



CARIBE WAVE 16

Webinar English

Christa G. von Hillebrandt-Andrade

NOAA NWS Caribbean Tsunami Warning Program- Manager

ICG CARIBE EWS Chair

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Institutional Reference Frame for the Exercise

UNESCO: The United National Educational, Scientific, and Cultural Organization's

ICG/CARIBE EWS: Intergovernmental Coordination Group for Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions

CTIC: Caribbean Tsunami Information Centre; A Government of Barbados UNESCO/ IOC Partnership

NOAA: National Oceanic and Atmospheric Administration, U.S. Department of Commerce

CEPRENAC: Coordination for Natural Disaster Prevention Center in Central America.

CDEMA: Caribbean Disaster and Emergency Management Agency

TWC: Tsunami Warning Centers

CTWP: Caribbean Tsunami Warning Program

CARIBE WAVE/LANTEX 2015

- 31 Members States and 17 of the territories in the Caribbean and Adjacent Regions participated in this exercise with a total of almost 191,420 people engaged.
 - This represented a participation rate of 100% (up from 98% in 2014, 94% in 2013, 75% in 2011) of all the countries and territories in the CARIBE EWS.

*Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Brazil (observer), Canada, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, France (Martinique, Guadeloupe, St. Barthelemy, St Martin), French Guiana, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Netherlands (Bonaire, Curacao, Saba and Sint Eustatius), Nicaragua, Panama, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sint Maarten, Suriname, Trinidad and Tobago, United Kingdom (Anguilla, Bermuda, British Virgin Islands, Cayman Islands, Montserrat, and Turks and Caicos), United States (Puerto Rico and the US Virgin Islands) and Venezuela (Bolivarian Republic of).

Feedback from CARIBE WAVE/LANTEX 2015

- 79% of the Tsunami Warning Focal Points received in a timely fashion the “dummy” message sent by the Tsunami Warning Centers (TWC).
- 46% of the survey respondents indicated that the exercise had media coverage.
- 88% of the TWFP/NDMO indicated that they had an activation and response process (standard operating procedures) in place for the receipt of tsunami warnings.
- Emergency response plan for tsunamis:
 - 62% of participating countries had a plan for local tsunamis
 - 68% of participating countries had a plan for regional tsunamis
 - 73% of participating countries had a plan for distant tsunamis
- 17 Member States or their territories indicated that they had tsunami inundation maps available for evacuated areas.
- 34% (up from 22% in 2014) of the TWFP/NDMO indicated that they had tsunami mass coastal evacuation plan.

Reasons for the Conduct of the Exercise

Helpful in validating or highlighting the need for tsunami planning.

- There is an **absolute need to reinforce preparedness, evacuation plans and involvement of private sector in tsunami readiness.** The fact that the **population and press has a high interest and awareness on these matters is important.**



Other Reasons for the Conduct of the Exercise

- Success of LANTEX 09, 10, 11, 12, 13, 14 and 15 and CARIBE WAVE 11, 13, 14 and 15.
 - Every time the participation has increased and there is greater awareness.
- Frequency of seismic and tsunami events at the global and regional levels, and the devastating impacts following the Haiti, Chile and Japan earthquakes and tsunamis.
- Tremendous vulnerability to life from tsunamis in the Region.
- Opportunities for partnerships with other bodies that coordinate and execute region-wide exercises.
- Importance of testing and refinement of warning systems and national protocols.

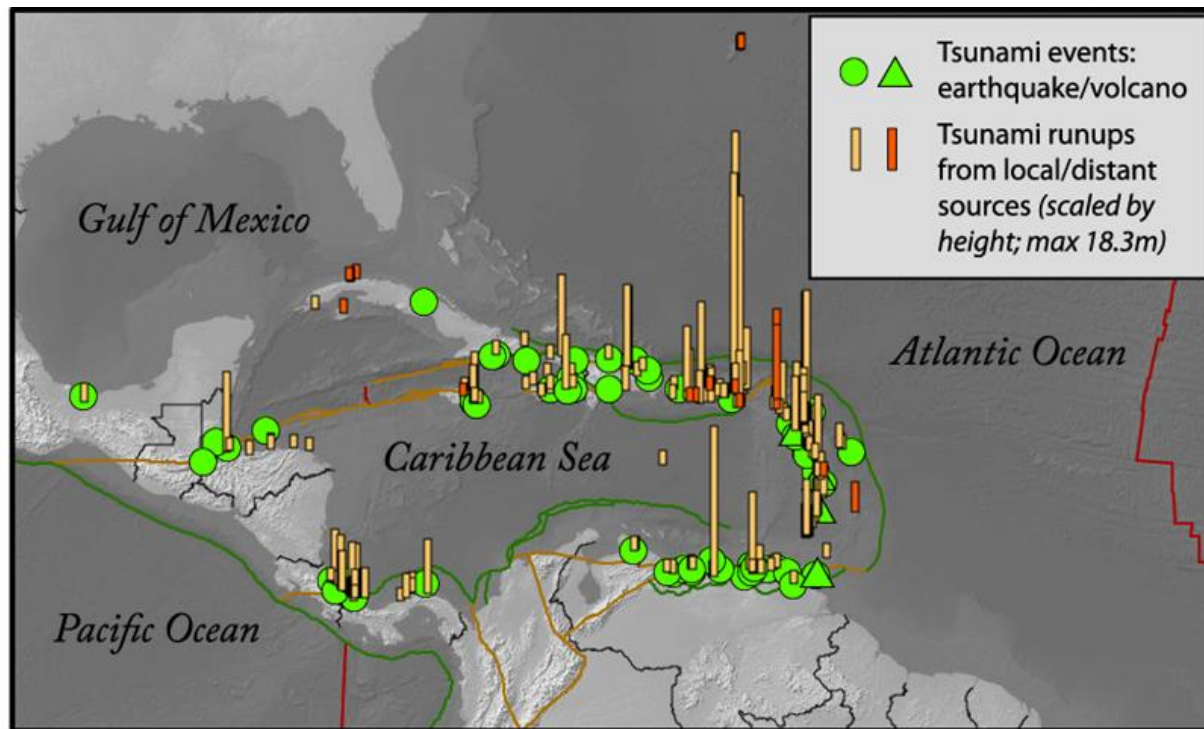


http://1.bp.blogspot.com/-BU3-wRZEI7s/VVFmJ_TXx/AAAAAAAAABak/wF6PQ9ixZs/s1600/na_color_Haiti_Earthquake3_t960.jpg



<http://www.brecorder.com/images/2015/09/chile-earthquake-000-mvd6714331.jpg>

According to the historical tsunami data base, over the past 500 years, at least 75 tsunamis have been observed in the region, and although they do not occur as frequently as in other basins, the vulnerability is very large; upwards of 500,000 people could be killed within hours if the response is not adequate.



Map of tsunami run-ups in the Caribbean 1493-2013 (National Centers for Environmental Information, <http://www.ngdc.noaa.gov/hazards/tsu.shtml>). Artist: Jesse Varner; originally published in von Hillebrandt-Andrade, 2013.

Country	Number of Registrants	Number of Participants according to Registration (closed March 20, 2015)	Number of Participants , with post exercise updates from Member States
Anguilla	5	5	1150
Dominican Republic	13	43	43
France	13	99	99
French Guiana	1	10	10
Grenada	4	9	9
Guadeloupe	24	408	3000
Guatemala	2	12	12
Guyana	2	12	12
Haiti	17	22	44
Honduras	1	1	1
Jamaica	2	2	2
Martinique	64	8,637	8637
Mexico	5	28	500
Montserrat	1	1	1
Nicaragua	4	28	100
Panama	20	63	600
Puerto Rico	500	80,953	80,953
Sint Maarten	2	2	25
Suriname	0	0	1
Trinidad and Tobago	4	104	30,104
Turks and Caicos	9	30	25
United States of America	144	23,344	23,344
U.S. Virgin Islands	30	4,793	4793
Venezuela	98	10,689	31,685
TOTAL			191,420

CARIBE WAVE 16

Objectives

- 1. To exercise and evaluate operations of the CARIBE EWS Tsunami Warning System.**
 - A. Validate the **issuance** of tsunami products from the PTWC.
 - B. Validate the **receipt** of tsunami products by CARIBE EWS Tsunami Warning Focal Points (TWFP) and/or National Tsunami Warning Centers (NTWC).
- 2. To continue the process of exposure to PTWC CARIBE EWS Enhanced products.**
 - A. Evaluate enhanced PTWC products.
 - B. Provide further feedback on the national procedures for implementation of the enhanced products.
- 3. To validate the readiness to respond to a tsunami.**
 - A. Validate the operational readiness of the TWFP (or like function) and/or the National Disaster Management Office (NDMO).
 - B. To improve operational readiness. Before the exercise, ensure appropriate tools and response plan(s) have been developed, including public education materials.
 - C. Validate that the dissemination of warnings and information/advice by Tsunami Warning Focal Points, and National Tsunami Warning Centers, to relevant in-country agencies and the public is accurate and timely.
 - D. Validate the organizational decision-making process (tsunami response plans) about public warnings and evacuations.
 - E. Validate that the methods used to notify and instruct the public are accurate and timely.
 - F. Evaluate the status of the National Public Awareness and Education Strategy.

Goals

Goal	2013 Result	2014 Metric	2014 Result	2015 Metric	2015 Result	2016 Metric
Participation of Member States of ICG CARIBE EWS with designated focal warning point	94%	95%	98% (including two MS/Territory unofficial)	95%	100%	100%
Compliance with the time line	Close to 100%	100%	Almost 100%	100%	Almost 100%	100%
Community involvement (beyond TWFP)	75%	75%	75%	80%	66%	85%
Number of participants	44,000	+10%	191,000	+10%	191,420	+10%
TWFP receive the dummy message	98%	100%	94%	100%	90%	100%
Countries who participate submit exercise questionnaire	90%	100%	100%	100%	91%	100%

Exercise Manuals

- The exercise manuals are available at www.caribewave.info
- The manual includes:
 - Suggested actions
 - Scenario description
 - Time table
 - Travel times and expected wave heights
 - Figures and samples of the messages
 - The website link to evaluation questionnaire

