Exercise PACIFEX23

Participant Handbook

A Continental U.S. and Canadian Pacific Coast
Tsunami Warning Exercise
April 13, 2023

PACIFEX23 Exercise

US National Tsunami Hazard Mitigation Program

NOTE: The contents of this handbook are patterned after previous PACIFEX and CARIBE WAVE Exercises (e.g., Commission Océanographique Intergouvernementale. *Exercise Caribe Wave 11. A Caribbean Tsunami Warning Exercise, 23 March 2011*, IOC Technical Series No. 93. Paris, UNESCO, 2011 (English/ French/ Spanish), Intergovernmental Oceanographic Commission *Exercise Caribe Wave/Lantex 13, A Caribbean Tsunami Warning Exercise, 20 March 2013, Volume 1: Participant Handbook, IOC Technical Series No. 101, Paris, UNESCO, 2012* and Intergovernmental Oceanographic commission. 2013. Exercise Caribe Wave/Lantex 14. A Caribbean and Northwestern Atlantic Tsunami Warning Exercise, 26 Marc 2014. Volume 1: Participant Handbook. IOC Technical Series, 109 vol. 1. Paris: UNESCO. (English and Spanish)). These CARIBE WAVE handbooks followed the Pacific Wave 08 manual published by the Intergovernmental Oceanographic Commission (*Exercise Pacific Wave 08, A Pacific-wide Tsunami Warning and Communication Exercise, 28-30 October 2008,* IOC Technical Series No. 82, Paris, UNESCO, 2008). The UNESCO How to Plan, Conduct and Evaluate Tsunami Wave Exercises. IOC Manuals and Guides No. 58 rev., Paris: UNESCO, 2013 (English, Spanish) is another important reference.

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1. Executive Summary

The NOAA/NWS U.S. National Tsunami Warning Center (NTWC) provides tsunami alerts for the coasts of the United States and Canada. Its annual PACIFEX exercise focuses on tsunami preparedness for the continental Pacific coasts of these countries. This year, the exercise aims to be more realistic and interactive than past exercises through a careful assessment of which information is anticipated to be available at any given time, and by providing NTWC decision support throughout the exercise that mirrors the support provided during a real event.

The scenario for this exercise involves a shallow M9.3 earthquake located along the Alaska-Aleutian Subduction Zone at 56.7ºN, 153.2ºW occurring at 16:30 UTC / 9:30a PDT on April 13, 2023, which is initially assessed as M8.3. For this scenario, as in a real event, information will be issued to all of the U.S. continental Pacific Coast states and Canada. This is an example of a scenario that initially prompts a Tsunami Watch for the U.S. West Coast, but is quickly upgraded to a higher alert level. The scenario also involves locally higher waves with a short lead time for areas near the source in Alaska to simulate additional tsunami sources resulting from mass failures. NTWC encourages partner interaction from all primary customers in real time for this exercise and at any time during a real event.

Highlights

- A source location identified in previous studies as prone to directing significant tsunami energy down the U.S. and Canadian west coast.
- Revised workbook structure to streamline helpful information
- NTWC release of multiple messages at realistic timing
- Four conference calls hosted by NTWC scientists for primary customers
- NTWC live support in a Google Chat room for NOAA internal partners

Exercise Timeline

The following represents a complete timeline of events for this scenario. Please use the Dissemination column to note which steps will or won't be exercised by NTWC.

Scenario Date (UTC)	Scenario Time (UTC)	Real Time (PDT)	Event	Msg #	Dissemination
04/13/2023	1630	930	Exercise start / CommsTest		Multiple means; See Table 2 p.17
04/13/2023	1636	936	Warn/Watch: US & Can West Coast	1	Email
04/13/2023	1649	949	Notif. for Conf. Call		Email
04/13/2023	1705	1005	Warn: US & Can West Coast	2	Email
04/13/2023	1715	1015	Conf. Call #1		Phone

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Scenario Date (UTC)	Scenario Time (UTC)	Real Time (PDT)	Event	Msg #	Dissemination
04/13/2023	1720	1020	Notif. for Conf. Call		Email
04/13/2023	1735	1035	Warn. continued	3	Email
04/13/2023	1800	1100	Conf. Call #2		Phone
04/13/2023	1805	1105	Warn. continued	4	Email
FAST FORWARD 3 HR IN SCENARIO		**CONTINUING IN REAL-TIME (PDT)**			
04/13/2023	2125	1125	Notif. for Conf. Call		Email
04/13/2023	2200	1200	Conf. Call #3		Phone
04/13/2023	2205	1205	W. Aleutians to Adv., Warn. continued	12	Email
FAST FORWARD 11 HR IN SCENARIO		**CONTINUING IN REAL-TIME (PDT)**			
04/14/2023	915	1215	Notif. for Conf. Call		Email
04/14/2023	1000	1300	Conf. Call #4		Phone
04/14/2023	1005	1305	S. CA and SE AK to Adv., W. Aleutians Can., Warn. continued	24	Email
FAST FORWARD ~ 2HR IN SCENARIO		**CONTINUING IN REAL-TIME (PDT)**			
04/14/2023	1205	1315	SE AK Can., Warn. to Adv., Adv. continued	26	Email
FAST FORWARD ~5HR IN SCENARIO		**CONTINUING IN REAL-TIME (PDT)**			
04/14/2023	1705	1335	Cancellation	31	Email

TWC Messages:

Warn	Tsunami Warning
Adv	Tsunami Advisory
Watch	Tsunami Watch
Can	Alert cancellation
Notif. for Conf. Call	Info message for partners alerting recipient to upcoming conference call

NTWC will continue Google Chat support to NOAA/NWS partners up through the exercise cancellation bulletin.

To get in touch with NTWC or be added to the exercise email list, please see the contact list in Section 4.5 or email ntwc@noaa.gov. A post-exercise survey will be circulated to the list in the days following the exercise. NTWC welcomes your questions and feedback and looks forward to working with you.

2. Exercise Concept

2.1 Purpose

The purpose of the exercise is to improve Tsunami Warning System effectiveness along the U.S. and Canadian Pacific coasts. It provides an opportunity for emergency management organizations throughout the region and other National Tsunami Warning Center (NTWC) core partners to exercise their operational lines of communications, review their tsunami response procedures, and promote tsunami preparedness. Regular exercising of response plans is critical to maintain readiness for an emergency. This is particularly true for tsunamis which are infrequent but high-impact events. Every impacted emergency management organization (EMO) is encouraged to participate. Additionally, the exercise offers an opportunity to learn about local tsunami hazards and the National Tsunami Warning Center's event timeline and process. Our goal is to increase understanding of the following during tsunami alerts: 1) messaging and communications, 2) detection, observing, and forecasting, and 3) cancellation criteria.

2.2 Objectives

Each organization can develop their objectives for the exercise depending on their level of involvement in the scenario. The following are the exercise's overarching objectives.

- Ensure message transmission from the NTWC to primary customers.
- Test tsunami response plans for EMOs that have developed plans, and provide a catalyst for EMOs that have not developed plans.
- EMOs review, discuss, and evaluate the various communication alternatives for receiving and disseminating tsunami messages.
- EMOs review, discuss, and evaluate potential response actions and challenges.
- Exercise NTWC tsunami decision support and encourage partner feedback.

3. Background

NOAA and the U.S. National Tsunami Hazard Mitigation Program (NTHMP) are providing the framework for the PACIFEX23 tsunami exercise, which is being conducted to assist tsunami preparedness efforts throughout the Pacific region. Recent earthquakes and their associated tsunamis, such as those in Haiti-2010, Japan-2011, Chile-2015, and Tonga-2022, attest to the importance of proper planning for tsunami response. Similar recent exercises in the Pacific and Caribbean Basins have proven effective in strengthening preparedness levels of emergency management organizations.

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3.1 Tsunami Warning System

Tsunami warning services for the continental United States and Canada are provided by the NTWC in Palmer, Alaska. The Pacific Tsunami Warning Center (PTWC) in Pearl Harbor, Hawaii, provides services for domestic Pacific island locations and territories, domestic Caribbean territories and other international partners. These Centers issue messages approximately three to seven minutes after the detection of an earthquake. Domestic messages include warnings, advisories, watches, and information statements.

Primary recipients of Tsunami Warning Center messages ("core partners") include national tsunami warning focal points, National Weather Service Weather Forecast Offices (WFO), state/territory emergency operation centers, national Coast Guards, and military contacts and US Federal partners. These agencies disseminate the messages to people within their service jurisdictions who may be impacted by a tsunami.

3.1.1 Alert Levels

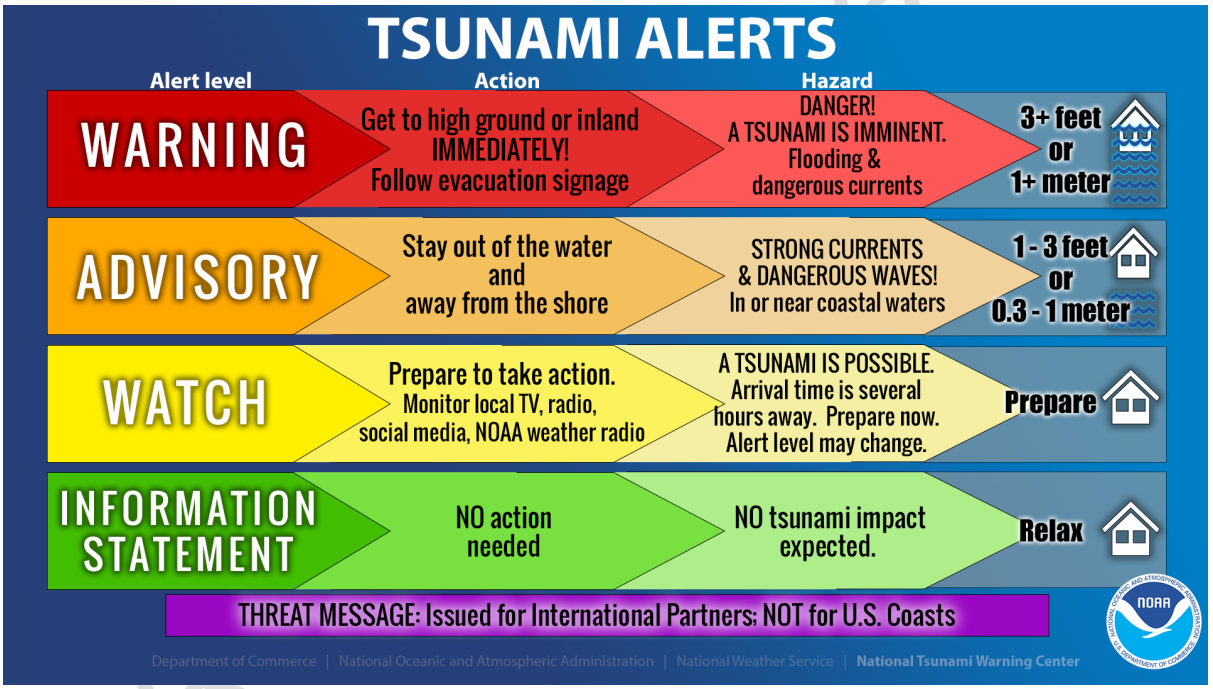

Figure 1: U.S. Tsunami Warning System alert levels.

Tsunami Watch - A tsunami watch is issued to alert emergency management officials and the public of an event which may later impact the watch area. The watch area may be upgraded to a warning or advisory - or canceled - based on updated information and analysis. Therefore, emergency management officials and the public should prepare to take action. Watches are normally issued based on seismic information without confirmation that a destructive tsunami is underway.

Tsunami Advisory - A tsunami advisory is issued when a tsunami with the potential to generate strong currents or waves dangerous to those in or very near the water is imminent, expected, or occurring. The threat may continue for several hours after initial arrival, but significant inundation is not expected for areas under an advisory.

Along with 1-3 foot water level fluctuations, Advisory-level events come with strong tsunami currents and eddies that can greatly impact the maritime community, both through difficult navigation and damage to docks, boats, and marinas.

Additional resources on Tsunami Maritime Guidance from the NTHMP can be found at: calema.maps.arcgis.com. Appropriate actions for local officials during a Tsunami Advisory may include: closing beaches, evacuating harbors and marinas, and repositioning ships to deep waters with time to safely do so. Advisories are normally updated to add observation or forecast information and continue the advisory, expand or reduce the alert area, upgrade to a warning, or cancel the advisory.

Tsunami Warning - A tsunami warning is issued when a tsunami with the potential to generate widespread inundation is imminent, expected, or occurring. Warnings alert the public that dangerous coastal flooding accompanied by powerful currents is possible and may continue for several hours after initial arrival. Warnings alert emergency management officials to take action for the entire tsunami hazard zone.

Appropriate actions for local officials during a Tsunami Warning may include: the evacuation of low-lying coastal areas, repositioning ships to deep waters with time to safely do so. Warnings may be updated to: expand or reduce the alert area, downgraded, or canceled. To provide the earliest possible alert, initial warnings are normally based only on seismic information.

3.1.2 NTWC Event Timeline and Process

Whether the tsunami is generated from an earthquake, landslide, volcano, or a meteorological event, NTWC's general process and the event timeline steps remain the same: alert, detect, observe, forecast, and cancel.

Initial alert

An initial tsunami alert is issued within 5 minutes of significant earthquake detection and ***before*** a tsunami has been detected. The two Tsunami Warning Centers agree on a set of preliminary earthquake parameters based on who has warning responsibility for the area the earthquake occurred in. The initial set of earthquake information available (magnitude, location, and depth) doesn't provide considerable information regarding whether a tsunami has formed or how large any tsunami may be. Earthquake shaking may also trigger landslides that become additional tsunami sources. Therefore, initial tsunami alerts are conservative in order to maximize warning time for people and communities in need. Alerts can also be issued upon detection of a tsunami threat from a landslide or volcanic event. NTWC does not issue alerts for meteotsunamis, but upon detection, works with NWS WFOs for those offices to alert their public through Special Weather Statements.

Alert messaging and communications

Bulletins

Once an alert is issued, tsunami bulletins are automatically disseminated through NWS Gateway, NOAA weather radio, Wireless Emergency Alerts (WEA), and the Emergency Alert System (EAS). Messages are also posted to NTWC's Twitter and

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Facebook pages, and all information is provided on tsunami.gov. Each bulletin contains the latest information on the alert areas, earthquake parameters, estimated times of arrival (ETAs), and provides calls to action. During alerts for the domestic U.S. or Canadian coastline, tsunami bulletins are updated every 30 minutes or as new information warrants.

Conference Calls

NTWC provides routine conference calls with core partners as soon as possible during an event, generally within the first hour after an alert is issued. Conference call notifications are sent out as an official NWS product (NOAK78) through the NWS Telecommunication Gateway and emailed to subscribed partners. During conference calls, the latest information is briefed including information on initial earthquake parameters, expected tsunami impacts, arrival times, observations, and forecasting with any upcoming modifications to the alert level. A opportunity for partners to ask impact-related questions is included at the end of the conference call for Federal and State Warning Points.*

**While this exercise is open to a wide variety of users to fully understand the tsunami event management chain, in an actual tsunami, the NTWC conference call audience is limited to Federal and State warning points (not local communities, who are served through their States and local information dissemination points).*

Tsunami.gov

NTWC and PTWC host official messages and event-based information on tsunami.gov. All event bulletins are provided in a table on the front page. Alert areas are shown on a map and with an icon indicating the tsunami source region. Estimated times of arrival, tsunami observations, forecasted wave heights are posted with event messages in the drop-down box on the right-hand side of the table.

Chat

NTWC uses Google Chat for ongoing event discussions with internal NOAA/NWS agency communication and warning points. The **"***NTWC PAC Event Collaboration Room"** in Google Chat is useful for creating a common operating picture and provides a vehicle for follow-up questions and quick graphical communication or document sharing to improve internal communication.

NOAA/NWS partners who do not have access to the collaboration Chat room should contact NTWC.

Phone

If at any time a core partner needs additional information or to talk with someone on the NTWC operations floor, use the unlisted number for WFOs/Emergency Managers.

Social Media

During a real tsunami event, bulletins are automatically posted to NTWC's Facebook, Twitter, and YouTube accounts. The use of social media adds additional context, clarification, and confirmation for partners and the public. Social media updates may include additional contextual information about a tsunami event that will support official NTWC messages and alerts.

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Facebook: https://www.facebook.com/NWSNTWC
Twitter: https://twitter.com/NWS_NTWC
YouTube: https://www.youtube.com/@USTsunamiWarningCenter

Tsunami Detection, Observing, and Forecasting

DART Network

Tsunami detection can occur before a wave reaches the coast through the DART (Deep Ocean Assessment and Reporting of Tsunamis) network. The DART network uses Bottom Pressure Recorder (BPR) instruments located on the seafloor in the deep ocean. BPRs detect changes in the pressure of the water column above as a tsunami wave propagates over the sensor, as well as often recording the pressure changes from the passage of earthquake and atmospheric waves. The National Data Buoy Center is responsible for maintaining the DART network. Due to the need to separate earthquake shaking signals from tsunami signals, DART observation interpretation is best left to tsunami experts. Tsunami wave measurement and detection will not be displayed clearly from the NDBC DART webpage.

Tide Gauges

Tsunamis are also detected using coastal tide gauges. During tsunami events, tide gauges operated by the National Ocean Service (NOS), Ocean Networks Canada, and other groups around the world are used to monitor water levels in real time. Observed water levels at both DARTs and coastal tide gauges must have the tidal signal removed in order to accurately measure tsunami amplitudes. U.S. tsunami-capable gauges are available at: https://tidesandcurrents.noaa.gov/tsunami/

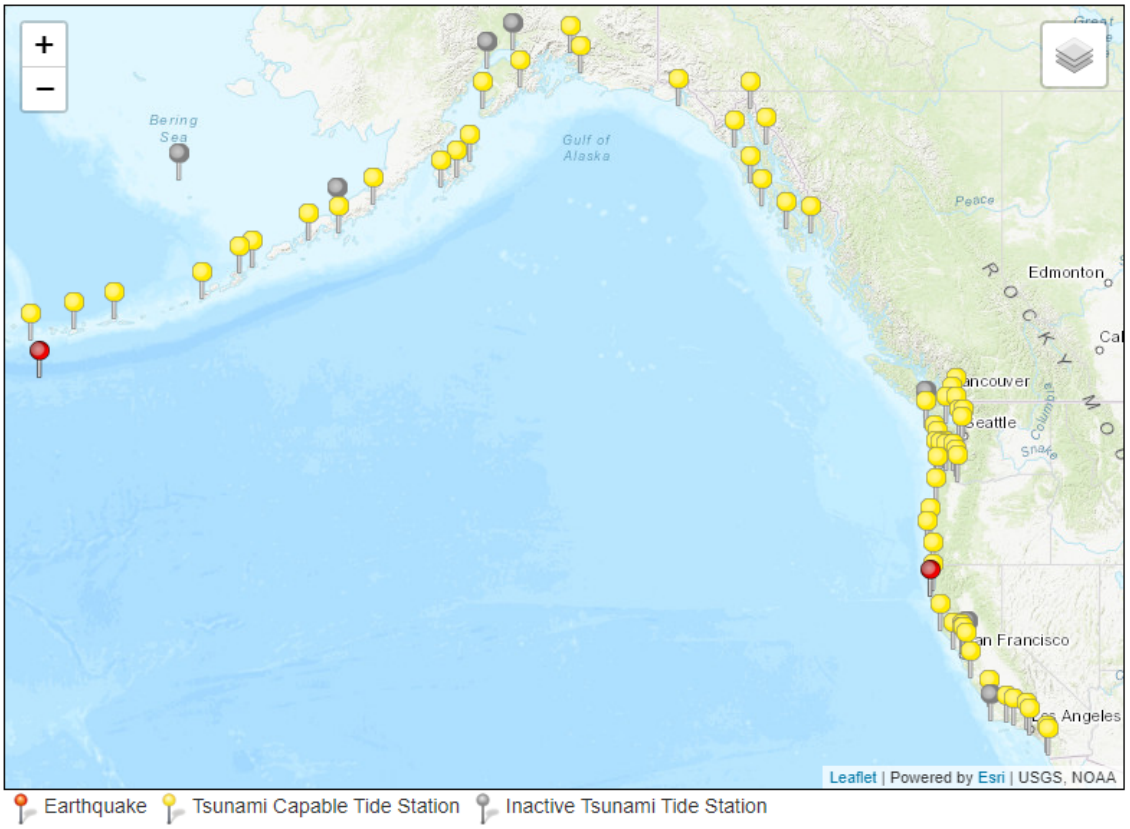

Figure 2. U.S. tsunami-capable tide gauges operated by the NOS Center for Operational Oceanographic Products and Services (CO-OPS).

Observing & Forecasting

Tsunamis are very long waves, often with periods of 15 to 60 minutes. When monitoring water levels, NTWC must therefore wait 15 to 30 minutes after a tsunami is detected for the observation to reach a maximum wave height. DART data take even longer to incorporate into real-time tsunami forecasting, requiring nearly a full wave cycle before they can be assimilated into tsunami forecast models. Forecasting accuracy improves with additional observations. Therefore, the observing and forecasting process requires time and multiple updates as more data is added.

For initial guidance, and until tsunami observations are available, NTWC uses "best-fit" pre-computed tsunami models for preliminary forecasts. Once a real-time forecast with tsunami observations has been achieved, the forecasted wave heights for coastal locations are published to tsunami.gov. A subset of these wave heights is provided in NTWC bulletins. For a list of sites where NTWC provides ETAs and forecasted wave heights, see **Appendix C**, NTWC Pacific Forecast Locations.

Cancellation Criteria

After a significant tsunami has been recorded, NTWC will monitor water levels and downgrade a coastal section from a Warning to an Advisory once wave height observations have diminished below the Warning threshold (3 ft) for at least 3 hours. NTWC will cancel the alert for a coastal section after wave height observations have remained below Advisory threshold (1 ft) for 3 hours.

3.2 PACIFEX23 Tsunami Scenario

The Pacifex23 tsunami scenario is based on a tsunami generated by a magnitude 9.3 earthquake along the Alaska-Aleutian Subduction Zone at 56.7ºN, 153.2ºW, and a depth of 5 km. The modelled source is 900 x 150 km (L x W), with variable amounts of slip on various fault patches up to a maximum of 35 m on patches near the hypocenter (**Figure 3**) and modified from a model by Butler *et al*. (2014).

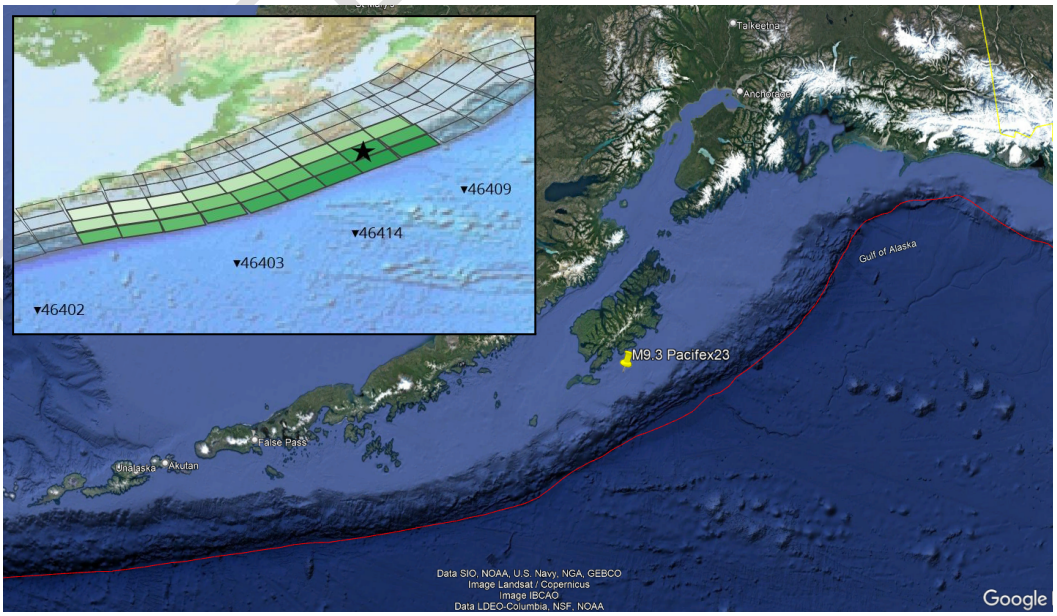

Figure 3: 2023 exercise event epicenter. Inset shows source distribution of fault slip (green patches) and locations of nearest DART instruments (upside-down triangles).

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Tectonic Setting: Alaska-Aleutian Subduction Zone

This earthquake occurs in the Alaska-Aleutian trench, which is the result of the Pacific plate being gradually forced northward beneath the North American plate. Many earthquakes result as a consequence of tectonic plate convergence, including some of the largest earthquakes that have ever been recorded. The return interval for great earthquakes of magnitude 8.0 or more occur with an average of about 70 years within different segments of the Aleutian arc. During each of these large earthquakes, the accumulated strain is released along a certain length (segment) of the arc system, generally on the order of a few hundred miles. For example, the 1964 magnitude 9.2 Prince William Sound earthquake released strain along a total distance of over 400 miles, from near Valdez to Kodiak Island (**Figure 4**). The rupture took 4.5 minutes to complete. This Great Alaskan Earthquake is the largest recorded in U.S. history and the second largest earthquake ever recorded.

