



CRRT – January 26, 2017

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ICG CARIBE EWS Chair

Institutional Reference Frame for the Exercise

UNESCO: The United Nations Educational, Scientific, and Cultural Organization

IOC: UNESCO Intergovernmental Oceanographic Commission

ICG/CARIBE EWS: UNESCO IOC 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

PTWC: NOAA Pacific Tsunami Warning Center (CARIBE EWS Tsunami Service Provider)

CTWP: NOAA Caribbean Tsunami Warning Program

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

CDEMA: Caribbean Disaster and Emergency Management Agency

EMIZ Antilles: French West Indies Zone Disaster Management Authority

CARIBE WAVE 2016

- 32 nations and 15 territories of the Caribbean and Adjacent Regions participated in this exercise with a total of 332,814 people engaged.
 - This represented a MS participation rate of 100% (same as 2015, up from 98% in 2014, 94% in 2013, 75% in 2011) and an increase of individual participation of 74% (up from 191,420 in 2015) .



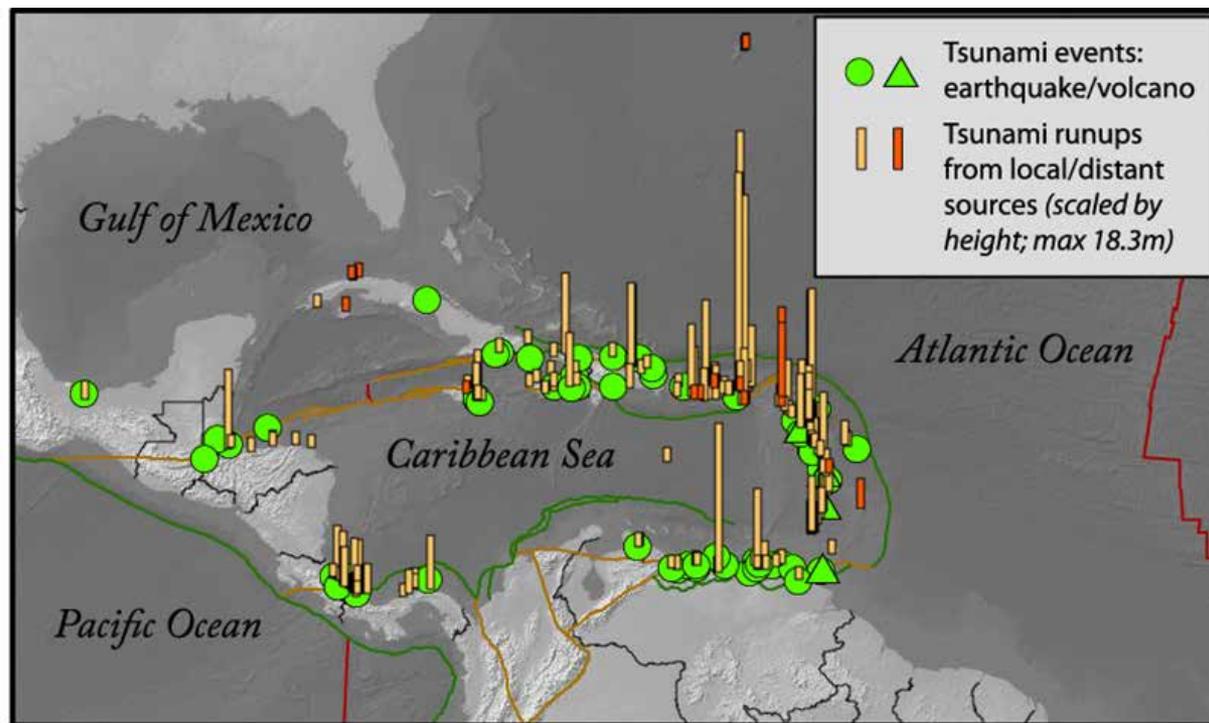
Country	Number of Participants, with post exercise updates from Member States
Antigua & Barbuda	393
Bahamas	5
Barbados	1,860
Belize	27
Brazil	10
Colombia	137
Costa Rica	200
Cuba	633
Dominica	353
Dominican Republic	380
France	147
Grenada	14,300
Guadeloupe	62,928
Guatemala	10
Guyana	10
Haiti	260
Honduras	6
Martinique	21,731
Mexico	1,810
Netherlands	5
NL- Aruba	3
NL- Curacao	180
NL- Sint Maarten	1,400
Nicaragua	525
Panama	5,958
Saint Kitts and Nevis	3,320
Saint Lucia	560
Saint Martin	4,026
Saint Vincent and the Grenadines	35
Trinidad and Tobago	279
UK- Anguilla	1,160
UK- Bermuda	158
UK- British Virgin Islands	4,762
UK- Cayman Islands	20
UK- Turks and Caicos Islands	30
USA- Puerto Rico	140,875
USA- U.S. Virgin Islands	2,928
Venezuela	61,390
TOTAL	332,814



Feedback from CARIBE WAVE 2016

- 84% of the Tsunami Warning Focal Points received the “dummy” message sent by the Pacific Tsunami Warning Center (PTWC).
- 51% of the survey respondents indicated that the exercise had media coverage.
- 86% 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:
 - 67% of participating countries had a plan for local tsunamis
 - 68% of participating countries had a plan for regional tsunamis
 - 71% of participating countries had a plan for distant tsunamis
- 17 Member States or their territories indicated that they had tsunami inundation maps.
- 29% of the TWFP/NDMO indicated that they had tsunami mass coastal evacuation plan.

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.

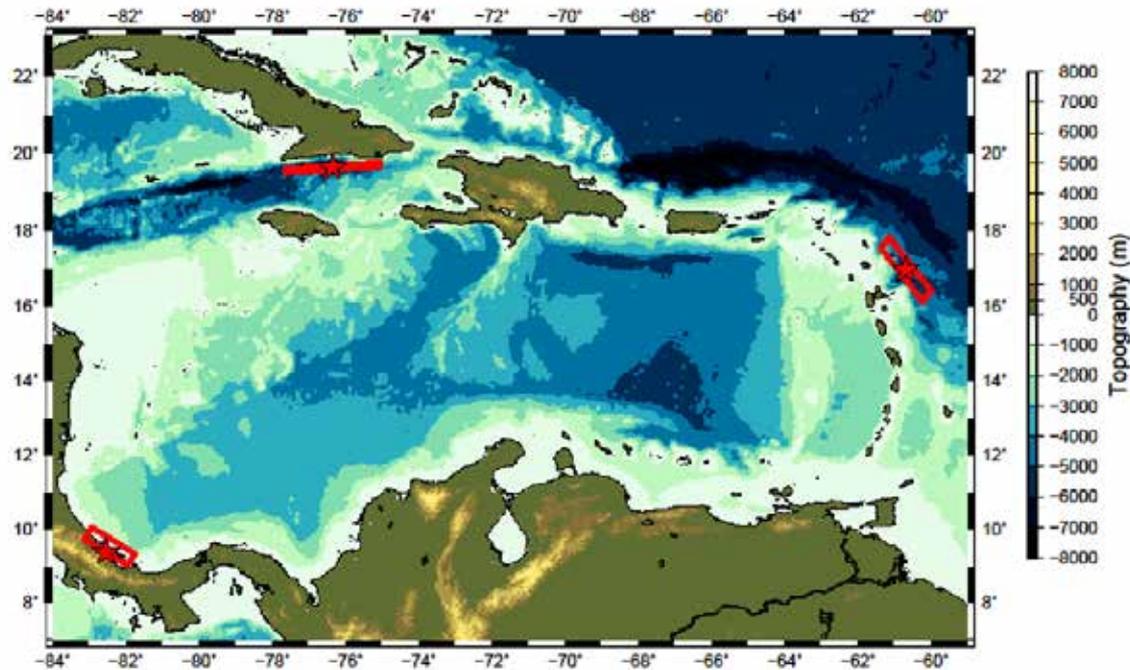


Map of tsunami run-ups in the Caribbean 1493-2013 (National Centers for Environmental Information, <http://www.ngdc.noaa.gov/hazards/tsu.shtml>). Artist: Jessee Varner; originally published in von Hillebrandt-Andrade, 2013.

CARIBE WAVE 17

CARIBE WAVE 17

Earthquake and Tsunami Scenarios



Scenario	Origin Time	Mw	Epicenter
Costa Rica	14:00:00 UTC March 21, 2017	7.9	9.37°, -82.54°
Cuba		8.2	19.625°, -76.35°
Northeastern Lesser Antilles		8.5	16.96°, -60.69°

Exercise Manuals

- The exercise manuals are available at www.caribewave.info
- The manual includes:
 - Tsunami and earthquake scenarios description
 - Timelines
 - PTWC International dummy message and simulated exercise threat messages
 - Travel times and expected wave heights
 - The website link to post-exercise evaluation questionnaire

Appendix E. TWC Dummy (Start of Exercise) Messages – INTERNATIONAL

PTWC

Center

WECA41 PHEB 211400

WMO ID

TSUCAX

AWIPS ID

TEST...TSUNAMI EXERCISE MESSAGE NUMBER 1...TEST
NWS PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 1400Z 21 MAR 2017

...CARIBEWAVE 17 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 17 CARIBBEAN TSUNAMI EXERCISE. 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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For the PTWC Domestic Dummy (very similar text), the header will be:

WECA40 PHEB 211400

TSUCAR

It will be issued via FAX, Email, EMWIN, AWIPS and all normal Dissemination systems as with a real event.

