



Tsunami Warning Services for the USVI

USVI EMC Meeting

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Manager

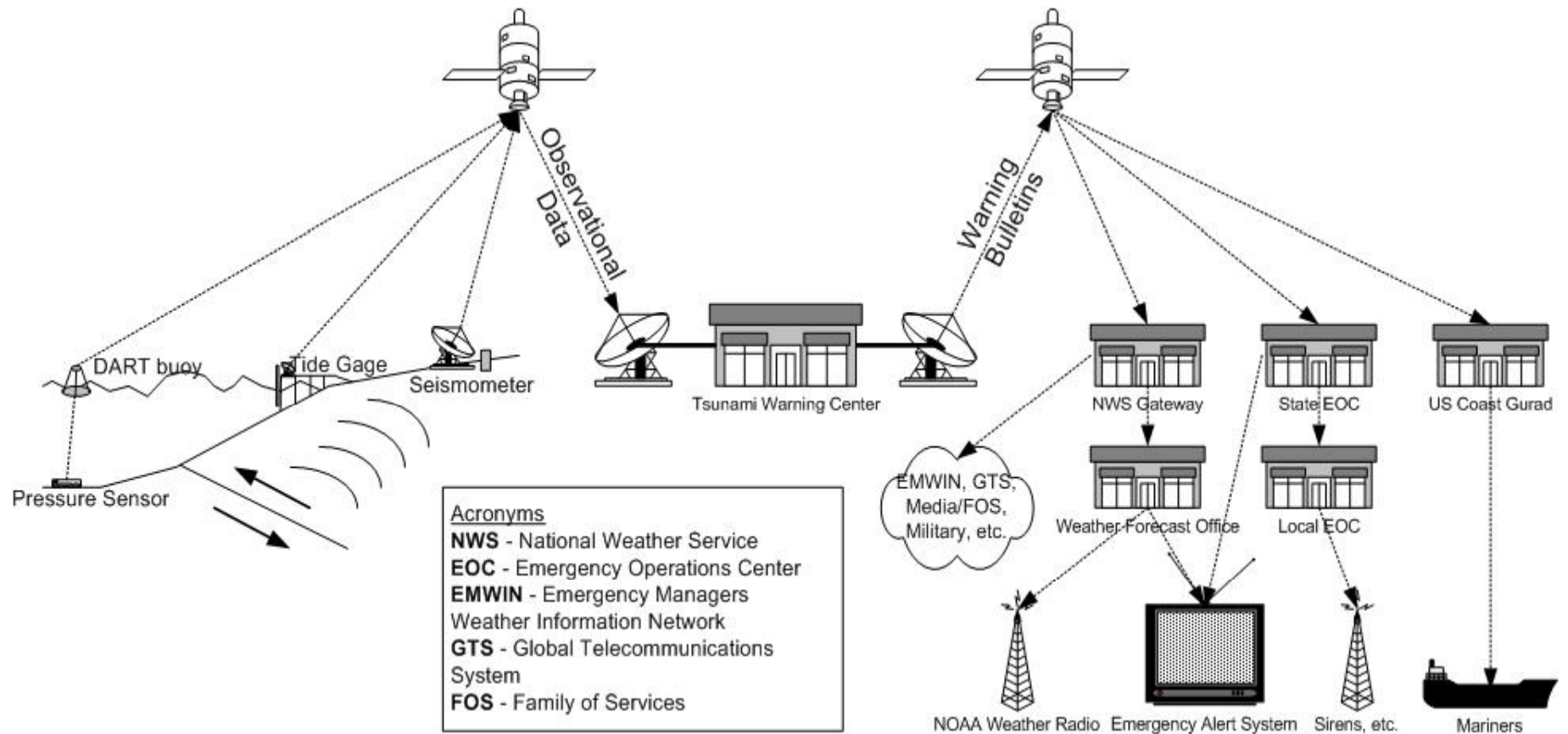
NOAA Caribbean Tsunami Warning Program
c/o Puerto Rico Seismic Network
Dept. of Geology, UPR-Mayagüez

