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***SOUTHERN REGION TSUNAMI WARNING OPERATIONS FOR WFO SAN JUAN
AND THE SOUTHEAST RIVER FORECAST CENTER***

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5. Minor wording changes throughout the Supplement.

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November 25, 2009

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Date

Regional Director

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1. **Introduction.**

This Regional Supplement describes responsibilities and provides guidance to the National Weather Service (NWS) San Juan Forecast Office (SJU) and the Southeast River Forecast Center (SERFC). Detailed procedures regarding the Southern Region (SR) continental United States (CONUS) coastal Weather Forecast Offices (WFO) and River Forecast Centers (RFC) with coastal responsibility along the Gulf of Mexico and Atlantic Ocean are contained in a separate Supplement.

WFO San Juan is responsible for planning and taking appropriate action when there is a threat of a tsunami, including dissemination of Tsunami Watches, Warnings, and Advisories. They are also responsible for ensuring the readiness of office staff and systems through routine operational drills, coordinating community outreach activities to increase tsunami hazard awareness, and assisting in emergency preparedness for tsunami events (e.g. promotion of the TsunamiReady program). Emergency Management Agencies in Puerto Rico (PR) and the United State Virgin Islands (USVI) have the responsibility for developing warning procedures, plans and evacuations for local communities, along with WFO SJU and the SERFC. Specific (localized) procedures will be included in the WFO Station Duty Manual (SDM). The Southeast River Forecast Center is responsible for preparing main stem river and flood forecast guidance for appropriate locations near the coastal areas that may be affected by tsunamis.

2. **Tsunami Program Procedures for WFO San Juan and the SERFC.**

The West Coast / Alaska Tsunami Warning Center (WC/ATWC) provides interim services until further notice for Atlantic basin, Caribbean and Gulf of Mexico seismic events. The Puerto Rico Seismic Network (PRSN) also monitors the Atlantic basin, Caribbean and Gulf of Mexico for seismic events. The Pacific Tsunami Warning Center (PTWC) is the backup for WC/ATWC.

If a seismic event occurs in the Atlantic and meets the seismic magnitude and location criteria listed in Sections 2.5.1 and 2.5.2, WC/ATWC will issue Tsunami Watches, Warnings, Advisories or Informational products for PR and the USVI. WFO SJU broadcasts this information on NOAA Weather Radio All Hazards (NWR). Updates are provided by WFO SJU and the SERFC to local customers and partners during and after events.

2.1. **Communications.**

a. **Advanced Weather Interactive Processing System (AWIPS).**

Both the SERFC and WFO SJU *must* ensure all of the products listed in Sections 2.3.2.a, 2.3.2.b and 2.3.2.c. are *alarmed* in AWIPS. In addition, both offices must ensure after each AWIPS build (or crash) that the products are reconfigured to be alarmed.

b. **Contact logs.**

WFO SJU will likely receive numerous calls from the media, public, emergency managers, etc. during earthquake and tsunami events. Ensure that all calls initiated or received, as well as subsequent actions are logged.

c. Emergency Phones.

Emergency office cellular and/or satellite phones should be charged and easily accessible to all staff. In addition, staff must know exactly where emergency cellular and/or satellite phones are and how to use them.

2.2 Procedures.

The WC/ATWC and the Puerto Rico Seismic Network (PRSN) monitor the Atlantic basin, Caribbean and Gulf of Mexico for seismic events. If a seismic event occurs in these areas and meets the seismic magnitude and location criteria listed in Section 2.5, WC/ATWC will issue the corresponding product. In addition, PRSN, following the same criteria, will contact WFO San Juan and Emergency Officials of PR and the USVI about seismic events. The Pacific Tsunami Warning Center (PTWC) is the backup for WC/ATWC.

2.2.1 Puerto Rico Seismic Network.

PRSN contacts WFO San Juan and Emergency Officials of PR and the USVI and relays tsunami/earthquake information for seismic events per the criteria in Section 2.5 via phone calls to WFO San Juan, British Virgin Islands (BVI) and the United States Virgin Islands police departments, and Puerto Rico Emergency Management Agency (PREMA).

2.3 WC/ATWC Products.

The products that WC/ATWC issue (and PTWC as backup) are detailed below.

2.3.1 Tsunami Product Definitions:

Tsunami Warning - a tsunami warning is issued when a potential tsunami with significant widespread inundation is imminent or expected. Warnings alert the public that widespread, dangerous coastal flooding accompanied by powerful currents is possible and may continue for several hours after arrival of the initial wave. Warnings also alert emergency management officials to take action for the entire tsunami hazard zone. Appropriate actions to be taken by local officials may include the evacuation of low-lying coastal areas, and the repositioning of ships to deep waters when there is time to safely do so. Warnings may be updated, adjusted geographically, downgraded, or canceled.

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.

Tsunami Advisory - a tsunami advisory is issued due to the threat of a potential tsunami which may produce strong currents or waves dangerous to those in or near the water. Coastal regions historically prone to damage due to strong currents induced by tsunamis are at the greatest risk. The threat may continue for several hours after the arrival of the initial wave, but significant widespread inundation is not expected for areas under an advisory. Appropriate actions to be taken by local officials may include closing beaches, evacuating harbors and marinas, and the repositioning of ships to deep waters when there is time to safely do so. Advisories are normally updated to continue the advisory, expand/contract affected areas, upgrade to a warning, or cancel the advisory.

Tsunami Information Statement - a tsunami information statement is issued to inform emergency management officials and the public that an earthquake has occurred, or that a tsunami warning, watch or advisory has been issued for another section of the ocean. In most cases, information statements are issued to indicate there is no threat of a destructive tsunami and to prevent unnecessary evacuations as the earthquake may have been felt in coastal areas. An information statement may, in appropriate situations, caution about the possibility of destructive local tsunamis. Information statements may be re-issued with additional information, though normally these messages are not updated. However, a watch, advisory or warning may be issued for the area, if necessary, after analysis and/or updated information becomes available.

2.3.2 Tsunami Text Products:

- a. Watches, Warnings, Advisories, and Cancellation Messages.
WC/ATWC issues Tsunami Watches, Tsunami Warnings, Tsunami Advisories, updates and cancellation messages under these two World Meteorological Organization (WMO) headings and AWIPS identifiers:

WEXX20 PAAQ ANCTSUAT1 – Standard format product
WEXX30 PAAQ ANCTSUATE – Public friendly product

Where, TSU = Tsunami Watch, Warning, Advisory, or Cancellation product

(See Table 1 and Table 2 in Section 2.5 for the criteria of Tsunami Watches, Warnings, and Advisories).

The TSUATE product is narrative and referred to as “public friendly”, whereas the TSUAT1 product is tabular and segmented in format and referred to as the “standard format.” Both the “public friendly” and “standard format” TSU products are issued during watch/warning/advisory events. See Appendix F for examples.

WC/ATWC will collect and analyze data, and issue follow-up statements every 30 minutes under TSUAT1 and TSUATE during the first two hours after an event. Later in the event, the frequency of issuance may decrease, but not exceed two hours. If a tsunami is no longer expected or the danger has passed, the WC/ATWC will issue a cancellation message under the same product IDs (TSUAT1 and TSUATE). The TSU products are used for the issuance and cancellation of Tsunami Watches, Warnings, and Advisories as well as the issuance of follow-up statements.

b. Tsunami Information Statements.

A Tsunami Information Statement (TIB) usually is issued when the magnitude of a seismic event is above 6.0 but below watch/warning/advisory criteria. The TIB is also based on location of a seismic event – see Sections 2.5.1 and 2.5.2 for specifics. It provides pertinent information about earthquakes in the region (particularly those which may have been felt near the coast or were strong enough to attract media attention). The WMO heading and AWIPS identifiers for the Tsunami Information Statements are:

WEXX22 PAAQ ANCT**TIB**AT1 – Standard format product
WEXX32 PAAQ ANCT**TIB**ATE – Public friendly product

TIB = Tsunami Information Statement

The TIBATE product is narrative and referred to as “public friendly”, whereas the TIBAT1 product is tabular in format and referred to as the “standard format.” Both TIB products are issued during seismic events where Magnitude (M) \geq 6.0 but below watch/warning/advisory criteria.

