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TSP Australia Product Demonstration

Dr Robert Greenwood
robert.greenwood@bom.gov.au

ICG Indian Ocean Tsunami Warning & Mitigation System SOP Workshops July 2023:
*Standard Operating Procedures (SOPs) for
National Tsunami Warning Centres (NTWCs) and
Disaster Management Organisations (DMOs)*

TSP Australia Structure



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TSP Australia is operated by the JATWC (Joint Australian Tsunami Warning Centre), consisting of:

Geoscience Australia (GA), Canberra: Earthquake Monitoring and Alerting

Bureau of Meteorology (BOM), Melbourne & Brisbane: Sea Level Monitoring and Tsunami Warning



JATWC staff located at Geoscience Australia (left) and Bureau of Meteorology (right)

1. Predicted Tsunami Arrival Times

- What is a CFZ
- Explanation of the four times T1, T2, T3, T4 and wave amplitudes

2. TSP Product Examples

Coastal Forecast Zones (CFZs)



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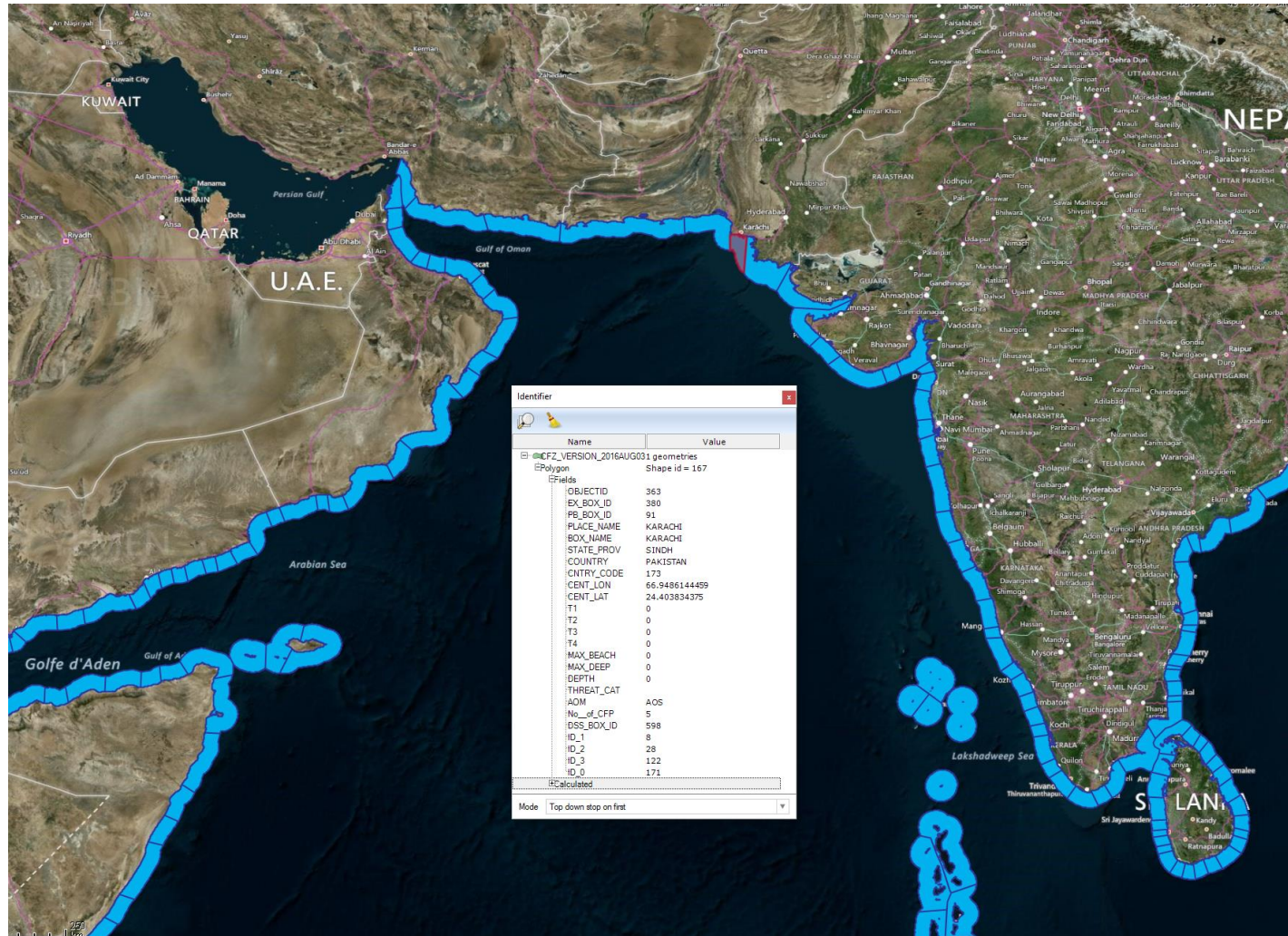


Predicted Tsunami Arrival Times



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Predicted Tsunami Arrival Times



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T1 = Time of arrival of first discernible tsunami wave (amplitude $> +2\text{cm}$)

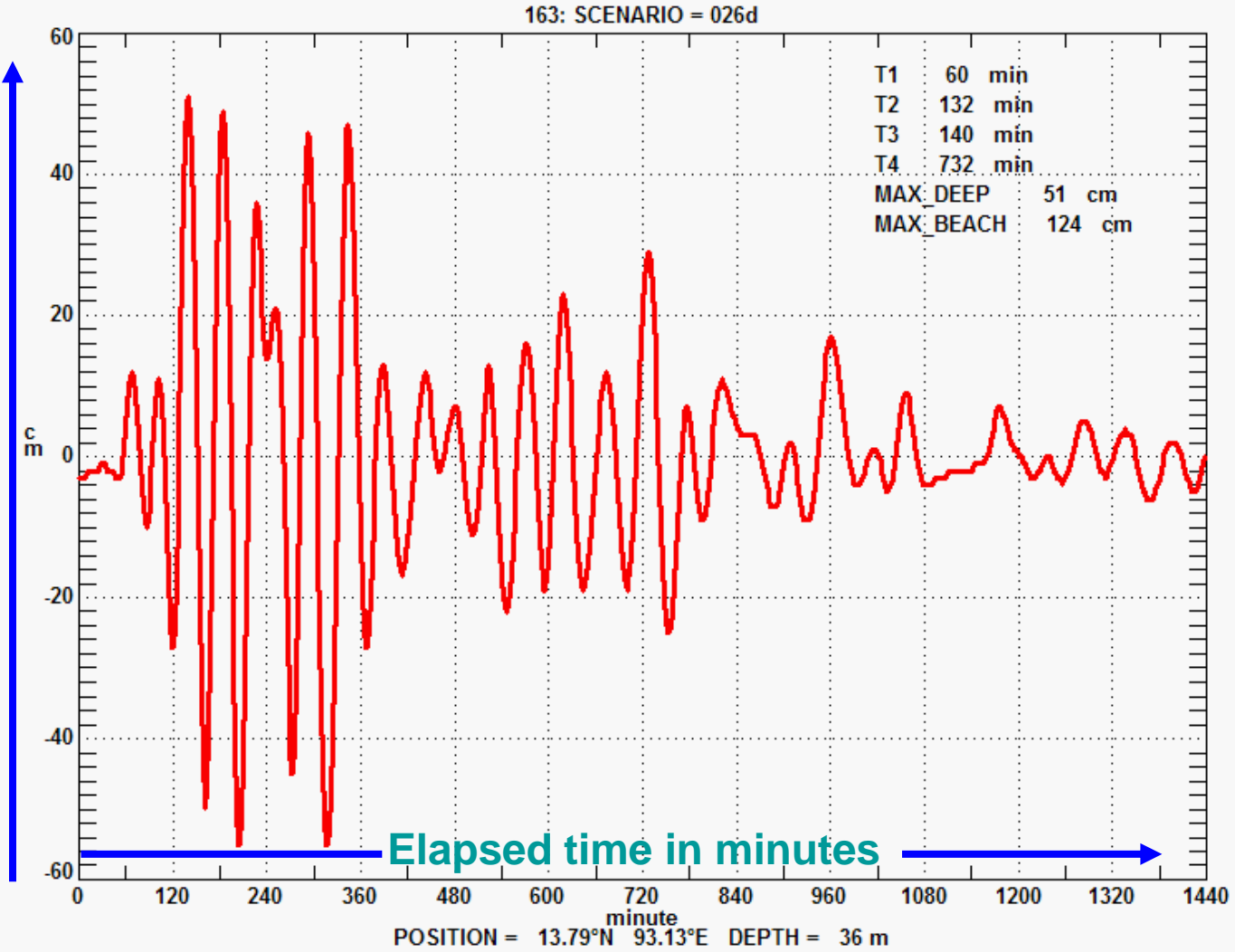
T2 = Time of arrival of first wave over $+50\text{cm}$ amplitude on the beach