Start of Exercise messages will also be sent out by PTWC twitter accounts

Users with US Cellphone providers can receive Tweets as text messages, sending as body message:

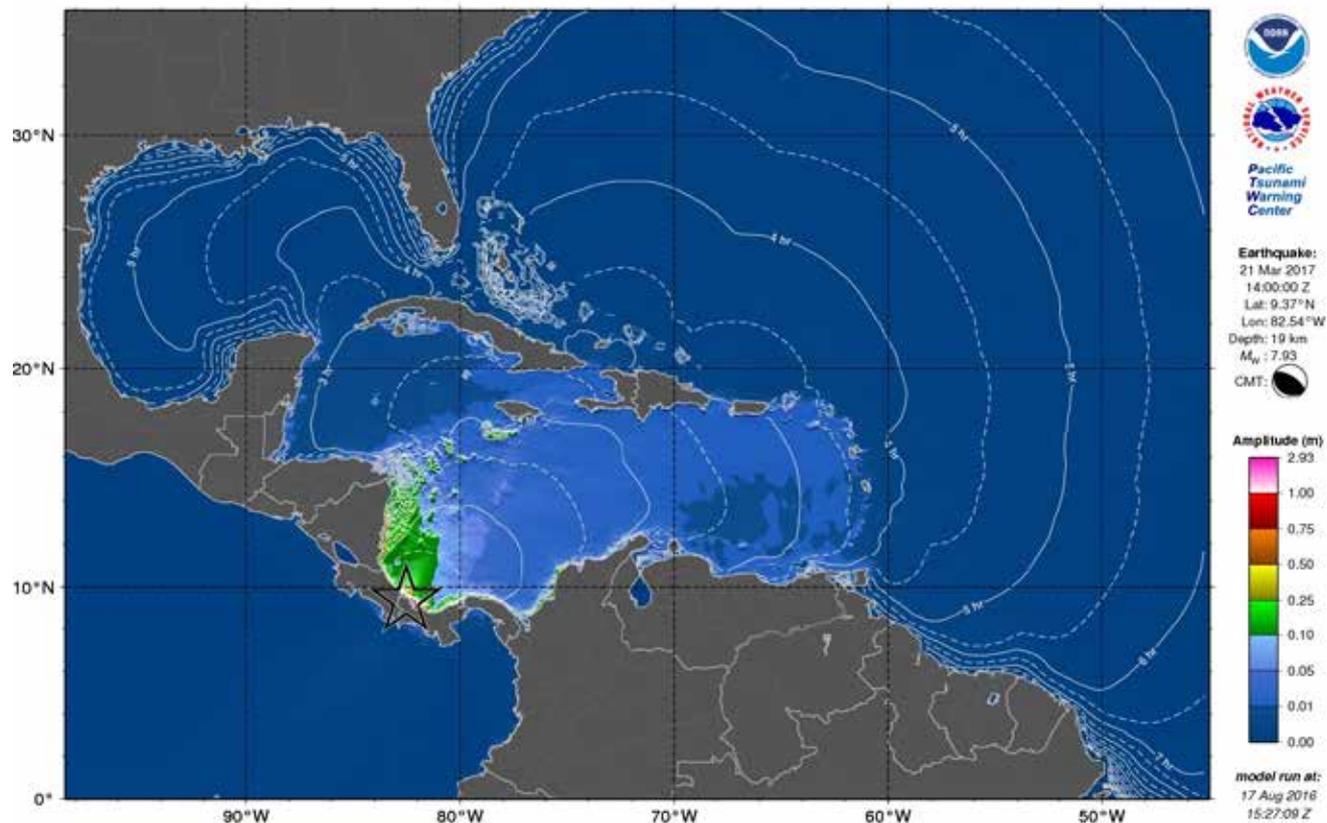
“Follow NWS_PTWC” to 40404 (this account is for all PTWC products)

“Follow NWS_CTWP” to 40404 (this account is only for PTWC products for the Caribbean and Adjacent Regions)

“This is a test message for the CARIBEWAVE17 tsunami exercise #CaribeWave” (will be issued at 14h00 UTC to NWS_PTWC and NWS_CTWP accounts/subscribers).”

Energy Forecast for Tsunami Wave Heights Costa Rica

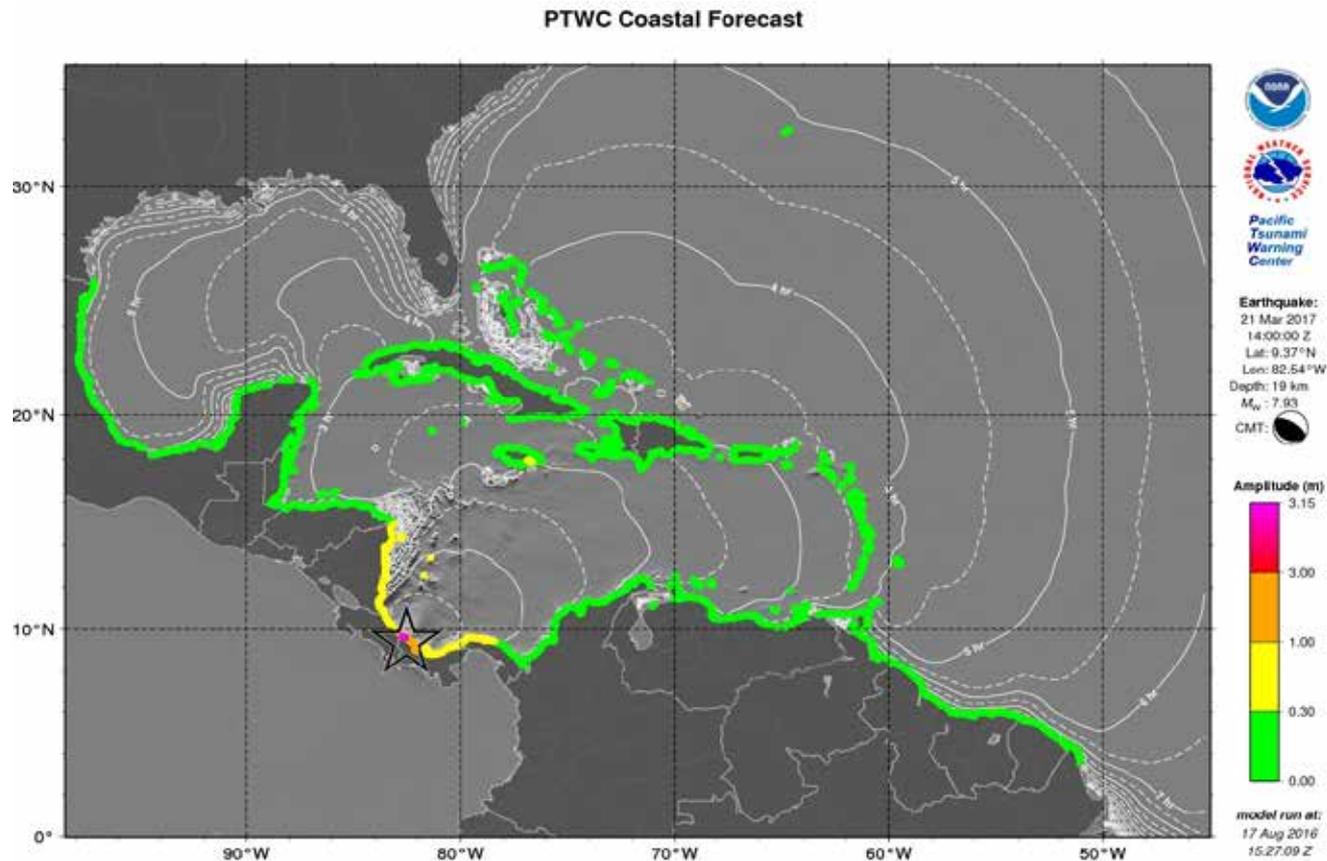
PTWC Energy Forecast



RIFT maximum amplitude map for the Southern Caribbean Sea based on the scenario for Costa Rica.

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

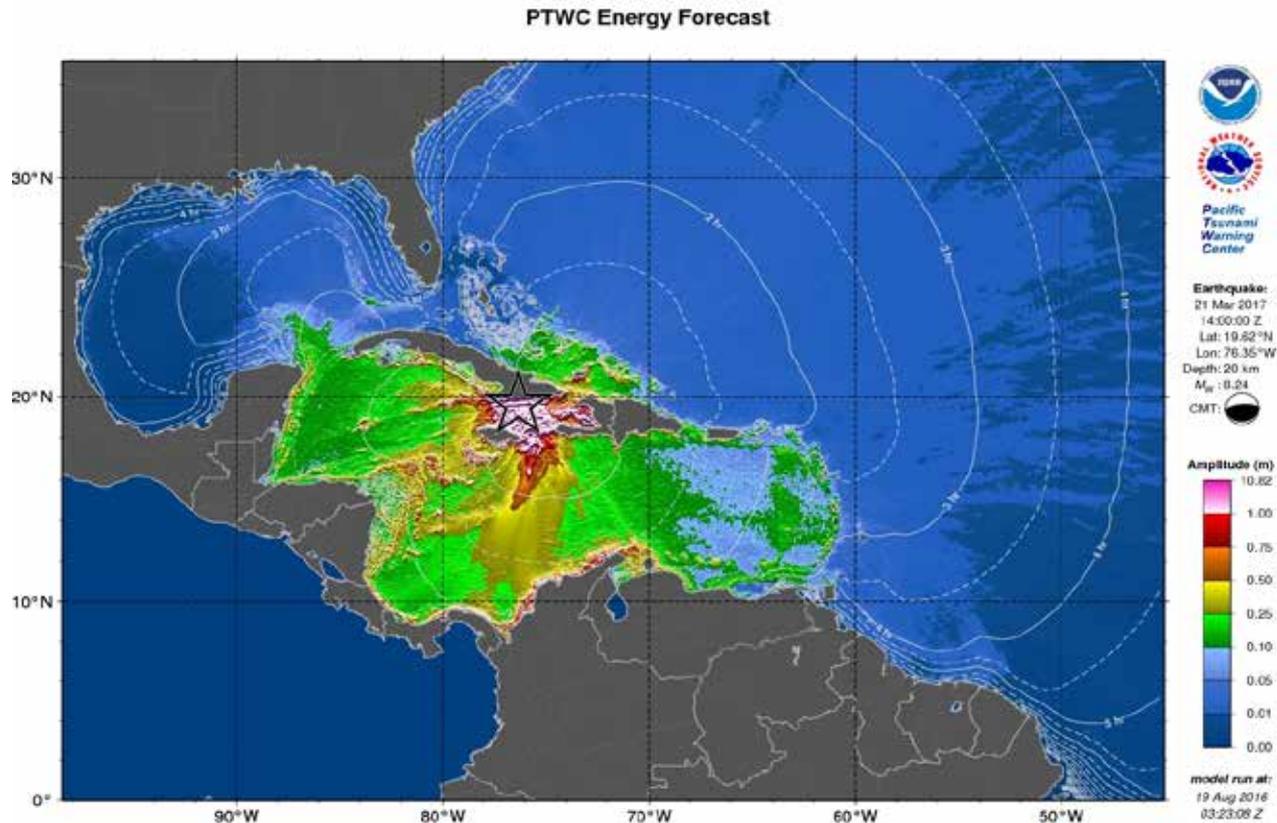
Coastal Forecast for Tsunami Wave Heights Costa Rica



RIFT coastal tsunami amplitude map for the Southern Caribbean Sea based on the scenario for Costa Rica.

