Intergovernmental Oceanographic Commission

National Oceanic and Atmospheric Administration

Servicio Hidrográfico y Oceanográfico de la Armada de Chile

International Tsunami Information Center

UNESCO IOC / NOAA
International Tsunami Information Center
Tsunami Training Video, November 2021

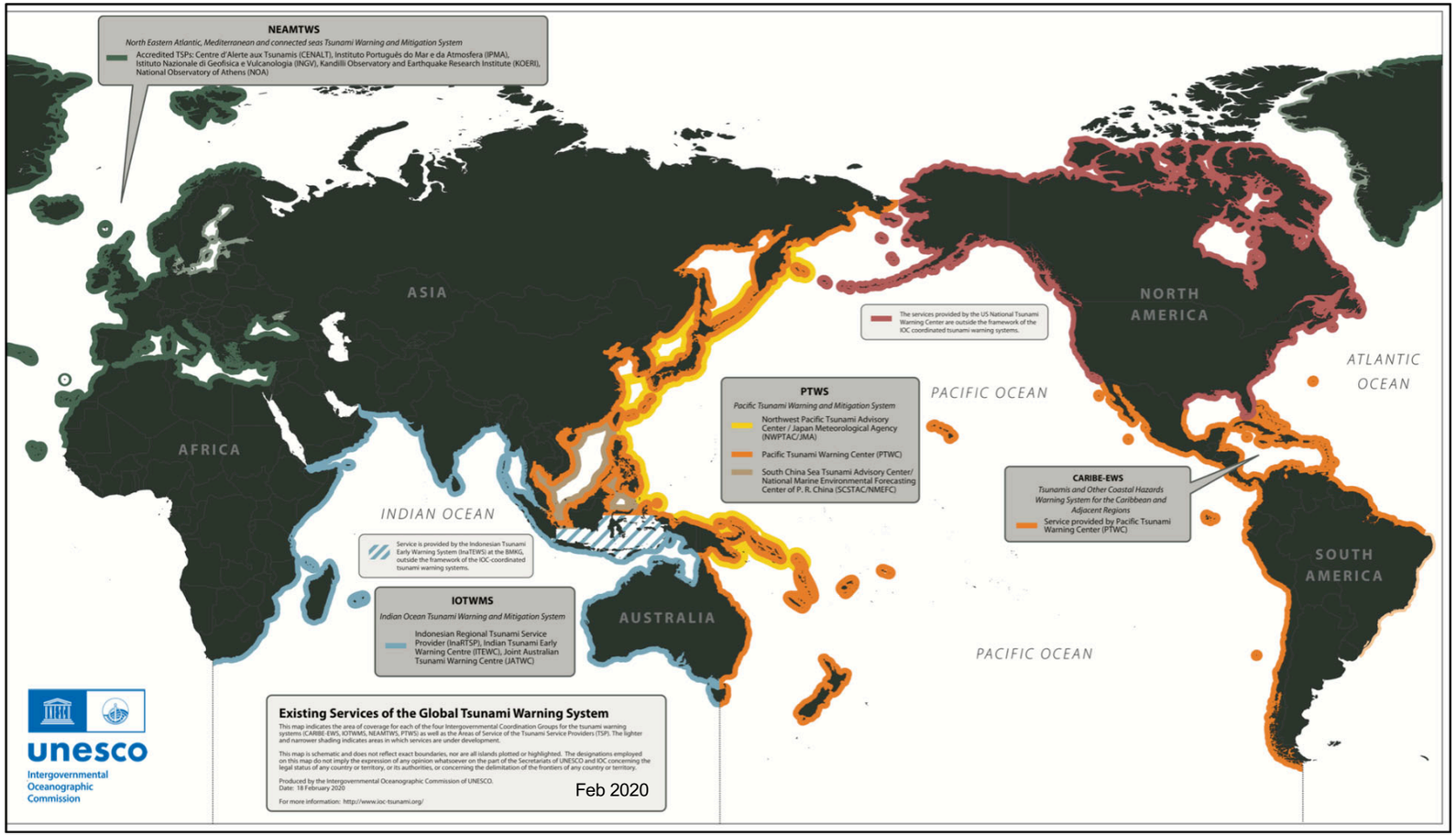
Pacific Tsunami Warning Center (PTWC)
Graphical Tsunami Forecast Products for the PTWS

Dr. Charles “Chip” McCreery
Director, PTWC

Video view/download: https://vimeo.com/showcase/8956022 (pw training)

Pacific Tsunami Warning Center – Operations Floor

Global Tsunami Warning and Mitigation System



PTWC

is

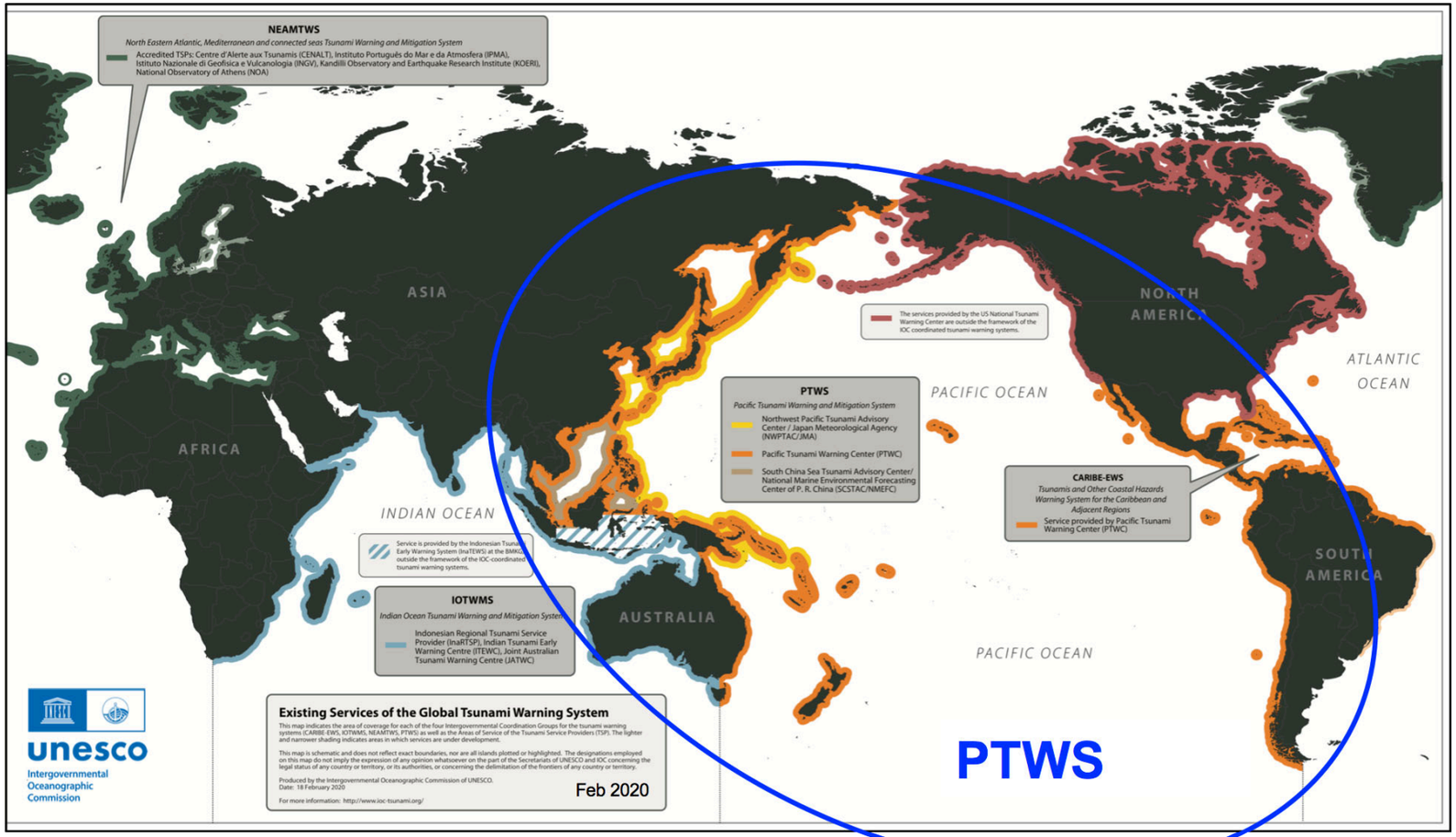
Tsunami Service Provider

for the

PTWS

(*Pacific Tsunami Warning and Mitigation System*)

Global Tsunami Warning and Mitigation System



PTWC

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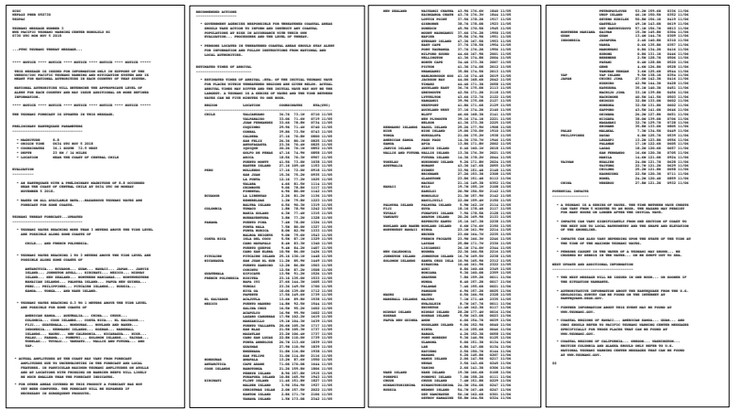
PTWS

(*Pacific Tsunami Warning and Mitigation System*)

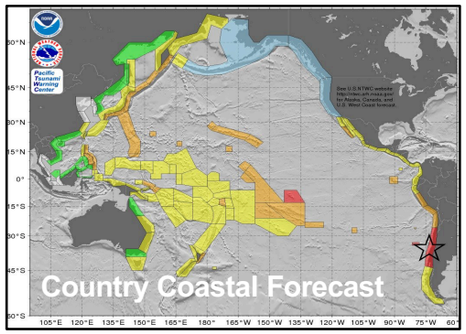
PTWC Text and Graphical Tsunami Products

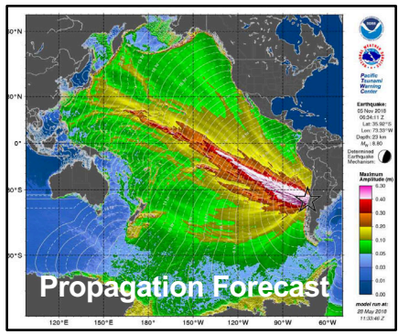
- Issued when there is a potential tsunami threat
- Help Member States determine tsunami alert levels for their coasts

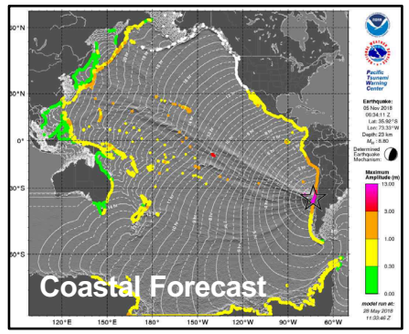
Public Text Product

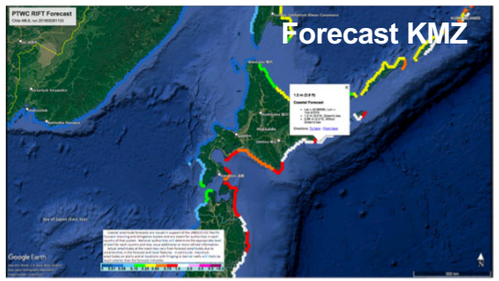


Private Graphical Products









Forecast Statistics

NS - RUN ID 20180528113346

ates: 35.9S 73.3W Depth: 023km Magnitude: 8.8

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Juan_Fernandez_Archipelago	11.	9.00	8.80	1.10	4.5	3.10	3.30	1.20	5
North_Central_Chile	5.5	2.20	1.90	1.00	2.8	0.86	0.62	0.53	121
Marquesas_Islands	4.2	2.70	2.40	0.74	1.3	0.59	0.55	0.25	24
Palmyra_Island	2.7	2.70	2.70	0.00	0.41	0.41	0.41	0.00	1
San_Felix_Islands	2.1	2.00	2.00	0.05	0.74	0.52	0.50	0.12	5
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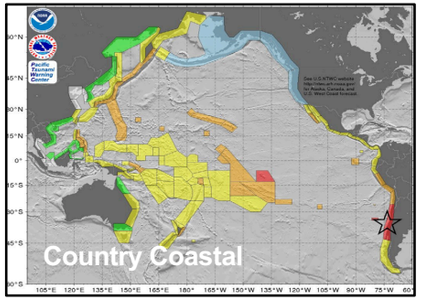
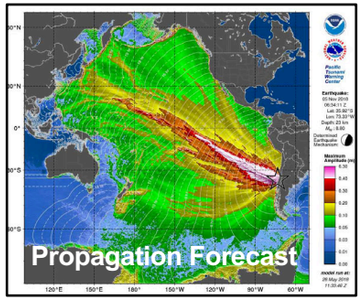
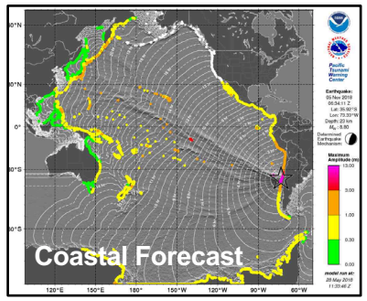
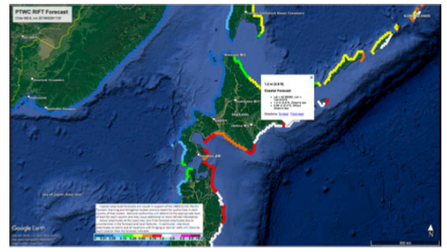






Forecast KMZ



Forecast Statistics

PTWC TABLE OF FORECAST STATISTICS FOR REGIONAL POLYGONS – RUN ID 20180528113346
(for internal use only – not for distribution)

Earthquake – Origin: 11/05/2018 06:34:11 UTC Coordinates: 35.9S 73.3W Depth: 023km Magnitude: 8.8

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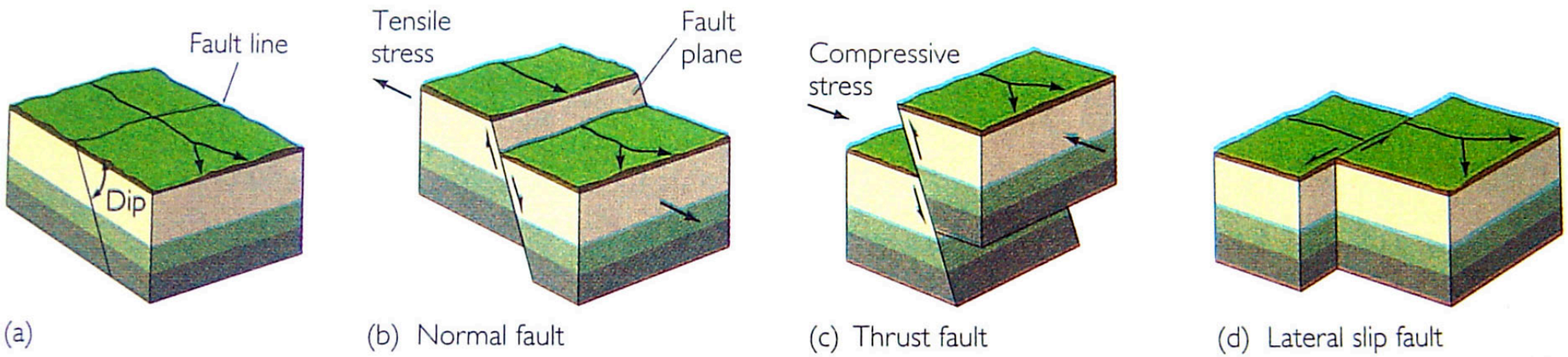
REFERENCE: *User's Guide for the Pacific Tsunami Warning Center Enhanced Products for the Pacific Tsunami Warning System. IOC Technical Series No 105. UNESCO/IOC 2014, rev 2022*

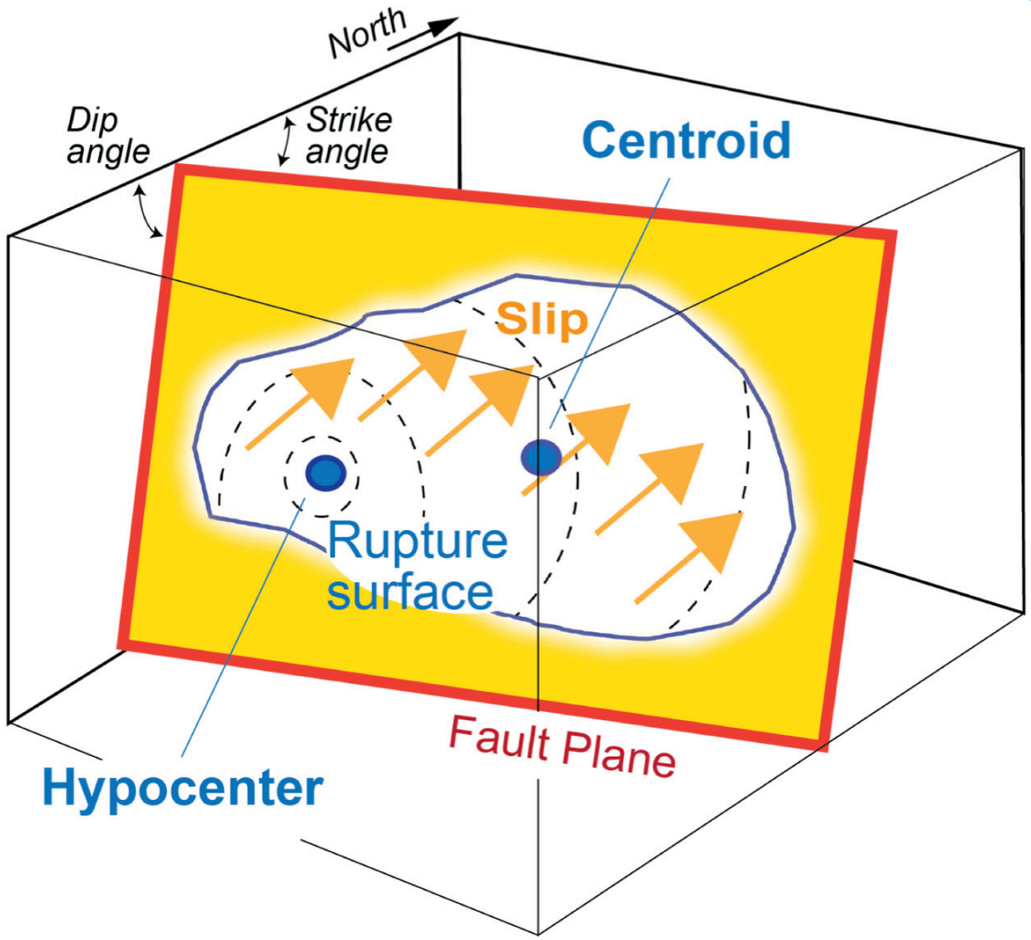
W-Phase Centroid Moment Tensor (WCMT)

- **The WCMT provides estimate of earthquake rupture mechanism**
  - Direction of fault line on Earth's surface
  - Dip angle of fault going into Earth
  - Direction Earth moved on either side of fault
- **3 types of earthquake faults: Normal, Thrust, Lateral or Strike-slip**
- **Most tsunamis are generated by thrust faults**

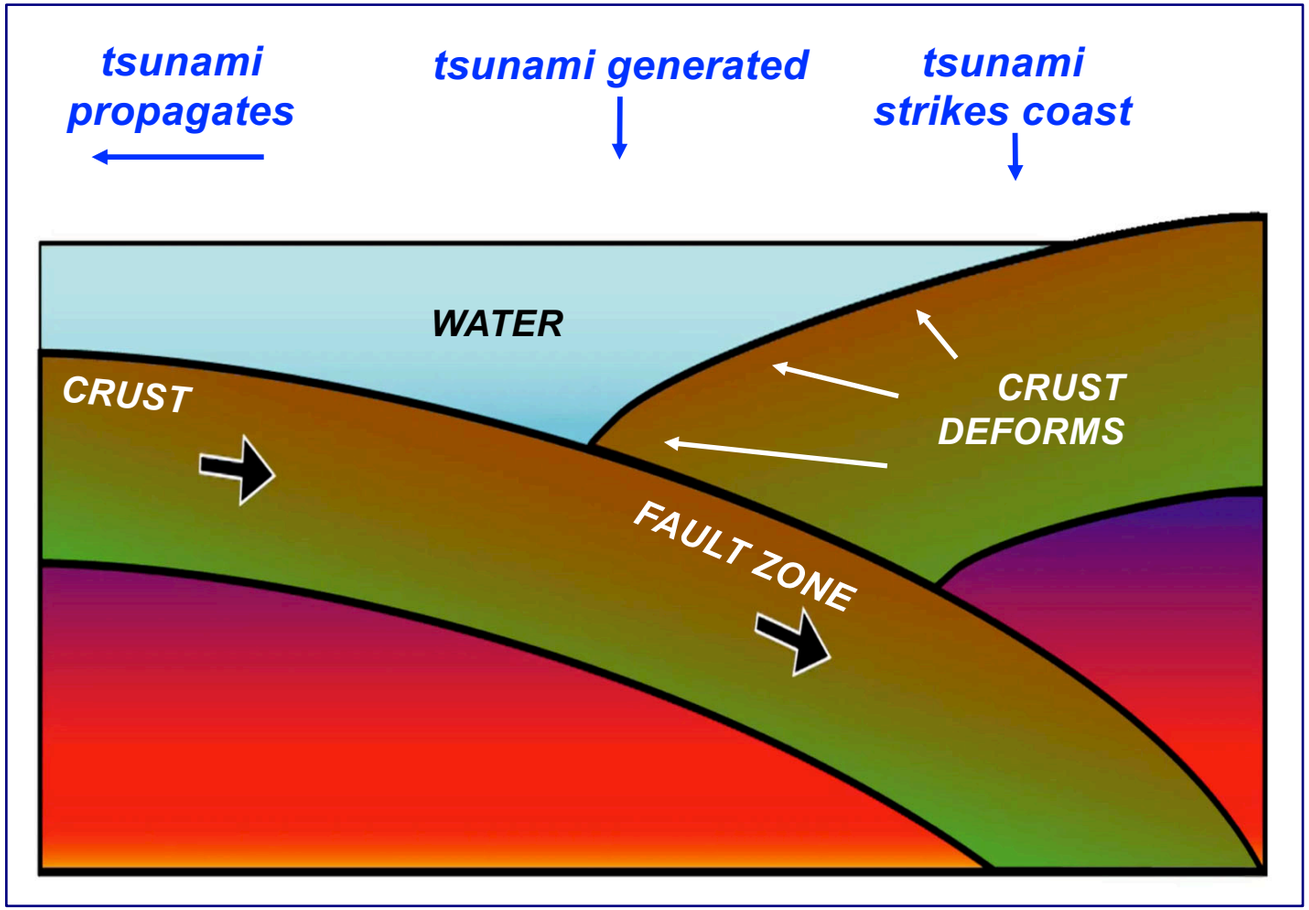


W-Phase Centroid Moment Tensor (WCMT)

- **The WCMT also provides**
  - Centroid location representing the center of rupture
  - Accurate earthquake Moment Magnitude (Mw)
- **Mw leads to an estimate of**
  - Fault rupture dimensions
  - Slip amount across fault



How an Earthquake Creates a Tsunami

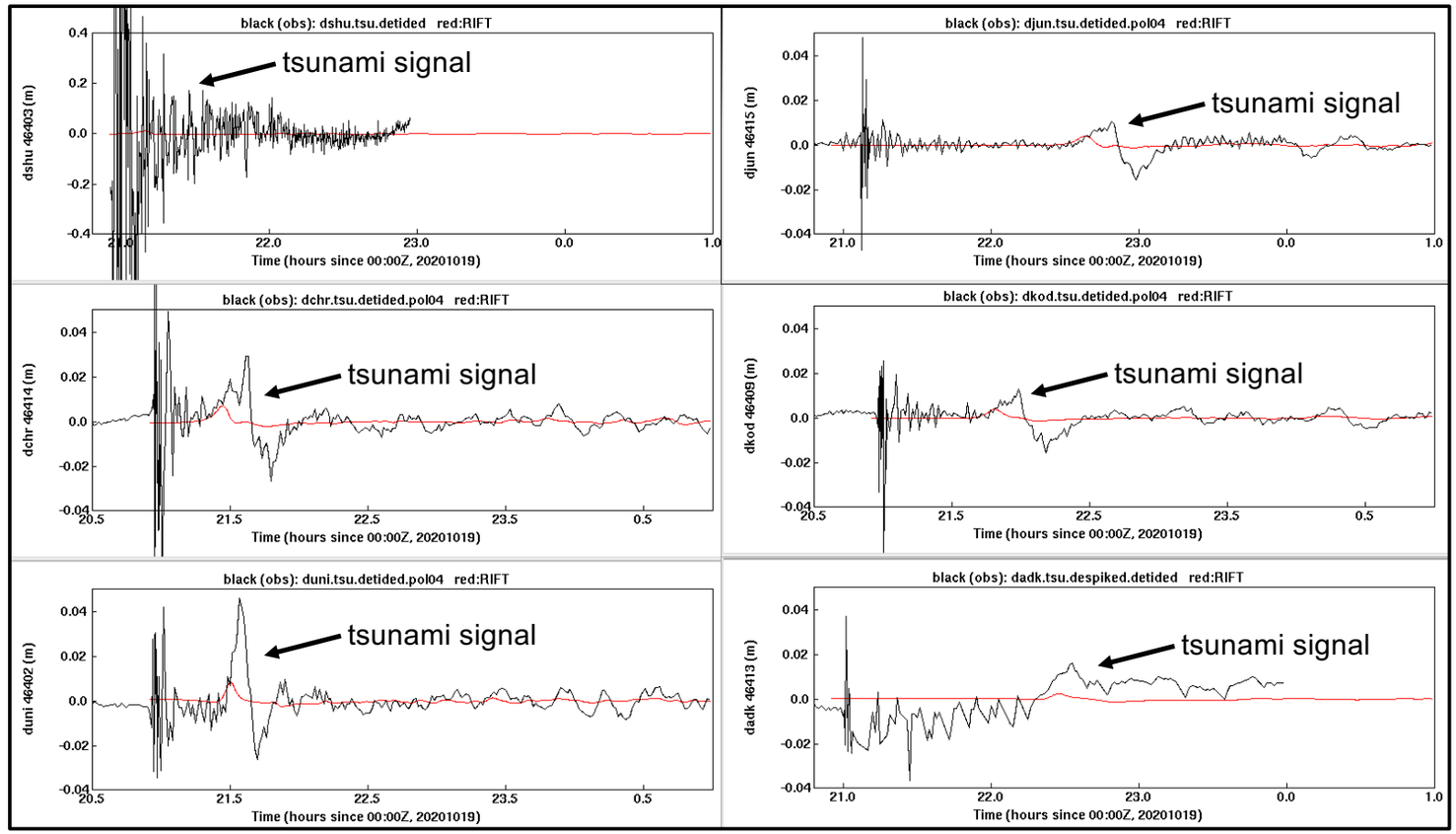


1. WCMT fault parameters describe how Earth's surface (crust) deforms during an earthquake
2. If deformed crust is under water, then the water moves generating a tsunami
3. RIFT simulates the:
   a. tsunami generation
   b. tsunami propagation across ocean, and
   c. tsunami striking coast

RIFT Forecast with Observations - Validation

- **Compare RIFT forecast with observations**
- **If waveforms and amplitudes are <u>similar</u>, then forecast is validated**

19 Oct 2020 Mw 7.6 Alaska Earthquake and Tsunami

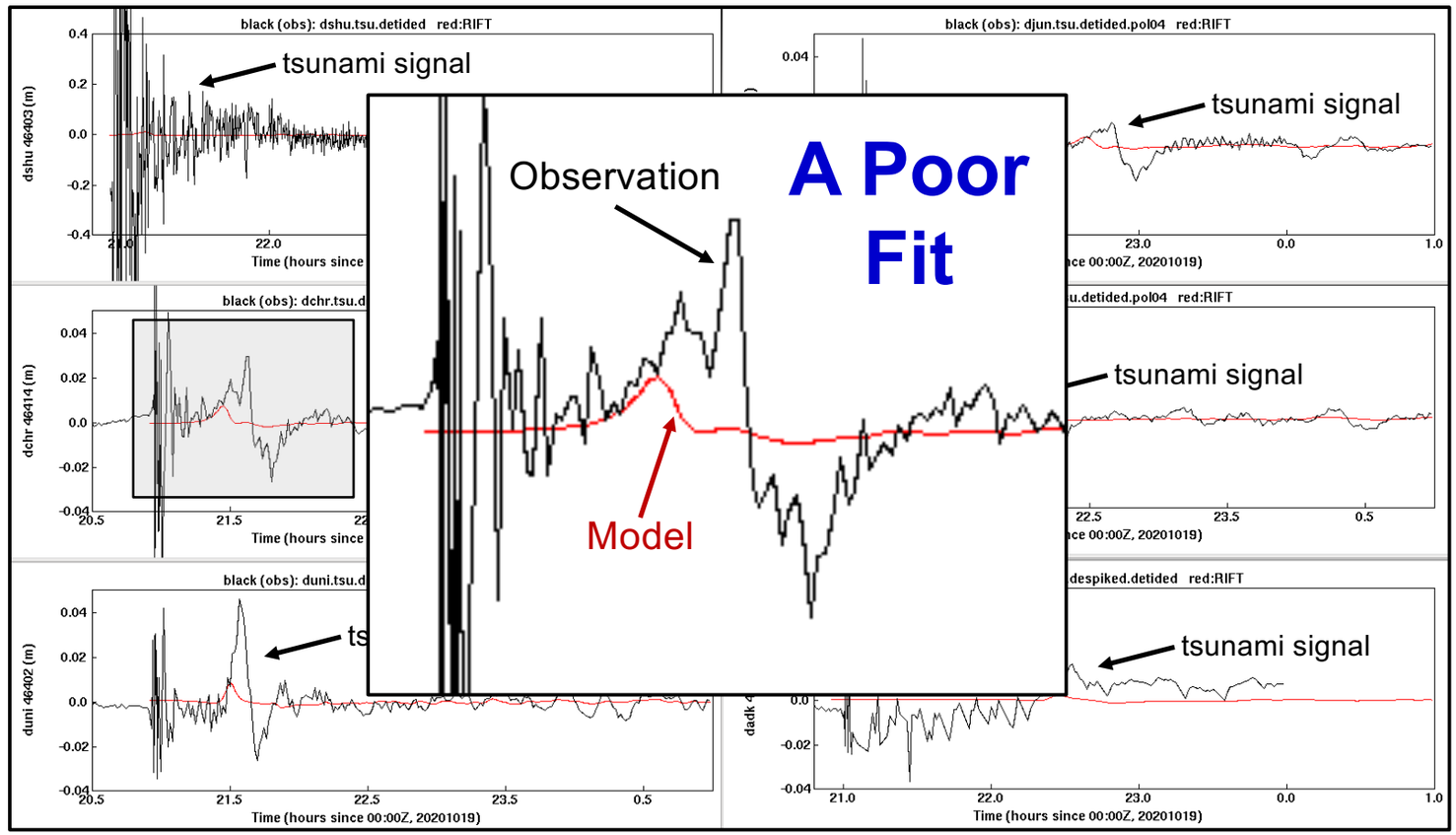


RIFT Forecast
DART Observation

RIFT Forecast with Observations – Needs Adjustment

- **Compare RIFT forecast with observations**
- **If waveforms and amplitudes are similar, then forecast is validated**

19 Oct 2020 Mw 7.6 Alaska Earthquake and Tsunami

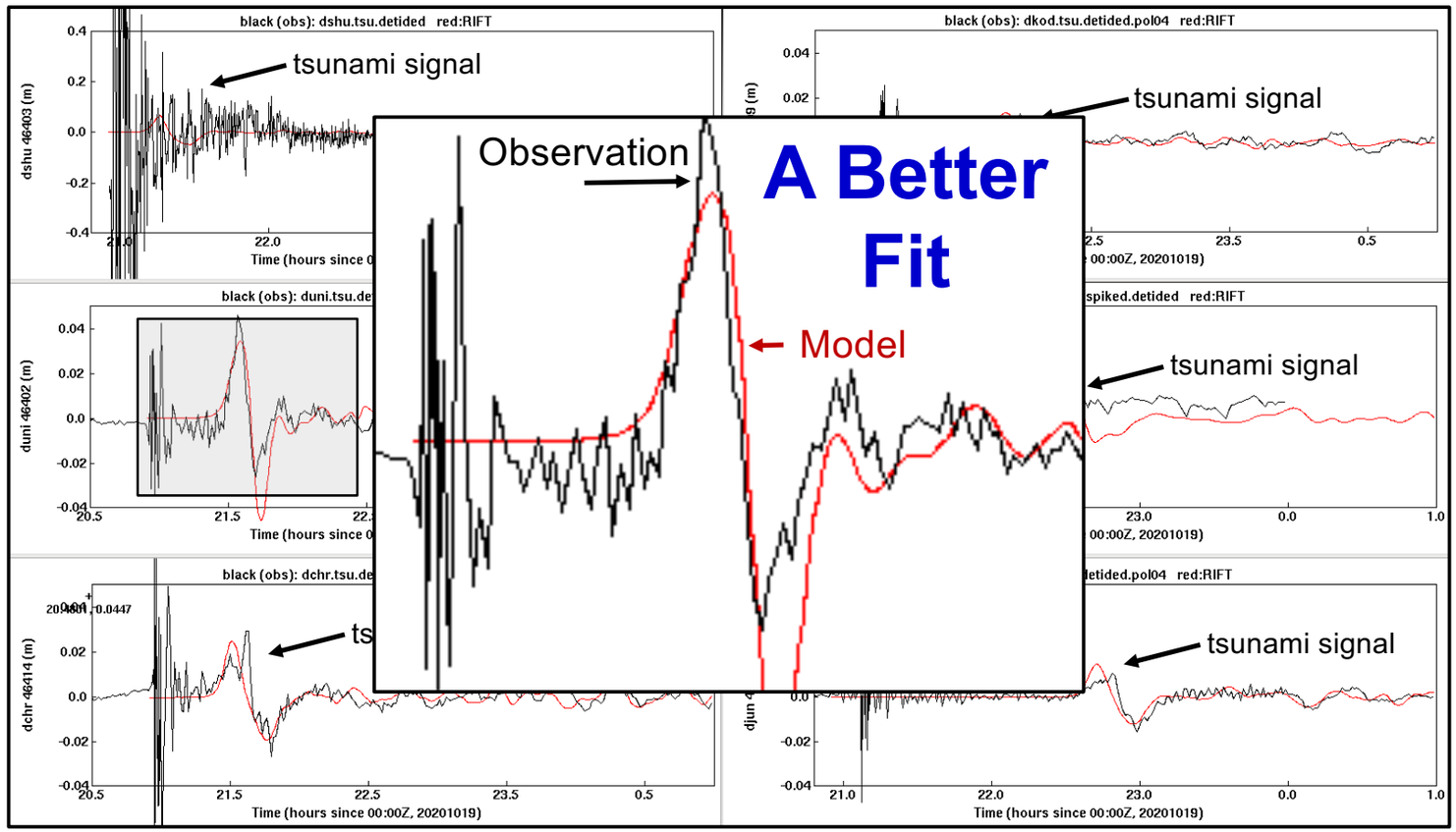


RIFT Forecast
DART Observation

RIFT Forecast with Observations - Adjusted

- **Compare RIFT forecast with observations**
- **If waveforms and amplitudes are similar, then forecast is validated**

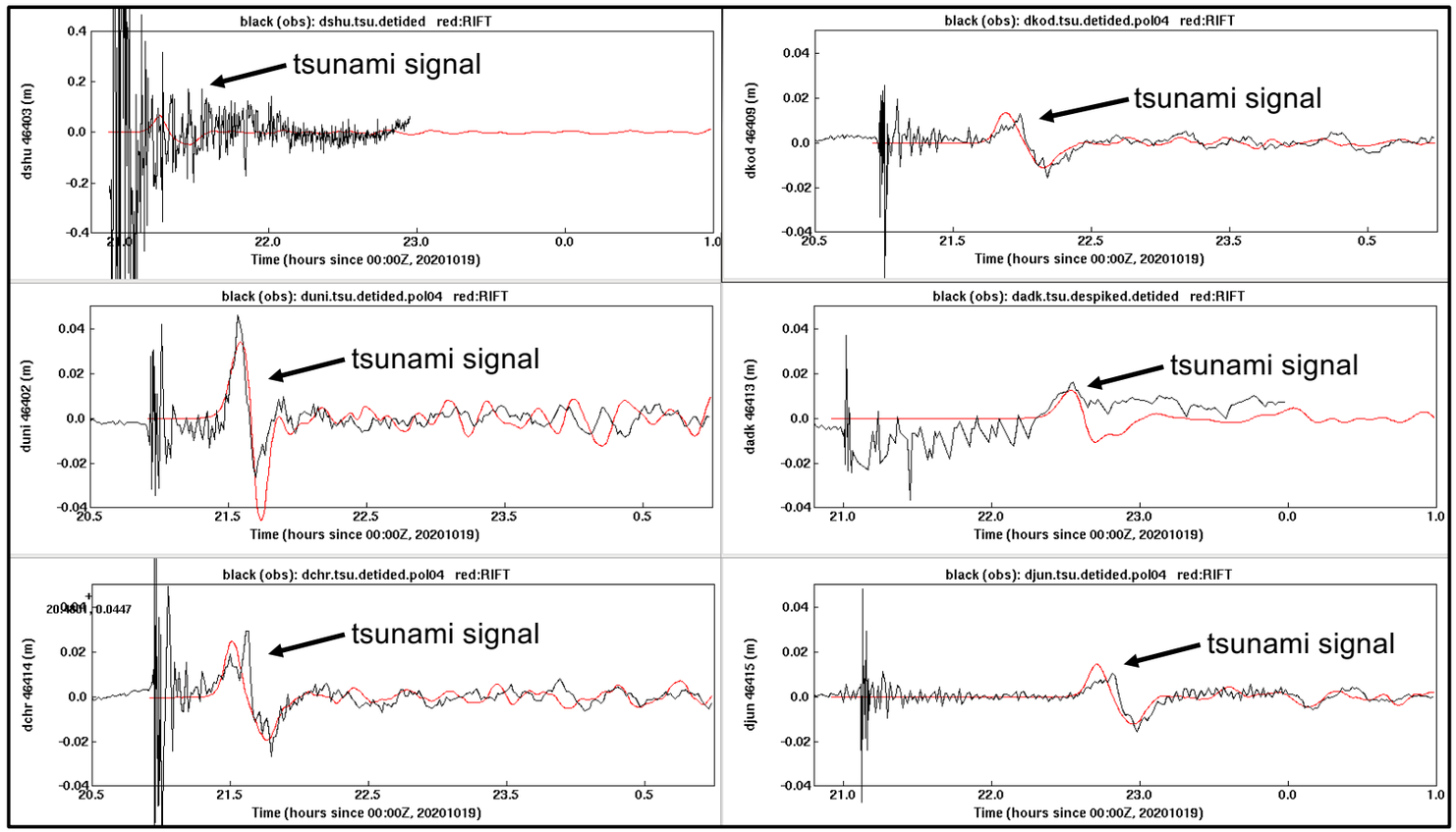
19 Oct 2020 Mw 7.6 Alaska Earthquake and Tsunami



