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SOUTHERN REGION TSUNAMI WARNING OPERATIONS FOR SR CONUS COASTAL WFOS AND RFCS

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SUMMARY OF REVISIONS: This supplement supersedes Southern Region Supplement 03-07 dated September 15, 2009, filed with NWSI 10-701.

8/2013 Revisions:

1. Removed references to the TIBAT1 product.
2. Changed notification responsibilities.
3. Added extra information about strong, felt earthquakes.
4. Added information if NWR is down.
5. Renumbered some sections and moved information to more appropriate sections.
6. Drills are to be reported to the Chief of MSB every year.

<Signed by> August 6, 2013
Steven Cooper, Date
Acting Regional Director

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1. Introduction

This Regional Supplement describes responsibilities and provides guidance to National Weather Service (NWS) 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. Detailed procedures regarding the WFO San Juan tsunami warning operations program are contained in a separate supplement.

If a seismic event occurs in the Atlantic and meets the seismic magnitude and location criteria listed in Sections 6.2 and 6.3, the West Coast / Alaska Tsunami Warning Center (WC/ATWC) will issue Tsunami Warnings, Advisories, Watches, or Informational products for the Southern and Eastern United States. The WFOs broadcast this information on NOAA Weather Radio All Hazards (NWR). Updates are provided by WFOs and RFCs to local customers and partners during and after events.

2. Tsunami Warning Program Overview

2.1 Weather Forecast Offices

The WFOs are responsible for planning for and taking appropriate action when there is a threat of a tsunami for their area, including dissemination of Tsunami Warnings, Advisories, and Watches. 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). State Emergency Management Agencies (in Texas, Louisiana, Mississippi, Alabama, Georgia, and Florida) have the responsibility for developing warning procedures and emergency plans, and for making evacuation decisions for local communities, using information from the WFOs and RFCs. Offices will document specific (localized) tsunami warning communication in the WFO Station Duty Manual (SDM).

2.2 River Forecast Centers

The SR RFCs are responsible for preparing main stem river and flood forecast guidance for appropriate locations near the coastal areas that may be affected by tsunamis.

2.3 Caribbean Tsunami Warning Program

The staff of the NWS Caribbean Tsunami Warning Program in Mayagüez, PR has responsibility for outreach, education, and supporting TsunamiReady preparedness activities for the U.S. western Atlantic coastal areas, within the Caribbean and the Gulf of

Mexico. The office currently provides support and guidance for tsunami observations, including seismic and sea level systems, tsunami forecasting, communications, education, and preparedness. They work closely with the Pacific Tsunami Warning Center (PTWC) and the WC/ATWC, which are currently providing interim tsunami warning and guidance for the international and domestic coastal areas along the western Atlantic basin.

2.4 West Coast / Alaska Tsunami Warning Center

The WC/ATWC provides interim services until further notice for potential tsunamigenic events which may affect the U.S. coastline areas of the western Atlantic basin, including the Caribbean and Gulf of Mexico.

2.5 Pacific Tsunami Warning Center

The Pacific Tsunami Warning Center (PTWC) is the backup for WC/ATWC. The PTWC provides interim tsunami warning services to the greater Caribbean.

3. Tsunami Program Procedures

The WC/ATWC monitors the Atlantic basin, Caribbean, and Gulf of Mexico for seismic events. If a seismic event occurs in the Atlantic and meets the seismic magnitude and location criteria listed in Section 6, the WC/ATWC will issue Tsunami Warnings, Advisories, Watches, or Informational products for the Southern and Eastern United States.

The WFOs relay the tsunami information on NWR broadcasts. Updates are provided by WFOs and RFCs via localized products to customers and partners during and after events. WFOs conduct outreach and education, including collaboration with Emergency Managers and partners for a successful tsunami program and awareness.

4. WC/ATWC Products

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

4.1 Tsunami Product Definitions (applying to CTWP, PTWC, WC/ATWC):

a. 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 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. To provide the earliest possible alert, initial warnings are normally based only on seismic information.

b. 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. 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.

c. 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.

d. 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, advisory, or watch 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 warning, advisory, or watch may be issued for the area, if necessary, after analysis and/or updated information becomes available.

4.2 Tsunami Text Products:

4.2.1 Warnings, Advisories, Watches, and Cancellation Messages

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

WEXX20 PAAQ ANC**TSU**AT1 – Standard format product
WEXX30 PAAQ ANC**TSU**ATE – Public product

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

(See Table 1 and Table 2 in Section 6 for the criteria of Tsunami Warnings, Advisories, and Watches.)

The TSUATE product is bulleted and referred to as "public" and is issued during warning/advisory/watch events. See Appendix F for example. TSUAT1 is a segmented product which contains VTEC and UGCs. The text is intended for text-to-speech applications.

WC/ATWC will collect and analyze data, as well as issue follow-up statements every 30 minutes under TSUAT1 and TSUATE during the first two hours after an event. Later in the event, the time between issuance may increase, but will 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).