T3 = Time of arrival of largest wave (“max beach”)

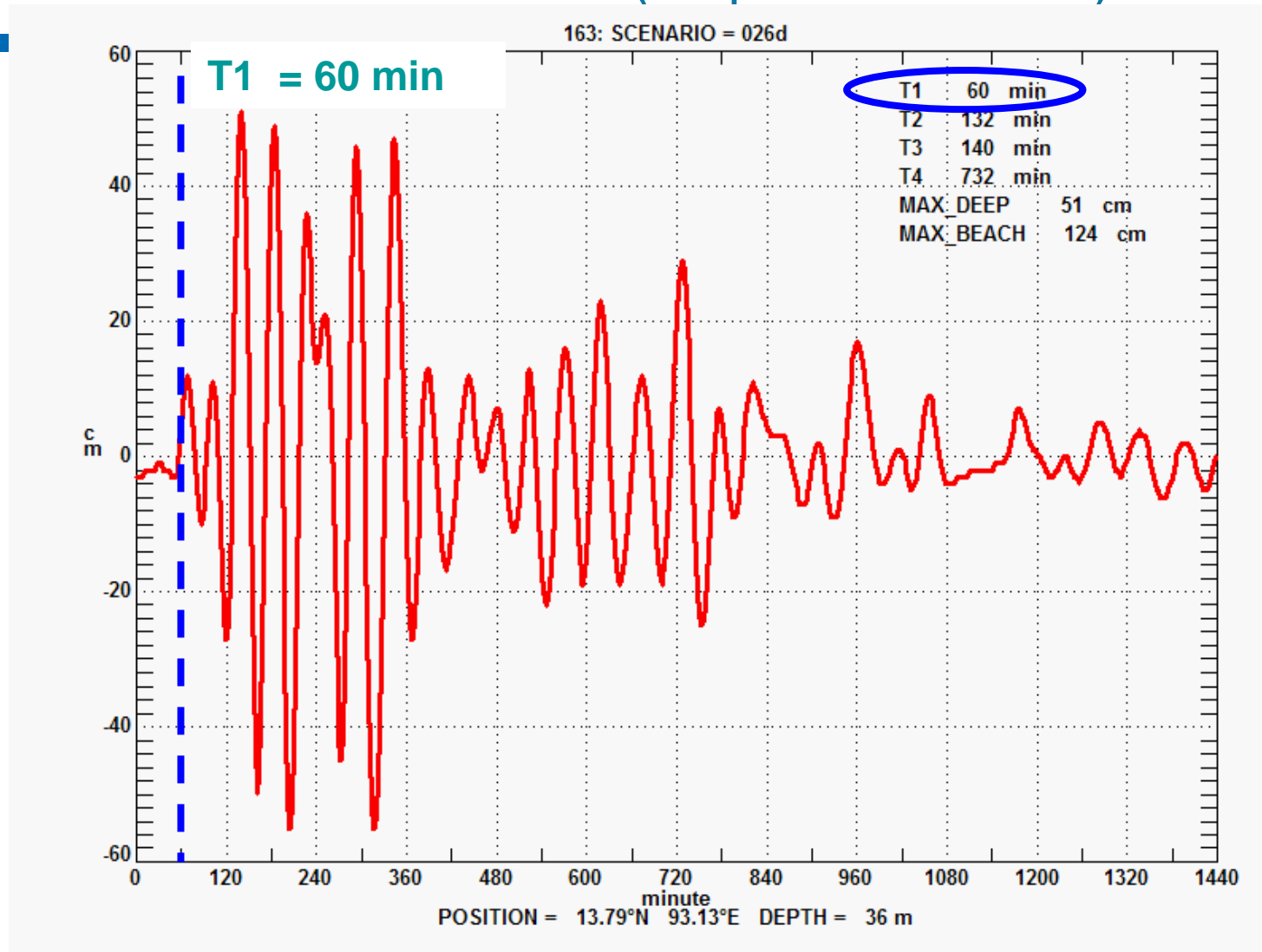
T4 = Time of arrival of last wave over $+50\text{cm}$ amplitude