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

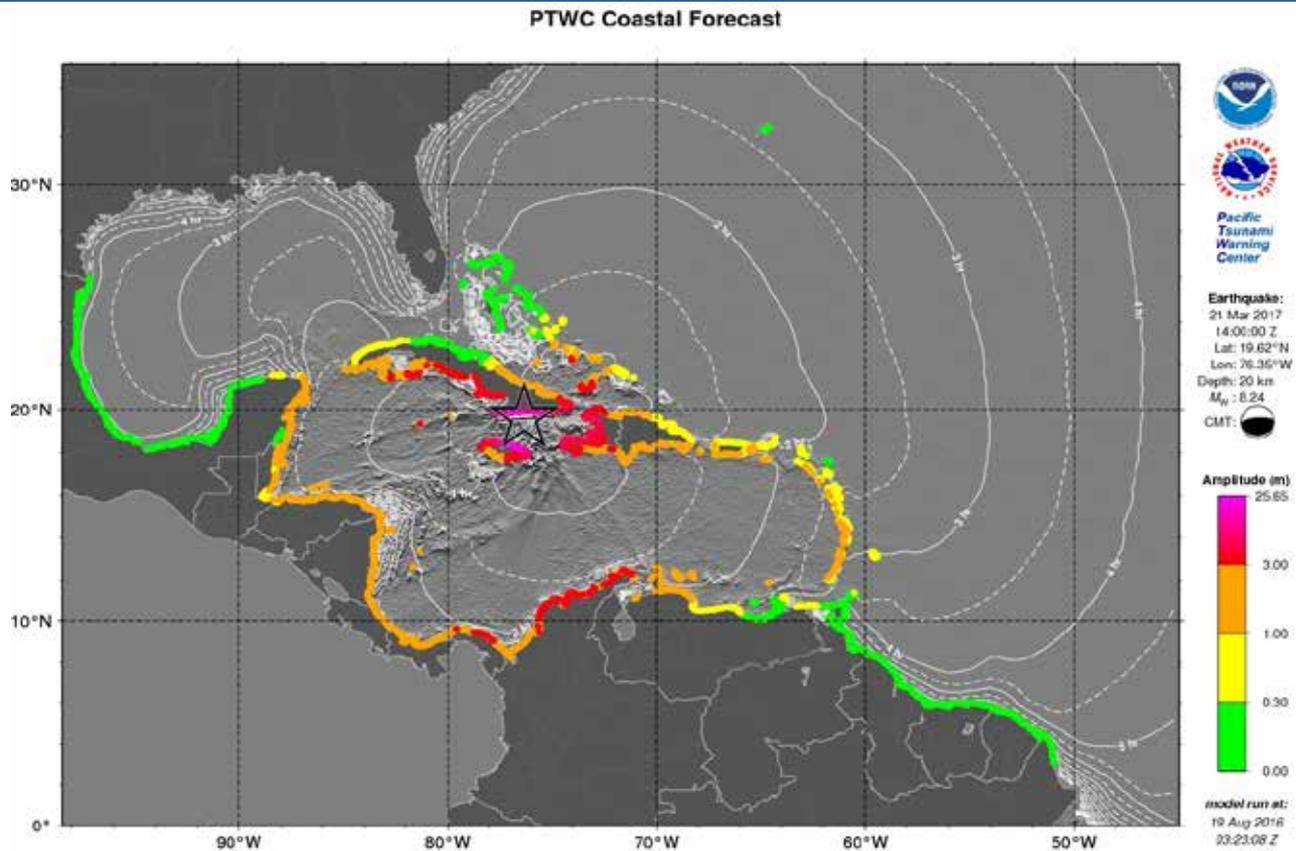
Energy Forecast for Tsunami Wave Heights Cuba



RIFT maximum amplitude map for the Northwestern portion of the Caribbean Sea scenario for Cuba.

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

Coastal Forecast for Tsunami Wave Heights Cuba



RIFT coastal tsunami amplitude map for the Northwestern portion of the Caribbean Sea scenario for Cuba.

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

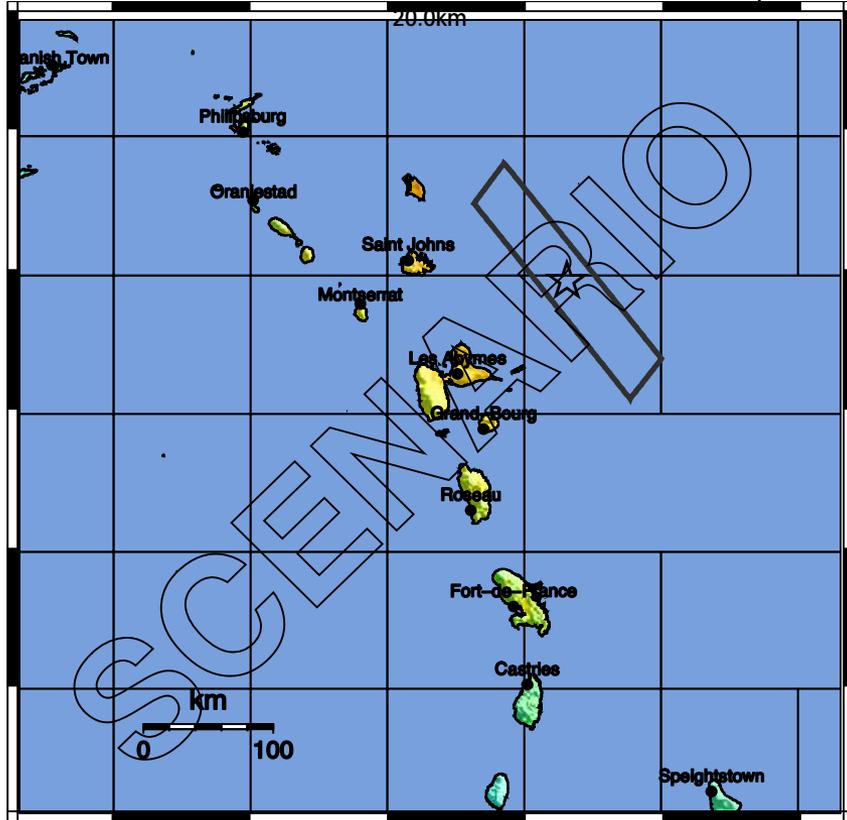
Northeastern Lesser Antilles Scenario

Earthquake Impact Scenario Northeastern Lesser Antilles

--- Earthquake Planning Scenario ---

ShakeMap for Northeastern Antilles Scenario

Scenario Date: Mar 21, 2017 14:00:00 UTC M 8.5 N16.96 W60.69 Depth:



PLANNING SCENARIO ONLY — Map Version 9 Processed 2016-08-12 19:25:02 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 **Yellow Alert**



M 8.5, Northeastern Antilles: Caribe Wave 17

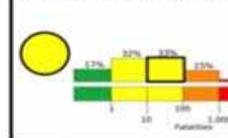
Origin Time: 2017-03-21 14:00:00 UTC (10:00:00 local)

Location: 16.96°N 60.69°W Depth: 20km

FOR TSUNAMI INFORMATION, SEE: tsunami.gov

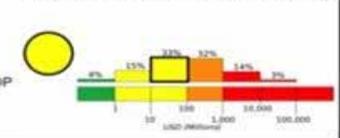
Created: 48 minutes, 0 seconds after earthquake

Estimated Fatalities



Yellow alert for shaking-related fatalities and economic losses. Some casualties and damage are possible and the impact should be relatively localized. Past yellow alerts have required a local or regional level response. Estimated economic losses are 1-7% GDP of Guadeloupe.

Estimated Economic Losses



Estimated Population Exposed to Earthquake Shaking

ESTIMATED POPULATION EXPOSURE (k = x1000)	--*	--*	171k*	394k*	663k*	364k	0	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	Resistant Structures: none	Vulnerable Structures: V. Light	Moderate	Moderate/Heavy	Heavy	V. 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 reinforced concrete and informal (metal, timber, GI etc.) construction.

Historical Earthquakes (with MMI levels):

Date (UTC)	Dist. (km)	Mag.	Max Shaking MMI(4)	Deaths
1985-03-16	186	6.4	VII(6k)	0
1974-10-08	143	7.5	VIII(40k)	0
2004-11-21	179	6.3	VII(3k)	1

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

Selected City Exposure

MMI City	Population
VII Piggotts	<1k
VII Saint John's	24k
VII Parham	<1k
VII All Saints	3k
VII Le Moule	23k
VII Potters Village	1k
VI Roseau	17k
VI Basseterre	13k
VI Fort-de-France	90k
IV Bridgetown	99k
IV Kingstown	25k

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: uslna.m8.5.e

Message Chronology issued by the PTWC Northeastern Lesser Antilles

Date	Time (UTC)	PTWC	
		Type of Product	Transmission Method
3/21/17	1400	----- Earthquake Occurs -----	
3/21/17	1400	Dummy	NWWS, GTS, EMWIN, AISR, Fax, Email
3/21/17	1405	Tsunami Threat Message #1	Email
3/21/17	1425	Tsunami Threat Message # 2 and Graphic Enhanced Product	Email
3/21/17	1525	Tsunami Threat Message #3	Email
3/21/17	1625	Tsunami Threat Message #4	Email
3/21/17	1725	Tsunami Threat Message #5	Email
3/21/17	1825	Tsunami Threat Message #6	Email
3/21/17	1925	Tsunami Threat Message #7	Email
3/21/17	2025	Tsunami Threat Message #8	Email
3/21/17	2125	Final Tsunami Threat Message #9	Email

PTWC Simulated Domestic Products

- These will be issued only via email to those agencies that are registered to receive the official products thru this mechanism (NWS SJFO, PRSEMA, PRSN)
- The simulated products will include:
 - Warning @ 14:05 UTC
 - Advisory a couple of hours later
 - Cancellation @ 21:25
- The EAS and NOAA Weather Radio will be activated (tested), NO test messages will be disseminated over WEA (Wireless Emergency Alerts), as would be the case for a real event.

