



# 2nd CARIBE WAVE/LANTEX 2014 Webinar English

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**February 19, 2014**

# WELCOME!!!!

## CARIBE WAVE 2014 Webinar Series

- ✓ 22 January in English
- ✓ 23 de enero en Español
- ✓ 24 janvier à Français
- ✓ 19 February in English
- 20 de febrero en Español
- 21 février à Français

# Institutional Reference Frame for the Exercise

- The United National Educational, Scientific, and Cultural Organization's (UNESCO) Intergovernmental Coordination Group for Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (**ICG/CARIBE EWS**) and its newly established Caribbean Tsunami Information Center (**CTIC**)
- Caribbean Disaster and Emergency Management Agency (**CDEMA**)
- Centro de Coordinación para la Prevención de los Desastres Naturales en América Central (**CEPRENAC**)
- The US NWS National Tsunami Hazard Mitigation Program (**NTHMP**), Tsunami Warning Centers (**TWC**) and Caribbean Tsunami Warning Program (**CTWP**)

# Objectives

- **To exercise and evaluate operations of the current Tsunami Warning System and in particular, the CARIBE EWS.**
  - Validate the **issuance** of tsunami products from the PTWC and US NTWC, CARIBE EWS Tsunami Service Providers.
  - Validate the **receipt and dissemination** of tsunami products by CARIBE EWS Tsunami Warning Focal Points (TWFP).
- **To continue process of exposure to PTWC proposed CARIBE EWS Enhanced products.**
  - Review and **evaluate enhanced products** that will be available in parallel with existing PTWC products.
  - Provide feedback on the staging, format and content of the experimental products

# Objectives (cont)

- **To validate the readiness to respond to a distant tsunami.**
  - Validate the operational readiness of the Tsunami Warning Focal Point (TWFP, or like function) and/or the National Disaster Management Office (NDMO).
  - To improve operational readiness. Before the exercise, ensure appropriate tools and response plan(s) have been developed, including public education materials
  - Validate dissemination of warnings and information/advice by Tsunami Warning Focal Points to relevant in-country agencies and the public is accurate and timely.
  - Validate the organisational decision-making process (tsunami response plans) about public warnings and evacuations.
  - Validate the methods used to notify and instruct the public are accurate and timely.

# Goals/Metrics

Goal	Result for 2011	Metric 2013	Result 2013	Metric 2014
Participation of Member States of ICG CARIBE EWS	75%	85%	94%	95%
Compliance with the time line	100%	100%	Close to 100%	100%
Community involvement (beyond TWFP)	61%	75%	69%	75%
TWFP receive the dummy message	90%	100%	98%	100%
Countries submit exercise questionnaire	94%	100%	90%	100%

# Exercise Manuals

- The exercise manuals are available at:  
[www.caribewave.info](http://www.caribewave.info)
- UNESCO IOC CARIBE EWS Handbook for Portugal Scenario is in English and Spanish
- NTHMP Manual and PTWC supplement for GOM manual on line (new), only English
- Include suggested actions as well as a description of the scenario, the time table, travel times and expected wave heights, figures and samples of the messages that would be issued for such events and the website link to evaluation questionnaire.