Predicted Tsunami Arrival Times

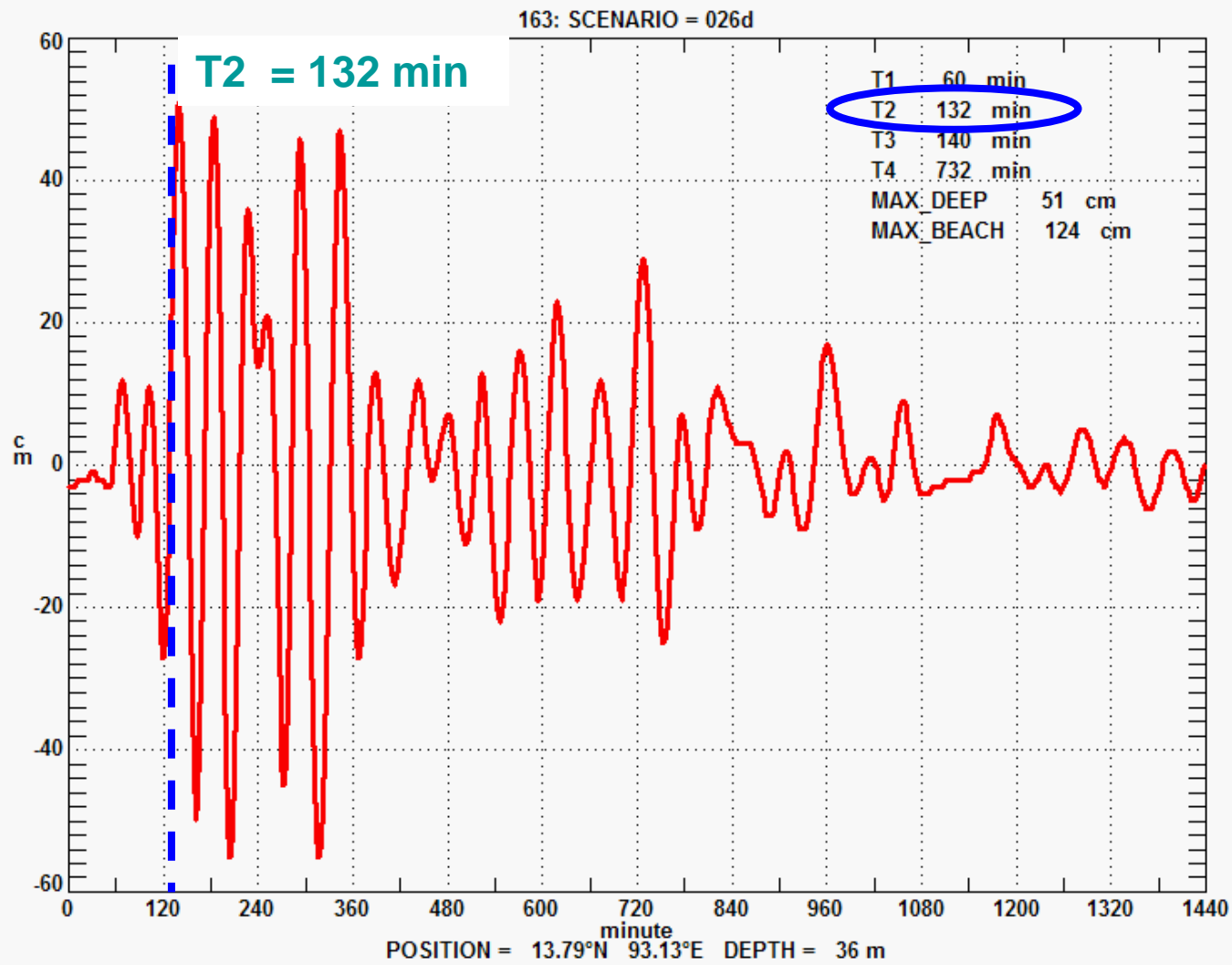
Sea
Level
Height
in cm



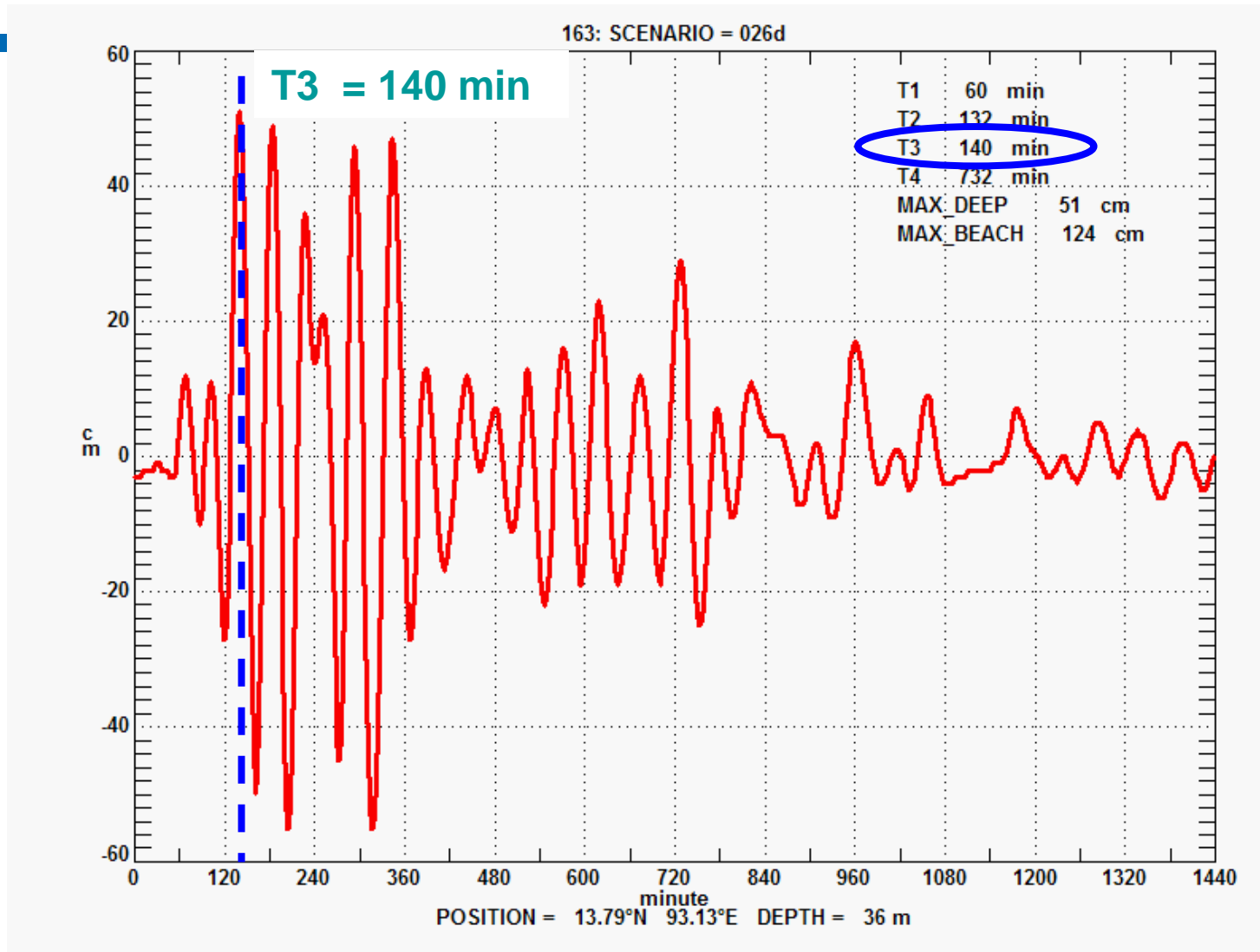
T1 = time of first discernible tsunami wave (amplitude $\geq +2\text{cm}$)



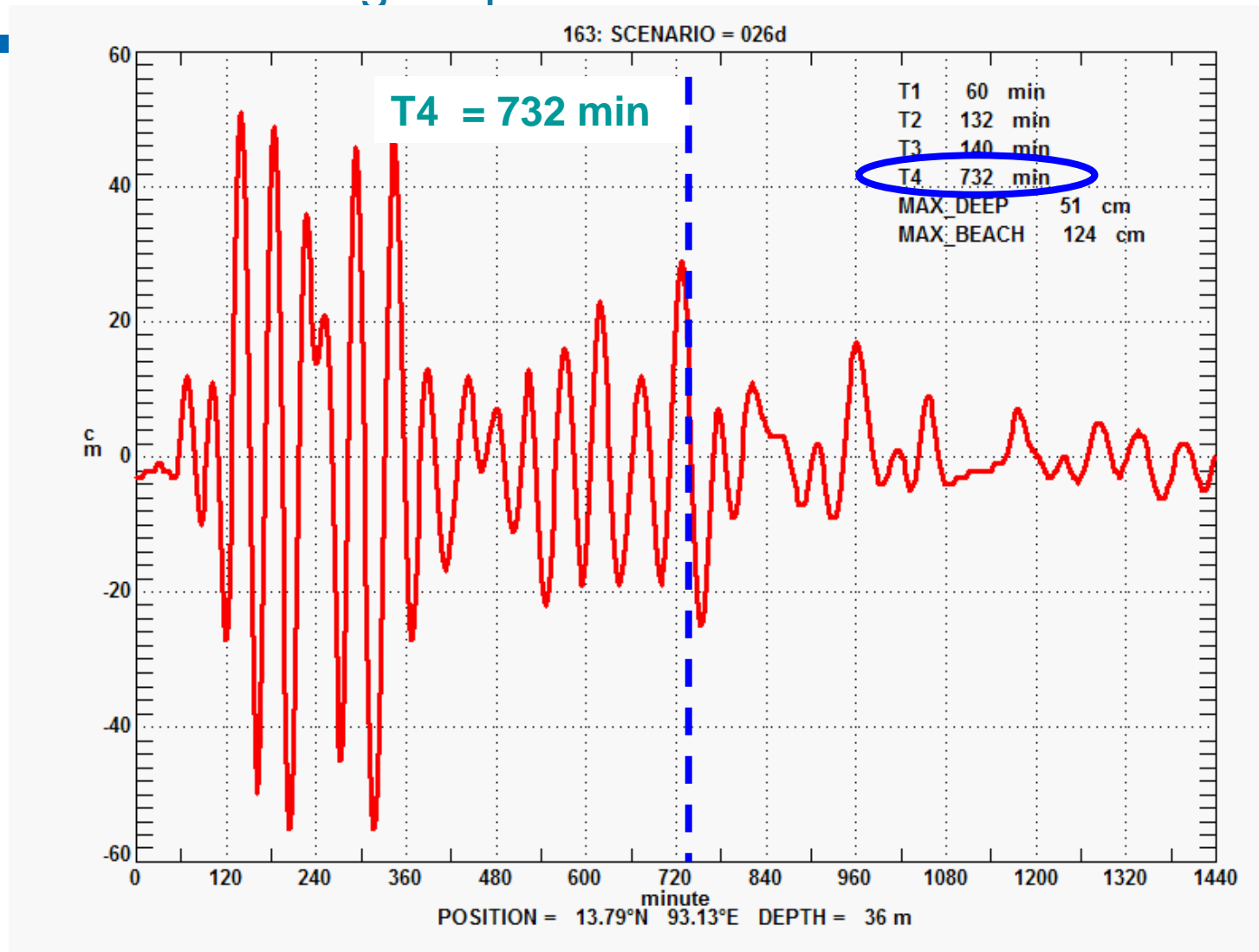
T2 = time of first wave to exceed amplitude $\geq +50\text{cm}$ on the beach