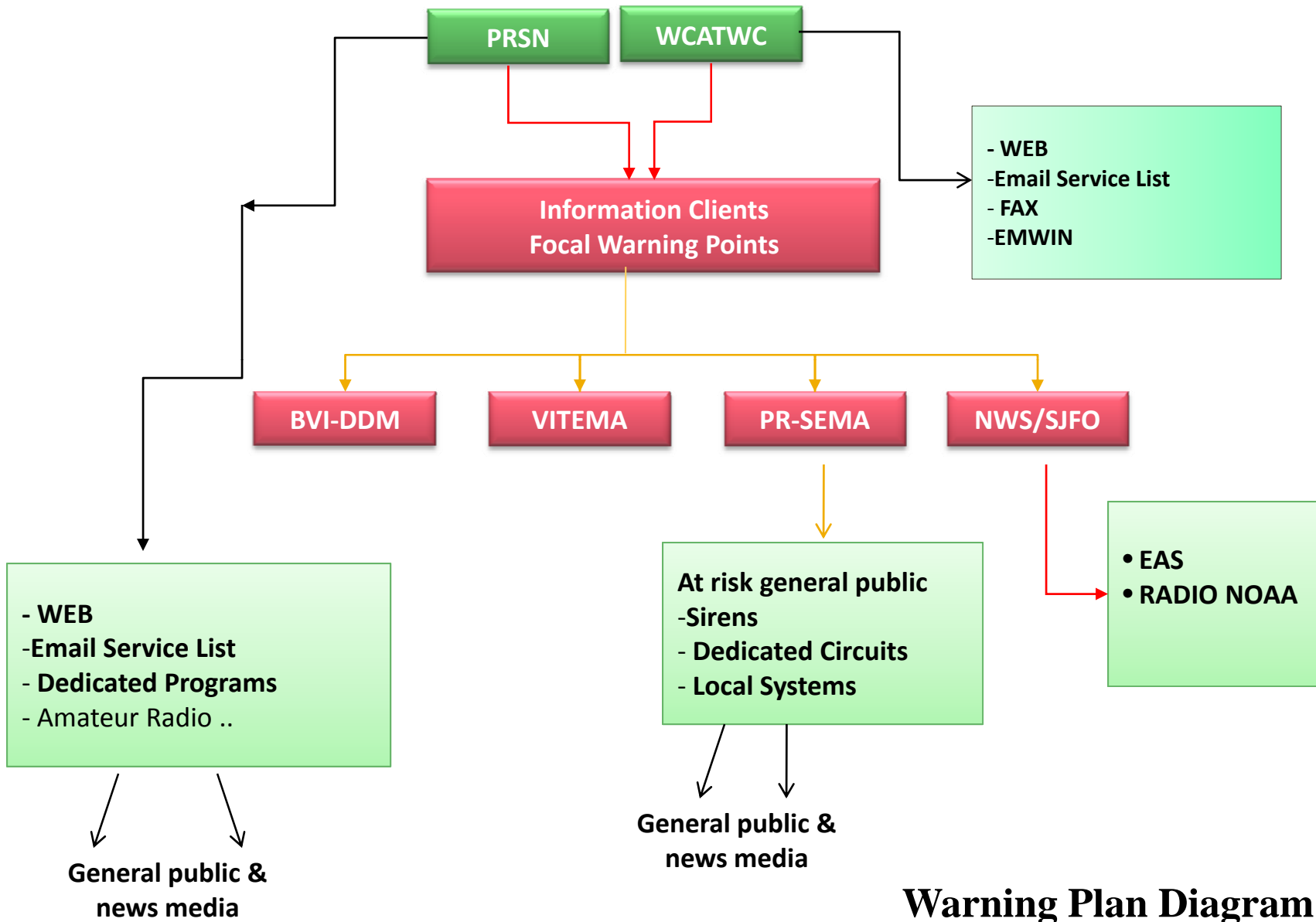
June 25, 2010

Current Tsunami Warning Service Providers

- West Coast and Alaska Tsunami Warning Center
 - Provides Interim Warning Service to Puerto Rico and the USVI
 - Backup to the PTWC
- Puerto Rico Seismic Network
 - Provides 24 x 7 tsunami warning service to Puerto Rico and the USVI and BVI (local governments protocol)
- Pacific Tsunami Warning Center
 - Provides Interim Tsunami Warning Guidance Service to the non US Caribbean and adjacent regions
- Caribbean Tsunami Warning Center (in proposed phase)

Tsunami Warning System Main Components





**Warning Plan Diagram
Puerto Rico/Virgin Islands**



- Danger!
- Run for High Ground!
- Follow Emergency Instructions.

W A R N I N G

A D V I S O R Y

- Possible Strong and Dangerous local Currents.
- Stay tuned for local Emergency guidance.



- Potential Danger.
- Stayed tuned for more information.



W A T C H



- Relax.
- No Danger.
- A distant ocean basin may be in danger.

I N F O R M A T I O N
S T A T E M E N T

WEST COAST & ALASKA TSUNAMI WARNING CENTER



Red Sísmica de Puerto Rico

<http://redsismica.upr.edu> Teléfono: 787-833-8433