Appendix F. TWC Exercise Messages Northeastern Antilles Earthquake Scenario

The following messages created for the CARIBE WAVE 17 tsunami exercise are representative of the official standard products issued by the PTWC during a large magnitude 8.5 earthquake and tsunami originating in the Northeastern Antilles. During a real event, the TWCs 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

ZCZC
WECA41 PHEB 211405 **WMO ID**
TSUCAX **AWIPS ID**

TSUNAMI MESSAGE NUMBER 1
NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI
1405 UTC TUE MAR 21 2017

...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 8.3
* ORIGIN TIME 1400 UTC MAR 21 2017
* COORDINATES 17.0 NORTH 60.7 WEST
* DEPTH 40 KM / 25 MILES
* LOCATION LEEWARD ISLANDS

EVALUATION

- * AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.3 OCCURRED IN THE LEEWARD ISLANDS AT 1400 UTC ON TUESDAY MARCH 21 2017.
- * 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

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

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 WITHIN THE REGION IDENTIFIED 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)	
PLYMOUTH	MONTserrat	16.7N	62.2W	1426	03/21
BASSE TERRE	GUADelouPE	16.0N	61.7W	1430	03/21
ROSEAU	DOMINICA	15.3N	61.4W	1432	03/21
CASTRIES	SAINT LUCIA	14.0N	61.0W	1439	03/21
FORT DE FRANCE	MARTINIQUE	14.6N	61.1W	1439	03/21
SAINT JOHNS	ANTIGUA	17.1N	61.9W	1439	03/21
PALMETTO POINT	BARBUDA	17.6N	61.9W	1441	03/21
SINT EUSTATIUS	SINT EUSTATIUS	17.5N	63.0W	1443	03/21
BASSETERRE	SAINT KITTS	17.3N	62.7W	1443	03/21
SABA	SABA	17.6N	63.2W	1444	03/21
BRIDGETOWN	BARBADOS	13.1N	59.6W	1447	03/21
THE VALLEY	ANGUILLA	18.3N	63.1W	1449	03/21
CHRISTIANSTED	US VIRGIN IS	17.7N	64.7W	1451	03/21
KINGSTOWN	SAINT VINCENT	13.1N	61.2W	1453	03/21
ANEGADA	BR VIRGIN IS	18.8N	64.3W	1453	03/21
SIMPSON BAAI	SINT MAARTEN	18.0N	63.1W	1455	03/21
SAN JUAN	PUERTO RICO	18.5N	66.1W	1455	03/21
ROADTOWN	BR VIRGIN IS	18.4N	64.6W	1507	03/21
MAYAGUEZ	PUERTO RICO	18.2N	67.2W	1508	03/21
SAINT BARTHELEM	SAINT BARTHELEMY	17.9N	62.8W	1513	03/21
CHARLOTTE AMALI	US VIRGIN IS	18.3N	64.9W	1513	03/21
BAIE LUCAS	SAINT MARTIN	18.1N	63.0W	1515	03/21
BAIE GRAND CASE	SAINT MARTIN	18.1N	63.1W	1518	03/21
SAINT GEORGES	GRENADA	12.0N	61.8W	1520	03/21
CABO ENGANO	DOMINICAN REP	18.6N	68.3W	1521	03/21
PUERTO PLATA	DOMINICAN REP	19.8N	70.7W	1523	03/21
BAIE BLANCHE	SAINT MARTIN	18.1N	63.0W	1529	03/21
GRAND TURK	TURKS N CAICOS	21.5N	71.1W	1531	03/21
PIRATES BAY	TRINIDAD TOBAGO	11.3N	60.6W	1532	03/21
CAP HAITEN	HAITI	19.8N	72.2W	1540	03/21
SANTO DOMINGO	DOMINICAN REP	18.5N	69.9W	1542	03/21
ONIMA	BONAIRE	12.3N	68.3W	1544	03/21
MAYAGUANA	BAHAMAS	22.3N	73.0W	1547	03/21
WEST CAICOS	TURKS N CAICOS	21.7N	72.5W	1548	03/21
BARACOA	CUBA	20.4N	74.5W	1559	03/21
JACAMEL	HAITI	18.1N	72.5W	1600	03/21
GREAT INAGUA	BAHAMAS	20.9N	73.7W	1601	03/21
ORANJESTAD	ARUBA	12.5N	70.0W	1601	03/21
SAN SALVADOR	BAHAMAS	24.1N	74.5W	1602	03/21
MAIQUETIA	VENEZUELA	10.6N	67.0W	1607	03/21
LONG ISLAND	BAHAMAS	23.3N	75.1W	1611	03/21
JEREMIE	HAITI	18.6N	74.1W	1611	03/21
RUTHS BAY	BERMUDA	32.4N	64.6W	1612	03/21
SANTIAGO D CUBA	CUBA	19.9N	75.8W	1614	03/21
GIBARA	CUBA	21.1N	76.1W	1617	03/21
CUMANA	VENEZUELA	10.5N	64.2W	1617	03/21
WILLEMSTAD	CURACAO	12.1N	68.9W	1618	03/21
EXUMA	BAHAMAS	23.6N	75.9W	1619	03/21
CAT ISLAND	BAHAMAS	24.4N	75.5W	1619	03/21
CROOKED ISLAND	BAHAMAS	22.7N	74.1W	1621	03/21
ELEUTHERA ISLAN	BAHAMAS	25.2N	76.1W	1625	03/21
PORT OF SPAIN	TRINIDAD TOBAGO	10.6N	61.5W	1633	03/21
ANDROS ISLAND	BAHAMAS	25.0N	77.9W	1633	03/21
CAYMAN BRAC	CAYMAN ISLANDS	19.7N	79.9W	1645	03/21
NASSAU	BAHAMAS	25.1N	77.4W	1646	03/21
SANTA MARTA	COLOMBIA	11.2N	74.2W	1648	03/21
MORTEGO BAY	JAMAICA	18.5N	77.9W	1657	03/21
FREEPORT	BAHAMAS	26.5N	78.8W	1658	03/21
ABACO ISLAND	BAHAMAS	26.6N	77.1W	1701	03/21
GRAND CAYMAN	CAYMAN ISLANDS	19.3N	81.3W	1701	03/21
CARTAGENA	COLOMBIA	10.4N	75.6W	1703	03/21
PORT AU PRINCE	HAITI	18.5N	72.4W	1704	03/21

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 SPECIFICALLY 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.

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NNNN

PTWC Message #2

ZCZC
WECA41 PHEB 211425 
TSUCAX 

TSUNAMI MESSAGE NUMBER 2
NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI
1425 UTC TUE MAR 21 2017

...TSUNAMI THREAT MESSAGE...

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

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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 1400 UTC MAR 21 2017
- * COORDINATES 17.0 NORTH 60.7 WEST
- * DEPTH 40 KM / 25 MILES
- * LOCATION LEEWARD ISLANDS

EVALUATION

-
- * AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.5 OCCURRED IN THE LEEWARD ISLANDS AT 1400 UTC ON TUESDAY MARCH 21 2017.
- * TSUNAMI WAVES HAVE BEEN OBSERVED.
- * BASED ON ALL AVAILABLE DATA... HAZARDOUS TSUNAMI WAVES ARE FORECAST FOR SOME COASTS.

TSUNAMI THREAT FORECAST...UPDATED

-
- * TSUNAMI WAVES REACHING MORE THAN 3 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE ALONG SOME COASTS OF

ANTIGUA AND BARBUDA... BARBADOS... DOMINICA...
GUADELOUPE... MARTINIQUE... MONTSERRAT... SABA AND SAINT
EUSTATIUS... AND SAINT KITTS AND NEVIS.
- * TSUNAMI WAVES REACHING 1 TO 3 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE ALONG SOME COASTS OF

DOMINICAN REPUBLIC... FRENCH GUYANE... GUYANA...
SURINAME... VENEZUELA... ANGUILLA... ARUBA... BERMUDA...
BONAIRE... CURACAO... GRENADA... PUERTO RICO AND VIRGIN
ISLANDS... SAINT BARTHELEMY... SAINT LUCIA... SINT
MAARTEN... SAINT MARTIN... SAINT VINCENT AND THE
GRENADINES... AND TRINIDAD AND TOBAGO.
- * TSUNAMI WAVES REACHING 0.3 TO 1 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE FOR SOME COASTS OF

BRAZIL... COLOMBIA... COSTA RICA... CUBA... HAITI...
NICARAGUA... PANAMA... BAHAMAS... JAMAICA... SAN ANDRES
AND PROVIDENCIA... AND TURKS AND CAICOS ISLANDS.
- * ACTUAL AMPLITUDES AT THE COAST MAY VARY FROM FORECAST AMPLITUDES DUE TO UNCERTAINTIES IN THE FORECAST AND LOCAL FEATURES. IN PARTICULAR MAXIMUM TSUNAMI AMPLITUDES ON ATOLLS OR SMALL ISLANDS AND AT LOCATIONS WITH FRINGING OR BARRIER REEFS WILL LIKELY BE MUCH SMALLER THAN THE FORECAST INDICATES.
- * FOR ALL OTHER AREAS COVERED BY THIS MESSAGE... THERE IS NO TSUNAMI THREAT ALTHOUGH SMALL SEA LEVEL CHANGES MAY OCCUR.