4.2.2 Tsunami Information Statements

A Tsunami Information Statement (TIB) usually is issued when the magnitude of a seismic event is above 6.0 but below warning/advisory/watch criteria. The TIB is also based on location of a seismic event – see Sections 6.2 and 6.3 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:

WEXX32 PAAQ ANC**TIB**ATE – Public product

Where, TIB = Tsunami Information Statement

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

4.2.3 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 6.2 and 6.3). The WMO heading and AWIPS identifier for the Tsunami Seismic Information Statement is:

SEXX60 PAAQ ANC**EQI**AT1

Where, EQI = Tsunami Seismic Information Statement

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

5. 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 (reference Section 2.7 in NWSI 10-701):

- 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, Earthquake Information Distribution System (EIDS), 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 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.

6. Procedural Thresholds

If an earthquake is detected in the Atlantic basin, Caribbean, and/or the Gulf of Mexico, the WC/ATWC will issue a Tsunami Warning, Tsunami Advisory, Tsunami Watch or Information Statement using the thresholds in Sections 6.2 and 6.3. Table 1 and Table 2 depict the criteria for the issuance of tsunami-related products.

6.1 Break Points

In the Tsunami Warning/Advisory/Watch product, breakpoints along the coast are used to define the areal extent of the threat. Below are the designated breakpoints used by the WC/ATWC for the Southern and Eastern U.S.:

Brownsville, TX	Bonita Beach, FL	Duck, NC
Baffin Bay, TX	Flamingo, FL	Chesapeake Bay, Smith Pt., VA
Port O'Connor, TX	Ocean Reef, FL	Cape Henlopen, DE
High Island, TX	Jupiter Inlet, FL	Sandy Hook, NJ
Morgan City, LA	Flagler Beach, FL	Watch Hill, RI
MS/AL Border	Altamaha Sound, GA	Merrimack River, MA
Destin, FL	South Santee River, SC	Stonington, ME
Suwannee River, FL	Surf City, NC	US/Canada Border

Whenever the boundary of a watch, warning, or advisory extends beyond a particular break point, the watch, warning, or advisory will include the next breakpoint.

6.2 Criteria for Events Near the Atlantic Coast or Gulf of Mexico

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	Within 150km of coast	Tsunami Seismic Information Statement	ANCEQIAT1
5.0 - 5.9	Within Gulf of Mexico or U.S. Atlantic Region	Tsunami Seismic Information Statement	ANCEQIAT1
6.0 - 6.4	Within Gulf of Mexico or U.S. Atlantic Region	Tsunami Information Statement	ANCTIBATE
6.0+	Inland	Tsunami Information Statement	ANCTIBATE
6.5 - 7.5	U.S. Atlantic	Fixed warning (250km)*	ANCTSUAT1 and ANCTSUATE
7.6 - 7.8	U.S. Atlantic	Fixed warning (500km)** - Fixed Advisory (500-1000km)**	ANCTSUAT1 and ANCTSUATE
>7.8	U.S. Atlantic	Warning (1000km)*** – Watch***	ANCTSUAT1 and ANCTSUATE
>= 6.5	Gulf of Mexico	Fixed warning for Gulf Coast	ANCTSUAT1 and ANCTSUATE

Note: "Atlantic coast" includes the coasts of eastern Canada.

* Fixed warning (250 km) indicates that a Tsunami Warning will be issued to the next breakpoint (see Section 6.1) beyond 250km in both directions along the coast. No watch will be issued, and the warning area will not be expanded unless conditions warrant.

** Fixed warning (500km) indicates that a Tsunami Warning will be issued to the next breakpoint (see Section 6.1) beyond 500km in both directions along the coast. **Fixed Advisory (500-1000km) indicates that an advisory will be issued from the end of the warning to the first breakpoint beyond 1000km in both directions along the coast. No watch will be issued, and the warning/advisory area will not be expanded unless conditions warrant.

*** Warning (1000km) indicates that a Tsunami Warning will be issued to the next breakpoint (see Section 6.1) beyond 1000km in both directions along the coast. *** Watch indicates that a Tsunami Watch will be issued to the rest of the U.S. and Canadian Atlantic coast (not including the Gulf of Mexico). The watch will be converted to a warning or advisory, or cancelled based on observed tsunami effects and forecast models.

Note: *Once tsunami height forecasts are refined with observations, those areas with forecasts in the range 0.3m to 1.0m are placed in Advisory status and those greater than 1.0m in Warning Status. If forecasts are below 0.3m, the Warnings, Advisories, and*

Watches are canceled. Note that tsunami forecasts may vary greatly along a coast. Broad areas are grouped into the appropriate level of alert.

6.3 Criteria for Other Atlantic Basin Regions

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

Magnitude	Area	Threat Level	Product
6.0-7.5 6.5-7.5	Caribbean Sea Other Atlantic regions	No Danger	ANCTIBATE
> 7.5	Atlantic basin (No potential danger to Area of Responsibility)	No Danger	ANCTIBATE
> 7.5	Atlantic basin (Potential danger to Area of Responsibility)	Estimated time of arrival dependent: Potential danger	ANCTIBATE or ANCTSUAT1 and ANCTSUATE

'Atlantic basin' in Table 2 above refers to the area within the Atlantic basin that is not within WC/ATWC's prescribed AOR. It is generally about 500km off the coast. See Appendix G for a graphical representation of this criteria and the WC/ATWC AOR.

7. WFO Procedures

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

8. WFO Communication and Dissemination

8.1 WFO Communication

1. Advanced Weather Interactive Processing System (AWIPS)
   All SR coastal WFOs and coastal RFCs *must* ensure all of the products listed in Sections 4.2.1, 4.2.2, and 4.2.3 are *alarmed* in AWIPS. In addition, offices must ensure after each AWIPS build (or crash) that the products are reconfigured to be alarmed.