Centro de Alerta de Tsunami de la Costa Oeste & Alaska

<http://wcatwc.arh.noaa.gov>

4 Niveles de Mensajería de Tsunami



- ¡Peligro!
- ¡Corra a tierras altas!
- Siga las instrucciones de emergencia.

Aviso

Advertencia

- Posibles corrientes locales fuertes y peligrosas.
- Manténgase escuchando las instrucciones locales de emergencia.



- Peligro potencial.
- Permanezca alerta para mas información.



Vigilancia

- Permanezca tranquilo.
- No hay peligro.
- Una cuenca oceánica distante puede estar en riesgo.

Declaración de Información



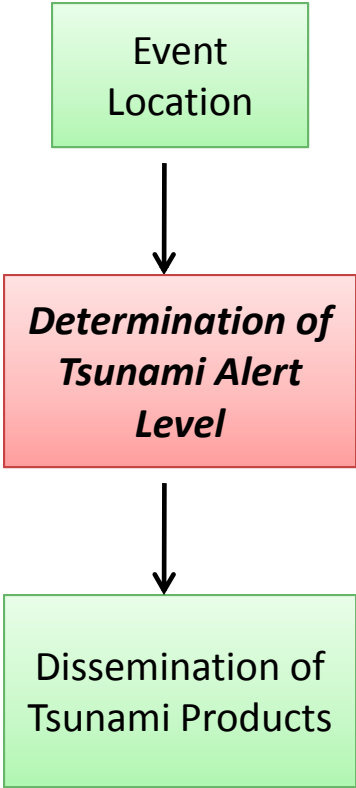
WEST COAST & ALASKA TSUNAMI WARNING CENTER



Procedural Thresholds – Puerto Rico/Virgin Islands

Magnitude	Area	Product
4.0-6.4	PR/VI AOR	Tsunami Information Statement
6.5 and higher	PR/VI (<100 km deep)	Warning PR/VI
6.5-7.5	Other coastal Atlantic/Caribbean regions	Tsunami Information Statement (High)
≥ 6.5	Inland (>100 km from coast) or Deep (>100 km)	
7.6-7.8	Other coastal Atlantic regions	TIS (High)
	Western Caribbean	TIS (High)
	Eastern Caribbean	PR/VI Advisory
≥ 7.9	Other coastal Atlantic regions	Threat Dependent
	Western Caribbean	PR/VI Advisory
	Eastern Caribbean	PR/VI Warning