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 WITHIN THREATENED REGIONS ARE GIVEN BELOW. 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)
PLYMOUTH	MONTSERRAT	16.7N	62.2W	1426 03/21
BASSE TERRE	GUADELOUPE	16.0N	61.7W	1430 03/21
ROSEAU	DOMINICA	15.3N	61.4W	1432 03/21
CASTRIES	SAINT LUCIA	14.0N	61.0W	1439 03/21
FORT DE FRANCE	MARTINIQUE	14.6N	61.1W	1439 03/21
SAINT JOHNS	ANTIGUA	17.1N	61.9W	1439 03/21
PALMETTO POINT	BARBUDA	17.6N	61.9W	1441 03/21
SINT EUSTATIUS	SINT EUSTATIUS	17.5N	63.0W	1443 03/21
BASSETERRE	SAINT KITTS	17.3N	62.7W	1443 03/21
SABA	SABA	17.6N	63.2W	1444 03/21
BRIDGETOWN	BARBADOS	13.1N	59.6W	1447 03/21
THE VALLEY	ANGUILLA	18.3N	63.1W	1449 03/21
CHRISTIANSTED	US VIRGIN IS	17.7N	64.7W	1451 03/21
KINGSTOWN	SAINT VINCENT	13.1N	61.2W	1453 03/21
ANEGADA	BR VIRGIN IS	18.8N	64.3W	1453 03/21
SIMPSON BAAI	SINT MAARTEN	18.0N	63.1W	1455 03/21
SAN JUAN	PUERTO RICO	18.5N	66.1W	1455 03/21
ROADTOWN	BR VIRGIN IS	18.4N	64.6W	1507 03/21
MAYAGUEZ	PUERTO RICO	18.2N	67.2W	1508 03/21
SAINT BARTHELEM	SAINT BARTHELEMY	17.9N	62.8W	1513 03/21
CHARLOTTE AMALI	US VIRGIN IS	18.3N	64.9W	1513 03/21
BAIE LUCAS	SAINT MARTIN	18.1N	63.0W	1515 03/21
BAIE GRAND CASE	SAINT MARTIN	18.1N	63.1W	1518 03/21
SAINT GEORGES	GRENADA	12.0N	61.8W	1520 03/21

CABO ENGANO	DOMINICAN REP	18.6N	68.3W	1521 03/21
PUERTO PLATA	DOMINICAN REP	19.8N	70.7W	1523 03/21
BAIE BLANCHE	SAINT MARTIN	18.1N	63.0W	1529 03/21
GRAND TURK	TURKS N CAICOS	21.5N	71.1W	1531 03/21
PIRATES BAY	TRINIDAD TOBAGO	11.3N	60.6W	1532 03/21
CAP HAITEN	HAITI	19.8N	72.2W	1540 03/21
SANTO DOMINGO	DOMINICAN REP	18.5N	69.9W	1542 03/21
ONIMA	BONAIRE	12.3N	68.3W	1544 03/21
MAYAGUANA	BAHAMAS	22.3N	73.0W	1547 03/21
WEST CAICOS	TURKS N CAICOS	21.7N	72.5W	1548 03/21
BARACOA	CUBA	20.4N	74.5W	1559 03/21
JACAMEL	HAITI	18.1N	72.5W	1600 03/21
GREAT INAGUA	BAHAMAS	20.9N	73.7W	1601 03/21
ORANJESTAD	ARUBA	12.5N	70.0W	1601 03/21
SAN SALVADOR	BAHAMAS	24.1N	74.5W	1602 03/21
MAIQUETIA	VENEZUELA	10.6N	67.0W	1607 03/21
LONG ISLAND	BAHAMAS	23.3N	75.1W	1611 03/21
JEREMIE	HAITI	18.6N	74.1W	1611 03/21
RUTHS BAY	BERMUDA	32.4N	64.6W	1612 03/21
GIBARA	CUBA	21.1N	76.1W	1617 03/21
CUMANA	VENEZUELA	10.5N	64.2W	1617 03/21
WILLEMSTAD	CURACAO	12.1N	68.9W	1618 03/21
EXUMA	BAHAMAS	23.6N	75.9W	1619 03/21
CAT ISLAND	BAHAMAS	24.4N	75.5W	1619 03/21
CROOKED ISLAND	BAHAMAS	22.7N	74.1W	1621 03/21
ELEUTHERA ISLAN	BAHAMAS	25.2N	76.1W	1625 03/21
PORT OF SPAIN	TRINIDAD TOBAGO	10.6N	61.5W	1633 03/21
ANDROS ISLAND	BAHAMAS	25.0N	77.9W	1633 03/21
NASSAU	BAHAMAS	25.1N	77.4W	1646 03/21
SANTA MARTA	COLOMBIA	11.2N	74.2W	1648 03/21
MONTEGO BAY	JAMAICA	18.5N	77.9W	1657 03/21
FREEPORT	BAHAMAS	26.5N	78.8W	1658 03/21
ABACO ISLAND	BAHAMAS	26.6N	77.1W	1701 03/21
CARTAGENA	COLOMBIA	10.4N	75.6W	1703 03/21
PORT AU PRINCE	HAITI	18.5N	72.4W	1704 03/21
BIMINI	BAHAMAS	25.8N	79.3W	1711 03/21
BARRANQUILLA	COLOMBIA	11.1N	74.9W	1712 03/21
KINGSTON	JAMAICA	17.9N	76.9W	1713 03/21
RIOHACHA	COLOMBIA	11.6N	72.9W	1716 03/21
ALIGANDI	PANAMA	9.2N	78.0W	1725 03/21
PUERTO CARRETO	PANAMA	8.8N	77.6W	1731 03/21
SAN ANDRES	SAN ANDRES PROVI	13.4N	81.4W	1732 03/21
PROVIDENCIA	SAN ANDRES PROVI	12.6N	81.7W	1735 03/21
PUERTO OBALDIA	PANAMA	8.7N	77.4W	1743 03/21
PUNTA CARIBANA	COLOMBIA	8.6N	76.9W	1747 03/21
CAYENNE	FRENCH GUYANE	4.9N	52.3W	1801 03/21
PUERTO LIMON	COSTA RICA	10.0N	83.0W	1803 03/21
COLON	PANAMA	9.4N	79.9W	1805 03/21
BOCAS DEL TORO	PANAMA	9.4N	82.2W	1817 03/21
PUNTO FIJO	VENEZUELA	11.7N	70.2W	1828 03/21
GEORGETOWN	GUYANA	6.8N	58.2W	1847 03/21
PUNTA GORDA	NICARAGUA	11.4N	83.8W	1855 03/21
PARAMARIBO	SURINAME	5.9N	55.2W	1904 03/21
PORLAMAR	VENEZUELA	10.9N	63.8W	1912 03/21
GOLFO VENEZUELA	VENEZUELA	11.4N	71.2W	1928 03/21
ILHA DE MARACA	BRAZIL	2.2N	50.5W	2147 03/21
PUERTO CABEZAS	NICARAGUA	14.0N	83.4W	2222 03/21

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.

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)		
DESIRADE GUADELOUPE	16.3N 61.1W	1414	14.72M/48.3FT	16

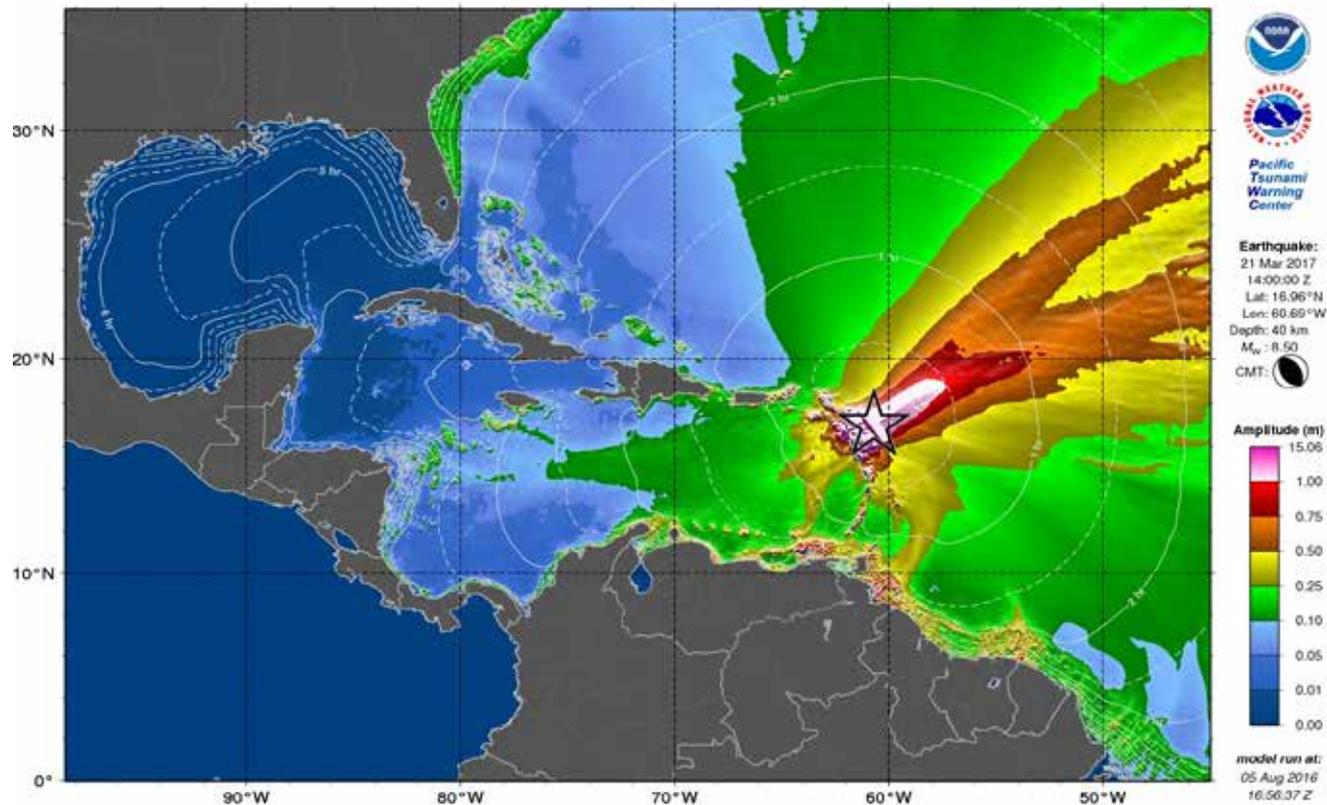
NEXT UPDATE AND ADDITIONAL INFORMATION

- * 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 SPECIFICALLY 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.