2. Contact logs
   Your office will likely receive numerous calls from the media, public, emergency managers, etc. during earthquake and tsunami events. Ensure that all calls and actions are logged.

3. 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 these phones are and how to use them.

8.2 NOAA Weather Radio All Hazards (NWR) and EAS Activation

8.2.1 When a Tsunami Warning or Watch is Issued for Your Area:

1. Activate NWR. When a Tsunami Warning or Watch has been issued by WC/ATWC for your area, affected coastal WFOs 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 TSUATE product to fill in the appropriate template and then use it as a broadcast script. Or use TSUAT1 to automatically deliver via NWR.

   Note: ***Only tone alert via NWR*** the proper EAS codes 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 (they do not exist in AWIPS, only as EAS codes in NWR).

2. Issue EAS Codes Via NWR
Currently, all SR CONUS coastal WFOs do not use the same EAS codes for Tsunami Warnings/Watches due to local agreements with partners. Therefore, your SDM will note which EAS code your office should use to activate NWR. One of the following three EAS codes should be used for tsunami EAS dissemination on CRS:

   (a) Civil Emergency Message (CEM), or
   (b) Coastal Hazards Message (CFW), or
   (c) Tsunami Warning message (TSW) / Tsunami Watch message (TSA).

   The EAS code your office uses for Tsunami Warnings and Watches must

be collaborated with your partners to ensure their systems are configured to receive those EAS codes.

Also note in your SDM which transmitters should be activated for tsunami information.

3. If NWR is Down
IF NWR is down, contact the Principle Entry Point (PEP) station and tell them to EAS activate for the appropriate product above (Tsunami Warning or Watch). Note in your SDM where all the PEP information is located in your office.

4. Issue Special Weather Statements for Updates
If a Tsunami Warning, Tsunami Advisory, and/or Tsunami Watch is issued by WC/ATWC for your County Warning Area (CWA), WFOs should issue Special Weather Statements (SPS) at intervals between the WC/ATWC product. 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 Warning/Advisory/Watch is in effect and WC/ATWC collects, reviews, and diagnoses data. 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 Warning, Advisory, or Watch is cancelled, use the SPS to relay this information. Broadcast the SPSs on NWR.

8.2.2. When a Tsunami Advisory is Issued for Your Area:

Upon receipt of a tsunami advisory from the WC/ATWC, WFOs may broadcast this information over NWR, based upon local customer requirements. You may use a CEM, CFW, or TSA code on NWR for Tsunami Advisories and manually state it is for a Tsunami Advisory. A Tsunami Advisory EAS code has yet to be developed and approved, so after coordination with partners, decide which code would be best for your customers and partners.

Then, at intervals between the WC/ATWC product, WFOs should issue Special Weather Statements (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, reviews, and diagnoses 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 SPS on NWR.

8.2.3. When a Tsunami Information Statement (TIB) is Issued:

If a TIB is issued for an earthquake that has occurred OUTSIDE the vicinity of your area, then the earthquake would likely not be felt and therefore the TIB should not be read on NWR.

However, if a TIB is issued for an earthquake that IS felt the public in your CWA, then you should read the TIB on NWR, especially because earthquakes of this size that are felt may result in an increase in the number of phone calls or activities at an office. Further, at forecaster discretion, a Special Weather Statement (SPS) or Public Information Statement (PNS) product should be issued from AWIPS and/or disseminated on NWR to help minimize media/public concerns. Restate the information from the TIB product, specifically:

> *"According to (WCATWC, USGS) an earthquake occurred at {lat/long/depth-distance from a certain location} at _____ (AM / PM).The earthquake has been reported as felt in (location) _____.*
>
> *Based on location and magnitude the earthquake was not sufficient to generate a tsunami damaging to _____ (list coastal area). Although, the coastal areas may experience non-damaging sea level changes.*
>
> See Appendix F on page F-4 for a complete TIB example product.

8.2.3 When a Tsunami Seismic Information Statement (EQI) is Issued:

If the WC/ATWC issues an EQI product for your CWA, a tsunami is unlikely.

EQI products are normally NOT disseminated over NWR, unless a forecaster's discretion indicates that an NWR announcement and PNS are necessary to alleviate public concern over tsunami danger. The earthquake may have been felt strongly enough in some locations across your CWA to cause an increase in phone calls or local activity, even though the magnitude is less than 6.0. Use the following wording in the PNS:

> *"According to (WCATWC, USGS) a light/moderate earthquake occurred at {lat/long/depth-distance from a certain location} at _____ (AM / PM).The earthquake has been reported as felt in (location_____.*
>
> *Given the size and location of the earthquake there is NO tsunami threat for _____ (list the area).*
>
> *Continue to monitor your favorite news source for more information. Updated information will be issued by emergency officials and WFO XXX."*

8.2.4 When the Tsunami Warning, Advisory, or Watch is Cancelled:

If the WC/ATWC cancels the Tsunami Warning, Advisory, or Watch 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 Warning, Advisory, or Watch has been cancelled.

A WFO's local policy to tone alert NWR cancellation messages must be collaborated with your partners. Note in your SDM if your office will tone alert NWR for cancelled Tsunami Watches, Warnings, or Advisories. As a reminder, use the SPS to relay information that a Tsunami Warning, Advisory, or Watch was cancelled. Broadcast the SPS on NWR.