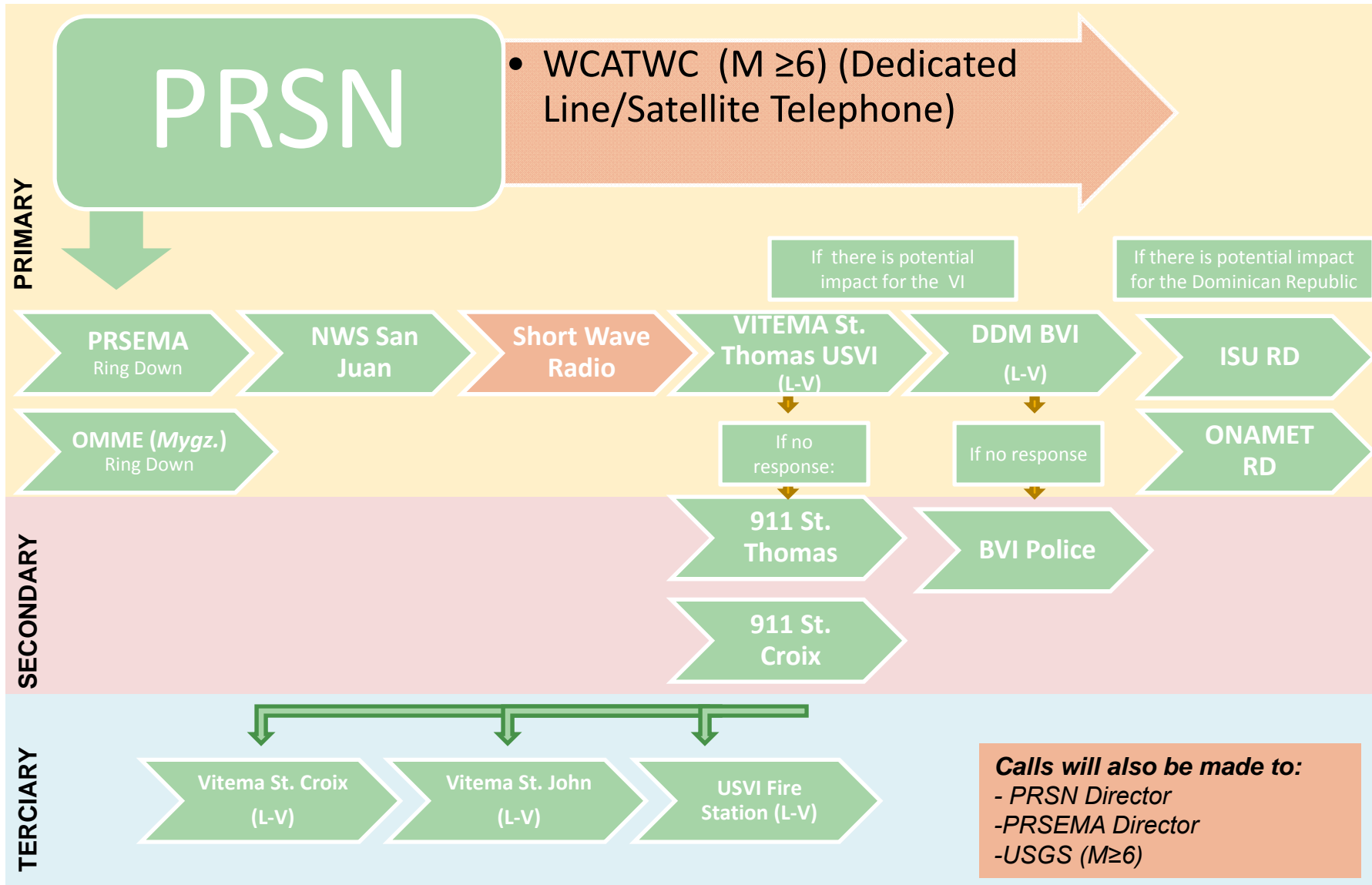
Initial Response
Goal Response Time: 5 minutes