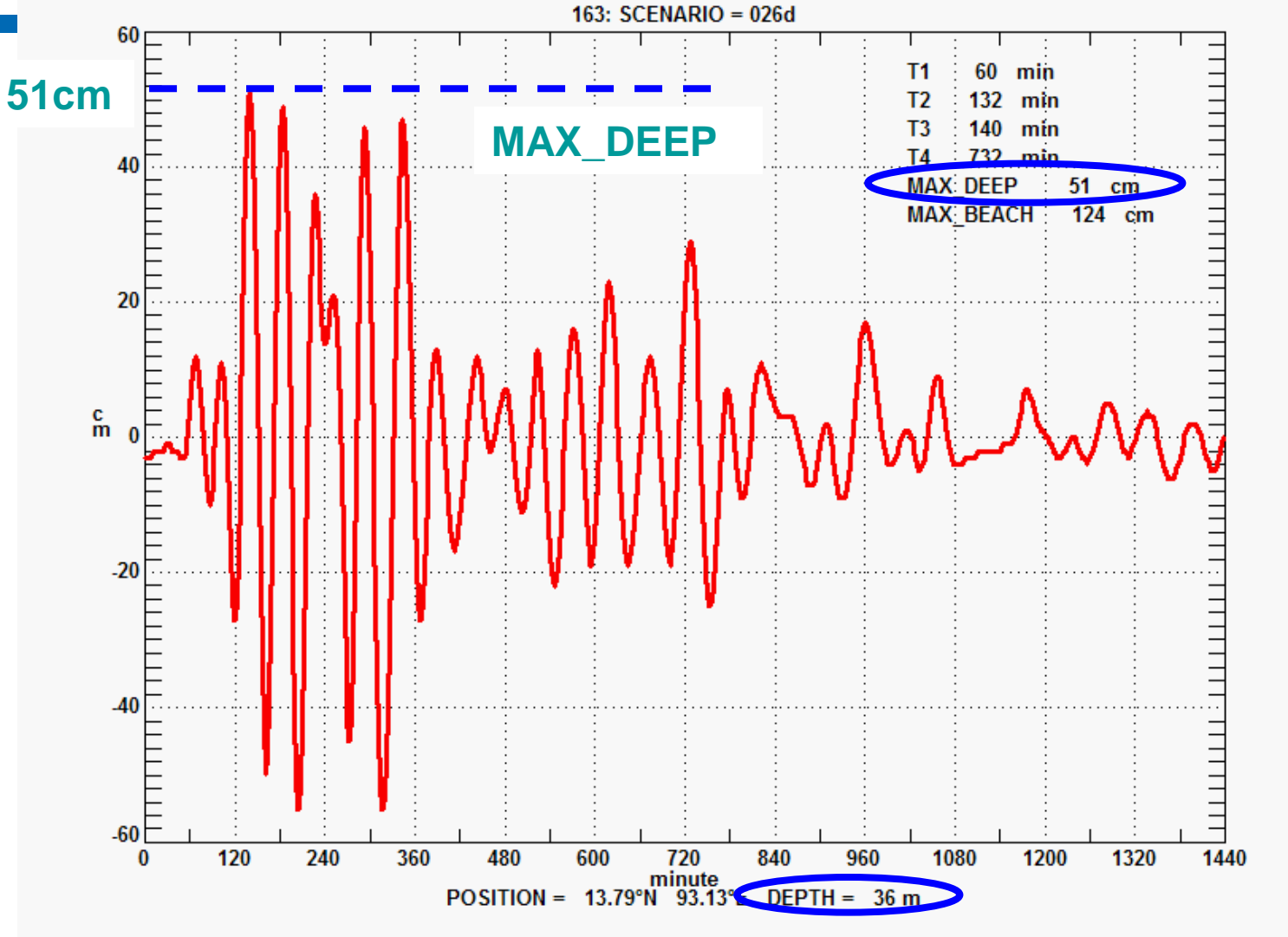
T3 = time of largest wave



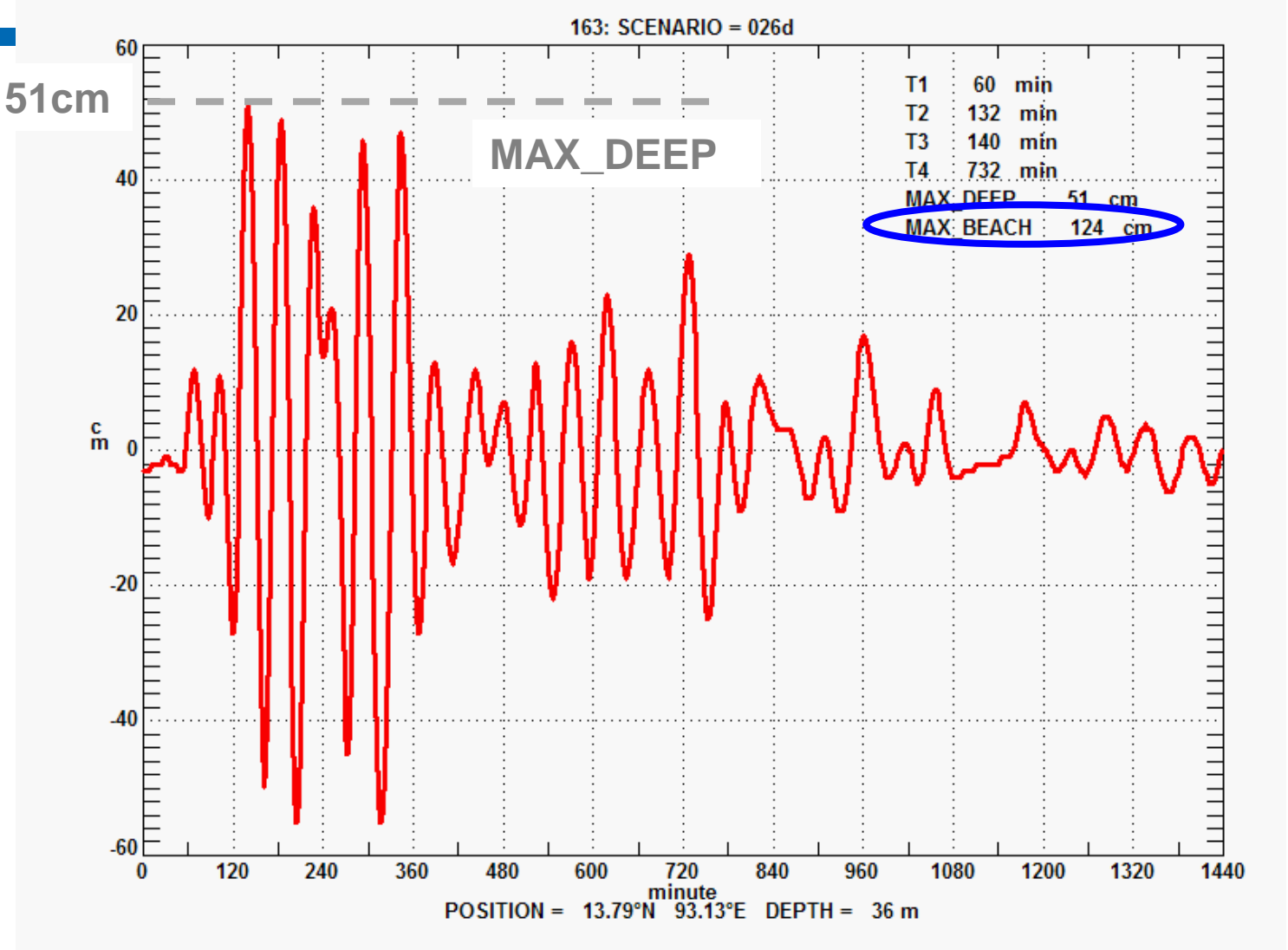
T4 = time of last wave exceeding amplitude $\geq +50\text{cm}$ on the beach