There are no mandatory follow-up messages for the TIB products.

c. Tsunami Seismic Information Statement.

A Tsunami Seismic Information Statement (EQI) is issued to provide pertinent information about earthquakes in the region, usually when the magnitude of a seismic event is below 6.0 but above 4.0 (location dependent – See Sections 2.5.1 and 2.5.2). The WMO heading and AWIPS identifier for the Tsunami Seismic Information Statement is:

SEX60 PAAQ ANCE**QI**AT1

EQI = Tsunami Seismic Information Statement

There are no mandatory follow up messages for the EQI product.

2.4 WC/ATWC Dissemination.

WC/ATWC will relay the TSU, TIB and EQI tsunami products for the Atlantic basin,

Caribbean and Gulf of Mexico by means of:

- broadcast over National Warning System (NAWAS),
- dissemination via National Airspace Data Interchange Network (NADIN2), NOAA Weather Wire Service (NWWS), Line223 (NWS Circuit and AWIPS feed), email, digital pagers, Quake Data Distribution System (QDDS), and WC/ATWC web site,
- telephone contact with the Naval Meteorological and Oceanographic Center (NMOC),
- telephone contact with the Pacific Tsunami Warning Center (PTWC),
- telephone contact with the Puerto Rico Seismic Network (PRSN),
- telephone contact with the National Earthquake Information Center (NEIC), and
- telephone contact with the U. S. State Department Operations Center when appropriate.
- For Caribbean events, telephone contact to PR EMA, VI EMA, and British VI.

2.5 Procedural Thresholds.

If an earthquake is detected in the Atlantic basin, Caribbean and Gulf of Mexico, the WC/ATWC will issue a Tsunami Watch, Tsunami Warning, Tsunami Advisory, or Information product using the thresholds in Sections 2.5.1 and 2.5.2. Table 1 and Table 2 depict the criteria for the issuance of tsunami-related products.

2.5.1 Criteria for Events Near Puerto Rico and the US Virgin Islands.

See Appendix G for a graphical representation of these criteria and the WC/ATWC Area of Responsibility (AOR).

**Table 1:
Determination of Product to be Issued by Earthquake Magnitude and Area of Occurrence**

Magnitude	Area	Product	Product ID
4.0 - 4.9	PR and USVI area	Tsunami Seismic_Information Statement	ANCEQIAT1
5.0 - 5.9	PR and USVI area	Tsunami Seismic_Information Statement	ANCEQIAT1
6.0 - 6.4	PR and USVI area	Tsunami Information Statement	ANCTIBAT1 and ANCTIBATE
> 6.0 and deeper than 100km	PR and USVI area	Tsunami Information Statement	ANCTIBAT1 and ANCTIBATE
>= 6.5	PR and USVI area	Tsunami Warning for PR/VI	ANCTSUAT1 and ANCTSUATE

Note: 'PR and USVI Area' is defined as the area from 17N to 20N and from 63.5W to 69W.

2.5.2 Criteria for the Atlantic and Caribbean Region.

Table 2:
Determination of Product to be Issued by Earthquake Magnitude and Area of Occurrence

Magnitude	Area	Product	Product
6.0-7.5 >= 6.0 and deeper than 100 km or inland	Caribbean	Tsunami Information Statement	ANCTIBAT1 and ANCTIBATE
7.6 – 7.8	Eastern Caribbean	Tsunami Advisory for PR/VI	ANCTSUAT1 and ANCTSUATE
7.6 – 7.8	Western Caribbean	Tsunami Information Statement	ANCTIBAT1 and ANCTIBATE
> 7.9	Eastern Caribbean	Tsunami Warning for PR/VI	ANCTSUAT1 and ANCTSUATE
>7.9	Western Caribbean	Tsunami Advisory for PR/VI	ANCTSUAT1 and ANCTSUATE
> 6.4	Atlantic basin (No potential danger to Area of Responsibility)	No Danger	ANCTIBAT1 and ANCTIBATE
> 7.5	Atlantic basin (Potential danger to Area of Responsibility)	Estimated time of arrival dependent: Potential danger	ANCTIBAT1 and ANCTIBATE or ANCTSUAT1 and ANCTSUATE

Note: 'Eastern Caribbean' and 'Western Caribbean' are separated at 75W.

2.6 Break Points.

In the tsunami watch/warning/advisory product, breakpoints along the CONUS coasts are used to define the areal extent. For Puerto Rico and the USVI, the tsunami products will not contain break points for the islands. Instead, the products will list the islands in the products that will be contained in a Watch, Warning, or Advisory.

3. WFO Procedures.

WFO San Juan will follow the procedures below if they are in the affected area of a Tsunami Watch, Warning, or Advisory. Critical actions by WFO SJU are necessary for public and partner notification. A checklist to be utilized during a tsunami event is provided in Appendix A.

3.1 NOAA Weather Radio All Hazards (NWR) Activation.

a. When a Tsunami Watch or Tsunami Warning is issued:

- 1) Activate NWR. When a Tsunami Watch or Tsunami Warning has been issued by WC/ATWC for the WFO SJU County Warning Area (CWA), the office will:
 - A. ***immediately*** activate the Emergency Alert System (EAS), and
 - B. tone alert (both 1050HZ and SAME [Specific Area Message Encoding]) the NWR Console Replacement System (CRS) for all affected NWR coastal transmitters and
 - C. broadcast the tsunami information on NWR.

Sample broadcast templates are provided in Appendix B (for a Tsunami Watch) or Appendix C (for a Tsunami Warning). Use information in the TSUAT1 product to fill in the appropriate template and then use it as a broadcast script.

Note: *Only tone alert via NWR* the proper EAS codes on NWR and read from the broadcast template script (located in Appendix B and C). Specifically, do ***not*** issue a Tsunami Warning message (TSW) or Tsunami Watch message (TSA) product from AWIPS.

- 2) Issue EAS Codes Via NWR.
Use the following EAS codes for tsunami EAS dissemination on CRS:

Tsunami Warning message (TSW) / Tsunami Watch message (TSA).

Note in your Station Duty Manual (SDM) these EAS codes and also note which transmitters should be activated for tsunami information.

- 3) Issue Special Weather Statements for Updates.
If a Tsunami Warning and/or Tsunami Watch is issued by WC/ATWC for any part of the CWA, WFO San Juan should issue Special Weather Statements (SPS) at intervals between the WC/ATWC products. Issue the SPS's via AWIPS and broadcast over NWR. Similar to Hurricane Local Statements, these SPSs are intended to provide timely updates to customers and partners while the Tsunami Watch/Warning is in effect and WC/ATWC collects, reviews, and diagnoses data (see Appendix F, Page F-7 for examples). In most cases, the SPS will reemphasize the information in the WC/ATWC products while adding additional local impact information such as flooding and any messages relayed by emergency managers, if available. When a Tsunami Watch or Warning is cancelled, use the SPS to relay this information. Broadcast the SPSs on

NWR.

b. When a Tsunami Advisory is Issued:

Upon receipt of a tsunami advisory from the WC/ATWC, WFO San Juan should broadcast this information over NWR, based upon local customer requirements (see Appendix D for broadcast template). Then, every 30 minutes afterwards, WFO SJU should issue Special Weather Statements (SPS) from AWIPS and also broadcast over NWR. Similar to Hurricane Local Statements, these SPSs are intended to provide timely updates to customers and partners while the tsunami advisory is in effect and WC/ATWC collects and analyzes data. In most cases, the SPS will reemphasize the information in the WC/ATWC products while adding local impact information such as flooding and any messages relayed by emergency managers, if available. When a tsunami advisory is cancelled, use the SPS to relay this information. Broadcast the SPSs on NWR.

c. When a Tsunami Information Statement (TIB) or Tsunami Seismic Information Statement (EQI) is Issued:

If the WC/ATWC issues a TIB or EQI product for the SJU CWA, a tsunami is unlikely.