RIFT Forecast with Observations - Updated

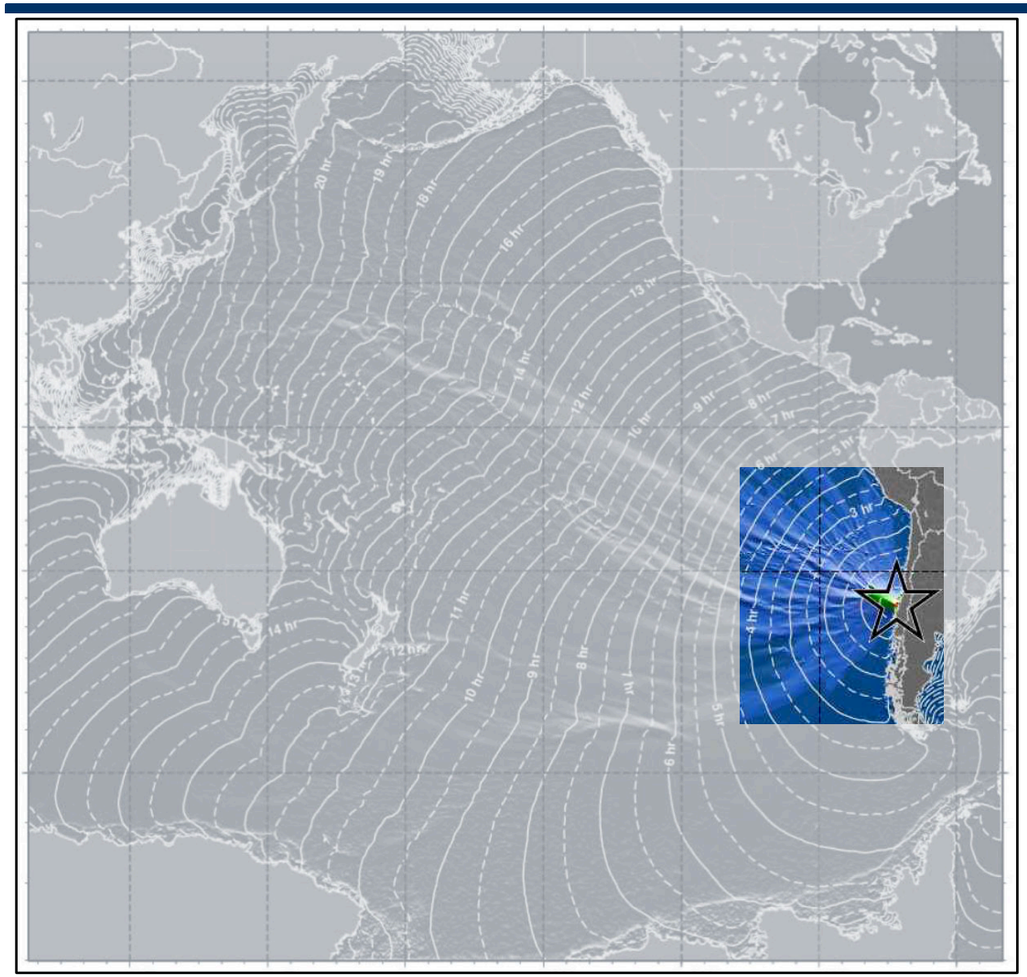
- **Compare RIFT forecast with observations**
- **If waveforms and amplitudes are similar, then forecast is validated**

19 Oct 2020 Mw 7.6 Alaska Earthquake and Tsunami



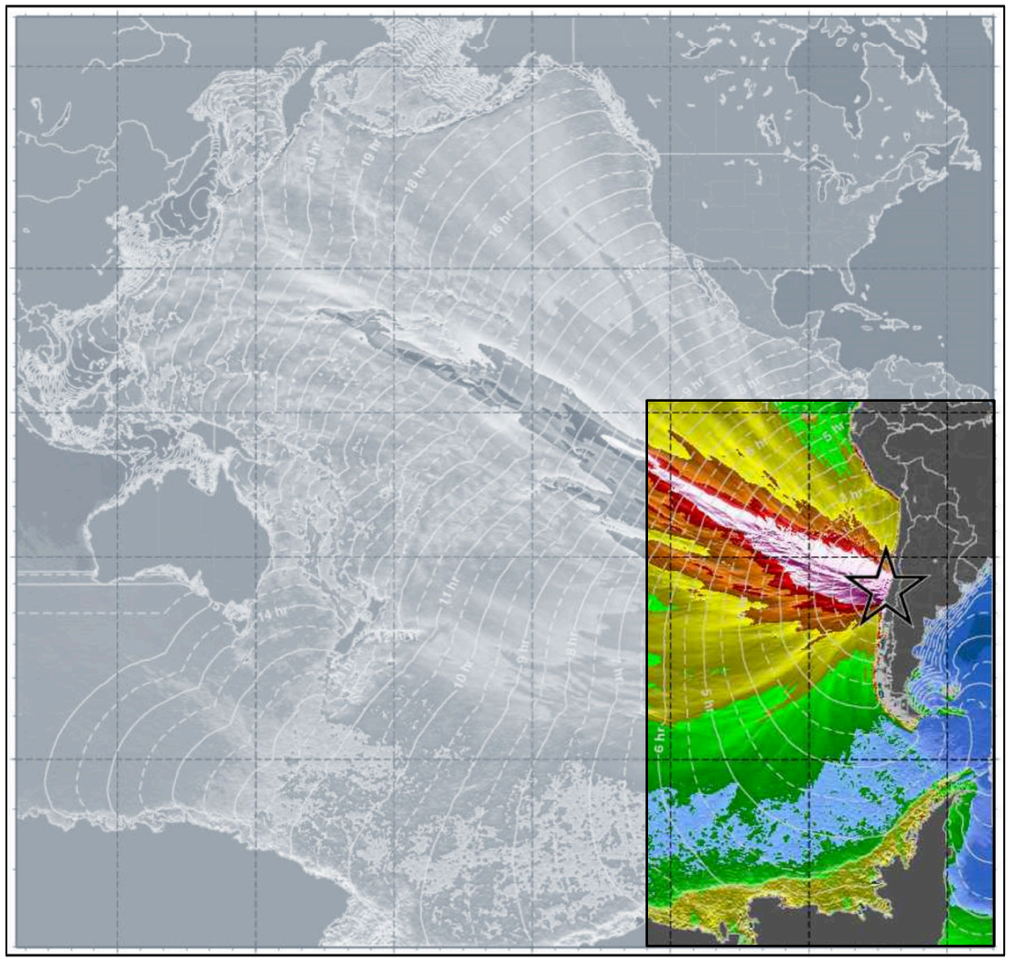
RIFT Forecast
DART Observation

RIFT Forecast Model – Small Domain for Small Events



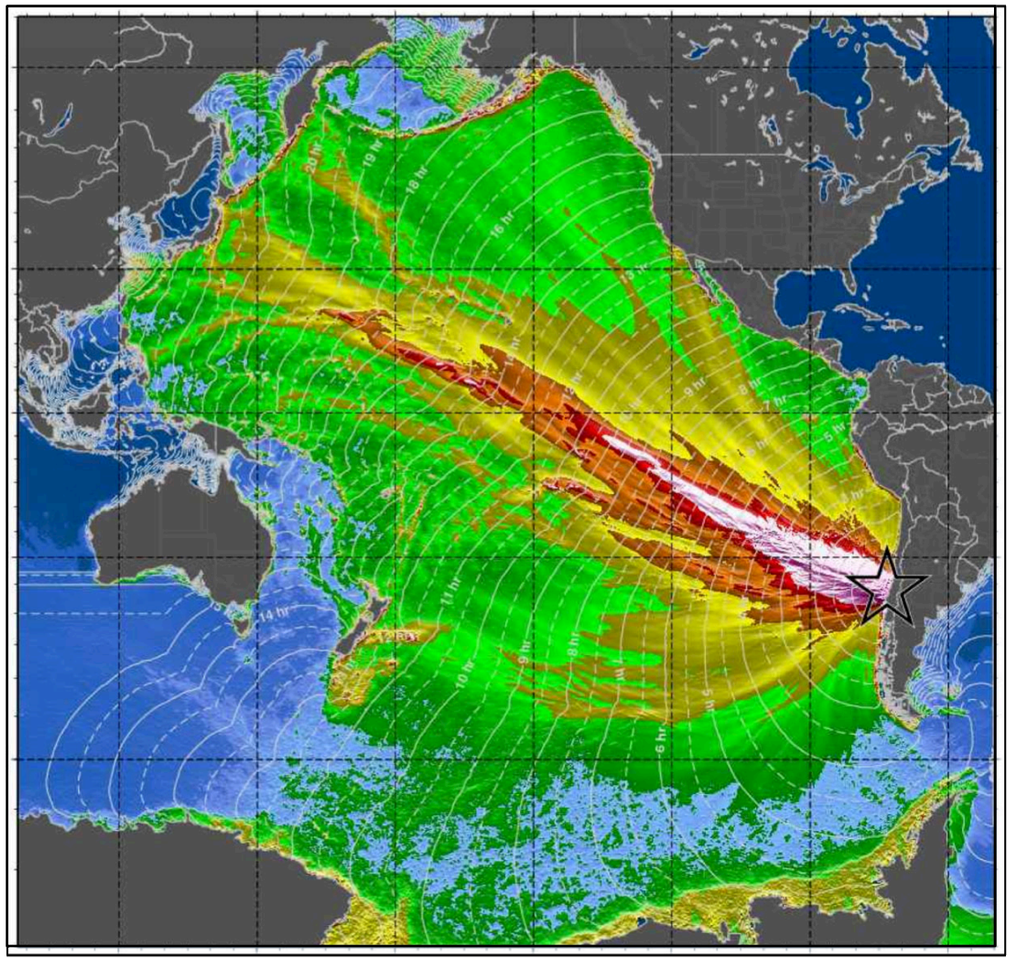
- For earthquakes likely to produce only a locally hazardous tsunami, just a small area around the epicenter is modelled because the tsunami is not likely to be a hazard further away.
- A higher resolution is used to sufficiently model shorter tsunami wavelengths produced by the smaller area of seafloor that is displaced.

RIFT Forecast Model – Initial Domain for Big Events



- For large earthquakes likely to produce hazardous tsunami waves far from the source, a limited area around the epicenter is initially modelled for speed.
- This result takes less than a minute to compute and is used to most quickly inform the nearest coasts likely to be impacted soonest with the largest waves.

RIFT Forecast Model – Full Domain for Big Events



- After the initial limited-domain forecast is made, the entire Pacific is modelled.
- This can take up to 15 minutes to compute.
- Once complete the results are disseminated to inform coasts located far from the source about their potential impacts.

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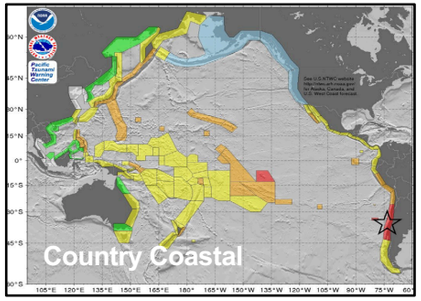
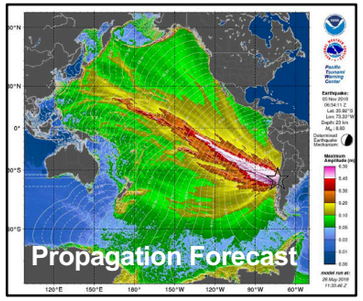
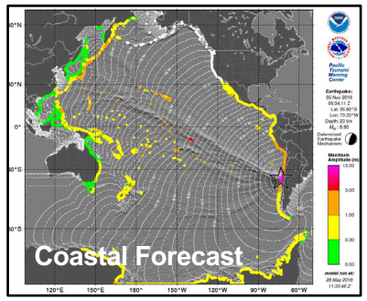
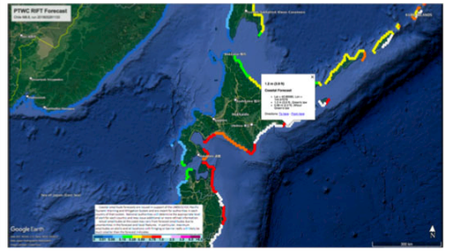






Forecast KMZ



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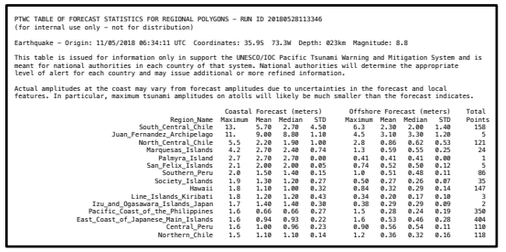

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PUBLIC TEXT MESSAGE

Text Message - Initial

ZCZC
WEPA40 PHEB 050640
TSUPAC

TSUNAMI MESSAGE NUMBER 1
NWS PACIFIC TSUNAMI WARNING CENTER HONOLULU HI
0640 UTC MON NOV 5 2018

... PTWC TSUNAMI THREAT MESSAGE ...

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****

THIS MESSAGE IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC PACIFIC TSUNAMI WARNING AND MITIGATION SYSTEM AND IS MEANT FOR NATIONAL AUTHORITIES IN EACH COUNTRY OF THAT SYSTEM.

NATIONAL AUTHORITIES WILL DETERMINE THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY AND MAY ISSUE ADDITIONAL OR MORE REFINED INFORMATION.

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****

PRELIMINARY EARTHQUAKE PARAMETERS
---

* MAGNITUDE 8.5
* ORIGIN TIME 0634 UTC NOV 5 2018
* COORDINATES 36.1 SOUTH 72.9 WEST
* DEPTH 23 KM / 14 MILES
* LOCATION NEAR THE COAST OF CENTRAL CHILE

EVALUATION
---

* AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.5 OCCURRED NEAR THE COAST OF CENTRAL CHILE AT 0634 UTC ON MONDAY NOVEMBER 5 2018.

* BASED ON THE PRELIMINARY EARTHQUAKE PARAMETERS... WIDESPREAD HAZARDOUS TSUNAMI WAVES ARE POSSIBLE.

TSUNAMI THREAT FORECAST
---

* HAZARDOUS TSUNAMI WAVES FROM THIS EARTHQUAKE ARE POSSIBLE WITHIN THE NEXT THREE HOURS ALONG SOME COASTS OF

CHILE AND PERU

RECOMMENDED ACTIONS
---

* GOVERNMENT AGENCIES RESPONSIBLE FOR THREATENED COASTAL AREAS SHOULD TAKE ACTION TO INFORM AND INSTRUCT ANY COASTAL POPULATIONS AT RISK IN ACCORDANCE WITH THEIR OWN EVALUATION... PROCEDURES AND THE LEVEL OF THREAT.

* PERSONS LOCATED IN THRE
FOR INFORMATION AND FOLL
LOCAL AUTHORITIES.

ESTIMATED TIMES OF ARRIVAL
---

* ESTIMATED TIMES OF ARRIV
FOR PLACES WITH A POTENT
TIMES MAY DIFFER AND THE
LARGEST. A TSUNAMI IS A
WAVES CAN BE FIVE MINUTE

REGION	LOCATI			
CHILE	TALCAHUANO	36.7S	73.1W	0710 11/05
	VALPARAISO	33.0S	71.6W	0719 11/05
	JUAN FERNANDEZ	33.6S	78.8W	0734 11/05
	COQUIMBO	29.9S	71.4W	0740 11/05
	CORRAL	39.8S	73.5W	0743 11/05
	CALDERA	27.1S	70.8W	0800 11/05
	SAN FELIX	26.3S	80.1W	0825 11/05
	ANTOFAGASTA	23.3S	70.4W	0825 11/05
	IQUIQ			
	GOLFO			
	ARICA			
PERU	MOLLEN			
	SAN JU			

POTENTIAL IMPACTS
---

* A TSUNAMI IS A SERIES OF
CAN VARY FROM 5 MINUTES
FOR MANY HOURS OR LONGER

* IMPACTS CAN VARY SIGNIFI
THE NEXT DUE TO LOCAL BATHYMETRY AND THE SHAPE AND ELEVATION OF THE SHORELINE.

* IMPACTS CAN ALSO VARY DEPENDING UPON THE STATE OF THE TIDE AT THE TIME OF THE MAXIMUM TSUNAMI WAVES.

* PERSONS CAUGHT IN THE WATER OF A TSUNAMI MAY DROWN... BE CRUSHED BY DEBRIS IN THE WATER... OR BE SWEPT OUT TO SEA.

NEXT UPDATE AND ADDITIONAL INFORMATION
---

* THE NEXT MESSAGE WILL BE ISSUED IN ONE HOUR... OR SOONER IF THE SITUATION WARRANTS.

* AUTHORITATIVE INFORMATION ABOUT THE EARTHQUAKE FROM THE U.S.

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PRELIMINARY EARTHQUAKE PARAMETERS
---

* MAGNITUDE 8.5
* ORIGIN TIME 0634 UTC NOV 5 2018
* COORDINATES 36.1 SOUTH 72.9 WEST
* DEPTH 23 KM / 14 MILES
* LOCATION NEAR THE COAST OF CENTRAL CHILE

TSUNAMI THREAT FORECAST
---

* HAZARDOUS TSUNAMI WAVES FROM THIS EARTHQUAKE ARE POSSIBLE WITHIN THE NEXT THREE HOURS ALONG SOME COASTS OF

CHILE AND PERU

Text Message - Initial

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ZCZC
WEPA40 PHEB 050640
TSUPAC

TSUNAMI MESSAGE NUMBER 1
NWS PACIFIC TSUNAMI WARNING CENTER HONOLULU HI
0640 UTC MON NOV 5 2018

... PTWC TSUNAMI THREAT MESSAGE ...


**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****

 THIS MESSAGE IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE
 UNESCO/IOC PACIFIC TSUNAMI WARNING AND MITIGATION SYSTEM AND IS
 MEANT FOR NATIONAL AUTHORITIES IN EACH COUNTRY OF THAT SYSTEM.

 NATIONAL AUTHORITIES WILL DETERMINE THE APPROPRIATE LEVEL OF
 ALERT FOR EACH COUNTRY AND MAY ISSUE ADDITIONAL OR MORE REFINED
 INFORMATION.

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****


PRELIMINARY EARTHQUAKE PARAMETERS
---------------------------------

  * MAGNITUDE      8.5
  * ORIGIN TIME    0634 UTC NOV 5 2018
  * COORDINATES    36.1 SOUTH  72.9 WEST
  * DEPTH          23 KM / 14 MILES
  * LOCATION       NEAR THE COAST OF CENTRAL CHILE


EVALUATION
----------

  * AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.5 OCCURRED
    NEAR THE COAST OF CENTRAL CHILE AT 0634 UTC ON MONDAY
    NOVEMBER 5 2018.

  * BASED ON THE PRELIMINARY EARTHQUAKE PARAMETERS... WIDESPREAD
    HAZARDOUS TSUNAMI WAVES ARE POSSIBLE.


TSUNAMI THREAT FORECAST
-----------------------

  * HAZARDOUS TSUNAMI WAVES FROM THIS EARTHQUAKE ARE POSSIBLE
    WITHIN THE NEXT THREE HOURS ALONG SOME COASTS OF

      CHILE AND PERU
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RECOMMENDED ACTIONS
-------------------

  * GOVERNMENT AGENCIES RESPONSIBLE FOR THREATENED COASTAL AREAS
    SHOULD TAKE ACTION TO INFORM AND INSTRUCT ANY COASTAL
    POPULATIONS AT RISK IN ACCORDANCE WITH THEIR OWN
    EVALUATION... PROCEDURES AND THE LEVEL OF THREAT.

  * PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD STAY ALERT
    FOR INFORMATION AND FOLLOW INSTRUCTIONS FROM NATIONAL AND
    LOCAL AUTHORITIES.


ESTIMATED TIMES OF ARRIVAL
--------------------------

  * ESTIMATED TIMES OF ARRIVAL -ETA- OF THE INITIAL TSUNAMI WAVE
    FOR PLACES WITH A POTENTIAL TSUNAMITHREAT. ACTUAL ARRIVAL
    TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE
    LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN
    WAVES CAN BE FIVE MINUTES TO ONE HOUR.

    REGION            LOCATION          COORDINATES     ETA(UTC)
    ------------------------------------------------------------
    CHILE             TALCAHUANO        36.7S  73.1W    0710 11/05
                      VALPARAISO        33.0S  71.6W    0719 11/05
                      JUAN FERNANDEZ    33.6S  78.8W    0734 11/05
                      COQUIMBO          29.9S  71.4W    0740 11/05
                      CORRAL            39.8S  73.5W    0743 11/05

    PERU


POTENTIAL IMPAC
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    THE NEXT DU
    OF THE SHOR

  * IMPACTS CAN
    THE TIME OF

  * PERSONS CAU
    CRUSHED BY
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NEXT UPDATE AND ADDITIONAL INFORMATION
--------------------------------------

  * THE NEXT MESSAGE WILL BE ISSUED IN ONE HOUR... OR SOONER IF
    THE SITUATION WARRANTS.

  * AUTHORITATIVE INFORMATION ABOUT THE EARTHQUAKE FROM THE U.S.
    GEOLOGICAL SURVEY CAN BE FOUND ON THE INTERNET AT
    EARTHQUAKE.USGS.GOV.

  * FURTHER INFORMATION ABOUT THIS EVENT MAY BE FOUND AT
    WWW.TSUNAMI.GOV.

  * COASTAL REGIONS OF HAWAII... AMERICAN SAMOA... GUAM... AND
    CNMI SHOULD REFER TO PACIFIC TSUNAMI WARNING CENTER MESSAGES
    SPECIFICALLY FOR THOSE PLACES THAT CAN BE FOUND AT
    WWW.TSUNAMI.GOV.

  * COASTAL REGIONS OF CALIFORNIA... OREGON... WASHINGTON...
    BRITISH COLUMBIA AND ALASKA SHOULD ONLY REFER TO U.S.
    NATIONAL TSUNAMI WARNING CENTER MESSAGES THAT CAN BE FOUND
    AT WWW.TSUNAMI.GOV.

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NNNN
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ESTIMATED TIMES OF ARRIVAL

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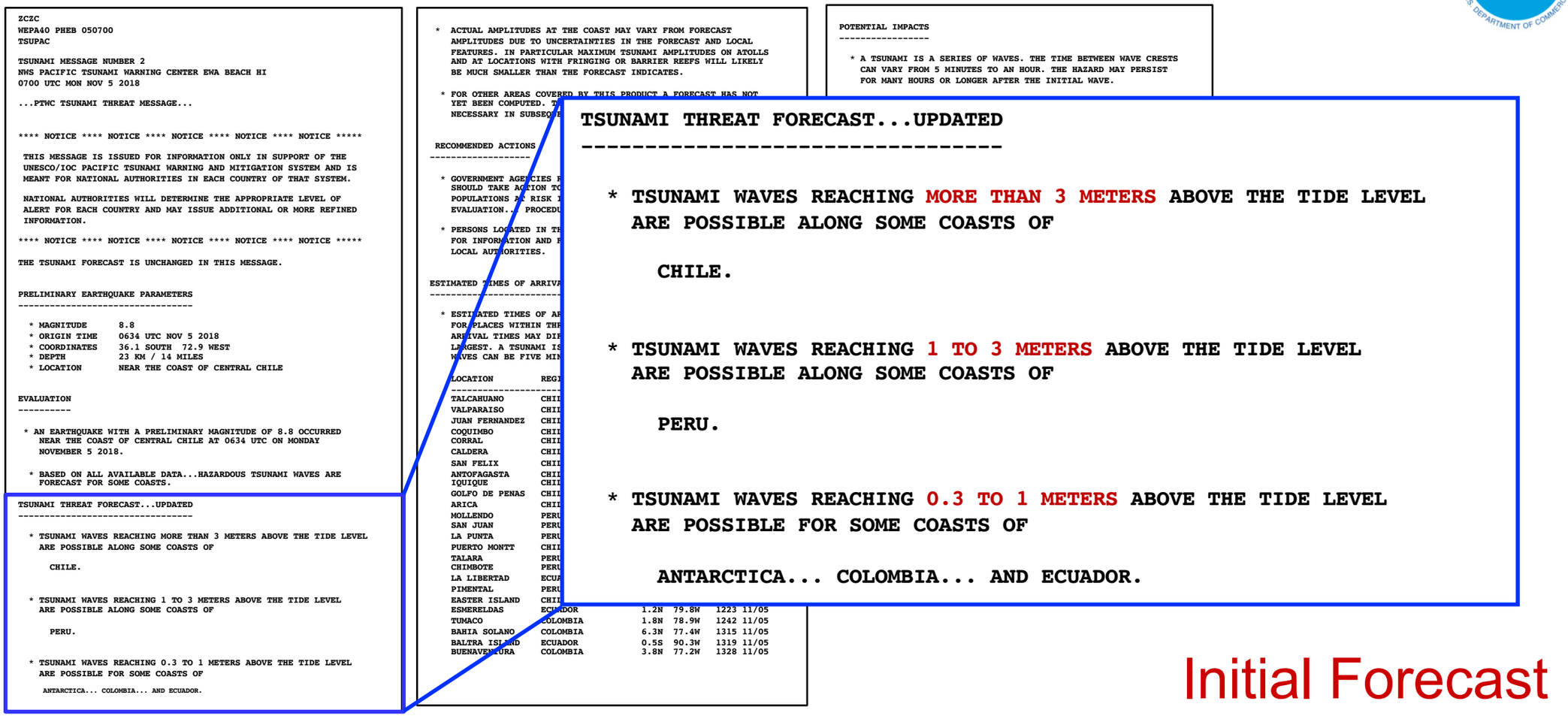
* ESTIMATED TIMES OF ARRIVAL -ETA- OF THE INITIAL TSUNAMI WAVE FOR PLACES WITH A POTENTIAL TSUNAMI THREAT. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN WAVES CAN BE FIVE MINUTES TO ONE HOUR.

REGION	LOCATION	COORDINATES	ETA(UTC)
CHILE	TALCAHUANO	36.7S 73.1W	0710 11/05
	VALPARAISO	33.0S 71.6W	0719 11/05

Text Message: Country Coastal Forecast summary



ZCZC
WEPA40 PHEB 050700
TSUPAC

TSUNAMI MESSAGE NUMBER 2
NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI
0700 UTC MON NOV 5 2018

...PTWC TSUNAMI THREAT MESSAGE...

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****

THIS MESSAGE IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC PACIFIC TSUNAMI WARNING AND MITIGATION SYSTEM AND IS MEANT FOR NATIONAL AUTHORITIES IN EACH COUNTRY OF THAT SYSTEM.

NATIONAL AUTHORITIES WILL DETERMINE THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY AND MAY ISSUE ADDITIONAL OR MORE REFINED INFORMATION.

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****

THE TSUNAMI FORECAST IS UNCHANGED IN THIS MESSAGE.

PRELIMINARY EARTHQUAKE PARAMETERS

* MAGNITUDE 8.8
* ORIGIN TIME 0634 UTC NOV 5 2018
* COORDINATES 36.1 SOUTH 72.9 WEST
* DEPTH 23 KM / 14 MILES
* LOCATION NEAR THE COAST OF CENTRAL CHILE

EVALUATION

* AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.8 OCCURRED NEAR THE COAST OF CENTRAL CHILE AT 0634 UTC ON MONDAY NOVEMBER 5 2018.
* BASED ON ALL AVAILABLE DATA...HAZARDOUS TSUNAMI WAVES ARE FORECAST FOR SOME COASTS.

TSUNAMI THREAT FORECAST...UPDATED

* TSUNAMI WAVES REACHING MORE THAN 3 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE ALONG SOME COASTS OF

  CHILE.

* TSUNAMI WAVES REACHING 1 TO 3 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE ALONG SOME COASTS OF

  PERU.

* TSUNAMI WAVES REACHING 0.3 TO 1 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE FOR SOME COASTS OF

  ANTARCTICA... COLOMBIA... AND ECUADOR.

* ACTUAL AMPLITUDES AT THE COAST MAY VARY FROM FORECAST AMPLITUDES DUE TO UNCERTAINTIES IN THE FORECAST AND LOCAL FEATURES. IN PARTICULAR MAXIMUM TSUNAMI AMPLITUDES ON ATOLLS AND AT LOCATIONS WITH FRINGING OR BARRIER REEFS WILL LIKELY BE MUCH SMALLER THAN THE FORECAST INDICATES.

* FOR OTHER AREAS COVERED BY THIS PRODUCT A FORECAST HAS NOT YET BEEN COMPUTED. T
NECESSARY IN SUBSEQ

RECOMMENDED ACTIONS

* GOVERNMENT AGE
SHOULD TAKE ACTION TO
POPULATIONS AT RISK
EVALUATION... PROCEDU

* PERSONS LOCATED IN TH
FOR INFORMATION AND
LOCAL AUTHORITIES.

ESTIMATED TIMES OF ARRIVA

* ESTIMATED TIMES OF AR
FOR PLACES WITHIN THE
ARRIVAL TIMES MAY DIF
LARGEST. A TSUNAMI IS
WAVES CAN BE FIVE MIN

LOCATION	REGI			
TALCAHUANO	CHIL			
VALPARAISO	CHIL			
JUAN FERNANDEZ	CHIL			
COQUIMBO	CHIL			
CORRAL	CHIL			
CALDERA	CHIL			
SAN FELIX	CHIL			
ANTOFAGASTA	CHIL			
IQUIQUE	CHIL			
GOLFO DE PENAS	CHIL			
ARICA	CHIL			
MOLLENDO	PERU			
SAN JUAN	PERU			
LA PUNTA	PERU			
PUERTO MONTT	CHIL			
TALARA	PERU			
CHIMBOTE	PERU			
LA LIBERTAD	ECUA			
PIMENTAL	PERU			
EASTER ISLAND	CHIL			
ESMERELDAS	ECUADOR	1.2N	79.8W	1223 11/05
TUMACO	COLOMBIA	1.8N	78.9W	1242 11/05
BAHIA SOLANO	COLOMBIA	6.3N	77.4W	1315 11/05
BALTRA ISLAND	ECUADOR	0.5S	90.3W	1319 11/05
BUENAVENTURA	COLOMBIA	3.8N	77.2W	1328 11/05

POTENTIAL IMPACTS

* A TSUNAMI IS A SERIES OF WAVES. THE TIME BETWEEN WAVE CRESTS CAN VARY FROM 5 MINUTES TO AN HOUR. THE HAZARD MAY PERSIST FOR MANY HOURS OR LONGER AFTER THE INITIAL WAVE.

TSUNAMI THREAT FORECAST...UPDATED

* TSUNAMI WAVES REACHING MORE THAN 3 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE ALONG SOME COASTS OF

  CHILE.

* TSUNAMI WAVES REACHING 1 TO 3 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE ALONG SOME COASTS OF

  PERU.

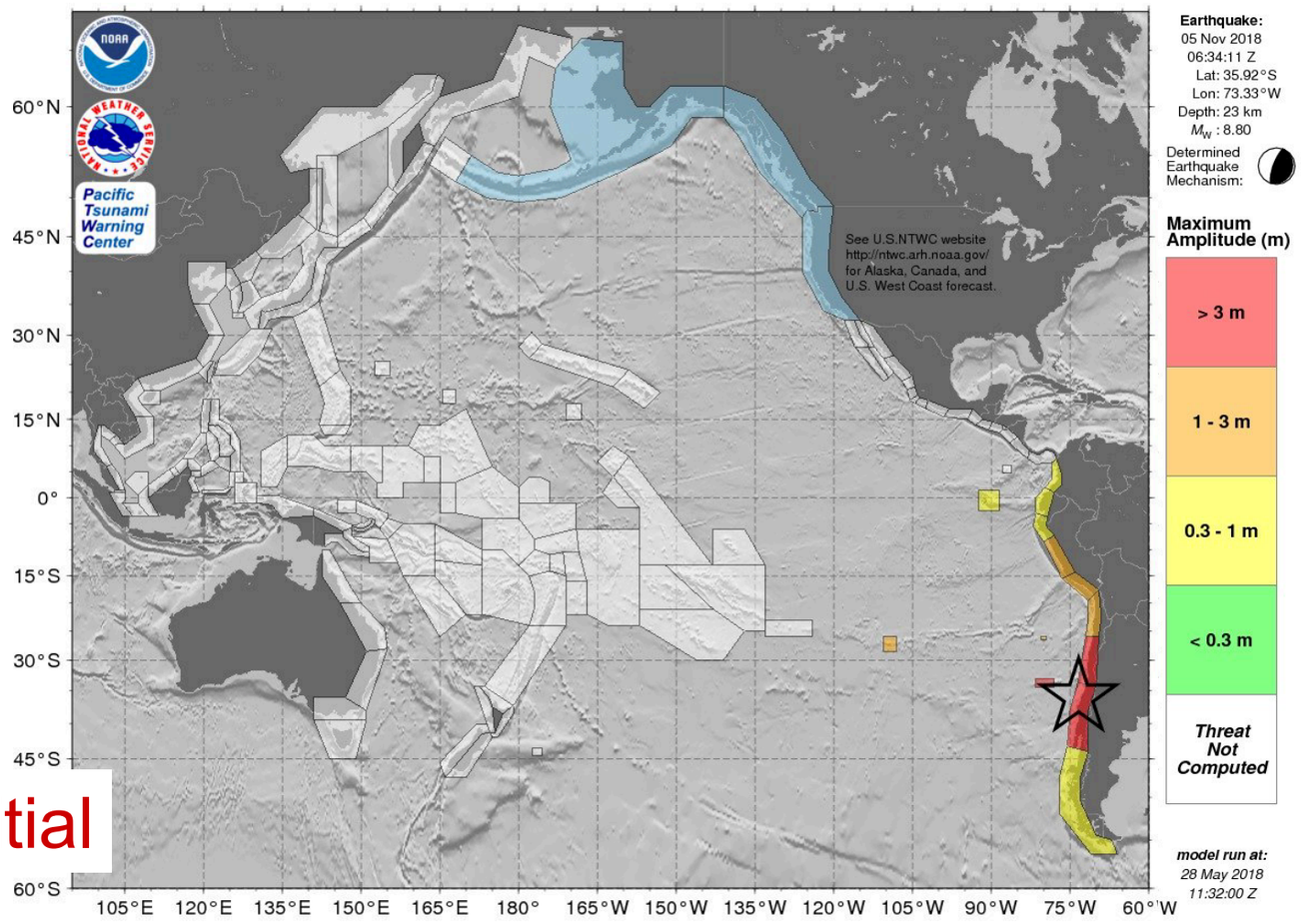
* TSUNAMI WAVES REACHING 0.3 TO 1 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE FOR SOME COASTS OF

  ANTARCTICA... COLOMBIA... AND ECUADOR.

Initial Forecast

GRAPHICAL PRODUCTS
Initial Forecast

Country Coastal Forecast: Polygon summary



Initial

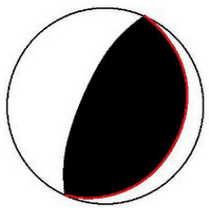
Maximum tsunami amplitude forecast for all coasts within each polygon as described by color scale.

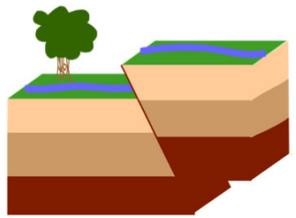
Each country is represented uniquely by one or more polygons.

Limited domain in this initial forecast for speed.

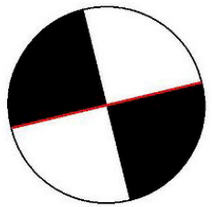
Fault Mechanisms: Beach Ball Representations

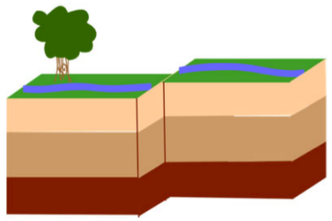
Thrust Fault



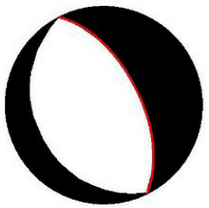


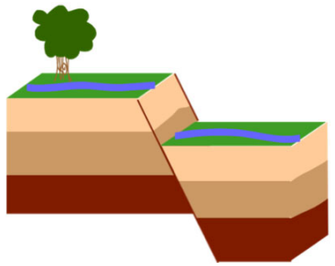
Strike-Slip Fault



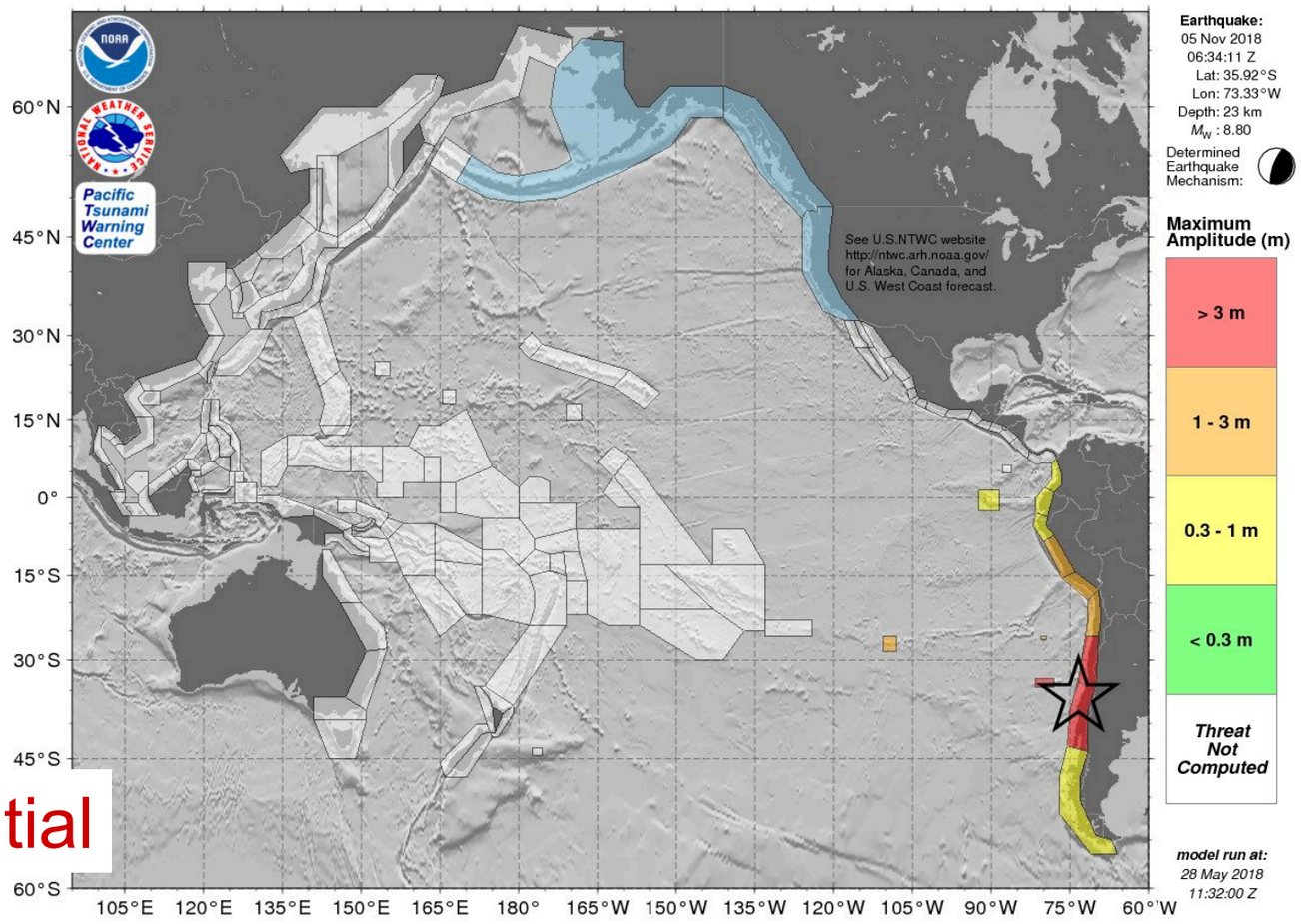


Normal Fault





Country Coastal Forecast: Polygon summary



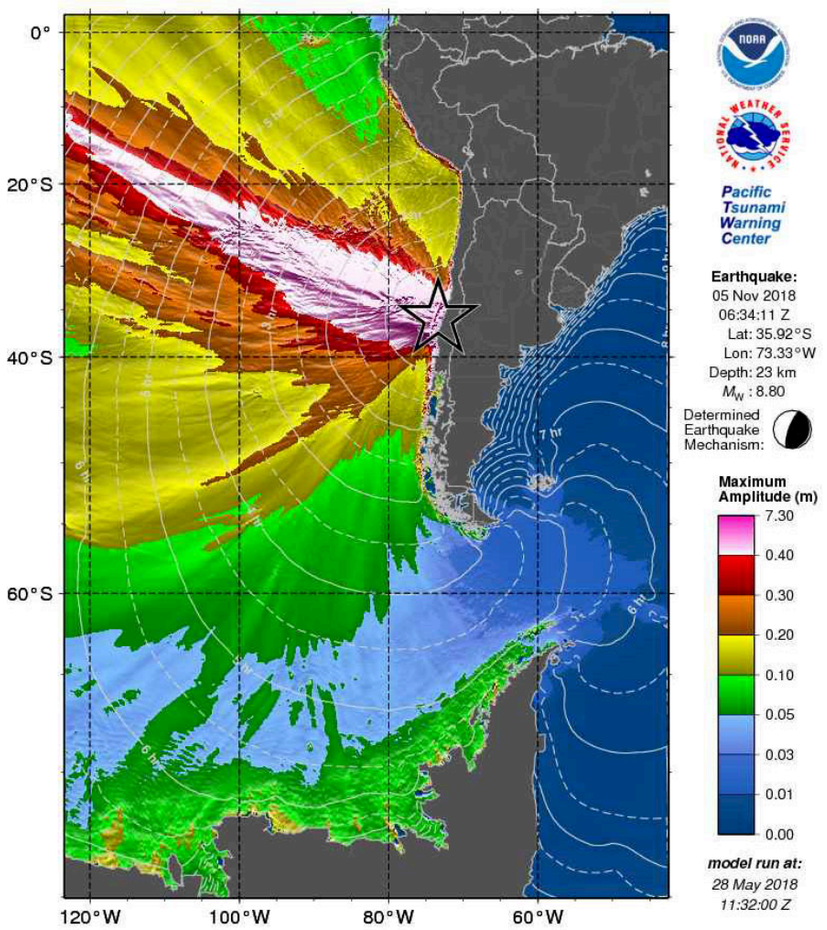
Initial

Maximum tsunami amplitude forecast for all coasts within each polygon as described by color scale.