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NNNN

Energy Forecast for Tsunami Wave Heights Northeastern Lesser Antilles

PTWC Energy Forecast

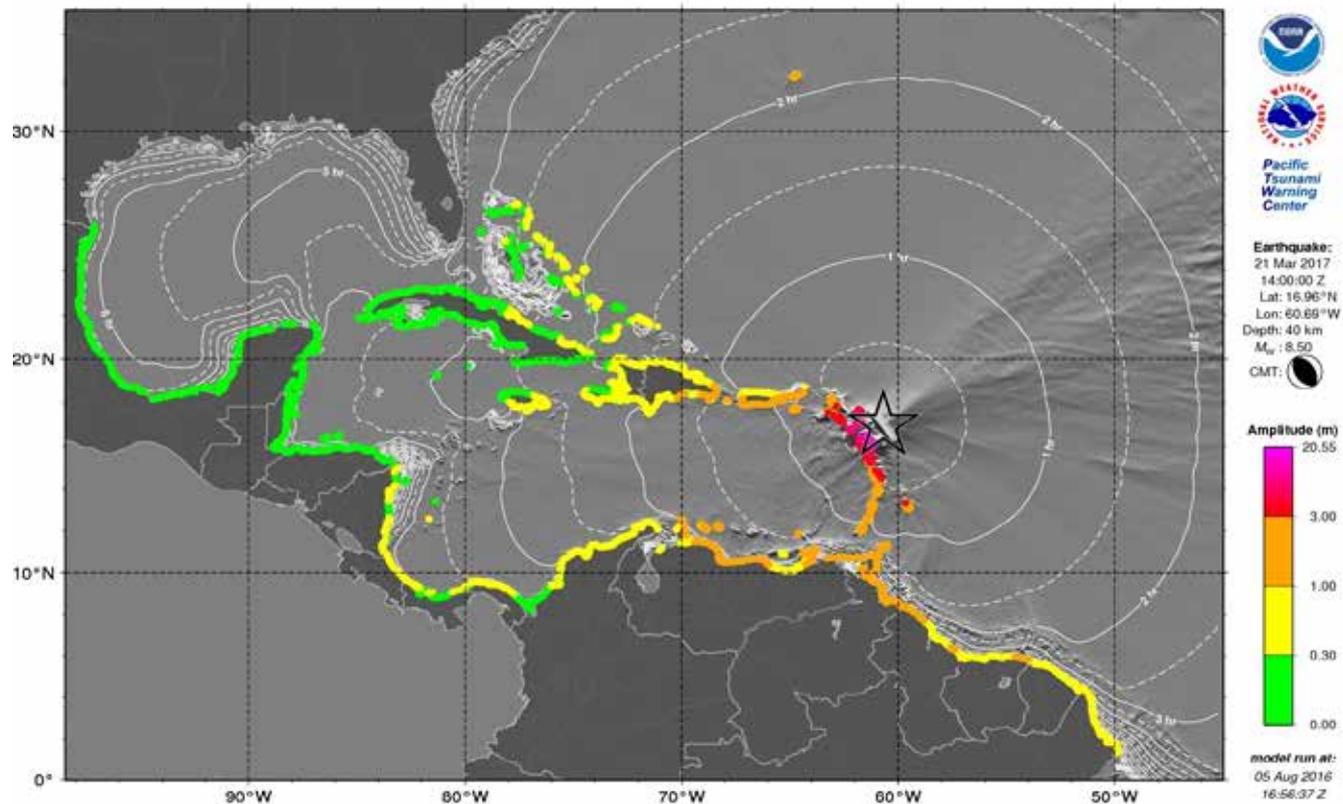


RIFT maximum amplitude map for the Southeastern portion of the Caribbean Sea scenario for Northeastern Lesser Antilles.

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

Coastal Forecast for Tsunami Wave Heights Northeastern Antilles

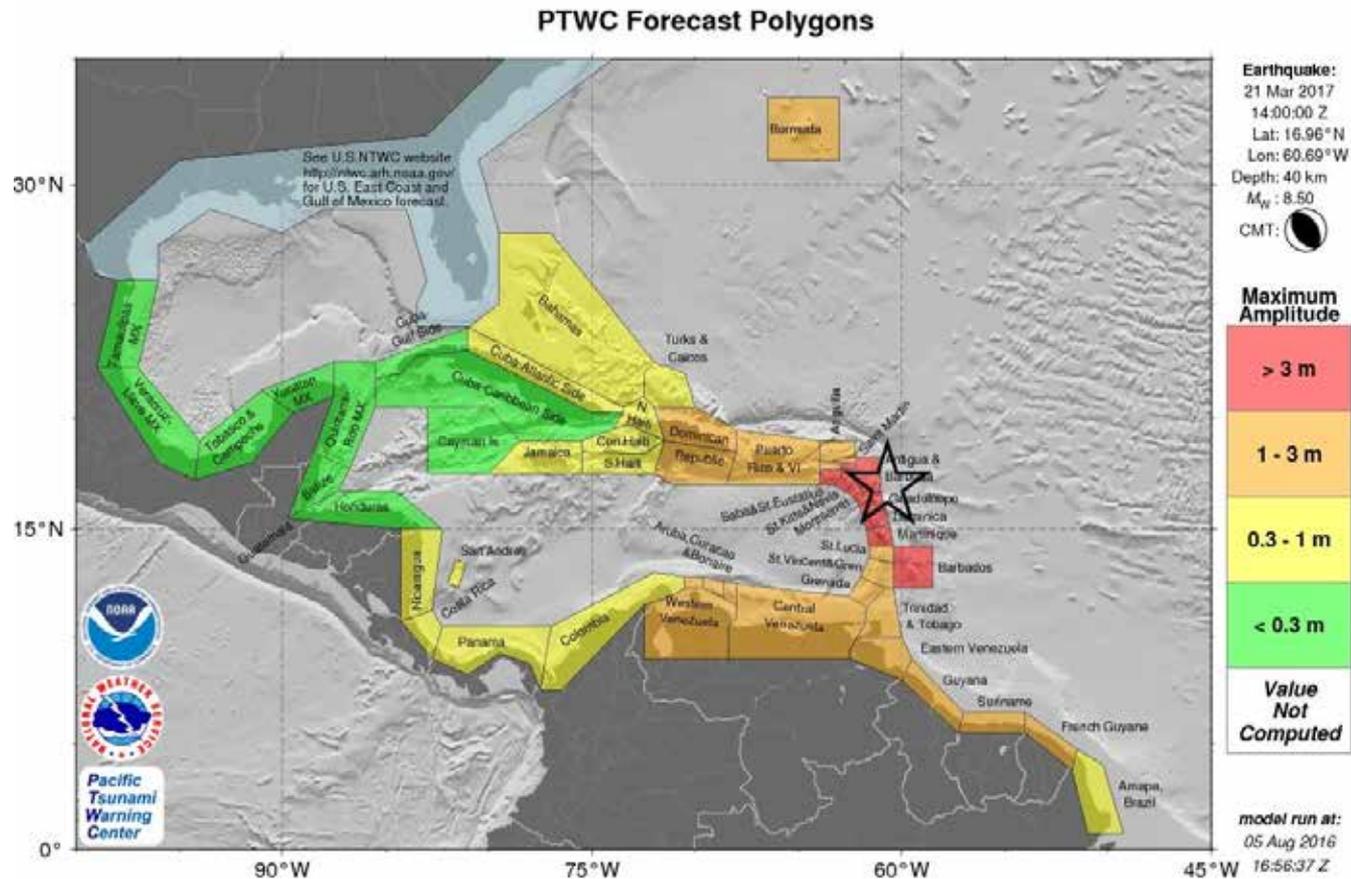
PTWC Coastal Forecast



RIFT coastal tsunami amplitude map for the Southeastern portion of the Caribbean Sea scenario for Northeastern Antilles.

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

Polygons Forecast for Tsunami Wave Heights Northeastern Lesser Antilles

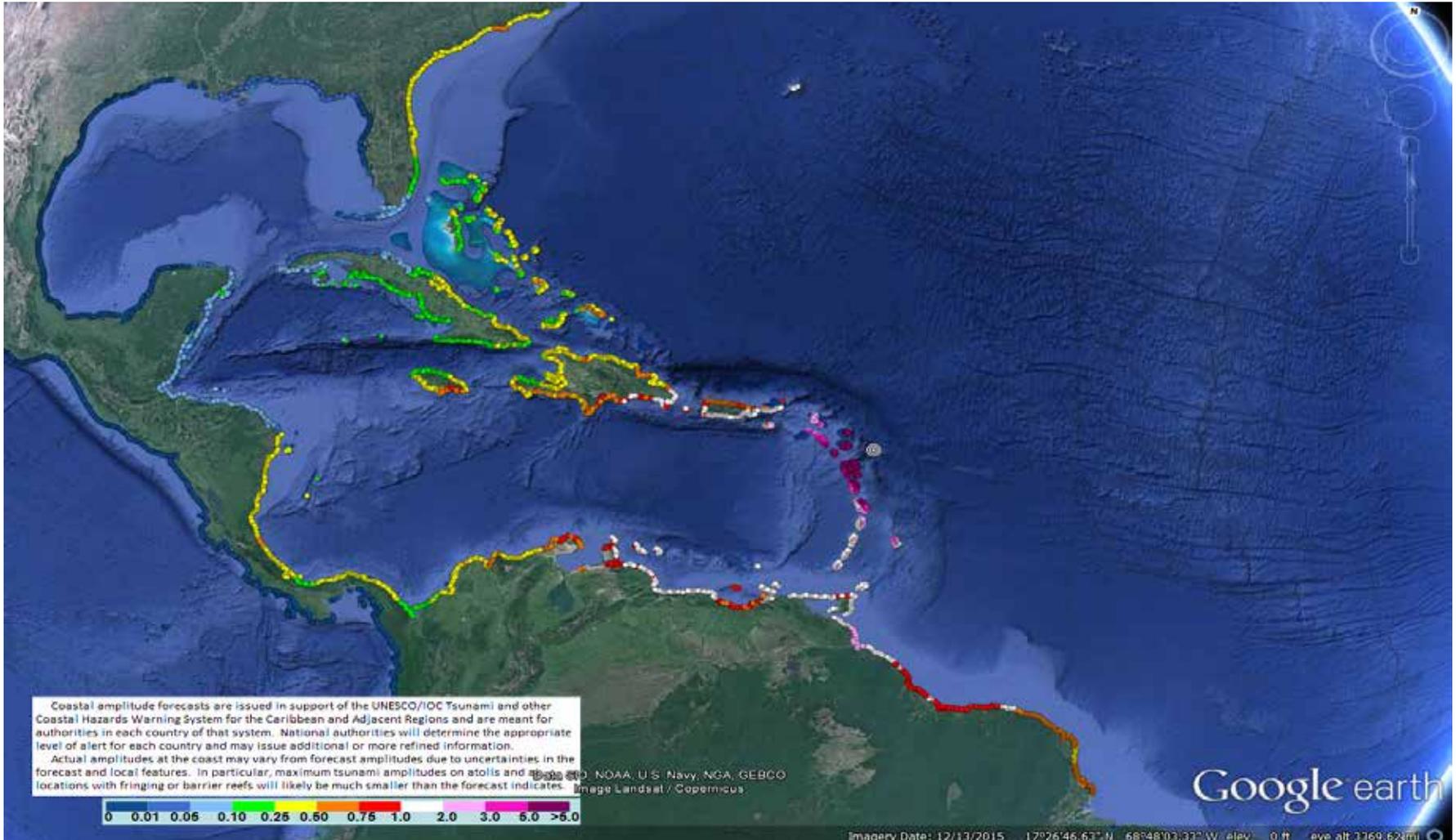


RIFT forecast polygons for the Caribbean region on the Northeastern Antilles scenario.