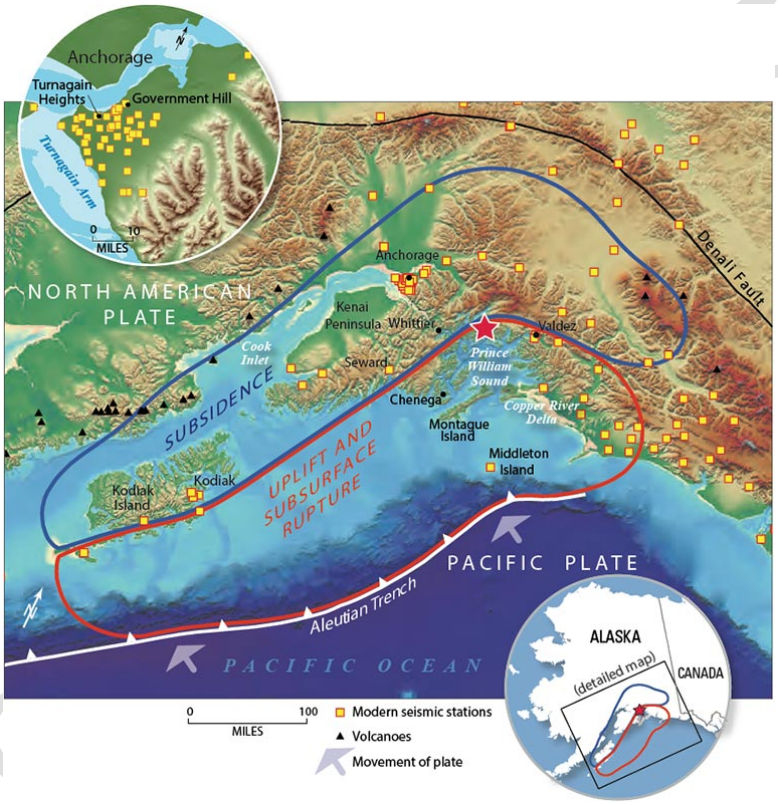

Figure 4: Figure from USGS. Map displays the epicenter and estimated rupture area of the Magnitude 9.2 Great Alaskan Earthquake.

Other historically significant subduction zone earthquakes in the Gulf of Alaska, occurring east of the Aleutian Islands include:

- 8.2 - 1938 Alaska Peninsula Earthquake, 1938-11-10
- 8.6 - 1946 Aleutian Islands (Unimak Island) Earthquake, 1946-04-01
- 8.2 - 2021 SE of Perryville, Alaska, 2021-07-28

While the probability of a very large >M9.3 earthquake from this region is unlikely in any given year, the purpose of this scenario is to test and exercise event response for uncommonly large earthquakes.

Relevant references:

Butler, R., Burney, D., and Walsh, D., 2014, Paleo-tsunami evidence on Kaua'i and numerical modeling of a great Aleutian tsunami: Geophysical Research Letters, v. 41, no. 19, p. 6,795–6,802. doi.org/10.1002/2014GL061232

Suleimani, E.N., Nicolsky, D.J., and Koehler, R.D., 2017, Updated tsunami inundation maps of the Kodiak area, Alaska: Alaska Division of Geological & Geophysical Surveys Report of Investigation 2017-8, 38 p., 10 sheets. http://doi.org/10.14509/29740

USGS Event Page- 1964 M9.2 Earthquake and Tsunami: https://earthquake.usgs.gov/earthquakes/events/alaska1964/

Tsunami Hazard and Impacts

The United States and Territories National Tsunami Hazard Assessment Historical Record and Sources for Waves - Update (2016) identifies the general tsunami hazard for both Alaska and the U.S. West Coast as "**high to very high**" due to the proximity of these regions to major subduction zones.

Earthquakes of M8.5+ in the Pacific generally produce tsunamis with basin-wide impacts. In this exercise scenario, a large earthquake preliminarily assessed as M8.3 initiates a Warning-level response for areas within 3 hours of tsunami travel time from the epicentral location SE of Kodiak Island, with more uncertainty about far-field impacts. The water depth in the source region (about 5000m) along with the shallow earthquake depth and location on the megathrust indicate that a large amount of water was likely displaced vertically, meaning the potential for significant tsunami impacts is high. This scenario is a plausible event in the region, despite having a presumed long recurrence time.

Alerting, Observation, and Forecasting Considerations

Since this region of Alaska is well-monitored and the earthquake rupture area is very large, both time until detection and forecast production time are relatively short. In this hypothetical event, the tsunami would initially be verified and measured by coastal tide gauges on the south-facing coast of Kodiak Island. In our scenario, the Kodiak gauge is taken offline as it is recording a very large wave arrival, so no maximum amplitude is reported. Several local and regional gauges record wave heights that far exceed the forecasts for the given earthquake parameters and arrive well ahead of the predicted arrival times, simulating additional tsunami sources from localized mass failures.

On the opposite side of the trench, DARTs 46403 and 46414 may both potentially record tsunami maxima within the first 30 minutes, feeding high-resolution tsunami forecasts within the first hour following the quake. These forecasts would provide relatively high confidence about expected impacts along the entire coastline.

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4. Exercise Outline

4.1 General

Tsunami Warning, Advisory, Watch, and Information messages for this exercise are issued by the NTWC based on a hypothetical earthquake with the following hypocenter parameters which in turn generates a tsunami:

Origin Time	16:30:00 UTC April 13, 2023	
	Preliminary	**Final**
Latitude	56.7° N	56.7° N
Longitude	153.2° W	153.2° W
Magnitude	Mwp 8.3	Mw 9.3
Depth	5 km	5 km

Similar to a real event, the first bulletin will contain a slightly different set of earthquake parameters than the others and a lower magnitude, as the true size of an earthquake greater than magnitude 8 usually takes over 15 minutes to determine. NTWC will modify their earthquake parameters for an event once the authoritative information becomes available from the U.S. Geological Survey (USGS), usually in bulletin 2.

Expected impacts for this exercise event are guided by tsunami forecast models and historical analogues. The models indicate a Warning level event along the U.S. and Canadian West Coasts.

Initially, NTWC issues a Tsunami Warning for areas within 3 hours of tsunami travel time from the earthquake source region, and a Watch for all other coastlines within their Pacific Designated Service Area. The Watch informs the public and partners that an event has occurred which is of concern, and could potentially impact those coasts. The alert level is raised to a Warning 30 minutes later after determining the true earthquake magnitude is M9.3, reviewing tsunami forecasts as the estimated magnitude rose, and examining water level observations from the nearest sensors. Alert level definitions are provided in Section 3.1.1.

Message Dissemination

NTWC will issue messages over various broadcast dissemination channels through the exercise. An initial communication test message will start the exercise at 1630 UTC on April 13, 2023. This test message will be circulated via the transmission methods in **Table 2**. From then on, participants should follow the schedule in **Table 1** to know when to expect new messages. These messages will be emailed from the NTWC Service Account, ntwc@noaa.gov. To be added to the exercise email list, please email the recipient email information to ntwc@noaa.gov or the NTWC Science Officer (contact information in **Section 4.5**) prior to the exercise date.

Table 1 is the message timeline as they would be issued by the NTWC in a real event. The messages can be used by EMOs to drive exercise timing if the group is not playing along with NTWC in real time. The messages (as shown in **Appendix A**)

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cover an approximately 24 hour scenario timeline, but have been condensed to 4 hours in real-time for the purpose of this exercise. The World Meteorological Organization (WMO) and Advanced Weather Interactive Processing System (AWIPS) headers used in the test message are listed in Table 2.

NTWC issues three official products each time a message is issued. The messages provided in the **Appendix** are known as the public message and do not contain codes or text intended for automated alert systems. English (**Appendix A**) and Spanish (**Appendix B**) versions of each message are provided for this exercise. The other message not shown in **Appendix A** is the segmented message. This message includes encoded NWS zones grouped in segments, Valid Time Event Codes (VTEC), and their associated level of threat. The segmentation is used for automated processing systems which parse NWS products. NTWC issues additional graphical and web-based products to its website and social media.

Participants may elect to use their own timelines in order to achieve their particular objectives. For example, a particular EMO's Exercise Controller may choose to feed the TWC bulletins into the exercise at times of their own choosing, or alternatively put them in envelopes with the time they must be opened written on each with each key participant agency having their own set of envelopes. The messages, provided in **Appendix A**, will facilitate this approach. More ideas on exercise approaches and a sample tabletop exercise can be found in **Appendices D and E**.

EMOs are welcome to modify estimated arrival times and/or wave amplitudes to suit their exercise – for example, to have the tsunami arrive sooner and with larger amplitude. Other exercise injects, such as tsunami damage reports, are also encouraged.

4.2 Master Schedule (Exercise Script)

Table 1: Scenario Timeline

A tsunami is triggered by a major earthquake with preliminary magnitude of M8.3, soon upgraded to M9.3, located at 56.7ºN, 153.2ºW, 80 miles SW of Kodiak City, Alaska, occurring on April 13, 2023 at 1630 UTC.

```
Magnitude      9.3
Origin Time    0830 AKDT Apr 13 2023
               0930  PDT Apr 13 2023
               1630  UTC Apr 13 2023
Coordinates    56.7 North 153.2 West
Depth          3 miles
Location       80 miles SW of Kodiak City, Alaska
               335 miles SW of Anchorage, Alaska
```

The initial test message will kick off the exercise at that time. The exercise message bulletins and notifications for conference calls will follow by email only. In the event of a National Weather Service Critical Weather Day on exercise day, the test message will also only be disseminated by email.

NTWC will continue Google Chat support to NOAA/NWS partners up through the exercise cancellation bulletin.

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The following represents a complete timeline of events for this scenario. Please use the Dissemination column to note which steps will or won't be exercised by NTWC.

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04/13/2023	1649	949	Notif. for Conf. Call		Email
04/13/2023	1705	1005	Warn: US & Can West Coast	2	Email
04/13/2023	1715	1015	Conf. Call #1		Phone
04/13/2023	1720	1020	Notif. for Conf. Call		Email
04/13/2023	1735	1035	Warn. continued	3	Email
04/13/2023	1800	1100	Conf. Call #2		Phone
04/13/2023	1805	1105	Warn. continued	4	Email
FAST FORWARD 3 HR IN SCENARIO		**CONTINUING IN REAL-TIME (PDT)**			
04/13/2023	2125	1125	Notif. for Conf. Call		Email
04/13/2023	2200	1200	Conf. Call #3		Phone
04/13/2023	2205	1205	W. Aleutians to Adv., Warn. continued	12	Email
FAST FORWARD 11 HR IN SCENARIO		**CONTINUING IN REAL-TIME (PDT)**			
04/14/2023	915	1215	Notif. for Conf. Call		Email
04/14/2023	1000	1300	Conf. Call #4		Phone
04/14/2023	1005	1305	S. CA and SE AK to Adv., W. Aleutians Can., Warn. continued	24	Email
FAST FORWARD ~ 2HR IN SCENARIO		**CONTINUING IN REAL-TIME (PDT)**			
04/14/2023	1205	1315	SE AK Can., Warn. to Adv., Adv. continued	26	Email
FAST FORWARD ~5HR IN SCENARIO		**CONTINUING IN REAL-TIME (PDT)**			
04/14/2023	1705	1335	Cancellation	31	Email

TWC Messages:

Warn	Tsunami Warning
Adv	Tsunami Advisory
Watch	Tsunami Watch
Can	Alert cancellation
Notif. for Conf. Call	Info message for partners alerting recipient to upcoming conference call

The initial test message will be disseminated over all standard TWC broadcast channels listed in Table 2. This is being issued to test communications with EMOs, and to start the exercise. If you typically receive NTWC monthly communications tests, please respond as you normally would. If you do not typically receive NTWC monthly communications tests, no action is needed from you if you receive the test message.

Table 2: Product Types

Product Types Issued for Test Message with Transmission Methods

Center	WMO ID	AWIPS ID	NWWS	GTS	EMWIN	AISR	Fax	Email
NTWC	WEPA41 PAAQ	TSUWCA	Yes	Yes	Yes	Yes	No	No
NTWC	WEAK51 PAAQ	TSUAK1	Yes	Yes	Yes	Yes	Yes	Yes
NTWC	WEAK61 PAAQ	TSUSPN	Yes	Yes	Yes	Yes	Yes	Yes

NWWS NOAA Weather Wire Service
GTS Global Telecommunications System
EMWIN Emergency Managers Weather Information Network
AISR Aeronautical Information System Replacement

4.3 Actions in Case of a Real Event

In the case of a real event occurring during the exercise, the NTWC will issue their normal messages for the event. Such messages will be given full priority and a decision will be made by the NTWC whether to issue the test message. Smaller earthquakes that only trigger a Tsunami Information Statement will not disrupt the exercise. All documentation and correspondence relating to this exercise is to be clearly identified as "**PACIFEX23"** and "**Exercise**." The test message will include the word "**Test**". All verbal communication from NTWC will begin and end with "**This in an Exercise**".

4.4 Procedure for False Alarm

Any time disaster response exercises are conducted, the potential exists for the public or media to interpret the event as real. Procedures should be set up by all participating entities to address public or media concerns involving this exercise in case of misinterpretation by media or the public.

In the event of a communication error or misinterpreted exercise message, NTWC will follow established internal procedures to mitigate public and media confusion.

Again, all verbal communications from NTWC will begin and end with "This is an Exercise".

All NTWC messages will include TEST and/or EXERCISE in the content and headlines.

PACIFEX23 Exercise

4.5 Resources

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

Questions on the exercise can be addressed to:

Person	Telephone #	Email
James Gridley, NTWC Director	907-745-4212	james.gridley@noaa.gov
Summer Ohlendorf, NTWC Science Officer	907-745-4212	summer.ohlendorf@noaa.gov
Dave Snider, NTWC Warning Coordinator	907-223-9988	david.snider@noaa.gov
Anthony Picasso, ADHSEM	907-428-7046	Anthony.Picasso@alaska.gov
Sonia Woolford, BC EMCR	778-698-5777	Sonia.Woolford@gov.bc.ca
Maximilian Dixon, WA EMD Tsunami PM	253-273-3395	Maximilian.Dixon@mil.wa.gov
Althea Rizzo, OR OEM Tsunami PM	971-719-0796	Althea.Rizzo@oem.oregon.gov
Yvette LaDuke, CalOES, Tsunami PM	916-715-2243	Yvette.LaDuke@caloes.ca.gov
Charles McCreery, PTWC Director	808-725-6380	charles.mccreery@noaa.gov

4.6 Media Arrangements

One advantage in conducting exercises is that it provides a venue to promote awareness of the exercise topic. Many residents along the Pacific coast may not realize that a tsunami warning system exists for their region, let alone the proper response. Communities may wish to invite their local media to the exercise to promote local awareness of the tsunami hazard. For all levels of exercising but especially for those countries executing full-scale and functional exercises, the media can also provide support in building awareness leading up to the Exercise. The media should be provided with available informational brochures prepared by the local, regional and international agencies. **Appendix F** contains a sample press release which can be adapted as necessary.

In an actual tsunami event, Media are encouraged to reach out to Dave Snider, NTWC Warning Coordinator, and their local NWS Weather Forecast Office Warning Coordination Meteorologist, or NOAA Public Affairs to coordinate event information for mass media.

5 Post-Exercise Evaluation

All participating agencies are requested to provide brief feedback on the exercise. This feedback will assist NTHMP and NOAA in the development of subsequent exercises. A post-exercise survey form will be emailed to the exercise email list within a day of exercise completion, and any exercise participants who do not receive one may request the form link by emailing ntwc@noaa.gov. Comments on the exercise, and proposed improvements to the messages may also be sent to this address. Any other items related to the tsunami warning system can be addressed to the persons listed in section 4.5.

PACIFEX23 Exe

Appendix A. NTWC English Exercise Messages

The following messages, created for the PACIFEX23 tsunami exercise, are representative of the official standard products issued by the NTWC during a tsunami which is generated by a magnitude 9.3 earthquake located along the Alaska-Aleutian Subduction Zone, at 56.7ºN, 153.2ºW. During a real event, the NTWC would also issue graphical and html-based products to the tsunami.gov website and via RSS. Users will additionally be able to find more detailed forecast and observation information than contained in the text products, via pull-down menus in the Messages table.

NTWC Bulletin #1

WEAK51 PAAQ 131636
TSUAK1

BULLETIN
Public Tsunami Message Number 1
NWS National Tsunami Warning Center Palmer AK
836 AM AKDT Thu Apr 13 2023

...A TSUNAMI WARNING IS NOW IN EFFECT...

...A TSUNAMI WATCH IS NOW IN EFFECT...

Tsunami Warning in Effect for;

* BRITISH COLUMBIA, The north coast and Haida Gwaii, the central coast and northeast Vancouver Island, the outer west coast of Vancouver Island, the Juan de Fuca Strait coast

* SOUTHEAST ALASKA, The inner and outer coast from The BC/Alaska Border to Cape Fairweather, Alaska (80 miles SE of Yakutat)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Pacific coasts from Cape Fairweather, Alaska (80 miles SE of Yakutat) to Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) to Attu, Alaska including the Pribilof Islands

Tsunami Watch in Effect for;

* CALIFORNIA, The coast from The Cal./Mexico Border to The Oregon/Cal. Border including San Francisco Bay

* OREGON, The coast from The Oregon/Cal. Border to The Oregon/Wash. Border including the Columbia River estuary coast

* WASHINGTON, Outer coast from the Oregon/Washington border to Slip Point, Columbia River estuary coast, and the Juan de Fuca Strait coast

PACIFEX23 Exercise

PRELIMINARY EARTHQUAKE PARAMETERS
---

* The following parameters are based on a rapid preliminary assessment of the earthquake and changes may occur.

* Magnitude 8.3
* Origin Time 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023
* Coordinates 56.7 North 153.2 West
* Depth 3 miles
* Location 80 miles SW of Kodiak City, Alaska
  335 miles SW of Anchorage, Alaska

FORECASTS OF TSUNAMI ACTIVITY
---

* Tsunami activity is forecasted to start at the following locations at the specified times.

SITE	FORECAST START OF TSUNAMI
* Alaska	
Seward	0855 AKDT Apr 13
Cordova	1010 AKDT Apr 13
Craig	1010 AKDT Apr 13
Homer	1010 AKDT Apr 13
Sitka	1015 AKDT Apr 13
Yakutat	1025 AKDT Apr 13
Sand Point	1030 AKDT Apr 13
Valdez	1035 AKDT Apr 13
Elfin Cove	1035 AKDT Apr 13
Kodiak	1055 AKDT Apr 13
Unalaska	1055 AKDT Apr 13
Saint Paul	1140 AKDT Apr 13
Cold Bay	1150 AKDT Apr 13
Adak	1400 AKDT Apr 13
Shemya	1430 AKDT Apr 13
* British Columbia	
Langara	1115 PDT Apr 13
Tofino	1220 PDT Apr 13
* Washington	
Neah Bay	1130 PDT Apr 13
Port Angeles	1300 PDT Apr 13
Bellingham	1310 PDT Apr 13
La Push	1310 PDT Apr 13
Moclips	1320 PDT Apr 13
Long Beach	1320 PDT Apr 13
Westport	1325 PDT Apr 13
Port Townsend	1350 PDT Apr 13
Tacoma	1415 PDT Apr 13
* Oregon	
Port Orford	1325 PDT Apr 13
Seaside	1330 PDT Apr 13

PACIFEX23 Exercise

Charleston 1330 PDT Apr 13
Brookings 1335 PDT Apr 13
Newport 1335 PDT Apr 13

* California
Crescent City 1340 PDT Apr 13
Fort Bragg 1345 PDT Apr 13
Monterey 1415 PDT Apr 13
San Francisco 1435 PDT Apr 13
Port San Luis 1440 PDT Apr 13
Santa Barbara 1450 PDT Apr 13
Los Angeles Harb 1510 PDT Apr 13
Newport Beach 1515 PDT Apr 13
Oceanside 1520 PDT Apr 13
La Jolla 1520 PDT Apr 13

OBSERVATIONS OF TSUNAMI ACTIVITY
---

* No tsunami observations are available to report.

RECOMMENDED ACTIONS

Actions to protect human life and property will vary within tsunami warning areas.

If you are in a tsunami warning area;

* Evacuate inland or to higher ground above and beyond designated tsunami hazard zones or move to an upper floor of a multi-story building depending on your situation.
* Move out of the water, off the beach, and away from harbors, marinas, breakwaters, bays and inlets.
* Be alert to and follow instructions from your local emergency officials because they may have more detailed or specific information for your location.
* If you feel a strong earthquake or extended ground rolling take immediate protective actions such as moving inland and/or uphill preferably by foot.
* Boat operators,
  * Where time and conditions permit, move your boat out to sea to a depth of at least 180 feet.
  * If at sea avoid entering shallow water, harbors, marinas, bays, and inlets to avoid floating and submerged debris and strong currents.
* Do not go to the shore to observe the tsunami.
* Do not return to the coast until local emergency officials indicate it is safe to do so.

If you are in a tsunami watch area;

* Prepare to take action and stay alert for further information.

IMPACTS

PACIFEX23 Exercise

Impacts will vary at different locations in the warning areas.

If you are in a tsunami warning area;

* A tsunami with damaging waves and powerful currents is possible.

* Repeated coastal flooding is possible as waves arrive onshore, move inland, and drain back into the ocean.

* Strong and unusual waves, currents and inland flooding can drown or injure people and weaken or destroy structures on land and in water.

* Water filled with floating or submerged debris that can injure or kill people and weaken or destroy buildings and bridges is possible.

* Strong and unusual currents and waves in harbors, marinas, bays, and inlets may be especially destructive.

* Some impacts may continue for many hours to days after arrival of the first wave.

* The first wave may not be the largest so later waves may be larger.

* Each wave may last 5 to 45 minutes as a wave encroaches and recedes.

* Coasts facing all directions are threatened because the waves can wrap around islands and headlands and into bays.

* Strong shaking or rolling of the ground indicates an earthquake has occurred and a tsunami may be imminent.

* A rapidly receding or receded shoreline, unusual waves and sounds, and strong currents are signs of a tsunami.

* The tsunami may appear as water moving rapidly out to sea, a gentle rising tide like flood with no breaking wave, as a series of breaking waves, or a frothy wall of water.

ADDITIONAL INFORMATION AND NEXT UPDATE
---

* Refer to the internet site tsunami.gov for more information.

* Pacific coastal residents outside California, Oregon, Washington, British Columbia and Alaska should refer to the Pacific Tsunami Warning Center messages at tsunami.gov.

* This message will be updated within 30 minutes.

$$

PACIFEX23 Exercise

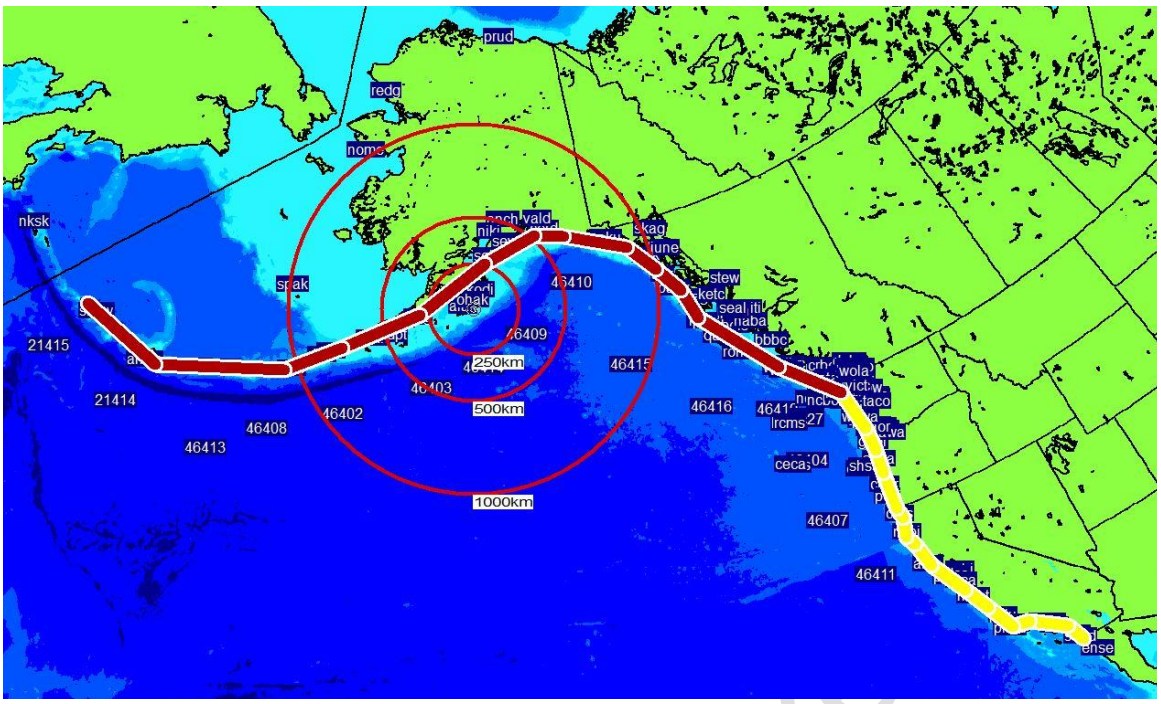

Figure A1: Coastal Alert Areas after Bulletin 1. White text shows water level observation sites.