Each country is represented uniquely by one or more polygons.

Limited domain in this initial forecast for speed.

Propagation Forecast: Directionality, Travel Times

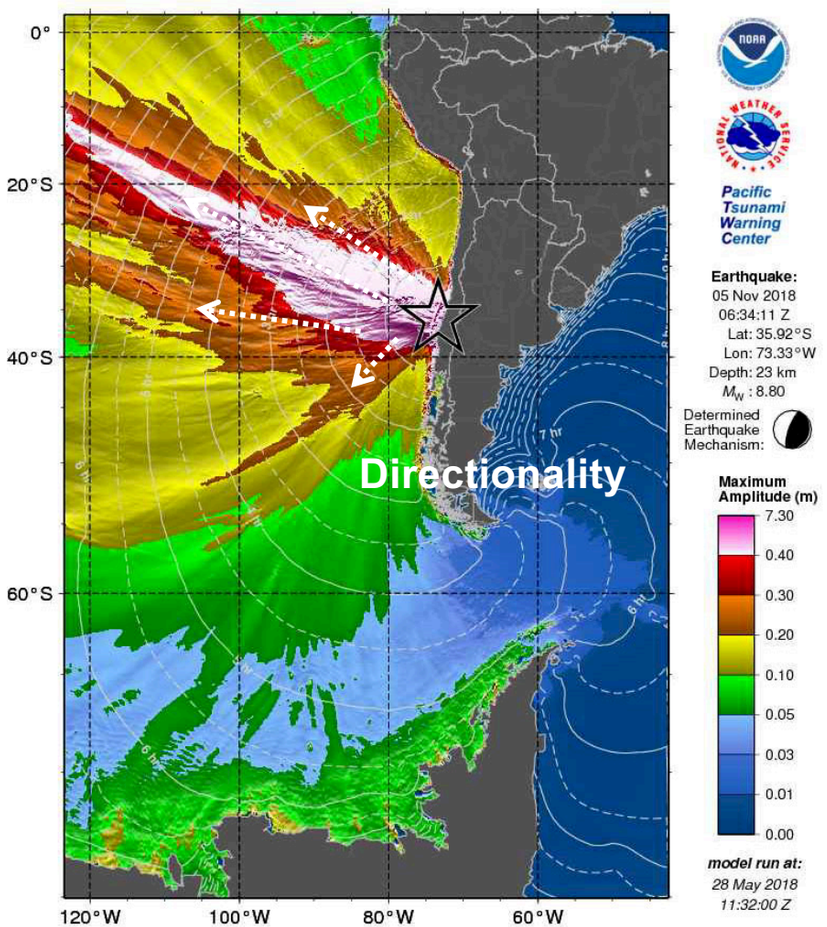


Initial

Tsunami amplitude forecast in deep water as described by the color scale.

Limited domain in this initial forecast for speed.

Propagation Forecast: Directionality, Travel Times

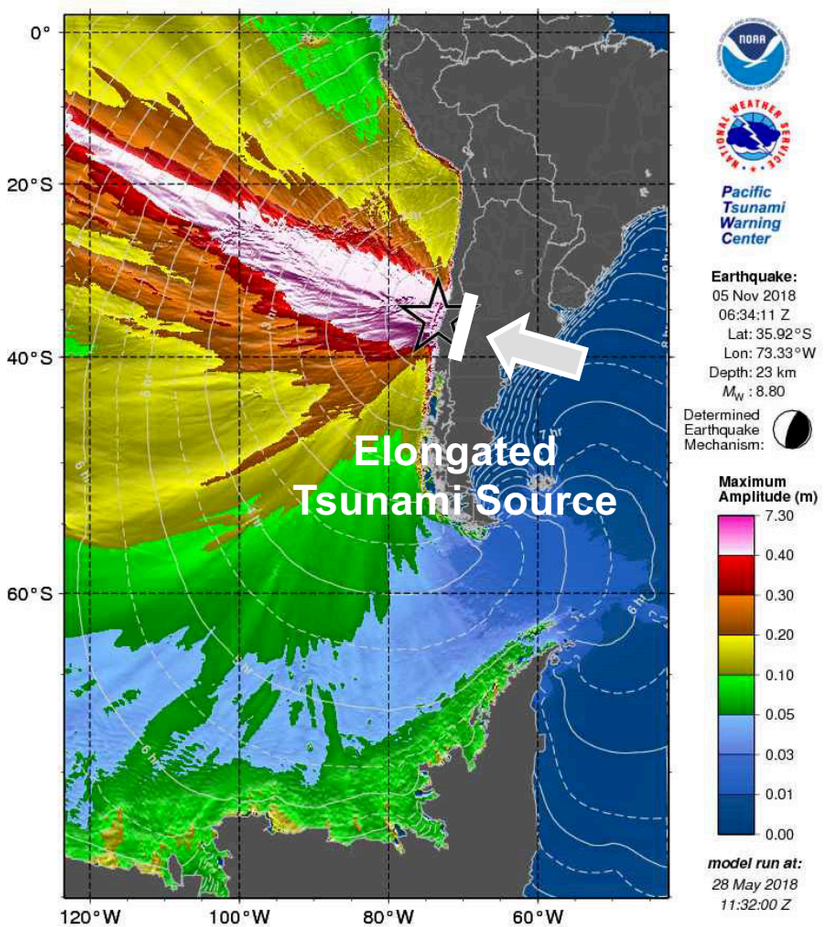


Tsunami amplitude forecast in deep water as described by the color scale.

Limited domain in this initial forecast for speed.

Initial

Propagation Forecast: Directionality, Travel Times



Initial

Tsunami amplitude forecast in deep water as described by the color scale.

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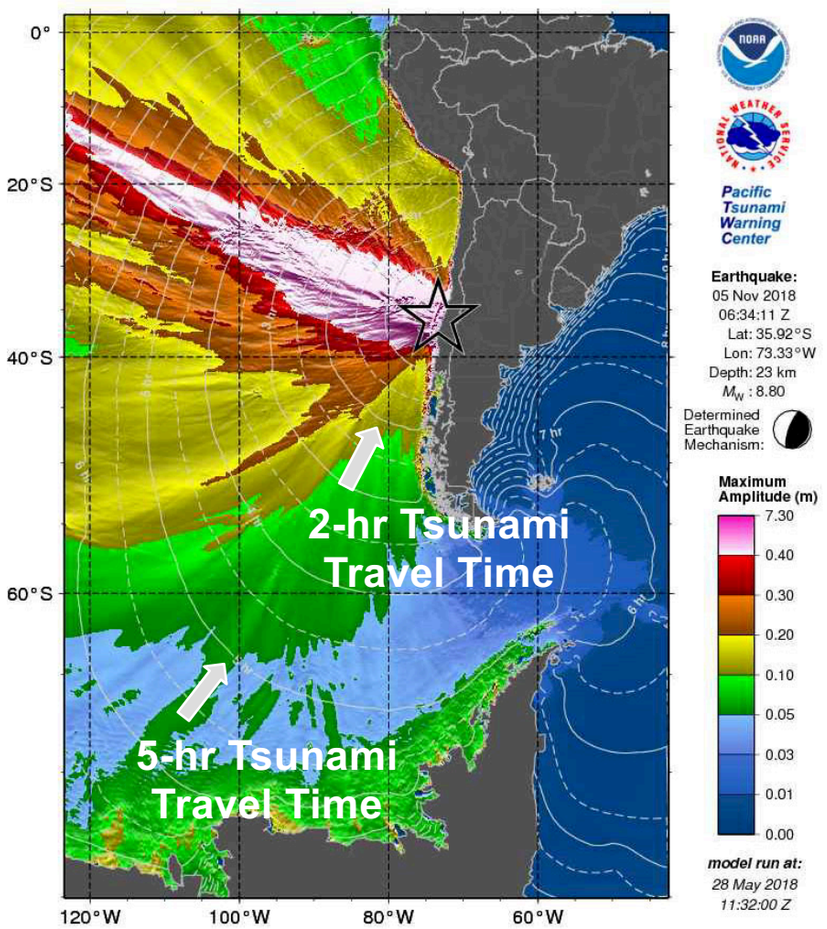
Propagation Forecast: Directionality, Travel Times

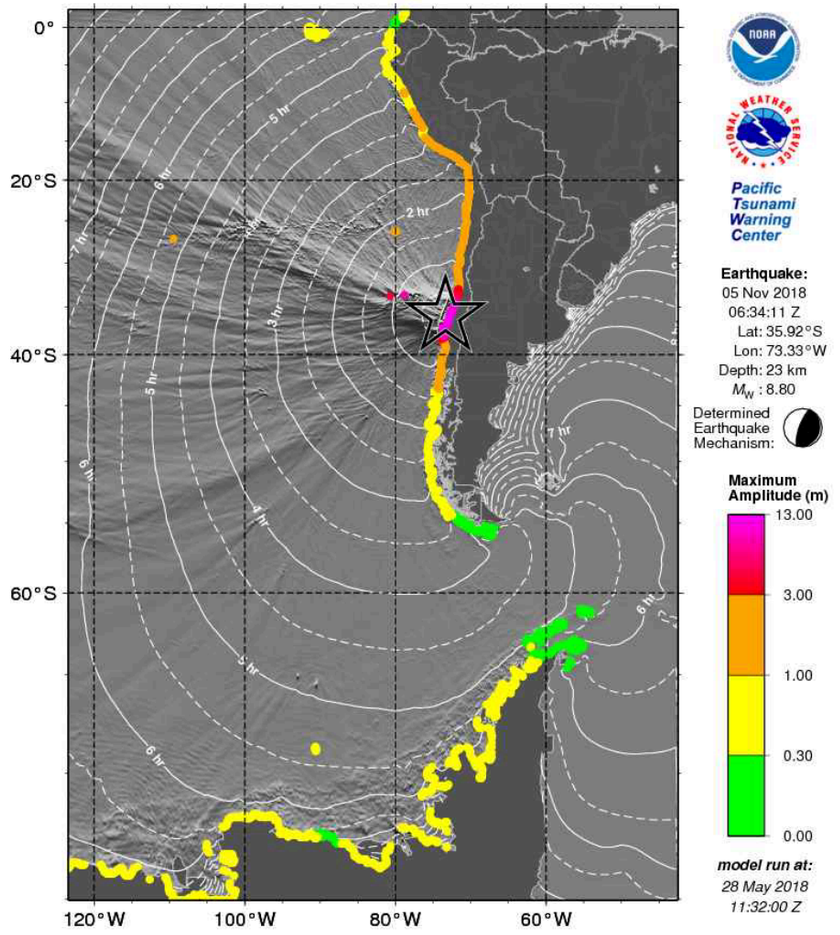


Initial

Tsunami amplitude forecast in deep water as described by the color scale.

Limited domain in this initial forecast for speed.

Coastal Forecast: Amplitude at each coastal point

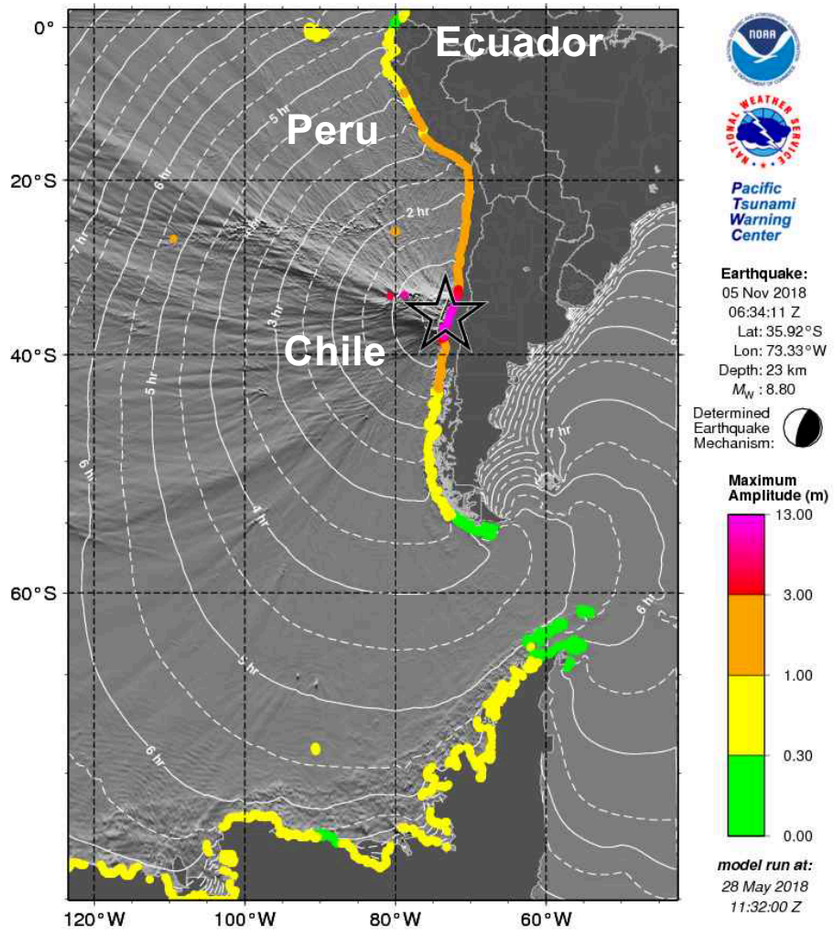


Initial

Tsunami amplitude forecast at coastal points as described by the color scale.

Limited domain in this initial forecast for speed.

Coastal Forecast: Amplitude at each coastal point



Initial

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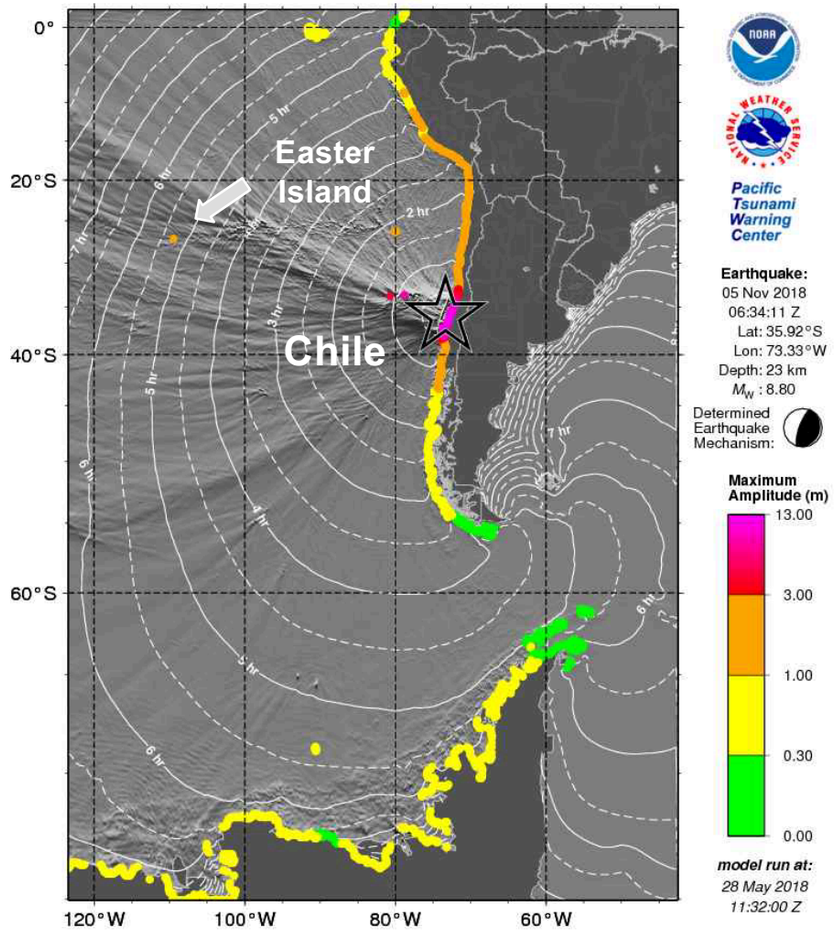
Limited domain in this initial forecast for speed.

Coastal Forecast: Amplitude at each coastal point



Initial

Tsunami amplitude forecast at coastal points as described by the color scale.

Limited domain in this initial forecast for speed.

RIFT Tsunami Model – Green's Law

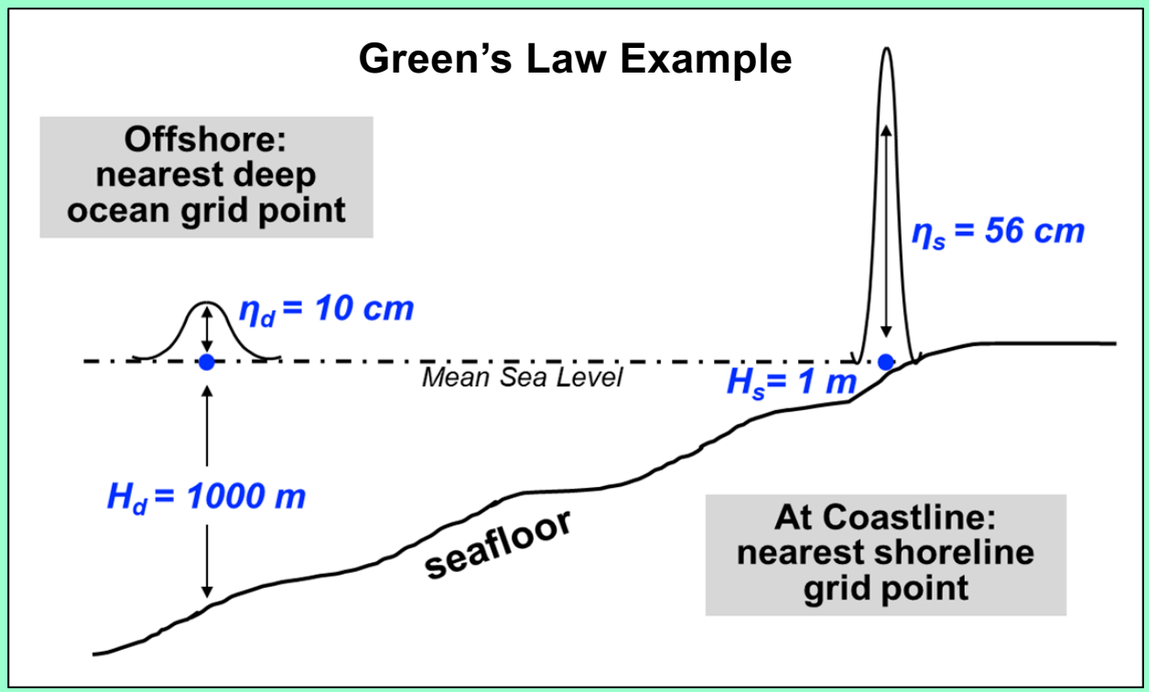
- **RIFT uses Green's Law to quickly estimate coastal amplitudes**
  - Modeling on fine-scale coastal grids takes too long, even on supercomputers
  - PTWC does not have access to fine-scale bathymetry for all coasts

Green's Law:

$$\eta_s \cong \eta_d \left(\frac{H_d}{H_s} \right)^{1/4}$$

η_s *wave amplitude at shoreline point*
η_d *wave amplitude at nearest deep ocean grid point*
H_d *water depth at nearest deep ocean grid point*
H_s *water depth at shoreline point*

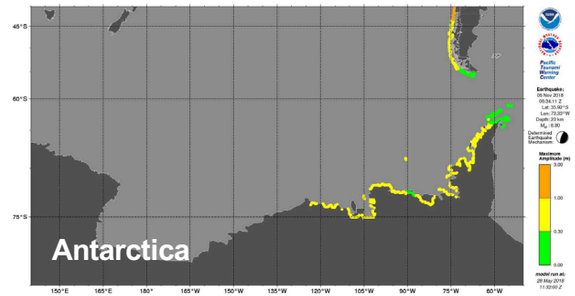
Offshore Tsunami Amplitude (10 cm)	Shoreline Amplitude from Green's Law (1 m water depth)	
Water Depth	**Amplitude**	**Amplification**
1000 m	56 cm	5.6
500 m	47 cm	4.7
100 m	32 cm	3.2
50 m	27 cm	2.7

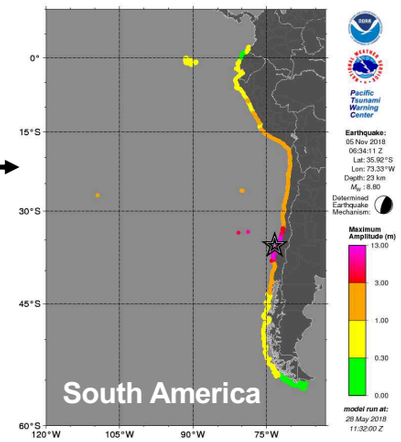


Coastal Forecast – Regional Maps, Initial

- Antarctica
- Bering Sea
- Central America
- French Polynesia
- Hawaii
- North America
- Northwest Pacific
- South America
- South Central Pacific
- South China Sea
- Southwest Pacific
- West Central Pacific

Only two regional plots due to the limited domain in this initial forecast

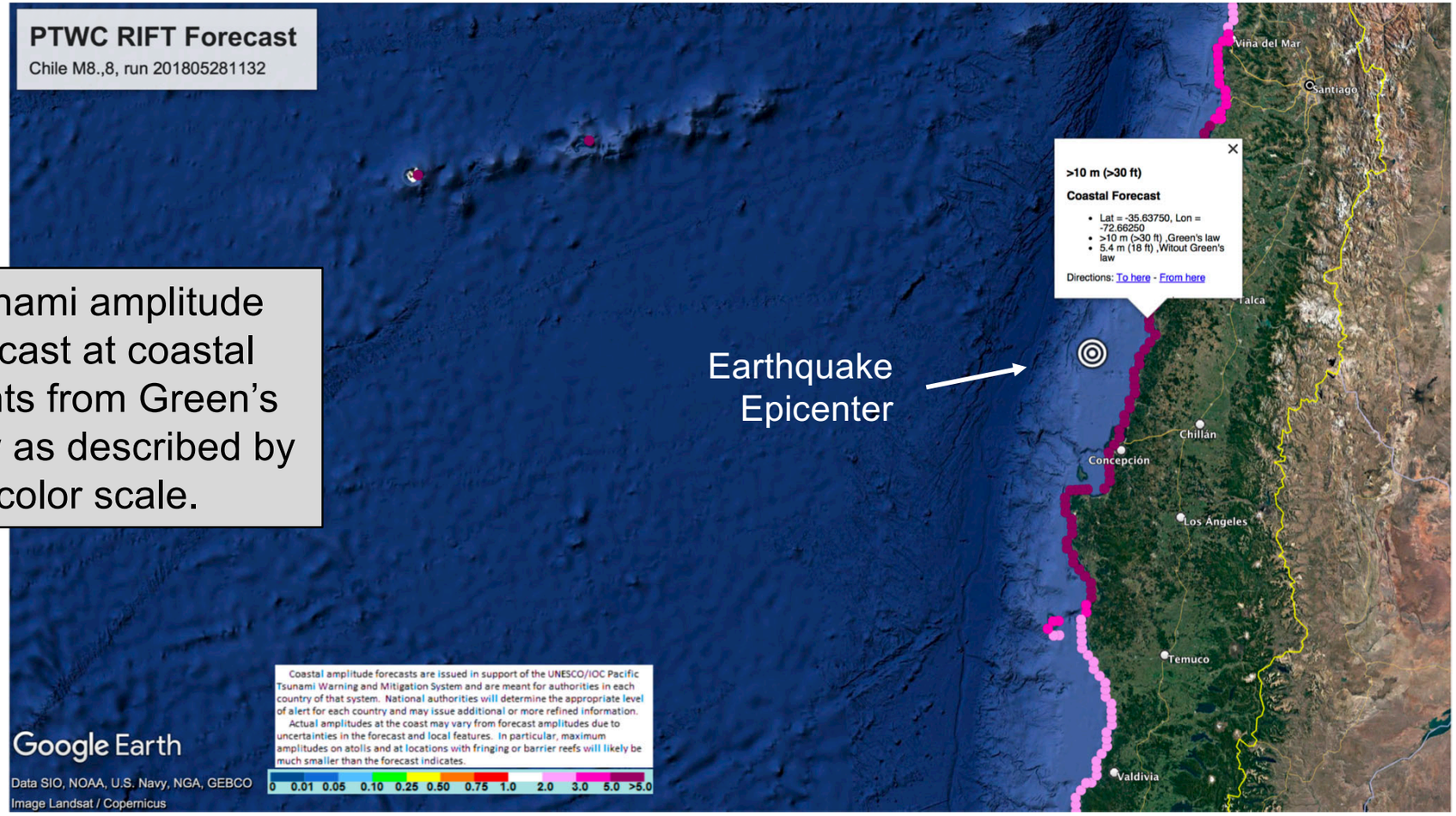




Initial

Forecast KMZ: Coastal (Green's Law), Offshore (no Green's Law)

Tsunami amplitude forecast at coastal points from Green's Law as described by the color scale.



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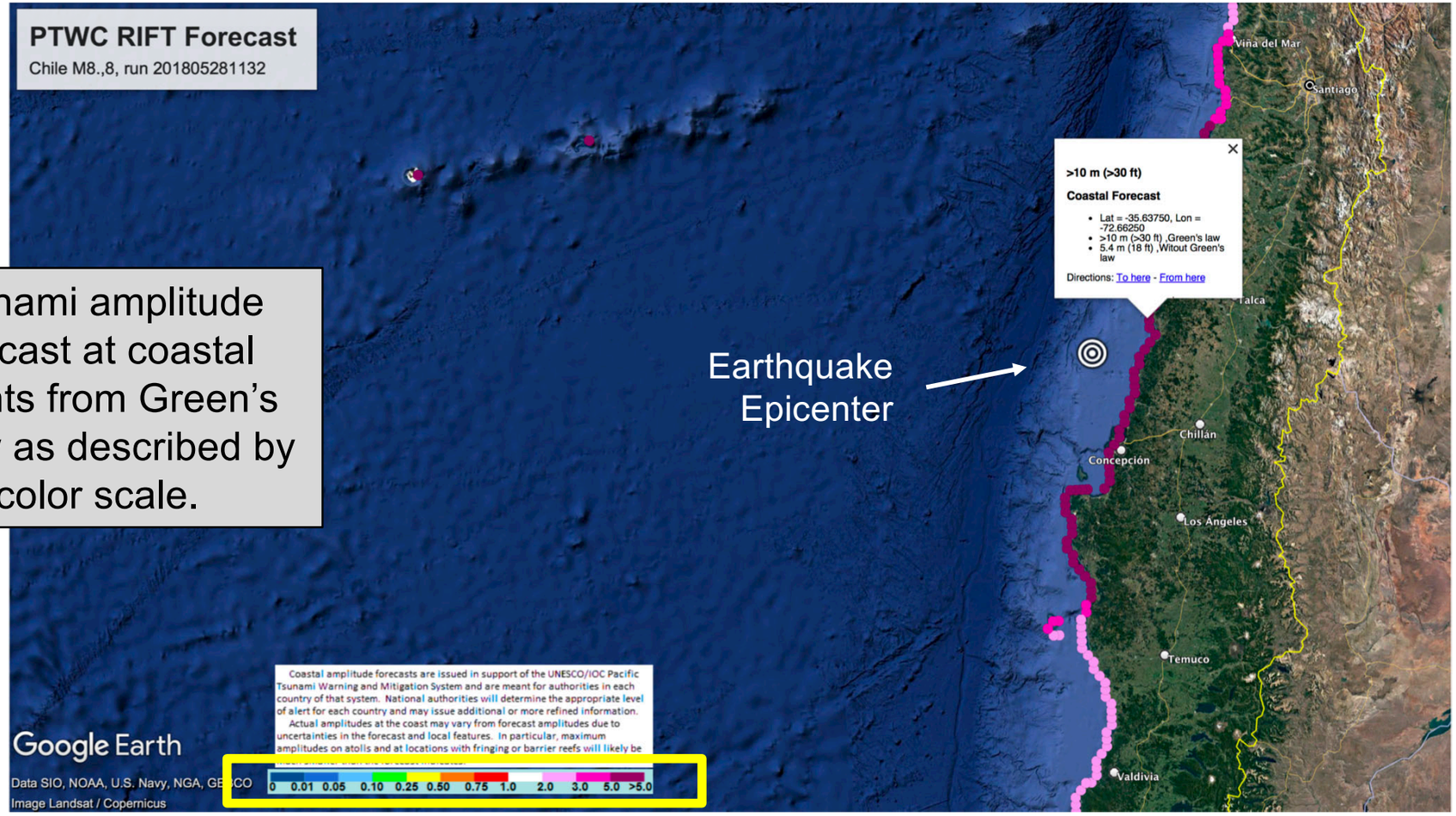

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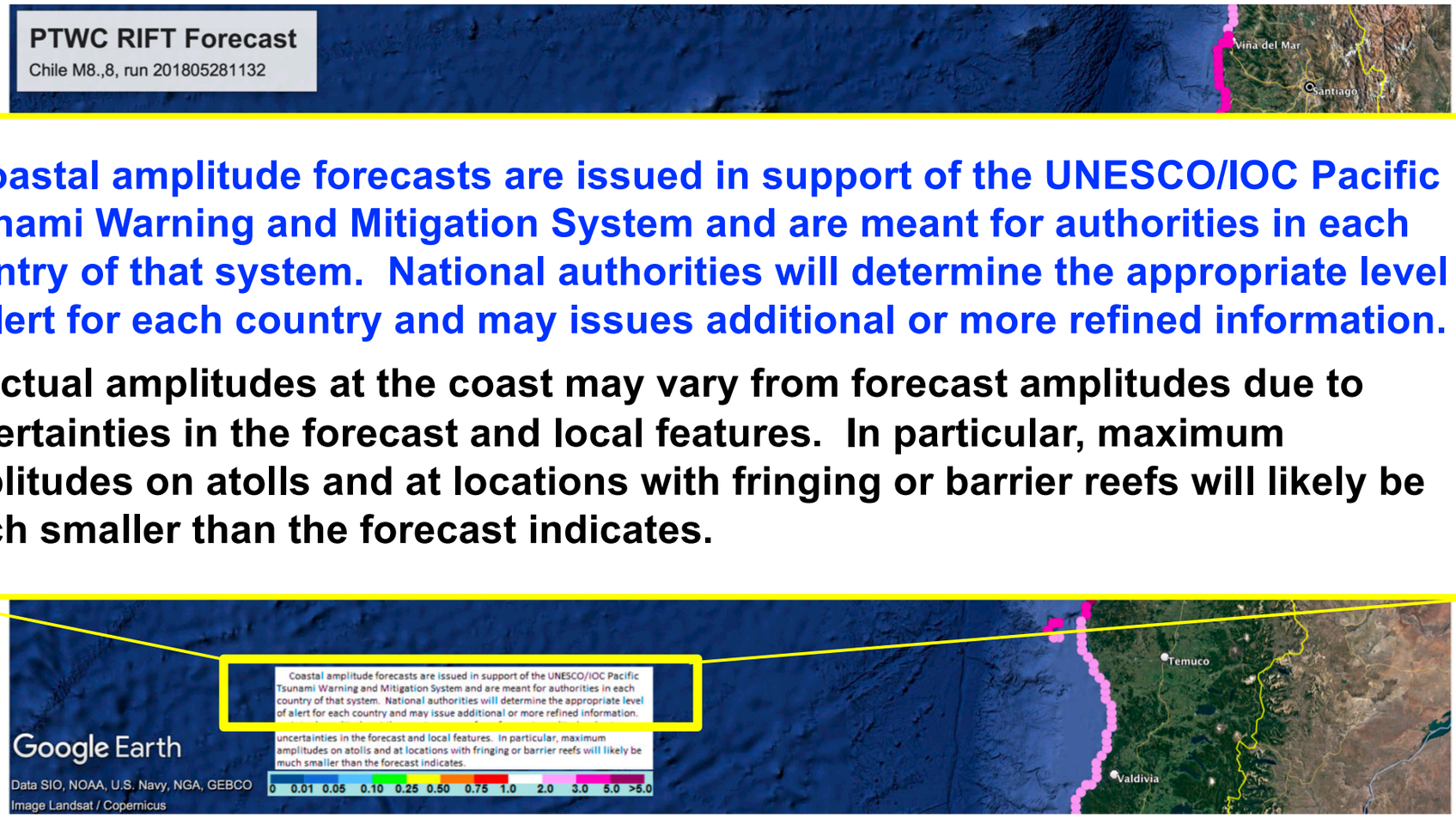
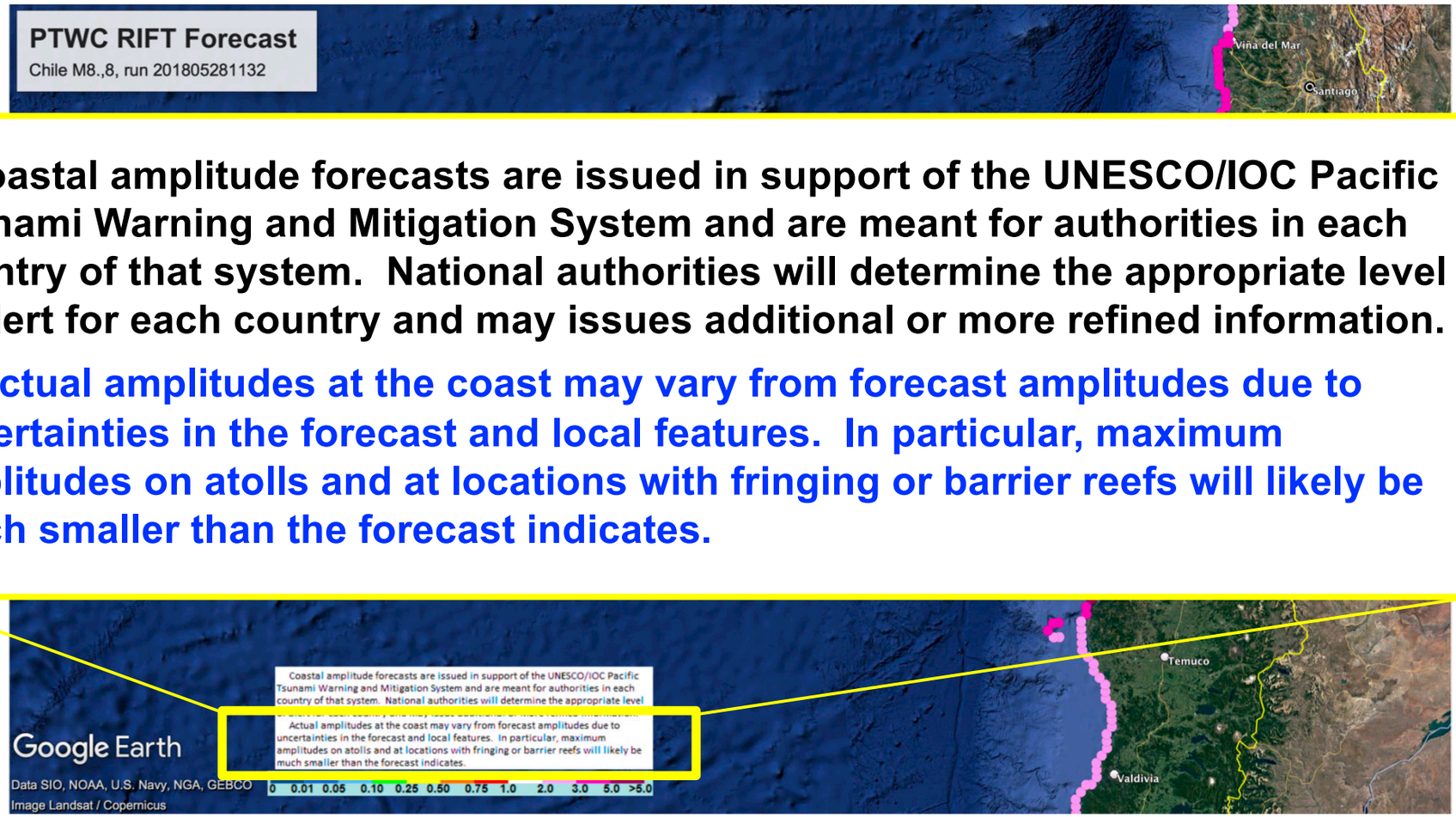


Coastal amplitude forecasts are issued in support of the UNESCO/IOC Pacific Tsunami Warning and Mitigation System and are meant for authorities in each country of that system. National authorities will determine the appropriate level of alert for each country and may issues additional or more refined information.

Actual amplitudes at the coast may vary from forecast amplitudes due to uncertainties in the forecast and local features. In particular, maximum amplitudes on atolls and at locations with fringing or barrier reefs will likely be much smaller than the forecast indicates.