MAX_DEEP = Largest positive wave amplitude in the time series



MAX_BEACH = MAX_DEEP height amplified to an on the beach value using Greens Law



TSP Product Examples



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Magnitude 9.0 earthquake

Latitude: 24.80N, Longitude: 58.20E

Off Coast of Iran

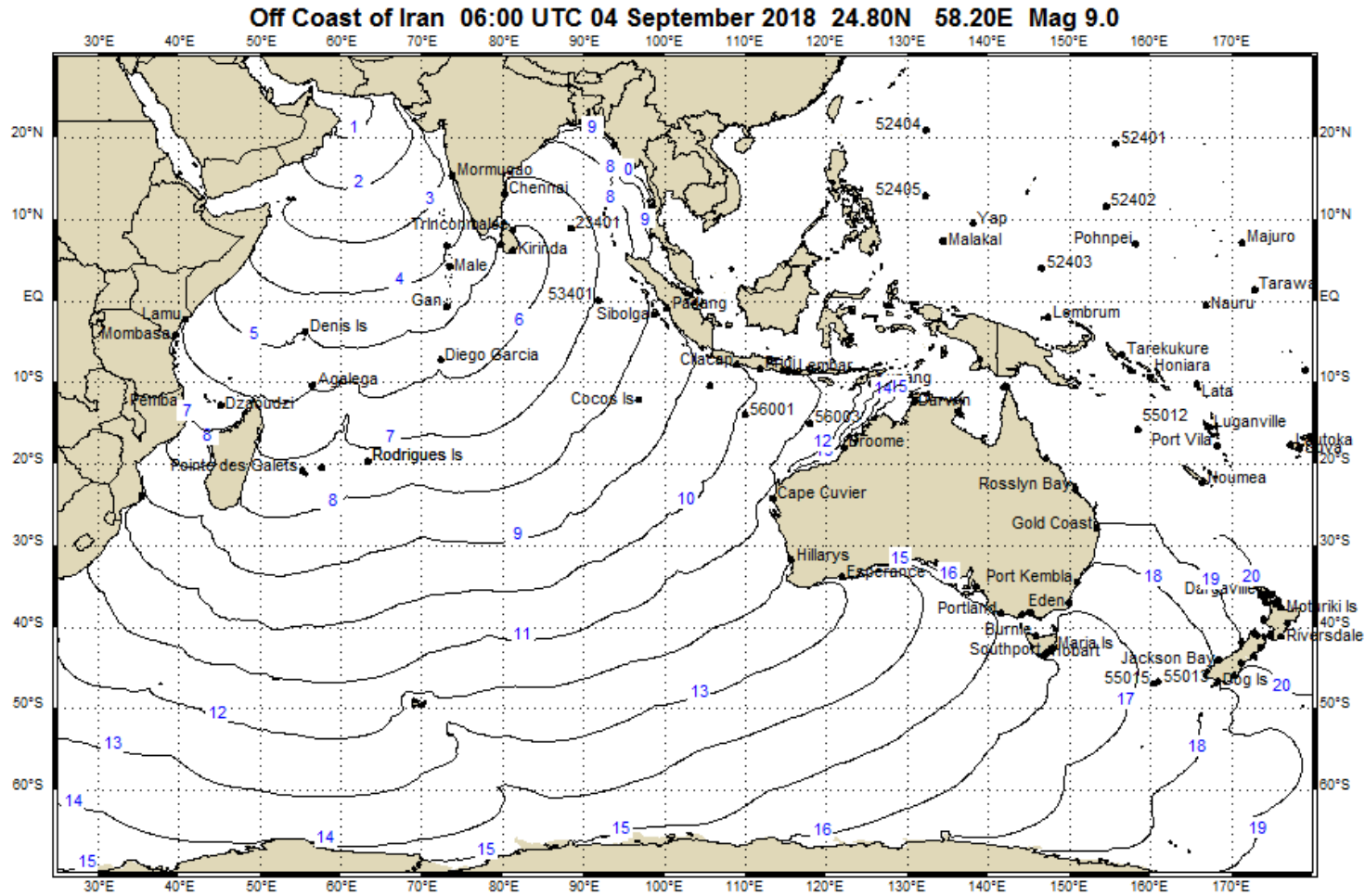
Earthquake Time: 0600UTC, 04/09/2018

Travel Times Map

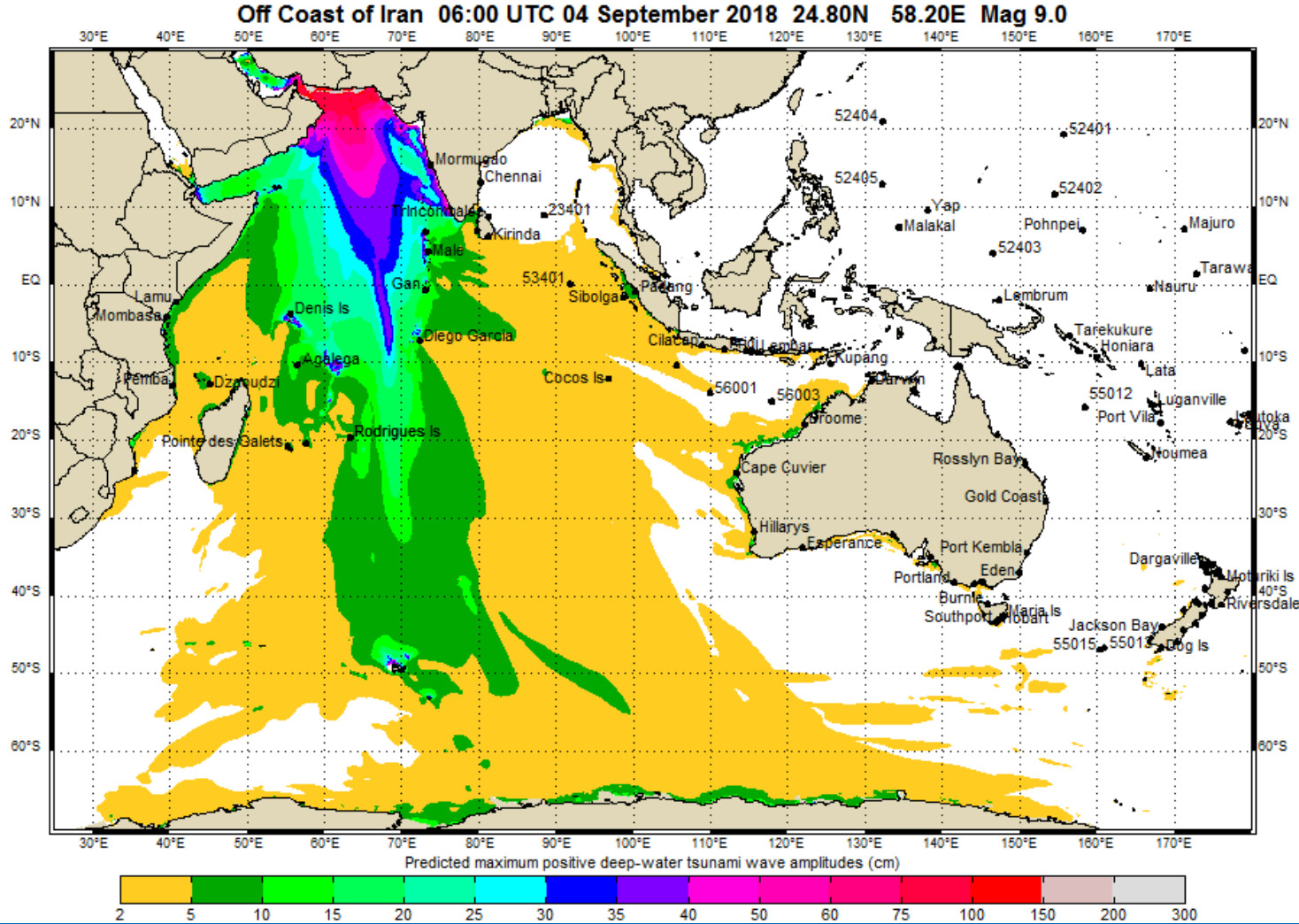


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Deep Water Wave Height Map

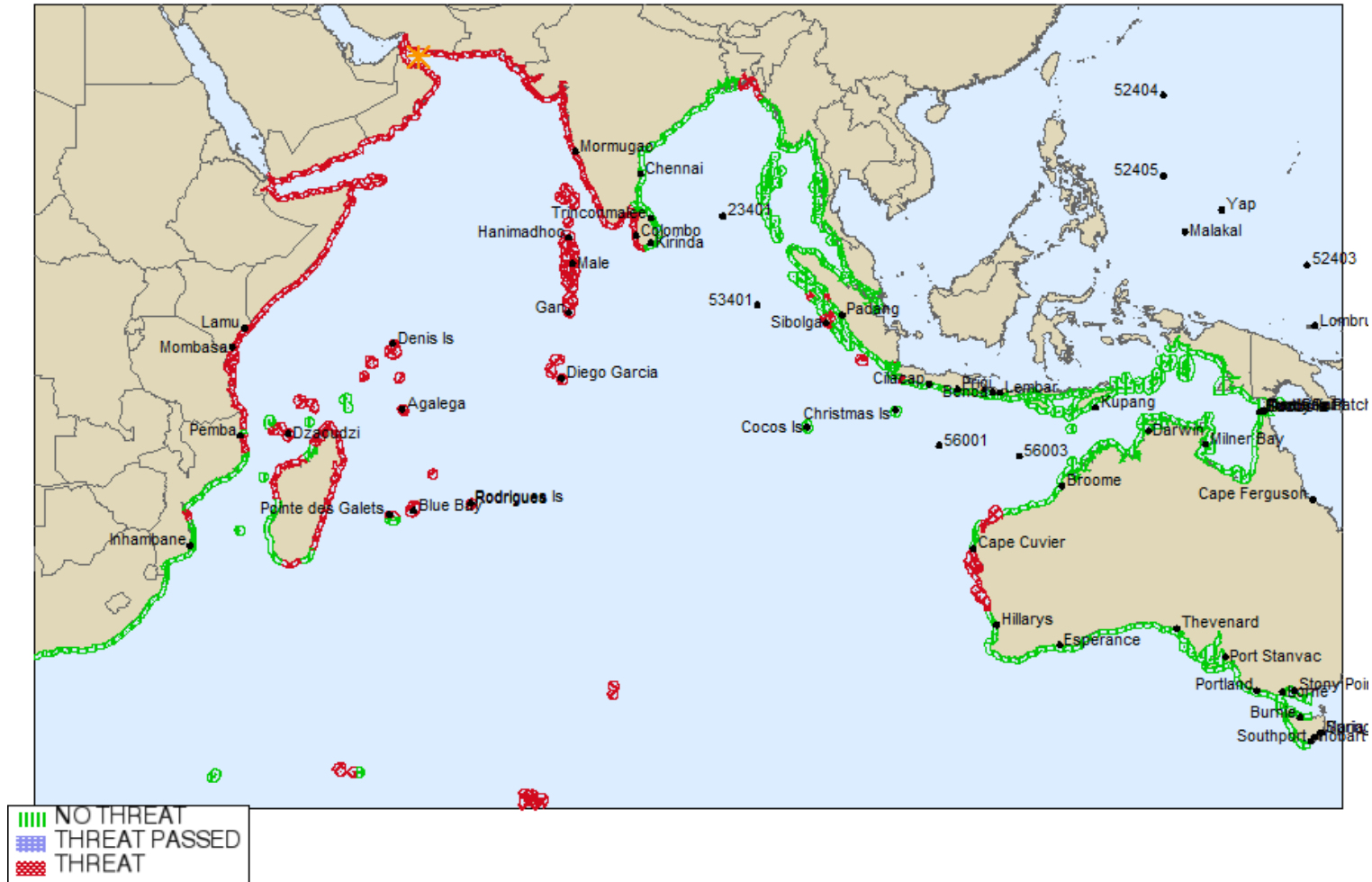


Zone Threat Assessment Map



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Zone Threat Assessment Table