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

KMZ

Northeastern Lesser Antilles



Forecasted Maximum Wave Heights*

Northeastern Lesser Antilles

PTWC

LOCATION	MAXIMUM TSUNAMI HEIGHT	LOCATION	MAXIMUM TSUNAMI HEIGHT
POINT FORTIN TT	1.37M/ 4.5FT	TORTOLA VI UK	1.68M/ 5.5FT
PONTA DELGADA PT	1.70M/ 5.6FT	PORT SAN ANDRES DO	1.29M/ 4.2FT
HORTA	2.77M/ 9.1FT	JACMEL HT	0.83M/ 2.7FT
SANTA MARIA	1.96M/ 6.4FT	BULLEN BAY CURACAO	1.55M/ 5.1FT
MONTAUK NY	0.76M/ 2.5FT	BARAHONA DO	0.90M/ 3.0FT
FORTALEZA BR	0.65M/ 2.1FT	CAP HAITIEN HT	0.41M/ 1.3FT
PALMEIRA CAPE VERDE	1.72M/ 5.6FT	CHARLOTTEVILLE TT	1.29M/ 4.2FT
TELA HN	0.09M/ 0.3FT	SCARBOROUGH TT	1.29M/ 4.2FT
KEY WEST FL	0.05M/ 0.2FT	DART 42407	0.13M/ 0.4FT
PRAIA CV	0.97M/ 3.2FT	MAGUEYES ISLAND PR	1.25M/ 4.1FT
MINDELO CV	1.71M/ 5.6FT	PUERTO PLATA DO	0.57M/ 1.9FT
VACA KEY FL	0.05M/ 0.2FT	PUNTA CANA DO	1.11M/ 3.6FT
OREGON INLET NC	0.85M/ 2.8FT	PRICKLEY BAY GD	1.82M/ 6.0FT
DUCK PIER NC	0.76M/ 2.5FT	CAJA DE MUERTOS PR	1.50M/ 4.9FT
PUERTO MORELOS MX	0.07M/ 0.2FT	LAMESHURBAYSTJOHNVI	1.68M/ 5.5FT
ISLA MUJERES	0.08M/ 0.3FT	MONA ISLAND PR	1.01M/ 3.3FT
BOCAS DEL TORO PA	0.39M/ 1.3FT	SAINT MARTIN FR	2.10M/ 6.9FT
CEIBA CABOTAGE HN	0.08M/ 0.3FT	DART 41420	0.08M/ 0.3FT
LIMON CR	0.35M/ 1.1FT	AGUADILLA PR	0.86M/ 2.8FT
CARRIE BOW CAY BH	0.09M/ 0.3FT	MAYAGUEZ PR	0.86M/ 2.8FT
PUERTO CORTES HN	0.09M/ 0.3FT	ESPERANZA VIEQUES P	1.47M/ 4.8FT
PUERTO MORELOS MX	0.10M/ 0.3FT	ARECIBO PR	0.77M/ 2.5FT
UTILA ISLAND HN	0.09M/ 0.3FT	YABUCOA PR	1.90M/ 6.2FT
HATTERAS NC	0.66M/ 2.2FT	DART 41421	0.16M/ 0.5FT
SAPZURRO CO	0.40M/ 1.3FT	SAN JUAN PR	0.89M/ 2.9FT
VIRGINIA KEY FL	0.07M/ 0.2FT	LIMETREE VI	1.19M/ 3.9FT
ROATAN ISLAND HN	0.08M/ 0.3FT	CALLIAQUA VC	1.56M/ 5.1FT
EL PORVENIR PA	0.43M/ 1.4FT	ST CROIX VI	1.19M/ 3.9FT
SAN ANDRES CO	0.34M/ 1.1FT	BARBUDA AG	4.26M/ 14.0FT
ILE ROYAL GUIANA FR	0.74M/ 2.4FT	BRIDGEPORT BB	2.08M/ 6.8FT
COVENAS CO	0.42M/ 1.4FT	PORT ST CHARLES BB	2.23M/ 7.3FT
DART 44402	0.09M/ 0.3FT	BASSETERRE KN	2.76M/ 9.1FT
PORT ROYAL JM	0.95M/ 3.1FT	FORT DE FRANCE MQ	2.84M/ 9.3FT
PORT AU PRINCE HT	0.72M/ 2.3FT	LE ROBERT MARTINIQU	2.84M/ 9.3FT
DART 44401	0.15M/ 0.5FT	ROSEAU DM	3.23M/ 10.6FT
GEORGE TOWN CY	0.13M/ 0.4FT	LE PRECHEUR MARTINI	2.62M/ 8.6FT
SANTA MARTA CO	0.59M/ 1.9FT	POINT A PITRE GP	20.10M/ 65.9FT
PORT OF SPAIN TT	1.16M/ 3.8FT	DESHAIES GUADELOUPE	6.35M/ 20.8FT
DART 41424	0.07M/ 0.2FT	PARHAM AT	12.98M/ 42.6FT
PUERTO ESTRELLA CO	0.85M/ 2.8FT	DESIRADE GUADELOUPE	14.72M/ 48.3FT
BERMUDA UK	0.75M/ 2.4FT		

*Maximum tsunami height is measured as water level above tide level at time of measurement, **run-up can be double this value**

PTWC Message #9

ZCZC
WECA41 PHEB 212125
TSUCAX

WMO ID

AWIPS ID

TSUNAMI MESSAGE NUMBER 9
NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI
2125 UTC TUE MAR 21 2017

...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 ****

PRELIMINARY EARTHQUAKE PARAMETERS

* MAGNITUDE 8.5
* ORIGIN TIME 1400 UTC MAR 21 2017
* COORDINATES 17.0 NORTH 60.7 WEST
* DEPTH 40 KM / 25 MILES
* LOCATION LEEWARD ISLANDS

EVALUATION

* AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.5 OCCURRED IN THE LEEWARD ISLANDS AT 1400 UTC ON TUESDAY MARCH 21 2017.

* BASED ON ALL AVAILABLE DATA... THE TSUNAMI THREAT FROM THIS EARTHQUAKE HAS PASSED AND THERE IS NO FURTHER THREAT. 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 UP TO 30 CM ABOVE AND BELOW THE NORMAL TIDE MAY OCCUR IN COASTAL AREAS NEAR THE EARTHQUAKE OVER THE NEXT FEW HOURS.... AND CONTINUING FOR UP TO SEVERAL HOURS.

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 SPECIFICALLY 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.

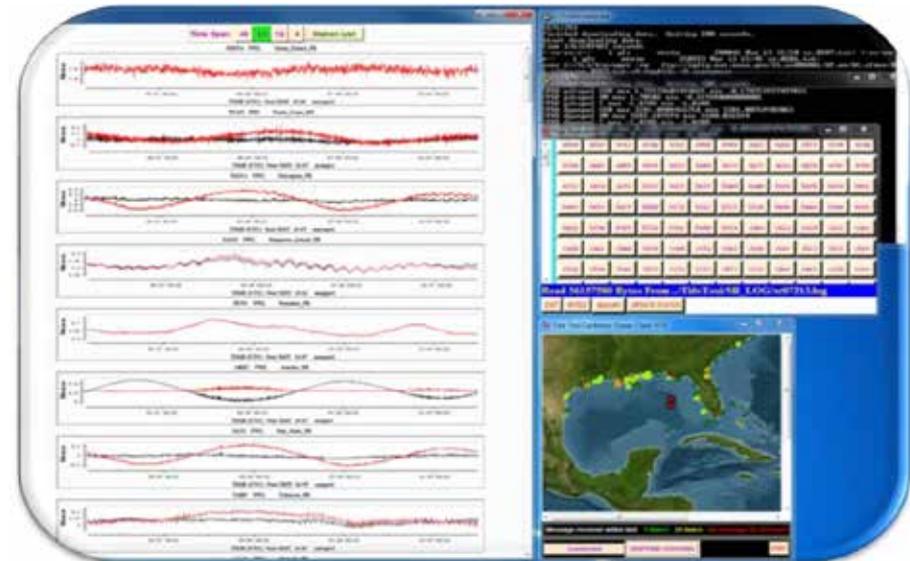
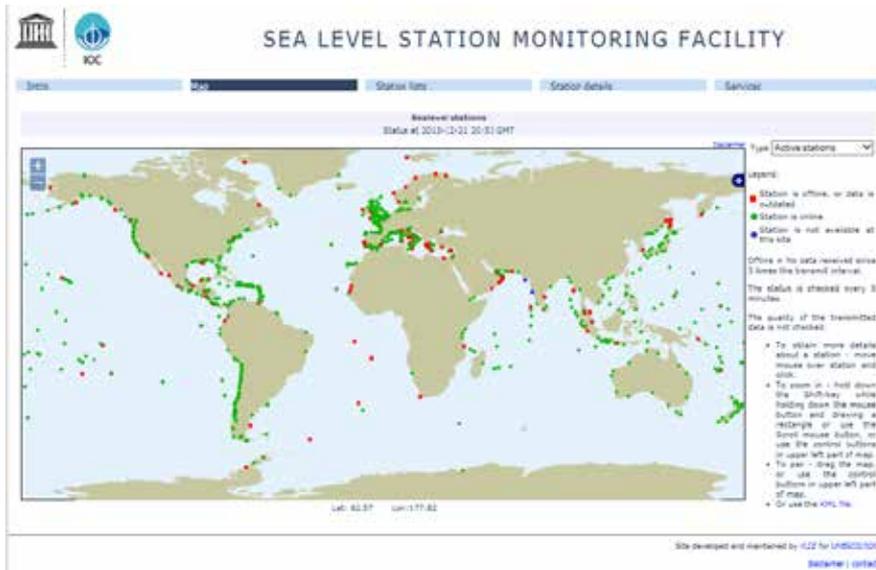
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NNNN

Sea Level Monitoring

As good practice, during the exercise corresponding authorities are encouraged to check out sea level readings in real time on the IOC Sea Level Monitoring Facility and Tide Tool which can also be run with the earthquake parameters.