TIBs or EQIs do not need to be disseminated over NWR. However, an earthquake that is felt may result in an increase in the number of phone calls or activities at an office. Therefore, at forecaster discretion, either a Public Information Statement (PNS) product or a Special Weather Statement (SPS) product may be issued from AWIPS and/or disseminated on NWR to help minimize media/public concerns. A PNS may be more appropriate for earthquakes that are not felt by many in the CWA. For widespread felt earthquakes across a CWA, the number of calls to the office may warrant an SPS. The PNS or SPS will reemphasize the information in the TIB or EQI product.

d. When the Tsunami Watch, Warning, or Advisory is Cancelled:

If the WC/ATWC cancels the Tsunami Watch, Warning, or Advisory for your area, broadcast the information on NWR using the template in Appendix E. Additionally, a Cancellation Checklist is provided on page A-2 that lists tasks to be completed when a Tsunami Watch, Warning, or Advisory has been cancelled.

WFO SJU's local policy to tone alert NWR cancellation messages must be collaborated with its partners. The Station Duty Manual (SDM) will specify whether the office will tone alert NWR for cancelled Tsunami Watches, Warnings, and Advisories. As a reminder, use the SPS to relay information that a Tsunami Watch, Warning, or Advisory was cancelled. Broadcast the SPSs on NWR.

3.2 Felt Earthquakes.

Anytime an earthquake is felt, WFO SJU may issue an Earthquake Report (EQR) to

inform surrounding offices and the public (see Directive 10-518, Section 4 for details on the EQR).

WFOs (and the public) may inform the National Earthquake Information Center (NEIC) and the United States Geological Survey (USGS) of a felt earthquake by filling out an Earthquake Report online at the USGS website:

<http://earthquake.usgs.gov/eqcenter/dyfi/>

If a strong earthquake creates many media and public inquiries, issuing an SPS may be prudent.

4. Dissemination Tests for WFO SJU and the SERFC.

Monthly dissemination tests will be conducted for tsunami products by WC/ATWC to ensure products are received by the NWS and its partners. WC/ATWC will disseminate a test TIB and/or test TSU product roughly once a month to WFOs, RFCs, the FAA and Federal and State emergency managers.

4.1 Tsunami Acknowledgement Message.

After receipt of the WC/ATWC tsunami test product(s) [normally the TSUAT1 product], WFO SJU and the SERFC will respond immediately by disseminating a Tsunami Acknowledgement Message (TMA) from AWIPS, as specified below. The TMA product is received back at WC/ATWC to validate operation of the communication system.

Because some customers can receive the TMA, it is important to add "**THIS IS A ONLY TEST**" to the body of the product.

Example of a TMA message sent to WC/ATWC:

SECA42 TJSJ 231410
TMASJU

This is only a test.

(add)

WEXX20 PAAQ RCVD AT **231305**

(this is the time you received the product, not the time this test message is transmitted)

\$\$

Important Note: The TMA product is NOT to be sent during actual events. It is only disseminated during monthly tests.

5. Procedures Used to Notify Southern Region Headquarters and the RFCs.

- a. To Southern Region Headquarters (SRH) from WFO San Juan.
Anytime WC/ATWC issues a Tsunami Watch, Warning, or Advisory for the area or an earthquake of intensity 5.0 or greater is felt, WFO San Juan will notify SRH by calling the Southern Region Regional Operations Center (ROC) at 817-978-1100, ext 147. Leave a message if no one answers and an SRH employee will be paged.

If WFO San Juan is down, WFO Miami will call SRH.

- b. To Southeast River Forecast Center (SERFC) from WFO San Juan.
WFO San Juan will notify the SERFC when a Tsunami Watch, Warning or Advisory has been issued for Puerto Rico and the U.S. Virgin Islands. If an event occurs after normal business hours, the Hydrologist-In-Charge (HIC) or Development and Operations Hydrologist (DOH) should be contacted at home. If they cannot be contacted, the after-hours contact list should be used until someone is contacted.

If communications at WFO San Juan are inoperative, WFO Miami will call the SERFC.

6. Drills.

Because earthquakes do not occur regularly, completion of drills are critical to maintaining operational proficiency. WFO SJU will conduct at least one annual drill related to tsunami program procedures, and will notify the SRH Tsunami Program Leader when the drill is completed by the staff members.

Appendix A:

Sample WFO Checklist to use when a Tsunami Watch, Warning or Advisory is issued by WC/ATWC for Your Area.

TSUNAMI WATCH / WARNING / ADVISORY
(circle one)

Criteria: By direction of the West Coast / Alaska Tsunami Warning Center.

Issued: Date _____ Time _____

Valid until: Date _____ Time _____

Initials of Warning Coordinator _____

Area Affected _____

**Time
Completed/Initials**

WATCH / WARNING CHECKLIST

_____/_____

Put the watch or warning information immediately on NWR as follows:

- Get a CRS/NWR Broadcast Template from Appendix B (for a Tsunami Watch) or Appendix C (for a Tsunami Warning) or Appendix D (for a Tsunami Advisory) .
- Fill in the blanks on the template. That is what you will read on CRS.
- Use the following EAS code _____ (defined locally in your SDM)
- Follow the proper procedures to broadcast the message for CRS.
- Write on the template the time your message was initially broadcast on NWR.

_____/_____

If other weather warnings are in effect during the tsunami event, after a short period of time that the tsunami message has played alone, play the additional warning messages in the interest of protecting lives and property. Keep CRS programming at an absolute minimum. This should all be programmed to happen automatically if you recorded the message correctly on CRS.

_____/_____

Issue an SPS product every 30 minutes and broadcast on NWR. The SPS product should provide updates and/or local information (see Section 3.1.a.3 for details).

_____/_____

Consider any additional actions that may enhance community response to this watch/warning. These may include additional phone calls to local emergency managers, law enforcement, fire departments, etc, where impact may be particularly damaging. Record all of these actions.

- _____/_____
Continue to record updates from WC/ATWC to CRS and also SPSs issued from your local office.
- _____/_____
Log all additional incidents or actions that pertain to this event. Any verification information received should be recorded as well.
- _____/_____
Contact the MIC and WCM if they are not on station.
- _____/_____
Contact the SERFC.
- _____/_____
Contact the SRH ROC by calling 817 978 1100, ext 147.

Time Completed

CANCELLATION CHECKLIST

- _____/_____
Put the cancellation on NWR as follows:
 - Get a Cancellation Broadcast Template from Appendix E.
 - Fill in the blanks. This is what you will read on CRS.
 - Follow the proper procedures to broadcast the message for CRS.
 - Write the time your cancellation message was initially broadcast on the template.
 - Remove the message after about 1 hour.
- _____/_____
Retain all records of this event and place on the WCM's desk.
- _____/_____
Notify the MIC or the WCM if they are not on station.
- _____/_____
Contact the SERFC.
- _____/_____
Contact the SRH ROC by calling 817 978 1100, ext 147.
- _____/_____
Gather pertinent documents and review evacuation/safety procedures if the office is threatened by the tsunami.

Appendix B:

CRS/NWR Broadcast Template for Tsunami Watch

Upon receipt of a **Tsunami Watch** product (TSUAT1) from the WC/ATWC that includes all or a portion of your area, print this form and fill it out based on information included in the Tsunami Watch product. Use the proper procedures to get the message below disseminated via CRS/NWR. Be sure to select the appropriate coastal transmitters that the Tsunami Watch will play on. Attach this form to the Tsunami Watch checklist. Here is the message to fill out and read:

"The National Weather Service has issued a TSUNAMI WATCH for coastal areas in _____ (specify area), from _____ to _____, at _____ AM / PM _____ (time zone). A large earthquake, with a preliminary magnitude of _____, has been detected approximately _____ miles _____ (direction) of _____ (location).

