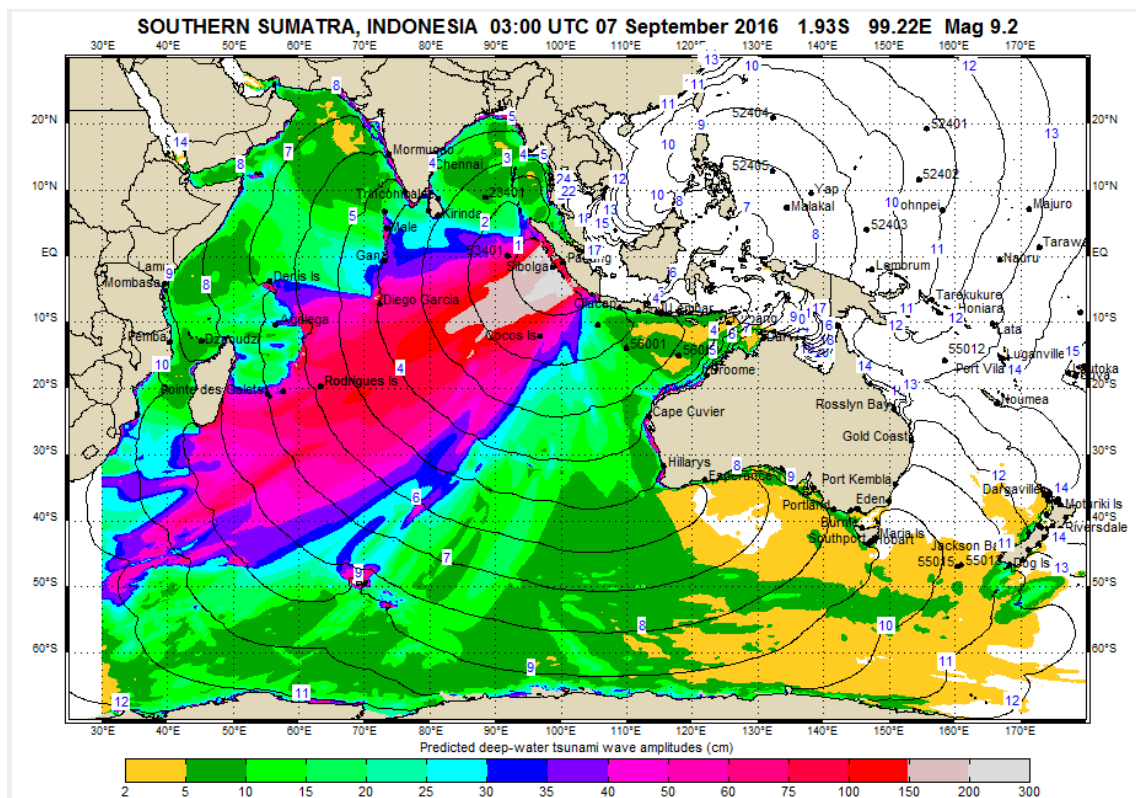


Figure 2. The Maximum Wave Amplitude Map overlaid with the first detectable wave Tsunami Travel Time contours produced by TSP Australia for Scenario 1, Sumatra.

3.2.2 Scenario 2, Makran Trench

This is a scenario of a magnitude 9.0 earthquake in the Makran Trench south of Pakistan (epicentre 24.8N 62.2E), starting at 0600 UTC on Thursday 8 September 2016. The simulated tsunami will take approximately 11 hours to travel from its source to the western coast of Australia.

Table 4: Bulletin Timelines for Scenario 2, Makran Trench

Magnitude 9.0 Earthquake, Off Coast of Pakistan, 0600UTC Thursday 08 September 2016

TSP AUSTRALIA			TSP INDIA			TSP INDONESIA		
Time (UTC)	Bulletin Number	Bulletin Type	Time (UTC)	Bulletin Number	Bulletin Type	Time (UTC)	Bulletin Number	Bulletin Type
0600		<i>Announcement Message</i>	0600		<i>Announcement Message</i>	600		<i>Announcement Message</i>
0612	1	Earthquake Bulletin (M8.3)	0605	1	Earthquake Bulletin (M8.2)	607	1	Earthquake Bulletin (M8.5)
0614	2	Potential Threat (M8.3)	0610	2	Potential Threat (M8.5)	610	2	Potential Threat (M8.7)
0625	3	Confirmed Threat (M8.8)	0645	3	Confirmed Threat (M9.0)	640	3	Confirmed Threat (M9.0)
0635	4	Confirmed Threat (M9.0)	0700	4	Confirmed Threat (M9.0)	700	4	Confirmed Threat (M9.0)
0735	5	Confirmed Threat (M9.0)	0800	5	Confirmed Threat (M9.0)	800	5	Confirmed Threat (M9.0)
0835	6	Confirmed Threat (M9.0)	0900	6	Confirmed Threat (M9.0)	900	6	Confirmed Threat (M9.0)
0935	7	Confirmed Threat (M9.0)	1000	7	Confirmed Threat (M9.0)	1000	7	Confirmed Threat (M9.0)
1035	8	Confirmed Threat (M9.0)	1100	8	Confirmed Threat (M9.0)	1100	8	Confirmed Threat (M9.0)
1135	9	Confirmed Threat (M9.0)	1200	9	Confirmed Threat (M9.0)	1200	9	Confirmed Threat (M9.0)
1235	10	Confirmed Threat (M9.0)	1300	10	Confirmed Threat (M9.0)	1300	10	Confirmed Threat (M9.0)
1335	11	Confirmed Threat (M9.0)	1400	11	Confirmed Threat (M9.0)	1400	11	Confirmed Threat (M9.0)
1435	12	Confirmed Threat (M9.0)	1500	12	Confirmed Threat (M9.0)	1500	12	Confirmed Threat (M9.0)
1535	13	Confirmed Threat (M9.0)	1600	13	Confirmed Threat (M9.0)	1700	13	Final Bulletin
1635	14	Confirmed Threat (M9.0)	1700	14	Confirmed Threat (M9.0)			
1735	15	Final Bulletin	1800	15	Final Bulletin			

Table 5: The Estimated Tsunami Arrival Times and the Maximum Wave Amplitudes for Scenario 2, Makran Trench.

T2 in UTC is the Estimated Tsunami Arrival Times (ETAs) for the first wave above the Threat Level of 0.5m. The earliest T2 out of the three TSPs is used for each listed country. MAX BEACH in metres is the estimated Maximum Wave Amplitude at the beach. The largest out of the three TSPs is used for each listed country. Not listed in the Table are those countries assessed by any of the three TSPs as not under threat.

No	Country Name	T2 (UTC)	MAX BEACH (m)
1	Australia	1400	1.18
2	Bangladesh	2144	0.58
3	British Indian Ocean Territory	1051	3.1
4	Comoros	1209	1.7
5	Djibouti	1053	3.1
6	French S & Antarctic Lands	1612	3.7
7	India	0600	4.89
8	Indonesia	1329	1.66
9	Iran	0600	19.1
10	Kenya	1130	1.7
11	Madagascar	1150	2.59
12	Maldives	0912	5.85
13	Mauritius	1143	1.72
14	Mozambique	1222	1.4
15	Oman	0610	17.3
16	Pakistan	0600	13.6
17	Reunion	1313	1.31
18	Seychelles	1036	2.61
19	Somalia	0905	3.6
20	South Africa	2121	0.66
21	Sri Lanka	1036	2.28
22	Tanzania	1200	2.4
23	UAE	0620	7.3
24	Yemen	0817	3.84

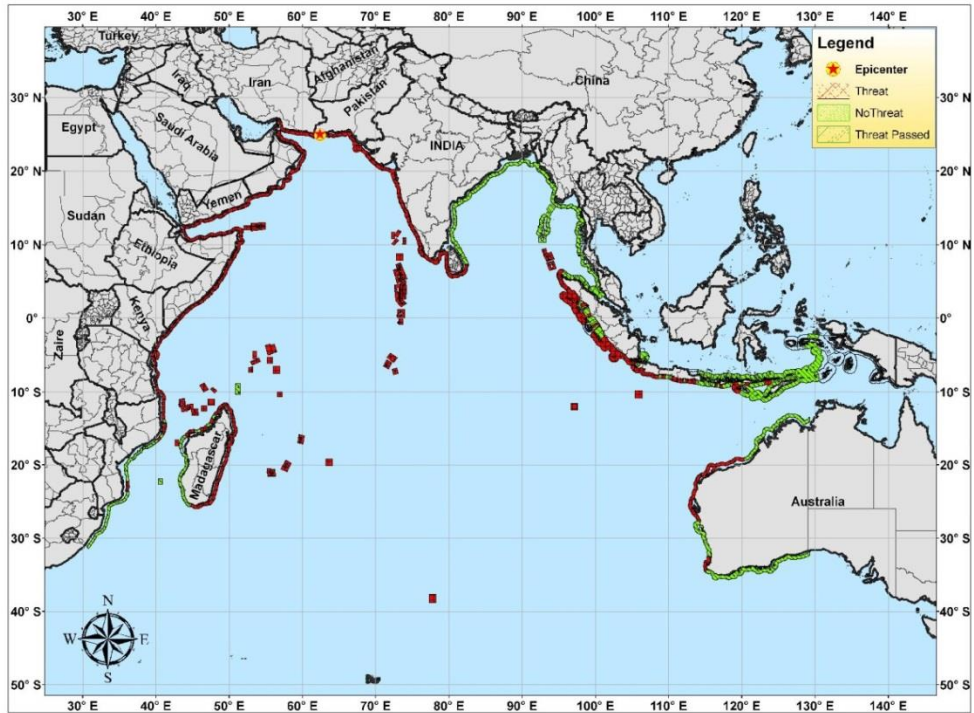


Figure 3. Threat Map produced by TSP India for Scenario 2, Makran Trench.

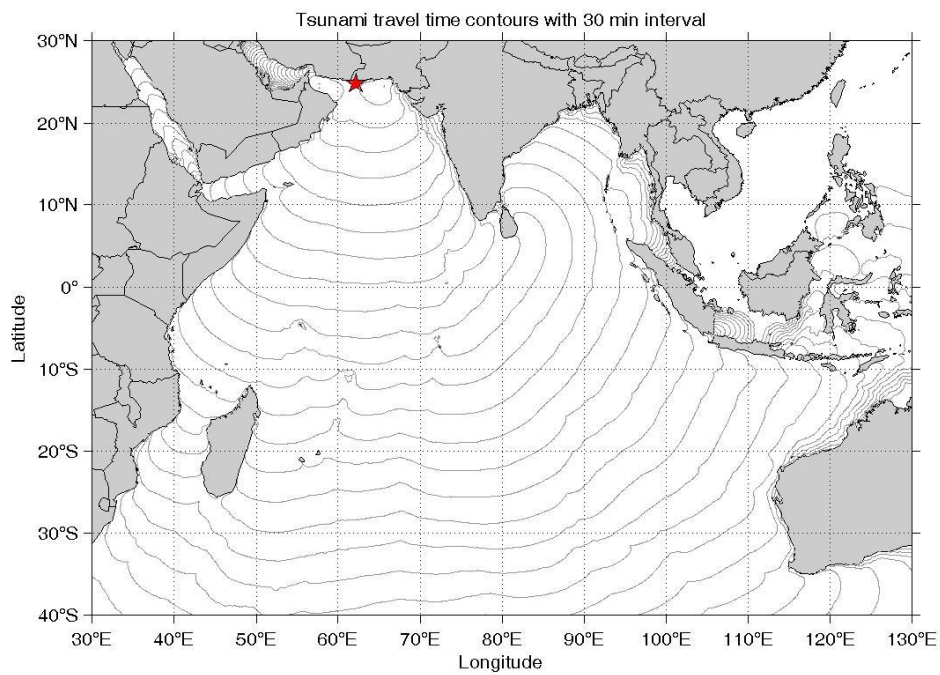


Figure 4. The first detectable wave Tsunami Travel Time contour map produced by TSP India for Scenario 2, Makran Trench

3.3 Logging and Status Reporting Procedure

During the exercise NTWCs are requested to log the times of reception of TSP Bulletin Notification Messages and of accessing TSP websites, and of reporting their National Warning Status via the TSP websites. The logging can be done either directly via the online evaluation form or via log forms – see Appendix V Post-Exercise Evaluation for details.