# CARIBE WAVE/LANTEX 2014

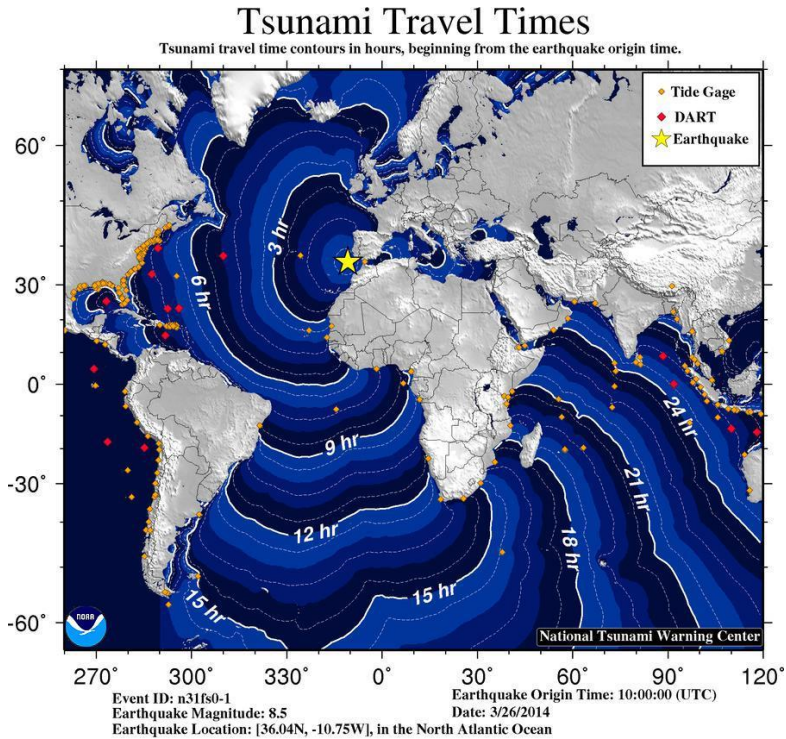


Figure A: Travel Times for Portugal Tsunami Scenario

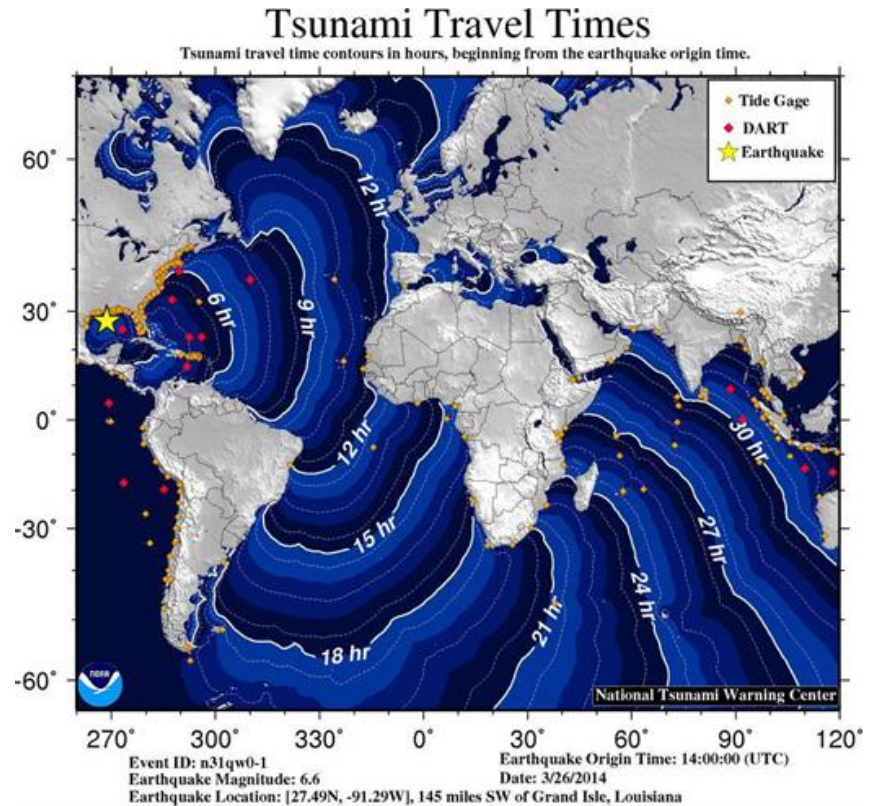


Figure B. Travel Times for Gulf of Mexico submarine landslide tsunami scenario



# CARIBE WAVE/LANTEX 2014

## Portugal Scenario

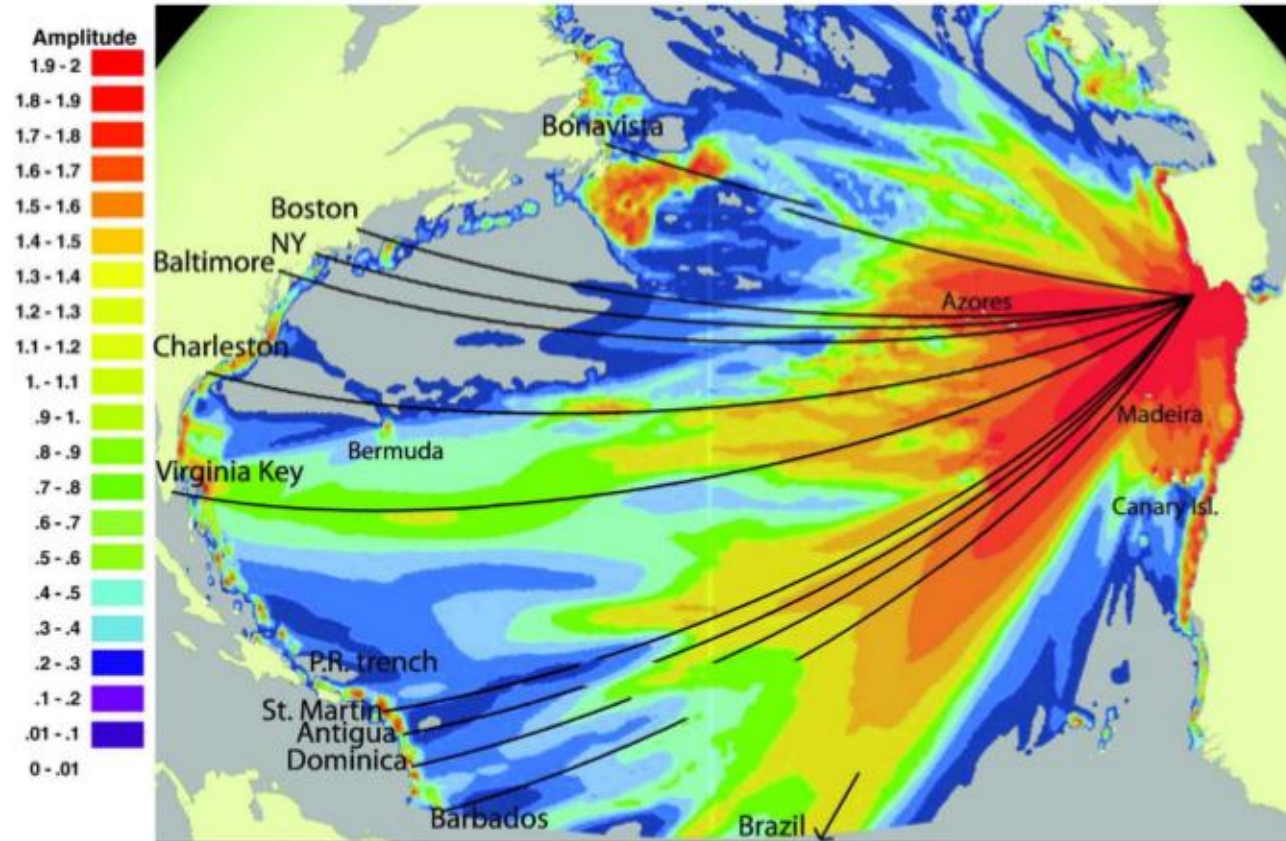
- March 26, 2014
- 10h00 UTC
- M 8.5, 270 km in the SW of Portugal
- Kick off (Dummy) messages will be issued by PTWC and US NTWC. Other centers may also be issuing products (eg. PRSN).