Tsunami Message	Criteria	Expected Conditions	Suggested Action
Warning (PRSN or WCATWC)	<ul style="list-style-type: none"> •Forecasted/observed amplitude over 1.0 m •Immediate warning based on earthquake parameters 	Inundating wave possible	Full evacuation suggested
Watch (PRSN or WCATWC)	<ul style="list-style-type: none"> •Early alert for areas that are distant from the wave front, but may have danger •Teletsunamis 	Danger level not yet known	Stay alert for more info
Advisory (PRSN or WCATWC)	<ul style="list-style-type: none"> •Forecasted amplitudes: 0.3 - 1.0 m •Observed amplitudes: 0.4 - 1.0 m •Immediate advisory based on earthquake parameters 	Strong currents likely	Stay away from the shore
Tsunami Information Statement	Minor waves at most	Minor waves at most	No action suggested

- Warnings and advisories suggest that action must be taken
- Advisories can be upgraded to a Warning or canceled
- Warning can be downgraded to an Advisory or canceled
- Watch can be upgraded to an Advisory or Warning

Phone Call and Radio Transmission Protocol



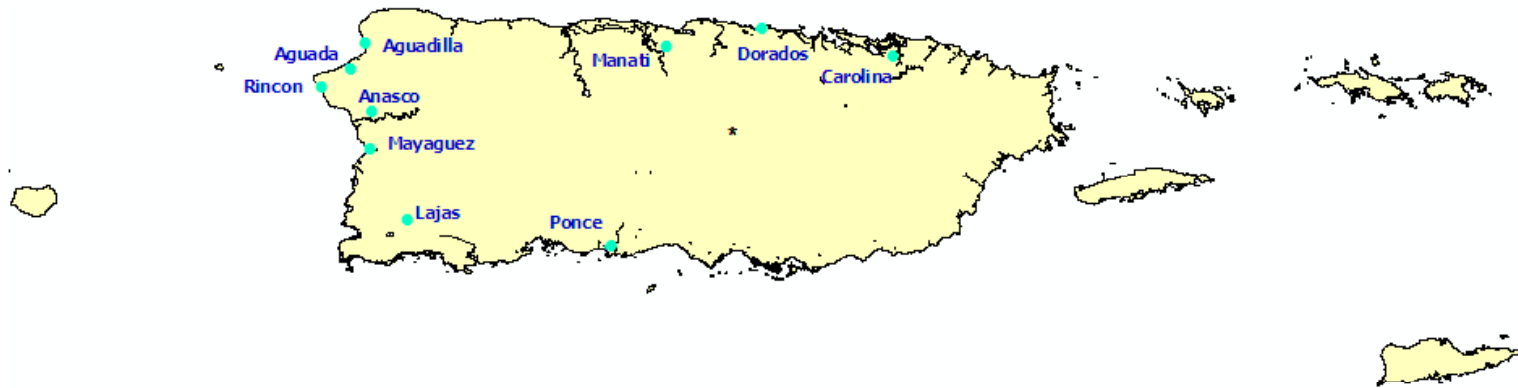
Tsunami Ready

NWS Program which recognizes communities that have met established requirements to improve tsunami readiness and preparedness



TsunamiReady Communities in Puerto Rico/USVI

Puerto Rico: 10 TsunamiReady Communities



Communities	
• Aguada	• Lajas
• Aguadilla	• Manati
• Anasco	• Mayaguez
• Carolina	• Ponce
• Dorados	• Rincon

[Return to TsunamiReady Communities](#)