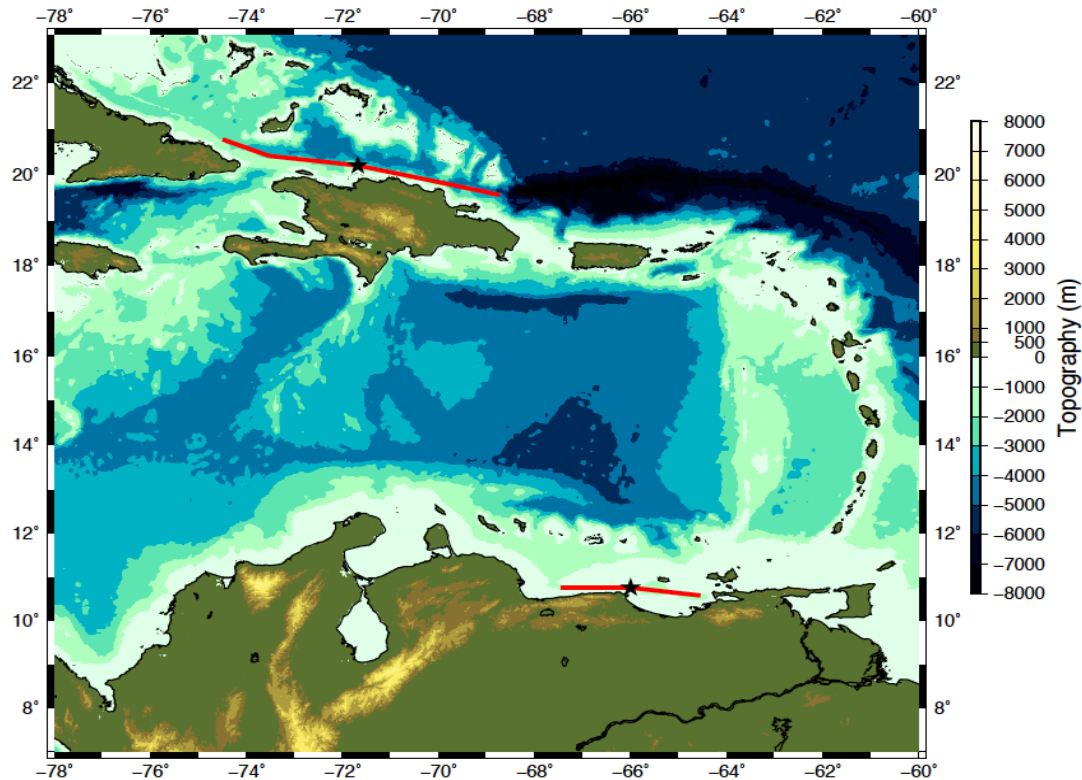
CARIBE WAVE 16

Earthquake and Tsunami Scenarios

- This exercise provides simulated tsunami threat messages from the PTWC triggered by two hypothetical earthquakes.
 - The Venezuela Mw 8.4 earthquake was modeled off the October 29, 1900 earthquake and tsunami.
 - The maximum water height was 10 meters.
 - The Northern Hispaniola Mw 8.7 earthquake was modeled off the May 7, 1842 earthquake and tsunami.
- The earthquakes in both scenarios, would produce a red alert for Hispaniola, Turks and Caicos Islands and the East of Cuba for the Northern Hispaniola scenario; and the coast of Venezuela for the Venezuela scenario.

CARIBE WAVE 16

Map of Scenarios

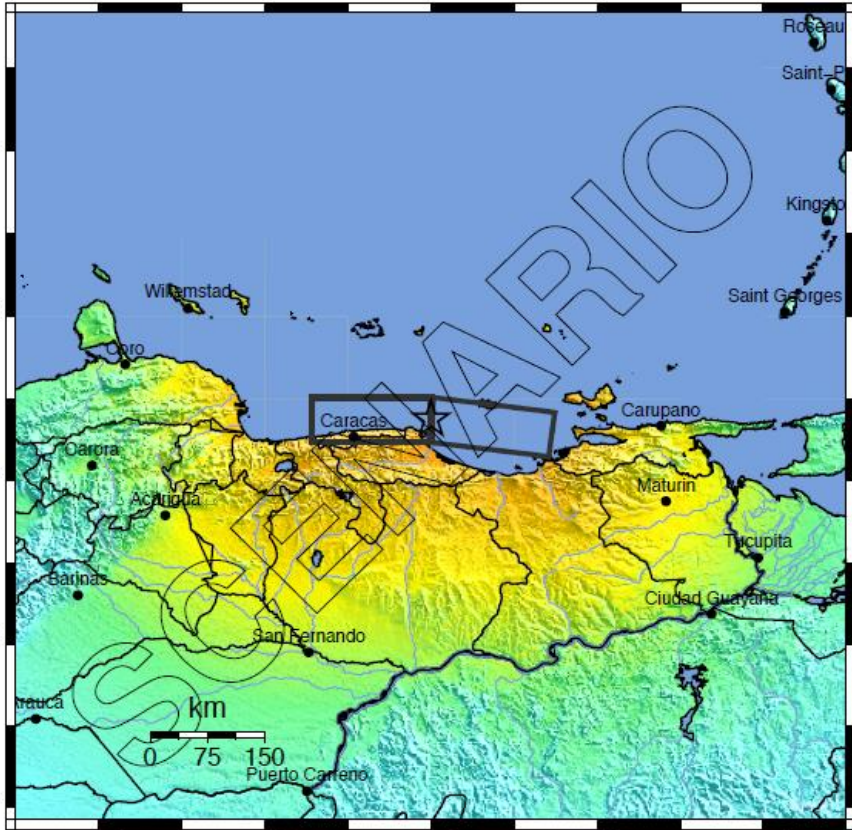


Scenario	Origin Time	Mw	Epicenter
Venezuela	14:00:00 UTC March 17, 2016	8.4	10.8°N, 66.0°W
Northern Hispaniola	15:00:00 UTC March 17, 2016	8.7	20.2°N, 71.7°W

Earthquake Impact Scenario Venezuela

— Earthquake Planning Scenario —
ShakeMap for Venezuela Scenario

Scenario Date: Mar 17, 2016 02:00:00 PM UTC M 8.4 N10.75 W66.00 Depth: 20.0km



PLANNING SCENARIO ONLY — Map Version 1 Processed 2015-08-25 08:19:16 PM UTC

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC. (%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL. (cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Scale based upon Worden et al. (2012)



Earthquake Shaking **Red Alert**

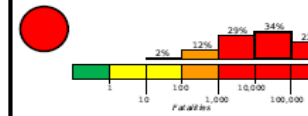


M 8.4, Venezuela

Origin Time: Thu 2016-03-17 14:00:00 UTC (09:30:00 local)
Location: 10.75°N 66.00°W Depth: 20 km
FOR TSUNAMI INFORMATION, SEE: tsunami.gov

Created: 25 minutes, 0 seconds after earthquake

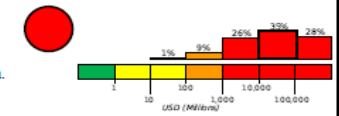
Estimated Fatalities



Red alert for shaking-related fatalities and economic losses. High casualties and extensive damage are probable and the disaster is likely widespread. Past red alerts have required a national or international response.

Estimated economic losses are 3-20% GDP of Bolivarian Republic of Venezuela.

Estimated Economic Losses

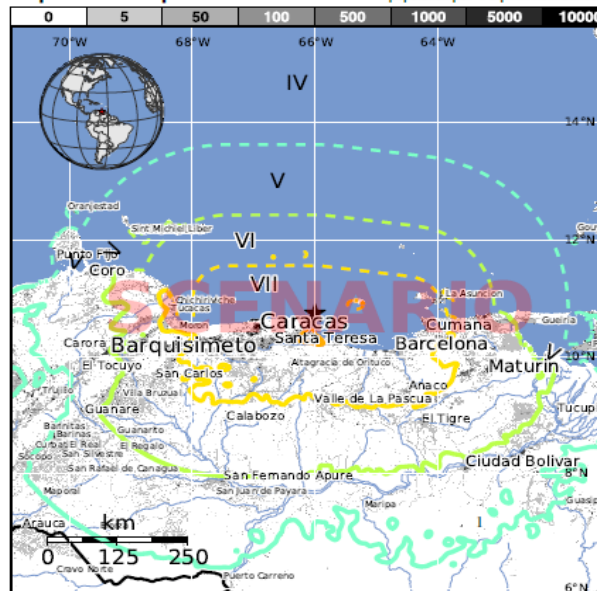


Estimated Population Exposed to Earthquake Shaking

ESTIMATED POPULATION EXPOSURE (k = x1000)	--	--	2,141k	6,296k	4,893k	11,690k	478k	0	0
ESTIMATED MODIFIED MERCALLI INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+
PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	Resistant Structures: none	Resistant Structures: none	Resistant Structures: none	Resistant Structures: V. Light	Resistant Structures: Light	Resistant Structures: Moderate	Resistant Structures: Moderate/Heavy	Resistant Structures: Heavy	Resistant Structures: V. Heavy
	Vulnerable Structures: none	Vulnerable Structures: none	Vulnerable Structures: none	Vulnerable Structures: Light	Vulnerable Structures: Moderate	Vulnerable Structures: Moderate/Heavy	Vulnerable Structures: Heavy	Vulnerable Structures: V. Heavy	Vulnerable Structures: V. Heavy

*Estimated exposure only includes population within the map area

Population Exposure



Structures: Overall, the population in this region resides in structures that are vulnerable to earthquake shaking, though some resistant structures exist. The predominant vulnerable building types are unreinforced brick masonry and adobe construction.

Historical Earthquakes (with MMI levels):

Date (UTC)	Dist. (km)	Mag.	Max Shaking MMI(#)	Deaths
1983-04-11	359	6.1	VIII(2k)	0
1974-06-12	281	6.5	IX(12k)	5
1997-07-09	271	6.9	VIII(2k)	81

Recent earthquakes in this area have caused secondary hazards such as landslides that might have contributed to losses.

Selected City Exposure

from GeoNames.org

MMI City	Population
VIII Puerto La Cruz	370k
VIII Guanta	<1k
VIII Lecherías	<1k
VIII Rio Chico	<1k
VIII San Jose de B.	<1k
VIII Boca de Uchire	<1k
VII Barcelona	425k
VII Caracas	3,000k
VII Maracay	1,754k
VII Valencia	1,385k
VI Barquisimeto	809k

bold cities appear on map

(k = x1000)

PAGER content is automatically generated, and only considers losses due to structural damage. Limitations of input data, shaking estimates, and loss models may add uncertainty.

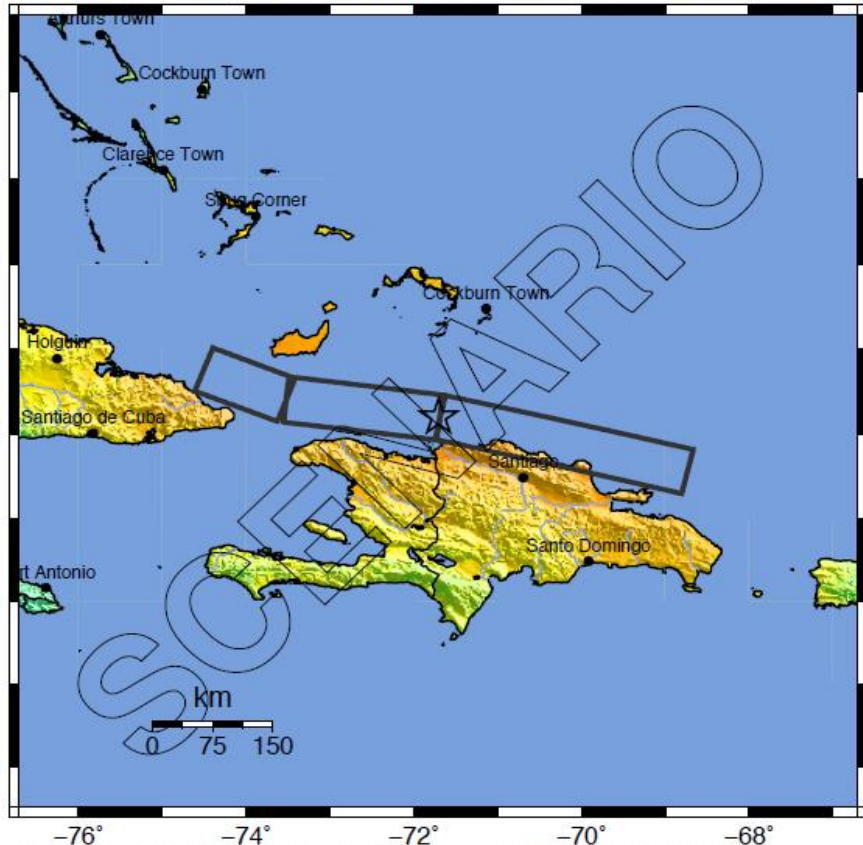
<http://earthquake.usgs.gov/pager>

Event ID: usvenezuela_2

Earthquake Impact Scenario Northern Hispaniola

— Earthquake Planning Scenario —
ShakeMap for Hispaniola Scenario

Scenario Date: Mar 17, 2016 03:00:00 PM UTC M 8.7 N20.20 W71.70 Depth: 15.0km



PLANNING SCENARIO ONLY --- Map Version 1 Processed 2015-08-25 08:18:37 PM UTC

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Scale based upon Worden et al. (2012)



Earthquake Shaking **Red Alert**

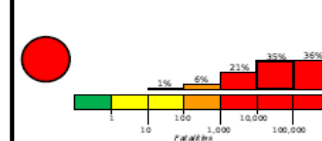


M 8.7, Northern Hispaniola

Origin Time: Thu 2016-03-17 15:00:00 UTC (10:00:00 local)
Location: 20.20°N 71.70°W Depth: 15 km
FOR TSUNAMI INFORMATION, SEE: tsunami.gov

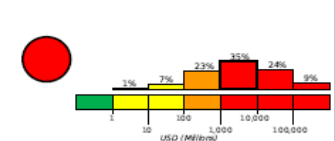
Created: 22 minutes, 0 seconds after earthquake

Estimated Fatalities



Red alert for shaking-related fatalities and economic losses. High casualties and extensive damage are probable and the disaster is likely widespread. Past red alerts have required a national or international response.