9. Felt Earthquakes

An SPS may be issued for earthquakes that are felt across the CWA to inform the public about the potential of a tsunami. The SPS can reemphasize the information in the TIB or EQI product, if the product has been received.

There are three types of scenarios:

1. For felt earthquakes where information has been received from WC/ATWC. In this case, issue an SPS as appropriate as described in Section 8.2.1.4
2. For strong* earthquakes and no information has been received from WC/ATWC and contact cannot be made with either Center. In this case follow Section 9.1 below. And,
3. Light to moderate** earthquakes and no information has been received from WC/ATWC and contact cannot be made with either Center. Follow procedures listed in Section 9.2 below.

*For purposes of this Instruction, strong earthquakes are defined as those that shake intensely for 20 seconds or more.

** For purposes of this Instruction, light/moderate earthquakes are defined as those that shake lightly or moderately for less than 20 seconds.

9.1 SPS for Strong Earthquakes

An SPS should be utilized after strong earthquakes to pass on information to the public about earthquakes and potential tsunamis during the time your office is waiting to receive Tsunami messages from WC/ATWC. Prior to issuing an SPS which contains information that a tsunami may have been generated based on strong shaking felt at the WFO, your office should attempt to contact WC/ATWC. If contact is made, the

WC/ATWC will provide specific information (and wording to use) regarding potential tsunami danger. If contact cannot be made, the WFO should continue as described below.

SPSs can be issued for strong, felt earthquakes for several reasons: (1) the earthquake is so strong that communication lines are down and your office may not hear from WC/ATWC; (2) your office has not yet heard from WC/ATWC but the earthquake is strong enough that a tsunami may be imminent and the SPS can alert the public a tsunami is possible; and (3) strong earthquakes can create numerous media and public inquiries and therefore issuing an SPS before tsunami messages are received from WC/ATWC may be prudent. In the SPS product, the forecaster may wish to use the following examples to express that a tsunami may be produced from strong earthquakes, but no notification has been received yet:

1. Example 1, SPS Wording for Strong Earthquake:

   A strong earthquake was felt near _____ at about _____ (AM / PM). The exact location and magnitude are unknown at this time.

   Anyone in low lying coastal areas should move immediately inland or to high ground due to the possibility of a tsunami. A tsunami can present itself as a rise or fall of sea level along the coast. A tsunami is a series of waves which could be dangerous for several hours after the initial wave arrives.

   Continue to monitor NOAA Weather Radio, or your favorite news source for more information. Updated information will be issued later by emergency management officials, the West Coast/Alaska Tsunami Warning Center, and (your office).

2. Example 2, SPS Wording for Strong Earthquake:

   A strong earthquake was felt near _____at about _____ (AM / PM). The location and magnitude are unknown at this time but {scattered, widespread, considerable} damage {falling objects, cracked buildings, collapsed structures, etc.} has been reported.

   Anyone in low lying coastal areas should move immediately inland or to high ground due to the possibility of a tsunami. A tsunami can present itself as a noticeable rise or fall of sea level along the coast. A tsunami is a series of waves which could be dangerous for several hours after the initial wave arrives.

   Continue to monitor NOAA Weather Radio, or your favorite news source for more information. Updated information will be issued later by emergency officials, the West Coast/Alaska Tsunami Warning Center, and (your office).

9.2 SPS for Light/Moderate Earthquakes

The SPS can be utilized after a light/moderate earthquake which is felt widely by the population and has generated numerous media and public inquiries, but information neither has been received from WC/ATWC nor has contact been made with any center. In this case, the public would be informed that there is NO tsunami threat. In the SPS product, the forecaster may use the following wording to express that there is NO tsunami threat from the earthquake

1. Example, SPS Wording for Light/Moderate Earthquakes:

An earthquake occurred at _____ (AM / PM).The earthquake has been reported as felt {lightly/moderately} in (location).

Given the reported intensity of the earthquake it is believed there is NO tsunami threat for (your area).

Continue to monitor your favorite news source for more information. Updated information will be issued by emergency officials.

9.3 Issue an Earthquake Report

Anytime an earthquake is felt, the WFO may issue an Earthquake Report (EQR) if you have time (see Directive 10-518, Section 4 for details on the EQR).

WFOs (and the public) may inform the National Earthquake Information Center (NEIC), the United States Geological Survey (USGS), and the Puerto Rico Seismic Network (PRSN) of a felt earthquake by filling their Did You Feel It Earthquake report form online at:

http://earthquake.usgs.gov/eqcenter/dyfi/ and **http://prsn.uprm.edu**

10. Dissemination Tests for WFOs and RFCs

Monthly dissemination tests will be conducted for tsunami products by WC/ATWC to ensure products are received by the NWS and its partners. The 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.

After receipt of the WC/ATWC tsunami test product(s), WFOs and RFCs 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 only a test.**" to the body of the product.

Example of a TMA message sent to WC/ATWC:

SEUS42 KJAX 231410
TMAJAX

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's only disseminated during monthly tests.

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

1. To Southern Region Headquarters (SRH) from WFO Jacksonville. Anytime WC/ATWC issues a TSU or TIB product for Southern Region's area or the Atlantic Basin, WFO Jacksonville 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 communications at WFO Jacksonville are inoperative, WFO Tampa will call SRH.