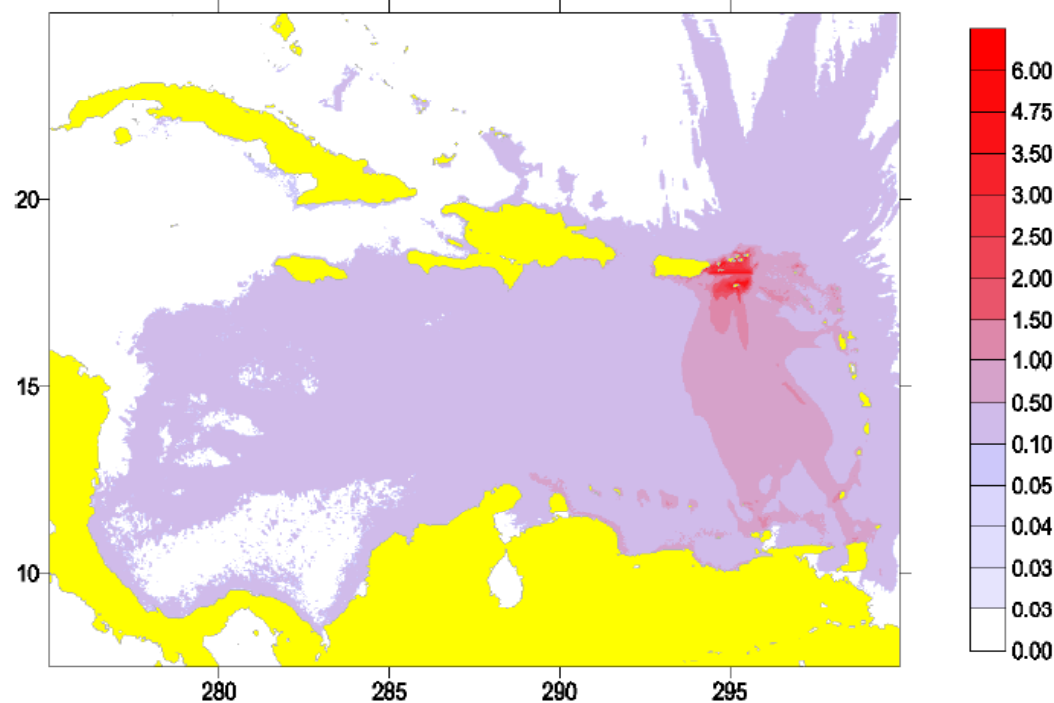
For more information contact: donna.franklin@noaa.gov, Map graphic: melody.magnus@noaa.gov
<http://www.stormready.noaa.gov/com-maps/wa-com.htm>
Last Updated: May 5, 2010



CARIBE WAVE LANTEX 2011

March 23, 2011

- Tsunami generated by a magnitude @ 7.5 earthquake in the US Virgin Island Basin (similar to the 1867 VI EQ and Tsunami)



The distribution of computed maximum positive tsunami amplitudes. The water surface elevation is in meters). Taken from Zahibo, et. al, 2003.

More information...

- PRSN
 - <http://redsismica.uprm.edu>
- NOAA Tsunami Site
 - <http://tsunami.gov>
- PRTWMP website with tsunami inundation maps
 - <http://poseidon.uprm.edu>
- UNESCO IOC Caribe EWS