Estimated Economic Losses



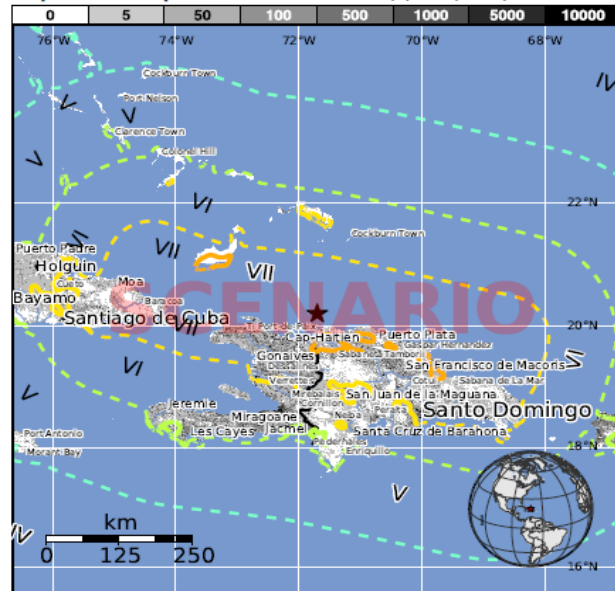
Estimated economic losses are 3-20% GDP of Dominican Republic.

Estimated Population Exposed to Earthquake Shaking

ESTIMATED POPULATION EXPOSURE (k = x1000)	--	--	5k*	710k*	9,934k*	13,629k	641k	0	0
ESTIMATED MODIFIED MERCALLI INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+
PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	Resistant Structures: none	Vulnerable Structures: none	none	V. Light	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy

*Estimated exposure only includes population within the map area

Population Exposure



Structures:
Overall, the population in this region resides in structures that are vulnerable to earthquake shaking, though some resistant structures exist. The predominant vulnerable building types are concrete/cinder block masonry and mud wall construction.

Historical Earthquakes (with MMI levels):

Date (UTC)	Dist. (km)	Mag.	Max Shaking (MMI#)	Deaths
1994-07-12	90	5.6	VIII(6k)	0
1984-06-24	353	5.2	V(440k)	5
1984-06-24	347	6.7	VIII(326k)	5

Recent earthquakes in this area have caused secondary hazards such as landslides that might have contributed to losses.

Selected City Exposure

MMI City	Population
VIII CastanueLAS	4K
VIII Caracol	2K
VIII Arroyo Salado	2K
VIII Ferrier	4K
VIII Agua Santa del Yuna	2K
VIII Jaibon	5K
VII Santiago de los C.	1,200K
VII Santo Domingo	2,202K
VII Santiago de Cuba	556K
VI Holguin	319K
VI Port-au-Prince	1,235K

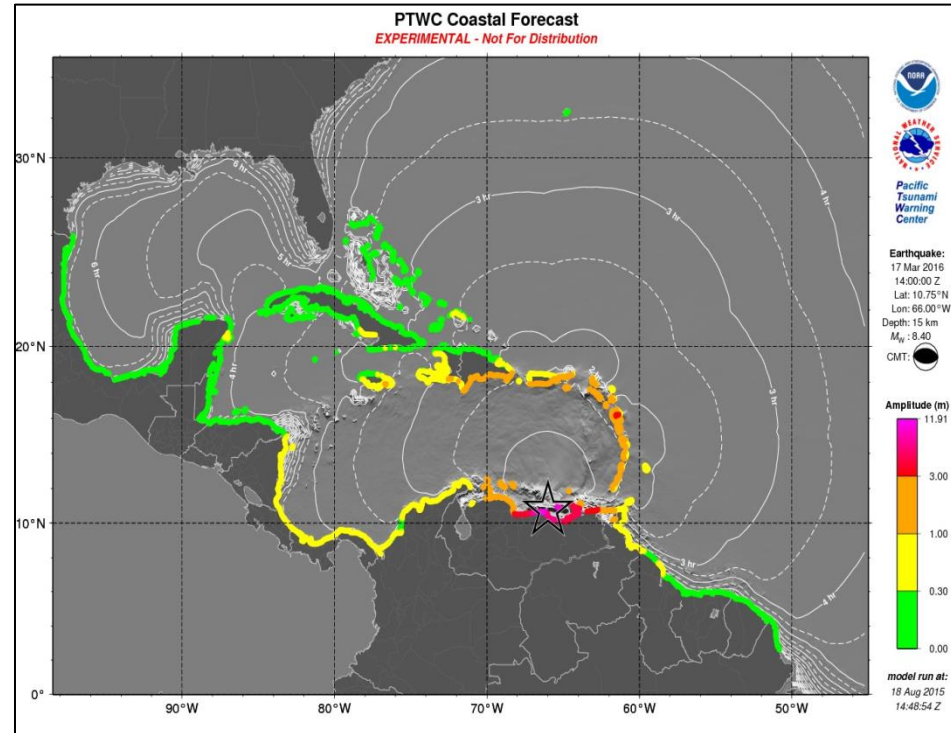
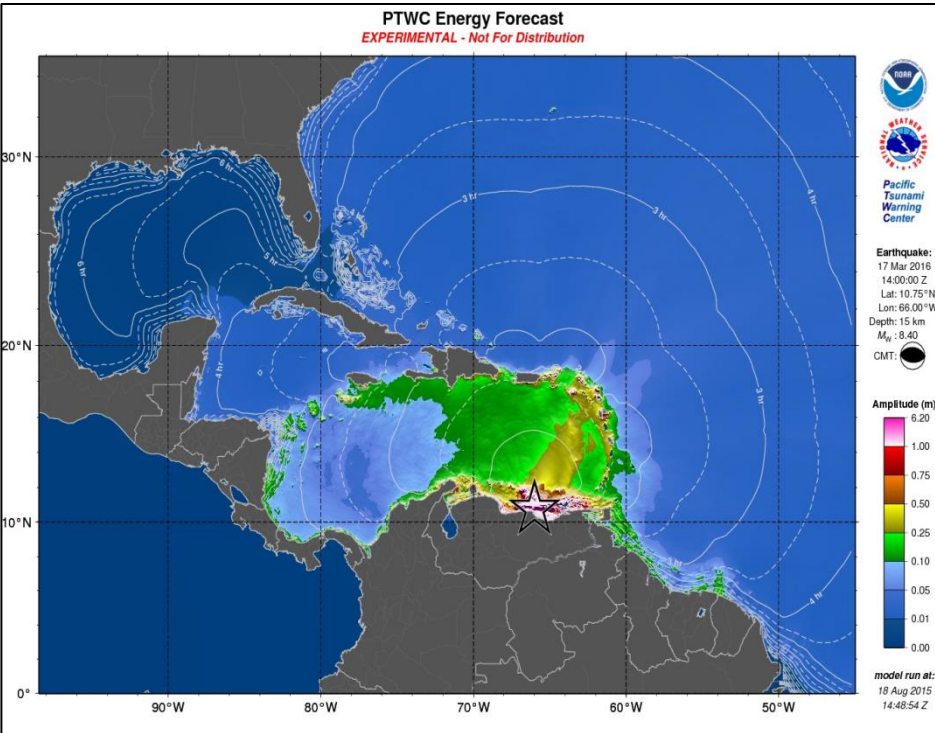
bold cities appear on map (k = x1000)

PAGER content is automatically generated, and only considers losses due to structural damage. Limitations of input data, shaking estimates, and loss models may add uncertainty.

<http://earthquake.usgs.gov/pager>

Event ID: ushispaniola.se

Forecasted Tsunami Wave Heights Venezuela

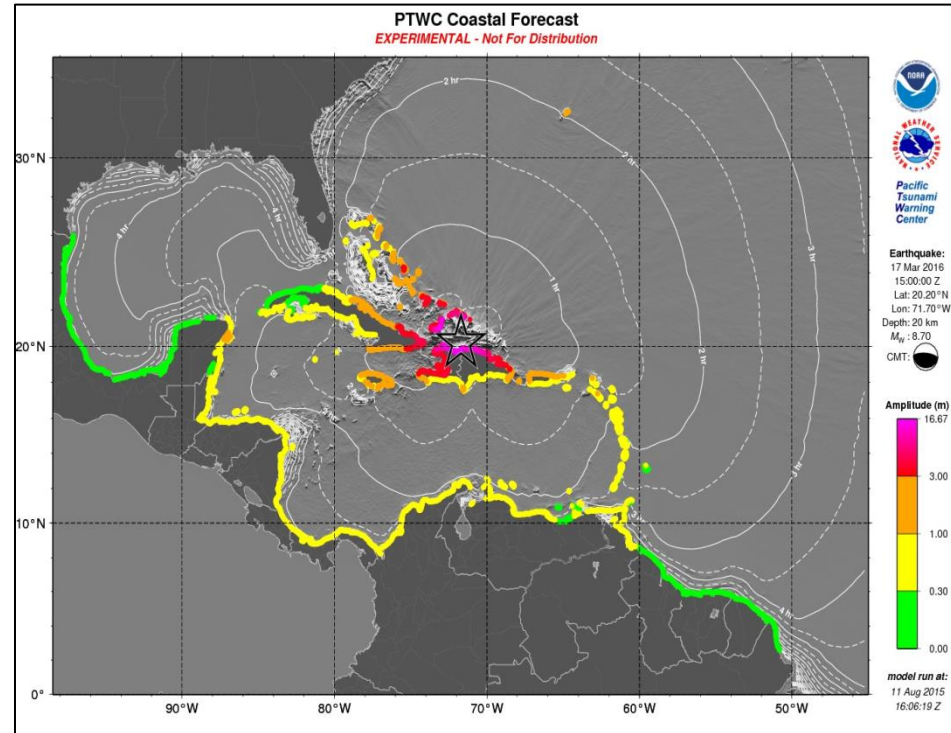
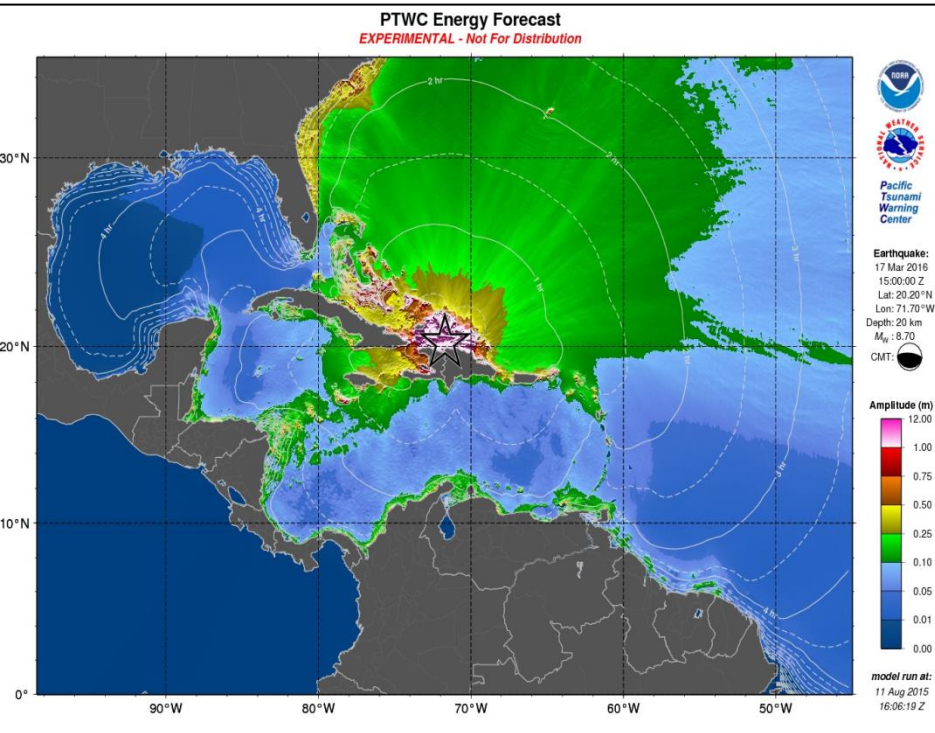