Initial

Forecast KMZ: Coastal (Green's Law), Offshore (no Green's Law)



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Initial

Forecast Statistics Table: Forecast variability

PTWC TABLE OF FORECAST STATISTICS FOR REGIONAL POLYGONS - RUN ID 20180528113200
(for internal use only - not for distribution)

Earthquake - Origin: 11/05/2018 06:34:11 UTC Coordinates: 35.9S 73.3W Depth: 023km Magnitude: 8.8

This table is issued for information only in support the UNESCO/IOC Pacific Tsunami Warning and Mitigation System and is meant for national authorities in each country of that system. National authorities will determine the appropriate level of alert for each country and may issue additional or more refined information.

Actual amplitudes at the coast may vary from forecast amplitudes due to uncertainties in the forecast and local features. In particular, maximum tsunami amplitudes on atolls will likely be much smaller than the forecast indicates.

	Coastal Forecast (meters)				Offshore Forecast (meters)				Total
Region_Name	Maximum	Mean	Median	STD	Maximum	Mean	Median	STD	Points
South_Central_Chile	13.	5.60	2.90	4.40	7.3	2.20	1.90	1.40	161
Juan_Fernandez_Archipelago	10.	8.00	8.00	2.20	2.8	2.10	2.10	0.78	2
North_Central_Chile	5.2	2.10	1.70	0.95	2.6	0.86	0.64	0.58	124
San_Felix_Islands	2.3	2.20	2.20	0.10	0.75	0.51	0.39	0.16	5
Southern_Peru	1.9	1.50	1.50	0.12	0.77	0.46	0.45	0.08	82
Easter_Island	1.5	1.50	1.50	0.00	0.26	0.26	0.26	0.00	1
Northern_Chile	1.4	1.10	1.10	0.12	0.93	0.33	0.30	0.11	118
Central_Peru	1.3	0.99	0.99	0.18	0.73	0.47	0.45	0.12	110
Southern_Chile	0.99	0.48	0.39	0.27	0.80	0.22	0.17	0.16	382
Amundsen_Sea	0.92	0.49	0.41	0.15	0.42	0.11	0.10	0.05	367
Galapagos_Islands	0.90	0.65	0.64	0.11	0.33	0.17	0.15	0.06	93

Initial

Forecast Statistics Table: Forecast variability

PTWC TABLE OF FORECAST STATISTICS FOR REGIONAL POLYGONS - RUN ID 20180528113200
(for internal use only - not for distribution)

Earthquake - Origin: 11/05/2018 06:34:11 UTC Coordinates: 35.9S 73.3W Depth: 023km Magnitude: 8.8

This table is issued for information only in support the UNESCO/IOC Pacific Tsunami Warning and Mitigation System and is meant for national authorities in each country of that system. National authorities will determine the appropriate level of alert for each country and may issue additional or more refined information.

Actual amplitudes at the coast may vary from forecast amplitudes due to uncertainties in the forecast and local features. In particular, maximum tsunami amplitudes on atolls will likely be much smaller than the forecast indicates.

	Coastal Forecast (meters)				Offshore Forecast (meters)				Total
Region_Name	Maximum	Mean	Median	STD	Maximum	Mean	Median	STD	Points
South_Central_Chile	13.	5.60	2.90	4.40	7.3	2.20	1.90	1.40	161
Juan_Fernandez_Archipelago	10.	8.00	8.00	2.20	2.8	2.10	2.10	0.78	2
North_Central_Chile	5.2	2.10	1.70	0.95	2.6	0.86	0.64	0.58	124
San_Felix_Islands	2.3	2.20	2.20	0.10	0.75	0.51	0.39	0.16	5
Southern_Peru	1.9	1.50	1.50	0.12	0.77	0.46	0.45	0.08	82
Easter_Island	1.5	1.50	1.50	0.00	0.26	0.26	0.26	0.00	1
Northern_Chile	1.4	1.10	1.10	0.12	0.93	0.33	0.30	0.11	118
Central_Peru	1.3	0.99	0.99	0.18	0.73	0.47	0.45	0.12	110
Southern_Chile	0.99	0.48	0.39	0.27	0.80	0.22	0.17	0.16	382
Amundsen_Sea	0.92	0.49	0.41	0.15	0.42	0.11	0.10	0.05	367
Galapagos_Islands	0.90	0.65	0.64	0.11	0.33	0.17	0.15	0.06	93

Initial

Forecast Statistics Table: Forecast variability

PTWC TABLE OF FORECAST STATISTICS FOR REGIONAL POLYGONS - RUN ID 20180528113200
(for internal use only - not for distribution)

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North_Central_Chile	5.2	2.10	1.70	0.95	2.6	0.86	0.64	0.58	124
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Easter_Island	1.5	1.50	1.50	0.00	0.26	0.26	0.26	0.00	1
Northern_Chile	1.4	1.10	1.10	0.12	0.93	0.33	0.30	0.11	118
Central_Peru	1.3	0.99	0.99	0.18	0.73	0.47	0.45	0.12	110
Southern_Chile	0.99	0.48	0.39	0.27	0.80	0.22	0.17	0.16	382
Amundsen_Sea	0.92	0.49	0.41	0.15	0.42	0.11	0.10	0.05	367
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Forecast Statistics Table: Forecast variability

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Juan_Fernandez_Archipelago	10.	8.00	8.00	2.20	2.8	2.10	2.10	0.78	2
North_Central_Chile	5.2	2.10	1.70	0.95	2.6	0.86	0.64	0.58	124
San_Felix_Islands	2.3	2.20	2.20	0.10	0.75	0.51	0.39	0.16	5
Southern_Peru	1.9	1.50	1.50	0.12	0.77	0.46	0.45	0.08	82
Easter_Island	1.5	1.50	1.50	0.00	0.26	0.26	0.26	0.00	1
Northern_Chile	1.4	1.10	1.10	0.12	0.93	0.33	0.30	0.11	118
Central_Peru	1.3	0.99	0.99	0.18	0.73	0.47	0.45	0.12	110
Southern_Chile	0.99	0.48	0.39	0.27	0.80	0.22	0.17	0.16	382
Amundsen_Sea	0.92	0.49	0.41	0.15	0.42	0.11	0.10	0.05	367
Galapagos_Islands	0.90	0.65	0.64	0.11	0.33	0.17	0.15	0.06	93

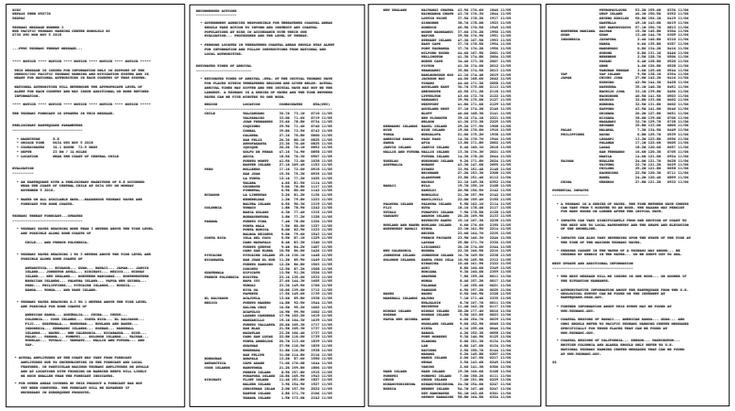
Initial

Pacific-wide Forecast

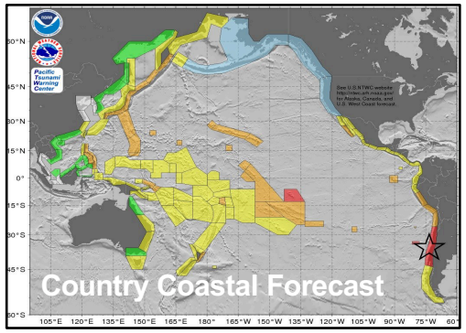
Pacific-wide Forecast

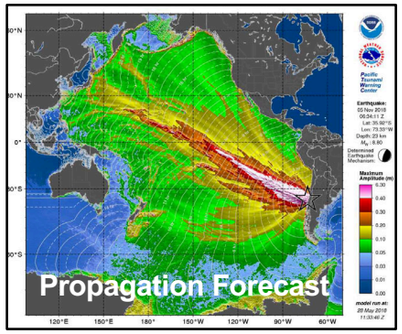
- For major tsunamis that can cause damage far from their source
- Issued about 20 to 30 minutes after initial regional forecast

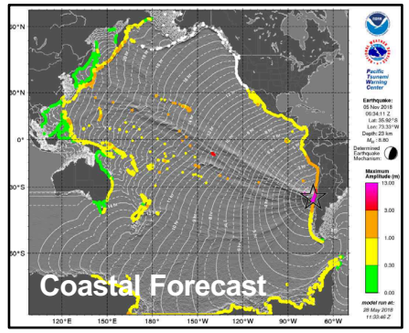
Public Text Product

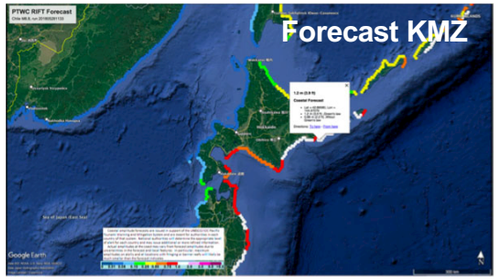


Private Graphical Products









Forecast Statistics

NS - RUN ID 20180528113346

ates: 35.9S 73.3W Depth: 023km Magnitude: 8.8

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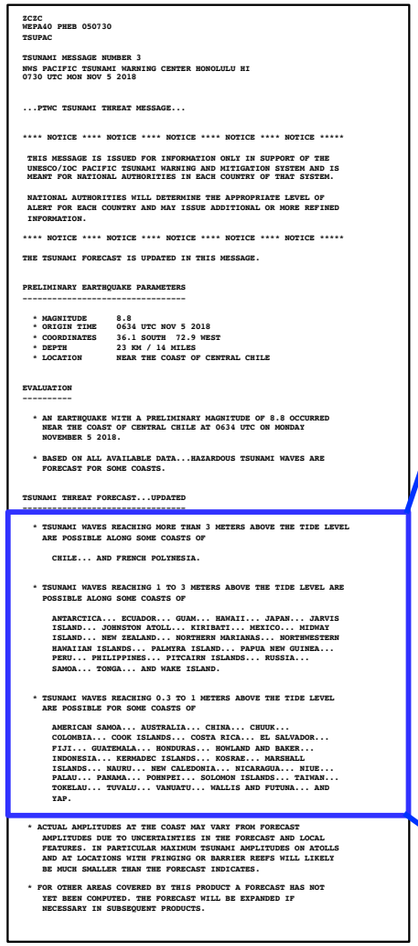
	Coastal Forecast (meters)				Offshore Forecast (meters)				Total
Region_Name	Maximum	Mean	Median	STD	Maximum	Mean	Median	STD	Points
South_Central_Chile	13.	5.70	2.70	4.50	6.3	2.30	2.00	1.40	158
Juan_Fernandez_Archipelago	11.	9.00	8.80	1.10	4.5	3.10	3.30	1.20	5
North_Central_Chile	5.5	2.20	1.90	1.00	2.8	0.86	0.62	0.53	121
Marquesas_Islands	4.2	2.70	2.40	0.74	1.3	0.59	0.55	0.25	24
Palmyra_Island	2.7	2.70	2.70	0.00	0.41	0.41	0.41	0.00	1
San_Felix_Islands	2.1	2.00	2.00	0.05	0.74	0.52	0.50	0.12	5
Southern_Peru	2.0	1.50	1.40	0.15	1.0	0.51	0.48	0.11	86
Society_Islands	1.9	1.30	1.20	0.27	0.50	0.27	0.26	0.07	35
Hawaii	1.8	1.10	1.00	0.32	0.84	0.32	0.29	0.14	147
Line_Islands_Kiribati	1.8	1.20	1.20	0.43	0.34	0.20	0.17	0.10	3
Izu_and_Ogasawara_Islands_Japan	1.7	1.40	1.40	0.30	0.38	0.29	0.29	0.09	2
Pacific_Coast_of_the_Philippines	1.6	0.66	0.66	0.27	1.5	0.28	0.24	0.19	350
East_Coast_of_Japanese_Main_Islands	1.6	0.94	0.93	0.22	1.6	0.53	0.46	0.28	404
Central_Peru	1.6	1.00	0.96	0.23	0.90	0.56	0.54	0.11	110
Northern_Chile	1.5	1.10	1.10	0.14	1.2	0.36	0.32	0.16	118

Text Message: Country Coastal Forecast summary



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ZCZC
WEPA40 PHEB 050730
TSUPAC

TSUNAMI MESSAGE NUMBER 3
NWS PACIFIC TSUNAMI WARNING CENTER HONOLULU HI
0730 UTC MON NOV 5 2018


...PTWC TSUNAMI THREAT MESSAGE...


**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****

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 UNESCO/IOC PACIFIC TSUNAMI WARNING AND MITIGATION SYSTEM AND IS
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 NATIONAL AUTHORITIES WILL DETERMINE THE APPROPRIATE LEVEL OF
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 INFORMATION.

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****

THE TSUNAMI FORECAST IS UPDATED IN THIS MESSAGE.


PRELIMINARY EARTHQUAKE PARAMETERS
---------------------------------

  * MAGNITUDE      8.8
  * ORIGIN TIME    0634 UTC NOV 5 2018
  * COORDINATES    36.1 SOUTH  72.9 WEST
  * DEPTH          23 KM / 14 MILES
  * LOCATION       NEAR THE COAST OF CENTRAL CHILE


EVALUATION
----------

  * AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.8 OCCURRED
    NEAR THE COAST OF CENTRAL CHILE AT 0634 UTC ON MONDAY
    NOVEMBER 5 2018.

  * BASED ON ALL AVAILABLE DATA...HAZARDOUS TSUNAMI WAVES ARE
    FORECAST FOR SOME COASTS.

TSUNAMI THREAT FORECAST...UPDATED
---------------------------------

  * TSUNAMI WAVES REACHING MORE THAN 3 METERS ABOVE THE TIDE LEVEL
    ARE POSSIBLE ALONG SOME COASTS OF

      CHILE... AND FRENCH POLYNESIA.

  * TSUNAMI WAVES REACHING 1 TO 3 METERS ABOVE THE TIDE LEVEL ARE
    POSSIBLE ALONG SOME COASTS OF

      ANTARCTICA... ECUADOR... GUAM... HAWAII... JAPAN... JARVIS
      ISLAND... JOHNSTON ATOLL... KIRIBATI... MEXICO... MIDWAY
      ISLAND... NEW ZEALAND... NORTHERN MARIANAS... NORTHWESTERN
      HAWAIIAN ISLANDS... PALMYRA ISLAND... PAPUA NEW GUINEA...
      PERU... PHILIPPINES... PITCAIRN ISLANDS... RUSSIA...
      SAMOA... TONGA... AND WAKE ISLAND.

  * TSUNAMI WAVES REACHING 0.3 TO 1 METERS ABOVE THE TIDE LEVEL
    ARE POSSIBLE FOR SOME COASTS OF

      AMERICAN SAMOA... AUSTRALIA... CHINA... CHUUK...
      COLOMBIA... COOK ISLANDS... COSTA RICA... EL SALVADOR...
      FIJI... GUATEMALA... HONDURAS... HOWLAND AND BAKER...
      INDONESIA... KERMADEC ISLANDS... KOSRAE... MARSHALL
      ISLANDS... NAURU... NEW CALEDONIA... NICARAGUA... NIUE...
      PALAU... PANAMA... POHNPEI... SOLOMON ISLANDS... TAIWAN...
      TOKELAU... TUVALU... VANUATU... WALLIS AND FUTUNA... AND
      YAP.

  * ACTUAL AMPLITUDES AT THE COAST MAY VARY FROM FORECAST
    AMPLITUDES DUE TO UNCERTAINTIES IN THE FORECAST AND LOCAL
    FEATURES. IN PARTICULAR MAXIMUM TSUNAMI AMPLITUDES ON ATOLLS
    AND AT LOCATIONS WITH FRINGING OR BARRIER REEFS WILL LIKELY
    BE MUCH SMALLER THAN THE FORECAST INDICATES.

  * FOR OTHER AREAS COVERED BY THIS PRODUCT A FORECAST HAS NOT
    YET BEEN COMPUTED. THE FORECAST WILL BE EXPANDED IF
    NECESSARY IN SUBSEQUENT PRODUCTS.
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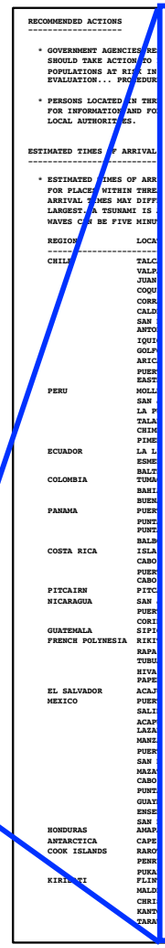

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RECOMMENDED ACTIONS
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  * GOVERNMENT AGENCIES RE
    SHOULD TAKE ACTION TO
    POPULATIONS AT RISK IN
    EVALUATION... PROCEDUR

  * PERSONS LOCATED IN THR
    FOR INFORMATION AND FO
    LOCAL AUTHORITIES.

ESTIMATED TIMES OF ARRIVAL
--------------------------

  * ESTIMATED TIMES OF ARR
    FOR PLACES WITHIN THRE
    ARRIVAL TIMES MAY DIFF
    LARGEST OF TSUNAMI IS
    WAVES CAN BE FIVE MINU