Detailed logging and reporting procedure:

1. Following the reception of each TSP Bulletin Notification Message, NTWCs should:
 - Log the time of reception of the TSP Notification Message, and how it was received (GTS, email, fax, SMS).
 - Use a web browser to access the password-protected website for the TSP given in the Notification Message, and log the success or otherwise of this access.
2. Following the times at which simulated National Warnings would be issued by the NTWC or NDMO in each country, the issuing agency should:
 - Report the National Tsunami Warning Status for their country via the web-based “NTWC Warning Status” form available on each TSP website.
 - Log the time of the status report and which TSP's website was used for the report. NOTE: **Only one status report is required after issuing each National Warning**, using the form on **any** of the TSP websites.

3.4 Website Passwords

The user names and passwords for accessing each of the TSP password-protected websites are known by NTWCs and are not included here (the websites are not intended to be viewed by the general public). If any NTWC is unsure of the passwords, please consult the TSP User Manuals, or the Technical Manual for the last IOTWMS Communications Test, or contact the IOTWMS Secretariat at: iotws@unesco.org.

3.5 Actions in Case of a Real Event

All documentation and correspondence relating to this exercise is to be clearly identified as **Exercise IOWave16** and **For Exercise Purposes Only**. In the case of a real event occurring during the exercise, TSPs and NTWCs will issue their normal message products for the event. Such messages will be given full priority and all TSPs should stop the exercise immediately and send an Announcement Message to that effect.

3.6 Resourcing

Although participating countries will have advance notice of the exercise and may elect to stand up a special dedicated shift to allow normal core business to continue uninterrupted, it is suggested that realistic resource levels be deployed in order to reflect some of the issues that are likely to be faced in a real event.

3.7 Media Involvement

The media have an important role in raising tsunami awareness to the public. Member States are therefore encouraged to involve the media in the exercise. Each country is responsible for the coordination of national in-country media communications for the

exercise. Media may be invited to participate or be simulated by exercise control staff.

The degree of media involvement in the exercise will vary from country to country, such as a paragraph in a newspaper, television coverage of an evacuation drill or information transmitted to the public via media networks. In all cases, it is important to ensure that the media and public know about the exercise beforehand so that they do not mistake it for a real tsunami warning.

Participating agencies should seek guidance from their National Contact for Exercise IOWave16 regarding responses to individual approaches by in-country media concerning the exercise.

3.8 Press Release

The UNESCO External Relations and Information department (ERI) will issue an international Media Advisory to alert the press of the Exercise IOWave16 about one week before the exercise.

ICG/IOTWMS Member States should consider issuing one or two exercise press releases to their respective country's media in conjunction with the UNESCO release. Member States' press releases will give adequate alert to their country's population and give their local media time to conduct interviews and documentaries with participating exercise organisations in advance of the exercise. Appendix III contains a sample press release that can be customised by Member States.

A second Member State press release, one week before the exercise, could provide a more detailed description of exercise activities to take place within that country.

4. POST-EXERCISE EVALUATION

4.1 Evaluation and Debriefing

Following the exercise, participating countries are requested to complete the online Exercise Evaluation Survey. This feedback will assist in the evaluation of Exercise IOWave16 and in the development of subsequent exercises.

The goal of exercise evaluation is to validate SOPs and to identify opportunities for improvement within the participating organisations. This is to be accomplished by collating supporting data, analysing the data to compare effectiveness against requirements, and determining what changes need to be made by participating organisations as well as the IOTWMS as a collective to support effective tsunami warning and decision making.

Evaluation of this exercise will focus on the adequacy of plans, policies, procedures, assessment capabilities, communication, resources and inter-agency/inter-jurisdictional relationships that support effective tsunami warning and decision-making at all levels of government and the community response.

The evaluation aims to inform and facilitate individual participant country evaluations as well as the integrated IOWave16 Report. The Post-Exercise Evaluation questionnaire addressing the respective focus areas and objectives is included in Appendix V for information and guidance. Please note that all participant countries are requested to complete the questionnaire **online** by **30 September 2016**. The link to the questionnaire will be provided to the IOWave16 National Contacts before the exercise.

Member States are encouraged to appoint Exercise Evaluators within each of their in-country agencies participating in the exercise, who would collect information during the exercise for the purposes of the Post-Exercise Evaluation. Member States are also encouraged to conduct formal exercise debriefs inclusive of all participants in their respective agencies, to facilitate a collective and official national evaluation. For details of

how to conduct a national evaluation refer to Appendix IV.

4.2 Exercise Observers

It is recommended that independent and objective Exercise Observers be appointed at all exercise points to support the collection of such data. Observers are to be guided by the exercise objectives and the information required in the Post-Exercise Evaluation questionnaire. International observers can be made available to Member States upon request and the understanding that the Member States will fund the observers' travel costs and per diems. Benefits of international observers include providing an independent assessment of the in-country response, recommending improvements to SOPs and communication linkages consistent with international best practice, and evaluating the success of the exercise in an Indian Ocean-wide context.

4.3 Exercise Report

In completing the online Post-Exercise Evaluation questionnaire, participating organisations are encouraged to note areas for improvement and actions that they plan to take. All official Post-Exercise Evaluation questionnaire responses are designated as "For Official Use Only" and will be restricted for use by the IOWave16 Task Team for the purpose of compilation of the Exercise Report. The Exercise Report will be submitted to the ICG/IOTWMS and Member States will have the opportunity to provide comments. The report will be published in the IOC Technical Series and will be in the public domain (i.e. available on the IOC website). Member States may also choose to share their national evaluation reports with the public.

APPENDIX I. EXAMPLES OF TSP BULLETIN NOTIFICATION MESSAGES

1. Full Notification Message – GTS, Fax, Email

The following is an example of an TSP Australia Notification Message that will be sent via GTS, fax and email. Notification Messages from TSP Indonesia and TSP India will be similar in format.

```
WEIO24 AMMC 070310
#####
#
#  TEST TEST TEST - EXERCISE IOWAVE16 - NOT A REAL TSUNAMI EVENT
#
#####
-----
TEST TSUNAMI BULLETIN NOTIFICATION MESSAGE NUMBER 1
TSUNAMI SERVICE PROVIDER - TSP AUSTRALIA [JATWC]
ISSUED AT 0310 UTC WEDNESDAY 7 SEPTEMBER 2016
-----
TO:    INDIAN OCEAN NATIONAL TSUNAMI WARNING CENTRES [NTWCs]
FROM:  TSP AUSTRALIA

NOTIFICATION:
TSP AUSTRALIA HAS JUST ISSUED TSUNAMI BULLETIN NUMBER 1 FOR THE
INDIAN OCEAN, BASED ON THE FOLLOWING EARTHQUAKE EVENT:

MAGNITUDE:    8.3 MWP
DEPTH:        10KM
DATE:         07 SEP 2016
ORIGIN TIME:  0300 UTC
LATITUDE:     1.93S
LONGITUDE:    99.22E
LOCATION:       SOUTHERN SUMATRA, INDONESIA

TO VIEW THE BULLETIN GO TO THE TSP AUSTRALIA WEBSITE AT:

http://reg.bom.gov.au/tsunami/rtsp/index.shtml

NOTE: THIS IS A RESTRICTED-ACCESS WEBSITE CONTAINING TECHNICAL DATA
FOR NATIONAL TSUNAMI WARNING CENTRES ONLY. IT IS NOT FOR GENERAL
PUBLIC ACCESS.

GENERAL PUBLIC INFORMATION FOR THIS EVENT IS AVAILABLE FROM:

JOINT AUSTRALIAN TSUNAMI WARNING CENTRE [JATWC]
BUREAU OF METEOROLOGY
MELBOURNE, AUSTRALIA
http://www.bom.gov.au/tsunami

END OF NOTIFICATION MESSAGE
-----
#####
#
#  TEST TEST TEST - EXERCISE IOWAVE16 - NOT A REAL TSUNAMI EVENT
#
#####
```

Notes:

1. The words highlighted in **red** have been added to the normal notification message format for the purposes of Exercise IOWave16.
2. For GTS dissemination of the notification messages, the GTS headers used by each TSP will be of the form:

- a. TSP India: **WEIO20 DEMS 070310**
- b. TSP Indonesia: **WEIO22 WIIX 070310**
- c. TSP Australia: **WEIO24 AMMC 070310**

2. Abbreviated Notification Message - SMS

The following is an example of an abbreviated TSP Australia Notification Message that will be sent via mobile-phone SMS. SMS messages will be kept to a maximum length of 160 characters to enable them to be transmitted in a single SMS text message.

TEST TSP AUSTRALIA BULLETIN 1 ISSUED See <http://reg.bom.gov.au/tsunami/TSP>
EQ 03:00 07/09/2016 UTC MAG 8.3 1.93S 99.22E SOUTHERN SUMATRA, INDONESIA

SMS Notification Messages from TSP Indonesia and TSP India will be similar in format.

APPENDIX II. EXAMPLES OF TSP CONFIRMED THREAT BULLETINS WITH TSUNAMI WAVE OBSERVATIONS

1. Scenario 1 – Sumatra Sample Tsunami Bulletin Issued by TSP Indonesia

TEST TEST TEST TEST TEST IOWave-Sep-2016 TEST TEST TEST TEST TEST TEST
TEST TEST TEST TEST IOWave-Sep-2016 TEST TEST TEST TEST TEST
TSP-InaTEWS-nomorheader

TSUNAMI BULLETIN NUMBER 4 (TYPE-III)
IOTWS TSUNAMI SERVICE PROVIDER INDONESIA (InaTEWS-BMKG)
issued at 0400 UTC, Wednesday, 07 September 2016

... CONFIRMED TSUNAMI THREAT IN THE INDIAN OCEAN ...

This bulletin applies to areas within and bordering the Indian Ocean. It is issued in support of the UNESCO/IOC Indian Ocean Tsunami Warning and Mitigation System (IOTWS).

1. EARTHQUAKE INFORMATION (updated)

IOTWS-TSP INDONESIA has detected an earthquake with the following details:

Magnitude : 9.2 (Mw)
Depth : 10km
Date : 07 Sep 2016
Origin Time: 03:00:00 UTC
Latitude : 1.93S
Longitude : 99.22E
Location : Southern Sumatra, Indonesia

2. EVALUATION

Sea level observations have confirmed that a TSUNAMI WAS GENERATED.
Maximum wave amplitudes observed so far:

LOCATION	COUNTRIES	LAT	LON	AMPL(m)	TIME(UTC)	DATE
TELUK DALAM	INDONESIA	00.55N	97.82E	7.0	03:12	Sep 07, 2016
TANAH BALA	INDONESIA	00.53S	98.50E	5.0	03:50	Sep 07, 2016
PADANG	INDONESIA	00.95S	100.37E	6.5	03:52	Sep 07, 2016

Based on pre-run model scenarios, the zones listed below are POTENTIALLY UNDER THREAT.

3. TSUNAMI THREAT FOR THE INDIAN OCEAN

The list below shows the forecast arrival time of the first wave estimated to exceed 0.5m amplitude at the beach in each zone (or a different threshold nominated by an NTWC), and the amplitude of the maximum beach wave predicted for the zone. Zones where the estimated wave amplitudes are less than the threshold amplitude at the beach are not shown.

The list is grouped by country (alphabetic order) and ordered according to the earliest estimated times of arrival at the beach.

Please be aware that actual wave arrival times may differ from those below, and the initial wave may not be the largest. A tsunami is a series of waves and the time between successive waves can be five minutes to one hour.

The threat is deemed to have passed two hours after the forecast time for last exceedance of the 0.5m threat threshold for a zone. As local conditions can cause a wide variation in tsunami wave action, CANCELLATION of national warnings and ALL CLEAR determination must be made by national/state/local authorities.