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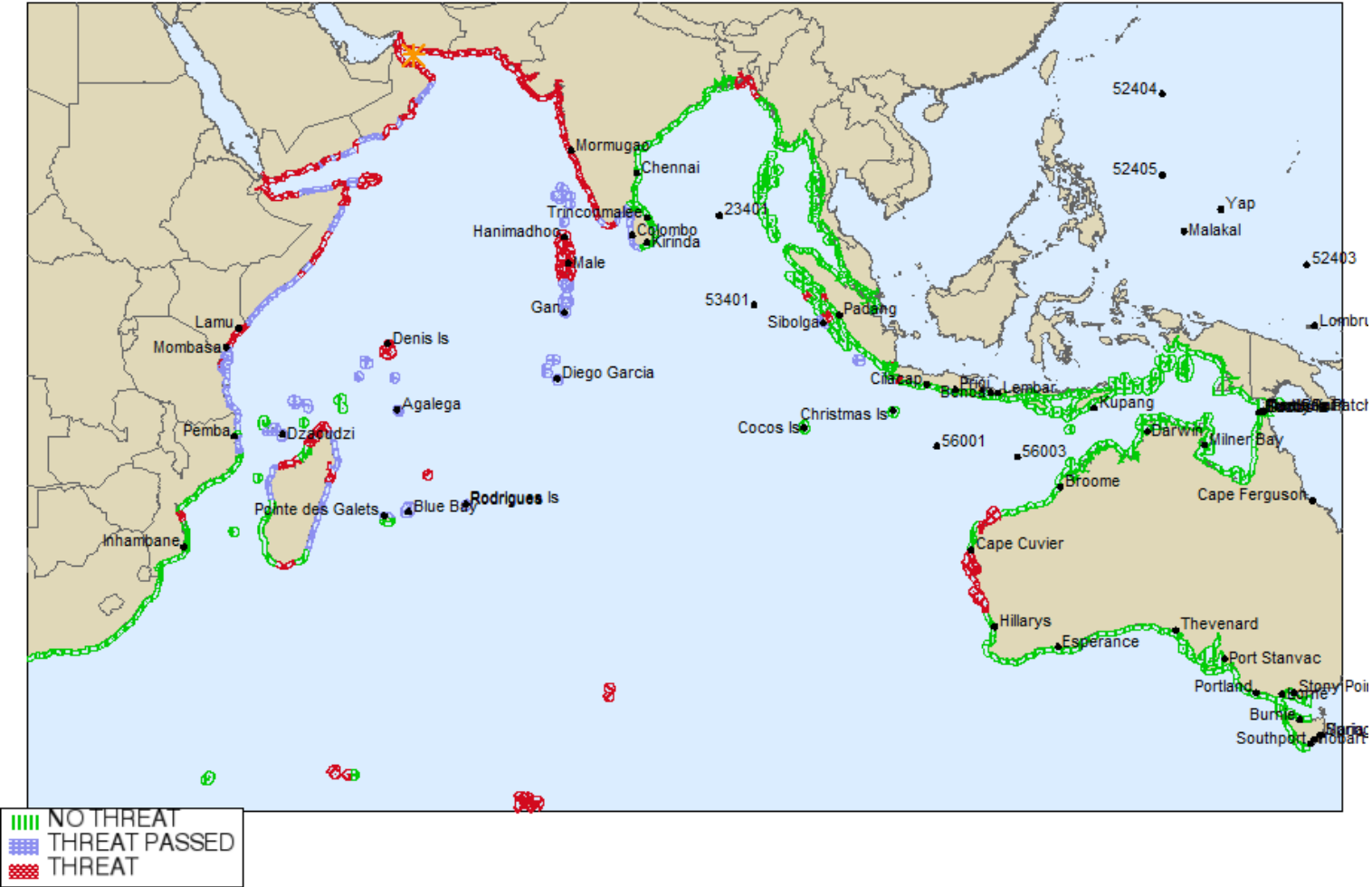
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EARTHQUAKE: Off Coast of Iran * TEST EVENT *** 06:00 UTC 04 September 2018 Mag 9.0**

INFORMATION FOR BULLETIN 5. Confirmed Threat Bulletin 0732UTC 04 Sep 2018

Exchange Bulletins	Threat Map	Threat Table	Deep Water Wave Amplitude Map	Travel Times Map	NTWC Status Reporting Form	Other Data		
SELECT COUNTRY:								
<ul style="list-style-type: none"> • AUSTRALIA • BANGLADESH • COMOROS • DJIBOUTI • FRANCE • INDIA 	<ul style="list-style-type: none"> • INDONESIA • IRAN • KENYA • MADAGASCAR • MALAYSIA • MALDIVES 	<ul style="list-style-type: none"> • MAURITIUS • MOZAMBIQUE • MYANMAR • OMAN • PAKISTAN • SEYCHELLES 	<ul style="list-style-type: none"> • SINGAPORE • SOMALIA • SOUTH AFRICA • SRI LANKA • TANZANIA • THAILAND 	<ul style="list-style-type: none"> • TIMOR-LESTE • UNITED ARAB EMIRATES • UNITED KINGDOM • YEMEN 				
(Red = Threat, Blue = Threat Passed, Green = No Threat)								
ZONE PREDICTIONS FOR PAKISTAN:								
COUNTRY ZONE ▼▲	MAX BEACH (m) ▼▲	MAX DEEP (m) ▼▲	DEPTH AT MAX DEEP (m) ▼▲	T1 (UTC) First Wave ▼▲	T2 (UTC) First Above Threat Level ▼▲	T3 (UTC) Max Wave ▼▲	T4 (UTC) Last Above Threat Level ▼▲	THREAT CATEGORY ▼▲
ORMARA	11.71	3.21	177	04 Sep 0600Z	04 Sep 0600Z	04 Sep 0604Z	05 Sep 0528Z	Threat
WINDER	5.15	1.86	59	04 Sep 0600Z	04 Sep 0602Z	04 Sep 0716Z	05 Sep 0600Z	Threat
SINDH	3.3	1.13	73	04 Sep 0656Z	04 Sep 0708Z	04 Sep 0728Z	05 Sep 0412Z	Threat
KARACHI	4.04	1.79	26	04 Sep 0642Z	04 Sep 0652Z	04 Sep 0740Z	05 Sep 0522Z	Threat

Zone Threat Assessment Map (Threat Passed)





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NTWC Status Reporting Form

IOTWMS-TSP India – Tsunami Service Provider for the Indian Ocean NTWC WARNING STATUS REPORTING FORM

This page is to be used by Indian Ocean National Tsunami Warning Centres (NTWCs) to advise TSPs of their current warning status. It should be used every time an NTWC issues a new or updated tsunami warning (or cancellation) for their country. The information will be placed on TSP public websites to enable the public, media and other NTWCs to be aware of the warning status of each country.

COUNTRY'S CURRENT WARNING STATUS

- Select your **Country** from the list at left
- Select your **Country's Current Warning Status (Threat Level 0, 1, 2 or 3)** from the list below
- Type **Additional Information About The Warning Status** in the text box below, such as the time and locations for which the warning has been issued, and the type of warning issued.
- Type your email in the **"Sender Email"** box.
- Type your name in the **"Sender Name"** box.
- **Time of Feedback** Submission.
- Press **"Submit"**.

1. Select Your Country:

Australia
Bangladesh
Comoros
Djibouti
France (Indian Ocean Territories)
India
Indonesia
Iran
Kenya
Madagascar
Malaysia
Maldives
Mauritius
Mozambique
Myanmar
Oman
Pakistan
Seychelles
Singapore
Somalia
South Africa
Sri Lanka
Tanzania
Thailand
Timor-Leste
UAE
UK (Indian Ocean Territories)
Yemen

2. Select Your Country's Current Warning Status:

- Threat Level 0:** No impact expected, no flooding, no currents.
- Threat Level 1:** There is a potential for tsunami impact, but given the travel time, no response of the public is necessary at the moment.
- Threat Level 2:** Threat to coastal marine areas due to strong currents and oscillations in sea level.
- Threat Level 3:** Threat of tsunami inundation to land areas.
- Cancellation/All Clear**

3. Type Additional Information About The Warning Status:

Max 1950 characters

4. Type Sender Email:

5. Type Sender Name:

6. Time of Feedback Submission: Mon Feb 24 2020 13:54:24 GMT+1100 (Australian Eastern Daylight Time)

7. Click Here to Submit Your Details:

TSP Australia Public Page Example



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[Bureau Home](#) > [Joint Australian Tsunami Warning Centre](#) > [Status of Tsunami Warnings in the Indian Ocean](#)
TSP Australia Public Webpage **Status of Tsunami Warnings in the Indian Ocean**

This website is maintained by the [Joint Australian Tsunami Warning Centre](#) for the Indian Ocean Tsunami Warning & Mitigation System (IOTWMS) as a Tsunami Service Provider (TSP).