Though it remains uncertain if a tsunami will impact the TSUNAMI WATCH area, the arrival times for the initial tsunami wave are estimated for the following locations:

_____(LOCATION) _____ AM / PM _____ (time zone).
_____(LOCATION) _____ AM / PM _____ (time zone).
_____(LOCATION) _____ AM / PM _____ (time zone).
_____(LOCATION) _____ AM / PM _____ (time zone).

Include the following italicized section if this information appears in the watch product:

A tsunami has been generated which could impact coastal areas of (list your area here). Observed tsunami wave heights from this earthquake have been _____ (FEET) at _____ (LOCATION) and _____ (FEET) at _____ (LOCATION) around _____ (AM / PM _____ (time zone).

Once again, a TSUNAMI WATCH is in effect from _____ (location) to _____ in _____ (specify area) at _____ AM / PM _____ (time zone).

A TSUNAMI WATCH means that the risk of a tsunami has increased, but its occurrence and timing are still uncertain.

If you are in the TSUNAMI WATCH area, stay posted on this potential hazard and be alert for instructions from local emergency officials. Your National Weather Service Office in (your location) will continue to monitor the situation, and will provide updates on NOAA Weather Radio every hour or sooner as conditions warrant."

Apendice B (Español):

CRS/NWR Pre-formato en español para una Vigilancia de Tsunami

Cuando se reciba **una vigilancia de tsunami** (TSUAT1) del (WC/ATWC) que incluya toda o parte del área, imprime esta forma y llena los blancos basado en la información incluida en la vigilancia de tsunami. Seguir el procedimiento apropiado para diseminar el siguiente mensaje a través de CRS/NWR. Verificar que se hayan seleccionado los transmisores apropiados para diseminar la vigilancia de tsunami. Grapar esta forma a la lista de cotejo para vigilancias de tsunami. Completar los blancos del siguiente mensaje y leerlos.

"El Servicio Nacional de Meteorología ha emitido una **VIGILANCIA DE TSUNAMI** para las áreas costeras de _____ (especifique el área), desde _____ a _____, a las _____ AM / PM _____ (AST). Un fuerte terremoto, con una magnitud preliminar de _____, ha sido detectado aproximadamente a _____ millas _____ (dirección) de _____ (localización).

Aunque es un tanto incierto si un tsunami impactará el área bajo **VIGILANCIA DE TSUNAMI**, la llegada de la primera ola del tsunami ha sido estimada para los siguientes lugares:

_____ LOCALIZACION) _____ AM / PM _____ (AST).
_____ LOCALIZACION) _____ AM / PM _____ (AST).
_____ LOCALIZACION) _____ AM / PM _____ (AST).
_____ LOCALIZACION) _____ AM / PM _____ (AST).

Incluir la siguiente sección italizada si esta información aparece en la vigilancia de tsunami:

Se ha generado un tsunami el cual puede impactar la zona costera (mencionar el area). La altura de las olas de tsunami observadas con este terremoto han sido _____ (pies) en _____ (LOCALIZACION) Y _____ (pies) en _____ (LOCALIZACION) alrededor _____ (AM / PM _____ (AST).

Una vez más, una **VIGILANCIA DE TSUNAMI** esta en efecto desde _____ (localización) hasta _____ en _____ (especificar el area) a las _____ AM / PM _____ (AST).

Una **VIGILANCIA DE TSUNAMIS** significa que el riesgo de un tsunami ha incrementado, pero su ocurrencia y hora de arribo es incierta.

Si se encuentra en el área de **VIGILANCIA DE TSUNAMI**, manténgase informado de esta amenaza potencial y esté alerta a instrucciones de los oficiales de manejo de emergencias. Su Oficina del Servicio Nacional de Meteorología en (su localidad) seguirá monitoreando la situación y proveerá actualizaciones a través de Radio NOAA cada hora o antes, según las condiciones ameriten.

Appendix C: CRS/NWR Broadcast Template for Tsunami Warning

Upon receipt of a **tsunami warning** product (TSUAT1) from the WC/ATWC that includes all or a portion of your area, print this form and fill it out based on information included in the tsunami warning product. Use the proper procedures to get the message below disseminated via CRS/NWR. Be sure to select the appropriate coastal transmitters that the tsunami warning will play on. Attach this form to the tsunami warning checklist. Here is the message to fill out and read:

"The National Weather Service has issued a TSUNAMI WARNING for coastal areas in _____ (specify area), from _____ to _____, at _____ AM / PM _____ (time zone). A large earthquake, with a preliminary magnitude of _____, has been detected approximately _____ miles _____ (direction) of _____ (location).

The arrival times for the initial tsunami waves are estimated for the following locations:

_____ (LOCATION) _____ AM / PM _____ (time zone).
_____ (LOCATION) _____ AM / PM _____ (time zone).
_____ (LOCATION) _____ AM / PM _____ (time zone).
_____ (LOCATION) _____ AM / PM _____ (time zone).

Include the following italicized section if this information appears in the warning product:

A tsunami has been generated which could impact coastal areas of (list your area here). Observed tsunami wave heights from this earthquake have been _____ (FEET) at _____ (LOCATION) and _____ (FEET) at _____ (LOCATION) around _____ (AM / PM _____ (time zone).

Once again, a TSUNAMI WARNING is in effect from _____ (location) to _____ in _____ (specify area) at _____ AM / PM _____ (time zone).

A TSUNAMI WARNING means that a tsunami is (circle one): occurring, imminent or highly likely.

Tsunamis are a series of waves generated by an undersea earthquake. This series of waves could be dangerous for several hours after the initial tsunami flood wave arrives.

If you are in the TSUNAMI WARNING area, stay alert for instructions from local emergency officials. Anyone on or near the beach in the TSUNAMI WARNING area should move to higher ground. Your National Weather Service Office in (your location) will continue to monitor the situation and will provide updates on NOAA Weather Radio every hour or sooner as conditions warrant."

Note: The warning coordinator can add information (call to action statements, etc...) to the last paragraph above, from the "EVALUATION" portion of WC/ATWC's tsunami warning product if he/she deems it appropriate.

Apéndice C: (Español)

CRS/NWR Pre-formato en español para un Aviso de Tsunami

Cuando se reciba un **aviso de tsunami** (TSUAT1) del (WC/ATWC) el cual incluya toda o una porción de su área, imprima esta forma y llene los blancos basado en la información incluida en el aviso de tsunami. Seguir el procedimiento apropiado para diseminar el siguiente mensaje a través de CRS/NWR. Verificar que se hayan seleccionado los transmisores costeros apropiados para diseminar el aviso de tsunami. Grapar esta forma a la lista de cotejo para avisos de tsunami. Completar los blancos del siguiente mensaje y leerlos.

"El Servicio Nacional de Meteorología ha emitido un **AVISO DE TSUNAMI** para las áreas costeras de _____ (especifique el área), desde _____ a _____, a las _____ AM / PM _____ (AST).

Un fuerte terremoto, con una magnitud preliminar de _____, ha sido detectado aproximadamente a _____ millas _____ al (dirección) de _____ (localización).

La llegada de la primera ola del tsunami ha sido estimada para los siguientes lugares:

_____ LOCALIZACION) _____ AM / PM _____ (AST).
_____ LOCALIZACION) _____ AM / PM _____ (AST).
_____ LOCALIZACION) _____ AM / PM _____ (AST).
_____ LOCALIZACION) _____ AM / PM _____ (AST).

Incluir la siguiente sección italizada si esta información aparece en el aviso de tsunami:

Se ha generado un tsunami el cual puede impactar la zona costera (mencionar el área). La altura de las olas de tsunami observadas con este terremoto han sido _____ (pies) en _____ (LOCALIZACION) Y _____ (pies) en _____ (LOCALIZACION) alrededor _____ (AM / PM _____ (AST).

Una vez más, un **AVISO DE TSUNAMI** está en efecto desde _____ (localización) hasta _____ en _____ (especificar el área) a las _____ AM / PM _____ (AST).

Un **AVISO DE TSUNAMI** quiere decir que (circule una): **está ocurriendo**, **es inminente** o **es altamente probable**.