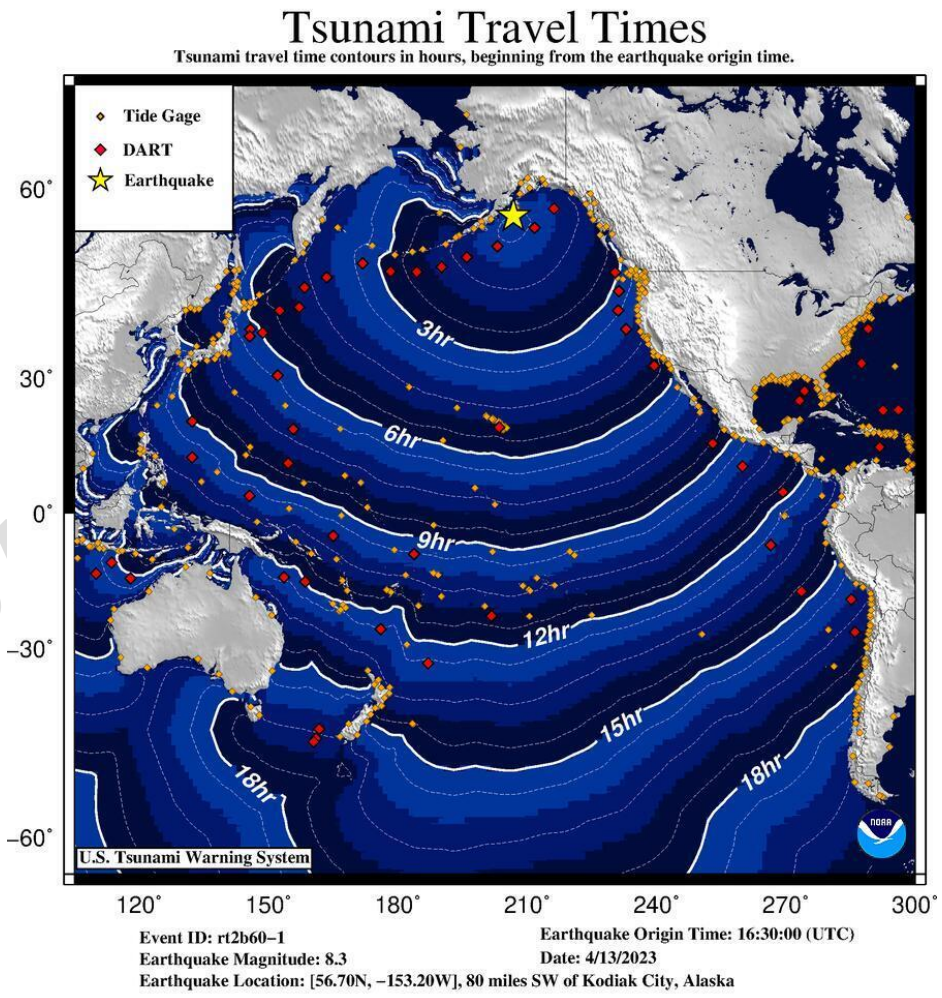

Figure A2: Hypothetical Tsunami Travel Times in hourly contours

NTWC Bulletin #2

WEAK51 PAAQ 131705
TSUAK1

BULLETIN
Public Tsunami Message Number 2
NWS National Tsunami Warning Center Palmer AK
905 AM AKDT Thu Apr 13 2023

UPDATES
---
* A tsunami has been confirmed and some impacts are expected
* Updated observations
* Revised alert areas
* Revised magnitude

...THE TSUNAMI WARNING REMAINS IN EFFECT…

Tsunami Warning in Effect for;

* CALIFORNIA, The coast from The Cal./Mexico Border to The Oregon/Cal. Border including San Francisco Bay

* OREGON, The coast from The Oregon/Cal. Border to The Oregon/Wash. Border including the Columbia River estuary coast

* WASHINGTON, Outer coast from the Oregon/Washington border to Slip Point, Columbia River estuary coast, and the Juan de Fuca Strait coast

* BRITISH COLUMBIA, The north coast and Haida Gwaii, the central coast and northeast Vancouver Island, the outer west coast of Vancouver Island, the Juan de Fuca Strait coast

* SOUTHEAST ALASKA, The inner and outer coast from The BC/Alaska Border to Cape Fairweather, Alaska (80 miles SE of Yakutat)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Pacific coasts from Cape Fairweather, Alaska (80 miles SE of Yakutat) to Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) to Attu, Alaska including the Pribilof Islands

PRELIMINARY EARTHQUAKE PARAMETERS - UPDATED
---

* The following parameters are based on a rapid preliminary assessment of the earthquake and changes may occur.

* Magnitude 9.3
* Origin Time 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023

PACIFEX23 Exercise

* Coordinates 56.7 North 153.2 West
* Depth 3 miles
* Location 80 miles SW of Kodiak City, Alaska
335 miles SW of Anchorage, Alaska

FORECASTS OF TSUNAMI ACTIVITY
---
* Tsunami activity is forecasted to start at the following locations at the specified times.

SITE	FORECAST START OF TSUNAMI
* Alaska	
Seward	0840 AKDT Apr 13
Cordova	0900 AKDT Apr 13
Homer	0910 AKDT Apr 13
Craig	0945 AKDT Apr 13
Sitka	0950 AKDT Apr 13
Valdez	0955 AKDT Apr 13
Yakutat	0955 AKDT Apr 13
Elfin Cove	0955 AKDT Apr 13
Sand Point	1005 AKDT Apr 13
Kodiak	1005 AKDT Apr 13
Unalaska	1030 AKDT Apr 13
Saint Paul	1110 AKDT Apr 13
Cold Bay	1125 AKDT Apr 13
Adak	1355 AKDT Apr 13
Shemya	1425 AKDT Apr 13
* British Columbia	
Langara	1055 PDT Apr 13
Tofino	1205 PDT Apr 13
* Washington	
Neah Bay	1115 PDT Apr 13
Port Angeles	1250 PDT Apr 13
La Push	1300 PDT Apr 13
Bellingham	1305 PDT Apr 13
Long Beach	1310 PDT Apr 13
Moclips	1310 PDT Apr 13
Westport	1315 PDT Apr 13
Port Townsend	1340 PDT Apr 13
Tacoma	1410 PDT Apr 13
* Oregon	
Seaside	1320 PDT Apr 13
Charleston	1320 PDT Apr 13
Port Orford	1320 PDT Apr 13
Newport	1325 PDT Apr 13
Brookings	1330 PDT Apr 13

PACIFEX23 Exercise

* California
Crescent City 1335 PDT Apr 13
Fort Bragg 1340 PDT Apr 13
Monterey 1410 PDT Apr 13
San Francisco 1430 PDT Apr 13
Port San Luis 1435 PDT Apr 13
Santa Barbara 1450 PDT Apr 13
Los Angeles Harb 1505 PDT Apr 13
Newport Beach 1515 PDT Apr 13
Oceanside 1520 PDT Apr 13
La Jolla 1520 PDT Apr 13

OBSERVATIONS OF TSUNAMI ACTIVITY - UPDATED
---

* Observed max tsunami height is the highest recorded water level above the tide level up to the time of this message.

SITE	TIME OF MEASUREMENT	OBSERVED MAX TSUNAMI HEIGHT
Old Harbor Alaska	1002 PDT Apr 13	22.0ft
Seldovia Alaska	0946 PDT Apr 13	23.3ft

RECOMMENDED ACTIONS - UPDATED

Actions to protect human life and property will vary within tsunami warning areas.

If you are in a tsunami warning area;

* Evacuate inland or to higher ground above and beyond designated tsunami hazard zones or move to an upper floor of a multi-story building depending on your situation.

* Move out of the water, off the beach, and away from harbors, marinas, breakwaters, bays and inlets.

* Be alert to and follow instructions from your local emergency officials because they may have more detailed or specific information for your location.

* If you feel a strong earthquake or extended ground rolling take immediate protective actions such as moving inland and/or uphill preferably by foot.

* Boat operators,
  * Where time and conditions permit, move your boat out to sea to a depth of at least 180 feet.

  * If at sea avoid entering shallow water, harbors, marinas, bays, and inlets to avoid floating and submerged debris and strong currents.

PACIFEX23 Exercise

* Do not go to the shore to observe the tsunami.

* Do not return to the coast until local emergency officials indicate it is safe to do so.

IMPACTS

Impacts will vary at different locations in the warning areas.

If you are in a tsunami warning area;

* A tsunami with damaging waves and powerful currents is possible.

* Repeated coastal flooding is possible as waves arrive onshore, move inland, and drain back into the ocean.

* Strong and unusual waves, currents and inland flooding can drown or injure people and weaken or destroy structures on land and in water.

* Water filled with floating or submerged debris that can injure or kill people and weaken or destroy buildings and bridges is possible.

* Strong and unusual currents and waves in harbors, marinas, bays, and inlets may be especially destructive.

* Some impacts may continue for many hours to days after arrival of the first wave.

* The first wave may not be the largest so later waves may be larger.

* Each wave may last 5 to 45 minutes as a wave encroaches and recedes.

* Coasts facing all directions are threatened because the waves can wrap around islands and headlands and into bays.

* Strong shaking or rolling of the ground indicates an earthquake has occurred and a tsunami may be imminent.

* A rapidly receding or receded shoreline, unusual waves and sounds, and strong currents are signs of a tsunami.

* The tsunami may appear as water moving rapidly out to sea, a gentle rising tide like flood with no breaking wave, as a series of breaking waves, or a frothy wall of water.

ADDITIONAL INFORMATION AND NEXT UPDATE
---
* Refer to the internet site tsunami.gov for more information.

PACIFEX23 Exercise

* Pacific coastal residents outside California, Oregon, Washington, British Columbia and Alaska should refer to the Pacific Tsunami Warning Center messages at tsunami.gov.

* This message will be updated within 30 minutes.

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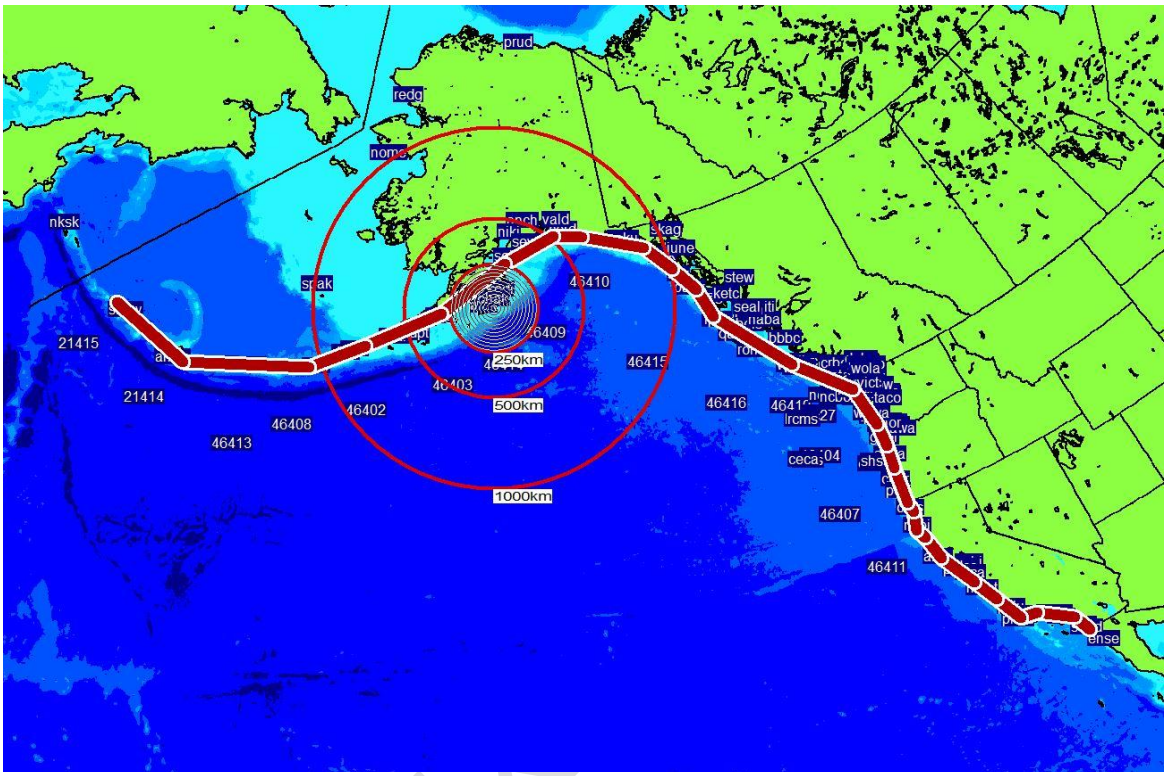

Figure A3: Coastal Alert Areas after Bulletin 2. White text shows water level observation sites.

NTWC Bulletin #3

WEAK51 PAAQ 131735
TSUAK1

BULLETIN
Public Tsunami Message Number 3
NWS National Tsunami Warning Center Palmer AK
935 AM AKDT Thu Apr 13 2023

UPDATES
---
* Updated observations
* Revised forecast information

...THE TSUNAMI WARNING REMAINS IN EFFECT...

Tsunami Warning in Effect for;

* CALIFORNIA, The coast from The Cal./Mexico Border to The Oregon/Cal. Border including San Francisco Bay

* OREGON, The coast from The Oregon/Cal. Border to The Oregon/Wash. Border including the Columbia River estuary coast

* WASHINGTON, Outer coast from the Oregon/Washington border to Slip Point, Columbia River estuary coast, and the Juan de Fuca Strait coast

* BRITISH COLUMBIA, The north coast and Haida Gwaii, the central coast and northeast Vancouver Island, the outer west coast of Vancouver Island, the Juan de Fuca Strait coast

* SOUTHEAST ALASKA, The inner and outer coast from The BC/Alaska Border to Cape Fairweather, Alaska (80 miles SE of Yakutat)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Pacific coasts from Cape Fairweather, Alaska (80 miles SE of Yakutat) to Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) to Attu, Alaska including the Pribilof Islands

FORECASTS OF TSUNAMI ACTIVITY
---

* A tsunami has been generated. The first waves are forecasted to arrive at the following locations and specified times.

* Forecast tsunami duration is the approximate length of time which the tsunami may produce dangerous currents and waves.

* Forecast max tsunami height is the highest expected water level above the tide.

* Forecasts are not provided for sites which have been impacted more than an hour prior to the time of this message.

SITE	FORECAST START OF TSUNAMI	FORECAST TSUNAMI DURATION	FORECAST MAX TSUNAMI HEIGHT
* Alaska			
Craig	0945 AKDT Apr 13		
Sitka	0950 AKDT Apr 13	48 hrs	5.0- 9.3 ft
Valdez	0955 AKDT Apr 13	30 hrs	2.7- 5.0 ft
Yakutat	0955 AKDT Apr 13	48 hrs	4.5- 8.4 ft
Elfin Cove	0955 AKDT Apr 13	36 hrs	3.2- 5.9 ft
Sand Point	1005 AKDT Apr 13	48 hrs	8.5-15.9 ft
Kodiak	1005 AKDT Apr 13	48 hrs	14.6-27.1 ft
Unalaska	1030 AKDT Apr 13	20 hrs	1.4- 2.6 ft
Saint Paul	1110 AKDT Apr 13		less than 1ft
Cold Bay	1125 AKDT Apr 13	36 hrs	3.2- 5.9 ft

PACIFEX23 Exercise

Adak 1355 AKDT Apr 13 15 hrs 1.0- 1.9 ft
Shemya 1425 AKDT Apr 13 less than 1ft

* British Columbia
Langara 1055 PDT Apr 13 30 hrs 2.7- 4.9 ft
Tofino 1205 PDT Apr 13 40 hrs 3.4- 6.2 ft

* Washington
Neah Bay 1115 PDT Apr 13 36 hrs 2.9- 5.3 ft
Port Angeles 1250 PDT Apr 13 40 hrs 3.8- 7.1 ft
La Push 1300 PDT Apr 13
Bellingham 1305 PDT Apr 13 30 hrs 2.5- 4.6 ft
Long Beach 1310 PDT Apr 13 48 hrs 6.7-12.4 ft
Moclips 1310 PDT Apr 13 48 hrs 7.5-13.9 ft
Westport 1315 PDT Apr 13 48 hrs 7.8-14.4 ft
Port Townsend 1340 PDT Apr 13 30 hrs 2.7- 5.1 ft
Tacoma 1410 PDT Apr 13

* Oregon
Seaside 1320 PDT Apr 13
Charleston 1320 PDT Apr 13 48 hrs 6.9-12.8 ft
Port Orford 1320 PDT Apr 13 48 hrs 6.6-12.2 ft
Newport 1325 PDT Apr 13
Brookings 1330 PDT Apr 13 48 hrs 8.8-16.3 ft

* California
Crescent City 1335 PDT Apr 13 48 hrs 11.8-21.8 ft
Fort Bragg 1340 PDT Apr 13 48 hrs 7.2-13.3 ft
Monterey 1410 PDT Apr 13 48 hrs 7.3-13.5 ft
San Francisco 1430 PDT Apr 13 48 hrs 5.3- 9.9 ft
Port San Luis 1435 PDT Apr 13 48 hrs 22.1-41.1 ft
Santa Barbara 1450 PDT Apr 13 48 hrs 5.3- 9.8 ft
Los Angeles Harb 1505 PDT Apr 13 30 hrs 2.6- 4.9 ft
Newport Beach 1515 PDT Apr 13 40 hrs 3.7- 6.9 ft
Oceanside 1520 PDT Apr 13 48 hrs 6.4-11.8 ft
La Jolla 1520 PDT Apr 13 48 hrs 6.3-11.8 ft

OBSERVATIONS OF TSUNAMI ACTIVITY - UPDATED
---

* Observed max tsunami height is the highest recorded water level above the tide level up to the time of this message.

SITE	TIME OF MEASUREMENT	OBSERVED MAX TSUNAMI HEIGHT
Old Harbor Alaska	1002 PDT Apr 13	22.0ft
Alitak Bay Alaska	1005 PDT Apr 13	20.3ft
Chignik Bay Alaska	1024 PDT Apr 13	18.0ft
King Cove Alaska	1018 PDT Apr 13	14.1ft
Seldovia Alaska	0946 PDT Apr 13	23.3ft
Sand Point Alaska	1014 PDT Apr 13	15.7ft

PACIFEX23 Exercise

PRELIMINARY EARTHQUAKE PARAMETERS
---

* Magnitude 9.3
* Origin Time 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023
* Coordinates 56.7 North 153.2 West
* Depth 3 miles
* Location 80 miles SW of Kodiak City, Alaska
  335 miles SW of Anchorage, Alaska

RECOMMENDED ACTIONS

Actions to protect human life and property will vary within tsunami warning areas.

If you are in a tsunami warning area;

* Evacuate inland or to higher ground above and beyond designated tsunami hazard zones or move to an upper floor of a multi-story building depending on your situation.

* Move out of the water, off the beach, and away from harbors, marinas, breakwaters, bays and inlets.

* Be alert to and follow instructions from your local emergency officials because they may have more detailed or specific information for your location.

* If you feel a strong earthquake or extended ground rolling take immediate protective actions such as moving inland and/or uphill preferably by foot.

* Boat operators,
  * Where time and conditions permit, move your boat out to sea to a depth of at least 180 feet.

  * If at sea avoid entering shallow water, harbors, marinas, bays, and inlets to avoid floating and submerged debris and strong currents.

* Do not go to the shore to observe the tsunami.

* Do not return to the coast until local emergency officials indicate it is safe to do so.

IMPACTS

Impacts will vary at different locations in the warning areas.

If you are in a tsunami warning area;

* A tsunami with damaging waves and powerful currents is possible.

PACIFEX23 Exercise

* Repeated coastal flooding is possible as waves arrive onshore, move inland, and drain back into the ocean.

* Strong and unusual waves, currents and inland flooding can drown or injure people and weaken or destroy structures on land and in water.

* Water filled with floating or submerged debris that can injure or kill people and weaken or destroy buildings and bridges is possible.

* Strong and unusual currents and waves in harbors, marinas, bays, and inlets may be especially destructive.

* Some impacts may continue for many hours to days after arrival of the first wave.

* The first wave may not be the largest so later waves may be larger.

* Each wave may last 5 to 45 minutes as a wave encroaches and recedes.

* Coasts facing all directions are threatened because the waves can wrap around islands and headlands and into bays.

* Strong shaking or rolling of the ground indicates an earthquake has occurred and a tsunami may be imminent.

* A rapidly receding or receded shoreline, unusual waves and sounds, and strong currents are signs of a tsunami.

* The tsunami may appear as water moving rapidly out to sea, a gentle rising tide like flood with no breaking wave, as a series of breaking waves, or a frothy wall of water.

ADDITIONAL INFORMATION AND NEXT UPDATE
---

* Refer to the internet site tsunami.gov for more information.

* Pacific coastal residents outside California, Oregon, Washington, British Columbia and Alaska should refer to the Pacific Tsunami Warning Center messages at tsunami.gov.

* This message will be updated within 30 minutes.

$$

PACIFEX23 Exercise

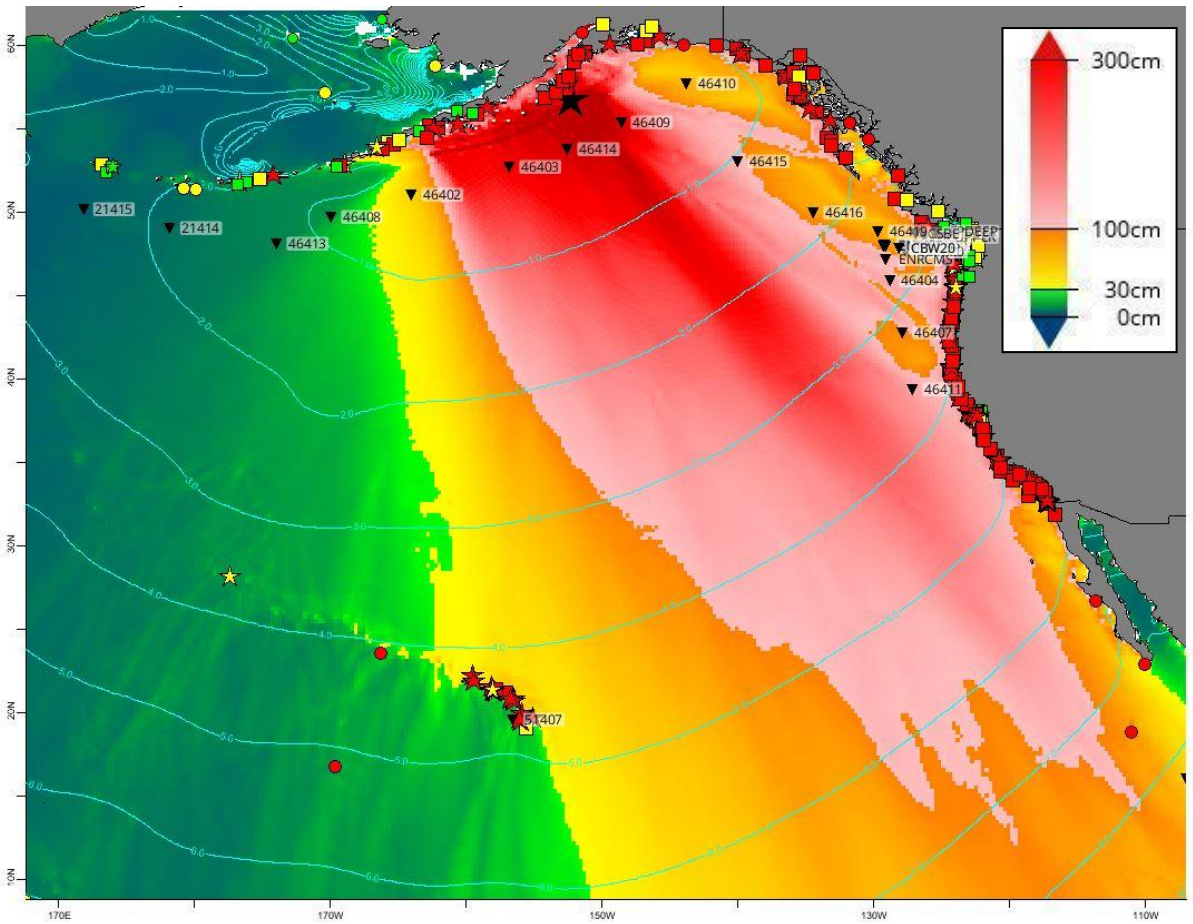

Figure A4. SIFT Event Forecast with Bulletin 3 after inverting simulated data from DARTs 46403 and 46414. PACIFEX23 source location (black star) in the Aleutian Trench. "Splash" color scale shows predicted tsunami wave amplitudes. Teal contours show 1 hour increments of tsunami travel time. Black inverted triangles show locations of Deep Ocean Assessment and Reporting of Tsunamis (DART) buoy systems. Symbols of circles, squares and stars are showing preliminary forecasted wave heights: green < 1ft, 1ft < yellow < 3ft, red > 3 ft.

NTWC Bulletin #4

WEAK51 PAAQ 131805
TSUAK1

BULLETIN
Public Tsunami Message Number 4
NWS National Tsunami Warning Center Palmer AK
1005 AM AKDT Thu Apr 13 2023

UPDATES
---
* Updated observations

...THE TSUNAMI WARNING REMAINS IN EFFECT...

Tsunami Warning in Effect for;

* CALIFORNIA, The coast from The Cal./Mexico Border to The Oregon/Cal. Border including San Francisco Bay

PACIFEX23

* OREGON, The coast from The Oregon/Cal. Border to The Oregon/Wash. Border including the Columbia River estuary coast

* WASHINGTON, Outer coast from the Oregon/Washington border to Slip Point, Columbia River estuary coast, and the Juan de Fuca Strait coast

* BRITISH COLUMBIA, The north coast and Haida Gwaii, the central coast and northeast Vancouver Island, the outer west coast of Vancouver Island, the Juan de Fuca Strait coast

* SOUTHEAST ALASKA, The inner and outer coast from The BC/Alaska Border to Cape Fairweather, Alaska (80 miles SE of Yakutat)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Pacific coasts from Cape Fairweather, Alaska (80 miles SE of Yakutat) to Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) to Attu, Alaska including the Pribilof Islands

FORECASTS OF TSUNAMI ACTIVITY
---

* A tsunami has been generated. The first waves are forecasted to arrive at the following locations and specified times.

* Forecast tsunami duration is the approximate length of time which the tsunami may produce dangerous currents and waves.

* Forecast max tsunami height is the highest expected water level above the tide.

* Forecasts are not provided for sites which have been impacted more than an hour prior to the time of this message.