Magnitud	Agencia	Hora Local (GMT-4)	Latitud	Longitud	Prof.	Región
3.7MI	PRSN	2010-02-21 10:55:02	18.858	-88.983	128	ZONA ORIENTAL DE LA REPUBLICA DOMINICANA
2.52MI	PRSN	2010-02-13 14:39:40	18.190	-88.899	15	REGION CENTRAL DE PUERTO RICO
2.59MI	PRSN	2010-02-04 00:08:38	18.056	-88.759	17	REGION SUR DE PUERTO RICO
3.61MI	PRSN	2010-02-01 21:01:09	19.373	-88.218	87	ZONA SIMICA DEL SOMBRERO
3.1MI	PRSN	2010-01-31 00:23:15	18.919	-88.128	8.8	ZONA SIMICA DEL SOMBRERO
3.56MI	PRSN	2010-01-30 23:45:30	18.878	-88.699	185.9	ZONA ORIENTAL DE LA REPUBLICA DOMINICANA
3.51MI	PRSN	2010-01-28 20:22:17	18.245	-88.594	74.9	ZONA ORIENTAL DE LA REPUBLICA DOMINICANA
2.6MI	PRSN	2010-01-26 13:08:28	18.202	-88.955	13.5	REGION CENTRAL DE PUERTO RICO
2.78MI	PRSN	2010-01-24 04:50:26	19.116	-88.426	15	ZONA DE FALLA DE LOS 19° N
6.1Mwp	PRSN	2010-01-20 07:03:44	18.428	-72.875	9.9	HAITI

February 9, 2007

CARIBBEAN TSUNAMI HAZARD
 Proceedings of the NSF Caribbean Tsunami Workshop
 San Juan, Beach Hotel, Puerto Rico 30 - 31 March 2004

edited by Aurelio Mercado-Irizarry (University of Puerto Rico, USA) & Philip Liu (Cornell University, USA)

This book aims to present the overall existing tsunami hazard in the Caribbean Sea region, a region which is typically only associated with hurricanes. It initially presents an overview of all of the existing tsunami-causing factors found in the region: earthquakes, sub-aerial and submarine landslides, and submarine explosions. This is followed by field evidence of recent and pre-historic tsunami events, which gives credibility to all of this effort. The next section is a description of the tsunami hazard mitigation efforts being carried out locally and in collaboration with national and international programs. The final part is dedicated to the presentation of related recent research results.

August 28, 2008

TSUNAMI THE FORGOTTEN DANGER
VIDEO DOCUMENTARY
NEW DVD VERSION AVAILABLE FOR DOWNLOAD!

The tsunami documentary produced in Puerto Rico. This video includes the history, hazards, and protective measures concerning tsunamis. The video was prepared by JAM Media (San Juan, P.R.) and it has been freely distributed to many schools, governmental and private agencies. To obtain copies of the documentary (VHS or DVD) contact the Puerto Rico Seismic Network. Teléfonos: 787-833-8433, 787-265-5452.

Three DVD quality versions available for download. On IE right button click on image and select "Save Target As...". Warning: This are very large files! Broadband (DSL or Cable Internet) recommended. If you're on dial-up use a download manager.

West Coast and Alaska Tsunami Warning Center

Latest Event

2010/02/23 12:57:45 (UTC)
 Swathless; Magnitude 4.7
 Location: 35 miles W of Alaska, Alaska
 852954

Please click here to see the area-of-responsibility (AoR) for the WC/ATWC and the PTWC.

The NWS operates two Tsunami Warning Centers and the International Tsunami Information Center

West Coast/ Alaska Tsunami Warning Center (WC/ATWC)

The WC/ATWC provides tsunami warning guidance for all U.S. coastal states (except Hawaii), the Canadian coastal provinces, Puerto Rico, and the Virgin Islands.

Richard H. Hagemeyer Pacific Tsunami Warning Center (PTWC)

The PTWC provides tsunami warning guidance for Hawaii and countries in the Pacific Ocean, Indian Ocean, and Caribbean Sea.

International Tsunami Information Center (ITIC)

Operated by the NWS on behalf of the Intergovernmental Oceanographic Commission of UNESCO, the ITIC supports the IOC's Tsunami Program which focuses on the coordination of tsunami warning and mitigation systems globally. The ITIC provides direct support to Member States in the Pacific by monitoring and recommending operational improvements to the Tsunami Warning System in the Pacific, and by working with countries to increase tsunami awareness and preparedness, and promote education and research.

Is your community prepared for the next destructive tsunami?

TsunamiReady Program

A program designed for recognition for Communities that have met certain standards of tsunami preparedness.

Thanks for your support and attention