AUSTRALIA

CHRISTMAS ISLAND	03:59z 07Sep2016	1.51m
COCOS ISLAND	04:11z 07Sep2016	5.72m
LEARMONTH	06:15z 07Sep2016	2.69m
CARNARVON	06:17z 07Sep2016	2.19m
BORROW ISLAND	06:54z 07Sep2016	2.35m
HAMELIN POOL	07:05z 07Sep2016	2.93m
PORT DENISON	07:10z 07Sep2016	2.75m
PORT HEADLAND	07:26z 07Sep2016	3.20m
GREY	07:30z 07Sep2016	2.27m
WINCHESTER	07:37z 07Sep2016	1.83m
ROTTNEST ISLAND	07:41z 07Sep2016	1.42m
SEABIRD	07:44z 07Sep2016	2.30m
PADBURY	07:52z 07Sep2016	2.22m
KALBARRI	07:53z 07Sep2016	3.30m
WALKAWAY	07:54z 07Sep2016	2.69m
ROCKINGHAM	07:54z 07Sep2016	2.07m
YANCHEP	07:54z 07Sep2016	2.40m
DEGREY	07:55z 07Sep2016	2.01m
YALLINGUP	07:55z 07Sep2016	2.64m
IRWIN	07:56z 07Sep2016	2.21m
MANDURAH	07:59z 07Sep2016	2.19m
KUDARDUP	08:09z 07Sep2016	2.12m
DARDANUP	08:16z 07Sep2016	2.54m
MOONYOONOOKA	08:30z 07Sep2016	2.89m
WINDY HARBOUR	08:34z 07Sep2016	1.98m
KIMBERLEY DOWN S	08:40z 07Sep2016	0.67m
NORNALUP	08:40z 07Sep2016	1.24m
LAGRANGE	08:49z 07Sep2016	1.15m
KUNUNURRA	09:41z 07Sep2016	0.78m
BOONGAREE ISLAND	11:58z 07Sep2016	0.78m
ALBANY	11:59z 07Sep2016	1.25m
GIBSON	13:59z 07Sep2016	0.52m
PARDOO	14:06z 07Sep2016	0.78m
ESPERANCE	15:33z 07Sep2016	0.50m
UNICORP.WEST COAST	17:55z 07Sep2016	0.54m
ELLISTON	18:05z 07Sep2016	0.55m
GLENELG PORTLAND	18:25z 07Sep2016	0.59m
BREMER BAY	18:58z 07Sep2016	0.56m
HOPETOUN	20:35z 07Sep2016	0.74m

BANGLADESH

COXS BAZAR	08:29z 07Sep2016	1.42m
BARGUNA	08:36z 07Sep2016	1.62m
KUTUBDIA ISLAND	08:44z 07Sep2016	1.29m
CHALNA	13:13z 07Sep2016	1.12m

BRITISH INDIAN OCEAN TERRITORY

MORESBY ISLAND	06:47z 07Sep2016	4.18m
DIEGO GARCIA	06:48z 07Sep2016	5.12m

NW EGMONT ISLAND	07:05z 07Sep2016	4.44m

COMOROS		

BAMBAO	11:34z 07Sep2016	1.15m
DZAOUDZI	11:36z 07Sep2016	1.06m
CHEZANI	11:42z 07Sep2016	1.35m
FOMBONI	11:43z 07Sep2016	1.33m

DJIBOUTI		

MUHAMMAD ALI BIN FATHA SUMANA	13:14z 07Sep2016	1.10m
NW ARTA	13:20z 07Sep2016	3.58m
ALAILI DADDA	13:40z 07Sep2016	0.87m

FRENCH SOUTHERN AND ANTARCTIC LA		

LLE SAINT-PAUL-NORTH	08:57z 07Sep2016	2.71m
LLE SAINT-PAUL-SOUTH	09:12z 07Sep2016	4.03m
AND ANTARCTIC LANDS	11:28z 07Sep2016	6.94m

INDIA		

INDIRA POINT	04:27z 07Sep2016	3.98m
KOMATRA AND KATCHAL ISLAND	04:40z 07Sep2016	2.95m
CAR NICOBAR	04:56z 07Sep2016	2.71m
LITTLE ANDAMAN	05:15z 07Sep2016	2.75m
NORTH SENTINEL ISLAND	05:33z 07Sep2016	2.26m
PORT BLAIR	05:35z 07Sep2016	1.83m
HAVELOCK	05:46z 07Sep2016	1.84m
BARREN ISLAND	05:58z 07Sep2016	0.67m
RANGATH BAY	06:02z 07Sep2016	0.99m
DIGLIPUR	06:08z 07Sep2016	0.93m
FLAT ISLAND	06:09z 07Sep2016	2.28m
CUDDALORE	06:22z 07Sep2016	2.39m
KOLUVERI	06:24z 07Sep2016	2.43m
WEST AND LANDFALL ISLAND	06:26z 07Sep2016	1.50m
PUDUCHERRY	06:27z 07Sep2016	3.80m
NAGAPATTINAM	06:28z 07Sep2016	2.49m
NAGAPATTINAM-THANJAVUR	06:29z 07Sep2016	2.95m
KARAIKAL	06:31z 07Sep2016	1.99m
MAHABALIPURAM	06:31z 07Sep2016	4.23m
TUTICORIN	06:33z 07Sep2016	3.31m
PONNERI	06:36z 07Sep2016	2.10m
SRIHARIKOTA	06:39z 07Sep2016	2.36m
RAMESWARAM	06:42z 07Sep2016	2.72m
CHENNAI	06:43z 07Sep2016	2.86m
MACHILIPATNAM	06:43z 07Sep2016	3.46m
KAKINADA	06:47z 07Sep2016	2.56m
NIJAMPATTANAM	06:48z 07Sep2016	3.64m
KOTTAPATNAM	06:49z 07Sep2016	3.53m
KOODANKULAM	06:53z 07Sep2016	3.43m
VISAKHAPATNAM	07:03z 07Sep2016	3.25m
KANYAKUMARI	07:03z 07Sep2016	4.77m
KOYYAM	07:06z 07Sep2016	2.02m
QUILON	07:08z 07Sep2016	2.56m
PURI	07:10z 07Sep2016	1.57m

TRIVANDRUM	07:11z 07Sep2016	3.47m
MINICOY	07:12z 07Sep2016	1.37m
PARADIP	07:14z 07Sep2016	1.17m
GOPALPUR	07:17z 07Sep2016	2.24m
ALLEPPEY ALAPPUZHA	07:21z 07Sep2016	2.78m
ANDROTH	07:23z 07Sep2016	1.48m
RAJNAGAR	07:32z 07Sep2016	1.14m
KAVARATTI	07:41z 07Sep2016	1.10m
AMINI	07:51z 07Sep2016	1.15m
AGATTI	07:55z 07Sep2016	1.50m
MANATTALA	07:55z 07Sep2016	2.12m
COCHIN	07:57z 07Sep2016	2.68m
TIRURANGADI	08:01z 07Sep2016	2.70m
NAIKANIDIHI	08:02z 07Sep2016	1.46m
SAGAR AND KAKDWIP	08:05z 07Sep2016	1.14m
BALESHWAR	08:14z 07Sep2016	1.28m
BEYPORE	08:14z 07Sep2016	1.73m
CHANDRAGIRI FORT	08:23z 07Sep2016	2.77m
MADAYI KANNUR	08:24z 07Sep2016	2.28m
MANGALORE	08:50z 07Sep2016	1.67m
UDUPI	09:07z 07Sep2016	2.75m
KARWAR	09:26z 07Sep2016	2.32m
MALVAN BAY	09:38z 07Sep2016	2.23m
PANAJI	09:40z 07Sep2016	1.82m
ANJANWEL	10:08z 07Sep2016	1.69m
ALIBAG PORT	10:58z 07Sep2016	1.68m
VERAVAL	11:09z 07Sep2016	1.03m
DWARKA	11:11z 07Sep2016	1.42m
MANDVI	13:10z 07Sep2016	0.93m
VIRAR	13:17z 07Sep2016	1.16m
DAMAN	14:22z 07Sep2016	1.07m
PORBANDAR	14:37z 07Sep2016	1.18m
MUMBAI	14:48z 07Sep2016	1.70m
AMRELI	14:59z 07Sep2016	1.15m
BORSI	16:25z 07Sep2016	0.92m
MAHUVA	16:26z 07Sep2016	0.95m

INDONESIA

SUMUT NIAS BAGIAN BARAT	03:00z 07Sep2016	18.76m
SUMBAR KEPULAUAN-MENTAWAI PULAU SIPORA	03:00z 07Sep2016	18.79m
SUMUT NIAS-SELATAN PULAU NIAS	03:00z 07Sep2016	16.79m
SUMUT NIAS-SELATAN PULAU TANAHMASA	03:00z 07Sep2016	15.28m
SUMBAR KEPULAUAN-MENTAWAI P. SIBERUT	03:00z 07Sep2016	17.85m
SUMBAR KEPULAUAN-MENTAWAI KEP. PAGAI	03:00z 07Sep2016	15.77m
SUMUT NIAS-SELATAN PULAU TANABALA	03:00z 07Sep2016	15.78m
SUMBAR PESISIR-SELATAN BAGIAN SELATAN	03:14z 07Sep2016	25.34m
SUMBAR PESISIR-SELATAN BAGIAN UTARA	03:16z 07Sep2016	29.95m
NAD SIMEULUE PULAU SIMEULUE	03:17z 07Sep2016	7.10m
BENGKULU MUKOMUKO	03:19z 07Sep2016	27.70m
BENGKULU BENGKULU-UTARA PULAU ENGGANO	03:20z 07Sep2016	10.43m
SUMUT NIAS BAGIAN TIMUR	03:21z 07Sep2016	8.32m
NAD ACEH-SINGKIL KEPULAUAN BANYAK	03:25z 07Sep2016	6.22m
SUMBAR KOTA-PARIAMAN	03:27z 07Sep2016	18.55m
SUMBAR PADANG-PARIAMAN BAGIAN SELATAN	03:27z 07Sep2016	23.22m
SUMBAR KOTA-PADANG BAGIAN UTARA	03:31z 07Sep2016	24.98m
BENGKULU KOTA-BENGKULU PANTAI-PANJANG	03:31z 07Sep2016	14.02m
SUMBAR PADANG-PARIAMAN BAGIAN UTARA	03:31z 07Sep2016	22.88m
BENGKULU SELUMA	03:32z 07Sep2016	17.79m
BENGKULU BENGKULU-UTARA BAGIAN UTARA	03:33z 07Sep2016	30.00m

SUMBAR KOTA-PADANG BAGIAN SELATAN	03:34z 07Sep2016	26.82m
SUMBAR AGAM	03:34z 07Sep2016	16.41m
SUMUT NIAS-SELATAN PULAU PINI	03:37z 07Sep2016	15.74m
BENGKULU KAUR	03:38z 07Sep2016	11.22m
BENGKULU BENGKULU-UTARA BAGIAN SELATAN	03:38z 07Sep2016	26.86m
BENGKULU BENGKULU-SELATAN	03:40z 07Sep2016	10.07m
LAMPUNG LAMPUNG-BARAT PESISIR-UTARA	03:42z 07Sep2016	5.83m
LAMPUNG LAMPUNG-BARAT PESISIR-TENGAH	03:44z 07Sep2016	7.10m
LAMPUNG LAMPUNG-BARAT PESISIR-SELATAN	03:45z 07Sep2016	6.93m
SUMBAR PASAMAN-BARAT	03:48z 07Sep2016	17.49m
BANTEN PANDEGLANG BAGIAN SELATAN	03:53z 07Sep2016	6.18m
BANTEN PANDEGLANG PULAU PANAITAN	03:54z 07Sep2016	3.72m
NAD ACEH-SELATAN BAGIAN UTARA	03:56z 07Sep2016	3.56m
BANTEN PANDEGLANG BAGIAN UTARA	03:58z 07Sep2016	5.41m
SUMUT TAPANULI-TENGAH BAGIAN SELATAN	03:59z 07Sep2016	10.93m
SUMUT TAPANULI-SELATAN	04:00z 07Sep2016	11.55m
SUMUT MANDAILING-NATAL BAGIAN UTARA	04:02z 07Sep2016	16.72m
JABAR SUKABUMI PELABUHAN-RATU	04:04z 07Sep2016	4.26m
BANTEN LEBAK	04:05z 07Sep2016	4.04m
LAMPUNG TANGGAMUS PULAU TABUAN	04:06z 07Sep2016	4.12m

(Please note: the rest of the coastal zones for Indonesia is omitted to save space. This note is not part of the bulletin)

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IRAN

PUSHT	11:21z 07Sep2016	1.34m
BIR	11:31z 07Sep2016	1.13m
MISKI	12:49z 07Sep2016	1.10m
SAR RIG	13:55z 07Sep2016	1.02m

KENYA

KIWAYU	11:29z 07Sep2016	1.84m
MALINDI	11:58z 07Sep2016	2.01m
KIPINI	12:01z 07Sep2016	2.05m
TAKAUNGU	12:02z 07Sep2016	1.74m
KISIMACHANDE	12:03z 07Sep2016	1.94m
MVULENI	12:26z 07Sep2016	1.33m

MADAGASCAR

VOHEMAR	10:31z 07Sep2016	5.39m
ANOROTSANGANA	10:38z 07Sep2016	2.42m
TOAMASINA AIRPORT	10:48z 07Sep2016	4.28m
TAMPOLO	10:51z 07Sep2016	4.62m
AMBAHY	11:01z 07Sep2016	7.14m
GLORIOSO ISLANDS	11:07z 07Sep2016	1.38m
FARAFAGANA	11:08z 07Sep2016	9.51m
MANANTENINA	11:15z 07Sep2016	5.03m
SAMPONA	11:49z 07Sep2016	4.96m
ANDROKA	12:05z 07Sep2016	3.47m
BALY	12:05z 07Sep2016	1.19m
TAMOTAMO	12:11z 07Sep2016	1.06m
EUROPA ISLAND	12:43z 07Sep2016	1.05m
JUAN DE NOVA ISLAND	12:44z 07Sep2016	1.13m
AMBANJA	13:47z 07Sep2016	1.01m