Los tsunamis son una serie de olas generadas por un terremoto submarino. Esta serie de olas pueden ser peligrosas por varias horas después de que haya llegado la ola inicial del tsunami.

Si usted se encuentra en una zona bajo **AVISO DE TSUNAMI**, manténgase atento a las instrucciones de los oficiales de manejo de emergencias. Toda persona en o cerca de la playa en la zona bajo **AVISO DE TSUNAMI** debe moverse a un lugar alto o alejarse de la costa. Su Servicio Nacional de Meteorología (localización) continuará monitoreando la situación y proveerá información actualizada vía Radio NOAA cada hora o antes si las condiciones lo ameritan."

Nota: El coordinador de avisos puede añadir información (medidas de precaución, etc) al último párrafo arriba, del contenido del boletín de tsunami emitido por el WC/ATWC si es apropiado.

Appendix D

CRS/NWR Broadcast Template for Tsunami Advisory

Upon receipt of a **Tsunami Advisory** product (TSUAT1) from the WC/ATWC that includes all or a portion of your area, print this form and fill it out based on information included in the Tsunami Advisory product. Use the proper procedures to get the message below disseminated via CRS/NWR. Be sure to select the appropriate coastal transmitters that the Tsunami Advisory will play on. Attach this form to the Tsunami Advisory checklist. Here is the message to fill out and read:

"The National Weather Service has issued a TSUNAMI ADVISORY for coastal areas in _____ (specify area), from _____ to _____, at _____ AM / PM _____ (time zone). A large earthquake, with a preliminary magnitude of _____, has been detected approximately _____ miles _____ (direction) of _____ (location).

The arrival times for the initial tsunami waves are estimated for the following locations:

_____(LOCATION) _____ AM / PM _____ (time zone).
_____(LOCATION) _____ AM / PM _____ (time zone).
_____(LOCATION) _____ AM / PM _____ (time zone).
_____(LOCATION) _____ AM / PM _____ (time zone).

Include the following italicized section if this information appears in the advisory product:

A tsunami has been generated which could impact coastal areas of (list your area here). Observed tsunami wave heights from this earthquake have been _____ (FEET) at _____(LOCATION) and _____ (FEET) at _____ (LOCATION) around _____ (AM / PM _____ (time zone).

Once again, a TSUNAMI ADVISORY is in effect from _____ (location) to _____ in _____ (specify area) at _____ AM / PM _____ (time zone).

A TSUNAMI ADVISORY means that a tsunami capable of producing strong currents or waves dangerous to persons in or very near the water is imminent or expected.

If you are in the TSUNAMI ADVISORY area, stay alert for instructions from local emergency officials. Persons in the TSUNAMI ADVISORY area should move out of the water, off the beach and out of harbors and marinas. Your National Weather Service Office in (your location) will continue to monitor the situation and will provide updates on NOAA Weather Radio every hour or sooner as conditions warrant."

Note: The warning coordinator can add information (call to action statements, etc...) to the last paragraph above, from the "EVALUATION" portion of WC/ATWC's tsunami warning product if he/she deems it appropriate.

Apéndice D: (Español)

CRS/NWR Pre-formato en español para una Advertencia de Tsunami

Cuando se reciba una **Advertencia de Tsunami** (TSUAT1) del (WC/ATWC) el cual incluya toda o una porción de su área, imprima esta forma y llene los blancos basado en la información incluida en la advertencia de tsunami. Seguir el procedimiento apropiado para diseminar el siguiente mensaje a través de CRS/NWR. Verificar que se hayan seleccionado los transmisores costeros apropiados para diseminar la advertencia de tsunami. Grapar esta forma a la lista de cotejo para advertencias de tsunami. Completar los blancos del siguiente mensaje y leerlos.

"El Servicio Nacional de Meteorología ha emitido una **ADVERTENCIA DE TSUNAMI** para las áreas costeras de _____ (especifique el área), desde _____ a _____, a las _____ AM / PM _____ (AST).

Un fuerte terremoto, con una magnitud preliminar de _____, ha sido detectado aproximadamente a _____ millas _____ al (dirección) de _____ (localización).

La llegada de las primeras olas del tsunami ha sido estimada para los siguientes lugares:

_____ (LOCALIZACIÓN) _____ AM / PM _____ (AST).
_____ (LOCALIZACIÓN) _____ AM / PM _____ (AST).
_____ (LOCALIZACIÓN) _____ AM / PM _____ (AST).
_____ (LOCALIZACIÓN) _____ AM / PM _____ (AST).

Incluir la siguiente sección italizada si esta información aparece en la advertencia de tsunami:

Se ha generado un tsunami el cual puede impactar la zona costera (mencionar el área). La altura de las olas de tsunami observadas con este terremoto han sido _____ (pies) en _____ (LOCALIZACIÓN) Y _____ (pies) en _____ (LOCALIZACIÓN) alrededor _____ (AM / PM _____ (AST).

Una vez más, una **ADVERTENCIA DE TSUNAMI** está en efecto desde _____ (localización) _____ (especifique el área), a las _____ AM / PM _____ (AST).

Una **ADVERTENCIA DE TSUNAMI** quiere decir que se espera o es inminente un tsunami capaz de producir olas o corrientes locales fuertes y peligrosas para las personas cerca del agua del mar o dentro de la playa.

Si usted se encuentra en una zona bajo **ADVERTENCIA DE TSUNAMI**, manténgase atento a las instrucciones de los oficiales de manejo de emergencias. Toda persona en o cerca de la playa en la zona bajo **ADVERTENCIA DE TSUNAMI** deben salirse del agua, y alejarse de muelles y marinas.

Su Servicio Nacional de Meteorología (localización) continuará monitoreando la situación y proveerá información actualizada via Radio NOAA cada hora o antes si las condiciones lo ameritan."

Nota: El coordinador de avisos puede añadir información (medidas de precaución, etc) al último párrafo arriba, del contenido del boletín de tsunami emitido por el WC/ATWC si es apropiado.

Appendix E
CRS/NWR Broadcast Template for Tsunami Cancellation

Upon receipt of a tsunami watch/warning/advisory **cancellation** product (TSUAT1) from the WC/ATWC for all or portions of your area, print this form and fill it out based on information included in the cancellation product. Use the proper procedures to get the message below disseminated via CRS/NWR. Be sure to select the appropriate coastal transmitters that the tsunami cancellation information will play on. Attach this form to the tsunami watch/warning/advisory checklist. Here is the message to fill out and read:

"The National Weather Service has canceled the TSUNAMI (WATCH / WARNING/ ADVISORY) for coastal areas in _____ (specify area), from _____ (location) to _____, at _____ AM / PM _____ time zone. The Tsunami Warning Center has determined that the tsunami danger for _____ (specify area) no longer exists.

Include the following italicized section if this information appears in the cancellation product :

A regional tsunami was generated from a magnitude _____ earthquake, approximately _____ miles _____ (direction) of _____. Observed tsunami wave heights from this earthquake were _____ (FEET) at _____ (LOCATION) and _____ (FEET) at _____ (LOCATION).

Once again, the TSUNAMI (WATCH / WARNING/ ADVISORY) has been canceled for coastal areas in _____ (specify area), from _____ (location) to _____, at _____ AM / PM _____ time zone. The Tsunami Warning Center has determined that no tsunami danger exists for _____ (specify area). Some coastal areas may experience small sea level changes. As local surf conditions can vary widely, the all clear determination must be made by local authorities.

This is the final statement on this situation that will be broadcast by your National Weather Service Office in _____ (specify location). Our normal NOAA Weather Radio broadcast cycle will resume shortly."

Apendice E(Español):

CRS/NWR Pre-formato en español para una cancelación de mensaje de Tsunami

Cuando se reciba un comunicado para cancelar una **Vigilancia/Aviso/Advertencia de Tsunami** (TSUAT1) del (WC/ATWC) el cual incluya toda o una porción de su área, imprima esta forma y llene los blancos basado en la información incluida en la advertencia de tsunami. Seguir el procedimiento apropiado para diseminar el siguiente mensaje a través de CRS/NWR. Verificar que se hayan seleccionado los transmisores costeros apropiados para diseminar la advertencia de tsunami. Grapar esta forma a la lista de cotejo para Vigilancia/Aviso/Advertencia de Tsunami. Completar los blancos del siguiente mensaje y leerlos.