    REGION              LOCA
    ------------------------
    CHILE               TALC
                        VALP
                        JUAN
                        COQU
                        CORR
                        CALD
                        SAN
                        ANTO
                        IQUI
                        GOLF
                        ARIC
                        PUER
                        EAST
    PERU                MOLL
                        SAN
                        LA P
                        TALA
                        CHIM
                        PIME
    ECUADOR             LA L
                        ESME
                        BALT
    COLOMBIA            TUMA
                        BAHI
                        BUEN
    PANAMA              PUER
                        PUNT
                        PUNT
                        BALB
    COSTA RICA          ISLA
                        CABO
                        PUER
                        CABO
    PITCAIRN            PITC
    NICARAGUA           SAN
                        PUER
                        CORI
    GUATEMALA           SIPI
    FRENCH POLYNESIA    RIKI
                        RAPA
                        TUBU
                        HIVA
                        PAPE
    EL SALVADOR         ACAJ
    MEXICO              PUER
                        SALI
                        ACAP
                        LAZA
                        MANZ
                        PUER
                        SAN
                        MAZA
                        CABO
                        PUNT
                        GUAY
                        ENSE
                        SAN
    HONDURAS            AMAP
    ANTARCTICA          CAPE
    COOK ISLANDS        RARO
                        PENR
                        PUKA
    KIRIBATI            FLIN
                        MALD
                        CHRI
                        KANT
                        TARA
```

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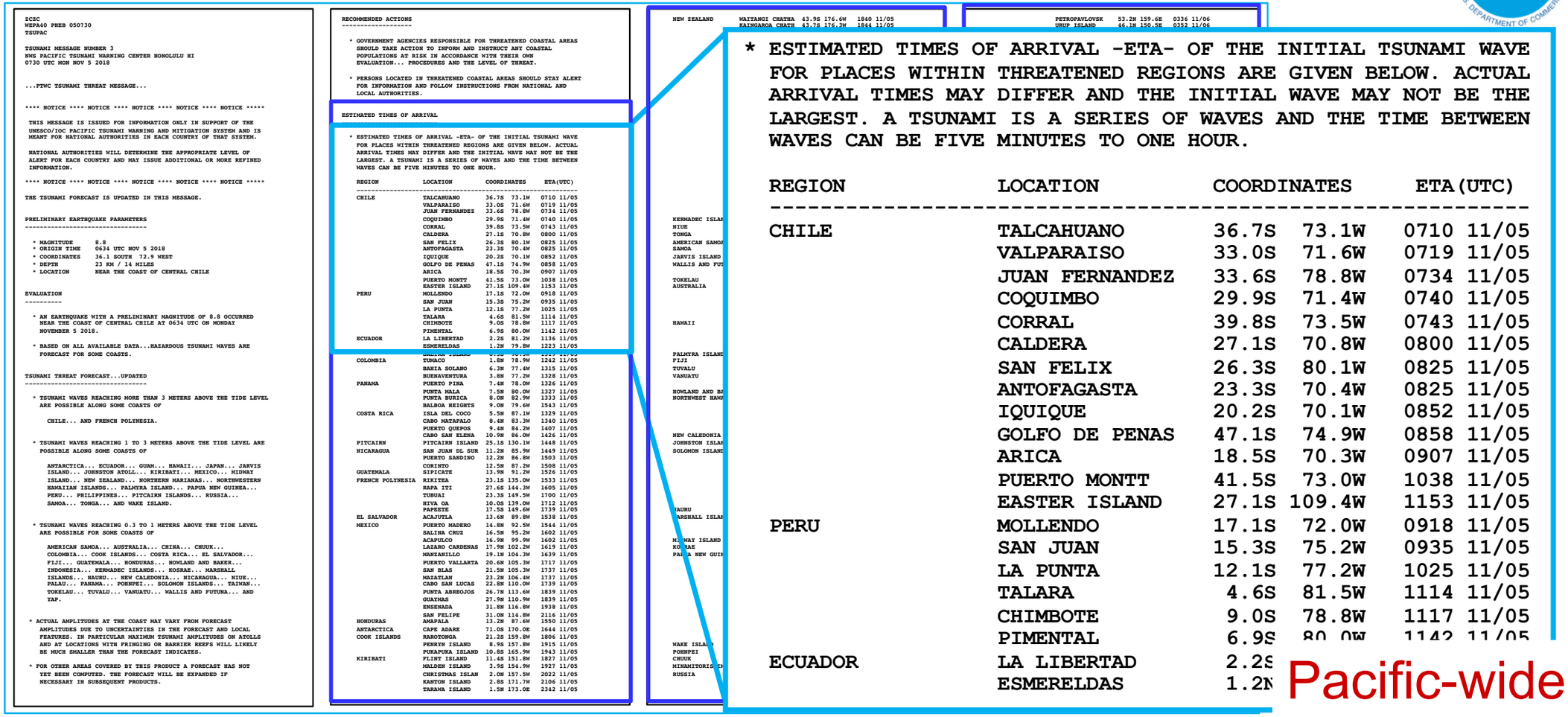
Pacific-wide

Text Message: Estimated Times of Arrival (ETA)



ZCZC
WEPA40 PHEB 050730
TSUPAC

TSUNAMI MESSAGE NUMBER 3
NWS PACIFIC TSUNAMI WARNING CENTER HONOLULU HI
0730 UTC MON NOV 5 2018

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THE TSUNAMI FORECAST IS UPDATED IN THIS MESSAGE.

PRELIMINARY EARTHQUAKE PARAMETERS

* MAGNITUDE 8.8
* ORIGIN TIME 0634 UTC NOV 5 2018
* COORDINATES 36.1 SOUTH 72.9 WEST
* DEPTH 23 KM / 14 MILES
* LOCATION NEAR THE COAST OF CENTRAL CHILE

EVALUATION

* AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.8 OCCURRED NEAR THE COAST OF CENTRAL CHILE AT 0634 UTC ON MONDAY NOVEMBER 5 2018.

* BASED ON ALL AVAILABLE DATA...HAZARDOUS TSUNAMI WAVES ARE FORECAST FOR SOME COASTS.

TSUNAMI THREAT FORECAST...UPDATED

* TSUNAMI WAVES REACHING MORE THAN 3 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE ALONG SOME COASTS OF

CHILE... AND FRENCH POLYNESIA.

* TSUNAMI WAVES REACHING 1 TO 3 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE ALONG SOME COASTS OF

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* TSUNAMI WAVES REACHING 0.3 TO 1 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE FOR SOME COASTS OF

AMERICAN SAMOA... AUSTRALIA... CHINA... CHUUK... COLOMBIA... COOK ISLANDS... COSTA RICA... EL SALVADOR... FIJI... GUATEMALA... HONDURAS... HOWLAND AND BAKER... INDONESIA... KERMADEC ISLANDS... KOSRAE... MARSHALL ISLANDS... NAURU... NEW CALEDONIA... NICARAGUA... NIUE... PALAU... PANAMA... PONHPEI... SOLOMON ISLANDS... TAIWAN... TOKELAU... TUVALU... VANUATU... WALLIS AND FUTUNA... AND YAP.

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* FOR OTHER AREAS COVERED BY THIS PRODUCT A FORECAST HAS NOT YET BEEN COMPUTED. THE FORECAST WILL BE EXPANDED IF NECESSARY IN SUBSEQUENT PRODUCTS.

RECOMMENDED ACTIONS

* GOVERNMENT AGENCIES RESPONSIBLE FOR THREATENED COASTAL AREAS SHOULD TAKE ACTION TO INFORM AND INSTRUCT ANY COASTAL POPULATIONS AT RISK IN ACCORDANCE WITH THEIR OWN EVALUATION... PROCEDURES AND THE LEVEL OF THREAT.

* PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD STAY ALERT FOR INFORMATION AND FOLLOW INSTRUCTIONS FROM NATIONAL AND LOCAL AUTHORITIES.

ESTIMATED TIMES OF ARRIVAL

* ESTIMATED TIMES OF ARRIVAL -ETA- OF THE INITIAL TSUNAMI WAVE FOR PLACES WITHIN THREATENED REGIONS ARE GIVEN BELOW. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN WAVES CAN BE FIVE MINUTES TO ONE HOUR.

REGION	LOCATION	COORDINATES	ETA(UTC)
CHILE	TALCAHUANO	36.7S 73.1W	0710 11/05
	VALPARAISO	33.0S 71.6W	0719 11/05
	JUAN FERNANDEZ	33.6S 78.8W	0734 11/05
	COQUIMBO	29.9S 71.4W	0740 11/05
	CORRAL	39.8S 73.5W	0743 11/05
	CALDERA	27.1S 70.8W	0800 11/05
	SAN FELIX	26.3S 80.1W	0825 11/05
	ANTOFAGASTA	23.3S 70.4W	0825 11/05
	IQUIQUE	20.2S 70.1W	0852 11/05
	GOLFO DE PENAS	47.1S 74.9W	0858 11/05
	ARICA	18.5S 70.3W	0907 11/05
	PUERTO MONTT	41.5S 73.0W	1038 11/05
	EASTER ISLAND	27.1S 109.4W	1153 11/05
PERU	MOLLENDO	17.1S 72.0W	0918 11/05
	SAN JUAN	15.3S 75.2W	0935 11/05
	LA PUNTA	12.1S 77.2W	1025 11/05
	TALARA	4.6S 81.5W	1114 11/05
	CHIMBOTE	9.0S 78.8W	1117 11/05
	PIMENTAL	6.9S 80.0W	1142 11/05
ECUADOR	LA LIBERTAD	2.2S 81.2W	1136 11/05
	ESMERELDAS	1.2N 79.8W	1223 11/05
	[illegible]	[illegible]	[illegible]
COLOMBIA	TUMACO	1.8N 78.9W	1242 11/05
	BAHIA SOLANO	6.3N 77.4W	1315 11/05
	BUENAVENTURA	3.8N 77.2W	1328 11/05
PANAMA	PUERTO PINA	7.4N 78.0W	1326 11/05
	PUNTA MALA	7.5N 80.0W	1327 11/05
	PUNTA BURICA	8.0N 82.9W	1333 11/05
	BALBOA HEIGHTS	9.0N 79.6W	1543 11/05
COSTA RICA	ISLA DEL COCO	5.5N 87.1W	1329 11/05
	CABO MATAPALO	8.4N 83.3W	1340 11/05
	PUERTO QUEPOS	9.4N 84.2W	1407 11/05
	CABO SAN ELENA	10.9N 86.0W	1426 11/05
PITCAIRN	PITCAIRN ISLAND	25.1S 130.1W	1448 11/05
NICARAGUA	SAN JUAN DL SUR	11.2N 85.9W	1449 11/05
	PUERTO SANDINO	12.2N 86.8W	1503 11/05
	CORINTO	12.5N 87.2W	1508 11/05
GUATEMALA	SIPICATE	13.9N 91.2W	1526 11/05
FRENCH POLYNESIA	RIKITEA	23.1S 135.0W	1533 11/05
	RAPA ITI	27.6S 144.3W	1605 11/05
	TUBUAI	23.3S 149.5W	1700 11/05
	HIVA OA	10.0S 139.0W	1712 11/05
	PAPEETE	17.5S 149.6W	1739 11/05
EL SALVADOR	ACAJUTLA	13.6N 89.8W	1538 11/05
MEXICO	PUERTO MADERO	14.8N 92.5W	1544 11/05
	SALINA CRUZ	16.5N 95.2W	1602 11/05
	ACAPULCO	16.9N 99.9W	1602 11/05
	LAZARO CARDENAS	17.9N 102.2W	1619 11/05
	MANZANILLO	19.1N 104.3W	1639 11/05
	PUERTO VALLARTA	20.6N 105.3W	1717 11/05
	SAN BLAS	21.5N 105.3W	1737 11/05
	MAZATLAN	23.2N 106.4W	1737 11/05
	CABO SAN LUCAS	22.8N 110.0W	1739 11/05
	PUNTA ABREOJOS	26.7N 113.6W	1839 11/05
	GUAYMAS	27.9N 110.9W	1839 11/05
	ENSENADA	31.8N 116.8W	1938 11/05
	SAN FELIPE	31.0N 114.8W	2116 11/05
HONDURAS	AMAPALA	13.2N 87.6W	1550 11/05
ANTARCTICA	CAPE ADARE	71.0S 170.0E	1644 11/05
COOK ISLANDS	RAROTONGA	21.2S 159.8W	1806 11/05
	PENRYN ISLAND	8.9S 157.8W	1915 11/05
	PUKAPUKA ISLAND	10.8S 165.9W	1943 11/05
KIRIBATI	FLINT ISLAND	11.4S 151.8W	1827 11/05
	MALDEN ISLAND	3.9S 154.9W	1927 11/05
	CHRISTMAS ISLAN	2.0N 157.5W	2022 11/05
	KANTON ISLAND	2.8S 171.7W	2106 11/05
	TARAWA ISLAND	1.5N 173.0E	2342 11/05

NEW ZEALAND WAITANGI CHATHA 43.9S 176.6W 1840 11/05
KAINGAROA CHATH 43.7S 176.3W 1844 11/05

PETROPAVLOVSK 53.2N 159.6E 0336 11/06
URUP ISLAND 46.1N 150.5E 0352 11/06

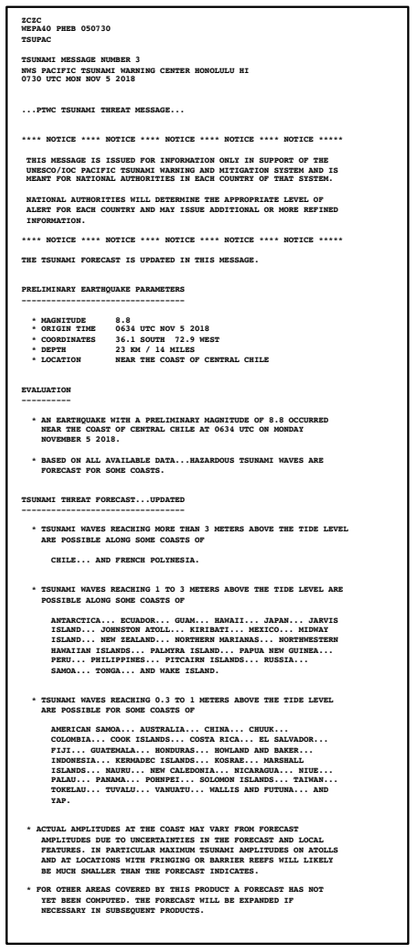
KERMADEC ISLAN
NIUE
TONGA
AMERICAN SAMOA
SAMOA
JARVIS ISLAND
WALLIS AND FUT
TOKELAU
AUSTRALIA
HAWAII
PALMYRA ISLAN
FIJI
TUVALU
VANUATU
HOWLAND AND BA
NORTHWEST HAWA
NEW CALEDONIA
JOHNSTON ISLAN
SOLOMON ISLAND
NAURU
MARSHALL ISLAN
M WAY ISLAND
KOSRAE
PALAU NEW GUIN
WAKE ISLAND
PONHPEI
CHUUK
MINAMITORISHIMA
RUSSIA

* ESTIMATED TIMES OF ARRIVAL -ETA- OF THE INITIAL TSUNAMI WAVE FOR PLACES WITHIN THREATENED REGIONS ARE GIVEN BELOW. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN WAVES CAN BE FIVE MINUTES TO ONE HOUR.

REGION	LOCATION	COORDINATES	ETA(UTC)
CHILE	TALCAHUANO	36.7S 73.1W	0710 11/05
	VALPARAISO	33.0S 71.6W	0719 11/05
	JUAN FERNANDEZ	33.6S 78.8W	0734 11/05
	COQUIMBO	29.9S 71.4W	0740 11/05
	CORRAL	39.8S 73.5W	0743 11/05
	CALDERA	27.1S 70.8W	0800 11/05
	SAN FELIX	26.3S 80.1W	0825 11/05
	ANTOFAGASTA	23.3S 70.4W	0825 11/05
	IQUIQUE	20.2S 70.1W	0852 11/05
	GOLFO DE PENAS	47.1S 74.9W	0858 11/05
	ARICA	18.5S 70.3W	0907 11/05
	PUERTO MONTT	41.5S 73.0W	1038 11/05
	EASTER ISLAND	27.1S 109.4W	1153 11/05
PERU	MOLLENDO	17.1S 72.0W	0918 11/05
	SAN JUAN	15.3S 75.2W	0935 11/05
	LA PUNTA	12.1S 77.2W	1025 11/05
	TALARA	4.6S 81.5W	1114 11/05
	CHIMBOTE	9.0S 78.8W	1117 11/05
	PIMENTAL	6.9S 80.0W	1142 11/05
ECUADOR	LA LIBERTAD	2.2S	
	ESMERELDAS	1.2N	

Pacific-wide

Text Message: Estimated Times of Arrival (ETA)



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ZCZC
WEPA40 PHEB 050730
TSUPAC

TSUNAMI MESSAGE NUMBER 3
NWS PACIFIC TSUNAMI WARNING CENTER HONOLULU HI
0730 UTC MON NOV 5 2018

...PTWC TSUNAMI THREAT MESSAGE...

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****

THIS MESSAGE IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE
UNESCO/IOC PACIFIC TSUNAMI WARNING AND MITIGATION SYSTEM AND IS
MEANT FOR NATIONAL AUTHORITIES IN EACH COUNTRY OF THAT SYSTEM.

NATIONAL AUTHORITIES WILL DETERMINE THE APPROPRIATE LEVEL OF
ALERT FOR EACH COUNTRY AND MAY ISSUE ADDITIONAL OR MORE REFINED
INFORMATION.

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****

THE TSUNAMI FORECAST IS UPDATED IN THIS MESSAGE.

PRELIMINARY EARTHQUAKE PARAMETERS
---------------------------------

  * MAGNITUDE      8.8
  * ORIGIN TIME    0634 UTC NOV 5 2018
  * COORDINATES    36.1 SOUTH  72.9 WEST
  * DEPTH          23 KM / 14 MILES
  * LOCATION       NEAR THE COAST OF CENTRAL CHILE

EVALUATION
----------

  * AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.8 OCCURRED
    NEAR THE COAST OF CENTRAL CHILE AT 0634 UTC ON MONDAY
    NOVEMBER 5 2018.

  * BASED ON ALL AVAILABLE DATA...HAZARDOUS TSUNAMI WAVES ARE
    FORECAST FOR SOME COASTS.

TSUNAMI THREAT FORECAST...UPDATED
---------------------------------

  * TSUNAMI WAVES REACHING MORE THAN 3 METERS ABOVE THE TIDE LEVEL
    ARE POSSIBLE ALONG SOME COASTS OF

      CHILE... AND FRENCH POLYNESIA.

  * TSUNAMI WAVES REACHING 1 TO 3 METERS ABOVE THE TIDE LEVEL ARE
    POSSIBLE ALONG SOME COASTS OF

      ANTARCTICA... ECUADOR... GUAM... HAWAII... JAPAN... JARVIS
      ISLAND... JOHNSTON ATOLL... KIRIBATI... MEXICO... MIDWAY
      ISLAND... NEW ZEALAND... NORTHERN MARIANAS... NORTHWESTERN
      HAWAIIAN ISLANDS... PALMYRA ISLAND... PAPUA NEW GUINEA...
      PERU... PHILIPPINES... PITCAIRN ISLANDS... RUSSIA...
      SAMOA... TONGA... AND WAKE ISLAND.

  * TSUNAMI WAVES REACHING 0.3 TO 1 METERS ABOVE THE TIDE LEVEL
    ARE POSSIBLE FOR SOME COASTS OF

      AMERICAN SAMOA... AUSTRALIA... CHINA... CHUUK...
      COLOMBIA... COOK ISLANDS... COSTA RICA... EL SALVADOR...
      FIJI... GUATEMALA... HONDURAS... HOWLAND AND BAKER...
      INDONESIA... KERMADEC ISLANDS... KOSRAE... MARSHALL
      ISLANDS... NAURU... NEW CALEDONIA... NICARAGUA... NIUE...
      PALAU... PANAMA... POHNPEI... SOLOMON ISLANDS... TAIWAN...
      TOKELAU... TUVALU... VANUATU... WALLIS AND FUTUNA... AND
      YAP.

  * ACTUAL AMPLITUDES AT THE COAST MAY VARY FROM FORECAST
    AMPLITUDES DUE TO UNCERTAINTIES IN THE FORECAST AND LOCAL
    FEATURES. IN PARTICULAR MAXIMUM TSUNAMI AMPLITUDES ON ATOLLS
    AND AT LOCATIONS WITH FRINGING OR BARRIER REEFS WILL LIKELY
    BE MUCH SMALLER THAN THE FORECAST INDICATES.

  * FOR OTHER AREAS COVERED BY THIS PRODUCT A FORECAST HAS NOT
    YET BEEN COMPUTED. THE FORECAST WILL BE EXPANDED IF
    NECESSARY IN SUBSEQUENT PRODUCTS.
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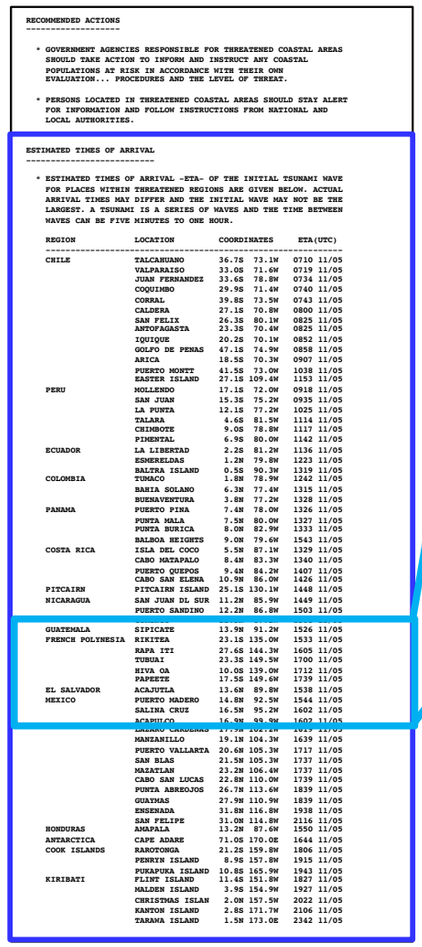

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RECOMMENDED ACTIONS
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  * GOVERNMENT AGENCIES RESPONSIBLE FOR THREATENED COASTAL AREAS
    SHOULD TAKE ACTION TO INFORM AND INSTRUCT ANY COASTAL
    POPULATIONS AT RISK IN ACCORDANCE WITH THEIR OWN
    EVALUATION... PROCEDURES AND THE LEVEL OF THREAT.

  * PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD STAY ALERT
    FOR INFORMATION AND FOLLOW INSTRUCTIONS FROM NATIONAL AND
    LOCAL AUTHORITIES.

ESTIMATED TIMES OF ARRIVAL
--------------------------

  * ESTIMATED TIMES OF ARRIVAL -ETA- OF THE INITIAL TSUNAMI WAVE
    FOR PLACES WITHIN THREATENED REGIONS ARE GIVEN BELOW. ACTUAL
    ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE
    LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN
    WAVES CAN BE FIVE MINUTES TO ONE HOUR.

  REGION            LOCATION          COORDINATES     ETA(UTC)
  ----------------------------------------------------------------
  CHILE             TALCAHUANO        36.7S  73.1W    0710 11/05
                    VALPARAISO        33.0S  71.6W    0719 11/05
                    JUAN FERNANDEZ    33.6S  78.8W    0734 11/05
                    COQUIMBO          29.9S  71.4W    0740 11/05
                    CORRAL            39.8S  73.5W    0743 11/05
                    CALDERA           27.1S  70.8W    0800 11/05
                    SAN FELIX         26.3S  80.1W    0825 11/05
                    ANTOFAGASTA       23.3S  70.4W    0825 11/05
                    IQUIQUE           20.2S  70.1W    0852 11/05
                    GOLFO DE PENAS    47.1S  74.9W    0858 11/05
                    ARICA             18.5S  70.3W    0907 11/05
                    PUERTO MONTT      41.5S  73.0W    1038 11/05
                    EASTER ISLAND     27.1S 109.4W    1153 11/05
  PERU              MOLLENDO          17.1S  72.0W    0918 11/05
                    SAN JUAN          15.3S  75.2W    0935 11/05
                    LA PUNTA          12.1S  77.2W    1025 11/05
                    TALARA             4.6S  81.5W    1114 11/05
                    CHIMBOTE           9.0S  78.8W    1117 11/05
                    PIMENTAL           6.9S  80.0W    1142 11/05
  ECUADOR           LA LIBERTAD        2.2S  81.2W    1136 11/05
                    ESMERELDAS         1.2N  79.8W    1223 11/05
                    BALTRA ISLAND      0.5S  90.3W    1319 11/05
  COLOMBIA          TUMACO             1.8N  78.9W    1242 11/05
                    BAHIA SOLANO       6.3N  77.4W    1315 11/05
                    BUENAVENTURA       3.8N  77.2W    1328 11/05
  PANAMA            PUERTO PINA        7.4N  78.0W    1326 11/05
                    PUNTA MALA         7.5N  80.0W    1327 11/05
                    PUNTA BURICA       8.0N  82.9W    1333 11/05
                    BALBOA HEIGHTS     9.0N  79.6W    1543 11/05
  COSTA RICA        ISLA DEL COCO      5.5N  87.1W    1329 11/05
                    CABO MATAPALO      8.4N  83.3W    1340 11/05
                    PUERTO QUEPOS      9.4N  84.2W    1407 11/05
                    CABO SAN ELENA    10.9N  86.0W    1426 11/05
  PITCAIRN          PITCAIRN ISLAND   25.1S 130.1W    1448 11/05
  NICARAGUA         SAN JUAN DL SUR   11.2N  85.9W    1449 11/05
                    PUERTO SANDINO    12.2N  86.8W    1503 11/05
  GUATEMALA         SIPICATE          13.9N  91.2W    1526 11/05
  FRENCH POLYNESIA  RIKITEA           23.1S 135.0W    1533 11/05
                    RAPA ITI          27.6S 144.3W    1605 11/05
                    TUBUAI            23.3S 149.5W    1700 11/05
                    HIVA OA           10.0S 139.0W    1712 11/05
                    PAPEETE           17.5S 149.6W    1739 11/05
  EL SALVADOR       ACAJUTLA          13.6N  89.8W    1538 11/05
  MEXICO            PUERTO MADERO     14.8N  92.5W    1544 11/05
                    SALINA CRUZ       16.5N  95.2W    1602 11/05
                    ACAPULCO          16.9N  99.9W    1602 11/05
                    MANZANILLO        19.1N 104.3W    1639 11/05
                    PUERTO VALLARTA   20.6N 105.3W    1717 11/05
                    SAN BLAS          21.5N 105.3W    1737 11/05
                    MAZATLAN          23.2N 106.4W    1737 11/05
                    CABO SAN LUCAS    22.8N 110.0W    1739 11/05
                    PUNTA ABREOJOS    26.7N 113.6W    1839 11/05
                    GUAYMAS           27.9N 110.9W    1839 11/05
                    ENSENADA          31.8N 116.7W    1938 11/05
                    SAN FELIPE        31.0N 114.8W    2116 11/05
  HONDURAS          AMAPALA           13.2N  87.6W    1550 11/05
  ANTARCTICA        CAPE ADARE        71.0S 170.0E    1644 11/05
  COOK ISLANDS      RAROTONGA         21.2S 159.8W    1806 11/05
                    PENRYN ISLAND      8.9S 157.8W    1915 11/05
                    PUKAPUKA ISLAND   10.8S 165.9W    1943 11/05
  KIRIBATI          FLINT ISLAND      11.4S 151.8W    1827 11/05
                    MALDEN ISLAND      3.9S 154.9W    1927 11/05
                    CHRISTMAS ISLAN    2.0N 157.5W    2022 11/05
                    KANTON ISLAND      2.8S 171.7W    2106 11/05
                    TARAWA ISLAND      1.5N 173.0E    2342 11/05
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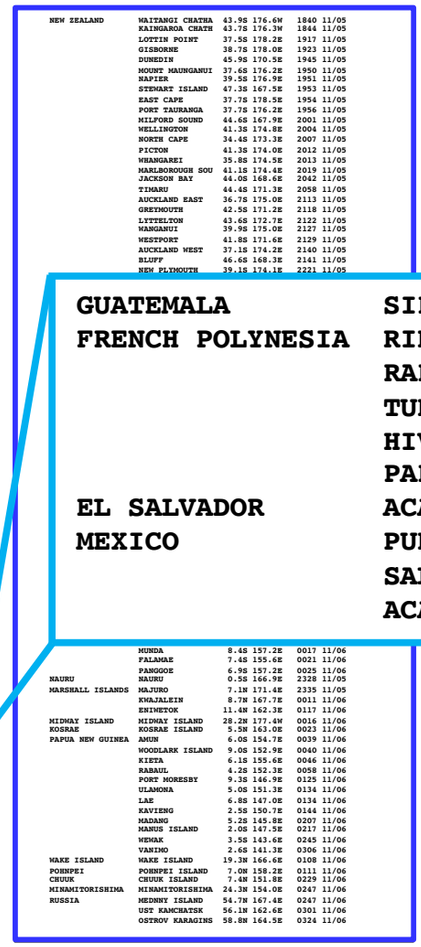

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  NEW ZEALAND       WAITANGI CHATHA   43.9S 176.6W    1840 11/05
                    KAINGAROA CHATH   43.7S 176.3W    1844 11/05
                    LOTTIN POINT      37.5S 178.2E    1917 11/05
                    GISBORNE          38.7S 178.0E    1923 11/05
                    DUNEDIN           45.9S 170.5E    1945 11/05
                    MOUNT MAUNGANUI   37.6S 176.2E    1950 11/05
                    NAPIER            39.5S 176.9E    1951 11/05
                    STEWART ISLAND    47.3S 167.5E    1953 11/05
                    EAST CAPE         37.7S 178.5E    1954 11/05
                    PORT TAURANGA     37.7S 176.2E    1956 11/05
                    MILFORD SOUND     44.6S 167.9E    2001 11/05
                    WELLINGTON        41.3S 174.8E    2004 11/05
                    NORTH CAPE        34.4S 173.3E    2007 11/05
                    PICTON            41.3S 174.0E    2012 11/05
                    WHANGAREI         35.8S 174.5E    2013 11/05
                    MARLBOROUGH SOU   41.1S 174.4E    2019 11/05
                    JACKSON BAY       44.0S 168.6E    2042 11/05
                    TIMARU            44.4S 171.3E    2058 11/05
                    AUCKLAND EAST     36.7S 175.0E    2113 11/05
                    GREYMOUTH         42.5S 171.2E    2118 11/05
                    LYTTELTON         43.6S 172.7E    2122 11/05
                    WANGANUI          39.9S 175.0E    2127 11/05
                    WESTPORT          41.8S 171.6E    2129 11/05
                    AUCKLAND WEST     37.1S 174.2E    2140 11/05
                    BLUFF             46.6S 168.3E    2141 11/05
                    NEW PLYMOUTH      39.1S 174.1E    2221 11/05
                    MUNDA              8.4S 157.2E    0017 11/06
                    FALAMAE            7.4S 155.6E    0021 11/06
                    PANGGOE            6.9S 157.2E    0025 11/06
  NAURU             NAURU              0.5S 166.9E    2328 11/05
  MARSHALL ISLANDS  MAJURO             7.1N 171.4E    2335 11/05
                    KWAJALEIN          8.7N 167.7E    0011 11/06
                    ENIWETOK          11.4N 162.3E    0117 11/06
  MIDWAY ISLAND     MIDWAY ISLAND     28.2N 177.4W    0016 11/06
  KOSRAE            KOSRAE ISLAND      5.3N 163.0E    0023 11/06
  PAPUA NEW GUINEA  AMUN               6.0S 154.7E    0039 11/06
                    WOODLARK ISLAND    9.0S 152.9E    0040 11/06
                    KIETA              6.1S 155.6E    0046 11/06
                    RABAUL             4.2S 152.3E    0058 11/06
                    PORT MORESBY       9.3S 146.9E    0125 11/06
                    ULAMONA            5.0S 151.3E    0134 11/06
                    LAE                6.8S 147.0E    0134 11/06
                    KAVIENG            2.5S 150.7E    0144 11/06
                    MADANG             5.2S 145.8E    0207 11/06
                    MANUS ISLAND       2.0S 147.5E    0217 11/06
                    WEWAK              3.5S 143.6E    0245 11/06
                    VANIMO             2.6S 141.3E    0306 11/06
  WAKE ISLAND       WAKE ISLAND       19.3N 166.6E    0108 11/06
  POHNPEI           POHNPEI ISLAND     7.0N 158.2E    0111 11/06
  CHUUK             CHUUK ISLAND       7.4N 151.8E    0229 11/06
  MINAMITORISHIMA   MINAMITORISHIMA   24.3N 154.0E    0247 11/06
  RUSSIA            MEDNNI ISLAND     54.7N 167.4E    0247 11/06
                    UST KAMCHATSK     56.1N 162.6E    0301 11/06
                    OSTROV KARAGINS   58.8N 164.5E    0324 11/06
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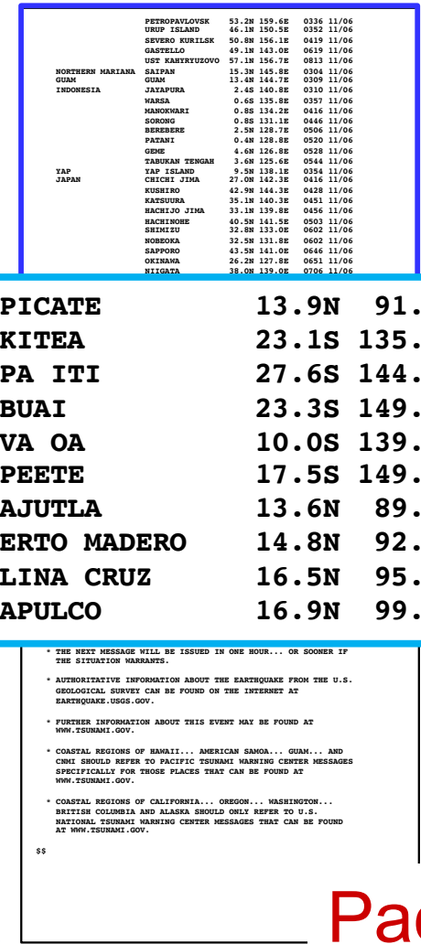

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                    PETROPAVLOVSK     53.2N 159.6E    0336 11/06
                    URUP ISLAND       46.1N 150.5E    0352 11/06
                    SEVERO KURILSK    50.8N 156.1E    0419 11/06
                    GASTELLO          49.1N 143.0E    0619 11/06
                    UST KAMYRUZOVO    57.1N 156.7E    0813 11/06
  NORTHERN MARIANA  SAIPAN            15.3N 145.8E    0304 11/06
  GUAM              GUAM              13.4N 144.7E    0309 11/06
  INDONESIA         JAYAPURA           2.4S 140.8E    0310 11/06
                    WARSA              0.6S 135.8E    0357 11/06
                    MANOKWARI          0.8S 134.2E    0416 11/06
                    SORONG             0.8S 131.1E    0446 11/06
                    BERESBERE          2.5N 128.7E    0506 11/06
                    PATANI             0.4N 128.8E    0520 11/06
                    GEME               4.6N 126.8E    0528 11/06
                    TABUKAN TENGAH     3.6N 125.6E    0544 11/06
  YAP               YAP ISLAND         9.5N 138.1E    0354 11/06
  JAPAN             CHICHI JIMA       27.0N 142.3E    0416 11/06
                    KUSHIRO           42.9N 144.3E    0428 11/06
                    KATSUURA          35.1N 140.3E    0451 11/06
                    HACHIJO JIMA      33.1N 139.8E    0456 11/06
                    HACHINOHE         40.5N 141.5E    0503 11/06
                    SHIMIZU           32.8N 133.0E    0602 11/06
                    NOBEOKA           32.5N 131.8E    0602 11/06
                    SAPPORO           43.5N 141.0E    0646 11/06
                    OKINAWA           26.2N 127.8E    0651 11/06
                    NIIGATA           38.0N 139.0E    0706 11/06

  * THE NEXT MESSAGE WILL BE ISSUED IN ONE HOUR... OR SOONER IF
    THE SITUATION WARRANTS.

  * AUTHORITATIVE INFORMATION ABOUT THE EARTHQUAKE FROM THE U.S.
    GEOLOGICAL SURVEY CAN BE FOUND ON THE INTERNET AT
    EARTHQUAKE.USGS.GOV.

  * FURTHER INFORMATION ABOUT THIS EVENT MAY BE FOUND AT
    WWW.TSUNAMI.GOV.

  * COASTAL REGIONS OF HAWAII... AMERICAN SAMOA... GUAM... AND
    CNMI SHOULD REFER TO PACIFIC TSUNAMI WARNING CENTER MESSAGES
    SPECIFICALLY FOR THOSE PLACES THAT CAN BE FOUND AT
    WWW.TSUNAMI.GOV.

  * COASTAL REGIONS OF CALIFORNIA... OREGON... WASHINGTON...
    BRITISH COLUMBIA AND ALASKA SHOULD ONLY REFER TO U.S.
    NATIONAL TSUNAMI WARNING CENTER MESSAGES THAT CAN BE FOUND
    AT WWW.TSUNAMI.GOV.

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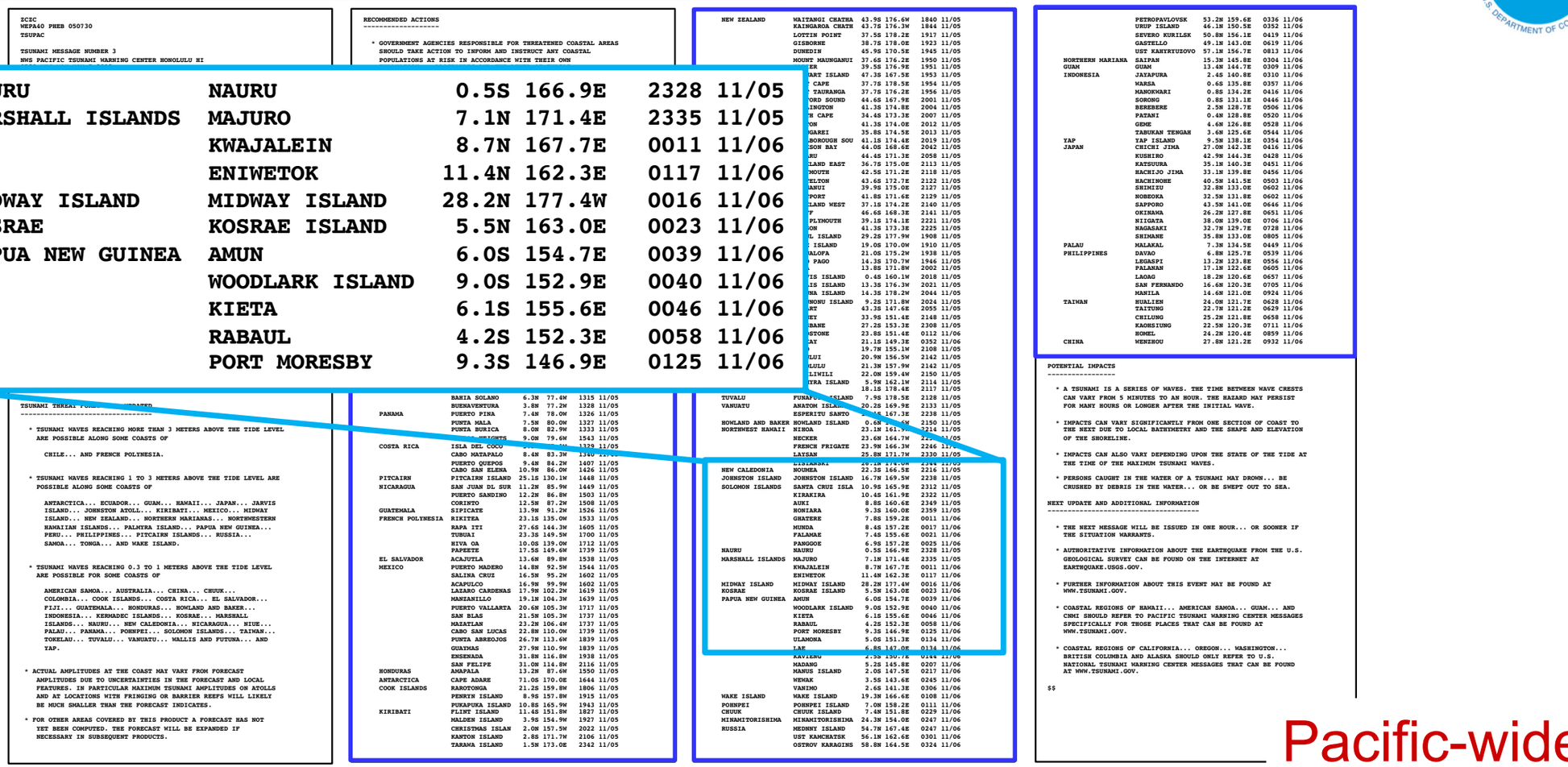
GUATEMALA	**SIPICATE**	**13.9N**	**91.2W**	**1526 11/05**
FRENCH POLYNESIA	**RIKITEA**	**23.1S**	**135.0W**	**1533 11/05**
	RAPA ITI	**27.6S**	**144.3W**	**1605 11/05**
	TUBUAI	**23.3S**	**149.5W**	**1700 11/05**
	HIVA OA	**10.0S**	**139.0W**	**1712 11/05**
	PAPEETE	**17.5S**	**149.6W**	**1739 11/05**
EL SALVADOR	**ACAJUTLA**	**13.6N**	**89.8W**	**1538 11/05**
MEXICO	**PUERTO MADERO**	**14.8N**	**92.5W**	**1544 11/05**
	SALINA CRUZ	**16.5N**	**95.2W**	**1602 11/05**
	ACAPULCO	**16.9N**	**99.9W**	**1602 11/05**

Pacific-wide

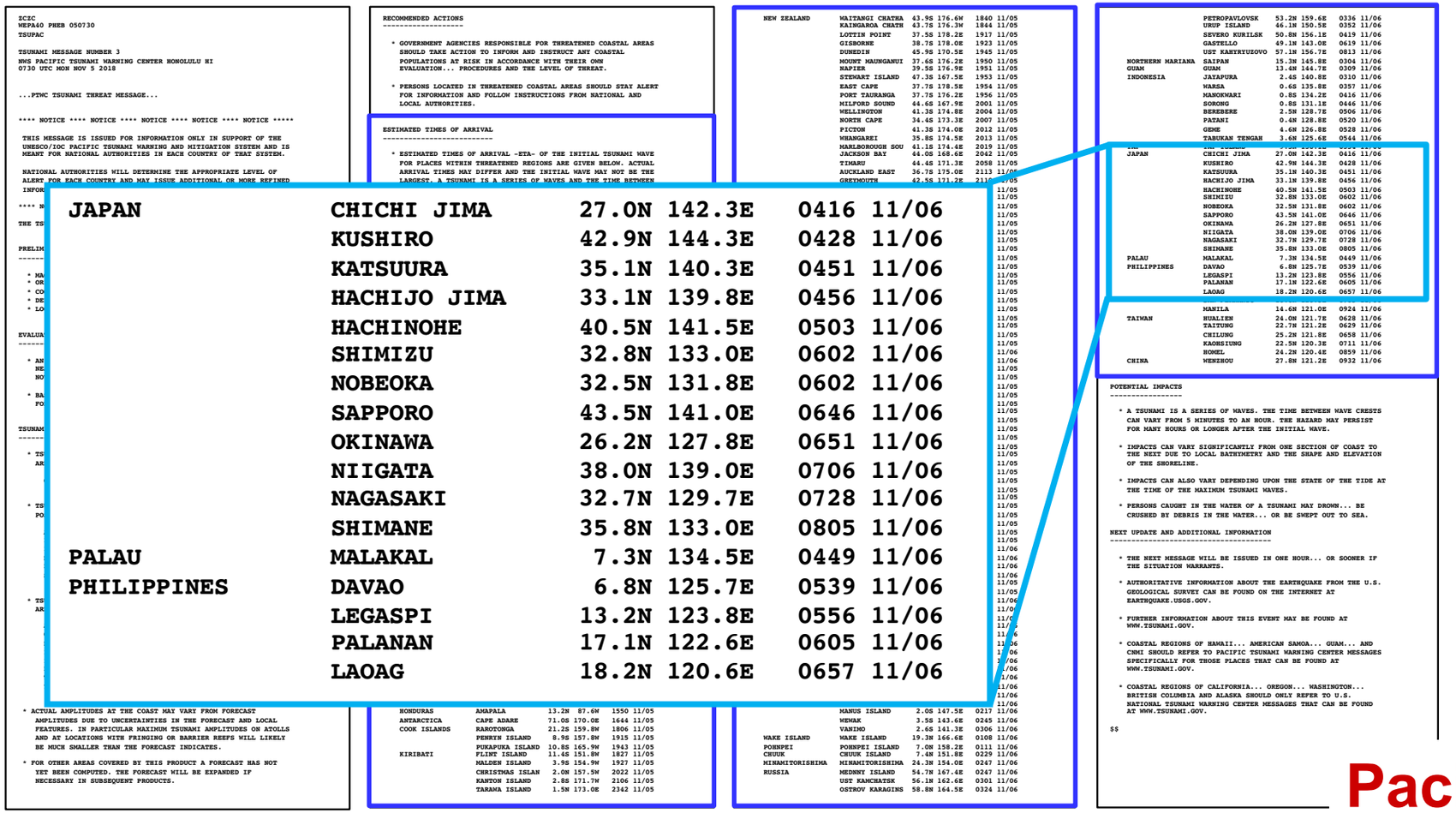
Text Message: Estimated Times of Arrival (ETA)



NAURU	NAURU	0.5S	166.9E	2328 11/05
MARSHALL ISLANDS	MAJURO	7.1N	171.4E	2335 11/05
	KWAJALEIN	8.7N	167.7E	0011 11/06
	ENIWETOK	11.4N	162.3E	0117 11/06
MIDWAY ISLAND	MIDWAY ISLAND	28.2N	177.4W	0016 11/06
KOSRAE	KOSRAE ISLAND	5.5N	163.0E	0023 11/06
PAPUA NEW GUINEA	AMUN	6.0S	154.7E	0039 11/06
	WOODLARK ISLAND	9.0S	152.9E	0040 11/06
	KIETA	6.1S	155.6E	0046 11/06
	RABAUL	4.2S	152.3E	0058 11/06
	PORT MORESBY	9.3S	146.9E	0125 11/06

Pacific-wide

Text Message: Estimated Times of Arrival (ETA)



ZCZC
WEPA40 PHEB 050730
TSUPAC

TSUNAMI MESSAGE NUMBER 3
NWS PACIFIC TSUNAMI WARNING CENTER HONOLULU HI
0730 UTC MON NOV 5 2018

...PTWC TSUNAMI THREAT MESSAGE...

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****

THIS MESSAGE IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC PACIFIC TSUNAMI WARNING AND MITIGATION SYSTEM AND IS MEANT FOR NATIONAL AUTHORITIES IN EACH COUNTRY OF THAT SYSTEM.

NATIONAL AUTHORITIES WILL DETERMINE THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY AND MAY ISSUE ADDITIONAL OR MORE REFINED

* ACTUAL AMPLITUDES AT THE COAST MAY VARY FROM FORECAST AMPLITUDES DUE TO UNCERTAINTIES IN THE FORECAST AND LOCAL FEATURES. IN PARTICULAR MAXIMUM TSUNAMI AMPLITUDES ON ATOLLS AND AT LOCATIONS WITH FRINGING OR BARRIER REEFS WILL LIKELY BE MUCH SMALLER THAN THE FORECAST INDICATES.

* FOR OTHER AREAS COVERED BY THIS PRODUCT A FORECAST HAS NOT YET BEEN COMPUTED. THE FORECAST WILL BE EXPANDED IF NECESSARY IN SUBSEQUENT PRODUCTS.

RECOMMENDED ACTIONS

* GOVERNMENT AGENCIES RESPONSIBLE FOR THREATENED COASTAL AREAS SHOULD TAKE ACTION TO INFORM AND INSTRUCT ANY COASTAL POPULATIONS AT RISK IN ACCORDANCE WITH THEIR OWN EVALUATION... PROCEDURES AND THE LEVEL OF THREAT.

* PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD STAY ALERT FOR INFORMATION AND FOLLOW INSTRUCTIONS FROM NATIONAL AND LOCAL AUTHORITIES.

ESTIMATED TIMES OF ARRIVAL

* ESTIMATED TIMES OF ARRIVAL -ETA- OF THE INITIAL TSUNAMI WAVE FOR PLACES WITHIN THREATENED REGIONS ARE GIVEN BELOW. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN

JAPAN	CHICHI JIMA	27.0N	142.3E	0416 11/06
	KUSHIRO	42.9N	144.3E	0428 11/06
	KATSUURA	35.1N	140.3E	0451 11/06
	HACHIJO JIMA	33.1N	139.8E	0456 11/06
	HACHINOHE	40.5N	141.5E	0503 11/06
	SHIMIZU	32.8N	133.0E	0602 11/06
	NOBEOKA	32.5N	131.8E	0602 11/06
	SAPPORO	43.5N	141.0E	0646 11/06
	OKINAWA	26.2N	127.8E	0651 11/06
	NIIGATA	38.0N	139.0E	0706 11/06
	NAGASAKI	32.7N	129.7E	0728 11/06
	SHIMANE	35.8N	133.0E	0805 11/06
PALAU	MALAKAL	7.3N	134.5E	0449 11/06
PHILIPPINES	DAVAO	6.8N	125.7E	0539 11/06
	LEGASPI	13.2N	123.8E	0556 11/06
	PALANAN	17.1N	122.6E	0605 11/06
	LAOAG	18.2N	120.6E	0657 11/06

HONDURAS	AMAPALA	13.2N	87.6W	1550 11/05
ANTARCTICA	CAPE ADARE	71.0S	170.0E	1644 11/05
COOK ISLANDS	RAROTONGA	21.2S	159.8W	1806 11/05
	PENRYN ISLAND	8.9S	157.8W	1915 11/05
	PUKAPUKA ISLAND	10.8S	165.9W	1943 11/05
KIRIBATI	FLINT ISLAND	11.4S	151.8W	1827 11/05
	MALDEN ISLAND	3.9S	154.9W	1927 11/05
	CHRISTMAS ISLAN	2.0N	157.5W	2022 11/05
	KANTON ISLAND	2.8S	171.7W	2106 11/05
	TARAWA ISLAND	1.5N	173.0E	2342 11/05

NEW ZEALAND	WAITANGI CHATHA	43.9S	176.6W	1840 11/05
	KAINGAROA CHATH	43.7S	176.3W	1844 11/05
	LOTTIN POINT	37.5S	178.2E	1917 11/05
	GISBORNE	38.7S	178.0E	1923 11/05
	DUNEDIN	45.9S	170.5E	1945 11/05
	MOUNT MAUNGANUI	37.6S	176.2E	1950 11/05
	NAPIER	39.5S	176.9E	1951 11/05
	STEWART ISLAND	47.3S	167.5E	1953 11/05
	EAST CAPE	37.7S	178.5E	1954 11/05
	PORT TAURANGA	37.7S	176.2E	1956 11/05
	MILFORD SOUND	44.6S	167.9E	2001 11/05
	WELLINGTON	41.3S	174.8E	2004 11/05
	NORTH CAPE	34.4S	173.3E	2007 11/05
	PICTON	41.3S	174.0E	2012 11/05
	WHANGAREI	35.8S	174.5E	2013 11/05
	MARLBOROUGH SOU	41.1S	174.4E	2019 11/05
	JACKSON BAY	44.0S	168.6E	2042 11/05
	TIMARU	44.4S	171.3E	2058 11/05
	AUCKLAND EAST	36.7S	175.0E	2113 11/05
	GREYMOUTH	42.5S	171.2E	2114 11/05
	MANUS ISLAND	2.0S	147.5E	0217 11/06
	WEWAK	3.5S	143.6E	0245 11/06
	VANIMO	2.6S	141.3E	0306 11/06
WAKE ISLAND	WAKE ISLAND	19.3N	166.6E	0108 11/06
PONNPEI	PONNPEI ISLAND	7.0N	158.2E	0111 11/06
CHUUK	CHUUK ISLAND	7.4N	151.8E	0229 11/06
MINAMITORISHIMA	MINAMITORISHIMA	24.3N	154.0E	0247 11/06
RUSSIA	MEDNNY ISLAND	54.7N	167.4E	0247 11/06
	UST KAMCHATSK	56.1N	162.6E	0301 11/06
	OSTROV KARAGINS	58.8N	164.5E	0324 11/06

	PETROPAVLOVSK	53.2N	159.6E	0336 11/06
	URUP ISLAND	46.1N	150.5E	0352 11/06
	SEVERO KURILSK	50.8N	156.1E	0419 11/06
	GASTELLO	49.1N	143.0E	0619 11/06
	UST KAMYRUZOVO	57.1N	156.7E	0813 11/06
NORTHERN MARIANA	SAIPAN	15.3N	145.8E	0304 11/06
GUAM	GUAM	13.4N	144.7E	0309 11/06
INDONESIA	JAYAPURA	2.4S	140.8E	0310 11/06
	WANSA	0.6S	135.8E	0357 11/06
	MANOKWARI	0.8S	134.2E	0416 11/06
	SORONG	0.8S	131.1E	0446 11/06
	BERESBERE	2.5N	128.7E	0506 11/06
	PATANI	0.4N	128.8E	0520 11/06
	GEME	4.6N	126.8E	0528 11/06
	TABUKAN TENGAH	3.6N	125.6E	0544 11/06
	[illegible]	[illegible]	[illegible]	[illegible]
JAPAN	CHICHI JIMA	27.0N	142.3E	0416 11/06
	KUSHIRO	42.9N	144.3E	0428 11/06
	KATSUURA	35.1N	140.3E	0451 11/06
	HACHIJO JIMA	33.1N	139.8E	0456 11/06
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	OKINAWA	26.2N	127.8E	0651 11/06
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	LEGASPI	13.2N	123.8E	0556 11/06
	PALANAN	17.1N	122.6E	0605 11/06
	LAOAG	18.2N	120.6E	0657 11/06
	[illegible]	[illegible]	[illegible]	[illegible]
	MANILA	14.6N	121.0E	0924 11/06
TAIWAN	HUALIEN	24.0N	121.7E	0628 11/06
	TAITUNG	22.7N	121.2E	0629 11/06
	CHILUNG	25.2N	121.8E	0658 11/06
	KAOHSIUNG	22.5N	120.3E	0711 11/06
	HOMEL	24.2N	120.4E	0859 11/06
CHINA	WENZHOU	27.8N	121.2E	0932 11/06

POTENTIAL IMPACTS

* A TSUNAMI IS A SERIES OF WAVES. THE TIME BETWEEN WAVE CRESTS CAN VARY FROM 5 MINUTES TO AN HOUR. THE HAZARD MAY PERSIST FOR MANY HOURS OR LONGER AFTER THE INITIAL WAVE.

* IMPACTS CAN VARY SIGNIFICANTLY FROM ONE SECTION OF COAST TO THE NEXT DUE TO LOCAL BATHYMETRY AND THE SHAPE AND ELEVATION OF THE SHORELINE.

* IMPACTS CAN ALSO VARY DEPENDING UPON THE STATE OF THE TIDE AT THE TIME OF THE MAXIMUM TSUNAMI WAVES.

* PERSONS CAUGHT IN THE WATER OF A TSUNAMI MAY DROWN... BE CRUSHED BY DEBRIS IN THE WATER... OR BE SWEPT OUT TO SEA.

NEXT UPDATE AND ADDITIONAL INFORMATION

* THE NEXT MESSAGE WILL BE ISSUED IN ONE HOUR... OR SOONER IF THE SITUATION WARRANTS.

* AUTHORITATIVE INFORMATION ABOUT THE EARTHQUAKE FROM THE U.S. GEOLOGICAL SURVEY CAN BE FOUND ON THE INTERNET AT EARTHQUAKE.USGS.GOV.

* FURTHER INFORMATION ABOUT THIS EVENT MAY BE FOUND AT WWW.TSUNAMI.GOV.

* COASTAL REGIONS OF HAWAII... AMERICAN SAMOA... GUAM... AND CNMI SHOULD REFER TO PACIFIC TSUNAMI WARNING CENTER MESSAGES SPECIFICALLY FOR THOSE PLACES THAT CAN BE FOUND AT WWW.TSUNAMI.GOV.

* COASTAL REGIONS OF CALIFORNIA... OREGON... WASHINGTON... BRITISH COLUMBIA AND ALASKA SHOULD ONLY REFER TO U.S. NATIONAL TSUNAMI WARNING CENTER MESSAGES THAT CAN BE FOUND AT WWW.TSUNAMI.GOV.

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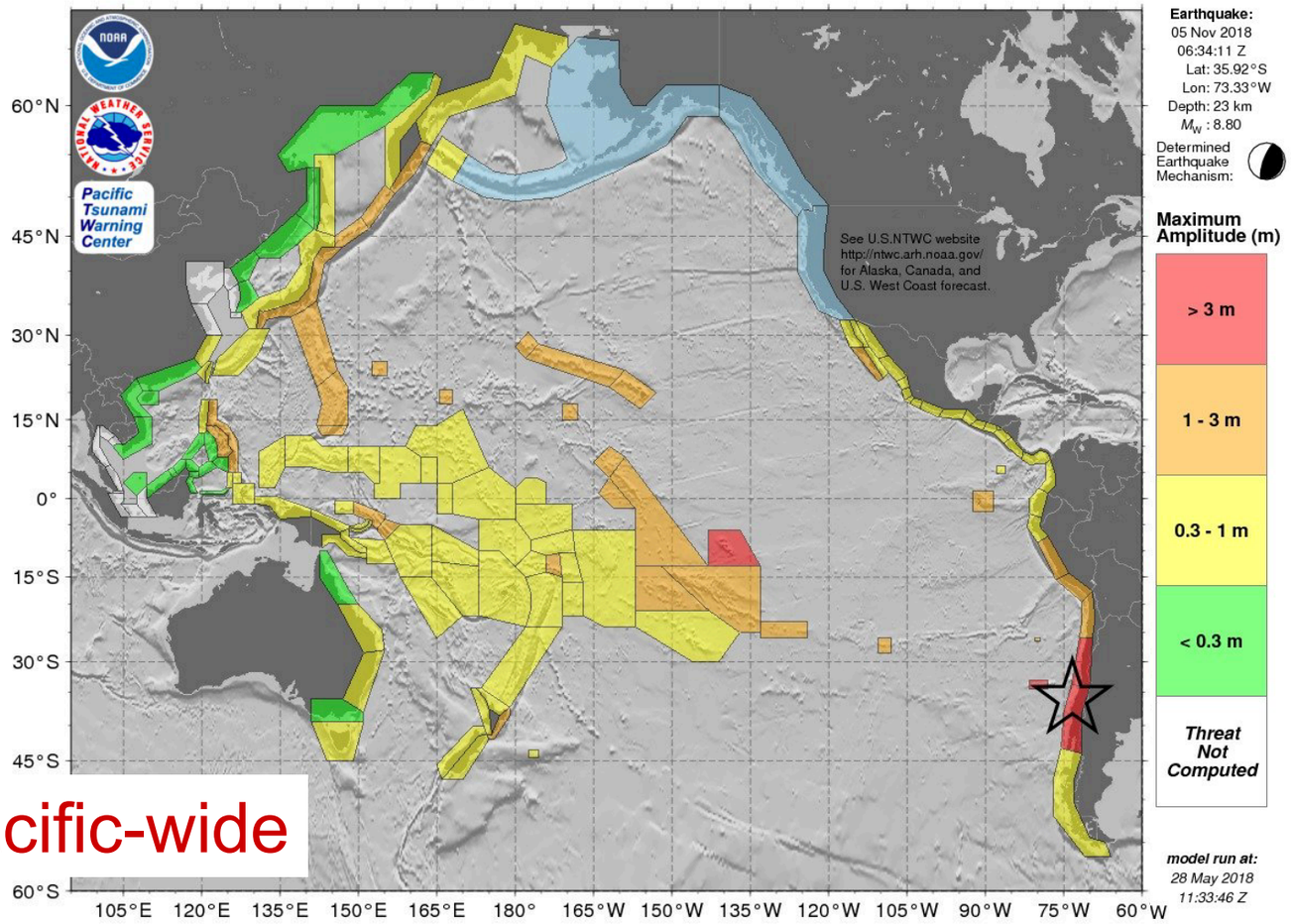
Pacific-wide

Country Coastal Forecast: Polygon summary

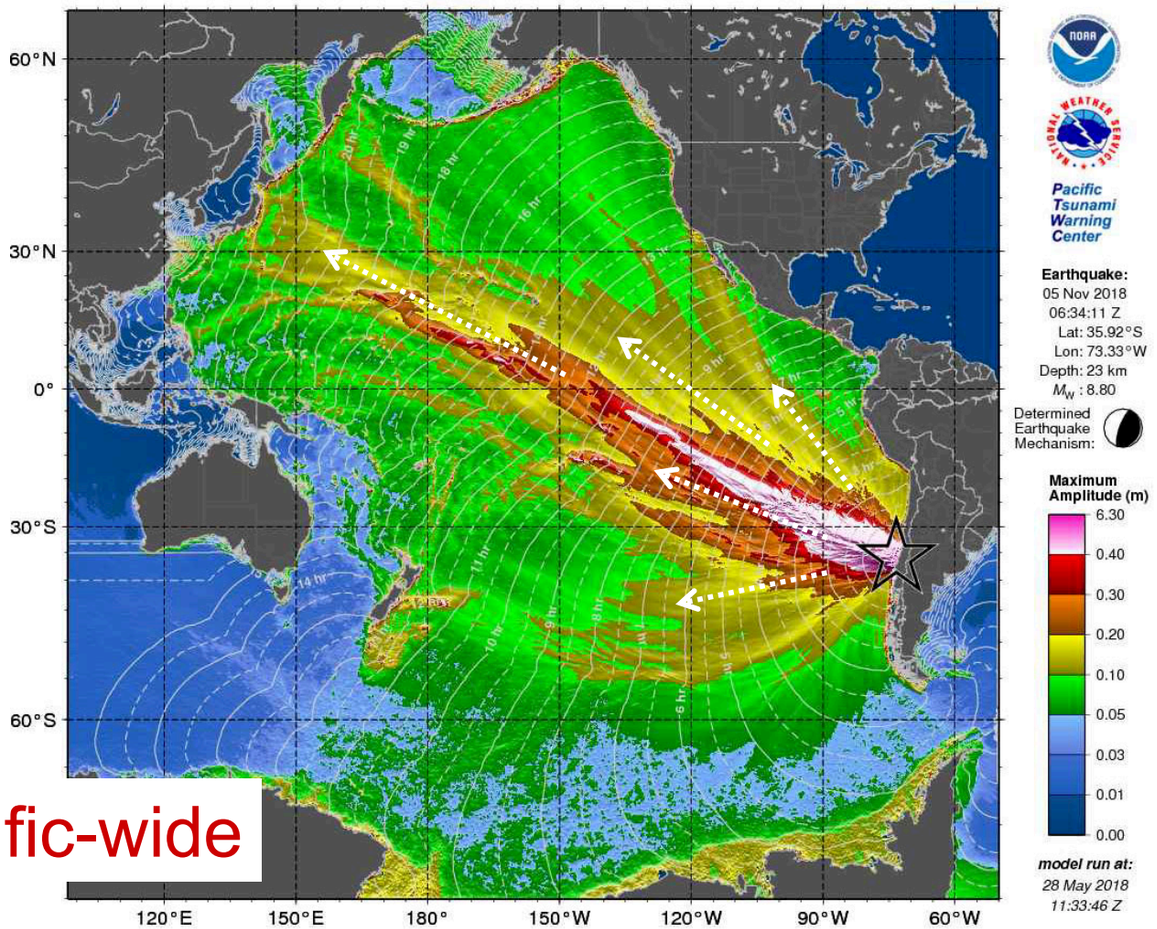


Pacific-wide

Maximum tsunami amplitude forecast for all coasts within each polygon as described by color scale.

Each country is represented uniquely by one or more polygons.

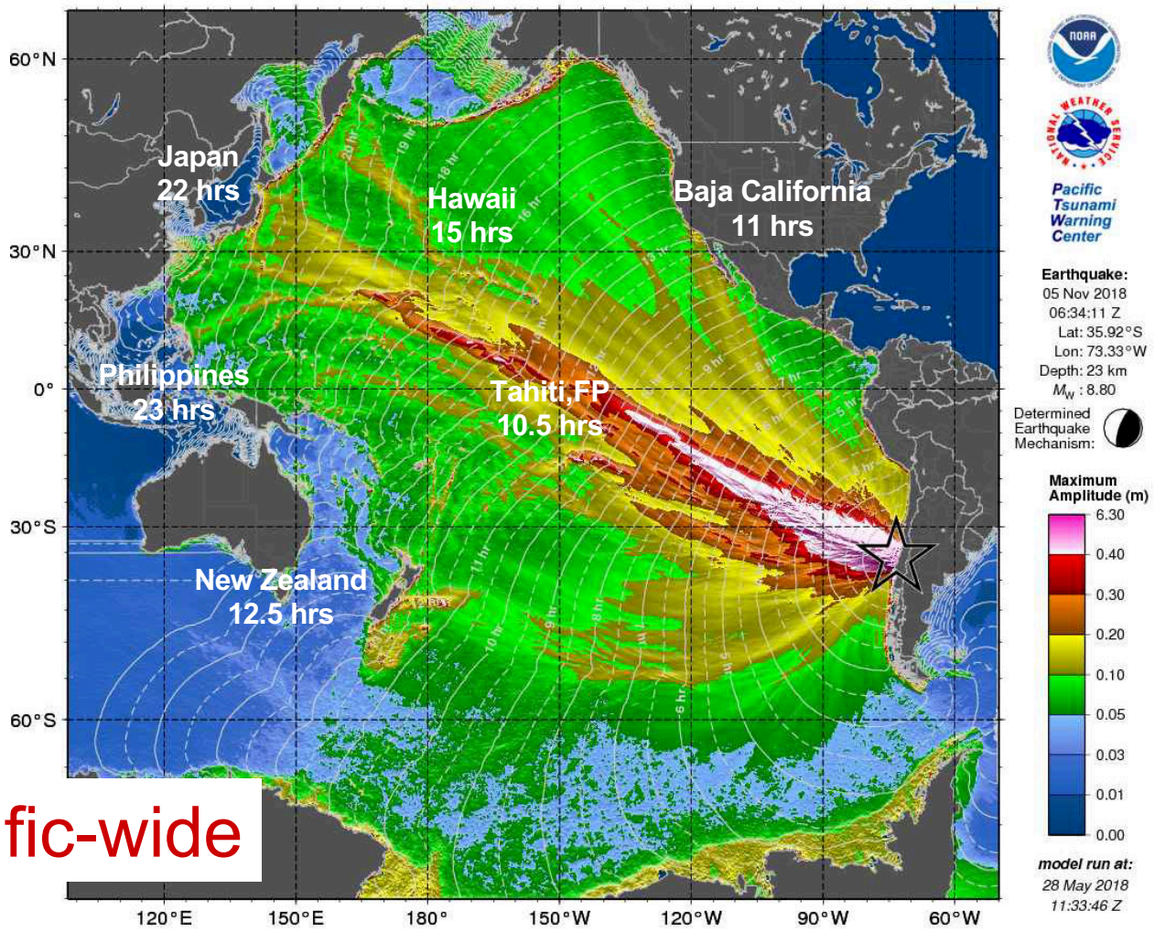
Propagation Forecast: Directionality, Travel Times



Pacific-wide

Tsunami amplitude forecast in deep water as described by the color scale.

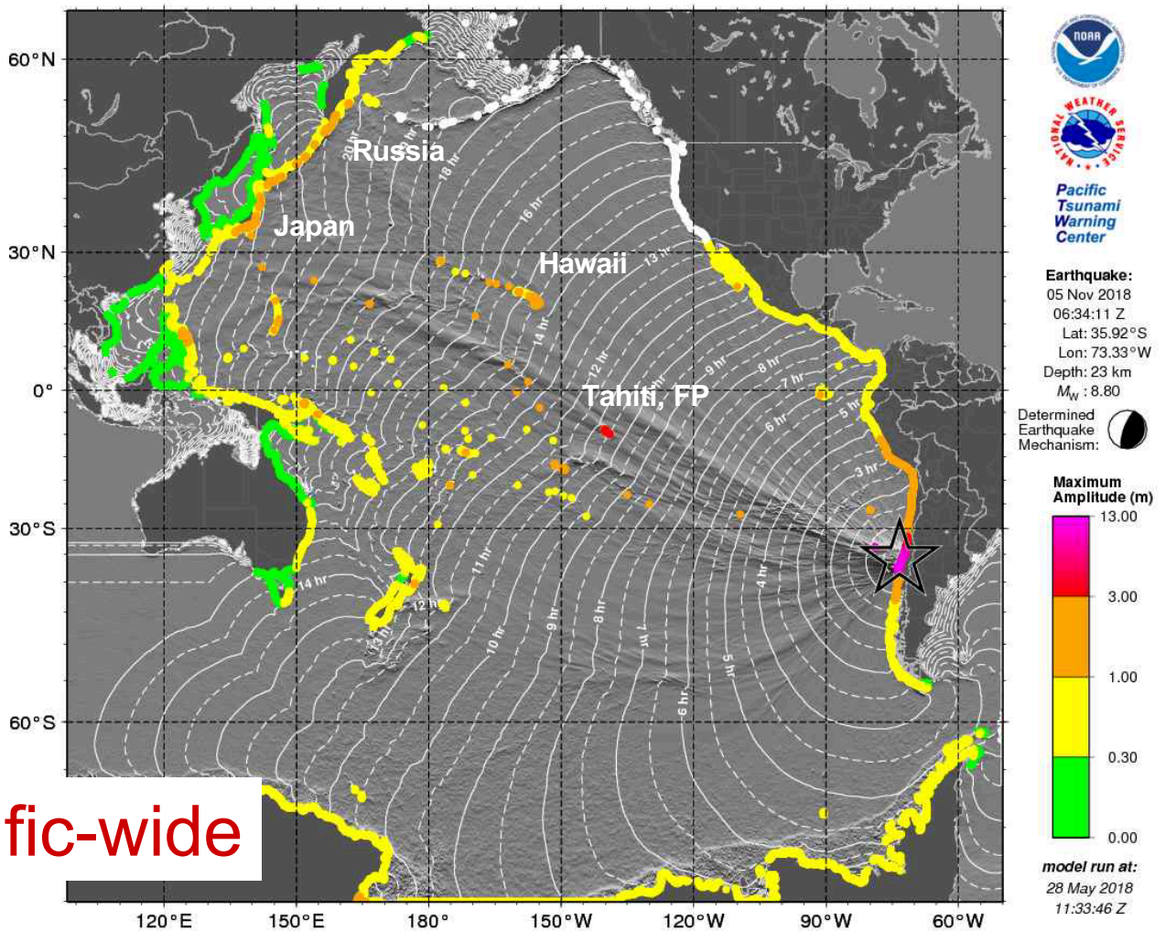
Propagation Forecast: Directionality, Travel Times



Pacific-wide

Tsunami amplitude forecast in deep water as described by the color scale.

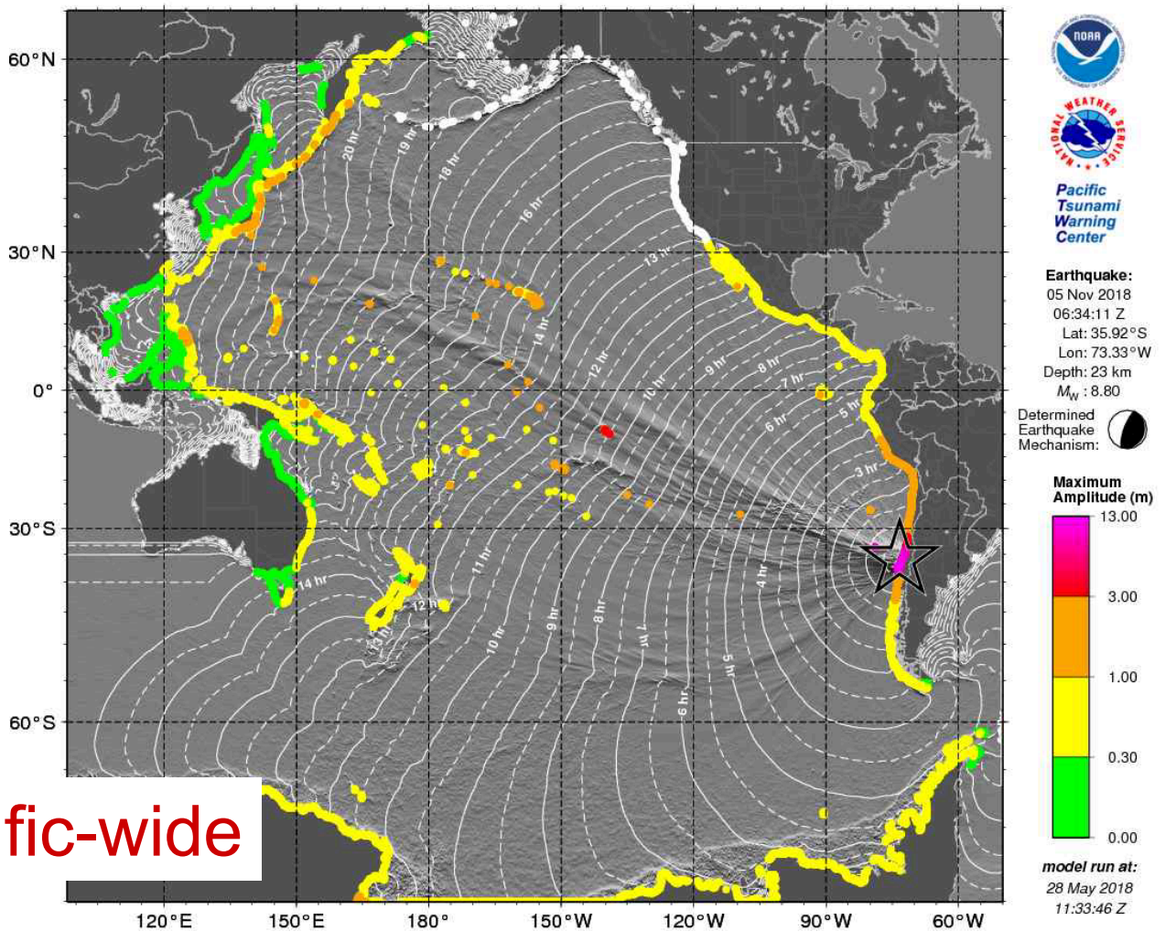
Coastal Forecast: Amplitude at each coastal point



Pacific-wide

Tsunami amplitude forecast at coastal points as described by the color scale.

Coastal Forecast: Amplitude at each coastal point

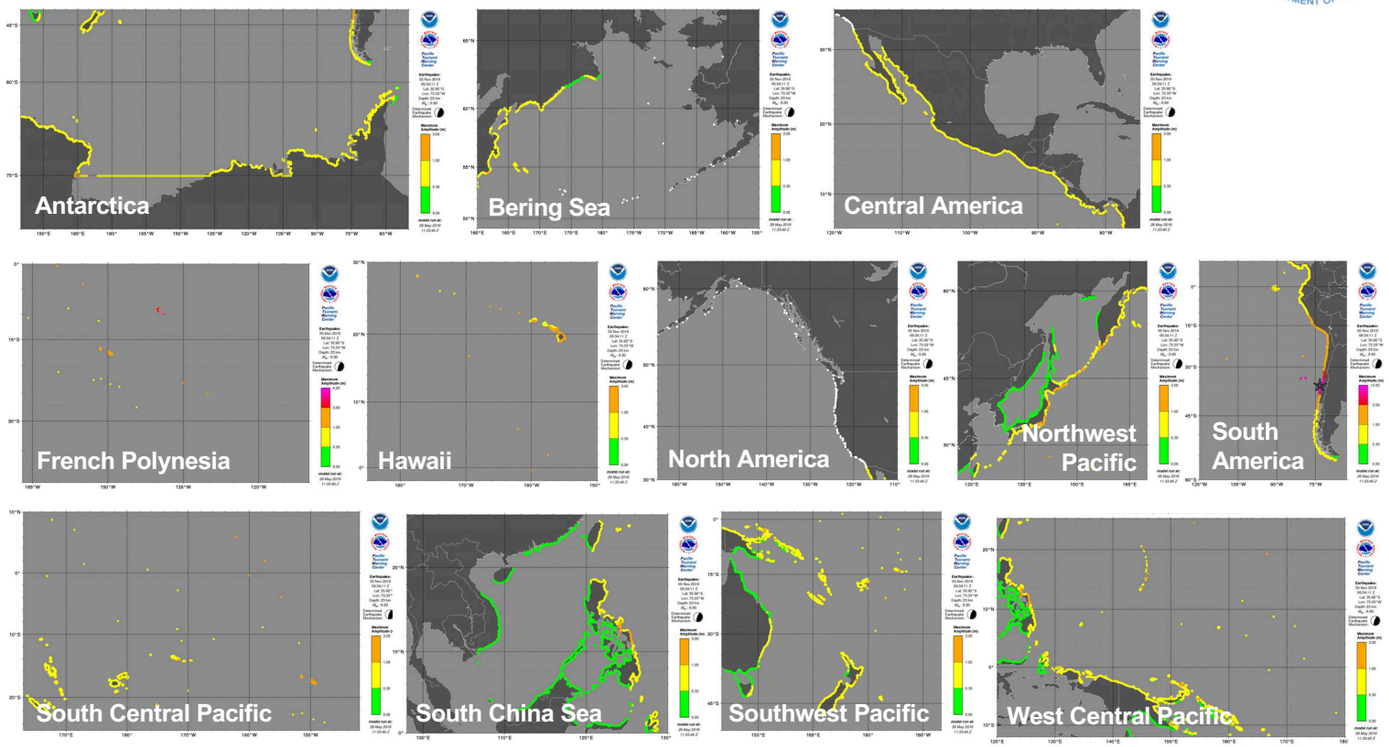


Pacific-wide

Tsunami amplitude forecast at coastal points as described by the color scale.

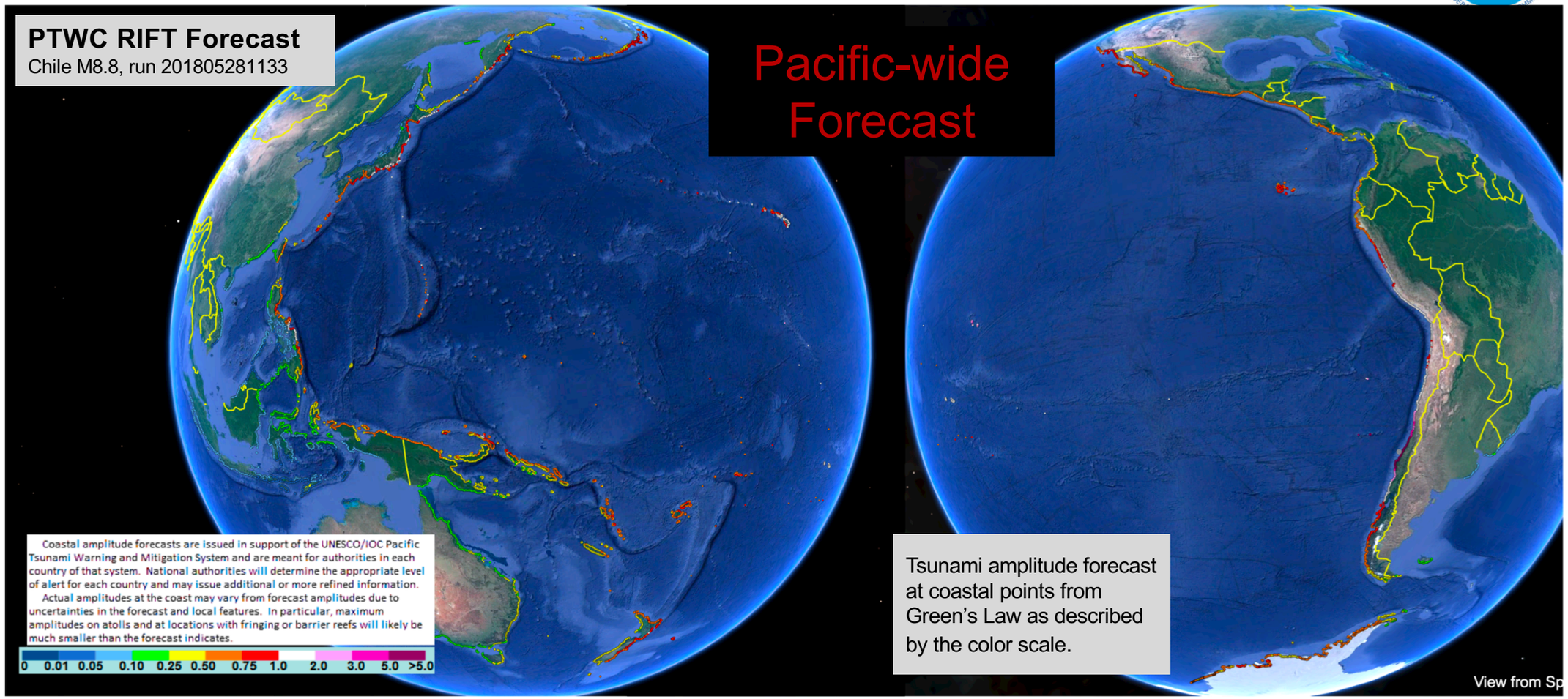
Coastal Forecast – 12 Regional Maps

- Antarctica
- Bering Sea
- Central America
- French Polynesia
- Hawaii
- North America
- Northwest Pacific
- South America
- South Central Pacific
- South China Sea
- Southwest Pacific
- West Central Pacific

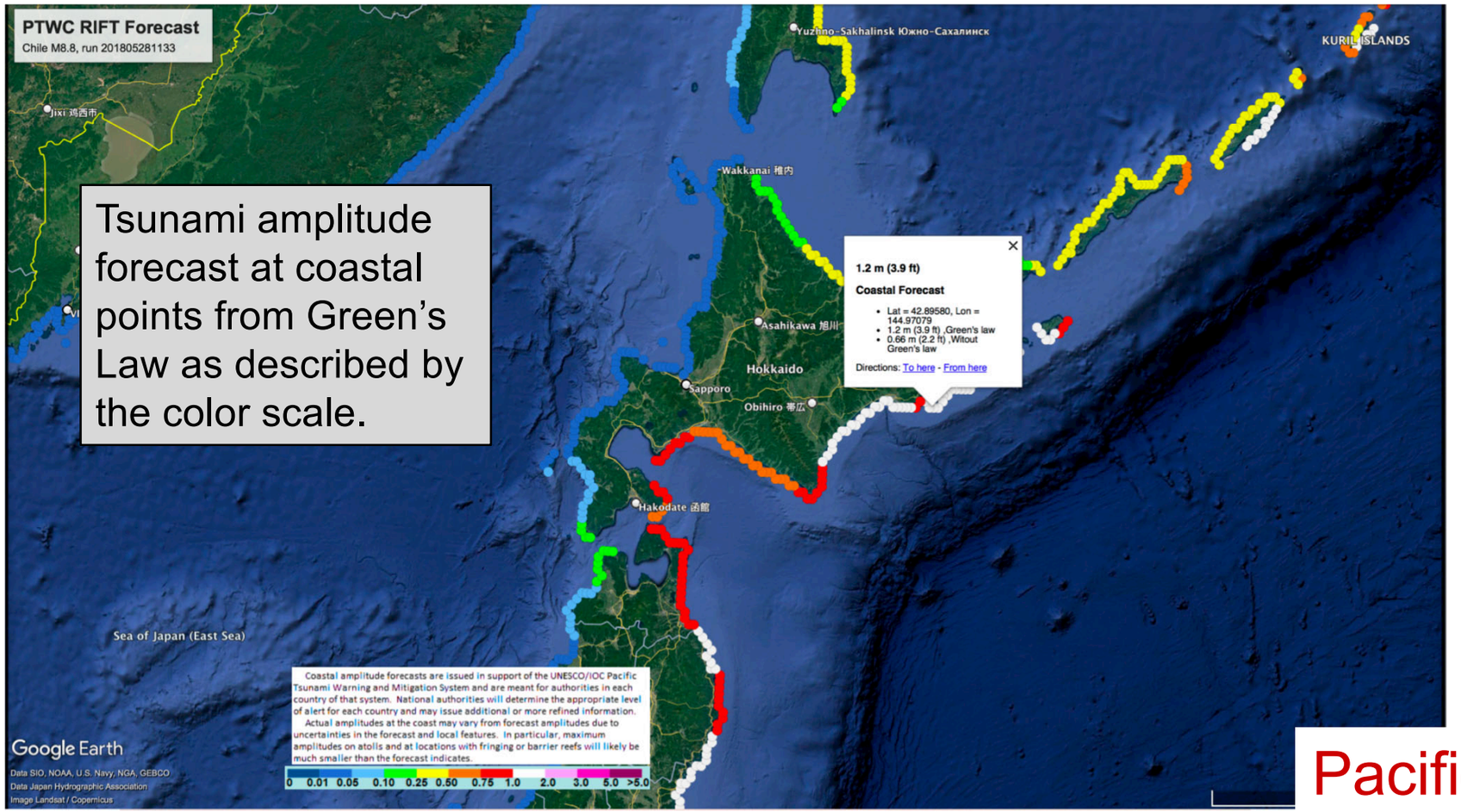


Pacific-wide

Forecast KMZ: Coastal (Green's Law), Offshore (no Green's Law)



Forecast KMZ: Coastal (Green's Law), Offshore (no Green's Law)



Pacific-wide

Forecast Statistics Table: Forecast variability

PTWC TABLE OF FORECAST STATISTICS FOR REGIONAL POLYGONS - RUN ID 20180528113346
(for internal use only - not for distribution

Earthquake - Origin: 11/05/2018 06:34:11 UTC Coordinates: 35.9S 73.3W Depth: 023km Magnitude: 8.8

This table is issued for information only in support the UNESCO/IOC Pacific Tsunami Warning and Mitigation System and is meant for national authorities in each country of that system. National authorities will determine the appropriate level of alert for each country and may issue additional or more refined information.

Actual amplitudes at the coast may vary from forecast amplitudes due to uncertainties in the forecast and local features. In particular, maximum tsunami amplitudes on atolls will likely be much smaller than the forecast indicates.

	Coastal Forecast (meters)				Offshore Forecast (meters)				Total
Region_Name	Maximum	Mean	Median	STD	Maximum	Mean	Median	STD	Points
South_Central_Chile	13.	5.70	2.70	4.50	6.3	2.30	2.00	1.40	158
Juan_Fernandez_Archipelago	11.	9.00	8.80	1.10	4.5	3.10	3.30	1.20	5
North_Central_Chile	5.5	2.20	1.90	1.00	2.8	0.86	0.62	0.53	121
Marquesas_Islands	4.2	2.70	2.40	0.74	1.3	0.59	0.55	0.25	24
Palmyra_Island	2.7	2.70	2.70	0.00	0.41	0.41	0.41	0.00	1
San_Felix_Islands	2.1	2.00	2.00	0.05	0.74	0.52	0.50	0.12	5
Southern_Peru	2.0	1.50	1.40	0.15	1.0	0.51	0.48	0.11	86
Society_Islands	1.9	1.30	1.20	0.27	0.50	0.27	0.26	0.07	35
Hawaii	1.8	1.10	1.00	0.32	0.84	0.32	0.29	0.14	147
Line_Islands_Kiribati	1.8	1.20	1.20	0.43	0.34	0.20	0.17	0.10	3
Izu_and_Ogasawara_Islands_Japan	1.7	1.40	1.40	0.30	0.38	0.29	0.29	0.09	2
Pacific_Coast_of_the_Philippines	1.6	0.66	0.66	0.27	1.5	0.28	0.24	0.19	350
East_Coast_of_Japanese_Main_Islands	1.6	0.94	0.93	0.22	1.6	0.53	0.46	0.28	404
Central_Peru	1.6	1.00	0.96	0.23	0.90	0.56	0.54	0.11	110
Northern_Chile	1.5	1.10	1.10	0.14	1.2	0.36	0.32	0.16	118
Easter_Island	1.5	1.50	1.50	0.00	0.28	0.28	0.28	0.00	1
Kuril_Islands_Russia	1.3	0.69	0.59	0.25	0.89	0.27	0.24	0.17	95
Pitcairn_Islands	1.3	1.30	1.30	0.00	0.22	0.22	0.22	0.00	1
Wake_Island	1.3	1.30	1.30	0.05	0.21	0.21	0.21	0.00	3
Urup_Etorofu_Kunashiri_Shikotan_and_Habomai_Islands	1.2	0.51	0.37	0.30	0.69	0.22	0.16	0.16	101
Ross_Sea	1.2	0.62	0.58	0.15	0.75	0.17	0.17	0.10	1158
New_Ireland	1.2	0.65	0.61	0.18	0.84	0.19	0.15	0.13	127
Samoa	1.2	0.76	0.72	0.14	0.66	0.25	0.20	0.14	40
Pacific_Coast_of_Kamchatka_Russia	1.2	0.89	0.90	0.16	1.4	0.59	0.58	0.23	157
Jarvis_Island	1.2	1.20	1.20	0.00	0.17	0.17	0.17	0.00	1
Johnston_Atoll	1.2	1.20	1.20	0.00	0.20	0.20	0.20	0.00	1
Interior_Seas_of_the_Philippines	1.1	0.10	0.07	0.17	0.57	0.03	0.02	0.06	264
Northern_Marianas	1.1	0.77	0.70	0.22	0.38	0.16	0.14	0.07	19
Galapagos_Islands	1.1	0.76	0.78	0.11	0.64	0.23	0.22	0.09	95
Northwestern_Hawaiian_Islands	1.1	1.00	1.00	0.11	0.50	0.37	0.39	0.11	5
Minamitorishima_Japan	1.1	1.10	1.10	0.00	0.16	0.16	0.16	0.00	1
Tuamotu_Archipelago	1.1	1.10	1.10	0.00	0.20	0.20	0.20	0.00	1
Bougainville_Papua_New_Guinea	1.0	0.54	0.59	0.25	0.83	0.27	0.22	0.15	74
Guam	1.0	0.72	0.64	0.15	0.25	0.20	0.20	0.05	12
Tonga	1.0	0.77	0.69	0.13	0.65	0.54	0.53	0.07	4
East_Side_of_North_Island_New_Zealand	1.0	0.80	0.78	0.09	0.71	0.46	0.47	0.14	87
Pacific_Side_of_Baja_Sud_Mexico	1.0	0.81	0.80	0.08	0.92	0.51	0.51	0.14	113
Midway_Island	1.0	0.97	0.97	0.04	0.41	0.28	0.30	0.08	13
Chatham_Islands	0.98	0.85	0.84	0.07	1.1	0.61	0.55	0.17	25
Vanuatu	0.97	0.60	0.62	0.12	0.59	0.18	0.17	0.07	189
Amundsen_Sea	0.97	0.69	0.67	0.14	0.66	0.22	0.19	0.09	394
East_Side_of_South_Island_New_Zealand	0.96	0.70	0.74	0.16	1.0	0.46	0.45	0.14	158
Pacific_Side_of_Baja_Mexico	0.96	0.78	0.76	0.09	0.73	0.45	0.43	0.12	74
Fiji	0.95	0.66	0.64	0.11	0.76	0.31	0.27	0.14	150
Cook_Islands	0.92	0.74	0.74	0.15	0.12	0.10	0.11	0.02	3
Gilbert_Islands_Kiribati	0.91	0.91	0.91	0.00	0.31	0.31	0.31	0.00	1
Bering_Sea_Coast_of_Eastern_Russia	0.90	0.40	0.41	0.12	0.63	0.26	0.24	0.10	328
Pacific_Side_of_Papua_Indonesia	0.89	0.57	0.57	0.10	0.81	0.24	0.20	0.13	266
Southern_Chile	0.89	0.58	0.58	0.18	0.74	0.34	0.30	0.14	381
Jalisco_Mexico	0.89	0.77	0.79	0.09	0.53	0.34	0.33	0.10	33
Nayarit_Mexico	0.87	0.58	0.54	0.11	0.63	0.36	0.38	0.13	31
Nansei_Islands_Japan	0.87	0.64	0.63	0.14	0.99	0.35	0.33	0.17	81
North_Side_of_North_Island_New_Zealand	0.86	0.67	0.66	0.06	0.88	0.44	0.44	0.12	114
Austral_Islands	0.86	0.78	0.79	0.08	0.18	0.14	0.15	0.02	5
Gulf_Side_of_Baja_Sud_Mexico	0.85	0.47	0.43	0.13	0.62	0.16	0.14	0.09	104
West_Side_of_South_Island_New_Zealand	0.84	0.39	0.40	0.10	0.57	0.21	0.22	0.10	140
Marshall_Islands	0.84	0.62	0.56	0.13	0.55	0.27	0.21	0.19	4
Manus_Island_Papua_New_Guinea	0.84	0.67	0.62	0.13	0.51	0.34	0.32	0.10	23
Oaxaca_Mexico	0.83	0.62	0.62	0.05	0.73	0.30	0.28	0.10	68
Choisel_to_Philip_Solomon_Islands	0.82	0.43	0.36	0.17	0.76	0.17	0.14	0.11	337
West_Coast_of_Japanese_Main_Islands	0.79	0.14	0.04	0.21	0.76	0.08	0.03	0.12	463
Talaud_Islands_Indonesia	0.79	0.49	0.51	0.18	0.33	0.15	0.12	0.06	19
Niue	0.79	0.79	0.79	0.00	0.10	0.10	0.10	0.00	1
Santa_Cruz_Islands	0.78	0.59	0.56	0.10	0.40	0.22	0.22	0.06	18
Northern_Peru	0.77	0.60	0.60	0.09	0.78	0.41	0.37	0.15	86
American_Samoa	0.77	0.64	0.63	0.05	0.31	0.19	0.16	0.08	18
Colima_Mexico	0.77	0.72	0.73	0.05	0.57	0.36	0.32	0.10	12
Howland_and_Baker	0.77	0.77	0.77	0.00	0.09	0.09	0.09	0.00	1
Tatarskiy_Straight_Coast_of_Sakhalin_Russia	0.06	0.05	0.06	0.00	0.08	0.03	0.03	0.02	47
East_Coast_of_Russia_on_the_Tatarskiy_Straight	0.06	0.05	0.05	0.00	0.03	0.01	0.01	0.00	43
Northwest_Coast_of_Sabah_Malaysia	0.05	0.05	0.05	0.00	0.04	0.03	0.02	0.01	52
Sulu_Sea_Coast_of_Sabah_Malaysia	0.05	0.05	0.05	0.00	0.05	0.02	0.02	0.01	49
East_Coast_of_Russia_north_of_the_Korean_Peninsula	0.05	0.03	0.03	0.00	0.04	0.02	0.02	0.01	148
Natuna_Islands_Indonesia	0.05	0.05	0.05	0.00	0.02	0.01	0.01	0.00	5
Eastern_Coast_of_DPR_of_Korea	0.05	0.03	0.03	0.01	0.03	0.01	0.01	0.01	89
Eastern_Coast_of_the_Republic_of_Korea	0.05	0.03	0.03	0.00	0.04	0.01	0.01	0.01	59

	Coastal Forecast (meters)				Offshore Forecast (meters)				Total
Region_Name	Maximum	Mean	Median	STD	Maximum	Mean	Median	STD	Points
South_Central_Chile	13.	5.70	2.70	4.50	6.3	2.30	2.00	1.40	158
Juan_Fernandez_Archipelago	11.	9.00	8.80	1.10	4.5	3.10	3.30	1.20	5
North_Central_Chile	5.5	2.20	1.90	1.00	2.8	0.86	0.62	0.53	121
Marquesas_Islands	4.2	2.70	2.40	0.74	1.3	0.59	0.55	0.25	24
Palmyra_Island	2.7	2.70	2.70	0.00	0.41	0.41	0.41	0.00	1
San_Felix_Islands	2.1	2.00	2.00	0.05	0.74	0.52	0.50	0.12	5
Southern_Peru	2.0	1.50	1.40	0.15	1.0	0.51	0.48	0.11	86
Society_Islands	1.9	1.30	1.20	0.27	0.50	0.27	0.26	0.07	35
Hawaii	1.8	1.10	1.00	0.32	0.84	0.32	0.29	0.14	147
Line_Islands_Kiribati	1.8	1.20	1.20	0.43	0.34	0.20	0.17	0.10	3
Izu_and_Ogasawara_Islands_Japan	1.7	1.40	1.40	0.30	0.38	0.29	0.29	0.09	2
Pacific_Coast_of_the_Philippines	1.6	0.66	0.66	0.27	1.5	0.28	0.24	0.19	350
East_Coast_of_Japanese_Main_Islands	1.6	0.94	0.93	0.22	1.6	0.53	0.46	0.28	404
Central_Peru	1.6	1.00	0.96	0.23	0.90	0.56	0.54	0.11	110
Northern_Chile	1.5	1.10	1.10	0.14	1.2	0.36	0.32	0.16	118
Easter_Island	1.5	1.50	1.50	0.00	0.28	0.28	0.28	0.00	1
Kuril_Islands_Russia	1.3	0.69	0.59	0.25	0.89	0.27	0.24	0.17	95
Pitcairn_Islands	1.3	1.30	1.30	0.00	0.22	0.22	0.22	0.00	1
Wake_Island	1.3	1.30	1.30	0.05	0.21	0.21	0.21	0.00	3
Urup_Etorofu_Kunashiri_Shikotan_and_Habomai_Islands	1.2	0.51	0.37	0.30	0.69	0.22	0.16	0.16	101
Ross_Sea	1.2	0.62	0.58	0.15	0.75	0.17	0.17	0.10	1158
New_Ireland	1.2	0.65	0.61	0.18	0.84	0.19	0.15	0.13	127
Samoa	1.2	0.76	0.72	0.14	0.66	0.25	0.20	0.14	40
Pacific_Coast_of_Kamchatka_Russia	1.2	0.89	0.90	0.16	1.4	0.59	0.58	0.23	157

Pacific-wide

Forecast Statistics Table: Forecast variability

PTWC TABLE OF FORECAST STATISTICS FOR REGIONAL POLYGONS - RUN ID 20180528113346
(for internal use only - not for distribution

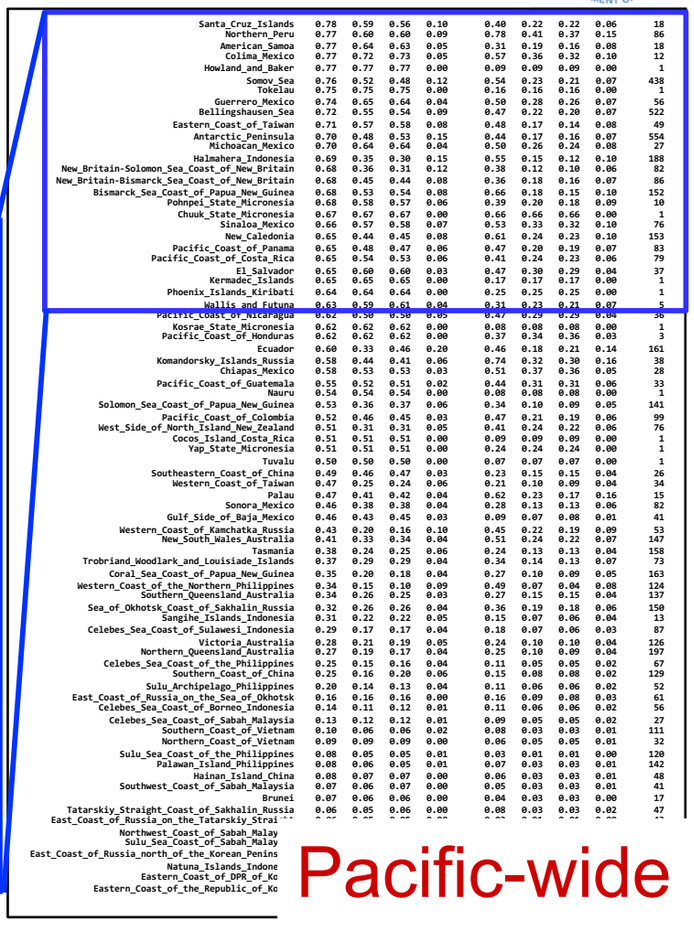
Earthquake - Origin: 11/05/2018 06:34:11 UTC Coordinates: 35.9S 73.3W Depth: 023km Magnitude: 8.8

This table is issued for information only in support the UNESCO/IOC Pacific Tsunami Warning and Mitigation System and is meant for national authorities in each country of that system. National authorities will determine the appropriate level of alert for each country and may issue additional or more refined information.

Actual amplitudes at the coast may vary from forecast amplitudes due to uncertainties in the forecast and local features. In particular, maximum tsunami amplitudes on atolls will likely be much smaller than the forecast indicates.

	Coastal Forecast (meters)				Offshore Forecast (meters)				Total
Region_Name	Maximum	Mean	Median	STD	Maximum	Mean	Median	STD	Points
South_Central_Chile	13.	5.70	2.70	4.50	6.3	2.30	2.00	1.40	158
Juan_Fernandez_Archipelago	11.	9.00	8.80	1.10	4.5	3.10	3.30	1.20	5
North_Central_Chile	5.5	2.20	1.90	1.00	2.8	0.86	0.62	0.53	121
Magueses_Islands	4.3	2.70	2.40	0.74	1.3	0.50	0.55	0.25	24

	Coastal Forecast (meters)				Offshore Forecast (meters)				Total
Region_Name	Maximum	Mean	Median	STD	Maximum	Mean	Median	STD	Points
Santa_Cruz_Islands	0.78	0.59	0.56	0.10	0.40	0.22	0.22	0.06	18
Northern_Peru	0.77	0.60	0.60	0.09	0.78	0.41	0.37	0.15	86
American_Samoa	0.77	0.64	0.63	0.05	0.31	0.19	0.16	0.08	18
Colima_Mexico	0.77	0.72	0.73	0.05	0.57	0.36	0.32	0.10	12
Howland_and_Baker	0.77	0.77	0.77	0.00	0.09	0.09	0.09	0.00	1
Somov_Sea	0.76	0.52	0.48	0.12	0.54	0.23	0.21	0.07	438
Tokelau	0.75	0.75	0.75	0.00	0.16	0.16	0.16	0.00	1
Guerrero_Mexico	0.74	0.65	0.64	0.04	0.50	0.28	0.26	0.07	56
Bellingshausen_Sea	0.72	0.55	0.54	0.09	0.47	0.22	0.20	0.07	522
Eastern_Coast_of_Taiwan	0.71	0.57	0.58	0.08	0.48	0.17	0.14	0.08	49
Antarctic_Peninsula	0.70	0.48	0.53	0.15	0.44	0.17	0.16	0.07	554
Michoacan_Mexico	0.70	0.64	0.64	0.04	0.50	0.26	0.24	0.08	27
Halmahera_Indonesia	0.69	0.35	0.30	0.15	0.55	0.15	0.12	0.10	188
New_Britain-Solomon_Sea_Coast_of_New_Britain	0.68	0.36	0.31	0.12	0.38	0.12	0.10	0.06	82
New_Britain-Bismarck_Sea_Coast_of_New_Britain	0.68	0.45	0.44	0.08	0.36	0.18	0.16	0.07	86
Bismarck_Sea_Coast_of_Papua_New_Guinea	0.68	0.53	0.54	0.08	0.66	0.18	0.15	0.10	152
Pohnpei_State_Micronesia	0.68	0.58	0.57	0.06	0.39	0.20	0.18	0.09	10
Chuuk_State_Micronesia	0.67	0.67	0.67	0.00	0.66	0.66	0.66	0.00	1
Sinaloa_Mexico	0.66	0.57	0.58	0.07	0.53	0.33	0.32	0.10	76
New_Caledonia	0.65	0.44	0.45	0.08	0.61	0.24	0.23	0.10	153
Pacific_Coast_of_Panama	0.65	0.48	0.47	0.06	0.47	0.20	0.19	0.07	83
Pacific_Coast_of_Costa_Rica	0.65	0.54	0.53	0.06	0.41	0.24	0.23	0.06	79
El_Salvador	0.65	0.60	0.60	0.03	0.47	0.30	0.29	0.04	37



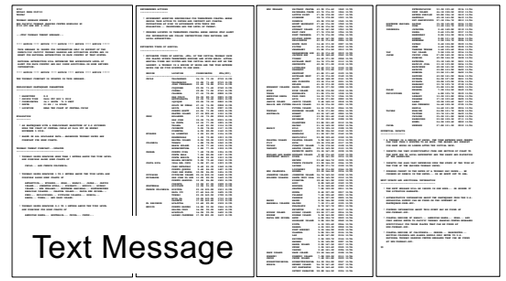
Santa_Cruz_Islands	0.78	0.59	0.56	0.10	0.40	0.22	0.22	0.06	18
Northern_Peru	0.77	0.60	0.60	0.09	0.78	0.41	0.37	0.15	86
American_Samoa	0.77	0.64	0.63	0.05	0.31	0.19	0.16	0.08	18
Colima_Mexico	0.77	0.72	0.73	0.05	0.57	0.36	0.32	0.10	12
Howland_and_Baker	0.77	0.77	0.77	0.00	0.09	0.09	0.09	0.00	1
Somov_Sea	0.76	0.52	0.48	0.12	0.54	0.23	0.21	0.07	438
Tokelau	0.75	0.75	0.75	0.00	0.16	0.16	0.16	0.00	1
Guerrero_Mexico	0.74	0.65	0.64	0.04	0.50	0.28	0.26	0.07	56
Bellingshausen_Sea	0.72	0.55	0.54	0.09	0.47	0.22	0.20	0.07	522
Eastern_Coast_of_Taiwan	0.71	0.57	0.58	0.08	0.48	0.17	0.14	0.08	49
Antarctic_Peninsula	0.70	0.48	0.53	0.15	0.44	0.17	0.16	0.07	554
Michoacan_Mexico	0.70	0.64	0.64	0.04	0.50	0.26	0.24	0.08	27
Halmahera_Indonesia	0.69	0.35	0.30	0.15	0.55	0.15	0.12	0.10	188
New_Britain-Solomon_Sea_Coast_of_New_Britain	0.68	0.36	0.31	0.12	0.38	0.12	0.10	0.06	82
New_Britain-Bismarck_Sea_Coast_of_New_Britain	0.68	0.45	0.44	0.08	0.36	0.18	0.16	0.07	86
Bismarck_Sea_Coast_of_Papua_New_Guinea	0.68	0.53	0.54	0.08	0.66	0.18	0.15	0.10	152
Pohnpei_State_Micronesia	0.68	0.58	0.57	0.06	0.39	0.20	0.18	0.09	10
Chuuk_State_Micronesia	0.67	0.67	0.67	0.00	0.66	0.66	0.66	0.00	1
Sinaloa_Mexico	0.66	0.57	0.58	0.07	0.53	0.33	0.32	0.10	76
New_Caledonia	0.65	0.44	0.45	0.08	0.61	0.24	0.23	0.10	153
Pacific_Coast_of_Panama	0.65	0.48	0.47	0.06	0.47	0.20	0.19	0.07	83
Pacific_Coast_of_Costa_Rica	0.65	0.54	0.53	0.06	0.41	0.24	0.23	0.06	79
El_Salvador	0.65	0.60	0.60	0.03	0.47	0.30	0.29	0.04	37
Kermadec_Islands	0.65	0.65	0.65	0.00	0.17	0.17	0.17	0.00	1
Phoenix_Islands_Kiribati	0.64	0.64	0.64	0.00	0.25	0.25	0.25	0.00	1
Wallis_and_Futuna	0.63	0.59	0.61	0.04	0.31	0.23	0.21	0.07	5
Pacific_Coast_of_Nicaragua	0.62	0.50	0.50	0.05	0.47	0.29	0.29	0.04	36
Kosrae_State_Micronesia	0.62	0.62	0.62	0.00	0.08	0.08	0.08	0.00	1
Pacific_Coast_of_Honduras	0.62	0.62	0.62	0.00	0.37	0.34	0.36	0.03	3
Ecuador	0.60	0.33	0.46	0.20	0.46	0.18	0.21	0.14	161
Komandorsky_Islands_Russia	0.58	0.44	0.41	0.06	0.74	0.32	0.30	0.16	38
Chiapas_Mexico	0.58	0.53	0.53	0.03	0.51	0.37	0.36	0.05	28
Pacific_Coast_of_Guatemala	0.55	0.52	0.51	0.02	0.44	0.31	0.31	0.06	33
Nauru	0.54	0.54	0.54	0.00	0.08	0.08	0.08	0.00	1
Solomon_Sea_Coast_of_Papua_New_Guinea	0.53	0.36	0.37	0.06	0.34	0.10	0.09	0.05	141
Pacific_Coast_of_Colombia	0.52	0.46	0.45	0.03	0.47	0.21	0.19	0.06	99
West_Side_of_North_Island_New_Zealand	0.51	0.31	0.31	0.05	0.41	0.24	0.22	0.06	76
Cocos_Island_Costa_Rica	0.51	0.51	0.51	0.00	0.09	0.09	0.09	0.00	1
Yap_State_Micronesia	0.51	0.51	0.51	0.00	0.24	0.24	0.24	0.00	1
Tuvalu	0.50	0.50	0.50	0.00	0.07	0.07	0.07	0.00	1
Southeastern_Coast_of_China	0.49	0.46	0.47	0.03	0.23	0.15	0.15	0.04	26
Western_Coast_of_Taiwan	0.47	0.25	0.24	0.06	0.21	0.10	0.09	0.04	34
Palau	0.47	0.41	0.42	0.04	0.62	0.23	0.17	0.16	15
Sonora_Mexico	0.46	0.38	0.38	0.04	0.28	0.13	0.13	0.06	82
Gulf_Side_of_Baja_Mexico	0.46	0.43	0.45	0.03	0.09	0.07	0.08	0.01	41
Western_Coast_of_Kamchatka_Russia	0.43	0.20	0.16	0.10	0.45	0.22	0.19	0.09	53
New_South_Wales_Australia	0.41	0.33	0.34	0.04	0.51	0.24	0.22	0.07	147
Tasmania	0.38	0.24	0.25	0.06	0.24	0.13	0.13	0.04	158
Trobriand_Woodlark_and_Louisiade_Islands	0.37	0.29	0.29	0.04	0.34	0.14	0.13	0.07	73
Coral_Sea_Coast_of_Papua_New_Guinea	0.35	0.20	0.18	0.04	0.27	0.10	0.09	0.05	163
Western_Coast_of_the_Northern_Philippines	0.34	0.15	0.10	0.09	0.49	0.07	0.04	0.08	124
Southern_Queensland_Australia	0.34	0.26	0.25	0.03	0.27	0.15	0.15	0.04	137
Sea_of_Okhotsk_Coast_of_Sakhalin_Russia	0.32	0.26	0.26	0.04	0.36	0.19	0.18	0.06	150
Sangihe_Islands_Indonesia	0.31	0.22	0.22	0.05	0.15	0.07	0.06	0.04	13
Celebes_Sea_Coast_of_Sulawesi_Indonesia	0.29	0.17	0.17	0.04	0.18	0.07	0.06	0.03	87
Victoria_Australia	0.28	0.21	0.19	0.05	0.24	0.10	0.10	0.04	126
Northern_Queensland_Australia	0.27	0.19	0.17	0.04	0.25	0.10	0.09	0.04	197
Celebes_Sea_Coast_of_the_Philippines	0.25	0.15	0.16	0.04	0.11	0.05	0.05	0.02	67
Southern_Coast_of_China	0.25	0.16	0.20	0.06	0.15	0.08	0.08	0.02	129
Sulu_Archipelago_Philippines	0.20	0.14	0.13	0.04	0.11	0.06	0.06	0.02	52
East_Coast_of_Russia_on_the_Sea_of_Okhotsk	0.16	0.16	0.16	0.00	0.16	0.09	0.08	0.03	61
Celebes_Sea_Coast_of_Borneo_Indonesia	0.14	0.11	0.12	0.01	0.11	0.06	0.06	0.02	56
Celebes_Sea_Coast_of_Sabah_Malaysia	0.13	0.12	0.12	0.01	0.09	0.05	0.05	0.02	27
Southern_Coast_of_Vietnam	0.10	0.06	0.06	0.02	0.08	0.03	0.03	0.01	111
Northern_Coast_of_Vietnam	0.09	0.09	0.09	0.00	0.06	0.05	0.05	0.01	32
Sulu_Sea_Coast_of_the_Philippines	0.08	0.05	0.05	0.01	0.03	0.01	0.01	0.00	120
Palawan_Island_Philippines	0.08	0.06	0.05	0.01	0.07	0.03	0.03	0.01	142
Hainan_Island_China	0.08	0.07	0.07	0.00	0.06	0.03	0.03	0.01	48
Southwest_Coast_of_Sabah_Malaysia	0.07	0.06	0.07	0.00	0.05	0.03	0.03	0.01	41
Brunei	0.07	0.06	0.06	0.00	0.04	0.03	0.03	0.00	17
Tatarskiy_Straight_Coast_of_Sakhalin_Russia	0.06	0.05	0.06	0.00	0.08	0.03	0.03	0.02	47
East_Coast_of_Russia_on_the_Tatarskiy_Strai									
Northwest_Coast_of_Sabah_Malay									
Sulu_Sea_Coast_of_Sabah_Malay									
East_Coast_of_Russia_north_of_the_Korean_Penins									
Natuna_Islands_Indone									
Eastern_Coast_of_DPR_of_Ko									
Eastern_Coast_of_the_Republic_of_Ko									

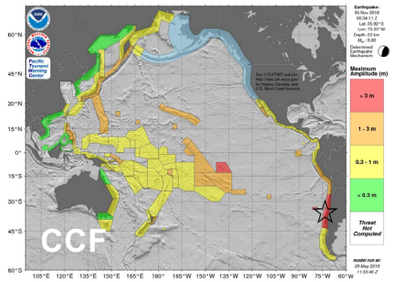
Pacific-wide

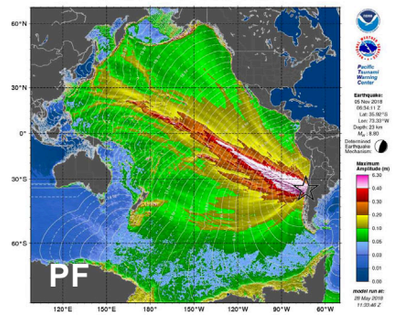
REVIEW

SOP Overview for Graphical Products

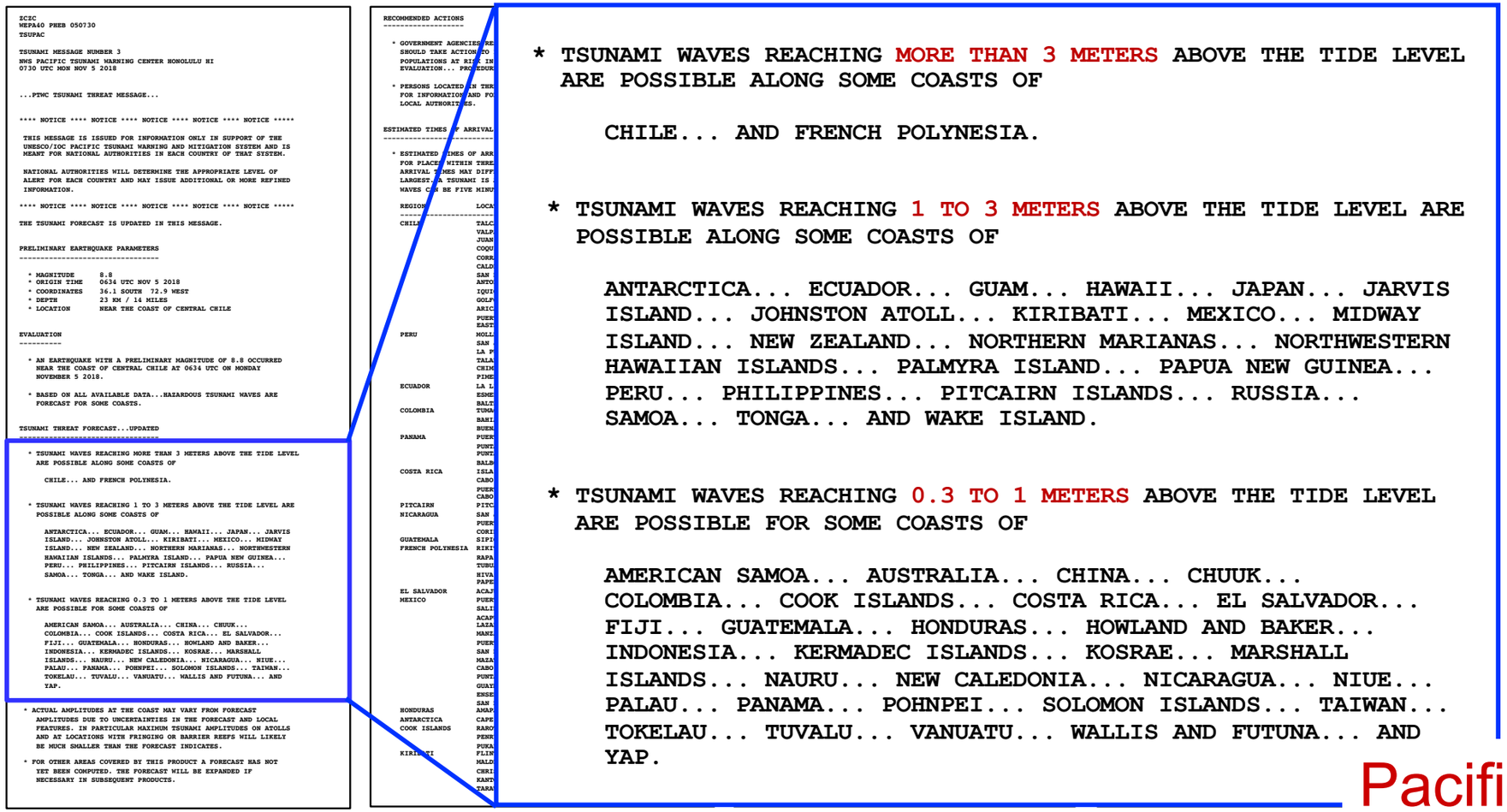
1. **Read Text Message**
   a. Do you have a threat?
   b. What is the maximum level of the threat?
   c. When is the first tsunami wave forecast to arrive?
2. **View Country Coastal Forecast (CCF)**
   a. What are the threat levels across the region?
   b. What is the threat in each of your polygons (if you have more than one)?
3. **View Propagation Forecast (PF)**
   a. Is your coast in a main beam of energy?
   b. How long will it take the tsunami to impact across the region?


Text Message





Text Message: Country Coastal Forecast summary



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ZCZC
WEPA40 PHEB 050730
TSUPAC

TSUNAMI MESSAGE NUMBER 3
NWS PACIFIC TSUNAMI WARNING CENTER HONOLULU HI
0730 UTC MON NOV 5 2018


...PTWC TSUNAMI THREAT MESSAGE...


**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****

 THIS MESSAGE IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE
 UNESCO/IOC PACIFIC TSUNAMI WARNING AND MITIGATION SYSTEM AND IS
 MEANT FOR NATIONAL AUTHORITIES IN EACH COUNTRY OF THAT SYSTEM.

 NATIONAL AUTHORITIES WILL DETERMINE THE APPROPRIATE LEVEL OF
 ALERT FOR EACH COUNTRY AND MAY ISSUE ADDITIONAL OR MORE REFINED
 INFORMATION.

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****

THE TSUNAMI FORECAST IS UPDATED IN THIS MESSAGE.


PRELIMINARY EARTHQUAKE PARAMETERS
---------------------------------

  * MAGNITUDE      8.8
  * ORIGIN TIME    0634 UTC NOV 5 2018
  * COORDINATES    36.1 SOUTH  72.9 WEST
  * DEPTH          23 KM / 14 MILES
  * LOCATION       NEAR THE COAST OF CENTRAL CHILE


EVALUATION
----------

  * AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.8 OCCURRED
    NEAR THE COAST OF CENTRAL CHILE AT 0634 UTC ON MONDAY
    NOVEMBER 5 2018.

  * BASED ON ALL AVAILABLE DATA...HAZARDOUS TSUNAMI WAVES ARE
    FORECAST FOR SOME COASTS.

TSUNAMI THREAT FORECAST...UPDATED
---------------------------------

  * TSUNAMI WAVES REACHING MORE THAN 3 METERS ABOVE THE TIDE LEVEL
    ARE POSSIBLE ALONG SOME COASTS OF

      CHILE... AND FRENCH POLYNESIA.

  * TSUNAMI WAVES REACHING 1 TO 3 METERS ABOVE THE TIDE LEVEL ARE
    POSSIBLE ALONG SOME COASTS OF

      ANTARCTICA... ECUADOR... GUAM... HAWAII... JAPAN... JARVIS
      ISLAND... JOHNSTON ATOLL... KIRIBATI... MEXICO... MIDWAY
      ISLAND... NEW ZEALAND... NORTHERN MARIANAS... NORTHWESTERN
      HAWAIIAN ISLANDS... PALMYRA ISLAND... PAPUA NEW GUINEA...
      PERU... PHILIPPINES... PITCAIRN ISLANDS... RUSSIA...
      SAMOA... TONGA... AND WAKE ISLAND.

  * TSUNAMI WAVES REACHING 0.3 TO 1 METERS ABOVE THE TIDE LEVEL
    ARE POSSIBLE FOR SOME COASTS OF

      AMERICAN SAMOA... AUSTRALIA... CHINA... CHUUK...
      COLOMBIA... COOK ISLANDS... COSTA RICA... EL SALVADOR...
      FIJI... GUATEMALA... HONDURAS... HOWLAND AND BAKER...
      INDONESIA... KERMADEC ISLANDS... KOSRAE... MARSHALL
      ISLANDS... NAURU... NEW CALEDONIA... NICARAGUA... NIUE...
      PALAU... PANAMA... POHNPEI... SOLOMON ISLANDS... TAIWAN...
      TOKELAU... TUVALU... VANUATU... WALLIS AND FUTUNA... AND
      YAP.

  * ACTUAL AMPLITUDES AT THE COAST MAY VARY FROM FORECAST
    AMPLITUDES DUE TO UNCERTAINTIES IN THE FORECAST AND LOCAL
    FEATURES. IN PARTICULAR MAXIMUM TSUNAMI AMPLITUDES ON ATOLLS
    AND AT LOCATIONS WITH FRINGING OR BARRIER REEFS WILL LIKELY
    BE MUCH SMALLER THAN THE FORECAST INDICATES.

  * FOR OTHER AREAS COVERED BY THIS PRODUCT A FORECAST HAS NOT
    YET BEEN COMPUTED. THE FORECAST WILL BE EXPANDED IF
    NECESSARY IN SUBSEQUENT PRODUCTS.

RECOMMENDED ACTIONS
-------------------

  * GOVERNMENT AGENCIES RE
    SHOULD TAKE ACTION TO
    POPULATIONS AT RISK IN
    EVALUATION... PROCEDUR

  * PERSONS LOCATED IN THR
    FOR INFORMATION AND FO
    LOCAL AUTHORITIES.

ESTIMATED TIMES OF ARRIVAL
--------------------------

  * ESTIMATED TIMES OF ARR
    FOR PLACES WITHIN THRE
    ARRIVAL TIMES MAY DIFF
    LARGEST TSUNAMI IS
    WAVES CAN BE FIVE MINU

    REGION                LOCA
    ----------------------------
    CHILE                 TALC
                          VALP
                          JUAN
                          COQU
                          CORR
                          CALD
                          IQUI
                          SAN
                          ANTO
                          ARIC
                          PUER
                          EAST
    PERU                  MOLL
                          SAN
                          LA P
                          TALA
                          CHIM
                          PIME
    ECUADOR               LA L
                          ESME
                          BALT
    COLOMBIA              TUMA
                          BAHI
                          BUEN
    PANAMA                PUER
                          PUNT
                          PUNT
                          BALB
    COSTA RICA            ISLA
                          CABO
                          PUER
                          CABO
    PITCAIRN              PITC
    NICARAGUA             SAN
                          PUER
                          CORI
    GUATEMALA             SIPI
    FRENCH POLYNESIA      RIKI
                          RAPA
                          TUBU
                          HIVA
                          PAPE
    EL SALVADOR           ACAJ
    MEXICO                PUER
                          SALI
                          ACAP
                          LAZA
                          MANZ
                          PUER
                          SAN
                          MAZA
                          CABO
                          PUNT
                          GUAY
                          ENSE
                          SAN
    HONDURAS              AMAP
    ANTARCTICA            CAPE
    COOK ISLANDS          RARO
                          PENR
                          PUKA
    KIRIBATI              FLIN
                          MALD
                          CHRI
                          KANT
                          TARA
```