MANJA	15:40z	07Sep2016	1.21m

MALAYSIA			

SEBERANG PERAI UTARA AND BARAT DAYA	08:10z	07Sep2016	0.96m
SATUN	12:53z	07Sep2016	0.99m
YAN	13:12z	07Sep2016	0.88m
WEST OF ALOR SETAR	13:26z	07Sep2016	0.81m
KERIAN	13:34z	07Sep2016	0.58m
KUALA MUDA	13:46z	07Sep2016	0.56m
MANJUNG	14:09z	07Sep2016	0.77m
SEBERANG PERAI SELATAN	15:44z	07Sep2016	0.68m
LARUT AND MATANG	18:32z	07Sep2016	0.73m

MALDIVES			

DHIYAMIGILI	06:36z	07Sep2016	3.93m
HITHADHOO	06:36z	07Sep2016	3.13m
THINADHOO	06:37z	07Sep2016	4.46m
KOLHUFUSHI	06:37z	07Sep2016	3.71m
MALE-SOUTH	06:41z	07Sep2016	4.91m
MALE-NORTH	06:46z	07Sep2016	3.15m
KULHUDHUFFUSHI	06:47z	07Sep2016	3.65m
GOIDHOO	07:00z	07Sep2016	2.65m
FERIDHOO	07:02z	07Sep2016	3.64m

MAURITIUS			

LA FERME	08:44z	07Sep2016	8.65m
CARGADOS CARAJOS	09:18z	07Sep2016	7.33m
GRANDE REVIERE SUD EST-EAST	09:27z	07Sep2016	3.98m
AGALEGA ISLAND	09:39z	07Sep2016	1.72m
GRANDE REVIERE SUD EST-WEST	09:43z	07Sep2016	4.16m

MOZAMBIQUE			

MAGANJA	12:05z	07Sep2016	1.38m
QUITERAJO	12:17z	07Sep2016	1.24m
MERONVI	12:18z	07Sep2016	1.90m
TAVARI	12:19z	07Sep2016	1.03m
PEMBA	12:21z	07Sep2016	1.31m
LURIO	12:23z	07Sep2016	1.48m
MURREBUE	12:24z	07Sep2016	0.98m
NANGATA	12:24z	07Sep2016	1.47m
MINHAUINE	12:26z	07Sep2016	1.28m
MECUFI	12:27z	07Sep2016	1.09m
LUMBO	12:28z	07Sep2016	1.54m
MOGINCUAL	12:46z	07Sep2016	1.36m
INHARRIME	13:13z	07Sep2016	1.85m
POMENE	13:26z	07Sep2016	1.79m
VILANKULO	13:30z	07Sep2016	1.72m
MAGUEMBA	13:35z	07Sep2016	1.96m
MAPUTO	13:44z	07Sep2016	2.58m
ZAVALA	13:46z	07Sep2016	2.25m
INHASSORO	13:46z	07Sep2016	0.99m
MOEBASE	13:49z	07Sep2016	0.84m
OCONE	13:51z	07Sep2016	1.38m

XAI-XAI	13:52z	07Sep2016	2.54m
AMADE	13:59z	07Sep2016	1.25m
MALUANA	14:02z	07Sep2016	1.91m
NAMORRE	14:27z	07Sep2016	0.89m
VILA DO CHINDE	14:29z	07Sep2016	1.34m
NHANGAU	14:30z	07Sep2016	1.43m
MAIONGUE	14:46z	07Sep2016	1.22m
NOVA LUSITANIA	14:51z	07Sep2016	0.98m

MYANMAR

THAN KYUN	06:06z	07Sep2016	1.16m
LITTLE COCO ISLAND	06:23z	07Sep2016	1.40m
LORD LOUGHBOROUGH ISLAND	06:24z	07Sep2016	1.42m
PREPARIS ISLAND	06:37z	07Sep2016	0.94m
GREAT WESTERN TORRES ISLAND	07:04z	07Sep2016	1.47m
KYWEGYAUNG	07:06z	07Sep2016	1.54m
CHEDUBA ISLAND	07:10z	07Sep2016	1.75m
SITTWE	07:37z	07Sep2016	2.06m
KYAUKPYU	07:38z	07Sep2016	2.82m
MAGYIGYAING	07:46z	07Sep2016	1.89m
THAWINCHAUNG	07:46z	07Sep2016	1.33m
PHARPON	07:50z	07Sep2016	2.05m
MALI KYUN	08:16z	07Sep2016	0.82m
YE	08:44z	07Sep2016	0.97m
MAWYEN	09:09z	07Sep2016	2.57m
YANGON-S	18:52z	07Sep2016	0.80m

OMAN

HASIK	10:28z	07Sep2016	2.04m
MASIRAH	10:38z	07Sep2016	1.51m
MIRBAT	10:38z	07Sep2016	2.18m
SALALAH	10:43z	07Sep2016	1.63m
DHALKUT	10:48z	07Sep2016	3.80m
RASS AL HADD	10:50z	07Sep2016	2.20m
QALHAT	10:51z	07Sep2016	1.09m
JUWAYRAH	10:54z	07Sep2016	3.01m
ABU GHALAT	10:56z	07Sep2016	1.46m
ASSIFAH	11:08z	07Sep2016	1.12m
DARSAIT	11:22z	07Sep2016	0.63m
AL KHABURAH	11:49z	07Sep2016	0.69m
SUHAR	11:53z	07Sep2016	0.74m
MUSANDAM	12:31z	07Sep2016	1.06m
BARKA	15:20z	07Sep2016	0.68m
HAY ASEM	16:53z	07Sep2016	0.62m

PAKISTAN

ORMARA	11:12z	07Sep2016	1.76m
WINDER	11:25z	07Sep2016	1.27m
SINDH	11:33z	07Sep2016	2.16m
KARACHI	11:48z	07Sep2016	1.87m

REUNION

SAINT - JOSEPH	09:52z	07Sep2016	4.58m
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SAINT DENIS	09:55z 07Sep2016	3.51m

SEYCHELLES		

COETIVY ISLAND	09:30z 07Sep2016	2.60m
FREGATE ISLAND	09:30z 07Sep2016	3.63m
TAKAMAKA	09:51z 07Sep2016	3.10m
ILE DESROCHES	10:02z 07Sep2016	2.26m
ALPHONSE ISLAND	10:14z 07Sep2016	1.20m
FARQUHAR GROUP	10:25z 07Sep2016	1.81m
ASTOVE ISLAND	10:57z 07Sep2016	1.33m
ALDABRA	11:08z 07Sep2016	1.15m

SOMALIA		

BANDER-BEYLA	10:29z 07Sep2016	3.33m
GALDOGOB	10:33z 07Sep2016	3.66m
JARIIBAN	10:35z 07Sep2016	2.97m
EYL	10:37z 07Sep2016	4.04m
TOOXIN	10:39z 07Sep2016	3.74m
CEEL DHEER	10:45z 07Sep2016	4.17m
XARARDHEERE	10:45z 07Sep2016	4.06m
MAREEG	10:47z 07Sep2016	3.13m
ITALA	10:50z 07Sep2016	2.43m
UARSCIECH	10:52z 07Sep2016	2.02m
MUQDISHO	10:57z 07Sep2016	2.86m
ABO	11:01z 07Sep2016	4.18m
BEYNAX BARRE	11:04z 07Sep2016	1.99m
BARAAWE	11:06z 07Sep2016	1.68m
JILIB	11:16z 07Sep2016	2.02m
TURDHO	11:20z 07Sep2016	2.71m
NE BEERNAASI	11:24z 07Sep2016	2.49m
QANDALA	11:26z 07Sep2016	1.40m
KAAMBOONI	11:27z 07Sep2016	1.68m
HADAAFTIMO	11:44z 07Sep2016	1.44m
BOSASO	11:46z 07Sep2016	1.29m
MAYDH	12:01z 07Sep2016	1.20m
KABURA	12:17z 07Sep2016	1.45m
BAKI	12:43z 07Sep2016	1.63m
SAYLAC	12:58z 07Sep2016	1.48m
LOYADO	13:10z 07Sep2016	0.95m

SOUTH AFRICA		

GWABALANDA HITAWI	13:30z 07Sep2016	2.18m
FUNK SEAMOUNT	13:31z 07Sep2016	4.58m
PORT DURNFORD	13:35z 07Sep2016	2.44m
LAKE SIBAYI	13:35z 07Sep2016	2.73m
KOSIMEER	13:38z 07Sep2016	2.66m
MARGATE	13:41z 07Sep2016	2.17m
KELSO	13:46z 07Sep2016	4.10m
MANDI	13:47z 07Sep2016	3.40m
BIZANA	13:49z 07Sep2016	2.53m
LUSIKISIKI	13:51z 07Sep2016	3.74m
ABORETUM	13:51z 07Sep2016	3.33m
PORT ST JOHNS	13:57z 07Sep2016	4.38m
NGQUELENI	14:00z 07Sep2016	4.12m
ELLIOTDALE	14:04z 07Sep2016	4.41m

WILLOWVALE	14:07z	07Sep2016	3.79m
KENTANI	14:10z	07Sep2016	3.60m
MARSHSTRAND	14:17z	07Sep2016	5.72m
	14:18z	07Sep2016	6.27m
ZIKHOVA	14:22z	07Sep2016	3.82m
PEDDIE	14:26z	07Sep2016	4.48m
BATHURST	14:37z	07Sep2016	5.11m
ALEXANDRIA	14:38z	07Sep2016	4.23m
PORT ELIZABETH	14:51z	07Sep2016	5.08m
GAMTOOS	14:57z	07Sep2016	3.21m
HUMANSDORP	15:29z	07Sep2016	2.84m
HANKEY	15:31z	07Sep2016	2.25m
GEORGE	15:48z	07Sep2016	2.90m
HEIDELBERG	15:52z	07Sep2016	3.82m
MOSSEL	16:01z	07Sep2016	5.32m
BREDASDORP	16:12z	07Sep2016	6.02m
WITAAND	16:22z	07Sep2016	5.81m

SRI LANKA

KIRINDA	05:35z	07Sep2016	4.52m
AKKARAIPATTU	05:36z	07Sep2016	3.16m
BATTICALOA	05:36z	07Sep2016	3.00m
OKANDA	05:41z	07Sep2016	5.41m
TANGALLA	05:43z	07Sep2016	2.71m
KATTANKUDI	05:44z	07Sep2016	3.02m
POTTUVIL	05:44z	07Sep2016	3.40m
ANAITIVU	05:47z	07Sep2016	2.35m
MATARA	05:48z	07Sep2016	4.03m
HAMBANTOTA	05:50z	07Sep2016	6.54m
PANKULAM	05:51z	07Sep2016	2.24m
MULLAITTIVU	05:52z	07Sep2016	3.07m
AMBALANGODA	05:52z	07Sep2016	4.07m
GALLE	05:54z	07Sep2016	4.11m
COLOMBO	06:06z	07Sep2016	3.30m
BERUWALA	06:06z	07Sep2016	3.74m
MORATUWA	06:12z	07Sep2016	3.96m
NEGOMBO	06:14z	07Sep2016	3.67m
CHUNDIKKULAM	06:17z	07Sep2016	2.38m
MUNDAL LAKE	06:20z	07Sep2016	2.22m
CHAVAKACHCHERI	06:26z	07Sep2016	3.16m
POINT PEDRO	06:27z	07Sep2016	2.86m
MANNAR ISLAND	06:28z	07Sep2016	2.03m
MUSALI	06:44z	07Sep2016	1.50m

TANZANIA

VUMBA	11:52z	07Sep2016	1.46m
ZANZIBAR	11:59z	07Sep2016	2.06m
SONGO SONGO ISLAND	12:06z	07Sep2016	1.69m
KUTANI	12:07z	07Sep2016	1.54m
RUVU	12:10z	07Sep2016	2.09m
MSASANI	12:10z	07Sep2016	2.37m
MADANGWA	12:13z	07Sep2016	1.94m
VUMBI	12:15z	07Sep2016	1.42m
JIMBO	12:18z	07Sep2016	1.15m
WEST TO KONDE	12:20z	07Sep2016	1.63m
BOMALANDNI	12:28z	07Sep2016	1.15m
BAGAMOYO	12:31z	07Sep2016	1.44m

GAZIJA	12:32z 07Sep2016	1.64m
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THAILAND