Earthquake Current

Check bulletin and map for tsunami information in the Indian Ocean

About FAQ Latest Public Bulletin

Warning Status

Australia	Bangladesh	Comoros	Djibouti
France (Indian Ocean Territories)	India	Indonesia	Iran
Kenya	Madagascar	Malaysia	Maldives
Mauritius	Mozambique	Myanmar	Oman
Pakistan	Seychelles	Singapore	Somalia
South Africa	Sri Lanka	Tanzania	Thailand
Timor-Leste	UAE	UK (Indian Ocean Territories)	Yemen

Legend: Unknown Level 0 Level 1 Level 2 Level 3 Cancel

Earthquakes

Event	Date	Mag.	Location
1	06:00 UTC 12 June 2019	9.0	Off coast of Pakistan *** TEST EVENT ***

Tsunami Wave Observations

#	Location	MAX	Date	Ev.
1	Gwadar	6.70m	06:06 UTC 12 Jun	1

National Tsunami Warning Centres
[Australia](#) [Bangladesh](#) [France \(Indian Ocean Territories\)](#) [India](#) [Indonesia](#) [Kenya](#) [Madagascar](#) [Malaysia](#) [Maldives](#) [Mauritius](#) [Mozambique](#) [Myanmar](#) [Oman](#) [Pakistan](#) [Seychelles](#) [Singapore](#) [Sri Lanka](#) [Tanzania](#) [Thailand](#) [Timor Leste](#) [UAE](#)

WARNINGS

WATER | CLIMATE | ENVIRONMENT

Tropical Cyclones

Tsunami Warning Centre

Radar Sat Maps

Rainfall Forecasts

Seasonal Outlooks

MetEye™

National Weather Services

Aviation Weather Services

Defence Services

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TSP Bulletin Types



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TSP Bulletin Type 1: Earthquake Bulletin

- Issued within 5-10 minutes of earthquake
- Contains earthquake details and optional qualitative tsunami threat assessment

TSP Bulletin Type 2: Potential Tsunami Threat Bulletin

- Issued with 10-20 minutes of earthquake
- Contains earthquake details, plus model predictions: T2 (arrival of first wave over threshold) and Max Beach height.

TSP Bulletin Type 3: Confirmed Tsunami Threat Bulletin

- Issued hourly following Type 2 Bulletin, or earlier if tsunami observations received
- Contains all Type 2 Bulletin information, plus observations of tsunami waves

TSP Bulletin Type 4: Final Tsunami Bulletin

- Issued 2 hours after last arrival time in Indian Ocean of a wave over 0.5m:
Issue Time = (last Indian Ocean T4) + 2 hours
- Contains observations of tsunami waves only
- Tsunami impacts on the beach and in the water could last beyond this time

TSP Bulletin Examples: Notification Message

-
TEST TSUNAMI BULLETIN NOTIFICATION MESSAGE NUMBER 1 IOTWMS TSUNAMI
SERVICE PROVIDER AUSTRALIA [JATWC] ISSUED AT 0612 UTC TUESDAY 04
SEPTEMBER 2018

-
TO: INDIAN OCEAN NATIONAL TSUNAMI WARNING CENTRES [NTWCs]
FROM: IOTWMS-TSP AUSTRALIA

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

MAGNITUDE: 7.8 MWP
DEPTH: 10KM
DATE: 04 SEP 2018
ORIGIN TIME: 0600 UTC
LATITUDE: 24.80N
LONGITUDE: 58.20E
LOCATION: OFF COAST OF IRAN

TO VIEW THE BULLETIN GO TO THE IOTWMS-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

-

TSP Bulletin Examples: Type 1 Earthquake Bulletin

-
TEST TSUNAMI BULLETIN NUMBER 1 (TYPE-I EARTHQUAKE BULLETIN)
IOTWMS TSUNAMI SERVICE PROVIDER AUSTRALIA (JATWC)
ISSUED AT 0612 UTC Tuesday 04 September 2018

-

... EARTHQUAKE BULLETIN ...

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 (IOTWMS).

1. EARTHQUAKE INFORMATION

IOTWMS-TSP AUSTRALIA has detected an earthquake with the following preliminary information:

Magnitude: 7.8 Mwp
Depth: 10km
Date: 04 Sep 2018
Origin Time: 0600 UTC
Latitude: 24.80N
Longitude: 58.20E
Location: Off Coast of Iran

2. EVALUATION

Based on historical data and tsunami modelling, this earthquake may be capable of generating a tsunami affecting the Indian Ocean region.

IOTWMS-TSP AUSTRALIA will monitor sea level gauges near the earthquake to determine if a tsunami was generated and will issue further bulletins for this event.

Further information on this event will be available at:
<http://reg.bom.gov.au/tsunami/rtsp>

3. 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.

4. OTHER INDIAN OCEAN TSUNAMI SERVICE PROVIDERS:
Other IOTWMS-TSPs may issue additional information at:
IOTWMS-TSP INDIA:
<http://www.incois.gov.in/Incois/tsunami/eqevents.jsp>
IOTWMS-TSP INDONESIA: <http://rtsp.bmkg.go.id>

5. CONTACT INFORMATION

IOTWMS-TSP AUSTRALIA
Joint Australian Tsunami Warning Centre (JATWC)
Bureau of Meteorology
GPO BOX 1289 Melbourne, Victoria, Australia, 3001
Website: <http://reg.bom.gov.au/tsunami/rtsp>

END OF BULLETIN

TSP Bulletin Examples: Type 2 No Threat Bulletin

-
TSUNAMI BULLETIN NUMBER 2 (TYPE-II THREAT ASSESSMENT BULLETIN)
IOTWMS TSUNAMI SERVICE PROVIDER AUSTRALIA (JATWC)
ISSUED AT 1214 UTC Friday 02 August 2019

-

... NO 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 (IOTWMS).

1. EARTHQUAKE INFORMATION

IOTWMS-TSP AUSTRALIA has detected an earthquake with the following details:

Magnitude: 7.1 Mwp
Depth: 69km
Date: 02 Aug 2019
Origin Time: 1203 UTC
Latitude: 7.47S
Longitude: 104.58E
Location: Southwest of Sumatra, Indonesia

2. EVALUATION

Based on pre-run model scenarios, there is NO THREAT to countries in the Indian Ocean.

3. 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.

4. UPDATES

No further bulletins will be issued by IOTWMS-TSP AUSTRALIA for this event unless other information becomes available.

Other IOTWMS-TSPs may issue additional information at:

IOTWMS-TSP INDIA:
<http://www.incois.gov.in/Incois/tsunami/eqevents.jsp>
IOTWMS-TSP INDONESIA: <http://rtsp.bmkg.go.id>

5. CONTACT INFORMATION

IOTWMS-TSP AUSTRALIA
Joint Australian Tsunami Warning Centre (JATWC)
Bureau of Meteorology
GPO BOX 1289 Melbourne, Victoria, Australia, 3001
<http://reg.bom.gov.au/tsunami/rtsp>

END OF BULLETIN

TSP Bulletin Examples: Type 2 Potential Threat Bulletin

-
TEST TSUNAMI BULLETIN NUMBER 2 (TYPE-II THREAT ASSESSMENT BULLETIN)
IOTWMS TSUNAMI SERVICE PROVIDER AUSTRALIA (JATWC)
ISSUED AT 0613 UTC Tuesday 04 September 2018

-

... POTENTIAL 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 (IOTWMS).

1. EARTHQUAKE INFORMATION

IOTWMS-TSP AUSTRALIA has detected an earthquake with the following details:

Magnitude: 7.8 Mwp
Depth: 10km
Date: 04 Sep 2018
Origin Time: 0600 UTC
Latitude: 24.80N
Longitude: 58.20E
Location: Off Coast of Iran

2. EVALUATION

Earthquakes of this size are capable of generating tsunamis. However, so far there is no confirmation about the triggering of a tsunami.

An investigation is under way to determine if a tsunami has been triggered. This TSP will monitor sea level gauges and report if any tsunami wave activity has occurred.

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, and the amplitude of the maximum beach wave predicted for the zone. Zones where the estimated wave amplitudes are less than 0.5m 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.