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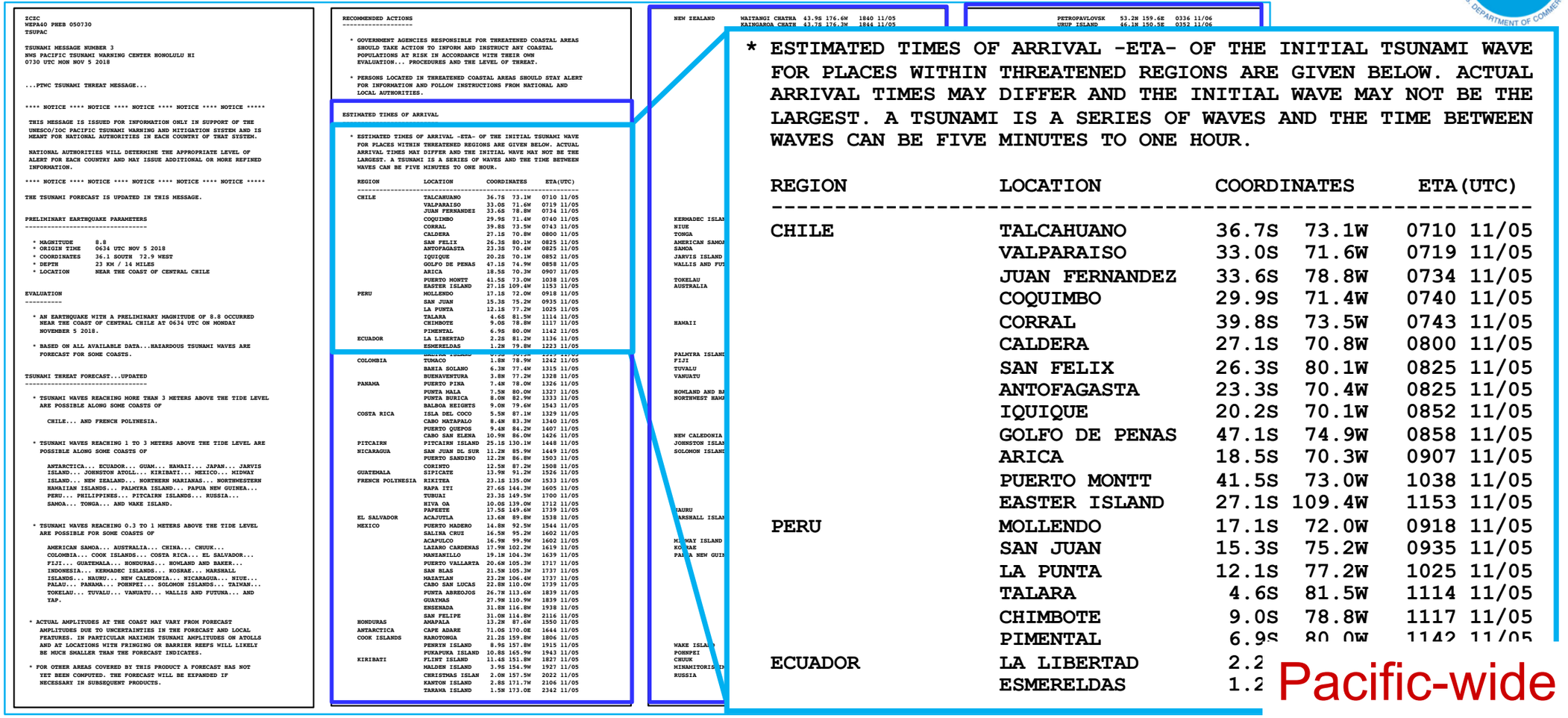
Pacific-wide