BAN KHAO BA	05:42z 07Sep2016	1.79m
KO RACHA YAI	05:50z 07Sep2016	2.49m
KO SURIN TAI	06:07z 07Sep2016	1.49m
WEST OF SURAT THANI	06:26z 07Sep2016	2.02m
THUNG WA	06:36z 07Sep2016	0.99m
KO RA WI	06:39z 07Sep2016	0.99m
PULAU LANGKAWI	07:36z 07Sep2016	1.57m
KO LANTA YAI	10:04z 07Sep2016	0.90m

TIMOR-LESTE

DILI	07:47z 07Sep2016	0.72m
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UNITED ARAB EMIRATES

KALBA	12:00z 07Sep2016	0.80m
ZIGGHY BAY	12:17z 07Sep2016	0.95m

YEMEN

SOCOTRA ISLAND SOUTH	10:22z 07Sep2016	4.06m
SOCOTRA ISLAND NORTH	10:32z 07Sep2016	2.92m
SOCOTRA ISLAND WEST	10:45z 07Sep2016	1.91m
DAMQAWT	10:49z 07Sep2016	2.49m
AL GHAYDAH AIRPORT	10:59z 07Sep2016	4.20m
HUSWAYN	11:10z 07Sep2016	3.23m
MASILAH WADI	11:23z 07Sep2016	2.32m
ALQUMRAH	11:23z 07Sep2016	2.43m
EAST TO HAMI	11:38z 07Sep2016	1.48m
HARRAH	11:39z 07Sep2016	1.34m
HAMI	11:48z 07Sep2016	2.44m
AL MUKALLA	11:49z 07Sep2016	2.62m
BROM MAYFA	11:54z 07Sep2016	1.53m
RUDUM	11:56z 07Sep2016	1.25m
AHWAR	12:16z 07Sep2016	1.34m
KHANFAR	12:28z 07Sep2016	1.49m
ADEN	12:46z 07Sep2016	1.74m
	12:53z 07Sep2016	1.56m
QAWAH	13:11z 07Sep2016	1.13m
AL MUALLA	13:41z 07Sep2016	0.78m
AT FUZAH	15:29z 07Sep2016	1.04m
BAYT AL FAQIAH	17:58z 07Sep2016	1.18m
YAKHTUL	18:46z 07Sep2016	0.98m
MAWSHIJ	19:02z 07Sep2016	0.75m

4. ADVICE

This bulletin is being issued as advice. Only national/state/local authorities and disaster management officers have the authority to make decisions regarding the official threat and warning status in their coastal areas and any action to be taken in response.

5. UPDATES

Additional bulletins will be issued by IOTWS-TSP INDONESIA for this event as more information becomes available.

Other IOTWS-TSPs may issue additional information at:

IOTWS-TSP AUSTRALIA: <http://reg.bom.gov.au/tsunami/rtsp/>

IOTWS-TSP INDIA: <http://www.incois.gov.in/Incois/tsunami/eqevents.jsp>

6. CONTACT INFORMATION

IOTWS-TSP INDONESIA:

THE AGENCY FOR METEOROLOGY CLIMATOLOGY AND GEOPHYSICS (BMKG)

InaTEWS - Indonesian Tsunami Early Warning System

Address: Jl. Angkasa I no.2 Kemayoran, Jakarta, Indonesia, 10720

Tel.: +62 (21) 4246321/6546316

Fax: +62 (21) 6546316/4246703

P.O. Box 3540 Jakarta

Website: <http://rtsp.bmkg.go.id/publicbull.php>

<http://www.bmkg.go.id>

<http://inatews.bmkg.go.id>

E-Mail: inartsp@bmkg.go.id

monitrtp@bmkg.go.id

END OF BULLETIN

TEST TEST TEST TEST TEST IOWave-Sep-2016 TEST TEST TEST TEST TEST TEST
TEST TEST TEST TEST IOWave-Sep-2016 TEST TEST TEST TEST TEST

2. Scenario 2 – Makran Trench Sample Tsunami Bulletin Issued by TSP Indonesia

TEST TEST TEST TEST TEST IOWave-Sep-2016 TEST TEST TEST TEST TEST
TEST TEST TEST TEST TEST IOWave-Sep-2016 TEST TEST TEST TEST TEST
TSP-InaTEWS-nomorheader

TSUNAMI BULLETIN NUMBER 5 (TYPE-III)
IOTWS TSUNAMI SERVICE PROVIDER INDONESIA (InaTEWS-BMKG)
issued at 0800 UTC, Thursday, 08 September 2016

... CONFIRMED TSUNAMI THREAT IN THE INDIAN OCEAN ...

This bulletin applies to areas within and bordering the Indian Ocean. It is issued in support of the UNESCO/IOC Indian Ocean Tsunami Warning and Mitigation System (IOTWS).

1. EARTHQUAKE INFORMATION (updated)

IOTWS-TSP INDONESIA has detected an earthquake with the following details:

Magnitude : 9.0 (Mw)
Depth : 10km
Date : 08 Sep 2016
Origin Time: 06:00:00 UTC
Latitude : 24.80N
Longitude : 62.20E
Location : Off Coast of Pakistan

2. EVALUATION

Sea level observations have confirmed that a TSUNAMI WAS GENERATED.
Maximum wave amplitudes observed so far:

LOCATION	COUNTRIES	LAT	LON	AMPL(m)	TIME(UTC)	DATE
CHABAHAR	IRAN	25.29N	60.60E	8.0	06:30	Sep 08, 2016
MUSCAT	OMAN	23.63N	58.57E	5.0	06:40	Sep 08, 2016
KARACHI	PAKISTAN	24.81N	66.75E	7.0	07:40	Sep 08, 2016

Based on pre-run model scenarios, the zones listed below are POTENTIALLY UNDER THREAT.

3. TSUNAMI THREAT FOR THE INDIAN OCEAN

The list below shows the forecast arrival time of the first wave estimated to exceed 0.5m amplitude at the beach in each zone (or a different threshold nominated by an NTWC), and the amplitude of the maximum beach wave predicted for the zone. Zones where the estimated wave amplitudes are less than the threshold amplitude at the beach are not shown.

The list is grouped by country (alphabetic order) and ordered according to the earliest estimated times of arrival at the beach.

Please be aware that actual wave arrival times may differ from those below, and the initial wave may not be the largest. A tsunami is a series of waves and the time between successive waves can be five minutes to one hour.

The threat is deemed to have passed two hours after the forecast time for last exceedance of the 0.5m threat threshold for a zone. As local conditions can cause a wide variation in tsunami wave action, CANCELLATION of national warnings and ALL CLEAR determination must be made by national/state/local authorities.

AUSTRALIA

COCOS ISLAND	14:06z	08Sep2016	0.64m
CHRISTMAS ISLAND	15:08z	08Sep2016	0.62m
CARNARVON	17:35z	08Sep2016	0.92m
HAMELIN POOL	17:37z	08Sep2016	1.18m
BORROW ISLAND	17:43z	08Sep2016	0.90m
YALLINGUP	18:12z	08Sep2016	0.81m
KALBARRI	18:18z	08Sep2016	0.74m
KUDARDUP	18:26z	08Sep2016	1.08m
PORT HEADLAND	18:27z	08Sep2016	0.71m
WINDY HARBOUR	18:48z	08Sep2016	0.77m
DARDANUP	19:25z	08Sep2016	0.73m
LEARMONTH	21:37z	08Sep2016	0.55m
DEGREY	21:37z	08Sep2016	0.53m
WALKAWAY	21:46z	08Sep2016	0.71m
MOONYOONOOKA	22:39z	08Sep2016	0.65m
MANDURAH	22:54z	08Sep2016	0.63m
PADBURY	22:57z	08Sep2016	0.53m
YANCHEP	22:58z	08Sep2016	0.57m
PORT DENISON	23:09z	08Sep2016	0.83m
ROCKINGHAM	23:12z	08Sep2016	0.56m
WINCHESTER	23:27z	08Sep2016	0.62m
IRWIN	23:47z	08Sep2016	0.54m

BRITISH INDIAN OCEAN TERRITORY

MORESBY ISLAND	10:54z	08Sep2016	3.04m
NW EGMONT ISLAND	11:05z	08Sep2016	2.46m
DIEGO GARCIA	11:30z	08Sep2016	2.92m

COMOROS

CHEZANI	12:10z	08Sep2016	1.07m
BAMBAO	12:11z	08Sep2016	1.14m
FOMBONI	12:14z	08Sep2016	1.19m
DZAOUDZI	12:16z	08Sep2016	0.98m

DJIBOUTI

MUHAMMAD ALI BIN FATHA SUMANA	10:55z	08Sep2016	1.74m
NW ARTA	10:59z	08Sep2016	3.66m
ALAILI DADDA	11:20z	08Sep2016	1.28m

FRENCH SOUTHERN AND ANTARCTIC LA

LLE SAINT-PAUL-NORTH	16:20z	08Sep2016	1.63m
LLE SAINT-PAUL-SOUTH	16:36z	08Sep2016	0.94m
AND ANTARCTIC LANDS	18:34z	08Sep2016	3.70m

INDIA

MANDVI	07:47z	08Sep2016	4.59m
DWARKA	07:55z	08Sep2016	4.32m
PORBANDAR	07:57z	08Sep2016	2.75m

VERAVAL	08:13z	08Sep2016	3.69m
AGATTI	08:44z	08Sep2016	4.23m
AMINI	08:48z	08Sep2016	4.89m
KAVARATTI	08:56z	08Sep2016	1.80m
MALVAN BAY	08:58z	08Sep2016	2.53m
PANAJI	09:09z	08Sep2016	2.89m
MINICOY	09:11z	08Sep2016	2.27m
ANDROTH	09:12z	08Sep2016	3.07m
ANJANWEL	09:13z	08Sep2016	3.64m
KARWAR	09:19z	08Sep2016	3.70m
ALIBAG PORT	09:36z	08Sep2016	2.95m
MANGALORE	09:43z	08Sep2016	3.10m
UDUPI	09:45z	08Sep2016	3.34m
VIRAR	09:46z	08Sep2016	3.13m
CHANDRAGIRI FORT	09:46z	08Sep2016	2.96m
MUMBAI	09:49z	08Sep2016	3.46m
AMRELI	09:53z	08Sep2016	3.35m
MADAYI KANNUR	09:54z	08Sep2016	2.95m
MAHUVA	09:55z	08Sep2016	3.32m
ALLEPPEY ALAPPUZHA	09:58z	08Sep2016	2.56m
BORSI	10:00z	08Sep2016	3.33m
MANATTALA	10:01z	08Sep2016	2.69m
TIRURANGADI	10:02z	08Sep2016	2.77m
QUILON	10:02z	08Sep2016	2.65m
BEYPORE	10:04z	08Sep2016	2.80m
COCHIN	10:08z	08Sep2016	2.98m
DAMAN	10:14z	08Sep2016	2.75m
TRIVANDRUM	10:15z	08Sep2016	2.57m
KANYAKUMARI	10:26z	08Sep2016	2.56m
KOODANKULAM	11:03z	08Sep2016	2.42m
RAMESWARAM	11:09z	08Sep2016	1.07m
TUTICORIN	11:29z	08Sep2016	2.22m
KOMATRA AND KATCHAL ISLAND	13:50z	08Sep2016	1.09m
LITTLE ANDAMAN	13:52z	08Sep2016	0.82m
INDIRA POINT	16:00z	08Sep2016	0.92m
NORTH SENTINEL ISLAND	16:19z	08Sep2016	0.97m
CAR NICOBAR	17:38z	08Sep2016	0.75m
FLAT ISLAND	18:23z	08Sep2016	0.67m
PORT BLAIR	19:35z	08Sep2016	0.82m

INDONESIA

SUMUT NIAS BAGIAN BARAT	13:36z	08Sep2016	1.19m
NAD SIMEULUE PULAU SIMEULUE	13:51z	08Sep2016	0.70m
SUMUT NIAS-SELATAN PULAU NIAS	14:05z	08Sep2016	0.99m
NAD ACEH-SINGKIL KEPULAUAN BANYAK	14:15z	08Sep2016	0.91m
SUMBAR KEPULAUAN-MENTAWAI P. SIBERUT	14:15z	08Sep2016	0.91m
SUMUT NIAS-SELATAN PULAU TANABALA	14:17z	08Sep2016	1.03m
NAD ACEH-BESAR BAGIAN BARAT	14:19z	08Sep2016	1.66m
SUMUT NIAS-SELATAN PULAU TANAHMASA	14:22z	08Sep2016	0.81m
SUMBAR KEPULAUAN-MENTAWAI KEP. PAGAI	14:29z	08Sep2016	0.79m
NAD ACEH-SELATAN BAGIAN SELATAN	15:08z	08Sep2016	1.06m
LAMPUNG LAMPUNG-BARAT PESISIR-SELATAN	15:10z	08Sep2016	0.80m
BENGKULU KAUR	15:10z	08Sep2016	0.66m
LAMPUNG LAMPUNG-BARAT PESISIR-UTARA	15:10z	08Sep2016	0.82m
LAMPUNG LAMPUNG-BARAT PESISIR-TENGAH	15:12z	08Sep2016	0.80m
BANTEN PANDEGLANG BAGIAN SELATAN	15:15z	08Sep2016	0.78m
BANTEN PANDEGLANG PULAU PANAITAN	15:16z	08Sep2016	0.53m
BENGKULU SELUMA	15:19z	08Sep2016	1.22m
BENGKULU KOTA-BENGKULU PANTAI-PANJANG	15:19z	08Sep2016	0.84m