SITE	FORECAST START OF TSUNAMI	FORECAST TSUNAMI DURATION	FORECAST MAX TSUNAMI HEIGHT
* Alaska			
Saint Paul	1110 AKDT Apr 13		less than 1ft
Cold Bay	1125 AKDT Apr 13	36 hrs	3.2- 5.9 ft
Adak	1355 AKDT Apr 13	15 hrs	1.0- 1.9 ft
Shemya	1425 AKDT Apr 13		less than 1ft
* British Columbia			
Tofino	1205 PDT Apr 13	40 hrs	3.4- 6.2 ft
* Washington			
Port Angeles	1250 PDT Apr 13	40 hrs	3.8- 7.1 ft
La Push	1300 PDT Apr 13		
Bellingham	1305 PDT Apr 13	30 hrs	2.5- 4.6 ft
Long Beach	1310 PDT Apr 13	48 hrs	6.7-12.4 ft
Moclips	1310 PDT Apr 13	48 hrs	7.5-13.9 ft
Westport	1315 PDT Apr 13	48 hrs	7.8-14.4 ft

PACIFEX23 Exercise

Port Townsend 1340 PDT Apr 13 30 hrs 2.7- 5.1 ft
Tacoma 1410 PDT Apr 13

* Oregon
Seaside 1320 PDT Apr 13
Charleston 1320 PDT Apr 13 48 hrs 6.9-12.8 ft
Port Orford 1320 PDT Apr 13 48 hrs 6.6-12.2 ft
Newport 1325 PDT Apr 13
Brookings 1330 PDT Apr 13 48 hrs 8.8-16.3 ft

* California
Crescent City 1335 PDT Apr 13 48 hrs 11.8-21.8 ft
Fort Bragg 1340 PDT Apr 13 48 hrs 7.2-13.3 ft
Monterey 1410 PDT Apr 13 48 hrs 7.3-13.5 ft
San Francisco 1430 PDT Apr 13 48 hrs 5.3- 9.9 ft
Port San Luis 1435 PDT Apr 13 48 hrs 22.1-41.1 ft
Santa Barbara 1450 PDT Apr 13 48 hrs 5.3- 9.8 ft
Los Angeles Harb 1505 PDT Apr 13 30 hrs 2.6- 4.9 ft
Newport Beach 1515 PDT Apr 13 40 hrs 3.7- 6.9 ft
Oceanside 1520 PDT Apr 13 48 hrs 6.4-11.8 ft
La Jolla 1520 PDT Apr 13 48 hrs 6.3-11.8 ft

OBSERVATIONS OF TSUNAMI ACTIVITY - UPDATED
---

* Observed max tsunami height is the highest recorded water level above the tide level up to the time of this message.

SITE	TIME OF MEASUREMENT	OBSERVED MAX TSUNAMI HEIGHT
Old Harbor Alaska	1002 PDT Apr 13	22.0ft
Alitak Bay Alaska	1005 PDT Apr 13	20.3ft
Seward Alaska	1050 PDT Apr 13	12.8ft
Chignik Bay Alaska	1024 PDT Apr 13	18.0ft
King Cove Alaska	1018 PDT Apr 13	14.1ft
Seldovia Alaska	0946 PDT Apr 13	23.3ft
Nikolski Alaska	1101 PDT Apr 13	2.8ft
Sand Point Alaska	1014 PDT Apr 13	15.7ft

PRELIMINARY EARTHQUAKE PARAMETERS
---

* Magnitude 9.3
* Origin Time 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023
* Coordinates 56.7 North 153.2 West
* Depth 3 miles
* Location 80 miles SW of Kodiak City, Alaska
  335 miles SW of Anchorage, Alaska

RECOMMENDED ACTIONS

Actions to protect human life and property will vary within tsunami warning areas.

If you are in a tsunami warning area;

PACIFEX23 Exercise

* Evacuate inland or to higher ground above and beyond designated tsunami hazard zones or move to an upper floor of a multi-story building depending on your situation.

* Move out of the water, off the beach, and away from harbors, marinas, breakwaters, bays and inlets.

* Be alert to and follow instructions from your local emergency officials because they may have more detailed or specific information for your location.

* If you feel a strong earthquake or extended ground rolling take immediate protective actions such as moving inland and/or uphill preferably by foot.

* Boat operators,
  * Where time and conditions permit, move your boat out to sea to a depth of at least 180 feet.

  * If at sea avoid entering shallow water, harbors, marinas, bays, and inlets to avoid floating and submerged debris and strong currents.

* Do not go to the shore to observe the tsunami.

* Do not return to the coast until local emergency officials indicate it is safe to do so.

IMPACTS

Impacts will vary at different locations in the warning areas.

If you are in a tsunami warning area;

* A tsunami with damaging waves and powerful currents is possible.

* Repeated coastal flooding is possible as waves arrive onshore, move inland, and drain back into the ocean.

* Strong and unusual waves, currents and inland flooding can drown or injure people and weaken or destroy structures on land and in water.

* Water filled with floating or submerged debris that can injure or kill people and weaken or destroy buildings and bridges is possible.

* Strong and unusual currents and waves in harbors, marinas, bays, and inlets may be especially destructive.

* Some impacts may continue for many hours to days after arrival of the first wave.

* The first wave may not be the largest so later waves may be larger.

* Each wave may last 5 to 45 minutes as a wave encroaches and recedes.

* Coasts facing all directions are threatened because the

PACIFEX23 Exercise

waves can wrap around islands and headlands and into bays.

* Strong shaking or rolling of the ground indicates an earthquake has occurred and a tsunami may be imminent.

* A rapidly receding or receded shoreline, unusual waves and sounds, and strong currents are signs of a tsunami.

* The tsunami may appear as water moving rapidly out to sea, a gentle rising tide like flood with no breaking wave, as a series of breaking waves, or a frothy wall of water.

ADDITIONAL INFORMATION AND NEXT UPDATE
---

* Refer to the internet site tsunami.gov for more information.

* Pacific coastal residents outside California, Oregon, Washington, British Columbia and Alaska should refer to the Pacific Tsunami Warning Center messages at tsunami.gov.

* This message will be updated within 30 minutes.

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NTWC Bulletin #12

WEAK51 PAAQ 132205
TSUAK1

BULLETIN
Public Tsunami Message Number 12
NWS National Tsunami Warning Center Palmer AK
205 PM AKDT Thu Apr 13 2023

UPDATES
---

* Updated observations
* Revised alert areas

...THE TSUNAMI WARNING REMAINS IN EFFECT...

...A TSUNAMI ADVISORY IS NOW IN EFFECT...

Tsunami Warning in Effect for;

* CALIFORNIA, The coast from The Cal./Mexico Border to The Oregon/Cal. Border including San Francisco Bay

* OREGON, The coast from The Oregon/Cal. Border to The Oregon/Wash. Border including the Columbia River estuary coast

* WASHINGTON, Outer coast from the Oregon/Washington border to Slip Point, Columbia River estuary coast, and the Juan de Fuca Strait coast

* BRITISH COLUMBIA, The north coast and Haida Gwaii, the central coast and northeast Vancouver Island, the outer west coast of Vancouver Island, the Juan de Fuca Strait coast

PACIFEX23 Exercise

* SOUTHEAST ALASKA, The inner and outer coast from The BC/Alaska Border to Cape Fairweather, Alaska (80 miles SE of Yakutat)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Pacific coasts from Cape Fairweather, Alaska (80 miles SE of Yakutat) to Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) to Samalga Pass, Alaska (30 miles SW of Nikolski)

Tsunami Advisory in Effect for;

* ALEUTIAN ISLANDS, Samalga Pass, Alaska (30 miles SW of Nikolski) to Attu, Alaska including the Pribilof Islands

FORECASTS OF TSUNAMI ACTIVITY
---

* A tsunami has been generated. The first waves are forecasted to arrive at the following locations and specified times.

* Forecast tsunami duration is the approximate length of time which the tsunami may produce dangerous currents and waves.

* Forecast max tsunami height is the highest expected water level above the tide.

* Forecasts are not provided for sites which have been impacted more than an hour prior to the time of this message.

SITE	FORECAST START OF TSUNAMI	FORECAST TSUNAMI DURATION	FORECAST MAX TSUNAMI HEIGHT
* Alaska			
Adak	1355 AKDT Apr 13	15 hrs	1.0- 1.9 ft
Shemya	1425 AKDT Apr 13		less than 1ft
* California			
San Francisco	1430 PDT Apr 13	48 hrs	5.3- 9.9 ft
Port San Luis	1435 PDT Apr 13	48 hrs	22.1-41.1 ft
Santa Barbara	1450 PDT Apr 13	48 hrs	5.3- 9.8 ft
Los Angeles Harb	1505 PDT Apr 13	30 hrs	2.6- 4.9 ft
Newport Beach	1515 PDT Apr 13	40 hrs	3.7- 6.9 ft
Oceanside	1520 PDT Apr 13	48 hrs	6.4-11.8 ft
La Jolla	1520 PDT Apr 13	48 hrs	6.3-11.8 ft

OBSERVATIONS OF TSUNAMI ACTIVITY - UPDATED
---

* Observed max tsunami height is the highest recorded water level above the tide level up to the time of this message.

SITE	TIME OF MEASUREMENT	OBSERVED MAX TSUNAMI HEIGHT
Old Harbor Alaska	1002 PDT Apr 13	22.0ft
Alitak Bay Alaska	1005 PDT Apr 13	20.3ft
Seward Alaska	1050 PDT Apr 13	12.8ft
Cordova Alaska	1155 PDT Apr 13	4.4ft
Chignik Bay Alaska	1024 PDT Apr 13	18.0ft

PACIFEX23 Exercise

King Cove Alaska	1018 PDT Apr 13	14.1ft
Craig Alaska	1140 PDT Apr 13	6.3ft
Akutan Alaska	1258 PDT Apr 13	1.5ft
Seldovia Alaska	0946 PDT Apr 13	23.3ft
Yakutat Alaska	1114 PDT Apr 13	7.2ft
Langara BC	1149 PDT Apr 13	5.1ft
Nikolski Alaska	1101 PDT Apr 13	2.8ft
Atka Alaska	1147 PDT Apr 13	3.0ft
Sand Point Alaska	1014 PDT Apr 13	15.7ft
Unalaska Alaska	1134 PDT Apr 13	1.6ft
Adak Alaska	1306 PDT Apr 13	1.5ft
Winter Harbour BC	1227 PDT Apr 13	4.1ft
Tofino British Columbia	1306 PDT Apr 13	4.2ft
La Push Washington	1328 PDT Apr 13	7.7ft
Toke Point Washington	1350 PDT Apr 13	3.0ft
Garibaldi Oregon	1342 PDT Apr 13	3.1ft
Port Orford Oregon	1339 PDT Apr 13	10.2ft
Newport Oregon	1341 PDT Apr 13	4.1ft
Crescent City CA	1351 PDT Apr 13	17.3ft
Humboldt Bay California	1354 PDT Apr 13	7.2ft
Friday Harbor WA	1427 PDT Apr 13	2.9ft
Monterey California	1458 PDT Apr 13	10.6ft
San Francisco CA	1452 PDT Apr 13	8.5ft

PRELIMINARY EARTHQUAKE PARAMETERS
---

* Magnitude 9.3
* Origin Time 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023
* Coordinates 56.7 North 153.2 West
* Depth 3 miles
* Location 80 miles SW of Kodiak City, Alaska
  335 miles SW of Anchorage, Alaska

RECOMMENDED ACTIONS - UPDATED

Actions to protect human life and property will vary within tsunami warning areas and within tsunami advisory areas.

If you are in a tsunami warning area;

* Evacuate inland or to higher ground above and beyond designated tsunami hazard zones or move to an upper floor of a multi-story building depending on your situation.

If you are in a tsunami warning or advisory area;

* Move out of the water, off the beach, and away from harbors, marinas, breakwaters, bays and inlets.

* Be alert to and follow instructions from your local emergency officials because they may have more detailed or specific information for your location.

* If you feel a strong earthquake or extended ground rolling take immediate protective actions such as moving inland and/or uphill preferably by foot.

PACIFEX23 Exercise

* Boat operators,
  * Where time and conditions permit, move your boat out to sea to a depth of at least 180 feet.
  * If at sea avoid entering shallow water, harbors, marinas, bays, and inlets to avoid floating and submerged debris and strong currents.
* Do not go to the shore to observe the tsunami.
* Do not return to the coast until local emergency officials indicate it is safe to do so.

IMPACTS

Impacts will vary at different locations in the warning and in the advisory areas.

If you are in a tsunami warning area;

* A tsunami with damaging waves and powerful currents is possible.
* Repeated coastal flooding is possible as waves arrive onshore, move inland, and drain back into the ocean.
* Strong and unusual waves, currents and inland flooding can drown or injure people and weaken or destroy structures on land and in water.
* Water filled with floating or submerged debris that can injure or kill people and weaken or destroy buildings and bridges is possible.
* Strong and unusual currents and waves in harbors, marinas, bays, and inlets may be especially destructive.

If you are in a tsunami advisory area;

* A tsunami with strong waves and currents is possible.
* Waves and currents can drown or injure people who are in the water.
* Currents at beaches and in harbors, marinas, bays, and inlets may be especially dangerous.

If you are in a tsunami warning or advisory area;

* Some impacts may continue for many hours to days after arrival of the first wave.
* The first wave may not be the largest so later waves may be larger.
* Each wave may last 5 to 45 minutes as a wave encroaches and recedes.
* Coasts facing all directions are threatened because the waves can wrap around islands and headlands and into bays.
* Strong shaking or rolling of the ground indicates an

PACIFEX23 Exercise

earthquake has occurred and a tsunami may be imminent.

* A rapidly receding or receded shoreline, unusual waves and sounds, and strong currents are signs of a tsunami.

* The tsunami may appear as water moving rapidly out to sea, a gentle rising tide like flood with no breaking wave, as a series of breaking waves, or a frothy wall of water.

ADDITIONAL INFORMATION AND NEXT UPDATE
---

* Refer to the internet site tsunami.gov for more information.

* Pacific coastal residents outside California, Oregon, Washington, British Columbia and Alaska should refer to the Pacific Tsunami Warning Center messages at tsunami.gov.

* This message will be updated within 60 minutes.

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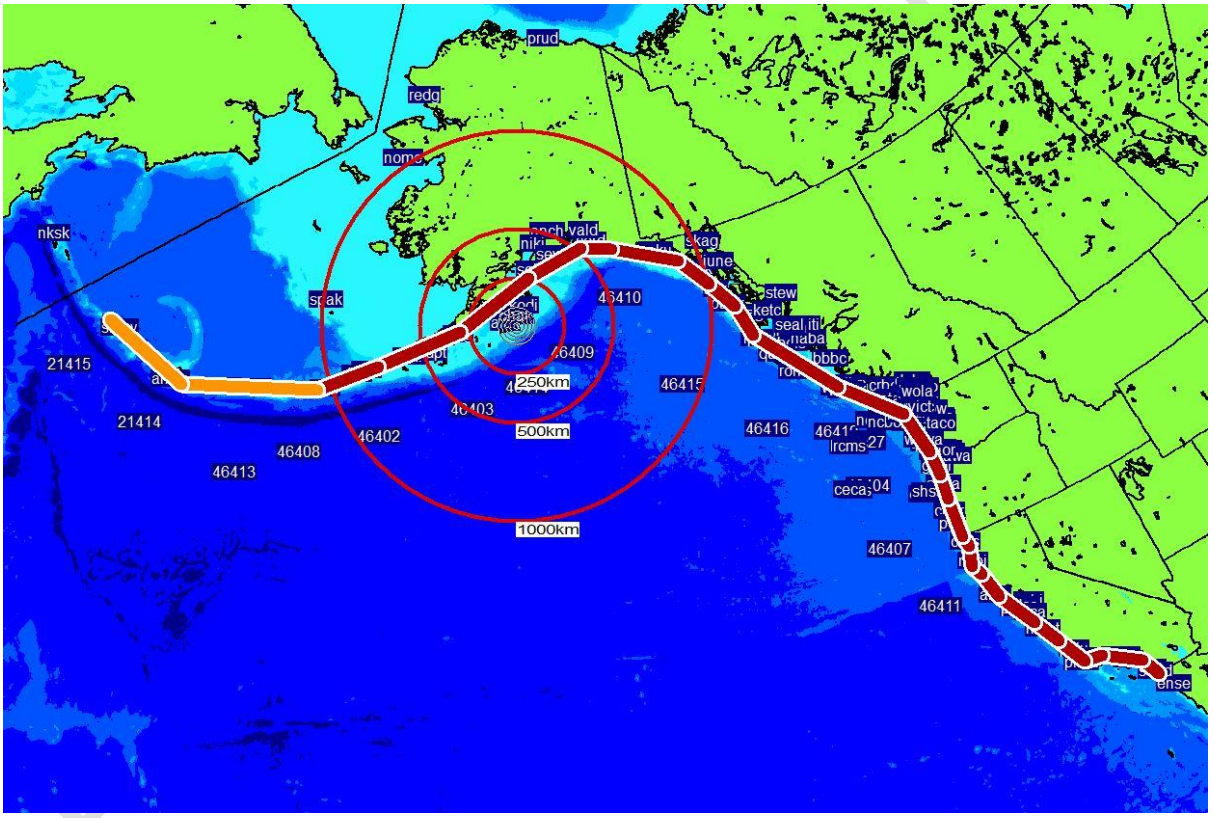

Figure A5: Coastal Alert Areas after Bulletin 12. White text shows water level observation sites.

NTWC Bulletin #24

WEAK51 PAAQ 141005
TSUAK1

BULLETIN
Public Tsunami Message Number 24
NWS National Tsunami Warning Center Palmer AK
205 AM AKDT Fri Apr 14 2023

UPDATES
---
* Updated observations
* Revised alert areas

...THE TSUNAMI WARNING REMAINS IN EFFECT...

...THE TSUNAMI ADVISORY REMAINS IN EFFECT...

Tsunami Warning in Effect for;

* CALIFORNIA, The coast from Point Conception, California to The Oregon/Cal. Border including San Francisco Bay

* OREGON, The coast from The Oregon/Cal. Border to The Oregon/Wash. Border including the Columbia River estuary coast

* WASHINGTON, Outer coast from the Oregon/Washington border to Slip Point, Columbia River estuary coast, and the Juan de Fuca Strait coast

* BRITISH COLUMBIA, The north coast and Haida Gwaii, the central coast and northeast Vancouver Island, the outer west coast of Vancouver Island, the Juan de Fuca Strait coast

* SOUTHEAST ALASKA, The inner and outer coast from The BC/Alaska Border to Cape Decision, Alaska (85 miles SE of Sitka)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Pacific coasts from Cape Fairweather, Alaska (80 miles SE of Yakutat) to Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) to Samalga Pass, Alaska (30 miles SW of Nikolski)

Tsunami Advisory in Effect for;

* CALIFORNIA, The coast from The Cal./Mexico Border to Point Conception, California

* SOUTHEAST ALASKA, The inner and outer coast from Cape Decision, Alaska (85 miles SE of Sitka) to Cape Fairweather, Alaska (80 miles SE of Yakutat)

Alerts in the following areas have been canceled because additional information and analysis have better defined the threat.

* The Tsunami Advisory is canceled for the coastal areas of Aleutian Islands from Samalga Pass, Alaska (30 miles SW of Nikolski) to Attu, Alaska

For other US and Canadian Pacific coasts in North America, there is no tsunami threat.

PACIFEX23 Exercise

OBSERVATIONS OF TSUNAMI ACTIVITY - UPDATED
---
* Observed max tsunami height is the highest recorded water level above the tide level up to the time of this message.

SITE	TIME OF MEASUREMENT	OBSERVED MAX TSUNAMI HEIGHT
Old Harbor Alaska	1002 PDT Apr 13	22.0ft
Alitak Bay Alaska	1005 PDT Apr 13	20.3ft
Seward Alaska	1050 PDT Apr 13	12.8ft
Cordova Alaska	1155 PDT Apr 13	4.4ft
Chignik Bay Alaska	1024 PDT Apr 13	18.0ft
King Cove Alaska	1018 PDT Apr 13	14.1ft
Craig Alaska	1140 PDT Apr 13	6.3ft
Akutan Alaska	1258 PDT Apr 13	1.5ft
Seldovia Alaska	0946 PDT Apr 13	23.3ft
Yakutat Alaska	1114 PDT Apr 13	7.2ft
Langara BC	1149 PDT Apr 13	5.1ft
Nikolski Alaska	1101 PDT Apr 13	2.8ft
Atka Alaska	1147 PDT Apr 13	3.0ft
Sand Point Alaska	1014 PDT Apr 13	15.7ft
Unalaska Alaska	1134 PDT Apr 13	1.6ft
Winter Harbour BC	1227 PDT Apr 13	4.1ft
Tofino British Columbia	1306 PDT Apr 13	4.2ft
La Push Washington	1328 PDT Apr 13	7.7ft
Toke Point Washington	1350 PDT Apr 13	3.0ft
Garibaldi Oregon	1342 PDT Apr 13	3.1ft
Port Orford Oregon	1339 PDT Apr 13	10.2ft
Newport Oregon	1341 PDT Apr 13	4.1ft
Crescent City CA	1351 PDT Apr 13	17.3ft
Humboldt Bay California	1354 PDT Apr 13	7.2ft
Friday Harbor WA	1427 PDT Apr 13	2.9ft
Monterey California	1458 PDT Apr 13	10.6ft
Tacoma Washington	1635 PDT Apr 13	1.8ft
San Francisco CA	1452 PDT Apr 13	8.5ft
Adak Alaska	1306 PDT Apr 13	1.5ft
Ventura California	1541 PDT Apr 13	9.1ft
Los Angeles Harbor CA	1546 PDT Apr 13	2.8ft
San Diego California	1551 PDT Apr 13	4.7ft
Alameda California	1601 PDT Apr 13	3.6ft

PRELIMINARY EARTHQUAKE PARAMETERS
---
* Magnitude 9.3
* Origin Time 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023
* Coordinates 56.7 North 153.2 West
* Depth 3 miles
* Location 80 miles SW of Kodiak City, Alaska
  335 miles SW of Anchorage, Alaska

RECOMMENDED ACTIONS
---
* See message number 12 for recommended actions.

IMPACTS

PACIFEX23 Exercise

---
* See message number 12 for possible impacts.

ADDITIONAL INFORMATION AND NEXT UPDATE
---
* Refer to the internet site tsunami.gov for more information.

* Pacific coastal residents outside California, Oregon, Washington, British Columbia and Alaska should refer to the Pacific Tsunami Warning Center messages at tsunami.gov.

* This message will be updated within 60 minutes.

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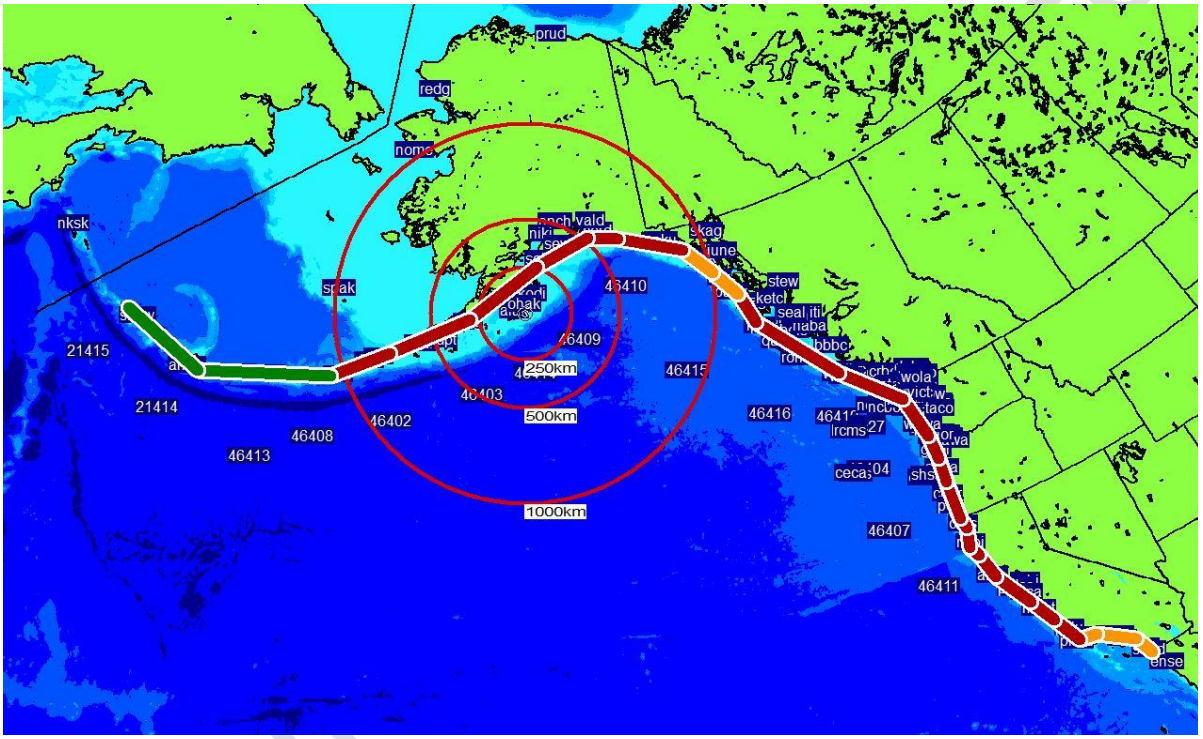

Figure A6: Coastal alert areas after Bulletin 24. White text shows water level observation sites.

NTWC Bulletin #26

WEAK51 PAAQ 141205
TSUAK1

BULLETIN
Public Tsunami Message Number 26
NWS National Tsunami Warning Center Palmer AK
405 AM AKDT Fri Apr 14 2023

UPDATES
---
* Revised alert areas

...THE TSUNAMI ADVISORY REMAINS IN EFFECT...

Tsunami Advisory in Effect for;

* CALIFORNIA, The coast from The Cal./Mexico Border to Point Conception, California

* CALIFORNIA, The coast from Point Conception, California to The Oregon/Cal. Border including San Francisco Bay

* OREGON, The coast from The Oregon/Cal. Border to The Oregon/Wash. Border including the Columbia River estuary coast

* WASHINGTON, Outer coast from the Oregon/Washington border to Slip Point, Columbia River estuary coast, and the Juan de Fuca Strait coast

* BRITISH COLUMBIA, The north coast and Haida Gwaii, the central coast and northeast Vancouver Island, the outer west coast of Vancouver Island, the Juan de Fuca Strait coast

* SOUTHEAST ALASKA, The inner and outer coast from The BC/Alaska Border to Cape Decision, Alaska (85 miles SE of Sitka)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Pacific coasts from Cape Fairweather, Alaska (80 miles SE of Yakutat) to Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) to Samalga Pass, Alaska (30 miles SW of Nikolski)

For other US and Canadian Pacific coasts in North America, there is no tsunami threat.

OBSERVATIONS OF TSUNAMI ACTIVITY - UPDATED
---

* Observed max tsunami height is the highest recorded water level above the tide level up to the time of this message.