2. To Southeast River Forecast Center (SERFC) from WFO Jacksonville. WFO Jacksonville will notify the SERFC when a Tsunami Warning, Advisory, or Watch has been issued for the Alabama, Georgia or Florida coasts. 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 Jacksonville are inoperative, WFO Tampa will call SERFC.

3. To Lower Mississippi River Forecast Center from WFO New Orleans.
   In the event a Tsunami Warning, Advisory, or Watch has been issued for Louisiana or Mississippi, WFO New Orleans will notify the Lower Mississippi

River Forecast Center (LMRFC). If an event occurs after normal business hours, WFO New Orleans will contact LMRFC personnel using the same after-hours contact procedures as in a major flood event. The LMRFC call list will provide the appropriate numbers and order of priority to ensure that an RFC forecaster is contacted. Upon receipt of a call, LMRFC forecasters will use established office procedures to notify management of a tsunami.

If communications at WFO New Orleans are inoperative, WFO Mobile will call LMRFC.

4. To West Gulf River Forecast Center (WGRFC) from WFO Houston.
WFO Houston will notify the WGRFC HIC/DOH/SCH when a Tsunami Warning, Advisory, or Watch has been issued for the Texas coast. If an event occurs after normal business hours, the HIC or 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 Houston are inoperative, WFO Lake Charles will call WGRFC.

12. Drills

Because earthquakes do not occur regularly, completion of drills is critical to maintaining operational proficiency. SR CONUS coastal WFOs should 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.

SRH will keep a record of the annual drills each office conducts. MICs are to send an email to notify the Chief of MSB after each drill.

Appendix A:

Sample WFO Checklist to Use When a Tsunami Warning, Advisory, or Watch is Issued by WC/ATWC for Your Area.

TSUNAMI WARNING / ADVISORY / WATCH

(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	WARNING/ADVISORY/ WATCH 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 at intervals between the WC/ATWC product and broadcast on NWR. The SPS product should provide updates and/or local information (see Section 8.2.1.4 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 as well as SPSs issued from your local office.

_____/_____ Gather pertinent documents and review evacuation/safety procedures if the office is threatened by the tsunami.

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.

_____/_____ Log all additional incidents or actions that pertain to this event. Any verification formation received should be recorded as well.

_____/_____ Contact the MIC and WCM if they are not on station. Also contact the RFC (if applicable).

Appendix B: CRS/NWR Broadcast Template for Tsunami Watch

Upon receipt of a **Tsunami Watch** product (TSUATE) 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 impact 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 All Hazards every hour or sooner as conditions warrant."

Appendix C: CRS/NWR Broadcast Template for Tsunami Warning

Upon receipt of a **Tsunami Warning** product (TSUATE) 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 All Hazards 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 s/he deems it appropriate.

Appendix D: CRS/NWR Broadcast Template for Tsunami Advisory

Upon receipt of a **Tsunami Advisory** product (TSUATE) 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 All Hazards 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 s/he deems it appropriate.

Appendix E
CRS/NWR Broadcast Template for Tsunami Cancellation

Upon receipt of a Tsunami Warning/Advisory/Watch **Cancellation** product (TSUATE) 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 Warning/Advisory/Watch checklist. Here is the message to fill out and read:

"The National Weather Service has Canceled the TSUNAMI (WARNING / ADVISORY / WATCH) 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 (WARNING/ ADVISORY /WATCH) 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 All Hazards broadcast cycle will resume shortly."

Appendix F: Product Examples from WC/ATWC

Example Tsunami Warning/Advisory/Watch (TSUAT1 product):

```
WEXX20 PAAQ 031903
TSUAT1

BULLETIN
TSUNAMI MESSAGE NUMBER 3
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
303 PM AST SUN FEB 3 2013

AMZ712-715-725-735-742-745-PRZ001>003-005-007-008-010-011-
VIZ001-002-032033-
/T.CAN.PAAQ.TS.W.0030.000000T0000Z-000000T0000Z/
/T.NEW.PAAQ.TS.Y.0030.130203T1903Z-000000T0000Z/
COASTAL AREAS OF PUERTO RICO AND THE VIRGIN ISLANDS.
303 PM AST SUN FEB 3 2013

...A TSUNAMI ADVISORY IS NOW IN EFFECT FOR PUERTO RICO AND
   THE VIRGIN ISLANDS...

IF YOU ARE LOCATED IN THIS COASTAL AREA... MOVE OFF THE
BEACH AND OUT OF HARBORS AND MARINAS.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING
STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR
THE WATER IS EXPECTED OR IS ALREADY OCCURRING.  AREAS IN
ADVISORY SHOULD NOT EXPECT WIDESPREAD INUNDATION.  TSUNAMIS
ARE A SERIES OF WAVES DANGEROUS MANY HOURS AFTER INITIAL
ARRIVAL TIME.  THE FIRST WAVE MAY NOT BE THE LARGEST.

AT 204 PM ATLANTIC STANDARD TIME ON FEBRUARY 3 AN EARTHQUAKE WITH
PRELIMINARY MAGNITUDE 7.2 OCCURRED 25 MILES NORTHWEST OF
 SAN JUAN PUERTO RICO.

THE TSUNAMI ADVISORY WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE.
REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

$$
```