BENGKULU BENGKULU-UTARA BAGIAN SELATAN	15:28z 08Sep2016	1.12m
LAMPUNG TANGGAMUS PULAU TABUAN	15:30z 08Sep2016	0.77m

(Please note: the rest of the coastal zones for Indonesia is omitted to save space. This note is not part of the bulletin)

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IRAN

PUSHT	06:00z 08Sep2016	19.10m
BIR	06:09z 08Sep2016	8.61m
MISKI	07:20z 08Sep2016	6.07m
SAR RIG	08:24z 08Sep2016	4.65m
KUSHK SAR	09:48z 08Sep2016	1.09m
ABU MUSA	09:59z 08Sep2016	1.11m
SIRRI	10:52z 08Sep2016	0.70m

KENYA

KIWAYU	11:32z 08Sep2016	1.43m
MALINDI	12:04z 08Sep2016	1.57m
KIPINI	12:06z 08Sep2016	1.12m
TAKAUNGU	12:09z 08Sep2016	1.37m
KISIMACHANDE	12:10z 08Sep2016	1.31m
MVULENI	12:30z 08Sep2016	1.00m

MADAGASCAR

GLORIOSO ISLANDS	11:52z 08Sep2016	1.01m
ANOROTSANGANA	11:58z 08Sep2016	1.58m
VOHEMAR	12:10z 08Sep2016	2.59m
BALY	12:44z 08Sep2016	0.83m
TAMOTAMO	12:51z 08Sep2016	1.05m
JUAN DE NOVA ISLAND	13:16z 08Sep2016	0.61m
TAMPOLO	13:25z 08Sep2016	1.87m
TOAMASINA AIRPORT	13:28z 08Sep2016	1.02m
AMBAHY	13:54z 08Sep2016	1.28m
FARAFAGANA	14:10z 08Sep2016	1.35m
MANANTENINA	14:28z 08Sep2016	0.83m
SAMPONA	15:45z 08Sep2016	0.94m
AMBANJA	21:41z 08Sep2016	0.66m

MALDIVES

KULHUDHUFFUSHI	09:20z 08Sep2016	5.85m
GOIDHOO	09:33z 08Sep2016	4.01m
FERIDHOO	09:37z 08Sep2016	4.49m
KOLHUFUSHI	09:46z 08Sep2016	3.59m
MALE-NORTH	09:52z 08Sep2016	2.44m
DHIYAMIGILI	09:54z 08Sep2016	3.50m
MALE-SOUTH	09:55z 08Sep2016	3.05m
THINADHOO	10:08z 08Sep2016	4.11m
HITHADHOO	10:19z 08Sep2016	2.95m

MAURITIUS

AGALEGA ISLAND	11:43z	08Sep2016	1.49m
LA FERME	13:06z	08Sep2016	1.72m
GRANDE REVIERE SUD EST-WEST	13:12z	08Sep2016	1.16m
CARGADOS CARAJOS	13:24z	08Sep2016	1.31m
GRANDE REVIERE SUD EST-EAST	13:27z	08Sep2016	0.81m

MOZAMBIQUE

MAGANJA	12:23z	08Sep2016	1.40m
MERONVI	12:37z	08Sep2016	1.05m
QUITERAJO	12:39z	08Sep2016	1.07m
TAVARI	12:44z	08Sep2016	1.04m
PEMBA	12:49z	08Sep2016	0.84m
LURIO	12:53z	08Sep2016	1.05m
MURREBUE	12:53z	08Sep2016	0.66m
NANGATA	12:55z	08Sep2016	1.21m
MECUFI	12:56z	08Sep2016	1.00m
MINHAUINE	12:58z	08Sep2016	1.05m
LUMBO	13:00z	08Sep2016	1.01m
MOGINCUAL	13:21z	08Sep2016	0.74m

OMAN

DARSAIT	06:10z	08Sep2016	5.57m
ASSIFAH	06:11z	08Sep2016	11.50m
QALHAT	06:17z	08Sep2016	17.30m
BARKA	06:18z	08Sep2016	6.63m
HAY ASEM	06:23z	08Sep2016	5.90m
AL KHABURAH	06:29z	08Sep2016	6.11m
RASS AL HADD	06:30z	08Sep2016	10.00m
SUHAR	06:39z	08Sep2016	5.36m
MASIRAH	06:51z	08Sep2016	4.70m
ABU GHALAT	06:54z	08Sep2016	5.34m
MUSANDAM	07:13z	08Sep2016	5.60m
JUWAYRAH	07:38z	08Sep2016	3.20m
HASIK	07:47z	08Sep2016	3.05m
MIRBAT	07:53z	08Sep2016	1.61m
SALALAH	08:03z	08Sep2016	1.67m
DHALKUT	08:06z	08Sep2016	3.18m

PAKISTAN

ORMARA	06:00z	08Sep2016	12.07m
WINDER	06:18z	08Sep2016	7.63m
KARACHI	06:59z	08Sep2016	7.19m
SINDH	07:15z	08Sep2016	4.92m

REUNION

SAINT DENIS	13:15z	08Sep2016	1.31m
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SEYCHELLES

FREGATE ISLAND	10:33z	08Sep2016	2.61m
ILE DESROCHES	10:50z	08Sep2016	1.82m

ALPHONSE ISLAND	11:04z	08Sep2016	0.94m
TAKAMAKA	11:12z	08Sep2016	3.02m
COETIVY ISLAND	11:13z	08Sep2016	1.33m
ASTOVE ISLAND	11:34z	08Sep2016	0.94m
ALDABRA	11:38z	08Sep2016	1.05m
FARQUHAR GROUP	11:44z	08Sep2016	0.91m

SOMALIA

ABO	09:07z	08Sep2016	3.60m
TOOXIN	09:11z	08Sep2016	3.55m
QANDALA	09:12z	08Sep2016	1.78m
BANDER-BEYLA	09:19z	08Sep2016	2.28m
HADAAFTIMO	09:29z	08Sep2016	1.59m
EYL	09:31z	08Sep2016	2.21m
BOSASO	09:32z	08Sep2016	1.88m
JARIIBAN	09:42z	08Sep2016	2.33m
MAYDH	09:45z	08Sep2016	1.85m
GALDOGOB	09:50z	08Sep2016	2.27m
KABURA	10:01z	08Sep2016	1.92m
XARARDHEERE	10:12z	08Sep2016	2.51m
BAKI	10:20z	08Sep2016	2.12m
CEEL DHEER	10:22z	08Sep2016	2.39m
MAREEG	10:27z	08Sep2016	2.10m
ITALA	10:29z	08Sep2016	1.23m
UARSCIECH	10:36z	08Sep2016	1.60m
SAYLAC	10:42z	08Sep2016	2.38m
MUQDISHO	10:44z	08Sep2016	1.34m
BEYNAX BARRE	10:52z	08Sep2016	1.48m
LOYADO	10:52z	08Sep2016	1.78m
BARAAWE	11:00z	08Sep2016	1.38m
JILIB	11:12z	08Sep2016	1.35m
TURDHO	11:17z	08Sep2016	1.30m
NE BEERNAASI	11:24z	08Sep2016	1.85m
KAAMBOONI	11:29z	08Sep2016	1.50m

SOUTH AFRICA

ELLIOTDALE	21:21z	08Sep2016	0.61m
NGQUELENI	22:16z	08Sep2016	0.51m
LUSIKISIKI	22:21z	08Sep2016	0.66m
ZIKHOVA	22:27z	08Sep2016	0.52m
KELSO	22:55z	08Sep2016	0.50m
WILLOWVALE	22:55z	08Sep2016	0.52m

SRI LANKA

COLOMBO	10:41z	08Sep2016	1.76m
AMBALANGODA	10:43z	08Sep2016	1.69m
NEGOMBO	10:44z	08Sep2016	0.99m
BERUWALA	10:51z	08Sep2016	1.33m
MORATUWA	10:52z	08Sep2016	1.52m
GALLE	10:54z	08Sep2016	1.41m
MATARA	10:55z	08Sep2016	2.28m
MANNAR ISLAND	10:57z	08Sep2016	0.95m
MUNDAL LAKE	11:00z	08Sep2016	0.82m
TANGALLA	11:00z	08Sep2016	1.10m
MUSALI	11:13z	08Sep2016	0.80m

HAMBANTOTA	11:33z	08Sep2016	1.01m
KIRINDA	14:23z	08Sep2016	1.12m
POTTUVIL	15:31z	08Sep2016	0.72m
OKANDA	17:12z	08Sep2016	0.72m

TANZANIA

VUMBA	12:01z	08Sep2016	1.07m
ZANZIBAR	12:10z	08Sep2016	1.17m
VUMBI	12:10z	08Sep2016	1.38m
KUTANI	12:18z	08Sep2016	1.30m
JIMBO	12:19z	08Sep2016	1.55m
GAZIJA	12:20z	08Sep2016	0.78m
SONGO SONGO ISLAND	12:21z	08Sep2016	1.18m
MSASANI	12:23z	08Sep2016	1.38m
MADANGWA	12:25z	08Sep2016	1.48m
RUVU	12:26z	08Sep2016	1.58m
WEST TO KONDE	12:28z	08Sep2016	1.28m
BOMALANDNI	12:33z	08Sep2016	0.98m
BAGAMOYO	12:37z	08Sep2016	0.97m

UNITED ARAB EMIRATES

KALBA	06:46z	08Sep2016	4.93m
ZIGGHY BAY	07:02z	08Sep2016	5.58m
ALDAREH	09:54z	08Sep2016	1.88m
AL HELIO	10:16z	08Sep2016	1.80m
DEIRA	11:00z	08Sep2016	2.78m
SIR BU NUAYR	11:41z	08Sep2016	0.72m
AL SMALIYAH	11:44z	08Sep2016	2.16m
DAS ISLAND	20:45z	08Sep2016	0.80m

YEMEN

DAMQAWT	08:17z	08Sep2016	2.05m
SOCOTRA ISLAND SOUTH	08:19z	08Sep2016	2.93m
AL GHAYDAH AIRPORT	08:26z	08Sep2016	3.53m
SOCOTRA ISLAND NORTH	08:28z	08Sep2016	2.73m
HUSWAYN	08:42z	08Sep2016	2.66m
SOCOTRA ISLAND WEST	08:42z	08Sep2016	2.40m
ALQUMRAH	08:52z	08Sep2016	2.68m
MASILAH WADI	09:01z	08Sep2016	2.15m
HARRAH	09:04z	08Sep2016	2.76m
EAST TO HAMI	09:07z	08Sep2016	1.63m
HAMI	09:17z	08Sep2016	3.84m
AL MUKALLA	09:20z	08Sep2016	3.48m
BROM MAYFA	09:26z	08Sep2016	1.85m
RUDUM	09:32z	08Sep2016	1.52m
AHWAR	09:53z	08Sep2016	1.43m
KHANFAR	10:08z	08Sep2016	3.15m
ADEN	10:26z	08Sep2016	3.12m
	10:32z	08Sep2016	2.78m
QAWAH	10:51z	08Sep2016	1.73m
AL MUALLA	11:19z	08Sep2016	1.22m
YAKHTUL	12:04z	08Sep2016	0.86m
MAWSHIJ	12:59z	08Sep2016	0.83m
AT FUZAH	13:02z	08Sep2016	1.03m
BAYT AL FAQIAH	13:38z	08Sep2016	1.04m

AL HUDAYDAH	19:59z 08Sep2016	0.65m
AL MAN SURİYAH	20:08z 08Sep2016	0.54m

4. ADVICE

This bulletin is being issued as advice. Only national/state/local authorities and disaster management officers have the authority to make decisions regarding the official threat and warning status in their coastal areas and any action to be taken in response.

5. UPDATES

Additional bulletins will be issued by IOTWS-TSP INDONESIA for this event as more information becomes available.

