

PACIFIC TSUNAMI WARNING CENTER
(as of June 2006, Communications Plan)

1. Introduction.

Since 2006, the PTWC has provided interim tsunami advisory services to countries of the Caribbean region. It issues “Tsunami Information Statements” for large earthquakes that may cause concern but do not have significant tsunamigenic potential, and “Tsunami Watch Messages” for large potentially tsunamigenic earthquakes, as well as for confirmed teletsunamis.

2. Product Issuance Criteria

There are three key earthquake parameters that can be determined quickly from seismic waveform data for the evaluation of an earthquake’s tsunamigenic potential. They are: 1) location - whether the earthquake is located under or very near the sea, 2) depth - whether the earthquake is located close enough to the earth’s surface to have caused a significant deformation of that surface and consequently a movement of the sea, and 3) magnitude - the size of the earthquake. Table 1 shows various combinations of these parameters and the types of products that will be issued for the CARIBE-EWS by PTWC for each case. These criteria are similar to what PTWC uses in the Pacific and Indian Oceans.

Table. Seismic criteria for PTWC’s issuance of products in the CARIBE-EWS.

Earthquake Depth	Earthquake Location	Earthquake Magnitude (Mw)	Description of Tsunami Potential	Product Type
< 100 km	Under or very near the sea	6.0 to 7.0 Caribbean	Very small potential for a destructive local tsunami	Tsunami Information Statement
		6.5 to 7.8 Atlantic	Very small potential for a destructive ocean-wide tsunami	Tsunami Information Statement
		7.1 to 7.5 Caribbean	Potential for a destructive local tsunami	Local Tsunami Watch Message
		7.6 to 7.8 Caribbean	Potential for a destructive regional tsunami	Regional Tsunami Watch Message
		≥ 7.9 Caribbean & Atlantic	Potential for a destructive ocean-wide tsunami	Ocean-wide Tsunami Watch Message
	Inland	≥ 6.0 Carib ≥ 6.5 Atlan	No tsunami potential	Tsunami Information Statement
≥ 100 km	All Locations	≥ 6.0 Carib ≥ 6.5 Atlan	No tsunami potential	Tsunami Information Statement

Earthquake Magnitude: The magnitude used by PTWC is the moment magnitude, Mw. It is more accurate for large earthquakes than the more common Richter magnitude. The moment magnitude determined by PTWC for initial products is Mwp, based on the first arriving seismic P waves. Subsequent estimates of Mw may be made by methods based on later arriving seismic waves.

Local Tsunami: A local tsunami is one with destructive or life threatening effects usually limited to within 100 km of the epicenter.

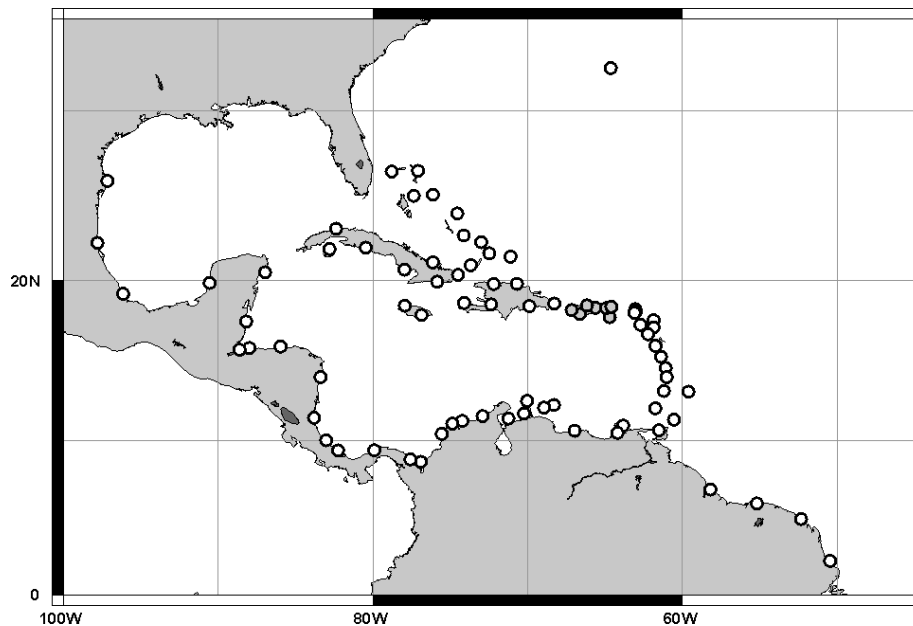
Regional Tsunami: A regional tsunami is one with destructive or life threatening effects usually limited to within 1000 km of the epicenter.