RIFT maximum amplitude map for the western Atlantic basin based on the SW Caribbean scenario for Venezuela.

RIFT coastal tsunami amplitude map for the Caribbean Sea based on the SW Caribbean scenario for Venezuela.

During a real event this product will only be made available to officially designated Tsunami Warning Focal Points and National Tsunami Warning Centers.

Forecasted Tsunami Wave Heights Northern Hispaniola



RIFT maximum amplitude map for the western Atlantic basin based on the SW Caribbean scenario for Northern Hispaniola.

RIFT coastal tsunami amplitude map for the Caribbean Sea based on the SW Caribbean scenario for Northern Hispaniola.

During a real event this product will only be made available to officially designated Tsunami Warning Focal Points and National Tsunami Warning Centers.

PTWC Enhanced Products

- March 1st, 2016 the CARIBE EWS will fully transition to the PTWC Enhanced Products.
- Products are threat-based on tsunami wave forecasts, in addition to the first product based on earthquake magnitude thresholds and travel time.
 - Will not use the watch term, indicate whether there is a threat and as of the second product, wave height

Product Types Issued for Dummy Message with Transmission Methods

Center	WMO ID	AWIPS ID	NWWS	GTS	EMWIN	AISR	Fax	Email
PTWC	WECA41 PHEB	TSUCAX	Yes	Yes	Yes	Yes	Yes	Yes

NWWS

GTS

EMWIN

AISR

NOAA Weather Wire Service

Global Telecommunications System

Emergency Manager's Weather Information Network

Aeronautical Information System Replacement

Message Chronology issued by the PTWC Venezuela

Date (UTC)	Time (UTC)	PTWC Message			
		#	Type	Dummy	Email
03/17/2016	1400	----Earthquake Occurs----			
03/17/2016	1405	01	Threat	Yes	Yes
03/17/2016	1425	02	Threat	No	Yes
03/17/2016	1510	03	Threat	No	Yes
03/17/2016	1545	04	Threat	No	Yes
03/17/2016	1645	05	Threat	No	Yes
03/17/2016	1745	06	Threat	No	Yes
03/17/2016	1845	07	Threat	No	Yes
03/17/2016	1945	08	Final Threat	No	Yes

Message Chronology issued by the PTWC

Northern Hispaniola

Date (UTC)	Time (UTC)	PTWC Message			
		#	Type	Dummy	Email
03/17/2016	1500	---- Earthquake Occurs ----			
03/17/2016	1505	01	Threat	Yes	Yes
03/17/2016	1525	02	Threat	No	Yes
03/17/2016	1600	03	Threat	No	Yes
03/17/2016	1630	04	Threat	No	Yes
03/17/2016	1700	05	Threat	No	Yes
03/17/2016	1800	06	Threat	No	Yes
03/17/2016	1900	07	Threat	No	Yes
03/17/2016	2000	08	Final Threat	No	Yes

Tsunami Threat issued by the PTWC

- Initial threat based on seismic information, as of second message, based on tsunami wave forecasts
- Forecasts indicate the levels of threat that have been forecast and to which countries or places they apply.
 - Levels= Tsunami heights (meters above the normal tide level)
 - 0.3-1 m
 - 1-3 m
 - > than 3 m

The PTWC will send via email all the simulated enhanced products (text and graphical) to the designated TWFP and NTWC (no need to register). To verify the current list of officially designated UNESCO

IOC CARIBE EWS TWFP and NTWC check out: http://www.ioc-tsunami.org/index.php?option=com_content&view=article&id=6&Itemid=22&lang=en

username: tsunami pwd: bigwave

Tsunami Checklists for NDMO/TWFP

Tsunami Evacuation Responsibilities Checklist for Government Disaster Response Agencies					
This is a simple checklist to use when doing an evacuation. List the agency(ies) / department(s) responsible for actions and recommended number of minutes (e.g. +10 minutes) after earthquake origin time.	Earthquake Origin Time: 0000				
	Agency(ies) / Department(s):	Time (mins):			
Strong and/or long duration earthquake is felt (vary depending distance from source)	_____	+	Initiate recall of disaster response workers	_____	+
Tsunami message received from tsunami service provider (NTWCs)	_____	+	Open and operate refuge centers	_____	+
Call in staff	_____	+	Prepare to start electrical generators	_____	+
Activate emergency centers / Notify public safety agencies	_____	+	If your facility is located in a tsunami evacuation zone: -Prepare to shutoff utilities (e.g. electrical, gas, water) -Protect key equipment (e.g. computers) -Remove key documents (e.g. financial, personal information)	_____	+
Coordinate sounding of public sirens and alarm notifications	_____	+		Determine if tsunami has caused coastal damage / injuries and the need to initiate search and rescue operations	_____
Initiate media notifications and evacuation announcements	_____	+	Determine when to declare the "all clear"	_____	+
Initiate evacuation of people away from coast (Tsunami Evacuation Maps)	_____	+	Prepare for post tsunami impact operations	_____	
Put boats/ships out to sea if wave impact time permits	_____	+	Do roll call for workers ___ and volunteers ___	_____	+
Setup road-blocks and evacuation routes	_____	+		_____	+
Guide people through traffic points to shelter	_____	+		_____	

National Tsunami Checklists

EVENT	TIME (WHEN)	ACTION TAKING (WHAT)	AUTHORITY (WHO)	MEDIUM (HOW)	RESULTING ACTION
EQ Occurs					
Tsunami threat message received					
Issue Public guidance					
Tsunami arrives					
Safe to return					

Appendix E. TWC Dummy (Start of Exercise) Messages

Venezuela Earthquake Scenario

PTWC

WECA41 PHEB 171405
TSUCAX

TEST...TSUNAMI EXERCISE MESSAGE NUMBER 1...TEST
NWS PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 1405Z 17 MAR 2016

...CARIBEWAVE 16 TSUNAMI EXERCISE MESSAGE. REFER TO PTWC MESSAGE 1 IN THE EXERCISE HANDBOOK. THIS IS AN EXERCISE ONLY...

THIS MESSAGE IS BEING USED TO START THE CARIBEWAVE 16 CARIBBEAN TSUNAMI EXERCISE VENEZUELA SCENARIO. THIS WILL BE THE ONLY EXERCISE MESSAGE BROADCAST FROM THE PACIFIC TSUNAMI WARNING CENTER EXCLUDING SPECIAL EMAIL MESSAGES DISCUSSED IN THE HANDBOOK. THE HANDBOOK IS AVAILABLE AT THE WEB SITE CARIBEWAVE.INFO. THE EXERCISE PURPOSE IS TO PROVIDE EMERGENCY MANAGEMENT A REALISTIC SCENARIO TO TEST TSUNAMI RESPONSE PLANS.

THIS IS ONLY AN EXERCISE.

\$\$

Northern Hispaniola Earthquake Scenario

PTWC

WECA41 PHEB 171505
TSUCAX

TEST...TSUNAMI EXERCISE MESSAGE NUMBER 1...TEST
NWS PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 1505Z 17 MAR 2016

...CARIBEWAVE 16 TSUNAMI EXERCISE MESSAGE. REFER TO PTWC MESSAGE 1 IN THE EXERCISE HANDBOOK. THIS IS AN EXERCISE ONLY...

THIS MESSAGE IS BEING USED TO START THE CARIBEWAVE 16 CARIBBEAN TSUNAMI EXERCISE NORTHERN HISPANIOLA SCENARIO. THIS WILL BE THE ONLY EXERCISE MESSAGE BROADCAST FROM THE PACIFIC TSUNAMI WARNING CENTER EXCLUDING SPECIAL EMAIL MESSAGES DISCUSSED IN THE HANDBOOK. THE HANDBOOK IS AVAILABLE AT THE WEB SITE CARIBEWAVE.INFO. THE EXERCISE PURPOSE IS TO PROVIDE EMERGENCY MANAGEMENT A REALISTIC SCENARIO TO TEST TSUNAMI RESPONSE PLANS.

THIS IS ONLY AN EXERCISE.

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**Appendix F. TWC Exercise Messages
Venezuela Earthquake Scenario**

The following messages created for the CARIBE WAVE 16 tsunami exercise are representative of the official standard products issued by the PTWC during a large magnitude 8.4 earthquake and tsunami originating in Venezuela. During a real event, NTWC and TWFP would be sent via email the graphical products. The alerts would persist longer during a real event than is depicted in this exercise.

PTWC Message #1

WECA41 PHEB 171405
TSUCAX

EXPERIMENTAL TSUNAMI MESSAGE NUMBER 1
NOT FOR DISTRIBUTION
NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI
1405 UTC THU MAR 17 2016

...TSUNAMI THREAT MESSAGE...

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE ****

THIS MESSAGE IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE
UNESCO/IOC TSUNAMI AND OTHER COASTAL HAZARDS WARNING SYSTEM FOR
THE CARIBBEAN AND ADJACENT REGIONS AND IS MEANT FOR NATIONAL
AUTHORITIES IN EACH COUNTRY OF THAT SYSTEM.

NATIONAL AUTHORITIES WILL DETERMINE THE APPROPRIATE LEVEL OF
ALERT FOR EACH COUNTRY AND MAY ISSUE ADDITIONAL OR MORE REFINED
INFORMATION.