Other IOTWS-TSPs may issue additional information at:

IOTWS-TSP AUSTRALIA: <http://reg.bom.gov.au/tsunami/rtsp/>

IOTWS-TSP INDIA: <http://www.incois.gov.in/Incois/tsunami/eqevents.jsp>

6. CONTACT INFORMATION

IOTWS-TSP INDONESIA:

THE AGENCY FOR METEOROLOGY CLIMATOLOGY AND GEOPHYSICS (BMKG)

InaTEWS - Indonesian Tsunami Early Warning System

Address: Jl. Angkasa I no.2 Kemayoran, Jakarta, Indonesia, 10720

Tel.: +62 (21) 4246321/6546316

Fax: +62 (21) 6546316/4246703

P.O. Box 3540 Jakarta

Website: <http://rtsp.bmkg.go.id/publicbull.php>

<http://www.bmkg.go.id>

<http://inatews.bmkg.go.id>

E-Mail: inartsp@bmkg.go.id

monitrtp@bmkg.go.id

APPENDIX III. SAMPLE PRESS RELEASE

TEMPLATE FOR NEWS RELEASE - USE AGENCY LETTERHEAD

Contact: *(insert name)* **FOR IMMEDIATE RELEASE** *(insert phone number)* *(insert date)*
(insert email address)

INDIAN OCEAN-WIDE TSUNAMI EXERCISE SET FOR SEPTEMBER 2016

(insert country name) will join over 20 other countries around the Indian Ocean Rim as a participant in mock tsunami scenarios on 7th and 8th September 2016. *(insert country name)* will exercise the Sumatra scenario on 7th September and/or Makran Trench scenario on 8th September *(select appropriate scenario(s))*.

The purpose of this Indian Ocean-wide exercise is to increase tsunami preparedness, evaluate response capabilities in each country and improve coordination throughout the region. The aim is to exercise all levels of the tsunami warning and response chain, with a primary focus on the local coastal community level.

"The 2004 Indian Ocean tsunami and subsequent events in the Indian and Pacific Oceans have brought to the attention of the world the urgent need to be more prepared for such events," said *(insert name of appropriate official)*. "This important exercise will test the current procedures of the Indian Ocean Tsunami Warning and Mitigation System and help identify operational strengths and weaknesses in each country."

The exercise, titled Exercise Indian Ocean Wave 2016 (IOWave16), will simulate Indian Ocean countries being put into a Tsunami Warning situation requiring government decision-making. It builds on previous Indian Ocean exercises conducted in 2009 (IOWave09), 2011 (IOWave11) and 2014 (IOWave14) *and on prior national tsunami warning drills carried out on (dates) (delete if not applicable)*.

During the exercise the three Tsunami Service Providers (TSPs) of Australia, India and Indonesia will provide simulated tsunami threat information to all National Tsunami Warning Centres (NTWCs) in the Indian Ocean region. Each NTWC will then evaluate the information and formulate test national tsunami warnings, which will be disseminated to the disaster response agencies and coastal communities participating in the exercise. *Due care will be taken to ensure the public is not inadvertently alarmed (delete if not applicable)*.

Insert paragraph tailored for specific country. Could identify participating agencies and specific plans. Could describe current early warning programme, past evacuation drills (if any), ongoing mitigation and public education programmes, etc. Could describe tsunami threat, history of tsunami hazards, if any.

Should any actual tsunami threat occur during the time period of the exercise, the exercise will be terminated.

Following the exercise, a review and evaluation will be conducted by all participating countries and agencies.

"We see this exercise as an essential element in the routine maintenance of the Indian Ocean Tsunami Warning and Mitigation System," said *(insert name of appropriate official)*.

"Our goal is to ensure the timely and effective notification of tsunamis, to educate communities at risk about safety preparedness, and to improve our overall coordination. We

will evaluate what works well, where improvements are needed, make necessary changes, and continue to practice.”

The exercise is in the Work Plan of the Intergovernmental Coordination Group of the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS). ICG/IOTWMS is a body of UNESCO's Intergovernmental Oceanographic Commission.

IOWave16 Information: <http://www.ioc-unesco.org/IOWave16>.

APPENDIX IV. EXERCISE FORMAT

TYPES OF EXERCISE

1. **An Orientation Exercise** lays the groundwork for a comprehensive exercise programme. It is a planned event, developed to bring together individuals and officials with a role or interest in multi-hazard response planning, problem solving, development of standard operational procedures (SOPs), and resource integration and coordination. An Orientation Exercise will have a specific goal and written objectives and result in an agreed upon Plan of Action.
2. **A Drill** is a planned activity that tests, develops, and/or maintains skills in a single or limited emergency response procedure. Drills generally involve operational response of single departments or agencies, organizations, or facilities, but may be a subset of full-scale exercises. Drills can involve internal notifications and/or field activities. Limited evacuation may or may not be conducted, such as within a school, pilot hotel, or village.
3. **A Tabletop Exercise** is a planned activity in which local officials, key staff, and organizations with disaster management responsibilities are presented with simulated emergency situations. It is usually informal, in a conference room environment, and is designed to elicit constructive discussion from the participants to assess plans, policies, and procedures. Individuals are encouraged to discuss decisions based on their organization's Standard Operating Procedures (SOPs) with emphasis on slow-paced problem solving, rather than rapid, real-time decision-making. A Tabletop Exercise should have specific goals, objectives, and a scenario narrative.
4. **A Functional Exercise** is a planned activity designed to test and evaluate individual functions, multiple activities within a function, or interdependent groups of functions among various agencies. It is based on a simulation of a realistic emergency situation. The Functional Exercise gives the decision-makers a fully simulated experience of being in a major disaster event. It should take place at the appropriate coordination locations (e.g. warning centres and emergency operations centres) and activate all the appropriate members designated by the plan. Organisations should test their SOPs using real-time simulation tsunami bulletins. Public evacuations may or may not be included. A Functional Exercise should have specific goals, objectives, and a scenario narrative.
5. **A Full-scale Exercise** is the culmination of a progressive exercise programme that has grown with the capacity of the community to conduct exercises. A Full-Scale exercise is a planned activity in a "challenging" environment that encompasses a majority of the tsunami warning and emergency management functions, and involves multiple layers of government (national, provincial, local). This type of exercise involves the actual mobilization and deployment of the appropriate personnel and resources needed to demonstrate operational capabilities. DMOs (Disaster Management Office) and other local command centres are required to be activated. It tests all aspects of emergency response, and should demonstrate inter-agency cooperation. A Full-scale exercise is the largest, costliest and most complex exercise type. It may or may not include public evacuations.

NATIONAL EXERCISE EVALUATION

It is recommended that both a hot and a cold debrief be held following the exercise. Held immediately after an exercise, a hot debrief is an opportunity for all participants to provide feedback while the exercise is still fresh in their minds. A suggested format for this is:

- Have a short break for about 10 minutes after the end of the exercise.
- The in-country/agency Exercise Director gives his or her initial feedback.
- Obtain participant round-table feedback.
- Evaluators provide their feedback.
- Provide appropriate acknowledgements.

A cold debrief is a more formal debrief held within four weeks following the exercise. The debrief process should include:

- What happened during the exercise?
- What went well?
- What needs improvement?
- What plans, procedures or training programmes need amendments?
- What follow up is required, including identifying any capability gaps for future capacity building?
- Was the exercise realistic?
- How could the exercise have been improved?

APPENDIX V. POST-EXERCISE EVALUATION

IOWave16 Post Exercise Evaluation

General Instructions

The evaluation will take approximately 60-90 minutes to complete assuming that the answers have already been collected and only one scenario has been exercised.

If both scenarios have been exercised, the respondent can choose which scenario he/she wishes to complete the survey for first and then complete the survey for the second scenario at a later time.

It is possible to exit a partially completed survey for completion at a later time. Simply exit the survey and use the link provided to you by email to access it again when you are ready to answer more questions. In this way you can complete the survey at your own pace and go back to amend responses if necessary.

The last page of the survey is marked, "End of Survey". Following this you will be directed to the "Thank You" page and then to the IOC UNESCO Exercise Indian Ocean Wave 2016 webpage.

Please complete and submit the online survey by **30 September 2016**.

Any questions can be directed to the ICG/IOTWMS Secretariat (email: iotws@unesco.org).

Exercise Objectives

There are six (6) core objectives that the IOWave16 Post Exercise Evaluation will evaluate.

The **Objective 1, 2 and 3** survey questions are to be completed by National Tsunami Warning Centres (NTWCs):

- **Objective 1:** Validate the dissemination by Tsunami Service Providers (TSPs) of Tsunami Bulletin Notification Messages to NTWCs via Tsunami Watch Focal Points (TWFPs) of Indian Ocean countries and the reception by NTWCs of the TSP messages.
- **Objective 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.
- **Objective 3:** Validate the reporting by NTWCs to the TSPs of their National Tsunami Warning status.

The **Objective 4 and 5** survey questions are to be completed by Disaster Management Organisations (DMOs) and/or NTWCs depending how tsunami response roles are structured within a particular country:

- **Objective 4:** Validate the SOPs within countries for generating and disseminating tsunami warnings to their relevant disaster response agencies, media, and the public.
- **Objective 5:** Validate the SOPs within countries for the issuing of public safety messages, ordering evacuations and where possible issuing all-clear messages.

The **Objective 6** survey question are to be completed by all DMOs regardless of whether evacuations were conducted or not.

- **Objective 6:** Validate the level of community awareness, preparedness and response.

Member State Details

Country

Details of National Contact for Exercise IOWave16

Name

Position

Agency

Email

Phone

Is there a second National Contact for Exercise IOWave16 in your country?

☐ Yes

☐ No

If yes, please provide the details of the second National Contact for Exercise IOWave16.

Name

Position

Agency

Email

Phone

Scenarios Exercised

Which scenarios did your country exercise?
(Select one or both.)

- ☐ Sumatra scenario, 7 September 2016
- ☐ Makran Trench scenario, 8 September 2016

Level of Participation

Please indicate if the following statements reflect your level of in-country participation.

	Yes	No
National disaster management organisations were involved.	<input type="radio"/>	<input type="radio"/>
Local disaster management organisation(s) participated.	<input type="radio"/>	<input type="radio"/>
Media representatives participated	<input type="radio"/>	<input type="radio"/>
The community was involved (not necessarily evacuation).	<input type="radio"/>	<input type="radio"/>
Public evacuation drills were conducted.	<input type="radio"/>	<input type="radio"/>

Comments

Please indicate the type of exercise(s) conducted.
Refer to Appendix III in the Exercise Manual for a description of the types of exercise.
(More than 1 option can be selected.)

- ☐ Orientation Exercise
- ☐ Drill
- ☐ Tabletop Exercise
- ☐ Functional Exercise
- ☐ Full Scale Exercise

Comments

Objective 1: Validate the dissemination by TSPs of Tsunami Bulletin Notification Messages to NTWCs via TWPFs of Indian Ocean countries and the reception by NTWCs of the TSP Messages.

Page description:
To be completed by NTWCs

1(a) Name of NTWC (organisational name)

1(b) For each of the four notification message delivery mediums was the information received in a timely manner for you to carry out your warning response SOPs.

	GTS	Fax	Email	SMS
TSP Australia	<div>Received in time</div> <div>Received late</div> <div>Not received</div>	<div>Received in time</div> <div>Received late</div> <div>Not received</div>	<div>Received in time</div> <div>Received late</div> <div>Not received</div>	<div>Received in time</div> <div>Received late</div> <div>Not received</div>
TSP India	<div>Received in time</div> <div>Received late</div> <div>Not received</div>	<div>Received in time</div> <div>Received late</div> <div>Not received</div>	<div>Received in time</div> <div>Received late</div> <div>Not received</div>	<div>Received in time</div> <div>Received late</div> <div>Not received</div>
TSP Indonesia	<div>Received in time</div> <div>Received late</div> <div>Not received</div>	<div>Received in time</div> <div>Received late</div> <div>Not received</div>	<div>Received in time</div> <div>Received late</div> <div>Not received</div>	<div>Received in time</div> <div>Received late</div> <div>Not received</div>

Comments

1(c) Please provide the **TSP Australia** notification message receipt times in UTC.

	GTS Time Received (UTC)	Fax Time Received (UTC)	Email Time Received (UTC)	SMS Time Received (UTC)
xx:xx Announcement Message	<div></div>	<div></div>	<div></div>	<div></div>
xx:xx Notification Message	<div></div>	<div></div>	<div></div>	<div></div>

Notification Message 1				
xx:xx Notification Message 2				
xx:xx Notification Message 3				
xx:xx Notification Message 4				
xx:xx Notification Message 5				
xx:xx Notification Message 6				
xx:xx Notification Message 7				
xx:xx Notification Message 8				
xx:xx Notification Message 9				
xx:xx Notification Message 10				
xx:xx Notification Message 11				
xx:xx Notification Message 12				
xx:xx				

xx:xx Notification Message 13				
xx:xx Notification Message 14				
xx:xx Notification Message 15				

1(d) Please provide the **TSP India** notification message receipt times in UTC.