SITE	TIME OF MEASUREMENT	OBSERVED MAX TSUNAMI HEIGHT
Old Harbor Alaska	1002 PDT Apr 13	22.0ft
Alitak Bay Alaska	1005 PDT Apr 13	20.3ft
Seward Alaska	1050 PDT Apr 13	12.8ft
Cordova Alaska	1155 PDT Apr 13	4.4ft
Chignik Bay Alaska	1024 PDT Apr 13	18.0ft
King Cove Alaska	1018 PDT Apr 13	14.1ft
Craig Alaska	1140 PDT Apr 13	6.3ft
Akutan Alaska	1258 PDT Apr 13	1.5ft
Seldovia Alaska	0946 PDT Apr 13	23.3ft
Yakutat Alaska	1114 PDT Apr 13	7.2ft
Langara BC	1149 PDT Apr 13	5.1ft
Nikolski Alaska	1101 PDT Apr 13	2.8ft
Atka Alaska	1147 PDT Apr 13	3.0ft
Sand Point Alaska	1014 PDT Apr 13	15.7ft
Unalaska Alaska	1134 PDT Apr 13	1.6ft
Winter Harbour BC	1227 PDT Apr 13	4.1ft
Tofino British Columbia	1306 PDT Apr 13	4.2ft

PACIFEX23 Exercise

La Push Washington	1328 PDT Apr 13	7.7ft
Toke Point Washington	1350 PDT Apr 13	3.0ft
Garibaldi Oregon	1342 PDT Apr 13	3.1ft
Port Orford Oregon	1339 PDT Apr 13	10.2ft
Newport Oregon	1341 PDT Apr 13	4.1ft
Crescent City CA	1351 PDT Apr 13	17.3ft
Humboldt Bay California	1354 PDT Apr 13	7.2ft
Friday Harbor WA	1427 PDT Apr 13	2.9ft
Monterey California	1458 PDT Apr 13	10.6ft
Tacoma Washington	1635 PDT Apr 13	1.8ft
San Francisco CA	1452 PDT Apr 13	8.5ft
Adak Alaska	1306 PDT Apr 13	1.5ft
Ventura California	1541 PDT Apr 13	9.1ft
Los Angeles Harbor CA	1546 PDT Apr 13	2.8ft
San Diego California	1551 PDT Apr 13	4.7ft
Alameda California	1601 PDT Apr 13	3.6ft

PRELIMINARY EARTHQUAKE PARAMETERS
---

* Magnitude 9.3
* Origin Time 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023
* Coordinates 56.7 North 153.2 West
* Depth 3 miles
* Location 80 miles SW of Kodiak City, Alaska
  335 miles SW of Anchorage, Alaska

RECOMMENDED ACTIONS - UPDATED

Actions to protect human life and property will vary within tsunami advisory areas.

If you are in a tsunami advisory area;

* Move out of the water, off the beach, and away from harbors, marinas, breakwaters, bays and inlets.

* Be alert to and follow instructions from your local emergency officials because they may have more detailed or specific information for your location.

* If you feel a strong earthquake or extended ground rolling take immediate protective actions such as moving inland and/or uphill preferably by foot.

* Boat operators,
  * Where time and conditions permit, move your boat out to sea to a depth of at least 180 feet.

  * If at sea avoid entering shallow water, harbors, marinas, bays, and inlets to avoid floating and submerged debris and strong currents.

* Do not go to the shore to observe the tsunami.

* Do not return to the coast until local emergency officials indicate it is safe to do so.

PACIFEX23 Exercise

IMPACTS

Impacts will vary at different locations in the advisory areas.

If you are in a tsunami advisory area;

* A tsunami with strong waves and currents is possible.

* Waves and currents can drown or injure people who are in the water.

* Currents at beaches and in harbors, marinas, bays, and inlets may be especially dangerous.

* Some impacts may continue for many hours to days after arrival of the first wave.

* The first wave may not be the largest so later waves may be larger.

* Each wave may last 5 to 45 minutes as a wave encroaches and recedes.

* Coasts facing all directions are threatened because the waves can wrap around islands and headlands and into bays.

* Strong shaking or rolling of the ground indicates an earthquake has occurred and a tsunami may be imminent.

* A rapidly receding or receded shoreline, unusual waves and sounds, and strong currents are signs of a tsunami.

* The tsunami may appear as water moving rapidly out to sea, a gentle rising tide like flood with no breaking wave, as a series of breaking waves, or a frothy wall of water.

ADDITIONAL INFORMATION AND NEXT UPDATE
---
* Refer to the internet site tsunami.gov for more information.

* Pacific coastal residents outside California, Oregon, Washington, British Columbia and Alaska should refer to the Pacific Tsunami Warning Center messages at tsunami.gov.

* This message will be updated within 60 minutes.

$$

PACIFEX23 Exercise

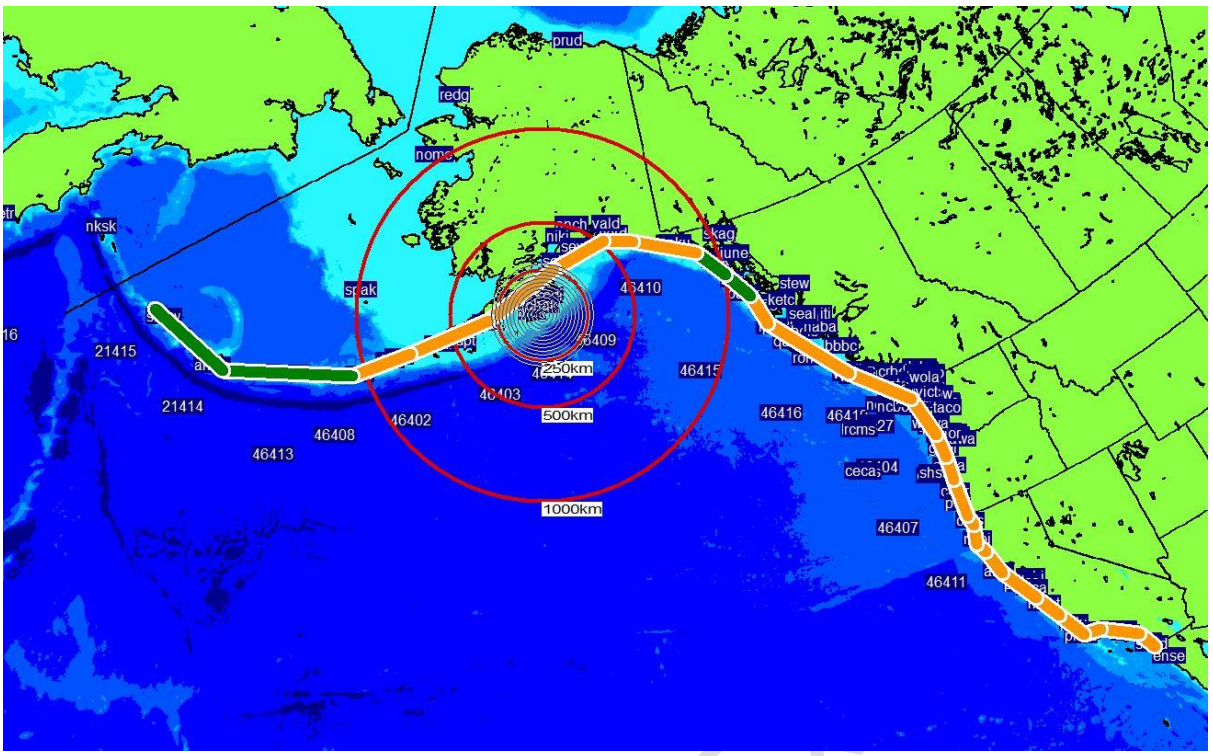

Figure A7: Coastal alert areas after Bulletin 26. White text shows water level observation sites.

NTWC Bulletin #31

WEAK51 PAAQ 141705
TSUAK1

BULLETIN
Public Tsunami Message Number 31
NWS National Tsunami Warning Center Palmer AK
905 AM AKDT Fri Apr 14 2023

...THE TSUNAMI ADVISORY IS CANCELLED...

* The Tsunami Advisory is canceled for the coastal areas of California, Oregon, Washington, British Columbia and Southeast Alaska

* The Tsunami Advisory is canceled for the coastal areas of South Alaska and the Alaska Peninsula and Aleutian Islands

OBSERVATIONS OF TSUNAMI ACTIVITY - UPDATED
---

* Observed max tsunami height is the highest recorded water level above the tide level up to the time of this message.

SITE	TIME OF MEASUREMENT	OBSERVED MAX TSUNAMI HEIGHT
Old Harbor Alaska	1002 PDT Apr 13	22.0ft

Alitak Bay Alaska	1005 PDT Apr 13	20.3ft
Seward Alaska	1050 PDT Apr 13	12.8ft
Cordova Alaska	1155 PDT Apr 13	4.4ft
Chignik Bay Alaska	1024 PDT Apr 13	18.0ft
King Cove Alaska	1018 PDT Apr 13	14.1ft
Craig Alaska	1140 PDT Apr 13	6.3ft
Akutan Alaska	1258 PDT Apr 13	1.5ft
Seldovia Alaska	0946 PDT Apr 13	23.3ft
Yakutat Alaska	1114 PDT Apr 13	7.2ft
Langara BC	1149 PDT Apr 13	5.1ft
Nikolski Alaska	1101 PDT Apr 13	2.8ft
Atka Alaska	1147 PDT Apr 13	3.0ft
Sand Point Alaska	1014 PDT Apr 13	15.7ft
Unalaska Alaska	1134 PDT Apr 13	1.6ft
Winter Harbour BC	1227 PDT Apr 13	4.1ft
Tofino British Columbia	1306 PDT Apr 13	4.2ft
La Push Washington	1328 PDT Apr 13	7.7ft
Toke Point Washington	1350 PDT Apr 13	3.0ft
Garibaldi Oregon	1342 PDT Apr 13	3.1ft
Port Orford Oregon	1339 PDT Apr 13	10.2ft
Newport Oregon	1341 PDT Apr 13	4.1ft
Crescent City CA	1351 PDT Apr 13	17.3ft
Humboldt Bay California	1354 PDT Apr 13	7.2ft
Friday Harbor WA	1427 PDT Apr 13	2.9ft
Monterey California	1458 PDT Apr 13	10.6ft
Tacoma Washington	1635 PDT Apr 13	1.8ft
San Francisco CA	1452 PDT Apr 13	8.5ft
Adak Alaska	1306 PDT Apr 13	1.5ft
Ventura California	1541 PDT Apr 13	9.1ft
Los Angeles Harbor CA	1546 PDT Apr 13	2.8ft
San Diego California	1551 PDT Apr 13	4.7ft
Alameda California	1601 PDT Apr 13	3.6ft

RECOMMENDED ACTIONS - UPDATED
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* Do not re-occupy hazard zones until local emergency officials indicate it is safe to do so.

IMPACTS - UPDATED
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* Tsunami activity has subsided along the coasts of the U.S. west coast states, British Columbia, and Alaska.

* Ongoing activity may persist in some areas causing strong currents dangerous to swimmers and boats.

* The determination to re-occupy hazard zones must be made by local officials.

PACIFEX23 Exercise

ADDITIONAL INFORMATION AND NEXT UPDATE
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* Refer to the internet site tsunami.gov for more information.

* Pacific coastal regions outside California, Oregon, Washington, British Columbia, and Alaska should refer to the Pacific Tsunami Warning Center messages at tsunami.gov.

* This will be the final U.S. National Tsunami Warning Center message issued for this event.

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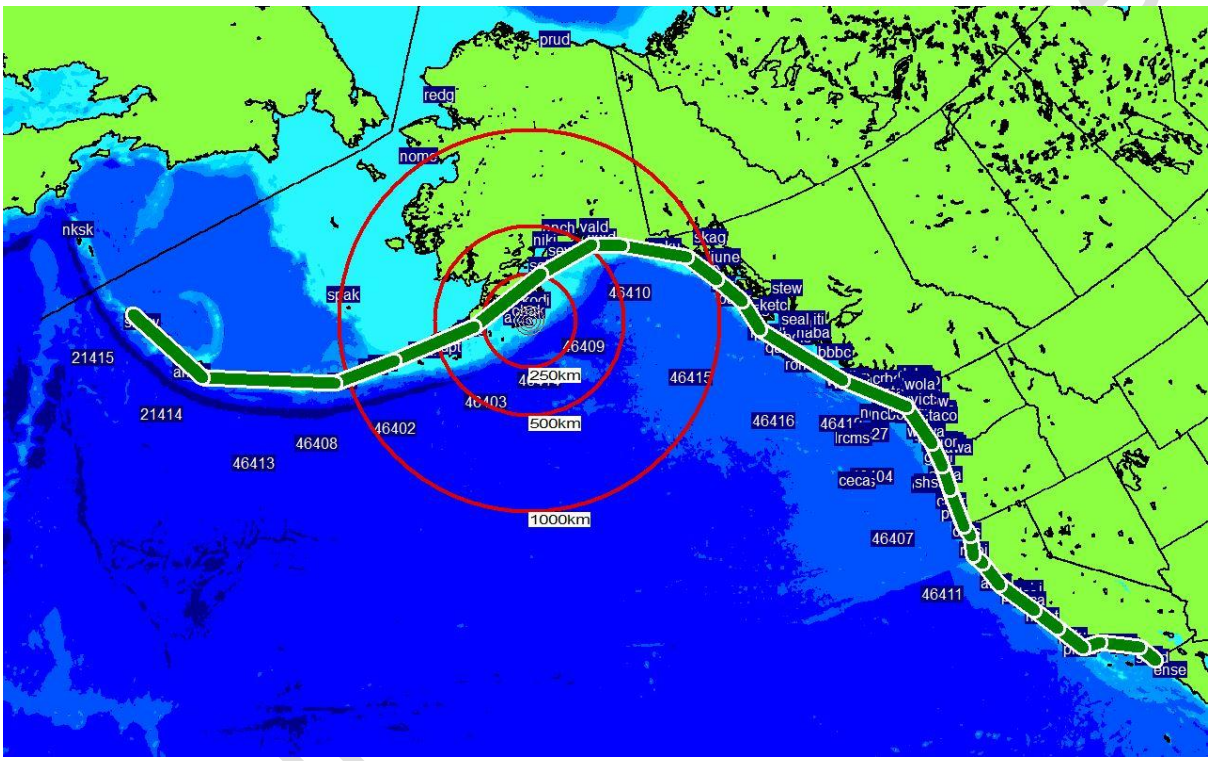

Figure A8: Alert areas at cancellation with Bulletin 31. White text shows water level observation sites.

Appendix B. NTWC Spanish Public Messages

NTWC Spanish Bulletin #1

WEAK61 PAAQ 131636
TSUSPN

BULLETIN
Mensaje de Tsunami numero 1
NWS Centro Nacional de Alerta de Tsunami Palmer AK
836 AM AKDT Thu Apr 13 2023

...UN AVISO DE TSUNAMI ESTA AHORA EN EFECTO...

...UNA VIGILANCIA DE TSUNAMI ESTA AHORA EN EFECTO...

Aviso de Tsunami en Efecto para;

* BRITISH COLUMBIA, La costa norte y Haida Gwaii, la costa central y la isla noreste de Vancouver, la costa oeste exterior de la isla de Vancouver, la costa del Estrecho de Juan de Fuca

* SOUTHEAST ALASKA, La costa interior y exterior desde The BC/Alaska Border hasta Cape Fairweather, Alaska (80 miles SE of Yakutat)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Costas Pacificas desde Cape Fairweather, Alaska (80 miles SE of Yakutat) hasta Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) hasta Attu, Alaska incluso las Islas Pribilof

Vigilancia de Tsunami en Efecto para;

* CALIFORNIA, Areas costeras desde The Cal./Mexico Border hasta The Oregon/Cal. Border incluso la bahia de San Francisco

* OREGON, Areas costeras desde The Oregon/Cal. Border hasta The Oregon/Wash. Border incluso la costa de el estuario de Rio de Columbia

* WASHINGTON, la costa exterior de la frontera de Oregon/Washington a Slip Point, la costa del estuario del Rio Columbia, y la costa del Estrecho de Juan de Fuca

PARAMETROS PRELIMINARES DEL TERREMOTO
---
* LOS SIGUIENTES PARAMETROS ESTAN BASADOS EN UNA EVALUACION PRELIMINAR RAPIDA Y PUEDEN VARIAR.

* Magnitud 8.3
* Tiempo de Origen 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023
* Coordenadas 56.7 Norte 153.2 Oeste
* Profundidad 3 millas

PACIFEX23 Exercise

* Localizacion 80 millas SW de Kodiak City, Alaska
335 millas SW de Anchorage, Alaska

PRONOSTICOS DEL TSUNAMI
---

* Se pronostica que la actividad del tsunami comience en los siguientes puntos a loas horas indicadas.

LUGAR	LLEGADA PRONOSTICADA DEL TSUNAMI
* Alaska	
Seward	0855 AKDT Apr 13
Cordova	1010 AKDT Apr 13
Craig	1010 AKDT Apr 13
Homer	1010 AKDT Apr 13
Sitka	1015 AKDT Apr 13
Yakutat	1025 AKDT Apr 13
Sand Point	1030 AKDT Apr 13
Valdez	1035 AKDT Apr 13
Elfin Cove	1035 AKDT Apr 13
Kodiak	1055 AKDT Apr 13
Unalaska	1055 AKDT Apr 13
Saint Paul	1140 AKDT Apr 13
Cold Bay	1150 AKDT Apr 13
Adak	1400 AKDT Apr 13
Shemya	1430 AKDT Apr 13
* British Columbia	
Langara	1115 PDT Apr 13
Tofino	1220 PDT Apr 13
* Washington	
Neah Bay	1130 PDT Apr 13
Port Angeles	1300 PDT Apr 13
Bellingham	1310 PDT Apr 13
La Push	1310 PDT Apr 13
Moclips	1320 PDT Apr 13
Long Beach	1320 PDT Apr 13
Westport	1325 PDT Apr 13
Port Townsend	1350 PDT Apr 13
Tacoma	1415 PDT Apr 13
* Oregon	
Port Orford	1325 PDT Apr 13
Seaside	1330 PDT Apr 13
Charleston	1330 PDT Apr 13
Brookings	1335 PDT Apr 13
Newport	1335 PDT Apr 13
* California	
Crescent City	1340 PDT Apr 13
Fort Bragg	1345 PDT Apr 13
Monterey	1415 PDT Apr 13
San Francisco	1435 PDT Apr 13
Port San Luis	1440 PDT Apr 13
Santa Barbara	1450 PDT Apr 13
Los Angeles Harb	1510 PDT Apr 13

PACIFEX23 Exercise

Newport Beach 1515 PDT Apr 13
Oceanside 1520 PDT Apr 13
La Jolla 1520 PDT Apr 13

OBSERVACIONES DEL TSUNAMI
---
* No hay observaciones del tsunami disponibles para reportar.

ACCIONES RECOMENDADAS

Las acciones para proteger la vida y propiedad pueden variar dentro de las areas de aviso de tsunami.

Si usted esta en un area de aviso;

* Desaloje tierra adentro o a un lugar alto fuera de la zona de inundacion por tsunami o muevase a un piso alto de un edificio multipiso segun sea su situacion.

* Salgase del agua, de la playa y alejese de puertos, marinas, bahias, ensenadas y rompeolas.

* Este alerta y siga las instrucciones de los oficiales locales de manejo de emergencia ya que ellos pueden tener informacion mas detallada o especifica para su ubicacion.

* Si siente un terremoto fuerte y/o prolongado tome inmediatamente acciones de seguridad como moverse tierra adentro y/o hacia un lugar alto preferiblemente a pie.

* Operadores de botes,
  * Cuando el tiempo y las condiciones lo permitan mueva su bote mar adentro a una profundidad de al menos 180 pies.

  * Si esta navegando evite entrar a aguas someras/llanas, puertos, marinas, bahias, y ensenadas para evitar corrientes fuertes y objetos flotantes o sumergidos.

* No vaya a la costa para observar el tsunami.

* No regrese a la costa hasta que los oficiales locales de manejo de emergencia local indiquen que es seguro hacerlo.

Si usted esta en un area de vigilancia;

* Preparese para tomar accion y este alerta para mas informacion.

IMPACTOS

Los impactos pueden variar en diferentes lugares dentro de las areas de aviso.

Si usted esta en un area de aviso;

* Es posible un tsunami con olas destructivas y corrientes fuertes.

* Posibles inundaciones costeras repetidas cuando las olas lleguen a la costa, se mueven tierra adentro, y

PACIFEX23 Exercise

retroceden al oceano.

* Olas fuertes e inusuales, corrientes e inundaciones pueden ahogar o herir personas y debilitar o destruir estructuras en tierra y dentro del agua.

* Agua con objetos flotantes o sumergidos pueden herir o causar la muerte a personas o destruir edificios y puentes.

* Corrientes y olas fuertes e inusuales en puertos, marinas, bahias, y ensenadas pueden ser especialmente destructivas.

* Algunos impactos pueden continuar por muchas horas hasta dias luego de la llegada de la primera ola.

* La primera ola puede no ser la mas grande las olas posteriores si.

* Cada ola puede durar de 5 a 45 minutos entre su embate y retroceso.

* Costas con frente en todas las direcciones pueden estar en peligro porque las olas pueden dar la vuelta a islas y entrar a bahias.

* Movimiento fuerte y/o prolongado del suelo indica que un terremoto ha ocurrido un tsunami puede haber sido generado y su llegada inminente.

* Un rapido retroceso de la linea de costa, olas y sonidos inusiales, y fuertes corrientes son senales de un tsunami.

* El tsunami puede aparecer como agua moviendose rapidamente hacia mar adentro, una marea suave que se eleva rapidamente sin olas rompientes, como una serie de olas rompientes, o una pared de agua espumosa.

INFORMACION ADICIONAL Y PROXIMA ACTUALIZACION
---

* Para acceder a informacion adicional consulte el sitio de internet tsunami.gov.

* Regiones costeras del Pacifico fuera de California, Oregon, Washington, Columbia Britanica y Alaska deben referirse a los mensanjes del Centro de Alerta de Tsunami del Pacifico en tsunami.gov.

* Este mensaje sera actualizado en 30 minutos.

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NTWC Spanish Bulletin #2

WEAK61 PAAQ 131705
TSUSPN

BULLETIN
Mensaje de Tsunami numero 2
NWS Centro Nacional de Alerta de Tsunami Palmer AK
905 AM AKDT Thu Apr 13 2023

ACTUALIZACIONES

PACIFEX23 Exercise

* Un tsunami ha sido confirmado y se esperan algunas impactos
* Nuevas observaciones
* Modifica las regiones bajo alerta
* Magnitud revisada

...EL AVISO DE TSUNAMI PERMANECE EN EFECTO...

Aviso de Tsunami en Efecto para;

* CALIFORNIA, Areas costeras desde The Cal./Mexico Border hasta The Oregon/Cal. Border incluso la bahia de San Francisco

* OREGON, Areas costeras desde The Oregon/Cal. Border hasta The Oregon/Wash. Border incluso la costa de el estuario de Rio de Columbia

* WASHINGTON, la costa exterior de la frontera de Oregon/Washington a Slip Point, la costa del estuario del Rio Columbia, y la costa del Estrecho de Juan de Fuca

* BRITISH COLUMBIA, La costa norte y Haida Gwaii, la costa central y la isla noreste de Vancouver, la costa oeste exterior de la isla de Vancouver, la costa del Estrecho de Juan de Fuca

* SOUTHEAST ALASKA, La costa interior y exterior desde The BC/Alaska Border hasta Cape Fairweather, Alaska (80 miles SE of Yakutat)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Costas Pacificas desde Cape Fairweather, Alaska (80 miles SE of Yakutat) hasta Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) hasta Attu, Alaska incluso las Islas Pribilof

PARAMETROS PRELIMINARES DEL TERREMOTO - ACTUALIZADOS
---

* LOS SIGUIENTES PARAMETROS ESTAN BASADOS EN UNA EVALUACION PRELIMINAR RAPIDA Y PUEDEN VARIAR.

* Magnitud 9.3
* Tiempo de Origen 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023
* Coordenadas 56.7 Norte 153.2 Oeste
* Profundidad 3 millas
* Localizacion 80 millas SW de Kodiak City, Alaska
  335 millas SW de Anchorage, Alaska

PRONOSTICOS DEL TSUNAMI
---

* Se pronostica que la actividad del tsunami comience en los siguientes puntos a loas horas indicadas.

LUGAR	LLEGADA PRONOSTICADA DEL TSUNAMI

PACIFEX23 Exercise

* Alaska
Seward 0840 AKDT Apr 13
Cordova 0900 AKDT Apr 13
Homer 0910 AKDT Apr 13
Craig 0945 AKDT Apr 13
Sitka 0950 AKDT Apr 13
Valdez 0955 AKDT Apr 13
Yakutat 0955 AKDT Apr 13
Elfin Cove 0955 AKDT Apr 13
Sand Point 1005 AKDT Apr 13
Kodiak 1005 AKDT Apr 13
Unalaska 1030 AKDT Apr 13
Saint Paul 1110 AKDT Apr 13
Cold Bay 1125 AKDT Apr 13
Adak 1355 AKDT Apr 13
Shemya 1425 AKDT Apr 13

* British Columbia
Langara 1055 PDT Apr 13
Tofino 1205 PDT Apr 13

* Washington
Neah Bay 1115 PDT Apr 13
Port Angeles 1250 PDT Apr 13
La Push 1300 PDT Apr 13
Bellingham 1305 PDT Apr 13
Long Beach 1310 PDT Apr 13
Moclips 1310 PDT Apr 13
Westport 1315 PDT Apr 13
Port Townsend 1340 PDT Apr 13
Tacoma 1410 PDT Apr 13

* Oregon
Seaside 1320 PDT Apr 13
Charleston 1320 PDT Apr 13
Port Orford 1320 PDT Apr 13
Newport 1325 PDT Apr 13
Brookings 1330 PDT Apr 13

* California
Crescent City 1335 PDT Apr 13
Fort Bragg 1340 PDT Apr 13
Monterey 1410 PDT Apr 13
San Francisco 1430 PDT Apr 13
Port San Luis 1435 PDT Apr 13
Santa Barbara 1450 PDT Apr 13
Los Angeles Harb 1505 PDT Apr 13
Newport Beach 1515 PDT Apr 13
Oceanside 1520 PDT Apr 13
La Jolla 1520 PDT Apr 13

OBSERVACIONES DEL TSUNAMI - ACTUALIZADAS
---

* La altura maxima observada del tsunami es el nivel de agua mas alto registrado sobre el nivel de la marea hasta la emision de este mensaje.