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE ****

PRELIMINARY EARTHQUAKE PARAMETERS

- * MAGNITUDE 8.4
- * ORIGIN TIME 1400 UTC MAR 17 2016
- * COORDINATES 10.8 NORTH 66.0 WEST
- * DEPTH 15 KM / 9 MILES
- * LOCATION NEAR THE COAST OF VENEZUELA

EVALUATION

* AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.4 OCCURRED
NEAR THE COAST OF VENEZUELA AT 1400 UTC ON THURSDAY MARCH 17
2016.

* BASED ON THE PRELIMINARY EARTHQUAKE PARAMETERS... WIDESPREAD
HAZARDOUS TSUNAMI WAVES ARE POSSIBLE.

TSUNAMI THREAT FORECAST

* HAZARDOUS TSUNAMI WAVES FROM THIS EARTHQUAKE ARE POSSIBLE
WITHIN THE NEXT THREE HOURS ALONG SOME COASTS OF

VENEZUELA... BONAIRE... CURACAO... ARUBA... SAINT
VINCENT... GRENADA... PUERTO RICO... SAINT LUCIA... US
VIRGIN ISLANDS... MARTINIQUE... DOMINICA... GUADELOUPE...
DOMINICAN REP... SABA... MONTSERRAT... SAINT KITTS... SINT
EUSTATIUS... BARBADOS... HAITI... TRINIDAD TOBAGO... SINT
MAARTEN... COLOMBIA... ANGUILLA... ANTIGUA... BR VIRGIN
ISLANDS... BARBUDA... SAINT BARTHELEMY... TURKS N
CAICOS... CUBA... SAINT MARTIN... JAMAICA... BAHAMAS...
PANAMA AND CAYMAN ISLANDS

RECOMMENDED ACTIONS

* GOVERNMENT AGENCIES RESPONSIBLE FOR THREATENED COASTAL AREAS
SHOULD TAKE ACTION TO INFORM AND INSTRUCT ANY COASTAL
POPULATIONS AT RISK IN ACCORDANCE WITH THEIR OWN
EVALUATION... PROCEDURES AND THE LEVEL OF THREAT.

* PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD STAY ALERT
FOR INFORMATION AND FOLLOW INSTRUCTIONS FROM NATIONAL AND
LOCAL AUTHORITIES.

ESTIMATED TIMES OF ARRIVAL

* ESTIMATED TIMES OF ARRIVAL -ETA- OF THE INITIAL TSUNAMI WAVE
FOR PLACES LISTED WITH A POTENTIAL TSUNAMI THREAT. ACTUAL
ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE
LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN
WAVES CAN BE FIVE MINUTES TO ONE HOUR.

LOCATION REGION COORDINATES ETA(UTC)

CUMANA	VENEZUELA	10.5N 64.2W	1438 03/17
MAQUETIA	VENEZUELA	10.6N 67.0W	1448 03/17
ONIMA	BONAIRE	12.3N 68.3W	1455 03/17
WILLEMSTAD	CURACAO	12.1N 68.9W	1501 03/17
ORANJESTAD	ARUBA	12.5N 70.0W	1519 03/17
KINGSTOWN	SAINT VINCENT	13.1N 61.2W	1519 03/17
SAINT GEORGES	GRENADA	12.0N 61.8W	1519 03/17
CASTRIES	SAINT LUCIA	14.0N 61.0W	1524 03/17
FORT DE FRANCE	MARTINIQUE	14.6N 61.1W	1527 03/17
ROSEAU	DOMINICA	15.3N 61.4W	1529 03/17
BASSE TERRE	GUADELOUPE	16.0N 61.7W	1532 03/17
SANTO DOMINGO	DOMINICAN REP	18.5N 69.9W	1538 03/17
SABA	SABA	17.6N 63.2W	1541 03/17
CABO ENGANO	DOMINICAN REP	18.6N 68.3W	1543 03/17
PLYMOUTH	MONTSERRAT	16.7N 62.2W	1544 03/17
BASSETERRE	SAINT KITTS	17.3N 62.7W	1545 03/17
SINT EUSTATIUS	SINT EUSTATIUS	17.5N 63.0W	1546 03/17
BRIDGETOWN	BARBADOS	13.1N 59.6W	1548 03/17
JACAMEL	HAITI	18.1N 72.5W	1552 03/17
PIRATES BAY	TRINIDAD TOBAGO	11.3N 60.6W	1553 03/17
SIMPSON BAY	SINT MAARTEN	18.0N 63.1W	1554 03/17
RIOHACHA	COLOMBIA	11.5N 72.9W	1605 03/17
BARRANQUILLA	COLOMBIA	11.1N 74.9W	1611 03/17
PUERTO PLATA	DOMINICAN REP	19.8N 70.7W	1613 03/17
THE VALLEY	ANGUILLA	18.3N 63.1W	1614 03/17
SAINT JOHN'S	ANTIGUA	17.1N 61.9W	1618 03/17
PALMETTO POINT	BARBUDA	17.5N 61.9W	1624 03/17
SAINT BARTHELEM	SAINT BARTHELEMY	17.9N 62.8W	1625 03/17
GRAND TURK	TURKS N CAICOS	21.5N 71.1W	1627 03/17
CARTAGENA	COLOMBIA	10.4N 75.6W	1628 03/17
CAP HAITEN	HAITI	19.8N 72.2W	1629 03/17
SANTIAGO DE CUBA	CUBA	19.9N 75.8W	1631 03/17
BAIE BLANCHE	SAINT MARTIN	18.1N 63.0W	1632 03/17
KINGSTON	JAMAICA	17.9N 76.9W	1635 03/17
WEST CAICOS	TURKS N CAICOS	21.7N 72.5W	1638 03/17
MAYAGUANA	BAHAMAS	22.3N 73.0W	1639 03/17
GREAT INAGUA	BAHAMAS	20.9N 73.7W	1642 03/17
ALIGANDI	PANAMA	9.2N 78.0W	1645 03/17
BARACOA	CUBA	20.4N 74.5W	1647 03/17
MONTEGO BAY	JAMAICA	18.5N 77.9W	1647 03/17
CROCKED ISLAND	BAHAMAS	22.7N 74.1W	1647 03/17
PORT OF SPAIN	TRINIDAD TOBAGO	10.6N 61.5W	1649 03/17
SANTA MARTA	COLOMBIA	11.2N 74.2W	1652 03/17
PUERTO CARRETO	PANAMA	8.8N 77.6W	1652 03/17
SAN SALVADOR	BAHAMAS	24.1N 74.5W	1652 03/17
LONG ISLAND	BAHAMAS	23.3N 75.1W	1656 03/17
CAYMAN BRAC	CAYMAN ISLANDS	19.7N 79.9W	1702 03/17
PUNTA CARIBANA	COLOMBIA	8.6N 76.9W	1704 03/17

POTENTIAL IMPACTS

* A TSUNAMI IS A SERIES OF WAVES. THE TIME BETWEEN WAVE CRESTS
CAN VARY FROM 5 MINUTES TO AN HOUR. THE HAZARD MAY PERSIST
FOR MANY HOURS OR LONGER AFTER THE INITIAL WAVE.

* IMPACTS CAN VARY SIGNIFICANTLY FROM ONE SECTION OF COAST TO
THE NEXT DUE TO LOCAL BATHYMETRY AND THE SHAPE AND ELEVATION
OF THE SHORELINE.

* IMPACTS CAN ALSO VARY DEPENDING UPON THE STATE OF THE TIDE AT
THE TIME OF THE MAXIMUM TSUNAMI WAVES.

* PERSONS CAUGHT IN THE WATER OF A TSUNAMI MAY DROWN... BE
CRUSHED BY DEBRIS IN THE WATER... OR BE SWEEPED OUT TO SEA.

NEXT UPDATE AND ADDITIONAL INFORMATION

* THE NEXT MESSAGE WILL BE ISSUED IN ONE HOUR... OR SOONER IF
THE SITUATION WARRANTS.

* AUTHORITATIVE INFORMATION ABOUT THE EARTHQUAKE FROM THE U.S.
GEOLOGICAL SURVEY CAN BE FOUND ON THE INTERNET AT
EARTHQUAKE.USGS.GOV/EARTHQUAKES -ALL IN LOWERCASE LETTERS-.

* FURTHER INFORMATION ABOUT THIS EVENT MAY BE FOUND AT
PTWC.WEATHER.GOV AND AT WWW.TSUNAMI.GOV.

* COASTAL REGIONS OF PUERTO RICO... THE U.S. VIRGIN ISLANDS...
AND THE BRITISH VIRGIN ISLANDS SHOULD REFER TO PACIFIC
TSUNAMI WARNING CENTER MESSAGES FOR THOSE PLACES THAT CAN BE
FOUND AT PTWC.WEATHER.GOV.

* COASTAL REGIONS OF THE US GULF COAST... US EAST COAST... AND
THE MARITIME PROVINCES OF CANADA SHOULD REFER TO U.S.
NATIONAL TSUNAMI WARNING CENTER MESSAGES THAT CAN BE FOUND
AT NTWC.ARH.NOAA.GOV.

PTWC Message #8

WECA41 PHEB 171945
TSUCAX

EXPERIMENTAL TSUNAMI MESSAGE NUMBER 8
NOT FOR DISTRIBUTION
NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI
1945 UTC THU MAR 17 2016

...FINAL TSUNAMI THREAT MESSAGE...

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE ****

THIS MESSAGE IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE
UNESCO/IOC TSUNAMI AND OTHER COASTAL HAZARDS WARNING SYSTEM FOR
THE CARIBBEAN AND ADJACENT REGIONS AND IS MEANT FOR NATIONAL
AUTHORITIES IN EACH COUNTRY OF THAT SYSTEM.

NATIONAL AUTHORITIES WILL DETERMINE THE APPROPRIATE LEVEL OF
ALERT FOR EACH COUNTRY AND MAY ISSUE ADDITIONAL OR MORE REFINED
INFORMATION.

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE ****

UPDATES

* THIS IS THE FINAL TSUNAMI THREAT MESSAGE FOR THIS EVENT.

* TSUNAMI OBSERVATIONS ARE UPDATED IN THIS MESSAGE.

PRELIMINARY EARTHQUAKE PARAMETERS

* MAGNITUDE 8.4
* ORIGIN TIME 1400 UTC MAR 17 2016
* COORDINATES 10.8 NORTH 66.0 WEST
* DEPTH 15 KM / 9 MILES
* LOCATION NEAR THE COAST OF VENEZUELA

EVALUATION

* AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.4 OCCURRED
NEAR THE COAST OF VENEZUELA AT 1400 UTC ON THURSDAY MARCH 17
2016.

* BASED ON ALL AVAILABLE DATA... THE TSUNAMI THREAT FROM THIS
EARTHQUAKE HAS NOW LARGELY PASSED.
TSUNAMI THREAT FORECAST...UPDATED

* THE TSUNAMI THREAT HAS NOW LARGELY PASSED.

RECOMMENDED ACTIONS

* GOVERNMENT AGENCIES RESPONSIBLE FOR ANY IMPACTED COASTAL
AREAS SHOULD MONITOR CONDITIONS AT THE COAST TO DETERMINE IF
AND WHEN IT IS SAFE TO RESUME NORMAL ACTIVITIES.

* PERSONS LOCATED NEAR IMPACTED COASTAL AREAS SHOULD STAY ALERT
FOR INFORMATION AND FOLLOW INSTRUCTIONS FROM LOCAL
AUTHORITIES.

* REMAIN OBSERVANT AND EXERCISE NORMAL CAUTION NEAR THE SEA.