Appendix F - Continued: Product Examples from WC/ATWC

Example Tsunami Warning/Advisory/Watch (TSUATE product):

```
WEXX30 PAAQ 031806
TSUATE

BULLETIN
PUBLIC TSUNAMI MESSAGE NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
206 PM AST SUN FEB 3 2013

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


WARNINGS/ADVISORIES/WATCHES - UPDATED
-------------------------------------
TSUNAMI WARNING IN EFFECT FOR...

 * COASTAL AREAS OF PUERTO RICO AND THE VIRGIN ISLANDS.

 * FOR OTHER US AND CANADIAN COASTS IN THE ATLANTIC AND
   GULF OF MEXICO - THE LEVEL OF TSUNAMI DANGER IS BEING
   EVALUATED. FURTHER INFORMATION WILL BE PROVIDED IN
   SUPPLEMENTARY MESSAGES.


PRELIMINARY EARTHQUAKE PARAMETERS
---------------------------------
 * MAGNITUDE      7.2
 * ORIGIN TIME    1304  EST FEB 03 2013
                  1404  AST FEB 03 2013
                  1204  CST FEB 03 2013
                  1804  UTC FEB 03 2013
 * COORDINATES    18.7 NORTH 66.4 WEST
 * DEPTH          20 MILES
 * LOCATION       55 MILES NW OF FAJARDO PUERTO RICO
                  25 MILES NW OF SAN JUAN PUERTO RICO


IMPACTS FOR TSUNAMI WARNING AREAS
---------------------------------
 * WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL
   CURRENTS IS POSSIBLE AND MAY CONTINUE FOR MANY HOURS AFTER
   TSUNAMI ARRIVAL.

 * THE FIRST WAVE MAY NOT BE THE LARGEST.


RECOMMENDED ACTIONS - UPDATED
-----------------------------
 * IF YOU ARE IN A WARNING AREA - MOVE INLAND TO HIGHER GROUND.

 * BE ALERT TO INSTRUCTIONS FROM YOUR LOCAL EMERGENCY OFFICIALS.

 * DO NOT GO TO THE COAST TO OBSERVE THE TSUNAMI.
```

```
 * DO NOT RETURN TO THE COAST UNTIL LOCAL EMERGENCY OFFICIALS
   INDICATE IT IS SAFE TO DO SO.


FORECASTS AND/OR OBSERVATIONS OF TSUNAMI ACTIVITY
-------------------------------------------------
                 FORECAST
                 START OF
SITE             OF TSUNAMI
----             ----------

 * PUERTO RICO
SAN JUAN         1412  AST FEB  3


NEXT UPDATE AND ADDITIONAL INFORMATION
--------------------------------------
 * THIS MESSAGE WILL BE UPDATED IN 30 MINUTES.

 * REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE
   INFORMATION.

 * CARIBBEAN COASTAL RESIDENTS OUTSIDE PUERTO RICO AND THE VIRGIN
   ISLANDS SHOULD REFER TO THE PACIFIC TSUNAMI WARNING CENTER MESSAGES
   FOR INFORMATION ON THIS EVENT AT PTWC.WEATHER.GOV.

$$
```

Appendix F - Continued: Product Examples from WC/ATWC

Example Tsunami Public Information Statement (TIBATE product):