"El Servicio Nacional de Meteorología ha cancelado la VIGILANCIA/AVISO/ADVERTENCIA DE TSUNAMI para las áreas costeras de _____ (especifique el área), desde _____ a _____, a las _____ AM / PM _____ (AST). El Centro de Avisos de Tsunami ha determinado que el peligro de tsunami para _____ (especifique el área), ya no existe.

Incluir la siguiente sección italizada si esta información aparece en el mensaje de cancelación:

Un tsunami regional fue generado por un terremoto de magnitud _____, aproximadamente _____ millas _____ (dirección) de _____. La altura de las olas de tsunami observadas con este terremoto han sido _____ (pies) en _____ (LOCALIZACION) Y _____ (pies) en _____ (LOCALIZACION) alrededor _____ (AM / PM _____ (AST).

Una vez más, la (VIGILANCIA/AVISO/ADVERTENCIA) DE TSUNAMI ha sido cancelada para las áreas costeras de _____ (especifique el área), desde _____ a _____, a las _____ AM / PM _____ (AST). El Centro de Avisos de Tsunami ha determinado que el peligro de tsunami para _____ (especifique el área), ya no existe. Algunas zonas costeras pudieran experimentar pequeñas variaciones en el nivel del mar. Debido a que las condiciones de oleaje local pueden variar, el mensaje de que el peligro ha pasado debe ser emitido por las autoridades locales.

Este será el último comunicado emitido por su oficina del Servicio Nacional de Meteorología en _____ (localización). Dentro de poco comenzaremos con nuestra ciclo de información regular via Radio NOAA.

Appendix F: Product Examples

Example of a standard format Tsunami Watch/Warning//Advisory (TSUAT1 product) issued by WC/ATWC:

WEXX20 PAAQ 312057
TSUAT1

BULLETIN

TEST...TSUNAMI MESSAGE NUMBER 1...TEST
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
457 PM AST SAT JAN 31 2009

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEXX20 MESSAGE WITH VTEC...

...A TEST TSUNAMI WARNING IS IN EFFECT FOR PUERTO RICO AND THE
VIRGIN ISLANDS...

...THIS MESSAGE IS INFORMATION ONLY FOR COASTAL AREAS OF
TEXAS - LOUISIANA - MISSISSIPPI - ALABAMA - FLORIDA -
GEORGIA - SOUTH CAROLINA - NORTH CAROLINA - VIRGINIA -
MARYLAND - DELAWARE - NEW JERSEY - NEW YORK - CONNECTICUT -
RHODE ISLAND - MASSACHUSETTS - NEW HAMPSHIRE - MAINE - NEW
BRUNSWICK - NOVA SCOTIA - NEWFOUNDLAND AND LABRADOR FROM
BROWNSVILLE TEXAS TO CAPE CHIDLEY LABRADOR...

RECOMMENDED ACTIONS

IT IS NOT KNOWN - REPEAT NOT KNOWN - IF A TSUNAMI EXISTS BUT A
TSUNAMI MAY HAVE BEEN GENERATED. PERSONS IN LOW-LYING COASTAL
AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY
OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE
AGENCIES.
- PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO
HIGHER GROUND.

THIS MESSAGE IS BASED MAINLY ON EARTHQUAKE DATA. AS MORE
INFORMATION BECOMES AVAILABLE THE WARNING AREAS WILL BE REFINED.

PRELIMINARY EARTHQUAKE PARAMETERS

MAGNITUDE - 6.6
TIME - 1550 EST JAN 31 2009
1650 AST JAN 31 2009
2050 UTC JAN 31 2009
LOCATION - 19.0 NORTH 65.0 WEST
65 MILES/105 KM NE OF FAJARDO PUERTO RICO
80 MILES/129 KM NE OF SAN JUAN PUERTO RICO
DEPTH - 6 MILES/10 KM

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL
ISSUE MESSAGES FOR AREAS IN THE CARIBBEAN OUTSIDE PUERTO RICO
AND THE VIRGIN ISLANDS.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD
INUNDATION IS IMMINENT OR EXPECTED. WARNINGS INDICATE THAT
WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL

CURRENTS IS POSSIBLE AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

AMZ712-715-725-735-742-745-PRZ001>003-005-007-008-010-011-
VIZ001-002-312157-
/X.NEW.PAAQ.TS.W.0066.090131T2057Z-000000T0000Z/
COASTAL AREAS OF PUERTO RICO AND THE VIRGIN ISLANDS.
457 PM AST SAT JAN 31 2009

...A TEST TSUNAMI WARNING IS IN EFFECT FOR PUERTO RICO AND THE VIRGIN ISLANDS...

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME. ESTIMATED TIMES OF INITIAL WAVE ARRIVAL FOR SELECTED SITES IN THE WARNING ARE PROVIDED BELOW.

SAN JUAN-PR 1707 AST JAN 31 MAYAGUEZ-PR 1726 AST JAN 31
CHRISTIANSTED-VI 1718 AST JAN 31 CHARLOT AMALI-VI 1731 AST JAN 31
FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE
WCATWC.ARH.NOAA.GOV

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST MESSAGE.

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Appendix F - Continued: Product Examples

Example of a “Public Friendly” Tsunami Watch/Warning/Advisory (TSUATE product) issued by WC/ATWC:

WEXX30 PAAQ 31000
TSUATE

BULLETIN
PUBLIC TSUNAMI MESSAGE NUMBER 2
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
600 AM AST SUN JAN 13 2008

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEXX30 MESSAGE...

...A TEST TSUNAMI WARNING IS IN EFFECT FOR PUERTO RICO AND THE
VIRGIN ISLANDS...

...A TEST TSUNAMI ADVISORY IS IN EFFECT FOR THE NORTH CAROLINA -
VIRGINIA - MARYLAND - DELAWARE - NEW JERSEY - NEW YORK -
CONNECTICUT - RHODE ISLAND - MASSACHUSETTS - NEW HAMPSHIRE
- MAINE - NEW BRUNSWICK - NOVA SCOTIA AND NEWFOUNDLAND
COASTAL AREAS FROM DUCK NORTH CAROLINA TO LA MANCHE
NEWFOUNDLAND...

...THIS MESSAGE IS INFORMATION ONLY FOR U.S. AND CANADIAN
ATLANTIC AND GULF OF MEXICO COASTAL REGIONS NOT INCLUDED IN
THE AREAS LISTED ABOVE...

A TSUNAMI WARNING MEANS... ALL COASTAL RESIDENTS IN THE WARNING
AREA WHO ARE NEAR THE BEACH OR IN LOW-LYING REGIONS SHOULD MOVE
IMMEDIATELY INLAND TO HIGHER GROUND AND AWAY FROM ALL HARBORS AND
INLETS INCLUDING THOSE SHELTERED DIRECTLY FROM THE SEA. THOSE
FEELING THE EARTH SHAKE... SEEING UNUSUAL WAVE ACTION... OR THE
WATER LEVEL RISING OR RECEDING MAY HAVE ONLY A FEW MINUTES BEFORE
THE TSUNAMI ARRIVAL AND SHOULD MOVE IMMEDIATELY. HOMES AND
SMALL BUILDINGS ARE NOT DESIGNED TO WITHSTAND TSUNAMI IMPACTS.
DO NOT STAY IN THESE STRUCTURES.

ALL RESIDENTS WITHIN THE WARNED AREA SHOULD BE ALERT FOR
INSTRUCTIONS BROADCAST FROM THEIR LOCAL CIVIL AUTHORITIES.
A TSUNAMI HAS BEEN RECORDED.