POTENTIAL IMPACTS

* MINOR SEA LEVEL FLUCTUATIONS MAY PERSIST IN COASTAL AREAS
AFFECTED BY THE TSUNAMI FOR SEVERAL HOURS OR LONGER.

TSUNAMI OBSERVATIONS

* THE FOLLOWING ARE TSUNAMI WAVE OBSERVATIONS FROM COASTAL
AND/OR DEEP-OCEAN SEA LEVEL GAUGES AT THE INDICATED
LOCATIONS. THE MAXIMUM TSUNAMI HEIGHT IS MEASURED WITH
RESPECT TO THE NORMAL TIDE LEVEL.

GAUGE TIME OF MAXIMUM WAVE
COORDINATES MEASURE TSUNAMI PERIOD
GAUGE LOCATION LAT LON (UTC) HEIGHT (MIN)

ILE ROYAL GUIANA FR	5.3N	52.6W	1922	0.20M/0.6FT	22
DART 42429	27.4N	85.7W	1908	0.00M/0.0FT	26
DART 42409	26.7N	85.8W	1856	0.00M/0.0FT	24
PUERTO MORELOS MX	21.4N	86.8W	1855	0.14M/0.5FT	28
ISLA MUJERES	21.2N	86.7W	1839	0.18M/0.6FT	18
DART 41424	32.9N	72.5W	1746	0.02M/0.1FT	14
LIMON CR	10.0N	83.0W	1735	0.69M/2.3FT	18
GEORGE TOWN CY	19.3N	81.4W	1732	0.12M/0.4FT	24
EL PORVENIR PM	9.6N	78.9W	1732	0.46M/1.5FT	26
SAN ANDRES CO	12.6N	81.7W	1716	0.45M/1.5FT	22
SANTA MARTA CO	11.2N	74.2W	1702	0.94M/3.1FT	22
CAP HAITIEN HT	19.8N	72.2W	1640	0.24M/0.8FT	26
PARHAM AT	17.1N	61.8W	1628	0.82M/2.7FT	16
DART 41420	23.5N	67.3W	1625	0.03M/0.1FT	22
DART 41421	23.4N	63.9W	1625	0.03M/0.1FT	26
LAMESHURBAYSTJOHNVI	18.3N	64.7W	1623	2.05M/6.7FT	22
PUERTO PLATA DO	19.8N	70.7W	1620	0.25M/0.8FT	18
DESIRADE GUADELOUPE	16.3N	61.1W	1609	0.96M/3.2FT	28
SAN JUAN PR	18.5N	66.1W	1611	0.41M/1.4FT	24
JACMEL HT	18.2N	72.5W	1600	1.47M/4.8FT	14
CHARLOTTEVILLE TT	11.3N	60.5W	1606	0.75M/2.4FT	26
LE ROBERT MARTINIQUE	14.7N	60.9W	1559	1.16M/3.8FT	28
BRIDGEPORT BB	13.1N	59.6W	1554	0.78M/2.6FT	22
PORT ST CHARLES BB	13.3N	59.6W	1555	0.88M/2.9FT	16
POINT A PITRE GP	16.2N	61.5W	1555	4.30M/14.1FT	28
PUNTA CANA DO	18.5N	68.4W	1547	1.91M/6.3FT	18
DESHAIES GUADELOUPE	16.3N	61.8W	1544	3.03M/9.9FT	20
ESPERANZA VIEQUES P	18.1N	65.5W	1542	1.69M/5.6FT	24
PORT SAN ANDRES DO	18.4N	69.6W	1548	1.68M/5.5FT	26
MAYAGUEZ PR	18.2N	67.2W	1541	1.42M/4.7FT	18
ROSEAU DM	15.3N	61.4W	1540	2.74M/9.0FT	26
LE PRECHEUR MARTINI	14.8N	61.2W	1534	2.55M/8.4FT	26
FORT DE FRANCE MQ	14.6N	61.1W	1541	2.97M/9.7FT	26
MONA ISLAND PR	18.1N	67.9W	1538	1.38M/4.5FT	20
CALLIAQUA VC	13.1N	61.2W	1540	1.87M/6.1FT	22
LIMETREE VI	17.7N	64.8W	1538	2.42M/7.9FT	22
ST CROIX VI	17.7N	64.7W	1535	2.27M/7.5FT	24
MAGUEYES ISLAND PR	18.0N	67.0W	1534	1.38M/4.5FT	14
PENUELAS PR	18.0N	66.8W	1535	1.91M/6.3FT	20
PRICKLEY BAY GD	12.0N	61.8W	1525	1.76M/5.8FT	24
BULLEN BAY CURACAO	12.2N	69.0W	1512	2.18M/7.2FT	22
DART 42407	15.3N	68.2W	1507	0.22M/0.7FT	16

NEXT UPDATE AND ADDITIONAL INFORMATION

* THIS WILL BE THE FINAL STATEMENT ISSUED FOR THIS EVENT UNLESS
NEW INFORMATION IS RECEIVED OR THE SITUATION CHANGES.

* AUTHORITATIVE INFORMATION ABOUT THE EARTHQUAKE FROM THE U.S.
GEOLOGICAL SURVEY CAN BE FOUND ON THE INTERNET AT
EARTHQUAKE.USGS.GOV/EARTHQUAKES -ALL IN LOWERCASE LETTERS-.

* FURTHER INFORMATION ABOUT THIS EVENT MAY BE FOUND AT
PTWC.WEATHER.GOV AND AT WWW.TSUNAMI.GOV.

* COASTAL REGIONS OF PUERTO RICO... THE U.S. VIRGIN ISLANDS...
AND THE BRITISH VIRGIN ISLANDS SHOULD REFER TO PACIFIC
TSUNAMI WARNING CENTER MESSAGES FOR THOSE PLACES THAT CAN BE
FOUND AT PTWC.WEATHER.GOV.

* COASTAL REGIONS OF THE US GULF COAST... US EAST COAST... AND
THE MARITIME PROVINCES OF CANADA SHOULD REFER TO U.S.
NATIONAL TSUNAMI WARNING CENTER MESSAGES THAT CAN BE FOUND
AT NTWC.ARH.NOAA.GOV.

Northern Hispaniola Earthquake Scenario

The following messages created for the CARIBE WAVE 16 tsunami exercise are representative of the official standard products issued by the PTWC during a large magnitude 8.7 earthquake and tsunami originating just northern Hispaniola. During a real event, the TVCs would also issue graphical and html-based products to their web sites and via RSS. The alerts would persist longer during a real event than is depicted in this exercise.

PTWC Message #1

WECA41 PHEB 171505
TSUCAX

EXPERIMENTAL TSUNAMI MESSAGE NUMBER 1
NOT FOR DISTRIBUTION
NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI
1505 UTC THU MAR 17 2016

...TSUNAMI THREAT MESSAGE...

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE ****

THIS MESSAGE IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE UNESCO/IOC TSUNAMI AND OTHER COASTAL HAZARDS WARNING SYSTEM FOR THE CARIBBEAN AND ADJACENT REGIONS AND IS MEANT FOR NATIONAL AUTHORITIES IN EACH COUNTRY OF THAT SYSTEM.

NATIONAL AUTHORITIES WILL DETERMINE THE APPROPRIATE LEVEL OF ALERT FOR EACH COUNTRY AND MAY ISSUE ADDITIONAL OR MORE REFINED INFORMATION.

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE ****

PRELIMINARY EARTHQUAKE PARAMETERS

* MAGNITUDE 8.5
* ORIGIN TIME 1500 UTC MAR 17 2016
* COORDINATES 20.0 NORTH 71.7 WEST
* DEPTH 20 KM / 12 MILES
* LOCATION DOMINICAN REPUBLIC REGION

EVALUATION

* AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.5 OCCURRED IN THE DOMINICAN REPUBLIC REGION AT 1500 UTC ON THURSDAY MARCH 17 2016.

* BASED ON THE PRELIMINARY EARTHQUAKE PARAMETERS... WIDESPREAD HAZARDOUS TSUNAMI WAVES ARE POSSIBLE.

TSUNAMI THREAT FORECAST

* HAZARDOUS TSUNAMI WAVES FROM THIS EARTHQUAKE ARE POSSIBLE WITHIN THE NEXT THREE HOURS ALONG SOME COASTS OF

HAITI... DOMINICAN REP... TURKS N CAICOS... BAHAMAS...
CUBA... PUERTO RICO... JAMAICA... CAYMAN ISLANDS... US
VIRGIN ISLANDS... SABA... SINT MAARTEN... SINT
EUSTATIUS... ANGUILLA... SAINT KITTS... BARBUDA...
BONAIRE... GUADELOUPE... MONTSERRAT... BR VIRGIN
ISLANDS... SAINT BARTHELEMY... CURACAO... ARUBA...
DOMINICA... SAINT MARTIN... MARTINIQUE... ANTIGUA...
BERMUDA... SAINT LUCIA... COLOMBIA... BARBADOS... SAINT
VINCENT... VENEZUELA... MEXICO... GRENADA... HONDURAS...
PANAMA AND TRINIDAD TOBAGO

RECOMMENDED ACTIONS

* GOVERNMENT AGENCIES RESPONSIBLE FOR THREATENED COASTAL AREAS SHOULD TAKE ACTION TO INFORM AND INSTRUCT ANY COASTAL POPULATIONS AT RISK IN ACCORDANCE WITH THEIR OWN EVALUATION... PROCEDURES AND THE LEVEL OF THREAT.

* PERSONS LOCATED IN THREATENED COASTAL AREAS SHOULD STAY ALERT FOR INFORMATION AND FOLLOW INSTRUCTIONS FROM NATIONAL AND LOCAL AUTHORITIES.

ESTIMATED TIMES OF ARRIVAL

* ESTIMATED TIMES OF ARRIVAL (ETA) OF THE INITIAL TSUNAMI WAVE FOR PLACES LISTED WITH A POTENTIAL TSUNAMI THREAT. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN WAVES CAN BE FIVE MINUTES TO ONE HOUR.