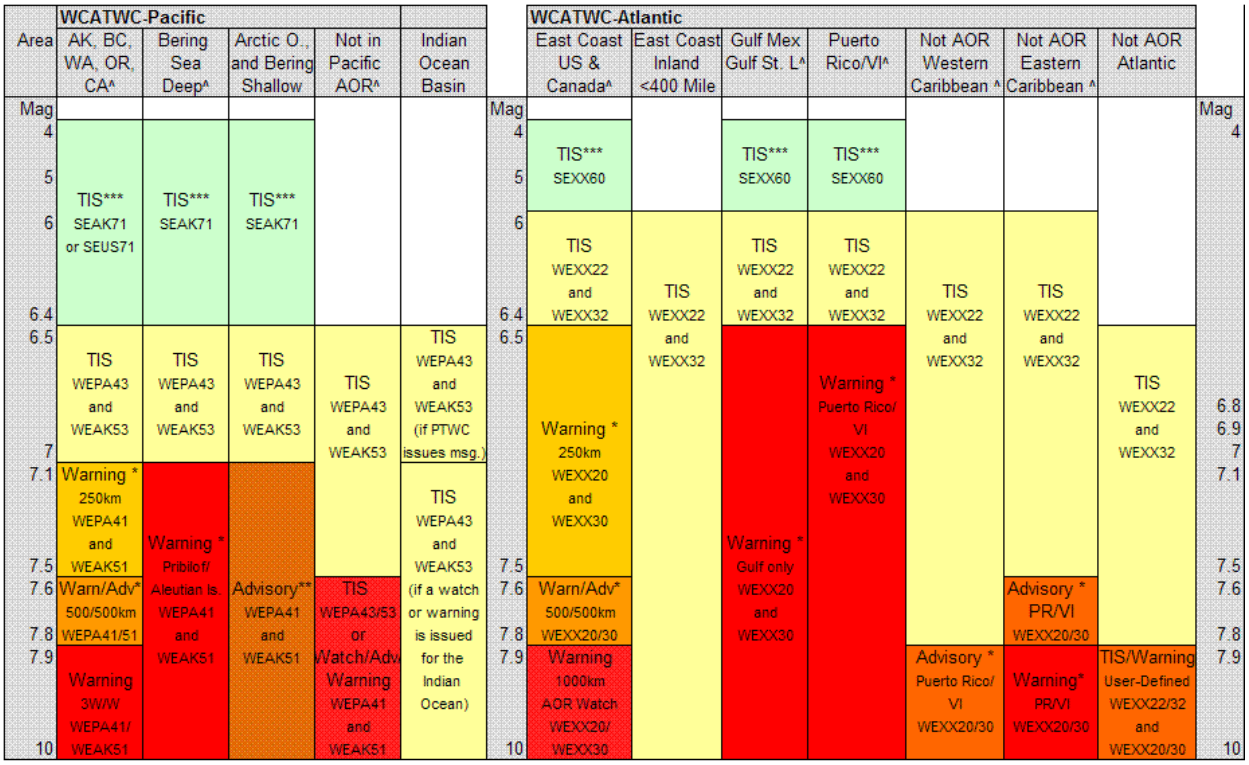
```
WEXX32 PAAQ 031802
TIBATE

PUBLIC TSUNAMI INFORMATION STATEMENT NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
202 PM AST SUN FEB 3 2013

...THIS IS A TSUNAMI INFORMATION STATEMENT FOR THE U.S. AND CANADA
   EAST COASTS/ GULF OF MEXICO STATES/PUERTO RICO AND THE VIRGIN
   ISLANDS...

EVALUATION
----------
 * THERE IS NO TSUNAMI DANGER FOR THE AREAS LISTED ABOVE.

 * BASED ON EARTHQUAKE INFORMATION AND HISTORIC TSUNAMI RECORDS
   THE EARTHQUAKE IS NOT EXPECTED TO GENERATE A TSUNAMI.

 * AN EARTHQUAKE HAS OCCURRED WITH PARAMETERS LISTED BELOW.


PRELIMINARY EARTHQUAKE PARAMETERS
---------------------------------
 * MAGNITUDE      6.3
 * ORIGIN TIME    1300  EST FEB 03 2013
                  1400  AST FEB 03 2013
                  1200  CST FEB 03 2013
                  1800  UTC FEB 03 2013
 * COORDINATES    10.8 NORTH 62.3 WEST
 * DEPTH          21 MILES
 * LOCATION       NEAR COAST OF VENEZUELA


NEXT UPDATE AND ADDITIONAL INFORMATION
--------------------------------------
 * THIS WILL BE THE ONLY WCATWC MESSAGE FOR THIS EVENT
   UNLESS ADDITIONAL INFORMATION BECOMES AVAILABLE.

 * REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR
   ADDITIONAL INFORMATION.

 * CARIBBEAN COASTAL REGIONS OUTSIDE PUERTO RICO AND THE VIRGIN
   ISLANDS SHOULD REFER TO THE PACIFIC TSUNAMI WARNING CENTER
   MESSAGES AT PTWC.WEATHER.GOV.

$$
```

Appendix F - Continued: Product Examples from WC/ATWC

Example Tsunami Seismic Information Statement (EQIAT1 product):

```
SEXX60 PAAQ 031800
EQIAT1

TSUNAMI SEISMIC INFORMATION STATEMENT
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
100 PM EST SUN FEB 3 2013

...THIS IS A TSUNAMI INFORMATION STATEMENT...


EVALUATION
----------
 * AN EARTHQUAKE HAS OCCURRED - THERE IS NO TSUNAMI DANGER.


PRELIMINARY EARTHQUAKE PARAMETERS
---------------------------------
 * MAGNITUDE      4.7
 * ORIGIN TIME    1259  EST FEB 03 2013
                  1159  CST FEB 03 2013
                  1359  AST FEB 03 2013
                  1759  UTC FEB 03 2013
 * COORDINATES    42.2 NORTH 70.2 WEST
 * DEPTH          12 MILES
 * LOCATION       65 MILES N OF NANTUCKET MASSACHUSETTS
                  45 MILES SE OF BOSTON MASSACHUSETTS


NEXT UPDATE AND ADDITIONAL INFORMATION
--------------------------------------
 * THIS WILL BE THE ONLY WCATWC MESSAGE ISSUED FOR THIS EVENT.

 * THE EARTHQUAKE PARAMETERS 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.

$$
```