IOC Sea Level Monitoring Facility
<http://www.ioc-sealevelmonitoring.org/>

Tide Tool
stuart.weinstein@noaa.gov



Registration at The *Tsunami*Zone

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



Home | TsunamiZone Regions | Other Languages | Contact Us | Search | Login

The TsunamiZone California Tsunami Preparedness Week March 20-26, 2016

Register Here! | Know Your Zone | Who is Participating? | How to Participate | Resources | News & Events | Partners & Sponsors

There is No Tsunami Warning, Advisory, Watch, or Threat in effect.

WELCOME TO THE TSUNAMIZONE!

[ESPAÑOL](#) | [FRANÇAIS](#)

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 2017 tsunami preparedness activities!

2017 CALENDAR

- March 19-25
Puerto Rico, U.S. Virgin Islands
CARIBE WAVE 2017 (March 21)
CARIFEX17 (March 22)
- March 25-31
Alaska, Guam
- March 27-31
[California](#)
- March 29
PACIFEX exercise
- April
Hawaii
- September 24-30
American Samoa
- October
Oregon & Washington

Over 400,000 participants registered

f t

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 receive them **but if registered, you will be part of the statistical count of who is participating**). 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



CARIBE WAVE 2017

CARIBE WAVE is the annual tsunami exercise of the UNESCO Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions ([CARIBE EWS](#)). Its major objective is for countries, emergency management stakeholders and communities at risk to test, validate and update their tsunami response plans.

When is CARIBE WAVE 2017?

The annual Tsunami Regional Exercise, Caribe Wave 2017, will take place on **March 21, 2017**. [Register today to participate in this exercise.](#)

Which scenario will be used for CARIBE WAVE 2017?

For CARIBE WAVE 2017 three different scenarios will be simulated. Each country will choose the one that best fits their objectives. The first scenario simulates a magnitude 7.9 earthquake generated off the Caribbean coast of Costa Rica. The second scenario is an 8.2 magnitude earthquake off the Southeastern coast of Cuba. The third scenario is a magnitude 8.5 earthquake Northeast of the Lesser Antilles.

What communication systems will be tested in this exercise?

The initial message will be issued at 1400 UTC by the Pacific Tsunami Warning Center (PTWC) throughout all the regular broadcast channels to test communication systems and to start the exercise. Also, the PTWC will issue simulated messages for each of the scenarios to the UNESCO officially designated Tsunami Warning Focal Points (TWFPs) and National Tsunami Warning Centers. Each country and territory will decide if and how messages will be disseminated within its area of responsibility.

Which agencies are participating in CARIBE WAVE 17?

Each one of the 48 countries and territories members of CARIBE EWS will decide the level of participation and coordinate the corresponding activities within their jurisdiction.

Why should I participate in this exercise?

The vulnerability and the risk of loss of life and welfare from a tsunami along the coasts of the Caribbean and Adjacent Regions should be a big motivation for our communities and countries to be prepared for a tsunami and participate in this exercise.

The exercise guidelines, other related materials and links for registration are available at caribewave.info.

ESPAÑOL | FRANÇAIS

UNESCO CARIBE EWS

UNESCO CARIBE EWS Member States and Territories

Antigua and Barbuda*	Bahamas
Barbados	Belize
Colombia	Costa Rica
Dominica	Dominican Republic
France (Guadeloupe, Guyane, Martinique, Saint Martin, St. Barthelemy)	
Grenada	Guatemala
Haiti	Guyana
Jamaica	Honduras
Netherlands (Aruba***, Bonaire, Curaçao***, Saba, Sint Eustatius, Sint Maarten***)	Mexico
Nicaragua	Panama
Saint Kitts and Nevis	Saint Lucia
Saint Vincent and the Grenadines	
Suriname	Trinidad and Tobago
United Kingdom of Great Britain & Northern Ireland (Anguilla***, Bermuda, British Virgin Islands***, Cayman Islands***, Montserrat***, Turks and Caicos)	
United States (Puerto Rico and U. S. Virgin Islands)	
Venezuela, Bolivarian Republic of	

*not an IOC Member State

**Designations of Tsunami National Contacts and Tsunami Warning Focal Points pending

***UNESCO Associate Member States participating at IOC CARIBE EWS

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

WHO IS PARTICIPATING?

Click on a category name to see a list of who is participating. Click on a region name to see details of participation totals by area.

These totals are current as of 01/25/2017 3:25 AM PST.

Category	Participants	Participation totals for each area	Total
Total:	485		
Individuals/Families	4	California	4
Childcare and Pre-Schools	0	North Coast	0
K-12 Schools and Districts	0	Shasta Cascade	0
Colleges and Universities	0	Bay Area	0
Local Government	46	Delta Sierra	0
State Government	0	Inyo-Mono	0
Federal Government (Including Military)	420	Central Valley South	0
Tribes	0	Central Coast	0
Businesses	0	Southern California Coast	0
Hotels and Other Lodgings	0	Inland Southern California	4
Healthcare	0	San Diego	0
Senior Facilities/Communities	0	Other Areas	0
Disability/AFN Organizations	0	Caribbean	481
Non-Profit Organizations	0	Acquilla	0
Neighborhood Groups	0	Antigua and Barbuda	0
Preparedness Organizations	0	Aruba	3
Faith-based Organizations	0	Bahamas	0
Museums, Libraries, Parks, etc.	0	Barbados	0
Volunteer/Service Clubs	0	Belize	0
Youth Organizations	0	Bermuda	0
Animal Shelters/Service Providers	0	Brazil	0
Agriculture/Livestock	0	British Virgin Islands	0
Volunteer Radio Groups	15	Cayman Islands	20
Science/Engineering Organizations	0	Colombia	0
Media Organizations	0	Costa Rica	0
Other	0	Cuba	0
		Curaçao	0
		Dominica	0
		Dominican Republic	0
		France	0
		Grenada	0
		Guadeloupe	0
		Guatemala	0
		Guinea	0
		Haiti	0
		Honduras	0
		Martinique	0
		Mexico	400
		Netherlands	0
		Nicaragua	0
		Panama	0
		Puerto Rico	58
		Saint Kitts and Nevis	0
		Saint Lucia	0
		Saint Martin	0
		Saint Vincent and the Grenadines	0
		Sint Maarten	0
		Trinidad and Tobago	0
		Turks and Caicos Islands	0
		U.S. Virgin Islands	0
		Venezuela	0

Category	Participantes	Participantes por	Total
Total:	58	Adjuntas	0
Individuos/Familias	0	Aguada	0
Cuido de niños y Pre-escolares	0	Aguadilla	0
Escuelas K-12	0	Aguas Buenas	0
Organizaciones para la Juventud	0	Aibonito	0
Universidades/colegios comunitarios	0	Anasco	0
Tribus	0	Arecibo	0
Gobierno Federal (Incluidos Los Militares)	0	Arroyo	0
Gobierno Estatal	0	Barceloneta	0
Gobierno Municipal	43	Barranquitas	0
Grupos Comunitarios/Urbanizaciones	0	Bayamon	0
Negocios	0	Cabo Rojo	0
Centros de Salud/Hospitales	0	Camuy	0
Centros Geriátricos/Comunidad de Personas de Edad Avanzada	0	Canovanas	0
Agencias de atención a incapacitados	0	Caguas	0
Organizaciones sin Fines de Lucro	0	Carolina	0
Organizaciones de Preparación y Respuesta	0	Catano	0
Iglesias/instituciones denominacionales	0	Cayey	0
Museos, Bibliotecas, Parques, etc.	0	Ceiba	0
Clubes de voluntarios/servicio	0	Ciales	0
Albergues para animales/veterinarios	0	Cidra	0
Agricultura/Ganadería	0	Coamo	0
Voluntarios de Grupos Radiales	15	Comerio	0
Organizaciones de Ciencia e Ingeniería	0	Corozal	0
Radio/televisión/prensa/internet	0	Culebra	0
Otro	0	Dorado	0
		Fajardo	0
		Florida	0
		Guanica	0
		Guayama	0
		Guaynabo	0
		Guayanilla	0
		Gurabo	0
		Hatillo	0
		Hormigueros	0
		Humacao	0
		Isabela	0
		Jayuya	0
		Juana Diaz	0
		Juncos	0
		Lajas	0
		Lares	15
		Las Marias	0
		Las Piedras	0
		Loiza	0
		Luquillo	0
		Manati	0
		Maricao	0
		Maunabo	0
		Mayaguez	43

Media Arrangements

- PRSN Tsunami Media Guide (English and Spanish)
<http://www.prsn.uprm.edu/mediakit/>
- Seismic Research Unit 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 Caribe Wave 17 dummy messages and to send email messages to corresponding recipients.
- In the case of smaller earthquakes, PTWC will issue the corresponding Tsunami Information Statement and the exercise will not be disrupted.
- All documentation and correspondence relating to this exercise is to be clearly identified as "**CARIBE WAVE 17**" 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 misinterpretation by media or the public.

Resources

- IOC Manual “How to plan, conduct and evaluate tsunami exercises” which will also be a useful resource.
- CARIBE WAVE 2011, 2013, 2014, 2015, 2016 Handbooks
- CARIBE WAVE 2013, 2014, 2015, 2016 Final and Media Report
- PTWC Communications Plan for the Caribbean
- Available at www.caribewave.info
- Questions on the exercise can be addressed to the members of the CARIBE WAVE 17 Task Team

Additional Info

- Additional materials will be added to CTWP (www.caribewave.info) and PRSN websites (prsn.uprm.edu).
- Over the next weeks PTWC will make available the simulated DOMESTIC products for the PR, USVI and BVI
- A similar presentation to this available on CTWP website
- Can make available this presentation to CRRT

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Timeline

ACTION	DUE DATE
Draft Circulated among ICG CARIBE EWS TNC/TWFP	Sep-16
Deadline for Comments	Sep-16
Final Exercise Handbook Available Online	Oct-16
Circular Letter Issued by IOC to MS	Nov-16
1 st Webinar CW	17 - Jan- 2017 -English 18 - Jan- 2017 -Spanish 19 - Jan- 2017 -French
2 nd Webinar CW	7- Mar- 2017 -English 8- Mar- 2017 -Spanish 9- Mar- 2017 -French
Member States and Territories inform which scenario they will be using for the exercise	10-Mar-2017
Exercise	21-Mar-17
Exercise Evaluation Due	3-Apr-17
Draft Final Caribe 17 Report	19- Apr- 17
Discussion of Exercise ICG CARIBE EWS 12 th Session	10-12 May-17

Questions, Comments

Thank you

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