LOCATION	REGION	COORDINATES	ETA(UTC)
CAP HAITEN	HAITI	18.8N 72.2W	1509 03/17
PUERTO PLATA	DOMINICAN REP	19.8N 70.7W	1514 03/17
WEST CAICOS	TURKS N CAICOS	21.7N 72.5W	1521 03/17
GREAT INGLIA	BAHAMAS	20.9N 73.7W	1524 03/17
MAXIGUANA	BAHAMAS	22.3N 73.0W	1527 03/17
BARACOA	CUBA	20.4N 74.5W	1529 03/17
GRAND TURK	TURKS N CAICOS	21.5N 71.1W	1529 03/17
CROOKED ISLAND	BAHAMAS	22.7N 74.1W	1542 03/17
SANTIAGO D CUBA	CUBA	19.5N 75.8W	1544 03/17
CARO ENGLANO	DOMINICAN REP	18.6N 68.3W	1546 03/17
SAN SALVADOR	BAHAMAS	24.1N 74.5W	1549 03/17
LONG ISLAND	BAHAMAS	23.3N 75.1W	1551 03/17
EXUMA	BAHAMAS	23.6N 75.9W	1604 03/17
MONTEGO BAY	JAMAICA	18.5N 77.9W	1605 03/17
COT ISLAND	BAHAMAS	24.4N 75.5W	1610 03/17
CAYMAN BRAC	CAYMAN ISLANDS	19.7N 79.9W	1617 03/17
ABACO ISLAND	BAHAMAS	25.6N 77.1W	1618 03/17
JACMAEL	HAITI	18.1N 72.5W	1619 03/17
KINGSTON	JAMAICA	17.9N 76.9W	1620 03/17
SANTO DOMINGO	DOMINICAN REP	18.5N 69.9W	1623 03/17
ANDROS ISLAND	BAHAMAS	25.8N 77.9W	1623 03/17
SABA	SABA	17.6N 63.2W	1626 03/17
JEREMIE	HAITI	18.6N 74.1W	1629 03/17
SIMPSON BAY	SINT MAARTEN	18.0N 63.1W	1633 03/17
GRABA	CUBA	21.1N 76.1W	1634 03/17
ELEUTHERA ISLAN	BAHAMAS	25.2N 76.1W	1636 03/17
SINT EUSTATIUS	SINT EUSTATIUS	17.5N 63.0W	1636 03/17
CENUEGOS	CUBA	22.0N 80.5W	1639 03/17
NASSAU	BAHAMAS	25.1N 77.4W	1640 03/17
THE VALLEY	ANGUILLA	18.3N 63.1W	1642 03/17
BASSETERRE	SAINT KITTS	17.3N 62.7W	1642 03/17
FREEPORT	BAHAMAS	26.5N 78.8W	1643 03/17
GRAND CAYMAN	CAYMAN ISLANDS	19.3N 81.3W	1644 03/17
PALMETTO POINT	BARBUDA	17.6N 61.9W	1651 03/17
ORINIA	BONAIRE	12.3N 68.3W	1653 03/17
BASSE TERRE	GUADELOUPE	16.0N 61.7W	1657 03/17
PLYMOUTH	MONTSERRAT	16.7N 62.2W	1657 03/17
SAINT BARTHELEMY	SAINT BARTHELEMY	17.5N 62.5W	1658 03/17
WILLEMSTAD	CURACAO	12.1N 68.9W	1659 03/17
ORANJESTAD	ARUBA	12.5N 70.0W	1701 03/17
ROSEAU	DOMINICA	15.3N 61.4W	1703 03/17
BAIE BLANCHE	SAINT MARTIN	18.1N 63.0W	1704 03/17
FORT DE FRANCE	MARTINIQUE	14.6N 61.1W	1706 03/17
SAINT JOHN	ANTIGUA	17.1N 61.9W	1708 03/17
RUTHS BAY	BERMUDA	32.4N 64.0W	1710 03/17
CASTRIES	SAINT LUCIA	14.0N 61.0W	1711 03/17
BARRANQUILLA	COLOMBIA	11.1N 74.9W	1713 03/17
BIMBI	BAHAMAS	25.8N 79.2W	1715 03/17
RIOHACHA	COLOMBIA	11.6N 72.9W	1715 03/17
PORT AU PRINCE	HAITI	18.5N 72.4W	1718 03/17
BRIDGETOWN	BARBADOS	13.1N 59.6W	1720 03/17
KINGSTOWN	SAINT VINCENT	13.1N 61.2W	1720 03/17
MAQUETIA	VENEZUELA	10.6N 67.0W	1721 03/17
CDZUMEL	MEXICO	20.5N 87.0W	1726 03/17
CARTAGENA	COLOMBIA	10.4N 75.6W	1727 03/17
SAINT GEORGES	GRENADA	12.0N 61.8W	1730 03/17
PUERTO CORTES	HONDURAS	15.9N 88.0W	1734 03/17
AUGANAN	PANAMA	9.2N 78.0W	1738 03/17
CUMANA	VENEZUELA	10.5N 64.2W	1739 03/17
PIRATES BAY	TRINIDAD TOBAGO	11.3N 60.6W	1742 03/17
PUERTO CARRETO	PANAMA	8.8N 87.0W	1747 03/17
TRUJILLO	HONDURAS	15.9N 86.0W	1753 03/17
SANTA MARTA	COLOMBIA	11.2N 74.2W	1755 03/17
LA HABANA	CUBA	23.2N 82.4W	1756 03/17
PUNTA CARIBIANA	COLOMBIA	8.6N 76.9W	1800 03/17

POTENTIAL IMPACTS

* A TSUNAMI IS A SERIES OF WAVES. THE TIME BETWEEN WAVE CRESTS CAN VARY FROM 5 MINUTES TO AN HOUR. THE HAZARD MAY PERSIST FOR MANY HOURS OR LONGER AFTER THE INITIAL WAVE.

* IMPACTS CAN VARY SIGNIFICANTLY FROM ONE SECTION OF COAST TO THE NEXT DUE TO LOCAL BATHYMETRY AND THE SHAPE AND ELEVATION OF THE SHORELINE.

* IMPACTS CAN ALSO VARY DEPENDING UPON THE STATE OF THE TIDE AT THE TIME OF THE MAXIMUM TSUNAMI WAVES.

* PERSONS CAUGHT IN THE WATER OF A TSUNAMI MAY DROWN... BE CRUSHED BY DEBRIS IN THE WATER... OR BE SWEEPED OUT TO SEA.

NEXT UPDATE AND ADDITIONAL INFORMATION

* THE NEXT MESSAGE WILL BE ISSUED IN ONE HOUR... OR SOONER IF THE SITUATION WARRANTS.

* AUTHORITY INFORMATION ABOUT THE EARTHQUAKE FROM THE U.S. GEOLOGICAL SURVEY CAN BE FOUND ON THE INTERNET AT EARTHQUAKE.USGS.GOV/EARTHQUAKES - ALL IN LOWERCASE LETTERS.

* FURTHER INFORMATION ABOUT THIS EVENT MAY BE FOUND AT PTWC.WEATHER.GOV AND AT WWW.TSUNAMI.GOV.

* COASTAL REGIONS OF PUERTO RICO... THE U.S. VIRGIN ISLANDS... AND THE BRITISH VIRGIN ISLANDS SHOULD REFER TO PACIFIC TSUNAMI WARNING CENTER MESSAGES FOR THOSE PLACES THAT CAN BE FOUND AT PTWC.WEATHER.GOV.

* COASTAL REGIONS OF THE US GULF COAST... US EAST COAST... AND THE MARITIME PROVINCES OF CANADA SHOULD REFER TO U.S. NATIONAL TSUNAMI WARNING CENTER MESSAGES THAT CAN BE FOUND AT NTWVCARH.NOAA.GOV.

PTWC Message #8

WECA41 PHEB 172000
TSUCAX

EXPERIMENTAL TSUNAMI MESSAGE NUMBER 8
NOT FOR DISTRIBUTION
NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI
2000 UTC THU MAR 17 2016

...FINAL TSUNAMI THREAT MESSAGE...

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE ****

THIS MESSAGE IS ISSUED FOR INFORMATION ONLY IN SUPPORT OF THE
UNESCO/IOC TSUNAMI AND OTHER COASTAL HAZARDS WARNING SYSTEM FOR
THE CARIBBEAN AND ADJACENT REGIONS AND IS MEANT FOR NATIONAL
AUTHORITIES IN EACH COUNTRY OF THAT SYSTEM.

NATIONAL AUTHORITIES WILL DETERMINE THE APPROPRIATE LEVEL OF
ALERT FOR EACH COUNTRY AND MAY ISSUE ADDITIONAL OR MORE REFINED
INFORMATION.

**** NOTICE **** NOTICE **** NOTICE **** NOTICE **** NOTICE ****

UPDATES

* THIS IS THE FINAL TSUNAMI THREAT MESSAGE FOR THIS EVENT.

* TSUNAMI OBSERVATIONS ARE UPDATED IN THIS MESSAGE.

PRELIMINARY EARTHQUAKE PARAMETERS

- * MAGNITUDE 8.7
- * ORIGIN TIME 1500 UTC MAR 17 2016
- * COORDINATES 20.2 NORTH 71.7 WEST
- * DEPTH 20 KM / 12 MILES
- * LOCATION DOMINICAN REPUBLIC REGION

EVALUATION

* AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.7 OCCURRED IN
THE DOMINICAN REPUBLIC REGION AT 1500 UTC ON THURSDAY MARCH 17
2016.

* BASED ON ALL AVAILABLE DATA... THE TSUNAMI THREAT FROM THIS
EARTHQUAKE HAS NOW LARGELY PASSED.

TSUNAMI THREAT FORECAST...UPDATED

* THE TSUNAMI THREAT HAS NOW LARGELY PASSED.

RECOMMENDED ACTIONS

* GOVERNMENT AGENCIES RESPONSIBLE FOR ANY IMPACTED COASTAL
AREAS SHOULD MONITOR CONDITIONS AT THE COAST TO DETERMINE IF
AND WHEN IT IS SAFE TO RESUME NORMAL ACTIVITIES.

* PERSONS LOCATED NEAR IMPACTED COASTAL AREAS SHOULD STAY ALERT
FOR INFORMATION AND FOLLOW INSTRUCTIONS FROM LOCAL
AUTHORITIES.

* REMAIN OBSERVANT AND EXERCISE NORMAL CAUTION NEAR THE SEA.

POTENTIAL IMPACTS

* MINOR SEA LEVEL FLUCTUATIONS MAY PERSIST IN COASTAL AREAS
AFFECTED BY THE TSUNAMI FOR SEVERAL HOURS OR LONGER.

TSUNAMI OBSERVATIONS

* THE FOLLOWING ARE TSUNAMI WAVE OBSERVATIONS FROM COASTAL
AND/OR DEEP-OCEAN SEA LEVEL GAUGES AT THE INDICATED
LOCATIONS. THE MAXIMUM TSUNAMI HEIGHT IS MEASURED WITH
RESPECT TO THE NORMAL TIDE LEVEL.

GAUGE TIME OF MAXIMUM WAVE
COORDINATES MEASURE TSUNAMI PERIOD
GAUGE LOCATION LAT LON (UTC) HEIGHT (MIN)