	GTS Time Received (UTC)	Fax Time Received (UTC)	Email Time Received (UTC)	SMS Time Received (UTC)
xx:xx Announcement Message				
xx:xx Notification Message 1				
xx:xx Notification Message 2				
xx:xx Notification Message 3				
xx:xx Notification Message 4				
xx:xx Notification Message 5				
xx:xx Notification Message 6				
xx:xx				

xx:xx Notification Message 7				
xx:xx Notification Message 8				
xx:xx Notification Message 9				
xx:xx Notification Message 10				
xx:xx Notification Message 11				
xx:xx Notification Message 12				
xx:xx Notification Message 13				
xx:xx Notification Message 14				
xx:xx Notification Message 15				

1(e) Please provide the **TSP Indonesia** notification message receipt times in UTC.

	GTS Time Received (UTC)	Fax Time Received (UTC)	Email Time Received (UTC)	SMS Time Received (UTC)
xx:xx Announcement Message				

xx:xx Notification Message 1				
xx:xx Notification Message 2				
xx:xx Notification Message 3				
xx:xx Notification Message 4				
xx:xx Notification Message 5				
xx:xx Notification Message 6				
xx:xx Notification Message 7				
xx:xx Notification Message 8				
xx:xx Notification Message 9				
xx:xx Notification Message 10				
xx:xx Notification Message 11				
xx:xx Notification Message 12				

Objective 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.

Page description:

To be completed by NTWCs

2(a) Please indicate which TSP exchange products you accessed on the password-protected websites.

	Bulletins	Coastal Zone Threat Map	Threat Table	Maximum Amplitude Map	Tsunami Travel Time (TTT) Map
TSP Australia	<div>Yes</div> <div>No</div> <div>Unable to access</div>	<div>Yes</div> <div>No</div> <div>Unable to access</div>	<div>Yes</div> <div>No</div> <div>Unable to access</div>	<div>Yes</div> <div>No</div> <div>Unable to access</div>	<div>Yes</div> <div>No</div> <div>Unable to access</div>
TSP India	<div>Yes</div> <div>No</div> <div>Unable to access</div>	<div>Yes</div> <div>No</div> <div>Unable to access</div>	<div>Yes</div> <div>No</div> <div>Unable to access</div>	<div>Yes</div> <div>No</div> <div>Unable to access</div>	<div>Yes</div> <div>No</div> <div>Unable to access</div>
TSP Indonesia	<div>Yes</div> <div>No</div> <div>Unable to access</div>	<div>Yes</div> <div>No</div> <div>Unable to access</div>	<div>Yes</div> <div>No</div> <div>Unable to access</div>	<div>Yes</div> <div>No</div> <div>Unable to access</div>	<div>Yes</div> <div>No</div> <div>Unable to access</div>

Were any other TSP exchange products (e.g. Spatial Files) accessed on the password-protected websites?

2(b) Was tsunami threat information from TSP websites (bulletins and other products) **used** in the production of your national warnings?

- ☐ Yes
- ☐ No

If yes, please indicate which information was used:

	Tsunami Wave Observations	Predicted Wave Arrival Times				Predicted Maximum Wave Amplitudes	Coastal Forecast Zone Threat Levels	Other
		T1	T2	T3	T4			
TSP Australia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TSP India	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TSP Indonesia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

If *no*, please comment why the tsunami threat information from the TSP websites was not used.

Objective 3: Validate the reporting by NTWCs to the TSPs of their National Tsunami Warning status.

Page description:

To be completed by NTWCs

3(a) Did your NTWC send reports of its warning status to the TSPs?

☐ Yes

☐ No

3(b) If yes, at what time (UTC) did the NTWC first report its status?

3(c) If yes, how many status reports did the NTWC send to the TSPs?

If *no*, why did your NTWC not report its warning status on a TSP website?

Objective 4: Validate the SOPs within countries for generating and disseminating tsunami warnings to their relevant disaster response agencies, media, and the public.

Page description:

To be completed by DMOs and/or NTWCs as appropriate.

The following section is designed to assess who is responsible for generating and disseminating tsunami warnings and information to five types of recipients:

- 1. National Disaster Management Organisation (NDMO)
- 2. Local Disaster Management Organisation - Provincial/Regional (LDMO-P)
- 3. Local Disaster Management Organisation - City/District (LDMO-C)
- 4. Media
- 5. Public

4(a) In the following table, please indicate who is responsible for the generation and dissemination of tsunami warnings and information to each recipient listed in the left-hand column, and if exercised, the details of the warning delivery.

	Who sends tsunami messages to you? (e.g. NTWC, NDMO, LDMO-P, LDMO-C and/or media)	Number of messages sent	Time of 1st message	Time of last message sent	Methods of delivery (e.g. email, webpage, sms, fax, phone, tv, radio)	Were the messages received in a timely manner?
NDMO	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<div> <div>Yes</div> <div>No</div> <div>n/a</div> <div></div> </div>
LDMO-P	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<div> <div>Yes</div> <div>No</div> <div>n/a</div> <div></div> </div>
LDMO-C	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<div> <div>Yes</div> <div>No</div> <div>n/a</div> <div></div> </div>
Media	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<div> <div>Yes</div> <div>No</div> <div>n/a</div> <div></div> </div>
Public	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<div> <div>Yes</div> <div>No</div> <div>n/a</div> <div></div> </div>

Comments

4(b) How well did your SOPs perform for generating and disseminating tsunami warnings within your country?

☐ extremely well ☐ very well ☐ well ☐ poor

Comments

Objective 5: Validate the SOPs within countries for the issuing of public safety messages, ordering evacuations and where possible issuing all-clear messages.

Page description:
To be completed by DMOs and/or NTWCs as appropriate.

Agency abbreviations used are:

- 1. National Tsunami Warning Centre (NTWC)
- 2. National Disaster Management Organisation (NDMO)
- 3. Local Disaster Management Organisation - Provincial/Regional (LDMO-P)
- 4. Local Disaster Management Organisation - City/District (LDMO-C)

5(a) Were **public safety messages** issued during the exercise? Public safety messages provide information about the tsunami threat and appropriate actions to take for each level of threat, but do not include evacuation orders or all-clear messages.

- ☐ Yes
- ☐ No

If yes, please complete to following table for **public safety messages** issued during the exercise.
(Complete one row for each agency/authority that issued public safety messages as required.)

	Name of agency/authority that issues public safety messages	Agency type	Time message issued (UTC)	Communication method (e.g. email, webpage, sms, fax, phone, tv, radio)	Were there any communication problems?
1.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>
2.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>
3.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>
4.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>
5.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>

The table below is a continuation of the previous table from the right-most column. In the online survey, there will be only one continuous table. Please complete each row in accordance with the agency/authority listed in the same row of the the previous table.

	Content of message	Reason message issued	Comments
1.			
2.			
3.			
4.			
5.			

5(b) Were **evacuation orders** issued during the exercise?

- ☐ Yes
- ☐ No

If yes, please complete to following table for **evacuation orders** issued during the exercise.
(Complete one row for each agency/authority that issued public safety messages as required.)

	Name of agency/authority that issues evacuation orders	Agency type	Time message issued (UTC)	Communication method (e.g. email, webpage, sms, fax, phone, tv, radio)	Were there any communication problems?
1.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>
2.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>
3.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>
4.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>
5.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>

The table below is a continuation of the previous table from the right-most column. In the online survey, there will be only one continuous table. Please complete each row in accordance with the agency/authority listed in the same row of the the previous table.

	Content of message	Reason message issued	Comments
1.			
2.			
3.			
4.			
5.			

5(c) Were **all-clear messages** issued during the exercise?

- ☐ Yes
- ☐ No

If yes, please complete to following table for **all-clear messages** issued during the exercise.
(Complete one row for each agency/authority that issued public safety messages as required.)

	Name of agency/authority that issues all-clear messages	Agency type	Time message issued (UTC)	Communication method (e.g. email, webpage, sms, fax, phone, tv, radio)	Were there any communication problems?
1.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>
2.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>
3.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>
4.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>
5.	<input type="text"/>	<div><div>NTWC</div><div>NDMO</div><div>LDMO-P</div><div>LDMO-C</div><div>Other</div></div>	<input type="text"/>	<input type="text"/>	<div><div>Yes</div><div>No</div></div>

The table below is a continuation of the previous table from the right-most column. In the online survey, there will be only one continuous table. Please complete each row in accordance with the agency/authority listed in the same row of the the previous table.

	Content of message	Reason message issued	Comments
1.			
2.			
3.			
4.			
5.			

Objective 6: Validate the level of community awareness, preparedness and response.

Page description:
To be completed by all DMOs regardless of whether evacuations were conducted or not.

6(a) Have there been any pre-exercise community preparedness activities?

- ☐ Yes
- ☐ No

If yes, what were the community preparedness activities?
(Select all that apply.)

- ☐ Tsunami exercise
- ☐ Tsunami education in schools
- ☐ Participatory evacuation planning
- ☐ Community education seminars
- ☐ Evacuation maps
- ☐ Evacuation signage
- ☐ Shelter facilities
- ☐ Other - Write In

6(b) Has there been any government support with regard to the following prior to the exercise?

	Yes	No
Tsunami signage	<input type="radio"/>	<input type="radio"/>
Vertical evacuation shelters	<input type="radio"/>	<input type="radio"/>
Hazard mapping	<input type="radio"/>	<input type="radio"/>
Tsunami inundation mapping	<input type="radio"/>	<input type="radio"/>
Evacuation route mapping	<input type="radio"/>	<input type="radio"/>
<div>Enter another option</div>	<input type="radio"/>	<input type="radio"/>

6(c) Were community evacuations conducted in any areas?

- ☐ Yes
- ☐ No

If yes, please answer the following questions for each community that evacuated.

6(d) Location of evacuation (name of town or community):

6(e) Please rank the following from 1 (none), 2 (low), 3 (high) to 4 (very high) in regard to the community that evacuated.

	1	2	3	4
Availability of tsunami risk assessment information such as inundation/evacuation maps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The level of community awareness of the local tsunami risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6(f) Have community members received any prior evacuation training?

- ☐ Yes
- ☐ No

Comments

6(g) Are there SOPs for community evacuation in place?

☐ Yes

☐ No

If yes, please provide the details.

6(h) How were community members notified that an evacuation order was issued? (Select all that apply.)

☐ Siren

☐ Door-to-door

☐ Public announcement

☐ Radio / TV

☐ Mobile Phone / Social Media

☐ Evacuation time set prior to the exercise

☐ Other - Write In

6(i) What time did the community receive the evacuation notification? (Specify UTC or local time.)

6(j) At what time was the evacuation? (Specify UTC or local time.)

6(k) What is the estimated number of people that evacuated?

6(l) Who evacuated? (Select all that apply.)

- ☐ Beachgoers
- ☐ Boat Users
- ☐ Home Residents
- ☐ Businesses
- ☐ Schools
- ☐ Hospitals
- ☐ Elderly Peoples Homes
- ☐ Hotels
- ☐ Other - Write In

6(m) Where did the evacuees go to?

6(n) Did the community receive an all-clear message?

☐ Yes

☐ No

If *yes*, at what time did the community receive the all-clear message? (Specify UTC or local time.)

6(o) At what time did the people return to their residences? (Specify UTC or local time.)

6(p) Did the evacuation process happen smoothly?

☐ Yes

☐ No

If *no*, please provide the details of the problems encountered during evacuation.

6(q) How could future evacuation exercises be improved?

General Questions

7(a) Please rank the following from 1 (poor), 2 (good), 3 (very good) to 4 (extremely good).

	1	2	3	4
Exercise planning and communication with Member States: Timeliness and usefulness of information provided by the ICG/IOTWMS Secretariat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exercise documentation: Manual, websites, bulletins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exercise format and style: Real-time operation, exercise messages similar to real event	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exercise evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

7(b) Our country benefited from the exercise by:

1.
2.
3.

7(c) Future exercises could be improved by:

1.
2.
3.

7(d) Our country used exercise observers?

- ☐ Yes
- ☐ No

If yes, please rank the following from 1 (poor), 2 (good), 3 (very good) to 4 (extremely good).

	1	2	3	4
Feedback provided by the exercise observers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information for the evaluation provided by the exercise observers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

End of Survey

Thank You!

Thank you for completing the IOWave16 Post Exercise Evaluation.