Appendix G:
Graphical Representation of Criteria

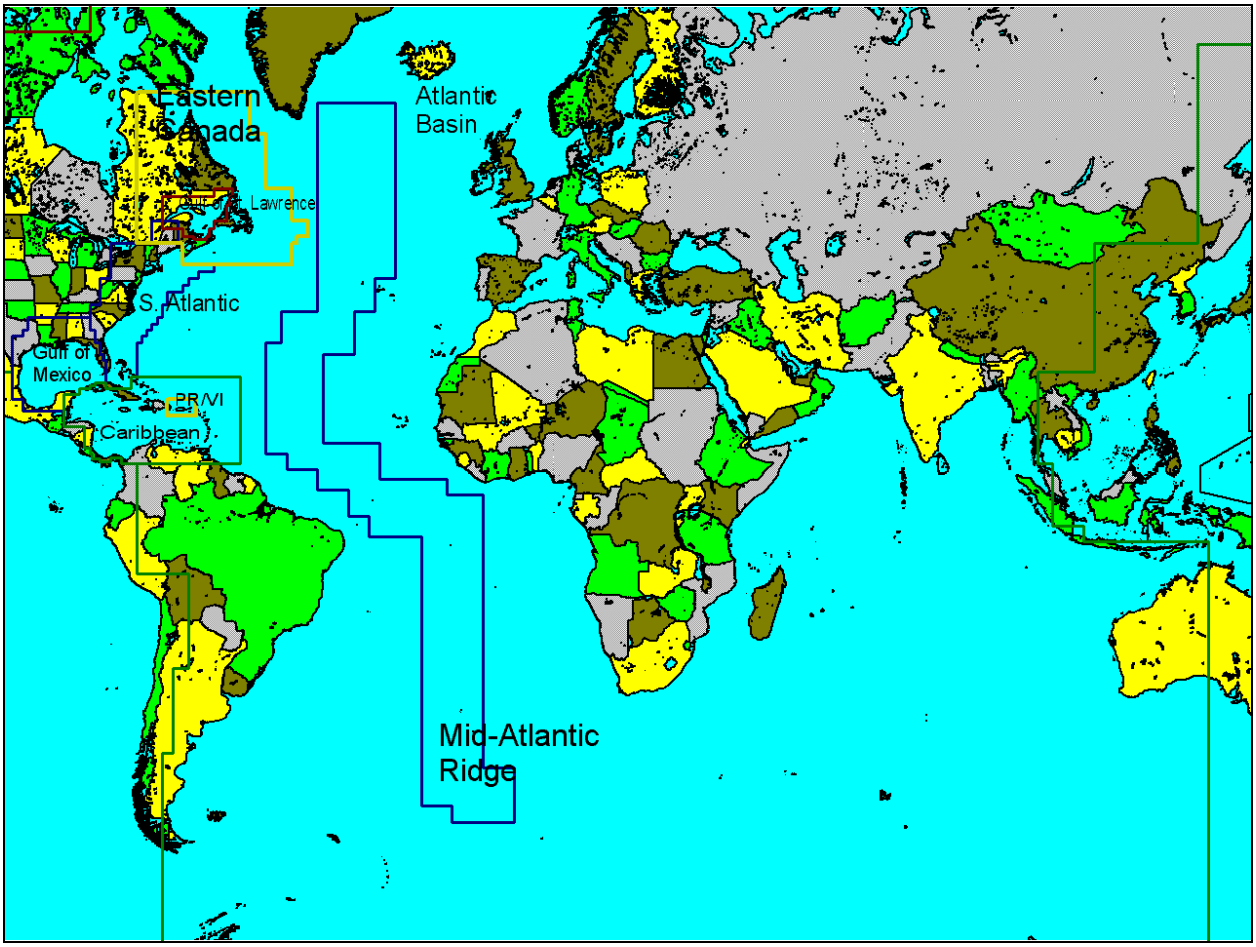


Area	WCATWC-Pacific: AK, BC, WA, OR, CA^	Bering Sea Deep^	Arctic O., and Bering Shallow	Not in Pacific AOR^	Indian Ocean Basin	Mag	WCATWC-Atlantic: East Coast US & Canada^	East Coast Inland <400 Mile	Gulf Mex Gulf St. L^	Puerto Rico/VI^	Not AOR Western Caribbean ^	Not AOR Eastern Caribbean ^	Not AOR Atlantic	Mag
Mag						Mag								Mag
4	TIS*** SEAK71 or SEUS71	TIS*** SEAK71	TIS*** SEAK71			4	TIS*** SEXX60		TIS*** SEXX60	TIS*** SEXX60				4
5						5								
6						6	TIS WEXX22 and WEXX32	TIS WEXX22 and WEXX32	TIS WEXX22 and WEXX32	TIS WEXX22 and WEXX32	TIS WEXX22 and WEXX32	TIS WEXX22 and WEXX32		
6.4						6.4								
6.5	TIS WEPA43 and WEAK53	TIS WEPA43 and WEAK53	TIS WEPA43 and WEAK53	TIS WEPA43 and WEAK53	TIS WEPA43 and WEAK53 (if PTWC issues msg.)	6.5	Warning * 250km WEXX20 and WEXX30		Warning * Gulf only WEXX20 and WEXX30	Warning * Puerto Rico/ VI WEXX20 and WEXX30			TIS WEXX22 and WEXX32	6.8 6.9
7														7
7.1	Warning * 250km WEPA41 and WEAK51	Warning * Pribilof/ Aleutian Is. WEPA41 and WEAK51	Advisory** WEPA41 and WEAK51		TIS WEPA43 and WEAK53 (if a watch or warning is issued for the Indian Ocean)									7.1
7.5						7.5								7.5
7.6	Warn/Adv* 500/500km WEPA41/51			TIS WEPA43/53 or Watch/Adv Warning WEPA41 and WEAK51		7.6	Warn/Adv* 500/500km 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 User-Defined 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
** For Arctic; Advisory if south of 75N and west of 138W; else TIS

TIS = Tsunami Information Statement
* = No Watch
*** = Depends on distance from coast
^ = if deeper than 100km and M<7.9, use TIS

Appendix G:
WCATWC Regional Boundaries in the Atlantic Basin



Note: The lines are different colors only so they can be seen easier on the colored map.