PILOTS STATION LA	28.9N	89.4W	1921	0.08M/0.3FT	18
KEY WEST FL	24.6N	81.8W	1852	0.20M/0.6FT	18
TRIDENT PIER FL	28.4N	80.6W	1854	1.26M/4.1FT	20
DART 42429	27.4N	85.7W	1820	0.01M/0.0FT	26
LIMON CR	10.0N	83.0W	1818	0.71M/2.3FT	22
CHARLOTTEVILLE TT	11.3N	60.5W	1809	0.28M/0.9FT	24
DART 42409	26.7N	85.8W	1810	0.01M/0.0FT	28
PUERTO MORELOS MX	21.4N	86.8W	1806	0.38M/1.2FT	18
ISLA MUJERES	21.2N	86.7W	1759	0.68M/2.2FT	14
EL PORVENIR PM	9.6N	78.9W	1754	0.87M/2.9FT	18
PRICKLEY BAY GD	12.0N	61.8W	1749	0.47M/1.5FT	24
SAN ANDRES CO	12.6N	81.7W	1751	0.57M/1.9FT	26
CALLIAQUA VC	13.1N	61.2W	1735	0.50M/1.7FT	22
BRIDGEPORT BB	13.1N	59.6W	1729	0.31M/1.0FT	26
PORT ST CHARLES BB	13.3N	59.6W	1722	0.31M/1.0FT	16
SANTA MARTA CO	11.2N	74.2W	1721	0.89M/2.9FT	22
FORT DE FRANCE MQ	14.6N	61.1W	1719	0.62M/2.0FT	26
LE ROBERT MARTINIQU	14.7N	60.9W	1714	0.31M/1.0FT	22
ROSEAU DM	15.3N	61.4W	1710	0.46M/1.5FT	18
LE PRECHEUR MARTINI	14.8N	61.2W	1712	0.54M/1.8FT	28
BULLEN BAY CURACAO	12.2N	69.0W	1713	0.89M/2.9FT	24
POINT A PITRE GP	16.2N	61.5W	1701	0.60M/2.0FT	14
DART 41424	32.9N	72.5W	1704	0.19M/0.6FT	26
LAMESHURBAYSTJOHNVI	18.3N	64.7W	1659	0.83M/2.7FT	28
DESHAIES GUADELOUPE	16.3N	61.8W	1657	0.62M/2.0FT	28
PORT SAN ANDRES DO	18.4N	69.6W	1651	1.14M/3.7FT	22
PARHAM AT	17.1N	61.8W	1647	0.42M/1.4FT	28
DESIRADE GUADELOUPE	16.3N	61.1W	1652	0.38M/1.3FT	22
ESPERANZA VIEQUES P	18.1N	65.5W	1639	0.73M/2.4FT	16
GEORGE TOWN CY	19.3N	81.4W	1639	0.47M/1.5FT	18
LIMETREE VI	17.7N	64.8W	1634	0.77M/2.5FT	20
ST CROIX VI	17.7N	64.7W	1629	0.80M/2.6FT	24
DART 42407	15.3N	68.2W	1630	0.07M/0.2FT	18
JACMEL HT	18.2N	72.5W	1629	0.78M/2.5FT	26
MAGUEYES ISLAND PR	18.0N	67.0W	1621	0.91M/3.0FT	26
PENUELAS PR	18.0N	66.8W	1623	0.94M/3.1FT	26
DART 41421	23.4N	63.9W	1619	0.19M/0.6FT	20
MONA ISLAND PR	18.1N	67.9W	1610	2.74M/9.0FT	22
PUNTA CANA DO	18.5N	68.4W	1604	3.47M/11.4FT	22
SAN JUAN PR	18.5N	66.1W	1601	2.03M/6.7FT	16
MAYAGUEZ PR	18.2N	67.2W	1603	3.55M/11.6FT	14
DART 41420	23.5N	67.3W	1553	0.24M/0.8FT	24
PUERTO PLATA DO	19.8N	70.7W	1522	15.27M/50.1FT	22
CAP HAITIEN HT	19.8N	72.2W	1514	17.74M/58.2FT	16

NEXT UPDATE AND ADDITIONAL INFORMATION

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NEW INFORMATION IS RECEIVED OR THE SITUATION CHANGES.

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AT NTWC.ARH.NOAA.GOV.

Member State Participation - Registration

- Member States to establish their own national task teams to determine the scope of their national participation and testing.

The screenshot shows the website tsunamizone.org. The navigation bar includes links for Home, TsunamiZone Regions (California, Caribbean), Other Languages, Contact Us, Search, and Login. A banner features the Golden Gate Bridge and a person running, with text for "U.S. Virgin Alaska Tsunami Preparedness Week Mar. 27-Apr. 2, 2016". Below the banner is a menu with "Register Here!" and other options. A green status bar indicates "No Tsunami Warnings, Advisories or Watches are in effect".

WELCOME TO THE TSUNAMIZONE!

Everyone, everywhere should know how to be prepared for tsunamis and what to do to be safe. This is true for people who live or work near the ocean, but also for anyone who may visit someday. Are you in the Zone?

TsunamiZone.org provides [suggestions](#) and [resources](#) for your family or organization to "[know your zone](#)" and to [learn](#) how to be safe.

Be counted among people and organizations worldwide by [registering](#) your 2016 tsunami preparedness activities!

CALENDAR

Official TsunamiZone Regions are linked to more information including regional events:

- March 13-19**
[Puerto Rico](#), [U.S. Virgin Islands](#)
- March 27-April 2**
Alaska, [California](#), CNMI, Guam
- April**
Hawaii
- September 18-24**
American Samoa
- October**
Guam & Washington



WELCOME TO THE TSUNAMIZONE IN THE CARIBBEAN!

Regional Tsunami Exercises to be conducted in the Caribbean and Adjacent Regions on March 17, 2016: [Register Now!](#)

On March 17, 2016, the annual Caribbean and Adjacent Regions Tsunami Exercise, [CARIBE WAVE](#), will take place. UNESCO, the [U.S. National Tsunami Hazard Mitigation Program \(NTHMP\)](#), in the case of Puerto Rico and the US Virgin Islands, together with other regional organizations, are providing the framework. This exercise is a means for emergency responders throughout the Caribbean and Adjacent Regions serviced by the [Pacific Tsunami Warning Center \(PTWC\)](#), to test and update tsunami response plans with their at risk communities. The scenarios are based on tsunamis generated by major earthquakes located off the coast of Venezuela (14h00 UTC) and the

UNESCO CARIBE EWS

Member States and Territories

Antigua and Barbuda	Aruba	
Bahamas	Barbados	Belize
Brazil*	Canada**	Colombia
Costa Rica	Cuba*	Curaçao
Dominica	Dominican Republic	

REGISTER YOUR TSUNAMI PREPAREDNESS ACTIVITIES

- If you have never registered with TsunamiZone.org, please use the form on the left.
- If you have previously registered with TsunamiZone.org, please login to your TsunamiZone profile using the form on the right.
- If *someone else* has registered your organization in the past, but you will be the registrant this year, please create a new registration using the form on the left.
- If your organization will participate in two or more TsunamiZone regions, e-mail info@tsunamiZone.org for registration assistance.

Event Organizers: [Submit your event details](#) to the [TsunamiZone calendar](#).

BENEFITS

By registering tsunami preparedness activities, you or your organization will:

- Be [counted](#) as a participant on the TsunamiZone website!
- Be [listed](#) with other participants in your area (Optional)
- Be an [example](#) that motivates others to [participate & prepare](#)
- Be [updated](#) with TsunamiZone news and preparedness tips
- Have **peace of mind** that you, your family, your co-workers and millions of others will **be better prepared to survive and recover quickly** when a tsunami occurs.

REGISTERING FOR THE FIRST TIME?

BEGIN Your Registration

Who are you registering?

Please select your country:

REGISTERED IN PAST YEARS?

LOGIN to Renew Your Registration

Confirm your TsunamiZone region:

Enter your e-mail address:

TsunamiZone Password:

Countries can keep track of registration by clicking on « Who is Participating »

Media Arrangements

- PRSN Tsunami Media Guide (English and Spanish)
<http://www.prsn.uprm.edu/mediakit/>
- Seismic Research Center Tsunami and other Coastal Hazards WS Media Information Kit
<http://www.uwiseismic.com>
- Handbook sample press release, which can be adapted as necessary.
- Social media; #CaribeWave

Actions in Case of a Real Event

In the case of a real event occurring during the exercise, the PTWC will issue the corresponding messages for the event. Such messages will be given full priority and a decision will be made by the PTWC whether to issue the dummy messages and to send email messages to corresponding recipients. Smaller earthquakes that only trigger a Tsunami Information Statement will not disrupt the exercise. All documentation and correspondence relating to this exercise is to be clearly identified as “**CARIBE WAVE 16**” and “**Exercise.**”

Procedure for False Alarm

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

Post-Exercise Evaluation Form

- Each CARIBE EWS member state and territory is requested to provide feedback on the exercise.
 - This feedback will assist the ICG/CARIBE-EWS in the evaluation of Caribe Wave 16 and the development of subsequent exercises, and help response agencies document lessons learned.
- The deadline for completing the evaluation is **March 23, 2016.**
 - <https://www.surveymonkey.com/r/CaribeWave16>

Resources

- IOC Manual “How to plan, conduct and evaluate tsunami exercises” which will also be a useful resource.
- CARIBE WAVE 2011, 2013, 2014, 2015 Handbooks
- CARIBE WAVE 2013, 2014, 2015 Final and Media Report
- PTWC Communications Plan for the Caribbean
- PTWC Enhanced Products User Guide
- Available at www.caribewave.info

Additional Info

- Additional materials will be added to CTWP (www.caribewave.info) and PRSN websites.
- Send links of other national pages to christa.vonh@noaa.gov to include on CTWP and PRSN websites
- This presentation is available on CTWP website

CARIBE WAVE 16 Task Team

Person	Telephone #	Email
Elizabeth Vanacore, PRSN, CARIBE WAVE 16 Chair	1-787-833-8433	elizabeth.vanacore@upr.edu
Christa von Hillebrandt-Andrade, CARIBE EWS Chair; NWS CTWP Manager	1-787-249-8307	christa.vonh@noaa.gov
Milton Puentes, CARIBE EWS Vice Chair	57-1-2020490	milpuentes@gmail.com
Denis Lopez, CARIBE EWS Vice Chair	596-596-39393	denis.lopez@martinique.pref.gouv.fr
Aura Fernandez, CARIBE EWS Vice Chair	582-122575153	aefernandez@funvisis.gob.ve
Jean Marie Saurel, CARIBE EWS Chair WG1	596-596-784146	saurel@ipgp.fr
Alberto Lopez, CARIBE EWS Chair WG2	1-787-832-4040	alberto.lopez3@upr.edu
Antonio Aguilar, CARIBE EWS Chair WG3	582-122575153	antoniodesastres@gmail.com
Patrick Tyburn, CARIBE EWS Chair WG4	596-596-393813	patrick.tyburn@martinique.pref.gouv.fr
Alison Brome, Interim Director, CTIC	1-246-622-1610 x1002	a.brome@unesco.org
Charles McCreery, PTWC Director	1-808-689-8207	charles.mccreery@noaa.gov
Gerard Fryer, PTWC Rep.	1-808-689-8207	gerard.fryer@noaa.gov
Víctor Huérfano, PRSN Director	1-787-833-8433	victor@prsn.uprm.edu
Ronald Jackson, Director CDEMA	246-425-0386	ronald.jackson@cdema.org
Roy Barboza Sequeira, Executive Secretary, CEPREDENAC	502-2390-0200	rbarboza@sica.int
Bernardo Aliaga, Technical Secretary UNESCO	33-1-45683980	b.aliaga@unesco.org
Walt Zaleski, NWS Southern Region WCM	1-817-978-1100 x107	walt.zaleski@noaa.gov
Wilfredo Ramos, PREMA Rep.	1-787-724-0124 x20036	wramos@prema.pr.gov
Heriberto Fabian, Scientific Expert, Dominican Republic	001-829-932-2318	fabianespinal@gmail.com
Frank Audemard (Funvisis), CARIBE EWS Vice Chair WG2	582-122575153	faudemard@funvisis.gob.ve

Timeline

ACTION	DUE DATE (completed)
Draft Circulated among ICG CARIBE EWS TNC/TWFP	September 2015 (Sept. 2015)
Deadline for Comments	September 18, 2015 (Sept. 2015)
Final Exercise Handbook Available Online	October 15, 2015 (January, 2016)
Circular Letter Issued by IOC to MS	November, 2015 (January, 2016)
1st Webinar CW	January 19, 20, 21 – 2016
2nd Webinar CW	March 1, 2, 3 - 2016
Exercise Registration Deadline	March 17, 2016
Exercise	March 17, 2016
Exercise Evaluation Due	March 23, 2016
Draft Final Caribe 16 Report	April 1, 2016
Discussion of Exercise ICG CARIBE EWS 11th Session	April 5-7, 2016

Webinars

- ✓ 19 January in English
- 20 de enero en Español
- 21 janvier à Français
- 1 March in English
- 2 de marzo en Español
- 3 mars à Français

Questions, Comments

Thank you for participating

christa.vonh@noaa.gov