Text Message: Estimated Times of Arrival (ETA)



ZCZC
WEPA40 PHEB 050730
TSUPAC

TSUNAMI MESSAGE NUMBER 3
NWS PACIFIC TSUNAMI WARNING CENTER HONOLULU HI
0730 UTC MON NOV 5 2018

...PTWC TSUNAMI THREAT MESSAGE...

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE *****

THIS MESSAGE IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC PACIFIC TSUNAMI WARNING AND MITIGATION SYSTEM AND IS MEANT FOR NATIONAL AUTHORITIES IN EACH COUNTRY OF THAT SYSTEM.

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* COORDINATES 36.1 SOUTH 72.9 WEST
* DEPTH 23 KM / 14 MILES
* LOCATION NEAR THE COAST OF CENTRAL CHILE

EVALUATION

* AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.8 OCCURRED NEAR THE COAST OF CENTRAL CHILE AT 0634 UTC ON MONDAY NOVEMBER 5 2018.
* BASED ON ALL AVAILABLE DATA...HAZARDOUS TSUNAMI WAVES ARE FORECAST FOR SOME COASTS.

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RECOMMENDED ACTIONS

* GOVERNMENT AGENCIES RESPONSIBLE FOR THREATENED COASTAL AREAS SHOULD TAKE ACTION TO INFORM AND INSTRUCT ANY COASTAL POPULATIONS AT RISK IN ACCORDANCE WITH THEIR OWN EVALUATION... PROCEDURES AND THE LEVEL OF THREAT.

* PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD STAY ALERT FOR INFORMATION AND FOLLOW INSTRUCTIONS FROM NATIONAL AND LOCAL AUTHORITIES.

ESTIMATED TIMES OF ARRIVAL

* ESTIMATED TIMES OF ARRIVAL -ETA- OF THE INITIAL TSUNAMI WAVE FOR PLACES WITHIN THREATENED REGIONS ARE GIVEN BELOW. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN WAVES CAN BE FIVE MINUTES TO ONE HOUR.

REGION	LOCATION	COORDINATES	ETA(UTC)
CHILE	TALCAHUANO	36.7S 73.1W	0710 11/05
	VALPARAISO	33.0S 71.6W	0719 11/05
	JUAN FERNANDEZ	33.6S 78.8W	0734 11/05
	COQUIMBO	29.9S 71.4W	0740 11/05
	CORRAL	39.8S 73.5W	0743 11/05
	CALDERA	27.1S 70.8W	0800 11/05
	SAN FELIX	26.3S 80.1W	0825 11/05
	ANTOFAGASTA	23.3S 70.4W	0825 11/05
	IQUIQUE	20.2S 70.1W	0852 11/05
	GOLFO DE PENAS	47.1S 74.9W	0858 11/05
	ARICA	18.5S 70.3W	0907 11/05
	PUERTO MONTT	41.5S 73.0W	1038 11/05
	EASTER ISLAND	27.1S 109.4W	1153 11/05
PERU	MOLLENDO	17.1S 72.0W	0918 11/05
	SAN JUAN	15.3S 75.2W	0935 11/05
	LA PUNTA	12.1S 77.2W	1025 11/05
	TALARA	4.6S 81.5W	1114 11/05
	CHIMBOTE	9.0S 78.8W	1117 11/05
	PIMENTAL	6.9S 80.0W	1142 11/05
ECUADOR	LA LIBERTAD	2.2S 81.2W	1136 11/05
	ESMERELDAS	1.2N 79.8W	1223 11/05
	[illegible]	[illegible]	[illegible]
COLOMBIA	TUMACO	1.8N 78.9W	1242 11/05
	BAHIA SOLANO	6.3N 77.4W	1315 11/05
	BUENAVENTURA	3.8N 77.2W	1328 11/05
PANAMA	PUERTO PINA	7.4N 78.0W	1326 11/05
	PUNTA MALA	7.5N 80.0W	1327 11/05
	PUNTA BURICA	8.0N 82.9W	1333 11/05
	BALBOA HEIGHTS	9.0N 79.6W	1543 11/05
COSTA RICA	ISLA DEL COCO	5.5N 87.1W	1329 11/05
	CABO MATAPALO	8.4N 83.3W	1340 11/05
	PUERTO QUEPOS	9.4N 84.2W	1407 11/05
	CABO SAN ELENA	10.9N 86.0W	1426 11/05
PITCAIRN	PITCAIRN ISLAND	25.1S 130.1W	1448 11/05
NICARAGUA	SAN JUAN DL SUR	11.2N 85.9W	1449 11/05
	PUERTO SANDINO	12.2N 86.8W	1503 11/05
	CORINTO	12.5N 87.2W	1508 11/05
GUATEMALA	SIPICATE	13.9N 91.2W	1526 11/05
FRENCH POLYNESIA	RIKITEA	23.1S 135.0W	1533 11/05
	RAPA ITI	27.6S 144.3W	1605 11/05
	TUBUAI	23.3S 149.5W	1700 11/05
	HIVA OA	10.0S 139.0W	1712 11/05
	PAPEETE	17.5S 149.6W	1739 11/05
EL SALVADOR	ACAJUTLA	13.6N 89.8W	1538 11/05
MEXICO	PUERTO MADERO	14.8N 92.5W	1544 11/05
	SALINA CRUZ	16.5N 95.2W	1602 11/05
	ACAPULCO	16.9N 99.9W	1602 11/05
	LAZARO CARDENAS	17.9N 102.2W	1619 11/05
	MANZANILLO	19.1N 104.3W	1639 11/05
	PUERTO VALLARTA	20.6N 105.3W	1717 11/05
	SAN BLAS	21.5N 105.3W	1737 11/05
	MAZATLAN	23.2N 106.4W	1737 11/05
	CABO SAN LUCAS	22.8N 110.0W	1739 11/05
	PUNTA ABREOJOS	26.7N 113.6W	1839 11/05
	GUAYMAS	27.9N 110.9W	1839 11/05
	ENSENADA	31.8N 116.8W	1938 11/05
	SAN FELIPE	31.0N 114.8W	2116 11/05
HONDURAS	AMAPALA	13.2N 87.6W	1550 11/05
ANTARCTICA	CAPE ADARE	71.0S 170.0E	1644 11/05
COOK ISLANDS	RAROTONGA	21.2S 159.8W	1806 11/05
	PENRYN ISLAND	8.9S 157.8W	1915 11/05
	PUKAPUKA ISLAND	10.8S 165.9W	1943 11/05
KIRIBATI	FLINT ISLAND	11.4S 151.8W	1827 11/05
	MALDEN ISLAND	3.9S 154.9W	1927 11/05
	CHRISTMAS ISLAN	2.0N 157.5W	2022 11/05
	KANTON ISLAND	2.8S 171.7W	2106 11/05
	TARAWA ISLAND	1.5N 173.0E	2342 11/05

NEW ZEALAND WAITANGI CHATHA 43.9S 176.6W 1840 11/05
KAINGAROA CHATH 43.7S 176.3W 1844 11/05

PETROPAVLOVSK 53.2N 159.6E 0336 11/06
URUP ISLAND 46.1N 150.5E 0352 11/06

KERMADEC ISLAN
NIUE
TONGA
AMERICAN SAMOA
SAMOA
JARVIS ISLAND
WALLIS AND FUT
TOKELAU
AUSTRALIA
HAWAII
PALMYRA ISLAN
FIJI
TUVALU
VANUATU
NOWLAND AND BA
NORTHWEST HAWA
NEW CALEDONIA
JOHNSTON ISLAN
SOLOMON ISLAN
NAURU
ARSHALL ISLAN
M WAY ISLAND
KO AE
PA A NEW GUI
WAKE ISLAN
PONHPEI
CHUUK
MINAMITORIS IM
RUSSIA

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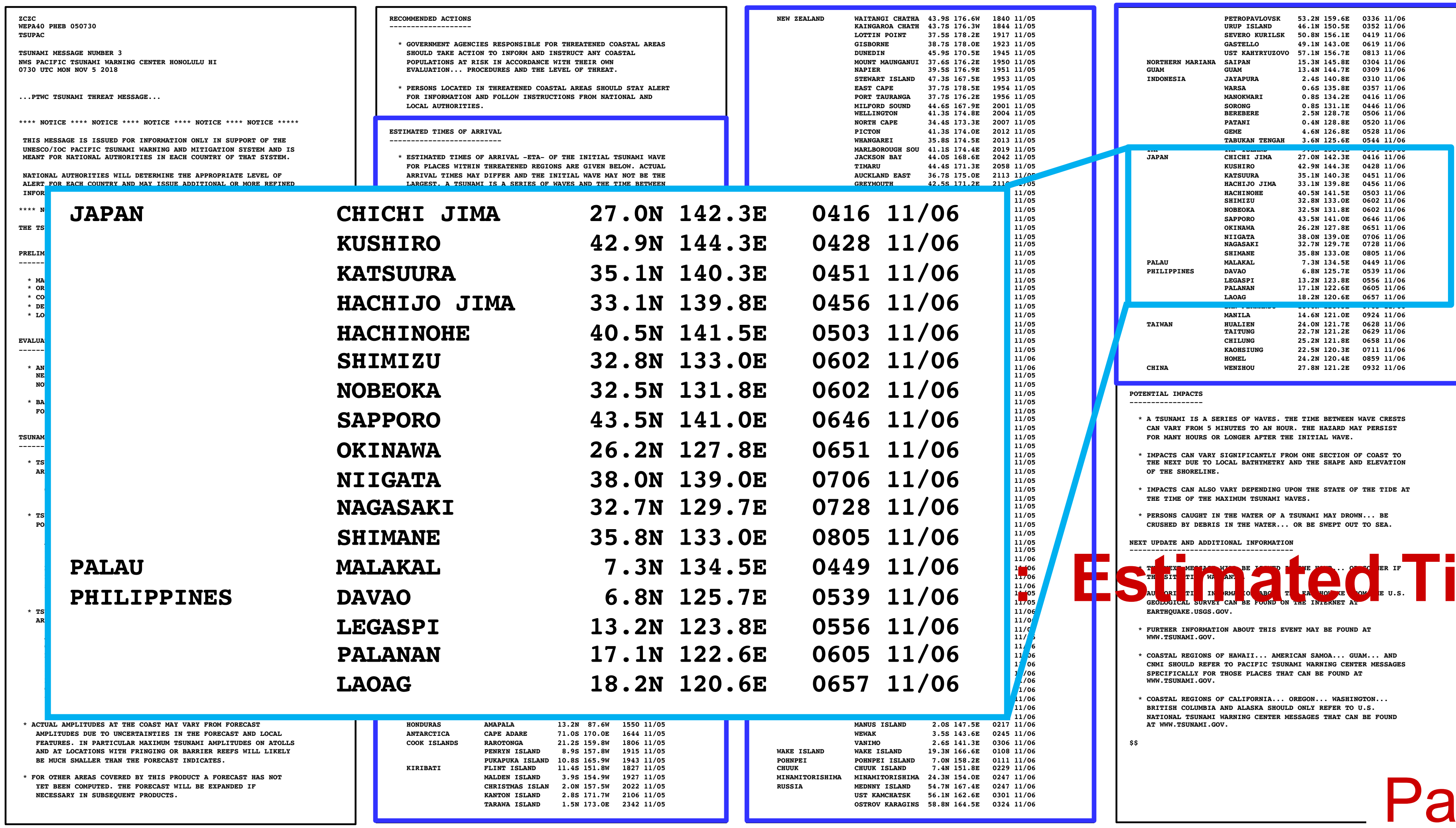
ECUADOR	LA LIBERTAD	2.2	
	ESMERELDAS	1.2	

Pacific-wide

Estimated Times of Arrival

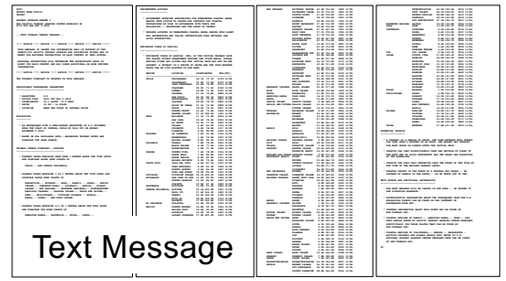


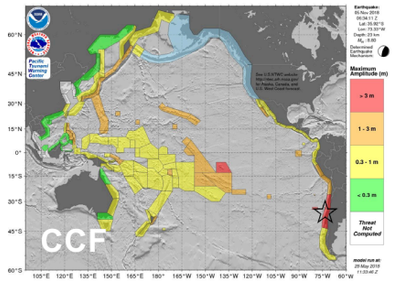
JAPAN	CHICHI JIMA	27.0N 142.3E	0416 11/06
	KUSHIRO	42.9N 144.3E	0428 11/06
	KATSUURA	35.1N 140.3E	0451 11/06
	HACHIJO JIMA	33.1N 139.8E	0456 11/06
	HACHINOHE	40.5N 141.5E	0503 11/06
	SHIMIZU	32.8N 133.0E	0602 11/06
	NOBEOKA	32.5N 131.8E	0602 11/06
	SAPPORO	43.5N 141.0E	0646 11/06
	OKINAWA	26.2N 127.8E	0651 11/06
	NIIGATA	38.0N 139.0E	0706 11/06
	NAGASAKI	32.7N 129.7E	0728 11/06
	SHIMANE	35.8N 133.0E	0805 11/06
PALAU	MALAKAL	7.3N 134.5E	0449 11/06
PHILIPPINES	DAVAO	6.8N 125.7E	0539 11/06
	LEGASPI	13.2N 123.8E	0556 11/06
	PALANAN	17.1N 122.6E	0605 11/06
	LAOAG	18.2N 120.6E	0657 11/06

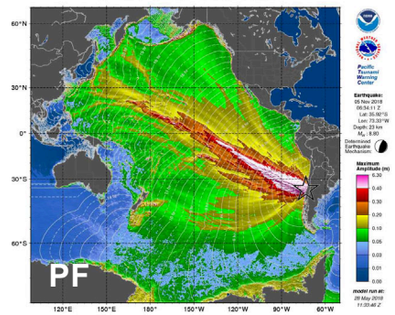
Pacific-wide

SOP Overview for Graphical Products

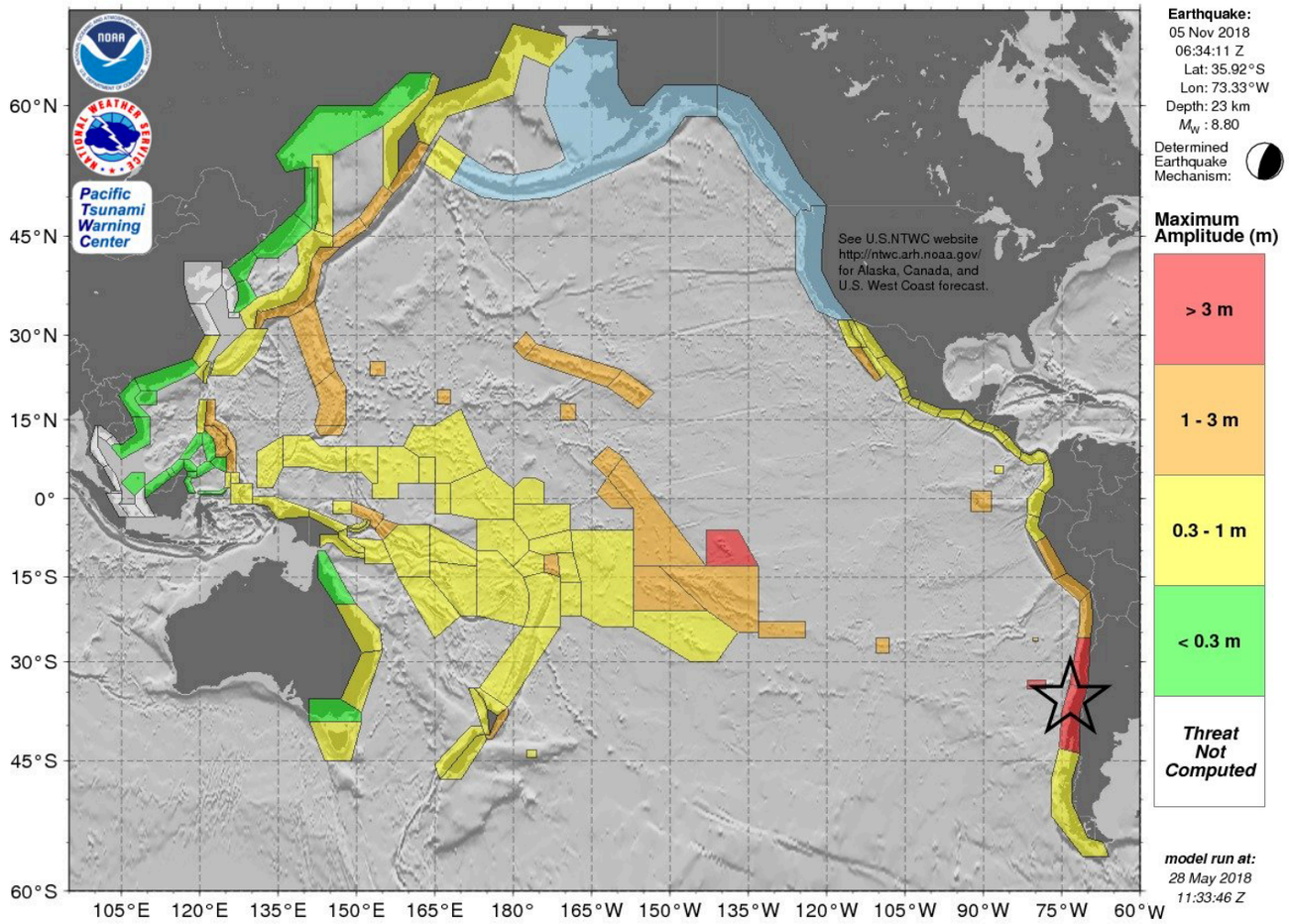
1. **Read Text Message**
   a. Do you have a threat?
   b. What is the maximum level of the threat?
   c. When is the first tsunami wave forecast to arrive?
2. **View Country Coastal Forecast (CCF)**
   a. What are the threat levels across the region?
   b. What is the threat in each of your polygons (if you have more than one)?
3. **View Propagation Forecast (PF)**
   a. Is your coast in a main beam of energy?
   b. How long will it take the tsunami to impact across the region?