LUGAR	HORA DE LA MEDICION	ALTURA MAX OBSERVADA DEL TSUNAMI
Old Harbor Alaska	1002 PDT Apr 13	22.0ft

PACIFEX23 Exercise

Seldovia Alaska 0946 PDT Apr 13 23.3ft

ACCIONES RECOMENDADAS - ACTUALIZADAS

Las acciones para proteger la vida y propiedad pueden variar dentro de las areas de aviso de tsunami.

Si usted esta en un area de aviso;

* Desaloje tierra adentro o a un lugar alto fuera de la zona de inundacion por tsunami o muevase a un piso alto de un edificio multipiso segun sea su situacion.

* Salgase del agua, de la playa y alejese de puertos, marinas, bahias, ensenadas y rompeolas.

* Este alerta y siga las instrucciones de los oficiales locales de manejo de emergencia ya que ellos pueden tener informacion mas detallada o especifica para su ubicacion.

* Si siente un terremoto fuerte y/o prolongado tome inmediatamente acciones de seguridad como moverse tierra adentro y/o hacia un lugar alto preferiblemente a pie.

* Operadores de botes,
  * Cuando el tiempo y las condiciones lo permitan mueva su bote mar adentro a una profundidad de al menos 180 pies.

  * Si esta navegando evite entrar a aguas someras/llanas, puertos, marinas, bahias, y ensenadas para evitar corrientes fuertes y objetos flotantes o sumergidos.

* No vaya a la costa para observar el tsunami.

* No regrese a la costa hasta que los oficiales locales de manejo de emergencia local indiquen que es seguro hacerlo.

IMPACTOS

Los impactos pueden variar en diferentes lugares dentro de las areas de aviso.

Si usted esta en un area de aviso;

* Es posible un tsunami con olas destructivas y corrientes fuertes.

* Posibles inundaciones costeras repetidas cuando las olas lleguen a la costa, se mueven tierra adentro, y retroceden al oceano.

* Olas fuertes e inusuales, corrientes e inundaciones pueden ahogar o herir personas y debilitar o destruir estructuras en tierra y dentro del agua.

* Agua con objetos flotantes o sumergidos pueden herir o causar la muerte a personas o destruir edificios y puentes.

* Corrientes y olas fuertes e inusuales en puertos, marinas, bahias, y ensenadas pueden ser especialmente destructivas.

PACIFEX23 Exercise

* Algunos impactos pueden continuar por muchas horas hasta dias luego de la llegada de la primera ola.

* La primera ola puede no ser la mas grande las olas posteriores si.

* Cada ola puede durar de 5 a 45 minutos entre su embate y retroceso.

* Costas con frente en todas las direcciones pueden estar en peligro porque las olas pueden dar la vuelta a islas y entrar a bahias.

* Movimiento fuerte y/o prolongado del suelo indica que un terremoto ha ocurrido un tsunami puede haber sido generado y su llegada inminente.

* Un rapido retroceso de la linea de costa, olas y sonidos inusiales, y fuertes corrientes son senales de un tsunami.

* El tsunami puede aparecer como agua moviendose rapidamente hacia mar adentro, una marea suave que se eleva rapidamente sin olas rompientes, como una serie de olas rompientes, o una pared de agua espumosa.

INFORMACION ADICIONAL Y PROXIMA ACTUALIZACION
---

* Para acceder a informacion adicional consulte el sitio de internet tsunami.gov.

* Regiones costeras del Pacifico fuera de California, Oregon, Washington, Columbia Britanica y Alaska deben referirse a los mensanjes del Centro de Alerta de Tsunami del Pacifico en tsunami.gov.

* Este mensaje sera actualizado en 30 minutos.

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NTWC Spanish Bulletin #3

WEAK61 PAAQ 131735
TSUSPN

BULLETIN
Mensaje de Tsunami numero 3
NWS Centro Nacional de Alerta de Tsunami Palmer AK
935 AM AKDT Thu Apr 13 2023

ACTUALIZACIONES
---

* Nuevas observaciones
* Informacion de pronostico revisada

...EL AVISO DE TSUNAMI PERMANECE EN EFECTO...

Aviso de Tsunami en Efecto para;

PACIFEX23 Exercise

* CALIFORNIA, Areas costeras desde The Cal./Mexico Border hasta The Oregon/Cal. Border incluso la bahia de San Francisco

* OREGON, Areas costeras desde The Oregon/Cal. Border hasta The Oregon/Wash. Border incluso la costa de el estuario de Rio de Columbia

* WASHINGTON, la costa exterior de la frontera de Oregon/Washington a Slip Point, la costa del estuario del Rio Columbia, y la costa del Estrecho de Juan de Fuca

* BRITISH COLUMBIA, La costa norte y Haida Gwaii, la costa central y la isla noreste de Vancouver, la costa oeste exterior de la isla de Vancouver, la costa del Estrecho de Juan de Fuca

* SOUTHEAST ALASKA, La costa interior y exterior desde The BC/Alaska Border hasta Cape Fairweather, Alaska (80 miles SE of Yakutat)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Costas Pacificas desde Cape Fairweather, Alaska (80 miles SE of Yakutat) hasta Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) hasta Attu, Alaska incluso las Islas Pribilof

PRONOSTICOS DEL TSUNAMI
---

* Se ha generado un tsunami. las primeras olas del tsunami estan pronosticadas para llegar a los siguientes puntos a las horas indicadas.

* La duracion pronosticada del tsunami es el periodo aproximado de tiempo que se espera que el tsunami puede producir corrientes y olas peligrosas.

* La altura maxima de ola pronosticada es el nivel de agua mas alto esperado sobre el nivel de la marea.

* No se dan pronosticos para puntos que han sido impactados a mas de una hora antes de la emision de este mensaje.

LUGAR	LLEGADA PRONOSTICADA DEL TSUNAMI	PRONOSTICO DE DURACION DEL TSUNAMI	ALTURA MAX PRONOSTICADA DEL TSUNAMI
* Alaska			
Craig	0945 AKDT Apr 13		
Sitka	0950 AKDT Apr 13	48 hrs	5.0- 9.3 pie
Valdez	0955 AKDT Apr 13	30 hrs	2.7- 5.0 pie
Yakutat	0955 AKDT Apr 13	48 hrs	4.5- 8.4 pie
Elfin Cove	0955 AKDT Apr 13	36 hrs	3.2- 5.9 pie
Sand Point	1005 AKDT Apr 13	48 hrs	8.5-15.9 pie

PACIFEX23 Exercise

Kodiak 1005 AKDT Apr 13 48 hrs 14.6-27.1 pie
Unalaska 1030 AKDT Apr 13 20 hrs 1.4- 2.6 pie
Saint Paul 1110 AKDT Apr 13 menos de 1pie
Cold Bay 1125 AKDT Apr 13 36 hrs 3.2- 5.9 pie
Adak 1355 AKDT Apr 13 15 hrs 1.0- 1.9 pie
Shemya 1425 AKDT Apr 13 menos de 1pie

* British Columbia
Langara 1055 PDT Apr 13 30 hrs 2.7- 4.9 pie
Tofino 1205 PDT Apr 13 40 hrs 3.4- 6.2 pie

* Washington
Neah Bay 1115 PDT Apr 13 36 hrs 2.9- 5.3 pie
Port Angeles 1250 PDT Apr 13 40 hrs 3.8- 7.1 pie
La Push 1300 PDT Apr 13
Bellingham 1305 PDT Apr 13 30 hrs 2.5- 4.6 pie
Long Beach 1310 PDT Apr 13 48 hrs 6.7-12.4 pie
Moclips 1310 PDT Apr 13 48 hrs 7.5-13.9 pie
Westport 1315 PDT Apr 13 48 hrs 7.8-14.4 pie
Port Townsend 1340 PDT Apr 13 30 hrs 2.7- 5.1 pie
Tacoma 1410 PDT Apr 13

* Oregon
Seaside 1320 PDT Apr 13
Charleston 1320 PDT Apr 13 48 hrs 6.9-12.8 pie
Port Orford 1320 PDT Apr 13 48 hrs 6.6-12.2 pie
Newport 1325 PDT Apr 13
Brookings 1330 PDT Apr 13 48 hrs 8.8-16.3 pie

* California
Crescent City 1335 PDT Apr 13 48 hrs 11.8-21.8 pie
Fort Bragg 1340 PDT Apr 13 48 hrs 7.2-13.3 pie
Monterey 1410 PDT Apr 13 48 hrs 7.3-13.5 pie
San Francisco 1430 PDT Apr 13 48 hrs 5.3- 9.9 pie
Port San Luis 1435 PDT Apr 13 48 hrs 22.1-41.1 pie
Santa Barbara 1450 PDT Apr 13 48 hrs 5.3- 9.8 pie
Los Angeles Harb 1505 PDT Apr 13 30 hrs 2.6- 4.9 pie
Newport Beach 1515 PDT Apr 13 40 hrs 3.7- 6.9 pie
Oceanside 1520 PDT Apr 13 48 hrs 6.4-11.8 pie
La Jolla 1520 PDT Apr 13 48 hrs 6.3-11.8 pie

OBSERVACIONES DEL TSUNAMI - ACTUALIZADAS
---

* La altura maxima observada del tsunami es el nivel de agua mas alto registrado sobre el nivel de la marea hasta la emision de este mensaje.

LUGAR	HORA DE LA MEDICION	ALTURA MAX OBSERVADA DEL TSUNAMI
Old Harbor Alaska	1002 PDT Apr 13	22.0ft
Alitak Bay Alaska	1005 PDT Apr 13	20.3ft
Chignik Bay Alaska	1024 PDT Apr 13	18.0ft

PACIFEX23 Exercise

King Cove Alaska	1018 PDT Apr 13	14.1ft
Seldovia Alaska	0946 PDT Apr 13	23.3ft
Sand Point Alaska	1014 PDT Apr 13	15.7ft

PARAMETROS PRELIMINARES DEL TERREMOTO
---

* Magnitud 9.3
* Tiempo de Origen 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023
* Coordenadas 56.7 Norte 153.2 Oeste
* Profundidad 3 millas
* Localizacion 80 millas SW de Kodiak City, Alaska
  335 millas SW de Anchorage, Alaska

ACCIONES RECOMENDADAS

Las acciones para proteger la vida y propiedad pueden variar dentro de las areas de aviso de tsunami.

Si usted esta en un area de aviso;

* Desaloje tierra adentro o a un lugar alto fuera de la zona de inundacion por tsunami o muevase a un piso alto de un edificio multipiso segun sea su situacion.

* Salgase del agua, de la playa y alejese de puertos, marinas, bahias, ensenadas y rompeolas.

* Este alerta y siga las instrucciones de los oficiales locales de manejo de emergencia ya que ellos pueden tener informacion mas detallada o especifica para su ubicacion.

* Si siente un terremoto fuerte y/o prolongado tome inmediatamente acciones de seguridad como moverse tierra adentro y/o hacia un lugar alto preferiblemente a pie.
* Operadores de botes,
  * Cuando el tiempo y las condiciones lo permitan mueva su bote mar adentro a una profundidad de al menos 180 pies.

  * Si esta navegando evite entrar a aguas someras/llanas, puertos, marinas, bahias, y ensenadas para evitar corrientes fuertes y objetos flotantes o sumergidos.

* No vaya a la costa para observar el tsunami.

* No regrese a la costa hasta que los oficiales locales de manejo de emergencia local indiquen que es seguro hacerlo.

IMPACTOS

Los impactos pueden variar en diferentes lugares dentro de las areas de aviso.

PACIFEX23 Exercise

Si usted esta en un area de aviso;

* Es posible un tsunami con olas destructivas y corrientes fuertes.

* Posibles inundaciones costeras repetidas cuando las olas lleguen a la costa, se mueven tierra adentro, y retroceden al oceano.

* Olas fuertes e inusuales, corrientes e inundaciones pueden ahogar o herir personas y debilitar o destruir estructuras en tierra y dentro del agua.

* Agua con objetos flotantes o sumergidos pueden herir o causar la muerte a personas o destruir edificios y puentes.

* Corrientes y olas fuertes e inusuales en puertos, marinas, bahias, y ensenadas pueden ser especialmente destructivas.

* Algunos impactos pueden continuar por muchas horas hasta dias luego de la llegada de la primera ola.

* La primera ola puede no ser la mas grande las olas posteriores si.

* Cada ola puede durar de 5 a 45 minutos entre su embate y retroceso.

* Costas con frente en todas las direcciones pueden estar en peligro porque las olas pueden dar la vuelta a islas y entrar a bahias.

* Movimiento fuerte y/o prolongado del suelo indica que un terremoto ha ocurrido un tsunami puede haber sido generado y su llegada inminente.

* Un rapido retroceso de la linea de costa, olas y sonidos inusiales, y fuertes corrientes son senales de un tsunami.

* El tsunami puede aparecer como agua moviendose rapidamente hacia mar adentro, una marea suave que se eleva rapidamente sin olas rompientes, como una serie de olas rompientes, o una pared de agua espumosa.

INFORMACION ADICIONAL Y PROXIMA ACTUALIZACION
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* Para acceder a informacion adicional consulte el sitio de internet tsunami.gov.

* Regiones costeras del Pacifico fuera de California, Oregon, Washington, Columbia Britanica y Alaska deben referirse a los mensanjes del Centro de Alerta de Tsunami del Pacifico en tsunami.gov.

* Este mensaje sera actualizado en 30 minutos.

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PACIFEX23 Exercise

NTWC Spanish Bulletin #4

WEAK61 PAAQ 131805
TSUSPN

BULLETIN
Mensaje de Tsunami numero 4
NWS Centro Nacional de Alerta de Tsunami Palmer AK
1005 AM AKDT Thu Apr 13 2023

ACTUALIZACIONES
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* Nuevas observaciones

...EL AVISO DE TSUNAMI PERMANECE EN EFECTO...

Aviso de Tsunami en Efecto para;

* CALIFORNIA, Areas costeras desde The Cal./Mexico Border hasta The Oregon/Cal. Border incluso la bahia de San Francisco

* OREGON, Areas costeras desde The Oregon/Cal. Border hasta The Oregon/Wash. Border incluso la costa de el estuario de Rio de Columbia

* WASHINGTON, la costa exterior de la frontera de Oregon/Washington a Slip Point, la costa del estuario del Rio Columbia, y la costa del Estrecho de Juan de Fuca

* BRITISH COLUMBIA, La costa norte y Haida Gwaii, la costa central y la isla noreste de Vancouver, la costa oeste exterior de la isla de Vancouver, la costa del Estrecho de Juan de Fuca

* SOUTHEAST ALASKA, La costa interior y exterior desde The BC/Alaska Border hasta Cape Fairweather, Alaska (80 miles SE of Yakutat)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Costas Pacificas desde Cape Fairweather, Alaska (80 miles SE of Yakutat) hasta Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) hasta Attu, Alaska incluso las Islas Pribilof

PRONOSTICOS DEL TSUNAMI
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* Se ha generado un tsunami. las primeras olas del tsunami estan pronosticadas para llegar a los siguientes puntos a las horas indicadas.

* La duracion pronosticada del tsunami es el periodo aproximado de tiempo que se espera que el tsunami puede producir corrientes y olas peligrosas.

PACIFEX23 Exercise

* La altura maxima de ola pronosticada es el nivel de agua mas alto esperado sobre el nivel de la marea.

* No se dan pronosticos para puntos que han sido impactados a mas de una hora antes de la emision de este mensaje.

LUGAR	LLEGADA PRONOSTICADA DEL TSUNAMI	PRONOSTICO DE DURACION DEL TSUNAMI	ALTURA MAX PRONOSTICADA DEL TSUNAMI
* Alaska			
Saint Paul	1110 AKDT Apr 13		menos de 1pie
Cold Bay	1125 AKDT Apr 13	36 hrs	3.2- 5.9 pie
Adak	1355 AKDT Apr 13	15 hrs	1.0- 1.9 pie
Shemya	1425 AKDT Apr 13		menos de 1pie
* British Columbia			
Tofino	1205 PDT Apr 13	40 hrs	3.4- 6.2 pie
* Washington			
Port Angeles	1250 PDT Apr 13	40 hrs	3.8- 7.1 pie
La Push	1300 PDT Apr 13		
Bellingham	1305 PDT Apr 13	30 hrs	2.5- 4.6 pie
Long Beach	1310 PDT Apr 13	48 hrs	6.7-12.4 pie
Moclips	1310 PDT Apr 13	48 hrs	7.5-13.9 pie
Westport	1315 PDT Apr 13	48 hrs	7.8-14.4 pie
Port Townsend	1340 PDT Apr 13	30 hrs	2.7- 5.1 pie
Tacoma	1410 PDT Apr 13		
* Oregon			
Seaside	1320 PDT Apr 13		
Charleston	1320 PDT Apr 13	48 hrs	6.9-12.8 pie
Port Orford	1320 PDT Apr 13	48 hrs	6.6-12.2 pie
Newport	1325 PDT Apr 13		
Brookings	1330 PDT Apr 13	48 hrs	8.8-16.3 pie
* California			
Crescent City	1335 PDT Apr 13	48 hrs	11.8-21.8 pie
Fort Bragg	1340 PDT Apr 13	48 hrs	7.2-13.3 pie
Monterey	1410 PDT Apr 13	48 hrs	7.3-13.5 pie
San Francisco	1430 PDT Apr 13	48 hrs	5.3- 9.9 pie
Port San Luis	1435 PDT Apr 13	48 hrs	22.1-41.1 pie
Santa Barbara	1450 PDT Apr 13	48 hrs	5.3- 9.8 pie
Los Angeles Harb	1505 PDT Apr 13	30 hrs	2.6- 4.9 pie
Newport Beach	1515 PDT Apr 13	40 hrs	3.7- 6.9 pie
Oceanside	1520 PDT Apr 13	48 hrs	6.4-11.8 pie
La Jolla	1520 PDT Apr 13	48 hrs	6.3-11.8 pie

OBSERVACIONES DEL TSUNAMI - ACTUALIZADAS
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* La altura maxima observada del tsunami es el nivel de agua mas alto registrado sobre el nivel de la marea hasta la emision de este mensaje.

PACIFEX23 Exercise

LUGAR	HORA DE LA MEDICION	ALTURA MAX OBSERVADA DEL TSUNAMI
Old Harbor Alaska	1002 PDT Apr 13	22.0ft
Alitak Bay Alaska	1005 PDT Apr 13	20.3ft
Seward Alaska	1050 PDT Apr 13	12.8ft
Chignik Bay Alaska	1024 PDT Apr 13	18.0ft
King Cove Alaska	1018 PDT Apr 13	14.1ft
Seldovia Alaska	0946 PDT Apr 13	23.3ft
Nikolski Alaska	1101 PDT Apr 13	2.8ft
Sand Point Alaska	1014 PDT Apr 13	15.7ft

PARAMETROS PRELIMINARES DEL TERREMOTO
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* Magnitud 9.3
* Tiempo de Origen 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023
* Coordenadas 56.7 Norte 153.2 Oeste
* Profundidad 3 millas
* Localizacion 80 millas SW de Kodiak City, Alaska
  335 millas SW de Anchorage, Alaska

ACCIONES RECOMENDADAS

Las acciones para proteger la vida y propiedad pueden variar dentro de las areas de aviso de tsunami.

Si usted esta en un area de aviso;

* Desaloje tierra adentro o a un lugar alto fuera de la zona de inundacion por tsunami o muevase a un piso alto de un edificio multipiso segun sea su situacion.

* Salgase del agua, de la playa y alejese de puertos, marinas, bahias, ensenadas y rompeolas.

* Este alerta y siga las instrucciones de los oficiales locales de manejo de emergencia ya que ellos pueden tener informacion mas detallada o especifica para su ubicacion.

* Si siente un terremoto fuerte y/o prolongado tome inmediatamente acciones de seguridad como moverse tierra adentro y/o hacia un lugar alto preferiblemente a pie.

* Operadores de botes,
  * Cuando el tiempo y las condiciones lo permitan mueva su bote mar adentro a una profundidad de al menos 180 pies.

  * Si esta navegando evite entrar a aguas someras/llanas, puertos, marinas, bahias, y ensenadas para evitar

PACIFEX23 Exercise

corrientes fuertes y objetos flotantes o sumergidos.

* No vaya a la costa para observar el tsunami.

* No regrese a la costa hasta que los oficiales locales de manejo de emergencia local indiquen que es seguro hacerlo.

IMPACTOS

Los impactos pueden variar en diferentes lugares dentro de las areas de aviso.

Si usted esta en un area de aviso;

* Es posible un tsunami con olas destructivas y corrientes fuertes.

* Posibles inundaciones costeras repetidas cuando las olas lleguen a la costa, se mueven tierra adentro, y retroceden al oceano.

* Olas fuertes e inusuales, corrientes e inundaciones pueden ahogar o herir personas y debilitar o destruir estructuras en tierra y dentro del agua.

* Agua con objetos flotantes o sumergidos pueden herir o causar la muerte a personas o destruir edificios y puentes.

* Corrientes y olas fuertes e inusuales en puertos, marinas, bahias, y ensenadas pueden ser especialmente destructivas.

* Algunos impactos pueden continuar por muchas horas hasta dias luego de la llegada de la primera ola.

* La primera ola puede no ser la mas grande las olas posteriores si.

* Cada ola puede durar de 5 a 45 minutos entre su embate y retroceso.

* Costas con frente en todas las direcciones pueden estar en peligro porque las olas pueden dar la vuelta a islas y entrar a bahias.

* Movimiento fuerte y/o prolongado del suelo indica que un terremoto ha ocurrido un tsunami puede haber sido generado y su llegada inminente.

* Un rapido retroceso de la linea de costa, olas y sonidos inusiales, y fuertes corrientes son senales de un tsunami.

* El tsunami puede aparecer como agua moviendose rapidamente hacia mar adentro, una marea suave que se eleva rapidamente sin olas rompientes, como una serie de olas rompientes, o una pared de agua espumosa.

PACIFEX23 Exercise

INFORMACION ADICIONAL Y PROXIMA ACTUALIZACION
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* Para acceder a informacion adicional consulte el sitio de internet tsunami.gov.

* Regiones costeras del Pacifico fuera de California, Oregon, Washington, Columbia Britanica y Alaska deben referirse a los mensanjes del Centro de Alerta de Tsunami del Pacifico en tsunami.gov.

* Este mensaje sera actualizado en 30 minutos.

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NTWC Spanish Bulletin #12

WEAK61 PAAQ 132205
TSUSPN

BULLETIN
Mensaje de Tsunami numero 12
NWS Centro Nacional de Alerta de Tsunami Palmer AK
205 PM AKDT Thu Apr 13 2023

ACTUALIZACIONES
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* Nuevas observaciones
* Modifica las regiones bajo alerta

...EL AVISO DE TSUNAMI PERMANECE EN EFECTO...

...UNA ADVERTENCIA DE TSUNAMI ESTA AHORA EN EFECTO...

Aviso de Tsunami en Efecto para;

* CALIFORNIA, Areas costeras desde The Cal./Mexico Border hasta The Oregon/Cal. Border incluso la bahia de San Francisco

* OREGON, Areas costeras desde The Oregon/Cal. Border hasta The Oregon/Wash. Border incluso la costa de el estuario de Rio de Columbia

* WASHINGTON, la costa exterior de la frontera de Oregon/Washington a Slip Point, la costa del estuario del Rio Columbia, y la costa del Estrecho de Juan de Fuca

* BRITISH COLUMBIA, La costa norte y Haida Gwaii, la costa central y la isla noreste de Vancouver, la costa oeste exterior de la isla de Vancouver, la costa del Estrecho de Juan de Fuca

* SOUTHEAST ALASKA, La costa interior y exterior desde The BC/Alaska Border hasta Cape Fairweather, Alaska (80 miles SE of Yakutat)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Costas Pacificas

PACIFEX23 Exercise

desde Cape Fairweather, Alaska (80 miles SE of Yakutat)
hasta Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) hasta Samalga Pass, Alaska (30 miles SW of Nikolski)

Advertencia de Tsunami en Efecto para;

* ALEUTIAN ISLANDS, Samalga Pass, Alaska (30 miles SW of Nikolski) hasta Attu, Alaska incluso las Islas Pribilof

PRONOSTICOS DEL TSUNAMI
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* Se ha generado un tsunami. las primeras olas del tsunami estan pronosticadas para llegar a los siguientes puntos a las horas indicadas.

* La duracion pronosticada del tsunami es el periodo aproximado de tiempo que se espera que el tsunami puede producir corrientes y olas peligrosas.

* La altura maxima de ola pronosticada es el nivel de agua mas alto esperado sobre el nivel de la marea.

* No se dan pronosticos para puntos que han sido impactados a mas de una hora antes de la emision de este mensaje.

LUGAR	LLEGADA PRONOSTICADA DEL TSUNAMI	PRONOSTICO DE DURACION DEL TSUNAMI	ALTURA MAX PRONOSTICADA DEL TSUNAMI
* Alaska			
Adak	1355 AKDT Apr 13	15 hrs	1.0- 1.9 pie
Shemya	1425 AKDT Apr 13		menos de 1pie
* California			
San Francisco	1430 PDT Apr 13	48 hrs	5.3- 9.9 pie
Port San Luis	1435 PDT Apr 13	48 hrs	22.1-41.1 pie
Santa Barbara	1450 PDT Apr 13	48 hrs	5.3- 9.8 pie
Los Angeles Harb	1505 PDT Apr 13	30 hrs	2.6- 4.9 pie
Newport Beach	1515 PDT Apr 13	40 hrs	3.7- 6.9 pie
Oceanside	1520 PDT Apr 13	48 hrs	6.4-11.8 pie
La Jolla	1520 PDT Apr 13	48 hrs	6.3-11.8 pie

OBSERVACIONES DEL TSUNAMI - ACTUALIZADAS
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* La altura maxima observada del tsunami es el nivel de agua mas alto registrado sobre el nivel de la marea hasta la emision de este mensaje.