IRAN			
BIR	0600Z	04Sep2018	1.66m
OMAN			
MUSCAT	0616Z	04Sep2018	0.90m
AL KHABURAH	0620Z	04Sep2018	0.89m
BARKA	0620Z	04Sep2018	0.82m
SOHAR	0636Z	04Sep2018	0.57m

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 IOTWMS-TSP AUSTRALIA for this event as more information becomes available.

Other IOTWMS-TSPs may issue additional information at:

TSP INDIA: <http://www.incois.gov.in/Incois/tsunami/eqevents.jsp>
TSP INDONESIA: <http://rtsp.bmkg.go.id>

6. CONTACT INFORMATION

IOTWMS-TSP AUSTRALIA
Joint Australian Tsunami Warning Centre (JATWC)
Bureau of Meteorology
GPO BOX 1289 Melbourne, Victoria, Australia, 3001
<http://reg.bom.gov.au/tsunami/rtsp>

END OF BULLETIN

TSP Bulletin Examples: Type 3 Confirmed Threat Bulletin

TEST TSUNAMI BULLETIN NUMBER 6 (TYPE-III CONFIRMED THREAT BULLETIN)
IOTWMS TSUNAMI SERVICE PROVIDER AUSTRALIA (JATWC)
ISSUED AT 0832 UTC Tuesday 04 September 2018

... 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 (IOTWMS).

1. EARTHQUAKE INFORMATION

IOTWMS-TSP AUSTRALIA has detected an earthquake with the following details:

Magnitude: 9.0 Mwp
Depth: 10km
Date: 04 Sep 2018
Origin Time: 0600 UTC
Latitude: 24.80N
Longitude: 58.20E
Location: Off Coast of Iran

2. EVALUATION

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

Gwadar	PAKISTAN	25.00N	62.00E	7.10m	04 Sep 06:10 UTC
Chabahar	IRAN	25.33N	60.50E	6.00m	04 Sep 06:15 UTC
Jask	IRAN	25.60N	57.77E	3.00m	04 Sep 06:20 UTC
Muscat	OMAN	23.60N	58.57E	5.50m	04 Sep 06:20 UTC
DART 23228	ARABIAN SEA	20.80N	65.35E	0.30m	04 Sep 06:52 UTC
DART 23226	ARABIAN SEA	20.20N	67.33E	0.26m	04 Sep 06:57 UTC
Masirah	OMAN	20.70N	58.87E	2.00m	04 Sep 07:05 UTC

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, and the amplitude of the maximum beach wave predicted for the zone. Zones where the estimated wave amplitudes are less than 0.5m 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.

IRAN
PUSHT 0600Z 04Sep2018 7.88m
BIR 0600Z 04Sep2018 12.69m
MISKI 0640Z 04Sep2018 3.60m

PAKISTAN
ORMARA 0600Z 04Sep2018 11.71m
WINDER 0602Z 04Sep2018 5.15m
KARACHI 0652Z 04Sep2018 4.04m
SINDH 0708Z 04Sep2018 3.30m

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 IOTWMS-TSP AUSTRALIA for this event as more information becomes available.

Other IOTWMS-TSPs may issue additional information at:

TSP INDIA: <http://www.incois.gov.in/Incois/tsunami/eqevents.jsp>
TSP INDONESIA: <http://rtsp.bmkg.go.id>

6. CONTACT INFORMATION

IOTWMS-TSP AUSTRALIA
Joint Australian Tsunami Warning Centre (JATWC)
Bureau of Meteorology
GPO BOX 1289 Melbourne, Victoria, Australia, 3001
<http://reg.bom.gov.au/tsunami/rtsp>

END OF BULLETIN

TSP Bulletin Examples: Type 4 Final Bulletin

TEST TSUNAMI BULLETIN NUMBER 16 (TYPE-IV FINAL BULLETIN)
IOTWMS TSUNAMI SERVICE PROVIDER AUSTRALIA (JATWC)
ISSUED AT 1832 UTC Tuesday 04 September 2018

... FINAL TSUNAMI BULLETIN FOR THE INDIAN OCEAN ...

1. EARTHQUAKE INFORMATION

IOTWMS-TSP AUSTRALIA has detected an earthquake with the following details:

Magnitude: 9.0 Mwp
Depth: 10km
Date: 04 Sep 2018
Origin Time: 0600 UTC
Latitude: 24.80N
Longitude: 58.20E
Location: Off Coast of Iran

2. EVALUATION

Data from sea-level gauges confirmed that a tsunami was generated.

The expected period of significant tsunami waves is now over for all threatened Indian Ocean countries, based on IOTWMS-TSP AUSTRALIA modelling.

Because 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. Please be aware that dangerous currents can continue for several hours after the main tsunami waves have passed.

3. TSUNAMI WAVE OBSERVATIONS

Listed below are maximum wave amplitudes recorded at the specified locations.

Note that wave amplitude is measured relative to normal sea level; it is NOT the crest-to-trough wave height.

Gwadar	PAKISTAN	25.00N	62.00E	7.10m	04 Sep 06:10 UTC
Chabahar	IRAN	25.33N	60.50E	6.00m	04 Sep 06:15 UTC
Muscat	OMAN	23.60N	58.57E	5.50m	04 Sep 06:20 UTC
DART 23228	ARABIAN SEA	20.80N	65.35E	0.30m	04 Sep 06:52 UTC
DART 23226	ARABIAN SEA	20.20N	67.33E	0.26m	04 Sep 06:57 UTC
Masirah	OMAN	20.70N	58.87E	2.00m	04 Sep 07:05 UTC
Salalah	OMAN	16.90N	54.01E	0.80m	04 Sep 08:30 UTC
Ormara	PAKISTAN	25.20N	64.07E	3.50m	04 Sep 08:40 UTC
Minicoy	INDIA	8.30N	73.05E	0.40m	04 Sep 09:30 UTC
Hanimadhoo	MALDIVES	6.80N	73.17E	0.60m	04 Sep 10:15 UTC

Gan	MALDIVES	0.70S	73.15E	0.75m	04 Sep 10:30 UTC
Aden	YEMEN	12.80N	44.97E	0.75m	04 Sep 11:00 UTC
Colombo	SRI LANKA	7.00N	79.85E	0.40m	04 Sep 11:30 UTC
Male	MALDIVES	4.20N	73.53E	0.50m	04 Sep 11:40 UTC
Jask	IRAN	25.60N	57.77E	3.50m	04 Sep 11:50 UTC
Karachi	PAKISTAN	24.83N	66.83E	1.90m	04 Sep 13:00 UTC
Mombasa	KENYA	4.10S	39.65E	0.30m	04 Sep 13:20 UTC
Pt Louis	MAURITIUS	20.17S	57.33E	0.55m	04 Sep 13:25 UTC
DART 23401	NICOBAR ISLA	8.90N	88.50E	0.02m	04 Sep 13:27 UTC
Cocos Island	AUSTRALIA	12.10S	96.89E	0.30m	04 Sep 14:20 UTC
Rodrigues	MAURITIUS	19.70S	63.42E	0.60m	04 Sep 14:40 UTC
Seblat	INDONESIA	3.17S	101.50E	0.20m	04 Sep 14:45 UTC
Christmas Is	AUSTRALIA	10.40S	105.67E	0.30m	04 Sep 15:25 UTC
Sittwe	MYANMAR	20.00N	92.83E	0.15m	04 Sep 16:00 UTC
Pangandaran	INDONESIA	7.83S	108.50E	0.15m	04 Sep 16:00 UTC
DART 56001	INDIAN OCEAN	13.99S	110.10E	0.09m	04 Sep 16:08 UTC
Comores	COMORES	11.70S	43.25E	0.95m	04 Sep 16:50 UTC
Denis Island	SEYCHELLES	3.80S	55.67E	0.90m	04 Sep 16:50 UTC
DART 56003	INDIAN OCEAN	15.02S	117.94E	0.07m	04 Sep 17:08 UTC
Point Murat	AUSTRALIA	21.80S	114.19E	0.65m	04 Sep 17:30 UTC

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

No further bulletins will be issued by IOTWMS-TSP AUSTRALIA for this event unless additional information becomes available.

Other IOTWMS-TSPs may issue additional information at:

TSP INDIA: <http://www.incois.gov.in/Incois/tsunami/eqevents.jsp>
TSP INDONESIA: <http://rtsp.bmkg.go.id>

6. CONTACT INFORMATION

IOTWMS-TSP AUSTRALIA
Joint Australian Tsunami Warning Centre (JATWC)
Bureau of Meteorology
GPO BOX 1289 Melbourne, Victoria, Australia, 3001
<http://reg.bom.gov.au/tsunami/rtsp>

END OF BULLETIN

Cancellation Times for National Warnings



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Cancellation time for National Warnings to be decided by NTWC - likely to be after the country's last T4 time has passed, or after all tsunami wave observations have stopped coming in for the country, or both.



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Commission

THANK YOU

Dr Robert Greenwood
robert.greenwood@bom.gov.au