Ocean-wide Tsunami: An ocean-wide tsunami is one with destructive or life threatening effects that can extend across an entire ocean basin.

3. Message Content

Products are divided into just a few general sections. A **header** gives the product number. It starts at 1 for each event and is incremented if subsequent products are issued for the same event. The header also indicates who issued the product, in this case PTWC, and the time the product is issued. The header is followed by a statement about **who the product is intended for** -- all areas of the Caribbean. The next line is a banner indicating the **type of product**, a Tsunami Information Statement or a Tsunami Watch Message. If a Tsunami Watch is in effect, the countries in a watch are indicated. This is followed by the **preliminary earthquake parameters** including the origin time, coordinates, location name, and earthquake magnitude. If any **sea level observations** are available, they are provided next. Until more real time reporting sea level gauges are installed, however, such observations will be very limited or non-existent. The next section is the **evaluation**. It contains descriptive language about the potential for a destructive tsunami. If a Tsunami Watch is issued, **estimated arrival times** for forecast points (Figure) within the Watch area are provided. Last is a statement about **if and when a subsequent product** will be issued for the event.

Figure. Preliminary forecast points for countries in the Caribbean region. Tsunami Watch Messages provide estimated times of arrival for forecast points in the region of the Tsunami Watch.



4. Product Dissemination and Communication Tests

The following circuits and methods will be used to disseminate products:

- 1) Global Telecommunications System of the World Meteorological Organization (WMO/GTS)
- 2) Internet Email
- 3) Telefax
- 4) U.S. NOAA Weather Wire
- 5) U.S. Advanced Weather Information Processing System (AWIPS)

The GTS is the backbone of the international dissemination system, but telefax and email are also widely utilized. The NOAA Weather Wire facilitates making all these products available to independent subscribers such as the media through the U.S. National Weather Service's Family of Services. AWIPS distributes the products to all U.S. Weather Forecast Offices.

Two levels of product are distinguished and given separate World Meteorological Organization (WMO) identifiers (Table).

Table. PTWC CARIBE-EWS Product IDs for WMO/GTS and AWIPS.

WMO/GTS ID	AWIPS ID	Product Type
WECA41 PHEB	TSUCAX	Tsunami Watch Message
WECA43 PHEB	TIBCAX	Tsunami Information Statement

Communications Tests

PTWC will conduct communications tests approximately four times per year to verify that communications links to designated contact points are functioning properly. The test will be issued with the product identifier of a Tsunami Watch Message (WEIO21 PHEB and TSUIOX), but it will only be a test.

5. Bulletin Interpretation and Action

It is the responsibility of the contact point for each country, where PTWC products are received, to establish procedures for acting on them in a way to save lives and reduce property damage. These procedures should include:

- 1) Rapid notification of decision-making authorities
- 2) Decision-making regarding the ordering of evacuations and other protective measures
- 3) If warranted, rapid and comprehensive notification of the public at risk
- 4) Procedures for evacuations including establishment of evacuation zones and routes
- 5) Response procedures in case of a tsunami disaster

A significant challenge associated with these procedures is the decision-making about evacuations, particularly since evacuations can be very costly and disruptive and there is a significant probability of false alarms owing to the current lack of adequate sea level data from the source region. Procedures can include pre-determined decisions, such as automatically notifying the media and public for nearby events when time is very limited.

6. Example Statements

PTWC Sample Tsunami Information Statements, Local, Regional, and Ocean-wide Tsunami Watch Bulletins and Communication Test messages are provided in the Communications Plans for the Caribbean (June 2006),\.