LUGAR	HORA DE LA MEDICION	ALTURA MAX OBSERVADA DEL TSUNAMI
Old Harbor Alaska	1002 PDT Apr 13	22.0ft
Alitak Bay Alaska	1005 PDT Apr 13	20.3ft
Seward Alaska	1050 PDT Apr 13	12.8ft
Cordova Alaska	1155 PDT Apr 13	4.4ft

PACIFEX23 Exercise

Chignik Bay Alaska	1024 PDT Apr 13	18.0ft
King Cove Alaska	1018 PDT Apr 13	14.1ft
Craig Alaska	1140 PDT Apr 13	6.3ft
Akutan Alaska	1258 PDT Apr 13	1.5ft
Seldovia Alaska	0946 PDT Apr 13	23.3ft
Yakutat Alaska	1114 PDT Apr 13	7.2ft
Langara BC	1149 PDT Apr 13	5.1ft
Nikolski Alaska	1101 PDT Apr 13	2.8ft
Atka Alaska	1147 PDT Apr 13	3.0ft
Sand Point Alaska	1014 PDT Apr 13	15.7ft
Unalaska Alaska	1134 PDT Apr 13	1.6ft
Adak Alaska	1306 PDT Apr 13	1.5ft
Winter Harbour BC	1227 PDT Apr 13	4.1ft
Tofino British Columbia	1306 PDT Apr 13	4.2ft
La Push Washington	1328 PDT Apr 13	7.7ft
Toke Point Washington	1350 PDT Apr 13	3.0ft
Garibaldi Oregon	1342 PDT Apr 13	3.1ft
Port Orford Oregon	1339 PDT Apr 13	10.2ft
Newport Oregon	1341 PDT Apr 13	4.1ft
Crescent City CA	1351 PDT Apr 13	17.3ft
Humboldt Bay California	1354 PDT Apr 13	7.2ft
Friday Harbor WA	1427 PDT Apr 13	2.9ft
Monterey California	1458 PDT Apr 13	10.6ft
San Francisco CA	1452 PDT Apr 13	8.5ft

PARAMETROS PRELIMINARES DEL TERREMOTO
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* Magnitud 9.3
* Tiempo de Origen 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023
* Coordenadas 56.7 Norte 153.2 Oeste
* Profundidad 3 millas
* Localizacion 80 millas SW de Kodiak City, Alaska
  335 millas SW de Anchorage, Alaska

ACCIONES RECOMENDADAS - ACTUALIZADAS

Las acciones para proteger la vida y propiedad pueden variar dentro de las areas de aviso y las areas de advertencia de tsunami.

Si usted esta en un area de aviso;

* Desaloje tierra adentro o a un lugar alto fuera de la zona de inundacion por tsunami o muevase a un piso alto de un edificio multipiso segun sea su situacion.

Si usted esta en un area de aviso o advertencia;

* Salgase del agua, de la playa y alejese de puertos, marinas, bahias, ensenadas y rompeolas.

* Este alerta y siga las instrucciones de los oficiales locales de manejo de emergencia ya que ellos pueden tener informacion mas detallada o especifica para su ubicacion.

* Si siente un terremoto fuerte y/o prolongado tome inmediatamente acciones de seguridad como moverse tierra

PACIFEX23 Exercise

adentro y/o hacia un lugar alto preferiblemente a pie.

* Operadores de botes,
  * Cuando el tiempo y las condiciones lo permitan mueva su bote mar adentro a una profundidad de al menos 180 pies.
  * Si esta navegando evite entrar a aguas someras/llanas, puertos, marinas, bahias, y ensenadas para evitar corrientes fuertes y objetos flotantes o sumergidos.
* No vaya a la costa para observar el tsunami.
* No regrese a la costa hasta que los oficiales locales de manejo de emergencia local indiquen que es seguro hacerlo.

IMPACTOS

Los impactos pueden variar en diferentes lugares dentro de las areas de aviso y las areas de advertencia.

Si usted esta en un area de aviso;

* Es posible un tsunami con olas destructivas y corrientes fuertes.
* Posibles inundaciones costeras repetidas cuando las olas lleguen a la costa, se mueven tierra adentro, y retroceden al oceano.
* Olas fuertes e inusuales, corrientes e inundaciones pueden ahogar o herir personas y debilitar o destruir estructuras en tierra y dentro del agua.
* Agua con objetos flotantes o sumergidos pueden herir o causar la muerte a personas o destruir edificios y puentes.
* Corrientes y olas fuertes e inusuales en puertos, marinas, bahias, y ensenadas pueden ser especialmente destructivas.

Si usted esta en un area de advertencia;

* Un tsunami con olas y corrientes fuertes puede ser posible.
* Olas y corrientes pueden ahogar o herir personas que se encuentran en el agua.
* Corrientes en playas y puertos, marinas, bahias, y ensenadas pueden ser especialmente peligrosas.

Si usted esta en un area de aviso o advertencia;

* Algunos impactos pueden continuar por muchas horas hasta dias luego de la llegada de la primera ola.
* La primera ola puede no ser la mas grande las olas posteriores si.
* Cada ola puede durar de 5 a 45 minutos entre su embate y retroceso.
* Costas con frente en todas las direcciones pueden estar en peligro porque las olas pueden dar la vuelta a islas y entrar a bahias.

PACIFEX23 Exercise

* Movimiento fuerte y/o prolongado del suelo indica que un terremoto ha ocurrido un tsunami puede haber sido generado y su llegada inminente.

* Un rapido retroceso de la linea de costa, olas y sonidos inusiales, y fuertes corrientes son senales de un tsunami.

* El tsunami puede aparecer como agua moviendose rapidamente hacia mar adentro, una marea suave que se eleva rapidamente sin olas rompientes, como una serie de olas rompientes, o una pared de agua espumosa.

INFORMACION ADICIONAL Y PROXIMA ACTUALIZACION
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* Para acceder a informacion adicional consulte el sitio de internet tsunami.gov.

* Regiones costeras del Pacifico fuera de California, Oregon, Washington, Columbia Britanica y Alaska deben referirse a los mensanjes del Centro de Alerta de Tsunami del Pacifico en tsunami.gov.

* Este mensaje sera actualizado en 60 minutos.

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NTWC Spanish Bulletin #24

WEAK61 PAAQ 141005
TSUSPN

BULLETIN
Mensaje de Tsunami numero 24
NWS Centro Nacional de Alerta de Tsunami Palmer AK
205 AM AKDT Fri Apr 14 2023

ACTUALIZACIONES
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* Nuevas observaciones
* Modifica las regiones bajo alerta

...EL AVISO DE TSUNAMI PERMANECE EN EFECTO...

...LA ADVERTENCIA DE TSUNAMI PERMANECE EN EFECTO...

Aviso de Tsunami en Efecto para;

* CALIFORNIA, Areas costeras desde Point Conception, California hasta The Oregon/Cal. Border incluso la bahia de San Francisco

* OREGON, Areas costeras desde The Oregon/Cal. Border hasta The Oregon/Wash. Border incluso la costa de el estuario de Rio de Columbia

* WASHINGTON, la costa exterior de la frontera de Oregon/Washington a Slip Point, la costa del estuario del Rio Columbia, y la costa del Estrecho de Juan de Fuca

* BRITISH COLUMBIA, La costa norte y Haida Gwaii, la costa central y la isla noreste de Vancouver, la costa oeste

PACIFEX23 Exercise

exterior de la isla de Vancouver, la costa del Estrecho de Juan de Fuca

* SOUTHEAST ALASKA, La costa interior y exterior desde The BC/Alaska Border hasta Cape Decision, Alaska (85 miles SE of Sitka)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Costas Pacificas desde Cape Fairweather, Alaska (80 miles SE of Yakutat) hasta Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) hasta Samalga Pass, Alaska (30 miles SW of Nikolski)

Advertencia de Tsunami en Efecto para;

* CALIFORNIA, Areas costeras desde The Cal./Mexico Border hasta Point Conception, California

* SOUTHEAST ALASKA, La costa interior y exterior desde Cape Decision, Alaska (85 miles SE of Sitka) hasta Cape Fairweather, Alaska (80 miles SE of Yakutat)

Alertas en las siguientes areas han sido canceladas porque se ha definido mejor la amenaza en base a informacion y analisis adicional.

* Advisory de Tsunami ha sido Cancelado para areas costeras de Aleutian Islands desde Samalga Pass, Alaska (30 miles SW of Nikolski) hasta Attu, Alaska

Para otras costas del Pacifico de los Estados Unidos y Canada en Norte America, no existe amenaza de tsunami.

OBSERVACIONES DEL TSUNAMI - ACTUALIZADAS
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* La altura maxima observada del tsunami es el nivel de agua mas alto registrado sobre el nivel de la marea hasta la emision de este mensaje.

LUGAR	HORA DE LA MEDICION	ALTURA MAX OBSERVADA DEL TSUNAMI
Old Harbor Alaska	1002 PDT Apr 13	22.0ft
Alitak Bay Alaska	1005 PDT Apr 13	20.3ft
Seward Alaska	1050 PDT Apr 13	12.8ft
Cordova Alaska	1155 PDT Apr 13	4.4ft
Chignik Bay Alaska	1024 PDT Apr 13	18.0ft
King Cove Alaska	1018 PDT Apr 13	14.1ft
Craig Alaska	1140 PDT Apr 13	6.3ft
Akutan Alaska	1258 PDT Apr 13	1.5ft
Seldovia Alaska	0946 PDT Apr 13	23.3ft
Yakutat Alaska	1114 PDT Apr 13	7.2ft
Langara BC	1149 PDT Apr 13	5.1ft
Nikolski Alaska	1101 PDT Apr 13	2.8ft
Atka Alaska	1147 PDT Apr 13	3.0ft
Sand Point Alaska	1014 PDT Apr 13	15.7ft
Unalaska Alaska	1134 PDT Apr 13	1.6ft

PACIFEX23 Exercise

Winter Harbour BC	1227 PDT Apr 13	4.1ft
Tofino British Columbia	1306 PDT Apr 13	4.2ft
La Push Washington	1328 PDT Apr 13	7.7ft
Toke Point Washington	1350 PDT Apr 13	3.0ft
Garibaldi Oregon	1342 PDT Apr 13	3.1ft
Port Orford Oregon	1339 PDT Apr 13	10.2ft
Newport Oregon	1341 PDT Apr 13	4.1ft
Crescent City CA	1351 PDT Apr 13	17.3ft
Humboldt Bay California	1354 PDT Apr 13	7.2ft
Friday Harbor WA	1427 PDT Apr 13	2.9ft
Monterey California	1458 PDT Apr 13	10.6ft
Tacoma Washington	1635 PDT Apr 13	1.8ft
San Francisco CA	1452 PDT Apr 13	8.5ft
Adak Alaska	1306 PDT Apr 13	1.5ft
Ventura California	1541 PDT Apr 13	9.1ft
Los Angeles Harbor CA	1546 PDT Apr 13	2.8ft
San Diego California	1551 PDT Apr 13	4.7ft
Alameda California	1601 PDT Apr 13	3.6ft

PARAMETROS PRELIMINARES DEL TERREMOTO
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* Magnitud 9.3
* Tiempo de Origen 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023
* Coordenadas 56.7 Norte 153.2 Oeste
* Profundidad 3 millas
* Localizacion 80 millas SW de Kodiak City, Alaska
  335 millas SW de Anchorage, Alaska

ACCIONES RECOMENDADAS
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* Ver mensaje numero 12 para acciones recomendadas.

IMPACTOS
---
* Ver mensaje numero 12 para posibles impactos.

INFORMACION ADICIONAL Y PROXIMA ACTUALIZACION
---
* Para acceder a informacion adicional consulte el sitio de internet tsunami.gov.

* Regiones costeras del Pacifico fuera de California, Oregon, Washington, Columbia Britanica y Alaska deben referirse a los mensanjes del Centro de Alerta de Tsunami del Pacifico en tsunami.gov.

* Este mensaje sera actualizado en 60 minutos.

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NTWC Spanish Bulletin #26

WEAK61 PAAQ 141205
TSUSPN

PACIFEX23 Exercise

BULLETIN
Mensaje de Tsunami numero 26
NWS Centro Nacional de Alerta de Tsunami Palmer AK
405 AM AKDT Fri Apr 14 2023

ACTUALIZACIONES
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* Modifica las regiones bajo alerta

...LA ADVERTENCIA DE TSUNAMI PERMANECE EN EFECTO...

Advertencia de Tsunami en Efecto para;

* CALIFORNIA, Areas costeras desde The Cal./Mexico Border hasta Point Conception, California

* CALIFORNIA, Areas costeras desde Point Conception, California hasta The Oregon/Cal. Border incluso la bahia de San Francisco

* OREGON, Areas costeras desde The Oregon/Cal. Border hasta The Oregon/Wash. Border incluso la costa de el estuario de Rio de Columbia

* WASHINGTON, la costa exterior de la frontera de Oregon/Washington a Slip Point, la costa del estuario del Rio Columbia, y la costa del Estrecho de Juan de Fuca

* BRITISH COLUMBIA, La costa norte y Haida Gwaii, la costa central y la isla noreste de Vancouver, la costa oeste exterior de la isla de Vancouver, la costa del Estrecho de Juan de Fuca

* SOUTHEAST ALASKA, La costa interior y exterior desde The BC/Alaska Border hasta Cape Decision, Alaska (85 miles SE of Sitka)

* SOUTH ALASKA AND THE ALASKA PENINSULA, Costas Pacificas desde Cape Fairweather, Alaska (80 miles SE of Yakutat) hasta Unimak Pass, Alaska (80 miles NE of Unalaska)

* ALEUTIAN ISLANDS, Unimak Pass, Alaska (80 miles NE of Unalaska) hasta Samalga Pass, Alaska (30 miles SW of Nikolski)

Para otras costas del Pacifico de los Estados Unidos y Canada en Norte America, no existe amenaza de tsunami.

OBSERVACIONES DEL TSUNAMI - ACTUALIZADAS
---
* La altura maxima observada del tsunami es el nivel de agua mas alto registrado sobre el nivel de la marea hasta la emision de este mensaje.

LUGAR	HORA DE LA MEDICION	ALTURA MAX OBSERVADA DEL TSUNAMI
Old Harbor Alaska	1002 PDT Apr 13	22.0ft

PACIFEX23 Exercise

Alitak Bay Alaska	1005 PDT Apr 13	20.3ft
Seward Alaska	1050 PDT Apr 13	12.8ft
Cordova Alaska	1155 PDT Apr 13	4.4ft
Chignik Bay Alaska	1024 PDT Apr 13	18.0ft
King Cove Alaska	1018 PDT Apr 13	14.1ft
Craig Alaska	1140 PDT Apr 13	6.3ft
Akutan Alaska	1258 PDT Apr 13	1.5ft
Seldovia Alaska	0946 PDT Apr 13	23.3ft
Yakutat Alaska	1114 PDT Apr 13	7.2ft
Langara BC	1149 PDT Apr 13	5.1ft
Nikolski Alaska	1101 PDT Apr 13	2.8ft
Atka Alaska	1147 PDT Apr 13	3.0ft
Sand Point Alaska	1014 PDT Apr 13	15.7ft
Unalaska Alaska	1134 PDT Apr 13	1.6ft
Winter Harbour BC	1227 PDT Apr 13	4.1ft
Tofino British Columbia	1306 PDT Apr 13	4.2ft
La Push Washington	1328 PDT Apr 13	7.7ft
Toke Point Washington	1350 PDT Apr 13	3.0ft
Garibaldi Oregon	1342 PDT Apr 13	3.1ft
Port Orford Oregon	1339 PDT Apr 13	10.2ft
Newport Oregon	1341 PDT Apr 13	4.1ft
Crescent City CA	1351 PDT Apr 13	17.3ft
Humboldt Bay California	1354 PDT Apr 13	7.2ft
Friday Harbor WA	1427 PDT Apr 13	2.9ft
Monterey California	1458 PDT Apr 13	10.6ft
Tacoma Washington	1635 PDT Apr 13	1.8ft
San Francisco CA	1452 PDT Apr 13	8.5ft
Adak Alaska	1306 PDT Apr 13	1.5ft
Ventura California	1541 PDT Apr 13	9.1ft
Los Angeles Harbor CA	1546 PDT Apr 13	2.8ft
San Diego California	1551 PDT Apr 13	4.7ft
Alameda California	1601 PDT Apr 13	3.6ft

PARAMETROS PRELIMINARES DEL TERREMOTO
---

* Magnitud 9.3
* Tiempo de Origen 0830 AKDT Apr 13 2023
  0930 PDT Apr 13 2023
  1630 UTC Apr 13 2023
* Coordenadas 56.7 Norte 153.2 Oeste
* Profundidad 3 millas
* Localizacion 80 millas SW de Kodiak City, Alaska
  335 millas SW de Anchorage, Alaska

ACCIONES RECOMENDADAS - ACTUALIZADAS

Las acciones para proteger la vida y propiedad pueden variar dentro de las areas de advertencia de tsunami.

Si usted esta en un area de advertencia;

* Salgase del agua, de la playa y alejese de puertos, marinas, bahias, ensenadas y rompeolas.

* Este alerta y siga las instrucciones de los oficiales locales de manejo de emergencia ya que ellos pueden tener informacion mas detallada o especifica para su ubicacion.

* Si siente un terremoto fuerte y/o prolongado tome

PACIFEX23 Exercise

inmediatamente acciones de seguridad como moverse tierra adentro y/o hacia un lugar alto preferiblemente a pie.

* Operadores de botes,
  * Cuando el tiempo y las condiciones lo permitan mueva su bote mar adentro a una profundidad de al menos 180 pies.

  * Si esta navegando evite entrar a aguas someras/llanas, puertos, marinas, bahias, y ensenadas para evitar corrientes fuertes y objetos flotantes o sumergidos.

* No vaya a la costa para observar el tsunami.

* No regrese a la costa hasta que los oficiales locales de manejo de emergencia local indiquen que es seguro hacerlo.

IMPACTOS

Los impactos pueden variar en diferentes lugares dentro de las areas de advertencia.

Si usted esta en un area de advertencia;

* Un tsunami con olas y corrientes fuertes puede ser posible.

* Olas y corrientes pueden ahogar o herir personas que se encuentran en el agua.

* Corrientes en playas y puertos, marinas, bahias, y ensenadas pueden ser especialmente peligrosas.

* Algunos impactos pueden continuar por muchas horas hasta dias luego de la llegada de la primera ola.

* La primera ola puede no ser la mas grande las olas posteriores si.

* Cada ola puede durar de 5 a 45 minutos entre su embate y retroceso.

* Costas con frente en todas las direcciones pueden estar en peligro porque las olas pueden dar la vuelta a islas y entrar a bahias.
* Movimiento fuerte y/o prolongado del suelo indica que un terremoto ha ocurrido un tsunami puede haber sido generado y su llegada inminente.

* Un rapido retroceso de la linea de costa, olas y sonidos inusiales, y fuertes corrientes son senales de un tsunami.

* El tsunami puede aparecer como agua moviendose rapidamente hacia mar adentro, una marea suave que se eleva rapidamente sin olas rompientes, como una serie de olas rompientes, o una pared de agua espumosa.

INFORMACION ADICIONAL Y PROXIMA ACTUALIZACION
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* Para acceder a informacion adicional consulte el sitio de

PACIFEX23 Exercise

internet tsunami.gov.

* Regiones costeras del Pacifico fuera de California, Oregon, Washington, Columbia Britanica y Alaska deben referirse a los mensanjes del Centro de Alerta de Tsunami del Pacifico en tsunami.gov.

* Este mensaje sera actualizado en 60 minutos.

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NTWC Spanish Bulletin #31

WEAK61 PAAQ 141705
TSUSPN

BULLETIN

Mensaje de Tsunami numero 31
NWS Centro Nacional de Alerta de Tsunami Palmer AK
905 AM AKDT Fri Apr 14 2023

...LA ADVERTENCIA DE TSUNAMI HA SIDO CANCELADA…

* Advisory de Tsunami ha sido Cancelado para areas costeras de California, Oregon, Washington, British Columbia y Southeast Alaska

* Advisory de Tsunami ha sido Cancelado para areas costeras de South Alaska and the Alaska Peninsula y Aleutian Islands

OBSERVACIONES DEL TSUNAMI - ACTUALIZADAS
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* La altura maxima observada del tsunami es el nivel de agua mas alto registrado sobre el nivel de la marea hasta la emision de este mensaje.

LUGAR	HORA DE LA MEDICION	ALTURA MAX OBSERVADA DEL TSUNAMI
Old Harbor Alaska	1002 PDT Apr 13	22.0ft
Alitak Bay Alaska	1005 PDT Apr 13	20.3ft
Seward Alaska	1050 PDT Apr 13	12.8ft
Cordova Alaska	1155 PDT Apr 13	4.4ft
Chignik Bay Alaska	1024 PDT Apr 13	18.0ft
King Cove Alaska	1018 PDT Apr 13	14.1ft
Craig Alaska	1140 PDT Apr 13	6.3ft
Akutan Alaska	1258 PDT Apr 13	1.5ft
Seldovia Alaska	0946 PDT Apr 13	23.3ft
Yakutat Alaska	1114 PDT Apr 13	7.2ft
Langara BC	1149 PDT Apr 13	5.1ft
Nikolski Alaska	1101 PDT Apr 13	2.8ft
Atka Alaska	1147 PDT Apr 13	3.0ft
Sand Point Alaska	1014 PDT Apr 13	15.7ft
Unalaska Alaska	1134 PDT Apr 13	1.6ft
Winter Harbour BC	1227 PDT Apr 13	4.1ft
Tofino British Columbia	1306 PDT Apr 13	4.2ft
La Push Washington	1328 PDT Apr 13	7.7ft

PACIFEX23 Exercise

Toke Point Washington	1350 PDT Apr 13	3.0ft
Garibaldi Oregon	1342 PDT Apr 13	3.1ft
Port Orford Oregon	1339 PDT Apr 13	10.2ft
Newport Oregon	1341 PDT Apr 13	4.1ft
Crescent City CA	1351 PDT Apr 13	17.3ft
Humboldt Bay California	1354 PDT Apr 13	7.2ft
Friday Harbor WA	1427 PDT Apr 13	2.9ft
Monterey California	1458 PDT Apr 13	10.6ft
Tacoma Washington	1635 PDT Apr 13	1.8ft
San Francisco CA	1452 PDT Apr 13	8.5ft
Adak Alaska	1306 PDT Apr 13	1.5ft
Ventura California	1541 PDT Apr 13	9.1ft
Los Angeles Harbor CA	1546 PDT Apr 13	2.8ft
San Diego California	1551 PDT Apr 13	4.7ft
Alameda California	1601 PDT Apr 13	3.6ft

ACCIONES RECOMENDADAS - ACTUALIZADAS
---

* No regresen a zonas desalojadas hasta que las autoridades locales de manejo de emergencia indiquen que es seguro hacerlo.

IMPACTOS - ACTUALIZADOS
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* La actividad del tsunami ha disminuido a lo largo de los estados de la costa oeste de los Estados Unidos, Columbia Britanica y Alaska.

* Actividad en curso puede seguir en algunas areas causando fuertes corrientes peligrosos para nadadores y embarcaciones.

* La determinacion para volver a ocupar zonas de peligro debe ser hecha por autoridades locales.

INFORMACION ADICIONAL Y PROXIMA ACTUALIZACION
---

* Para acceder a informacion adicional consulte el sitio de internet tsunami.gov.

* Regiones costeras del Pacifico fuera de California, Oregon, Washington, Columbia Britanica y Alaska deben referirse A los mensanjes del Centro de Alerta de Tsunami del Pacifico eb tsunami.gov.

* Este sera el ultimo boletin proveniente del Centro Nacional de Alerta de Tsunami de los Estados Unidos para este evento.