A TSUNAMI ADVISORY MEANS THAT A TSUNAMI CAPABLE OF PRODUCING
STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR
THE WATER IS IMMINENT OR EXPECTED. SIGNIFICANT WIDESPREAD
INUNDATION IS NOT YET BEEN CONFIRMED EXPECTED FOR AREAS UNDER AN ADVISORY.
CURRENTS MAY BE HAZARDOUS TO SWIMMERS... BOATS... AND COASTAL
STRUCTURES AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE
INITIAL WAVE ARRIVAL.

AT 555 AM ATLANTIC STANDARD TIME ON JANUARY 13 AN EARTHQUAKE WITH
PRELIMINARY MAGNITUDE 8.2 OCCURRED 130 MILES/209 KM NORTHWEST OF
MAYAGUEZ PUERTO RICO.
THIS EARTHQUAKE HAS GENERATED A TSUNAMI WHICH COULD CAUSE DAMAGE
TO REGIONS IN A WARNING OR ADVISORY. THE WAVES WILL FIRST REACH

SAN JUAN PUERTO RICO AT 620 AM AST ON JANUARY 13.
ESTIMATED TSUNAMI ARRIVAL TIMES AND MAPS ALONG WITH SAFETY RULES
AND OTHER INFORMATION CAN BE FOUND ON THE WEB SITE
WCATWC.ARH.NOAA.GOV.

A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES

LOCATION	LAT	LON	TIME	AMPL
SAN JUAN - PR	18.5N	66.1W	1045UTC	2.0M/6.6FT

TIME - TIME OF MEASUREMENT

AMPL - TSUNAMI AMPLITUDES ARE MEASURED RELATIVE TO NORMAL SEA LEVEL.
IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT.

VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT).

TSUNAMIS CAN BE DANGEROUS WAVES THAT ARE NOT SURVIVABLE. WAVE
HEIGHTS ARE AMPLIFIED BY IRREGULAR SHORELINE AND ARE DIFFICULT TO
FORECAST. TSUNAMIS OFTEN APPEAR AS A STRONG SURGE AND MAY BE
PRECEDED BY A RECEDING WATER LEVEL. MARINERS IN WATER DEEPER
THAN 600 FEET SHOULD NOT BE AFFECTED BY A TSUNAMI. WAVE HEIGHTS
WILL INCREASE RAPIDLY AS WATER SHALLOWS. TSUNAMIS ARE A SERIES OF
OCEAN WAVES WHICH CAN BE DANGEROUS FOR SEVERAL HOURS AFTER THE
INITIAL WAVE ARRIVAL. DO NOT RETURN TO EVACUATED AREAS UNTIL AN
ALL CLEAR IS GIVEN BY LOCAL CIVIL AUTHORITIES.

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL
ISSUE MESSAGES FOR AREAS IN THE CARIBBEAN OUTSIDE PUERTO RICO
AND THE VIRGIN ISLANDS.

MESSAGES WILL BE ISSUED EVERY 30 MINUTES OR MORE FREQUENTLY IF
THE SITUATION WARRANTS. THE TSUNAMI ALERT WILL REMAIN
IN EFFECT UNTIL FURTHER NOTICE. FOR FURTHER INFORMATION STAY TUNED
TO NOAA WEATHER RADIO... YOUR LOCAL TV OR RADIO STATIONS... OR SEE
THE WEB SITE WCATWC.ARH.NOAA.GOV.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.

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Appendix F - Continued: Product Examples

**Example of a standard format Tsunami Information Statement (TIBAT1 product) issued
by WC/ATWC:**

WEXX22 PAAQ 131012
TIBAT1

TSUNAMI INFORMATION STATEMENT NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
512 AM EST SUN JAN 13 2008

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEXX22 MESSAGE...

...THIS TEST TSUNAMI INFORMATION STATEMENT IS FOR PUERTO RICO/
THE VIRGIN ISLANDS/ THE U.S. ATLANTIC AND GULF OF
MEXICO STATES/ AND EASTERN CANADIAN PROVINCES...

NO - REPEAT NO - WARNING... WATCH OR ADVISORY IS IN EFFECT FOR
THESE AREAS.

EVALUATION

BASED ON EARTHQUAKE DATA AND HISTORIC TSUNAMI RECORDS THE
EARTHQUAKE WAS NOT SUFFICIENT TO GENERATE A TSUNAMI DAMAGING TO
PUERTO RICO/ THE VIRGIN ISLANDS/ THE U.S. ATLANTIC AND GULF
OF MEXICO COASTS/ AND EASTERN CANADA.

HOWEVER - EARTHQUAKES OF THIS SIZE SOMETIMES GENERATE
TSUNAMIS THAT CAN BE DESTRUCTIVE ALONG COASTS LOCATED IN THE
REGION OF THE EARTHQUAKE EPICENTER. AUTHORITIES IN THE REGION
SHOULD BE AWARE OF THIS POSSIBILITY AND TAKE APPROPRIATE ACTION.

PRELIMINARY EARTHQUAKE PARAMETERS

MAGNITUDE - 7.4
TIME - 0505 EST JAN 13 2008
 0405 CST JAN 13 2008
 1005 UTC JAN 13 2008
LOCATION - 38.8 NORTH 10.9 WEST
 - NORTH ATLANTIC OCEAN
DEPTH - 21 MILES/33 KM

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL
ISSUE MESSAGES FOR AREAS IN THE CARIBBEAN OUTSIDE PUERTO RICO
AND THE VIRGIN ISLANDS.

THIS WILL BE THE ONLY STATEMENT ISSUED FOR THIS EVENT BY THE
WEST COAST/ALASKA TSUNAMI WARNING CENTER UNLESS ADDITIONAL
INFORMATION BECOMES AVAILABLE. REFER TO THE INTERNET SITE
WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.

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Appendix F - Continued: Product Examples

Example of a Tsunami Seismic Information Statement (EQIAT1 product) issued by WC/ATWC:

SEXX60 PAAQ 131018
EQIAT1

TSUNAMI SEISMIC INFORMATION STATEMENT
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
518 AM EST SUN JAN 13 2008

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
SEXX60 MESSAGE...

...THIS IS A TEST INFORMATION STATEMENT...

EVALUATION

AN EARTHQUAKE HAS OCCURRED WITH A MAGNITUDE SUCH THAT A TSUNAMI
WILL NOT BE GENERATED. THIS WILL BE THE ONLY WCATWC MESSAGE
ISSUED FOR THIS EVENT.

PRELIMINARY EARTHQUAKE PARAMETERS

MAGNITUDE - 5.4
TIME - 0510 EST JAN 13 2008
 0410 CST JAN 13 2008
 1010 UTC JAN 13 2008
LOCATION - 42.1 NORTH 70.5 WEST
 50 MILES/80 KM NE OF PROVIDENCE RHODE ISLAND
 35 MILES/56 KM SE OF BOSTON MASSACHUSETTS
DEPTH - 21 MILES/33 KM

THE LOCATION AND MAGNITUDE ARE BASED ON PRELIMINARY INFORMATION.
FURTHER INFORMATION WILL BE ISSUED BY THE UNITED STATES
GEOLOGICAL SURVEY - EARTHQUAKE.USGS.GOV - OR THE APPROPRIATE
REGIONAL SEISMIC NETWORK.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.

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Appendix F - Continued: Product Examples SPS

Example of a Special Weather Statements

THERE IS A TSUNAMI ADVISORY IN EFFECT FOR AAA...BBB...AND CCC COUNTIES. NO SIGNIFICANT COASTAL FLOODING IS EXPECTED TO BE PRODUCED BY THESE WAVES. HOWEVER...SOME AREAS OF THE COAST COULD EXPERIENCE DANGEROUS CURRENTS AND SURGES IN HARBORS AND BAYS DUE TO THIS TSUNAMI. CRESCENT CITY HARBOR IS ESPECIALLY AT RISK. THE THREAT IS EXPECTED TO BEGIN AFTER 9 PM LOCAL TIME AND COULD CONTINUE FOR SEVERAL HOURS. THE INITIAL WAVE MAY NOT BE THE LARGEST. COASTAL RESIDENTS ARE ADVISED TO STAY OUT OF THE WATER...OFF THE BEACH...AND AWAY FROM HARBORS AND MARINAS. WAVE HEIGHTS AND CURRENTS ARE AMPLIFIED BY AN IRREGULAR SHORELINE AND ARE DIFFICULT TO PREDICT. MARINERS IN WATER DEEPER THAN 600 FEET SHOULD NOT BE AFFECTED BY A TSUNAMI.

PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

...TSUNAMI ADVISORY IN EFFECT FOR XXX COAST...

THE NATIONAL WEATHER SERVICE HAS ISSUED A TSUNAMI ADVISORY FOR THE XXXX COAST.

THERE IS NO TSUNAMI WATCH OR WARNING IN EFFECT. REPEAT NO WATCH OR WARNING IS IN EFFECT. NO SIGNIFICANT COASTAL FLOODING IS EXPECTED TO BE PRODUCED BY THESE WAVES. HOWEVER...SOME AREAS OF THE COAST COULD EXPERIENCE DANGEROUS CURRENTS AND SURGES IN HARBORS AND BAYS DUE TO THIS TSUNAMI. COASTAL RESIDENTS ARE ADVISED TO STAY OUT OF THE WATER, OFF THE BEACH, AND AWAY FROM HARBORS AND MARINAS. WAVE HEIGHTS AND CURRENTS ARE AMPLIFIED BY IRREGULAR SHORELINE AND ARE DIFFICULT TO PREDICT.

PREDICTED ARRIVAL TIMES OF THE ONSET OF THE SEA LEVEL RISES ARE

XXXX	928 PM
YYYYY	1001 PM

THE SEA LEVEL RISES COULD CONTINUE FOR SEVERAL HOURS. THE INITIAL WAVE MAY NOT BE THE LARGEST. THE GREATEST SEA LEVEL RISE MAY NOT BE UNTIL AN HOUR AND A HALF AFTER THE INITIAL ONSET. THE LARGEST RISES ARE EXPECTED TO BE APPROXIMATELY XXX TO XX CENTIMETERS (OR X TO X INCHES).

MARINERS IN WATER DEEPER THAN 600 FEET SHOULD NOT BE AFFECTED BY A TSUNAMI.

Appendix F - Continued: Product Examples SPS

Example of a Special Weather Statements

...TSUNAMI ADVISORY IS IN EFFECT FOR THE IMMEDIATE COASTAL AREAS OF AAA AND YYY...

THIS IS NOT A TSUNAMI WARNING OR TSUNAMI WATCH. REPEAT...THIS IS NOT A TSUNAMI WARNING OR TSUNAMI WATCH.

HOWEVER...A MINOR TSUNAMI MAY BE RECORDED IN SOME AREAS OF THE COAST WHICH COULD PRODUCE DANGEROUS CURRENTS AND SURGES IN HARBORS AND BAYS. COASTAL RESIDENTS ARE ADVISED TO STAY OUT OF THE WATERS...OFF THE BEACH AND AWAY FROM HARBORS AND MARINAS. WAVE HEIGHT AND CURRENTS ARE AMPLIFIED BY IRREGULAR SHORELINE AND ARE DIFFICULT TO PREDICT. MINOR WAVE FLUCTUATIONS AROUND ONE FOOT ARE EXPECTED TO BEGIN AT:

XXXX.... AT 8:59 PM LOCAL TIME

YYYY.... AT 9:03 PM LOCAL TIME

ZZZZ..... AT 9:06 PM LOCAL TIME

UUUU..... AT 9:11 PM LOCAL TIME

THESE MINOR WAVE FLUCTUATIONS COULD CONTINUE FOR SEVERAL HOURS. THE INITIAL WAVE MAY NOT BE THE LARGEST. MARINERS IN WATER DEEPER THAN 600 FEET SHOULD NOT BE AFFECTED BY A TSUNAMI.

THE TSUNAMI ADVISORY IS A RESULT OF THE X.0 EARTHQUAKE THAT OCCURRED AT 10:48 AM ADT NEAR XXXXX.

STAY TUNED TO YOUR LOCAL NEWS SOURCE AN NOAA WEATHER RADIO FOR FURTHER DEVELOPMENTS.

THIS PRODUCT WILL BE UPDATED IF ANY NEW DETAILS ARE AVAILABLE.

A STRONG EARTHQUAKE OCCURRED EARLIER TODAY NEAR XXX IN THE YYY OCEAN AND A TSUNAMI WAS GENERATED AND OBSERVED IN THAT AREA.

FOR THE XXX COAST...ONLY TSUNAMI WAVES OF A FEW INCHES ARE EXPECTED TO REACH THE COAST BETWEEN 10 AND 11 PM ATLANTIC TIME TONIGHT.

THERE IS NO...REPEAT...NO...TSUNAMI WATCH...WARNING OR ADVISORY IN EFFECT FOR THE XXX COAST. NO COASTAL FLOODING IS EXPECTED. THE MINIMUM WAVE HEIGHT FOR A TSUNAMI ADVISORY ON THE XXXX COAST IS X INCHES OR XX CENTIMETERS.

THE SMALL TSUNAMI WILL NOT BE VISIBLE AMONG THE COMMON OCEAN SURF..YET TIDE GAGES WILL LIKELY REPORT SMALL FLUCTUATIONS.

TO REPEAT...NO TSUNAMI WATCH...WARNING OR ADVISORY IS IN EFFECT FOR THE XXX COAST.

Appendix G: Graphical Representation of Criteria

Area	WCATWC-Pacific				Mag	WCATWC-Atlantic							Mag
	AK, BC, WA, OR, CA [^]	Bering Sea Deep [^]	Arctic O. and Bering Shallow	Not in AOR [^]		East Coast US & Canada [^]	East Coast Inland <400 Mile	Gulf Mex Gulf St. L [^]	Puerto Rico/VI [^]	Not AOR Western Caribbean [^]	Not AOR Eastern Caribbean [^]	Not AOR Atlantic	
4					4								4
5	TIS*** SEAK71 or SEUS71	TIS*** SEAK71	TIS*** SEAK71		5	TIS*** SEXX60		TIS*** SEXX60	TIS*** SEXX60				5
6					6								6
6.4					6.4	TIS WEXX22 and WEXX32		TIS WEXX22 and WEXX32	TIS WEXX22 and WEXX32				6.4
6.5					6.5		TIS WEXX22 and WEXX32						6.5
7	TIS WEPA43 and WEAK53	TIS WEPA43 and WEAK53		TIS WEPA43 and WEAK53	7	Warning * 250km WEXX20 and WEXX30		Warning * Puerto Rico/ VI WEXX20 and WEXX30					7
7.1	Warning * 250km WEPA41 and WEAK51	Warning * Pribilof/ Aleutian Is. WEPA41 and WEAK51	TIS WEPA43 and WEAK53 with appropriate Evaluation		7.1								7.1
7.5					7.5			Warning * Gulf only WEXX20 and WEXX30					7.5
7.6	Warn/Adv* 500/1000km WEPA41/51			TIS WEPA43/53 or Watch/ Warning WEPA41 and WEAK51	7.6	Warn/Adv* 500/1000km WEXX20/30				Advisory * PR/VI WEXX20/30			7.6
7.8					7.8								7.8
7.9	Warning 3W/W WEPA41/ WEAK51				7.9	Warning 1000km AOR Watch WEXX20/ WEXX30				Advisory * Puerto Rico/ VI WEXX20/30	Warning* PR/VI WEXX20/30	TIS/Warning Spec. area WEXX22/32 and WEXX20/30	7.9
10					10								10

*** Based on magnitude and distance from the coast.

[^] if deeper than 100km and <7.9, use TIS

* No Watch

No TIS for Alaska if less than magnitude 5 and West of 155W

3W/3W => warning for area impacted within 3 hours and watch for area 3 to 6 hours away

3W/W => warning for area impacted within 3 hours and watch for rest of AOR

TIS = Tsunami Information Statement

WMO product IDs listed under message type

WCATWC Regional boundaries in the Atlantic basin.