Text Message





Country Coastal Forecast: Polygon summary



Maximum tsunami amplitude forecast for all coasts within each polygon as described by color scale.

Each country is represented uniquely by one or more polygons.

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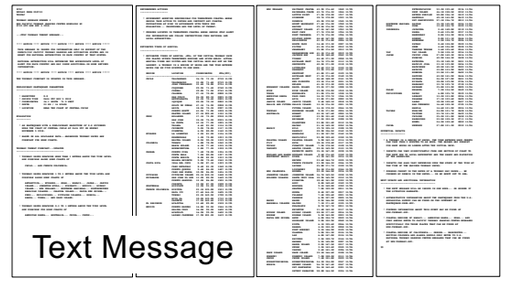
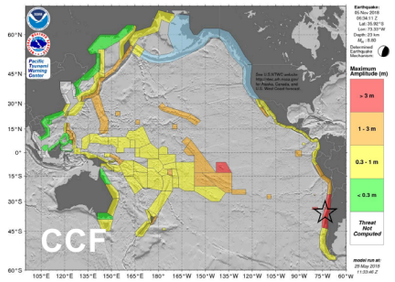
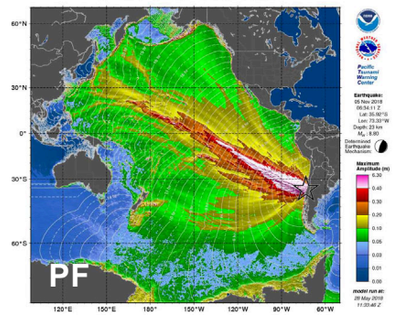
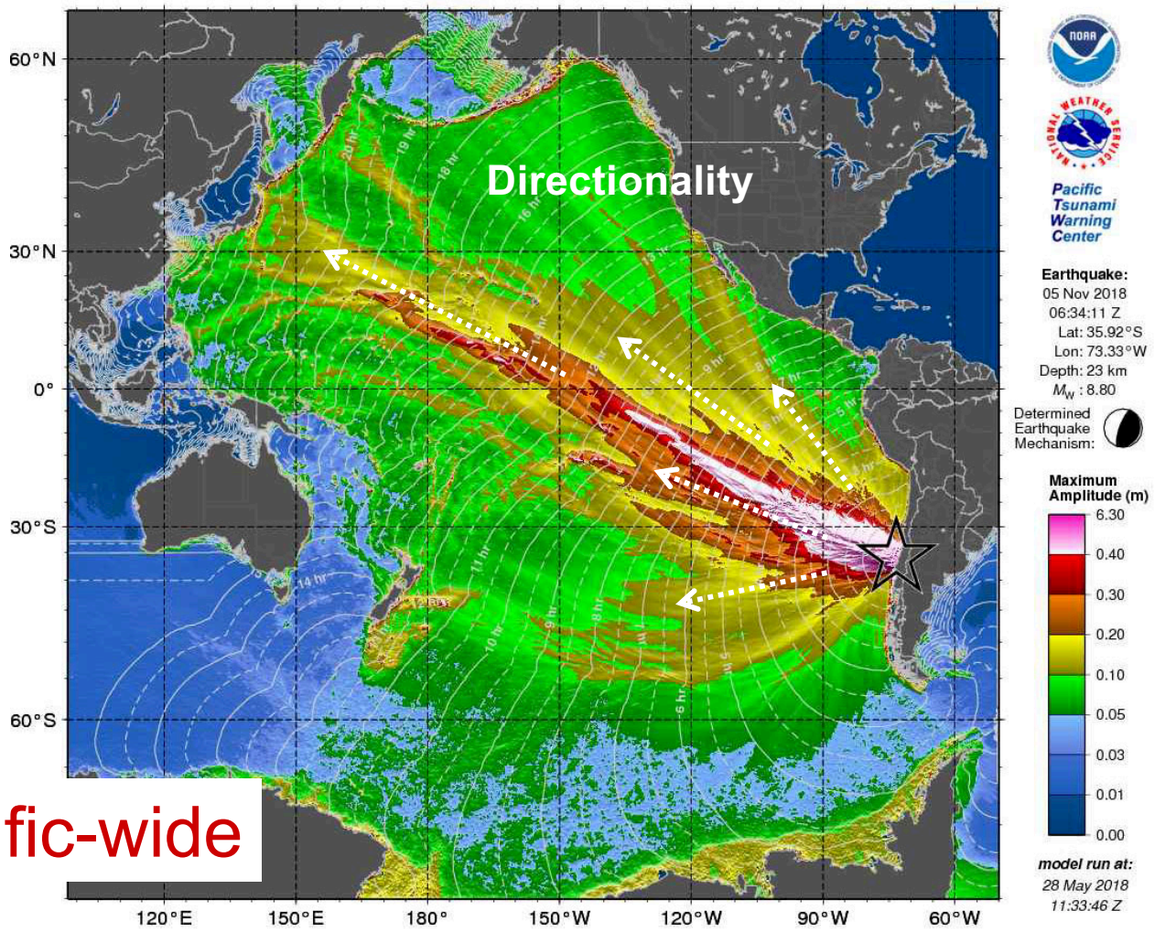

Text Message





Propagation Forecast: Directionality, Travel Times

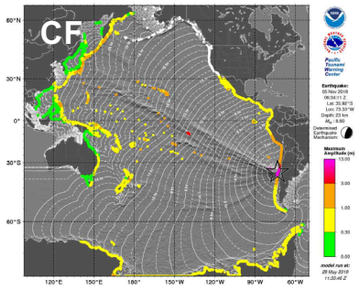


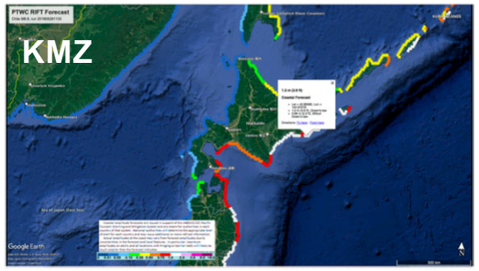
Pacific-wide

Tsunami amplitude forecast in deep water as described by the color scale.

SOP Overview for Graphical Products

4. **View Coastal Forecast (CF)**
   a. How big is the forecast everywhere?
5. **View Forecast KMZ File in *Google Earth***
   a. How big is the forecast at the finest scale?
   b. How big is it just offshore (for very small islands)?
6. **Read Forecast Statistics Table**
   a. Further evaluate the threat from forecast statistics.
7. **Consider All Available Information**
   a. Determine alert levels for your coasts.
   b. Issue appropriate safety instructions or orders.





Forecast Statistics

20180528113346

73.3W Depth: 023km Magnitude: 8.8

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	Coastal Forecast (meters)				Offshore Forecast (meters)				Total
Region_Name	Maximum	Mean	Median	STD	Maximum	Mean	Median	STD	Points
South_Central_Chile	13.	5.70	2.70	4.50	6.3	2.30	2.00	1.40	158
Juan_Fernandez_Archipelago	11.	9.00	8.80	1.10	4.5	3.10	3.30	1.20	5
North_Central_Chile	5.5	2.20	1.90	1.00	2.8	0.86	0.62	0.53	121
Marquesas_Islands	4.2	2.70	2.40	0.74	1.3	0.59	0.55	0.25	24
Palmyra_Island	2.7	2.70	2.70	0.00	0.41	0.41	0.41	0.00	1
San_Felix_Islands	2.1	2.00	2.00	0.05	0.74	0.52	0.50	0.12	5
Southern_Peru	2.0	1.50	1.40	0.15	1.0	0.51	0.48	0.11	86
Society_Islands	1.9	1.30	1.20	0.27	0.50	0.27	0.26	0.07	35
Hawaii	1.8	1.10	1.00	0.32	0.84	0.32	0.29	0.14	147
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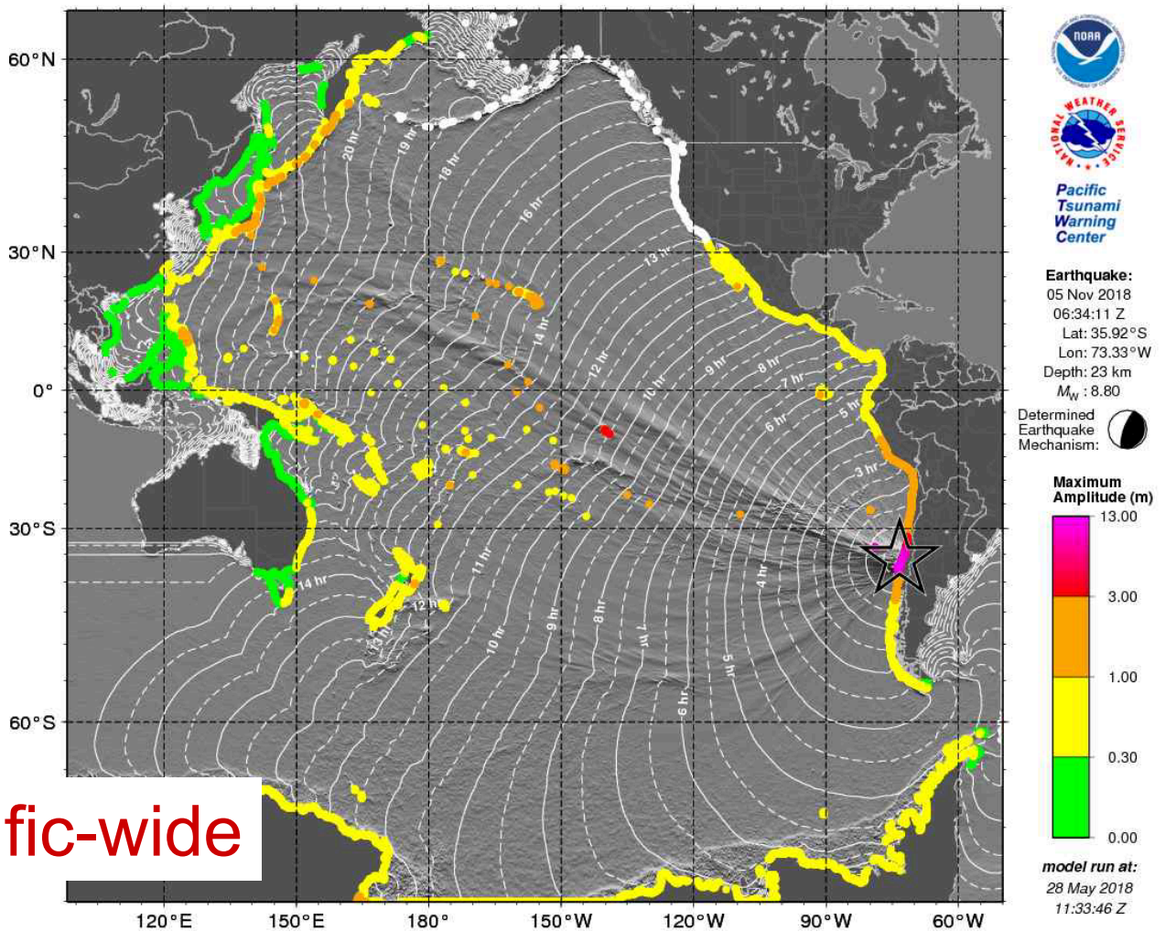
Pacific_Coast_of_the_Philippines	1.6	0.66	0.66	0.27	1.5	0.28	0.24	0.19	350
East_Coast_of_Japanese_Main_Islands	1.6	0.94	0.93	0.22	1.6	0.53	0.46	0.28	404
Central_Peru	1.6	1.00	0.96	0.23	0.90	0.56	0.54	0.11	110
Northern_Chile	1.5	1.10	1.10	0.14	1.2	0.36	0.32	0.16	118

Coastal Forecast: Amplitude at each coastal point

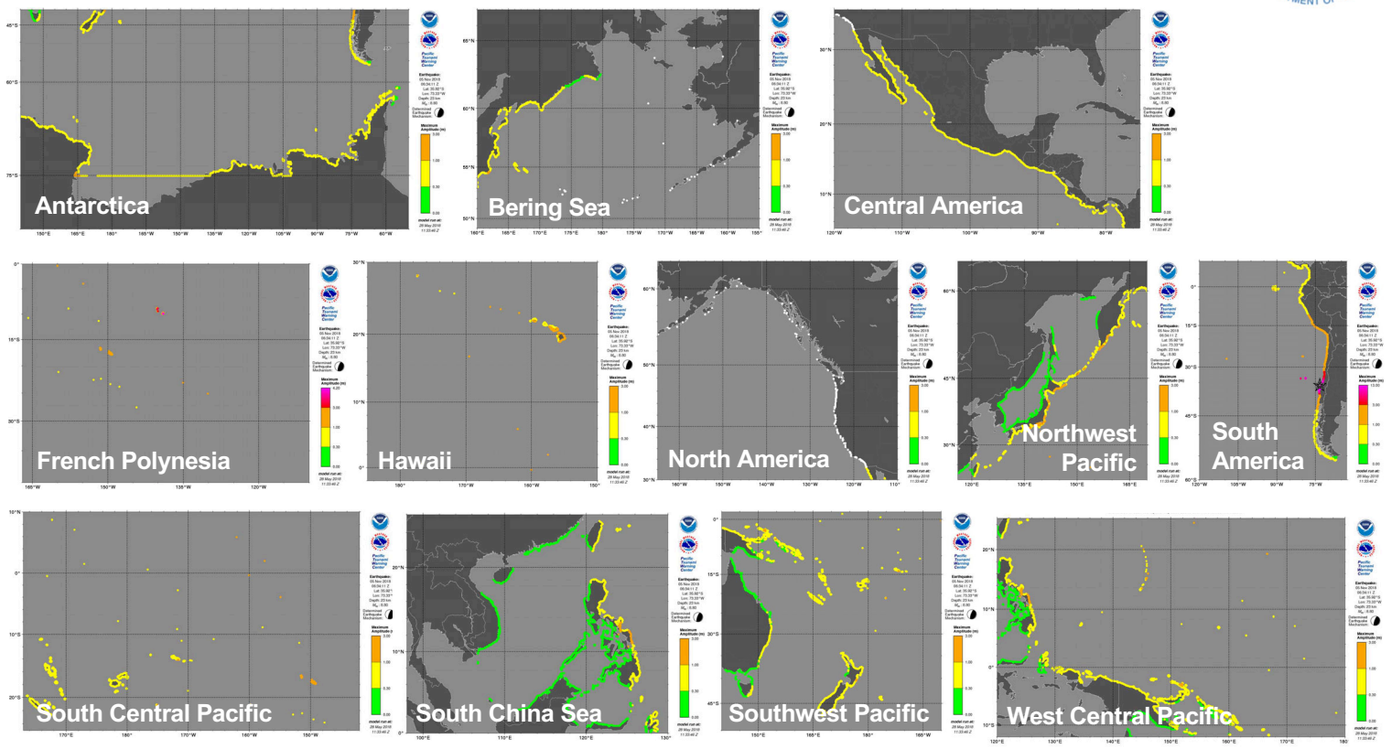


Pacific-wide

Tsunami amplitude forecast at coastal points as described by the color scale.

Coastal Forecast – 12 Regional Maps

- Antarctica
- Bering Sea
- Central America
- French Polynesia
- Hawaii
- North America
- Northwest Pacific
- South America
- South Central Pacific
- South China Sea
- Southwest Pacific
- West Central Pacific



Pacific-wide

SOP Overview for Graphical Products

4. **View Coastal Forecast (CF)**
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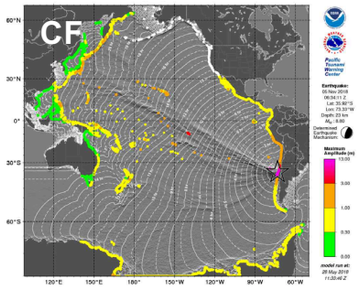

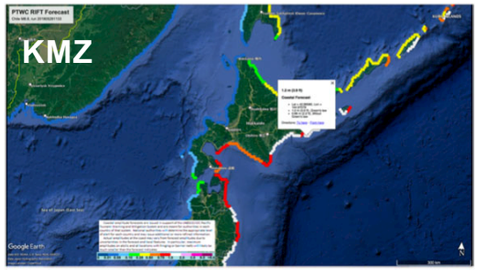

Forecast Statistics

20180528113346

73.3W Depth: 023km Magnitude: 8.8

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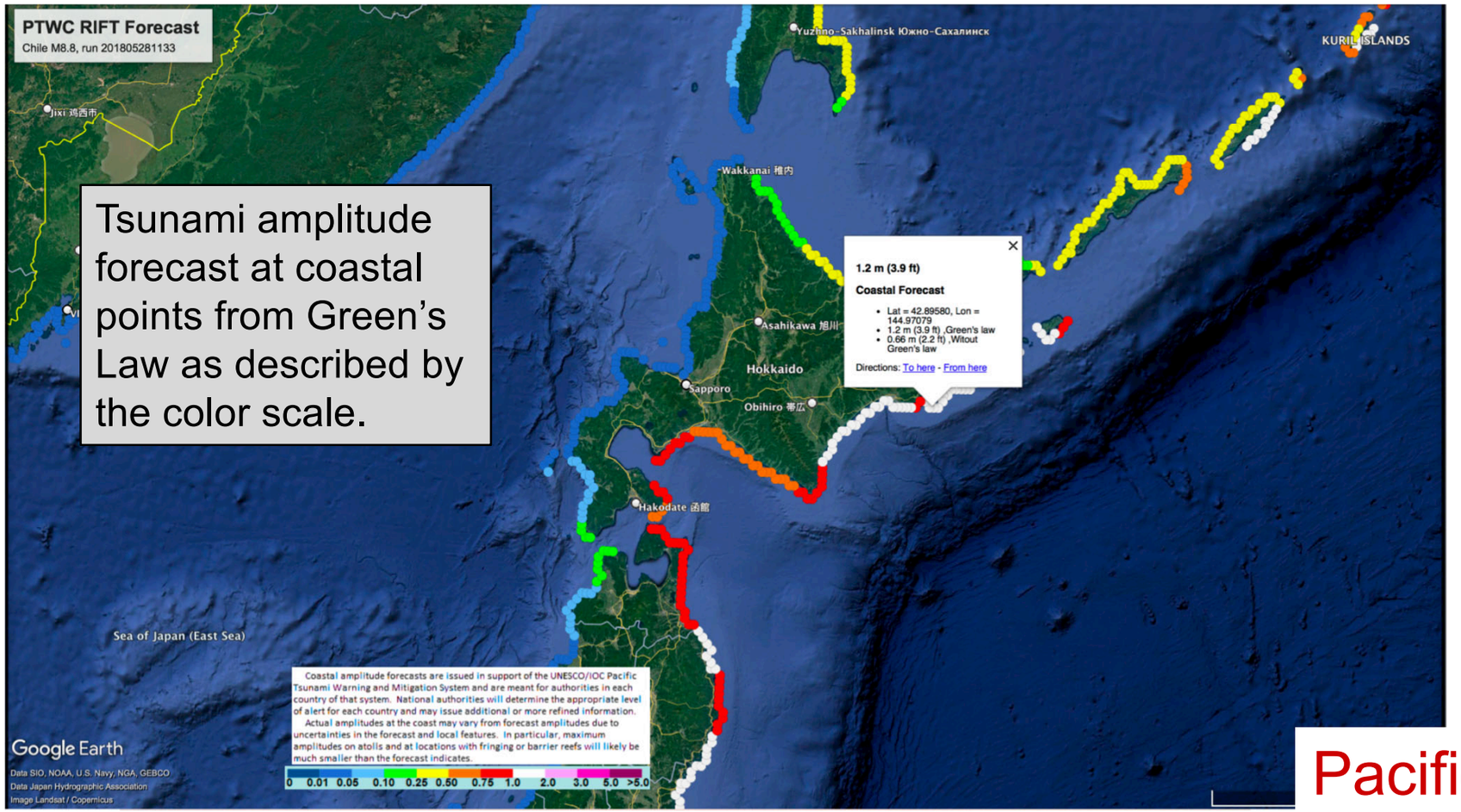
Forecast KMZ: Coastal (Green's Law), Offshore (no Green's Law)



Pacific-wide

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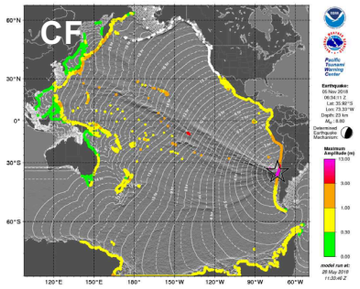

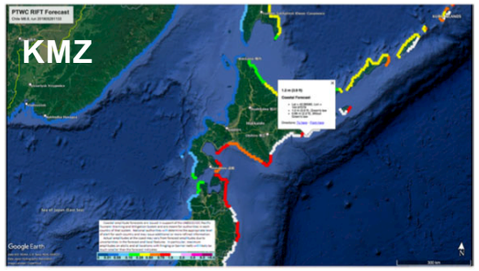

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20180528113346

73.3W Depth: 023km Magnitude: 8.8

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San_Felix_Islands	2.1	2.00	2.00	0.05	0.74	0.52	0.50	0.12	5
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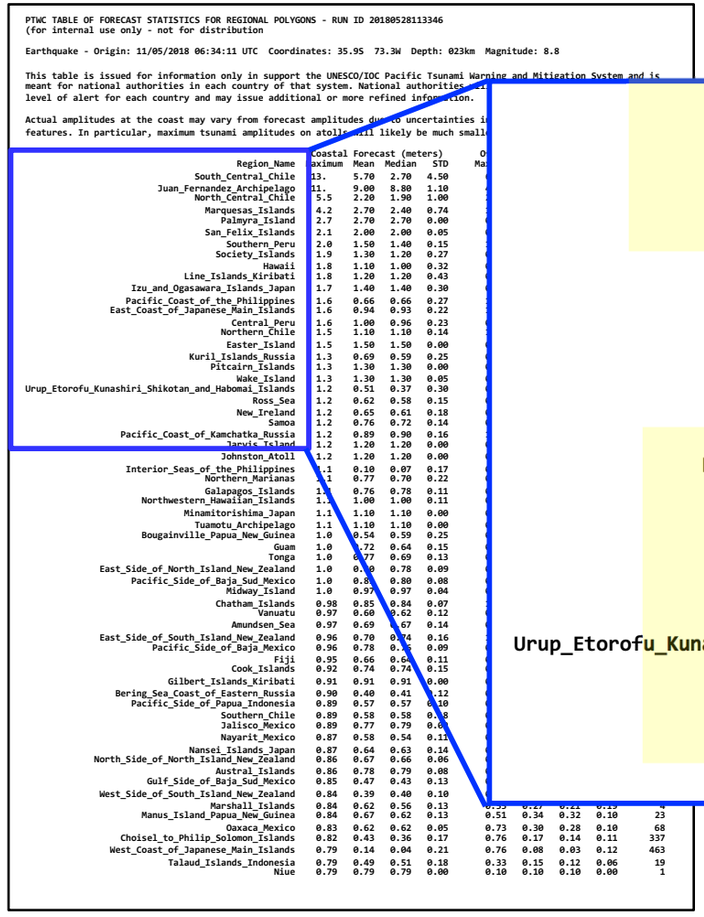
Northern_Chile	1.5	1.10	1.10	0.14	1.2	0.36	0.32	0.16	118

Forecast Statistics Table: Forecast variability



PTWC TABLE OF FORECAST STATISTICS FOR REGIONAL POLYGONS - RUN ID 20180528113346
(for internal use only - not for distribution

Earthquake - Origin: 11/05/2018 06:34:11 UTC Coordinates: 35.9S 73.3W Depth: 023km Magnitude: 8.8

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North_Central_Chile	5.5	2.20	1.90	1.00	
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Palmyra_Island	2.7	2.70	2.70	0.00	
San_Felix_Islands	2.1	2.00	2.00	0.05	
Southern_Peru	2.0	1.50	1.40	0.15	
Society_Islands	1.9	1.30	1.20	0.27	
Hawaii	1.8	1.10	1.00	0.32	
Line_Islands_Kiribati	1.8	1.20	1.20	0.43	
Izu_and_Ogasawara_Islands_Japan	1.7	1.40	1.40	0.30	
Pacific_Coast_of_the_Philippines	1.6	0.66	0.66	0.27	
East_Coast_of_Japanese_Main_Islands	1.6	0.94	0.93	0.22	
Central_Peru	1.6	1.00	0.96	0.23	
Northern_Chile	1.5	1.10	1.10	0.14	
Easter_Island	1.5	1.50	1.50	0.00	
Kuril_Islands_Russia	1.3	0.69	0.59	0.25	
Pitcairn_Islands	1.3	1.30	1.30	0.00	
Wake_Island	1.3	1.30	1.30	0.05	
Urup_Etorofu_Kunashiri_Shikotan_and_Habomai_Islands	1.2	0.51	0.37	0.30	
Ross_Sea	1.2	0.62	0.58	0.15	
New_Ireland	1.2	0.65	0.61	0.18	
Samoa	1.2	0.76	0.72	0.14	
Pacific_Coast_of_Kamchatka_Russia	1.2	0.89	0.90	0.16	
Jarvis_Island	1.2	1.20	1.20	0.00	
Johnston_Atoll	1.2	1.20	1.20	0.00	
Interior_Seas_of_the_Philippines	1.1	0.10	0.07	0.17	
Northern_Marianas	1.1	0.77	0.70	0.22	
Galapagos_Islands	1.1	0.76	0.78	0.11	
Northwestern_Hawaiian_Islands	1.1	1.00	1.00	0.11	
Minamitorishima_Japan	1.1	1.10	1.10	0.00	
Tuamotu_Archipelago	1.1	1.10	1.10	0.00	
Bougainville_Papua_New_Guinea	1.0	0.54	0.59	0.25	
Guam	1.0	0.72	0.64	0.15	
Tonga	1.0	0.77	0.69	0.13	
East_Side_of_North_Island_New_Zealand	1.0	0.80	0.78	0.09	
Pacific_Side_of_Baja_Sud_Mexico	1.0	0.83	0.80	0.08	
Midway_Island	1.0	0.97	0.97	0.04	
Chatham_Islands	0.98	0.85	0.84	0.07	
Vanuatu	0.97	0.60	0.62	0.12	
Amundsen_Sea	0.97	0.69	0.67	0.14	
East_Side_of_South_Island_New_Zealand	0.96	0.70	0.74	0.16	
Pacific_Side_of_Baja_Mexico	0.96	0.78	0.76	0.09	
Fiji	0.95	0.66	0.64	0.11	
Cook_Islands	0.92	0.74	0.74	0.15	
Gilbert_Islands_Kiribati	0.91	0.91	0.91	0.00	
Bering_Sea_Coast_of_Eastern_Russia	0.90	0.40	0.41	0.12	
Pacific_Side_of_Papua_Indonesia	0.89	0.57	0.57	0.10	
Southern_Chile	0.89	0.58	0.58	0.18	
Jalisco_Mexico	0.89	0.77	0.79	0.07	
Nayarit_Mexico	0.87	0.58	0.54	0.11	
Nansei_Islands_Japan	0.87	0.64	0.63	0.14	
North_Side_of_North_Island_New_Zealand	0.86	0.67	0.66	0.06	
Austral_Islands	0.86	0.78	0.79	0.08	
Gulf_Side_of_Baja_Sud_Mexico	0.85	0.47	0.43	0.13	
West_Side_of_South_Island_New_Zealand	0.84	0.39	0.40	0.10	
Marshall_Islands	0.84	0.62	0.56	0.13	0.55 0.27 0.21 0.15 4
Manus_Island_Papua_New_Guinea	0.84	0.67	0.62	0.13	0.51 0.34 0.32 0.10 23
Oaxaca_Mexico	0.83	0.62	0.62	0.05	0.73 0.30 0.28 0.10 68
Choisel_to_Philip_Solomon_Islands	0.82	0.43	0.36	0.17	0.76 0.17 0.14 0.11 337
West_Coast_of_Japanese_Main_Islands	0.79	0.14	0.04	0.21	0.76 0.08 0.03 0.12 463
Talaud_Islands_Indonesia	0.79	0.49	0.51	0.18	0.33 0.15 0.12 0.06 19
Niue	0.79	0.79	0.79	0.00	0.10 0.10 0.10 0.00 1

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Wake_Island	1.3	1.30	1.30	0.05	0.21	0.21	0.21	0.00	3
Urup_Etorofu_Kunashiri_Shikotan_and_Habomai_Islands	1.2	0.51	0.37	0.30	0.69	0.22	0.16	0.16	101
Ross_Sea	1.2	0.62	0.58	0.15	0.75	0.17	0.17	0.10	1158
New_Ireland	1.2	0.65	0.61	0.18	0.84	0.19	0.15	0.13	127
Samoa	1.2	0.76	0.72	0.14	0.66	0.25	0.20	0.14	40
Pacific_Coast_of_Kamchatka_Russia	1.2	0.89	0.90	0.16	1.4	0.59	0.58	0.23	157

Santa_Cruz_Islands	0.78	0.59	0.56	0.10	0.40	0.22	0.22	0.06	18
Northern_Peru	0.77	0.60	0.60	0.09	0.78	0.41	0.37	0.15	86
American_Samoa	0.77	0.64	0.63	0.05	0.31	0.19	0.16	0.08	18
Colima_Mexico	0.77	0.72	0.73	0.05	0.57	0.36	0.32	0.10	12
Howland_and_Baker	0.77	0.77	0.77	0.00	0.09	0.09	0.09	0.00	1
Somov_Sea	0.76	0.52	0.48	0.12	0.54	0.23	0.21	0.07	438
Tatarskiy_Straight_Coast_of_Sakhalin_Russia	0.66	0.63	0.66	0.00	0.06	0.03	0.03	0.02	47
East_Coast_of_Russia_on_the_Tatarskiy_Straight	0.06	0.05	0.05	0.00	0.03	0.01	0.01	0.00	43
Northwest_Coast_of_Sabah_Malaysia	0.05	0.05	0.05	0.00	0.04	0.03	0.02	0.01	52
Sulu_Sea_Coast_of_Sabah_Malaysia	0.05	0.05	0.05	0.00	0.05	0.02	0.02	0.01	49
East_Coast_of_Russia_north_of_the_Korean_Peninsula	0.05	0.03	0.03	0.00	0.04	0.02	0.02	0.01	148
Natuna_Islands_Indonesia	0.05	0.05	0.05	0.00	0.02	0.01	0.01	0.00	5
Eastern_Coast_of_DPR_of_Korea	0.05	0.03	0.03	0.01	0.03	0.01	0.01	0.01	89
Eastern_Coast_of_the_Republic_of_Korea	0.05	0.03	0.03	0.00	0.04	0.01	0.01	0.01	59

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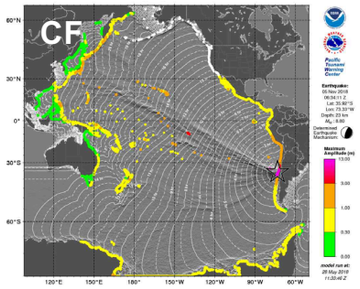
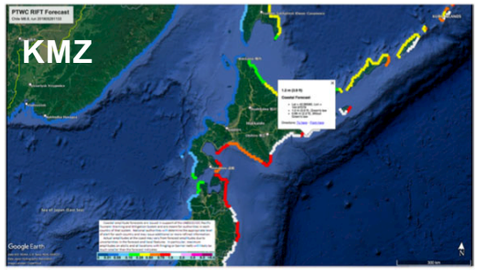
   a. Determine alert levels for your coasts.
   b. Issue appropriate safety instructions or orders.





Forecast Statistics

20180528113346

73.3W Depth: 023km Magnitude: 8.8

This table is issued for information only in support the UNESCO/IOC Pacific Tsunami Warning and Mitigation System and is meant for national authorities in each country of that system. National authorities will determine the appropriate level of alert for each country and may issue additional or more refined information.

Actual amplitudes at the coast may vary from forecast amplitudes due to uncertainties in the forecast and local features. In particular, maximum tsunami amplitudes on atolls will likely be much smaller than the forecast indicates.

	Coastal Forecast (meters)				Offshore Forecast (meters)				Total
Region_Name	Maximum	Mean	Median	STD	Maximum	Mean	Median	STD	Points
South_Central_Chile	13.	5.70	2.70	4.50	6.3	2.30	2.00	1.40	158
Juan_Fernandez_Archipelago	11.	9.00	8.80	1.10	4.5	3.10	3.30	1.20	5
North_Central_Chile	5.5	2.20	1.90	1.00	2.8	0.86	0.62	0.53	121
Marquesas_Islands	4.2	2.70	2.40	0.74	1.3	0.59	0.55	0.25	24
Palmyra_Island	2.7	2.70	2.70	0.00	0.41	0.41	0.41	0.00	1
San_Felix_Islands	2.1	2.00	2.00	0.05	0.74	0.52	0.50	0.12	5
Southern_Peru	2.0	1.50	1.40	0.15	1.0	0.51	0.48	0.11	86
Society_Islands	1.9	1.30	1.20	0.27	0.50	0.27	0.26	0.07	35
Hawaii	1.8	1.10	1.00	0.32	0.84	0.32	0.29	0.14	147
Line_Islands_Kiribati	1.8	1.20	1.20	0.43	0.34	0.20	0.17	0.10	3
Izu_and_Ogasawara_Islands_Japan	1.7	1.40	1.40	0.30	0.38	0.29	0.29	0.09	2
Pacific_Coast_of_the_Philippines	1.6	0.66	0.66	0.27	1.5	0.28	0.24	0.19	350
East_Coast_of_Japanese_Main_Islands	1.6	0.94	0.93	0.22	1.6	0.53	0.46	0.28	404
Central_Peru	1.6	1.00	0.96	0.23	0.90	0.56	0.54	0.11	110
Northern_Chile	1.5	1.10	1.10	0.14	1.2	0.36	0.32	0.16	118

Intergovernmental Oceanographic Commission

National Oceanic and Atmospheric Administration

Servicio Hidrográfico y Oceanográfico de la Armada de Chile

International Tsunami Information Center

Thank You

For more information, contact ITIC

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