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PACIFEX23 Exercise

Appendix C. NTWC Pacific Forecast Locations

NTWC East Coast and Gulf Forecast Locations (ETA's and Maximum wave height)					
WP_Name	State	Country	Tide Gauge	Breakpoint	Forecast Dissemination
The Cal./Mexico Border		United States		Yes	tsunami.gov
Orange/San Diego Line	California	United States		Yes	tsunami.gov
Rincon Point	California	United States		Yes	tsunami.gov
Point Conception	California	United States		Yes	tsunami.gov
Ragged Point	California	United States		Yes	tsunami.gov
Davenport	California	United States		Yes	tsunami.gov
Gualala River	California	United States		Yes	tsunami.gov
Mendo/Hum County Line	California	United States		Yes	tsunami.gov
Cape Mendocino	California	United States		Yes	tsunami.gov
Humboldt/Del Norte Line	California	United States		Yes	tsunami.gov
The Oregon/Cal. Border		United States		Yes	tsunami.gov
Douglas/Lane Line	Oregon	United States		Yes	tsunami.gov
Cascade Head	Oregon	United States		Yes	tsunami.gov
The Oregon/Wash. Border		United States		Yes	tsunami.gov
The Wash./BC Border		United States		Yes	tsunami.gov
North Vancouver Island	British Columbia	Canada		Yes	tsunami.gov
The BC/Alaska Border		United States		Yes	tsunami.gov
Cape Decision	Alaska	United States		Yes	tsunami.gov
Salisbury Sound	Alaska	United States		Yes	tsunami.gov
Cape Fairweather	Alaska	United States		Yes	tsunami.gov
Cape Suckling	Alaska	United States		Yes	tsunami.gov
Hinchinbrook Entrance	Alaska	United States		Yes	tsunami.gov
Kennedy Entrance	Alaska	United States		Yes	tsunami.gov
Chignik Bay	Alaska	United States	chig	Yes	tsunami.gov
Unimak Pass	Alaska	United States		Yes	tsunami.gov
Samalga Pass	Alaska	United States		Yes	tsunami.gov
Amchitka Pass	Alaska	United States		Yes	tsunami.gov
Attu	Alaska	United States		Yes	Messages & Tsunami.gov
Saint Paul	Alaska	United States	spak	No	Messages & Tsunami.gov
La Jolla	California	United States	lajo	No	Messages & Tsunami.gov
San Francisco	California	United States	fpnt	No	Messages & Tsunami.gov
Crescent City	California	United States	cres	No	Messages & Tsunami.gov
Neah Bay	Washington	United States	neah	No	Messages & Tsunami.gov
Tofino	British Columbia	Canada	tfbc	No	Messages & Tsunami.gov
Sitka	Alaska	United States	sitk	No	Messages & Tsunami.gov
Kodiak	Alaska	United States	kodi	No	Messages & Tsunami.gov
Shemya	Alaska	United States	shmy	No	Messages & Tsunami.gov
Los Angeles Harbor	California	United States	losa	No	Messages & Tsunami.gov
Santa Barbara	California	United States	sanb	No	Messages & Tsunami.gov
Charleston	Oregon	United States	char	No	Messages & Tsunami.gov
Westport South Bay	Washington	United States	wpwa	No	Messages & Tsunami.gov
Langara	British Columbia	Canada	lpbc	No	Messages & Tsunami.gov
Yakutat	Alaska	United States	yaku	No	Messages & Tsunami.gov
Cordova	Alaska	United States	cord	No	Messages & Tsunami.gov
Valdez	Alaska	United States	vald	No	Messages & Tsunami.gov
Seward	Alaska	United States	sewa	No	Messages & Tsunami.gov
Homer	Alaska	United States		No	Messages & Tsunami.gov
Sand Point	Alaska	United States	sdpt	No	Messages & Tsunami.gov
Cold Bay	Alaska	United States		No	Messages & Tsunami.gov
Unalaska	Alaska	United States	dutc	No	Messages & Tsunami.gov
Adak	Alaska	United States	adak	No	Messages & Tsunami.gov
Oceanside	California	United States		No	Messages & Tsunami.gov

Newport Beach	California	United States		No	Messages & Tsunami.gov
Santa Monica	California	United States	sanm	No	Messages & Tsunami.gov
Port San Luis	California	United States	pslu	No	Messages & Tsunami.gov
Point Sur	California	United States		No	Messages & Tsunami.gov
Monterey	California	United States	mont	No	Messages & Tsunami.gov
Point Reyes	California	United States	ptre	No	Messages & Tsunami.gov
Arena Cove	California	United States	aren	No	Messages & Tsunami.gov
Fort Bragg	California	United States		No	Messages & Tsunami.gov
Humboldt Bay	California	United States	nspi	No	Messages & Tsunami.gov
Brookings	Oregon	United States		No	Messages & Tsunami.gov
Port Orford	Oregon	United States	porf	No	Messages & Tsunami.gov
Astoria	Oregon	United States	asto	No	Messages & Tsunami.gov
Clatsop Spit	Oregon	United States		No	Messages & Tsunami.gov
Port Angeles	Washington	United States	pang	No	Messages & Tsunami.gov
Seattle	Washington	United States	ellb	No	Messages & Tsunami.gov
Elfin Cove	Alaska	United States	elak	No	Messages & Tsunami.gov
Perryville	Alaska	United States		No	Messages & Tsunami.gov
King Cove	Alaska	United States	kgak	No	Messages & Tsunami.gov
Akutan	Alaska	United States	akut	No	Messages & Tsunami.gov
Moclips	Washington	United States		No	Messages & Tsunami.gov
Long Beach	Washington	United States		No	Messages & Tsunami.gov
Port Townsend	Washington	United States	ptow	No	Messages & Tsunami.gov
Bellingham	Washington	United States		No	Messages & Tsunami.gov
Bolinas Lagoon	California	United States	blca	No	Messages & Tsunami.gov
Platform Harvest	California	United States	phca	No	Messages & Tsunami.gov
Redwood City	California	United States	rwca	No	Messages & Tsunami.gov
Richmond	California	United States	rdca	No	Messages & Tsunami.gov
Agony Point	Alaska	United States		No	Messages & Tsunami.gov
Alaid Island	Alaska	United States		No	Messages & Tsunami.gov
Alameda	California	United States	alam	No	Messages & Tsunami.gov
Auke Bay	Alaska	United States		No	Messages & Tsunami.gov
Avatanak Island	Alaska	United States		No	Messages & Tsunami.gov
Ballast Point	California	United States		No	Messages & Tsunami.gov
Bastendorf Beach	Oregon	United States		No	Messages & Tsunami.gov
Belkofski	Alaska	United States		No	Messages & Tsunami.gov
Biorka Island	Alaska	United States		No	Messages & Tsunami.gov
Bodega Bay	California	United States		No	Messages & Tsunami.gov
Cannon Beach	Oregon	United States		No	Messages & Tsunami.gov
Manzanita	Oregon	United States		No	Messages & Tsunami.gov
Rockaway Beach	Oregon	United States		No	Messages & Tsunami.gov
Cape Bingham	Alaska	United States		No	Messages & Tsunami.gov
Cape Hinchinbrook	Alaska	United States		No	Messages & Tsunami.gov
Winter Harbour	British Columbia	Canada	whbc	No	Messages & Tsunami.gov
Cape Blanco	Oregon	United States		No	Messages & Tsunami.gov
Carmel	California	United States		No	Messages & Tsunami.gov
Carpinteria	California	United States		No	Messages & Tsunami.gov
Coquille Point	Oregon	United States		No	Messages & Tsunami.gov
Elk	California	United States		No	Messages & Tsunami.gov
Empire	Oregon	United States		No	Messages & Tsunami.gov
Encinitas	California	United States		No	Messages & Tsunami.gov
English Bay	Alaska	United States		No	Messages & Tsunami.gov
Eureka	California	United States		No	Messages & Tsunami.gov
Everett	Washington	United States		No	Messages & Tsunami.gov
False Bay	Alaska	United States		No	Messages & Tsunami.gov
False Pass	Alaska	United States		No	Messages & Tsunami.gov
Gaviota	California	United States		No	Messages & Tsunami.gov

Gull Point	Alaska	United States		No	Messages & Tsunami.gov
Gustavus	Alaska	United States		No	Messages & Tsunami.gov
Half Moon Bay	California	United States		No	Messages & Tsunami.gov
Halibut Cove	Alaska	United States		No	Messages & Tsunami.gov
Hoonah	Alaska	United States		No	Messages & Tsunami.gov
Huntington Beach	California	United States		No	Messages & Tsunami.gov
Icy Bay	Alaska	United States		No	Messages & Tsunami.gov
Ivanof Bay	Alaska	United States		No	Messages & Tsunami.gov
Karab Cove	Alaska	United States		No	Messages & Tsunami.gov
Klamath River Mouth	California	United States		No	Messages & Tsunami.gov
Krestof Island	Alaska	United States		No	Messages & Tsunami.gov
Kruzof Island	Alaska	United States		No	Messages & Tsunami.gov
Laguna Beach	California	United States		No	Messages & Tsunami.gov
Lions Head	California	United States		No	Messages & Tsunami.gov
Malibu	California	United States		No	Messages & Tsunami.gov
Matlahaw Point	British Columbia	Canada		No	Messages & Tsunami.gov
Mendocino	California	United States		No	Messages & Tsunami.gov
Middle Harbor	California	United States		No	Messages & Tsunami.gov
Seal Beach	California	United States		No	Messages & Tsunami.gov
Montague Island	Alaska	United States		No	Messages & Tsunami.gov
Moss Landing	California	United States		No	Messages & Tsunami.gov
Morro Bay	California	United States		No	Messages & Tsunami.gov
Naples	California	United States		No	Messages & Tsunami.gov
Neskowin	Oregon	United States		No	Messages & Tsunami.gov
Yaquina John Point	Oregon	United States		No	Messages & Tsunami.gov
Nikolski	Alaska	United States	niko	No	Messages & Tsunami.gov
Nizki Island	Alaska	United States		No	Messages & Tsunami.gov
North Imperial Beach	California	United States		No	Messages & Tsunami.gov
Oceanside Beach	Oregon	United States		No	Messages & Tsunami.gov
Netarts	Oregon	United States		No	Messages & Tsunami.gov
Nestucca Bay	Oregon	United States		No	Messages & Tsunami.gov
Ouzinkie	Alaska	United States		No	Messages & Tsunami.gov
Pacifica	California	United States		No	Messages & Tsunami.gov
Pismo Beach	California	United States		No	Messages & Tsunami.gov
Point Reyes Beach	California	United States		No	Messages & Tsunami.gov
Port Lions	Alaska	United States		No	Messages & Tsunami.gov
Povorotni Point	Alaska	United States		No	Messages & Tsunami.gov
Redondo Beach	California	United States		No	Messages & Tsunami.gov
Rio Del Mar	California	United States		No	Messages & Tsunami.gov
Samalga Island	Alaska	United States		No	Messages & Tsunami.gov
San Diego	California	United States	sand	No	Messages & Tsunami.gov
Sanak	Alaska	United States		No	Messages & Tsunami.gov
Santa Cruz	California	United States		No	Messages & Tsunami.gov
Santa Cruz Island	California	United States		No	Messages & Tsunami.gov
Sausalito	California	United States		No	Messages & Tsunami.gov
Schooner Beach	Alaska	United States		No	Messages & Tsunami.gov
Sedanka Island	Alaska	United States		No	Messages & Tsunami.gov
Seldovia	Alaska	United States	seld	No	Messages & Tsunami.gov
Selezen Point	Alaska	United States		No	Messages & Tsunami.gov
Siletz Bay	Oregon	United States		No	Messages & Tsunami.gov
Depoe Bay	Oregon	United States		No	Messages & Tsunami.gov
Newport coast	Oregon	United States		No	Messages & Tsunami.gov
Situk River Mouth	Alaska	United States		No	Messages & Tsunami.gov
Siuslaw River Mouth	Oregon	United States		No	Messages & Tsunami.gov
South Spit	California	United States		No	Messages & Tsunami.gov

Surf	California	United States		No	Messages & Tsunami.gov
Tatitlek	Alaska	United States		No	Messages & Tsunami.gov
Ten Mile River Beach	California	United States		No	Messages & Tsunami.gov
Bayocean Peninsula	Oregon	United States		No	Messages & Tsunami.gov
Trinidad	California	United States		No	Messages & Tsunami.gov
Umpqua River Mouth	Oregon	United States		No	Messages & Tsunami.gov
Ventura	California	United States	veca	No	Messages & Tsunami.gov
West Atka Island	Alaska	United States		No	Messages & Tsunami.gov
White Point	British Columbia	Canada		No	Messages & Tsunami.gov
Whittier	Alaska	United States		No	Messages & Tsunami.gov
Yachats	Oregon	United States		No	Messages & Tsunami.gov
Necanicum R. Mouth	Oregon	United States		No	Messages & Tsunami.gov
Russian River Mouth	California	United States		No	Messages & Tsunami.gov
Stinson Beach	California	United States		No	Messages & Tsunami.gov
Oakland Outer Harbor	California	United States		No	Messages & Tsunami.gov
Mare Island	California	United States		No	Messages & Tsunami.gov
Alviso	California	United States		No	Messages & Tsunami.gov
Diablo Canyon	California	United States		No	Messages & Tsunami.gov
Goleta	California	United States		No	Messages & Tsunami.gov
Channel Islands Harbor	California	United States		No	Messages & Tsunami.gov
Port Hueneme	California	United States		No	Messages & Tsunami.gov
Two Harbors	California	United States		No	Messages & Tsunami.gov
Avalon	California	United States		No	Messages & Tsunami.gov
Two Harbors (west)	California	United States		No	Messages & Tsunami.gov
Dana Point	California	United States		No	Messages & Tsunami.gov
Long Beach	California	United States		No	Messages & Tsunami.gov
Bolinas	California	United States		No	Messages & Tsunami.gov
San Carlos	California	United States		No	Messages & Tsunami.gov
Mission Bay	California	United States		No	Messages & Tsunami.gov
Ocean Beach	California	United States		No	Messages & Tsunami.gov
Point Loma	California	United States		No	Messages & Tsunami.gov
North Island	California	United States		No	Messages & Tsunami.gov
K Pier, NAS Coronado	California	United States		No	Messages & Tsunami.gov
Naval Station	California	United States		No	Messages & Tsunami.gov
San Diego Harbor Ent.	California	United States		No	Messages & Tsunami.gov
North San Clemente Is.	California	United States		No	Messages & Tsunami.gov
Treasure Island Marina	California	United States		No	Messages & Tsunami.gov
North Spit coast	California	United States		No	Messages & Tsunami.gov
Lost Coast Shoreline	California	United States		No	Messages & Tsunami.gov
Mattole River	California	United States		No	Messages & Tsunami.gov
Westport	Washington	United States		No	Messages & Tsunami.gov
Waatch	Washington	United States		No	Messages & Tsunami.gov
Hoh	Washington	United States		No	Messages & Tsunami.gov
Queets	Washington	United States		No	Messages & Tsunami.gov
Coos Bay	Oregon	United States		No	tsunami.gov
Longview	Washington	United States	lvwa	No	tsunami.gov
Saint Helens	Oregon	United States	shor	No	tsunami.gov
Skagway	Alaska	United States	skag	No	tsunami.gov
Skamokawa	Washington	United States	skwa	No	tsunami.gov
Vancouver	Washington	United States	vawa	No	tsunami.gov
Seaside	Oregon	United States		No	tsunami.gov
Craig	Alaska	United States	crag	No	tsunami.gov
Newport	Oregon	United States	sbea	No	tsunami.gov
Garibaldi	Oregon	United States	gaor	No	tsunami.gov
Point Grenville	Washington	United States		No	tsunami.gov
La Push	Washington	United States	laph	No	tsunami.gov

Prince Rupert	British Columbia	Canada		No	tsunami.gov
Ketchikan	Alaska	United States	ketc	No	tsunami.gov
Port Alexander	Alaska	United States	paak	No	tsunami.gov
Juneau	Alaska	United States	june	No	tsunami.gov
Old Harbor	Alaska	United States	ohak	No	tsunami.gov
Alitak Bay	Alaska	United States	alak	No	tsunami.gov
Atka	Alaska	United States	atka	No	tsunami.gov
Amchitka	Alaska	United States	amka	No	tsunami.gov
Port Moller	Alaska	United States	pmak	No	tsunami.gov
Dillingham	Alaska	United States		No	tsunami.gov
Cape Newenham	Alaska	United States		No	tsunami.gov
Hooper Bay	Alaska	United States		No	tsunami.gov
Saint Matthew Island	Alaska	United States		No	tsunami.gov
Gambell	Alaska	United States		No	tsunami.gov
Unalakleet	Alaska	United States		No	tsunami.gov
Nome	Alaska	United States	nome	No	tsunami.gov
Little Diomede Island	Alaska	United States		No	tsunami.gov
Anchorage	Alaska	United States	anch	No	tsunami.gov
Cherry Point	Washington	United States	chrp	No	tsunami.gov
Friday Harbor	Washington	United States	frih	No	tsunami.gov
Nikiski	Alaska	United States	niki	No	tsunami.gov
Port Chicago	California	United States	pchi	No	tsunami.gov
Tacoma	Washington	United States	taco	No	tsunami.gov
Gold Beach	Oregon	United States		No	tsunami.gov
Pistol River	Oregon	United States		No	tsunami.gov
Fort Point	California	United States		No	tsunami.gov
Florence	Oregon	United States		No	tsunami.gov
Toke Point	Washington	United States	tpwa	No	tsunami.gov
Seaside City	Oregon	United States		No	tsunami.gov
Port Sonoma Marina	California	United States		No	tsunami.gov
Whidbey Island	Washington	United States		No	tsunami.gov
Indian Island	Washington	United States		No	tsunami.gov
Bella Bella	British Columbia	Canada	bbbc	No	tsunami.gov
Port Alberni	British Columbia	Canada	pabc	No	tsunami.gov
Wauna	Oregon	United States	waor	No	tsunami.gov
Campbell River	British Columbia	Canada	crbc	No	tsunami.gov
Sandy Cove	British Columbia	Canada	scbc	No	tsunami.gov
Bamfield	British Columbia	Canada	bamf	No	tsunami.gov
Hammond	Oregon	United States	haor	No	tsunami.gov
Patricia Bay	British Columbia	Canada	pbbc	No	tsunami.gov
Prince Rupert	British Columbia	Canada	prin	No	tsunami.gov
Port Hardy	British Columbia	Canada	phbc	No	tsunami.gov
Queen Charlotte	British Columbia	Canada	qcbc	No	tsunami.gov
Victoria Harbor	British Columbia	Canada	vibc	No	tsunami.gov

Appendix D. Type of Exercise

The exercise should be carried out such that communications and decision making at various organizational levels are exercised and conducted without disrupting or alarming the general public. Individual localities, however, may at their discretion elect to extend the exercise down to the level of testing local notification systems such as the Emergency Alert System (EAS), sirens, or loudspeakers.

Exercises stimulate the development, training, testing, and evaluation of Disaster Plans and Standard Operating Procedures (SOPs). Exercise participants may use their own past multi-hazard drills (e.g. flood, hurricane, tsunami, earthquake, etc.) as a framework to conduct PACIFEX23.

Exercises can be conducted at various scales of magnitude and sophistication. The following are examples of types of exercises conducted by EMOs:

1. **Orientation Exercise (Seminar):** An Orientation Exercise lays the groundwork for a comprehensive exercise program. It is a planned event, developed to bring together individuals and officials with a role or interest in multi-hazard response planning, problem solving, development of standard operational procedures (SOPs), and resource integration and coordination. An Orientation Exercise will have a specific goal and written objectives and result in an agreed upon Plan of Action.

2. **Drill:** The Drill is a planned activity that tests, develops, and/or maintains skills in a single or limited emergency response procedure. Drills generally involve operational response of single departments or agencies. Drills can involve internal notifications and/or field activities.

3. **Tabletop Exercise:** The Tabletop Exercise is a planned activity in which local officials, key staff, and organizations with disaster management responsibilities are presented with simulated emergency situations. It is usually informal, in a conference room environment, and is designed to elicit constructive discussion from the participants. Participants will examine and attempt to resolve problems, based on plans and procedures, if they exist. Individuals are encouraged to discuss decisions in depth with emphasis on slow-paced problem solving, rather than rapid, real time decision-making. A Tabletop Exercise should have specific goals, objectives, and a scenario narrative (see Appendix E for a Sample Tabletop Exercise Outline).

4. **Functional Exercise:** A Functional Exercise is a planned activity designed to test and evaluate organizational capacities. It is also utilized to evaluate the capability of a community's emergency management system by testing the Emergency Operations Plan (EOP). It is based on a simulation of a realistic emergency situation that includes a description of the situation (narrative) with communications between players and simulators. The Functional Exercise gives the players (decision-makers) a fully simulated experience of being in a major disaster event. It should take place at the appropriate coordination location (i.e. emergency operations center, emergency command center, command post, master control center, etc.) and activate all the appropriate members designated

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by the plan. Both internal and external agencies (government, private sector, and volunteer agencies) should be involved. It requires players, controllers, simulators, and evaluators. Message traffic will be simulated and inserted by the control team for player response/actions, under real time constraints. It may or may not include public evacuations. A Functional Exercise should have specific goals, objectives, and a scenario narrative.

5. **Full-scale Exercise:** A Full-scale Exercise is the culmination of a progressive exercise program that has grown with the capacity of the community to conduct exercises. A Full-Scale exercise is a planned activity in a "challenging" environment that encompasses a majority of the emergency management functions. This type of exercise involves the actual mobilization and deployment of the appropriate personnel and resources needed to demonstrate operational capabilities. EOCs and other command centers are required to be activated. A Full-scale Exercise is the largest, costliest, and most complex exercise type. It may or may not include public evacuations.

Example Time Frames for Different Exercise Types

Style	Planning Period	Duration	Comments
Orientation Exercise	2 wks	Hours	Individual or mixed groups
Drill	2 months	1 day	Individual technical groups generally
Tabletop Exercise	1 month	1-3 days	Single or multiple agency
Functional Exercise	> 3 months	1-5 days	Multiple Agency participation
Full-scale Exercise	>6 months	1 day/ week	Multiple Agency participation

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Appendix E. Example TableTop Exercise

Tabletop Exercise Development Steps

Source: California Office of Emergency Services

A Tabletop Exercise is a planned activity in which local officials, key staff, and organizations with disaster management responsibilities are presented with simulated emergency situations. It is usually informal and slow paced, in a conference room environment, and is designed to elicit constructive discussion from the participants to assess plans, policies, and procedures. Participants will examine and attempt to resolve problems, based on plans and procedures, if they exist. Individuals are encouraged to discuss decisions in depth based on their organization's Standard Operating Procedures (SOPs), with emphasis on slow-paced problem solving, rather than rapid, real time decision-making. An Exercise Controller (moderator) introduces a simulated tsunami scenario to participants via written message, simulated telephone or radio call, or by other means. Exercise problems and activities (injects) are further introduced. Participants conduct group discussions where resolution is generally agreed upon and then summarized by a group leader. A Tabletop Exercise should have specific goals, objectives, and a scenario narrative.

The following provides a Tabletop Exercise structure with sample text and example.

1. Vulnerability Analysis: Problem Statement

An example for a hurricane might be:
Due to the recent Hurricane incidents in the Southeast region of the United States, an awareness of the threat risk involved in these disasters has become more apparent, therefore the need for an evacuation system is vital. The state of Louisiana continues its ongoing tasks of planning, preparing, and training for Hurricane preparedness.

2. Purpose (Mission): Intent, what you plan to accomplish (Policy Statement)

An example for a hurricane might be:
The State of Louisiana has realized and recognizes the need for a more efficient and effective evacuation system, and is responding with this Comprehensive Exercise Plan. These events will include seminars, workshops, a tabletop exercise, functional and full-scale exercises within an 18-month time frame, under the State Homeland Security grant program.

3. Scope: **Exercise Activities**
Agencies Involved
Hazard Type
Geographic Impact Area

An example might be:
Emergency Services coordinators at local levels of government will identify representative jurisdictions from each of the six mutual aid regions located throughout the State to participate as host jurisdictions in a series of disaster preparedness exercises. These host jurisdictions will develop a progressive series of exercises each type building upon the previous type of exercise. The process will begin with a vulnerability analysis for each jurisdiction and continue through a progression of exercise activities including: orientation seminars, workshops, and tabletop and functional exercises. The eventual objective of these activities will be to reduce disaster impacts to their populations and city infrastructure. All events will be evaluated utilizing US Homeland Security Exercise Evaluation Program (HSEEP) after action reporting (AAR)

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standards. Steps for corrective actions will be made a part of the after action process and report. Surrounding jurisdictions in the mutual aid area will act as exercise design team members, exercise evaluators, or exercise observers for the purpose of information transfer to increase their operational readiness. Jurisdictions will participate on a rotational basis every two years to provide the opportunity for multiple jurisdiction participation.

4. Goals and Objectives:

Criteria for good objectives: Think SMART

- Simple (concise)
- Measurable
- Achievable (can this be done during the exercise?)
- Realistic (and challenging)
- Task Oriented (oriented to functions)

An example might be:

Comprehensive Exercise Program (CEP) Objectives

- *To improve operational readiness*
- *To improve multi-agency coordination and response capabilities for effective disaster response*
- *To identify communication pathways and problem areas pre-event between local jurisdictions and operational area, regional and state emergency operations centers*
- *To establish uniform methods for resource ordering, tracking, and supply for agencies involved at all levels of government.*

5. Narrative:

The Narrative should describe the following:

- Triggering emergency/disaster event
- Describe the environment at the time the exercise begins
- Provide necessary background information
- Prepare participants for the exercise
- Discovery, report: how do you find out?
- Advance notice?
- Time, location, extent or level of damage

6. Evaluation:

The Evaluation should describe the following:

- Objectives Based
- Train Evaluation Teams
- Develop Evaluation Forms

7. After Action Report (AAR): The AAR should be compiled using the evaluation reports.

8. Improvement Plan (IP): The IP should reduce vulnerabilities.

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Appendix F. Sample Press Release for Local Media

TEMPLATE FOR NEWS RELEASE

USE AGENCY MASTHEAD

Contact: (insert name)
(insert phone number)
(insert email address)

FOR IMMEDIATE RELEASE
(insert date)

PACIFIC TSUNAMI EXERCISE TO BE CONDUCTED APRIL 13, 2023

(*insert community/county/state name*) will join other localities along the U.S. and Canadian continental Pacific coastline as a participant in a tsunami response exercise on April 13, 2023. The purpose of this exercise is to evaluate local tsunami response plans, increase tsunami preparedness, and improve coordination throughout the region.

(*insert a promotional comment from a local official, such as "Events such as the 2011 Japan earthquake and tsunamis as well as the 2022 Tonga eruption and tsunami have reminded the world again of the urgent need to be more prepared for such events," said (insert name of appropriate official*). "This important exercise will test the current procedures of the Tsunami Warning System and help identify operational strengths and weaknesses in each community." (*Please modify for uniqueness.))*

The exercise, titled PACIFEX23, will simulate significant impacts along the West Coast of the continental United States and Canada which require implementation of local tsunami response plans. The exercise will (*insert "include" or "not include")* public notification.

The exercise will simulate a major earthquake and tsunami generated along the eastern Aleutian Arc offshore Kodiak Island with an epicenter at 56.7ºN, 153.2ºW and occurring at 9:30 am Pacific Daylight Time (*or appropriate local time*) on April 13, 2023. Exercise participants will be provided with a handbook which describes the scenario and contains tsunami messages from the U.S. National Tsunami Warning Center (NTWC). The NTWC is responsible for providing tsunami information to the continental Pacific coasts of the U.S. and Canada.

Insert paragraph tailored for specific community. Could identify participating agencies and specific plans. Could describe current early warning program, past tsunami exercises (if any), ongoing mitigation and public education programs, etc. Could describe tsunami threat, history of tsunami hazards, if any.

If any real tsunami threat occurs during the time period of the exercise, the exercise will be terminated.

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The exercise is supported by the U.S. National Tsunami Hazard Mitigation Program (NTHMP – a partnership of 29 states and territories and three federal agencies). For more information on the U.S. tsunami warning system, see www.tsunami.gov. For more information on the NTHMP, see nws.weather.gov/nthmp.

###

On the Web:

National Tsunami Warning Center, Pacific Tsunami Warning Center, NOAA Tsunami Program	http://www.tsunami.gov
NTHMP:	https://nws.weather.gov/nthmp/
Insert state/local emergency response URLs	

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