# 1755 Lisbon, Portugal Event

- ~8.5-9.0 Mw
- Tsunami run-up reached 5–15 m along the coasts of Portugal and Morocco
- Up to 100,000 deaths
- Waves with estimated runup heights of 7 meters were observed at Saba, Netherlands, Antilles

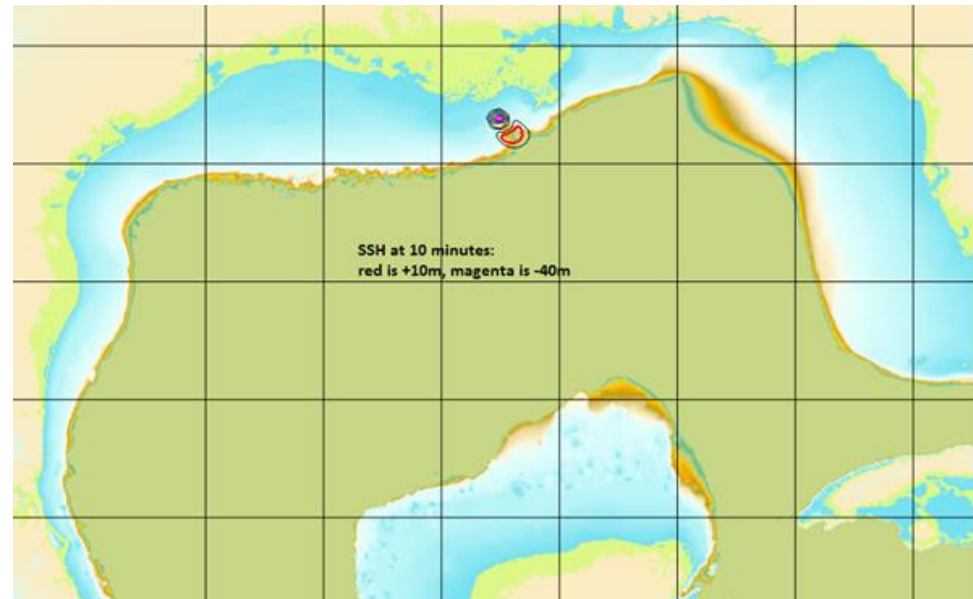
R. Barkan et al. / Marine Geology 264 (2009) 109–122



R. Barkan et al. / Marine Geology 264 (2009) 109–122

# Gulf of Mexico Scenario

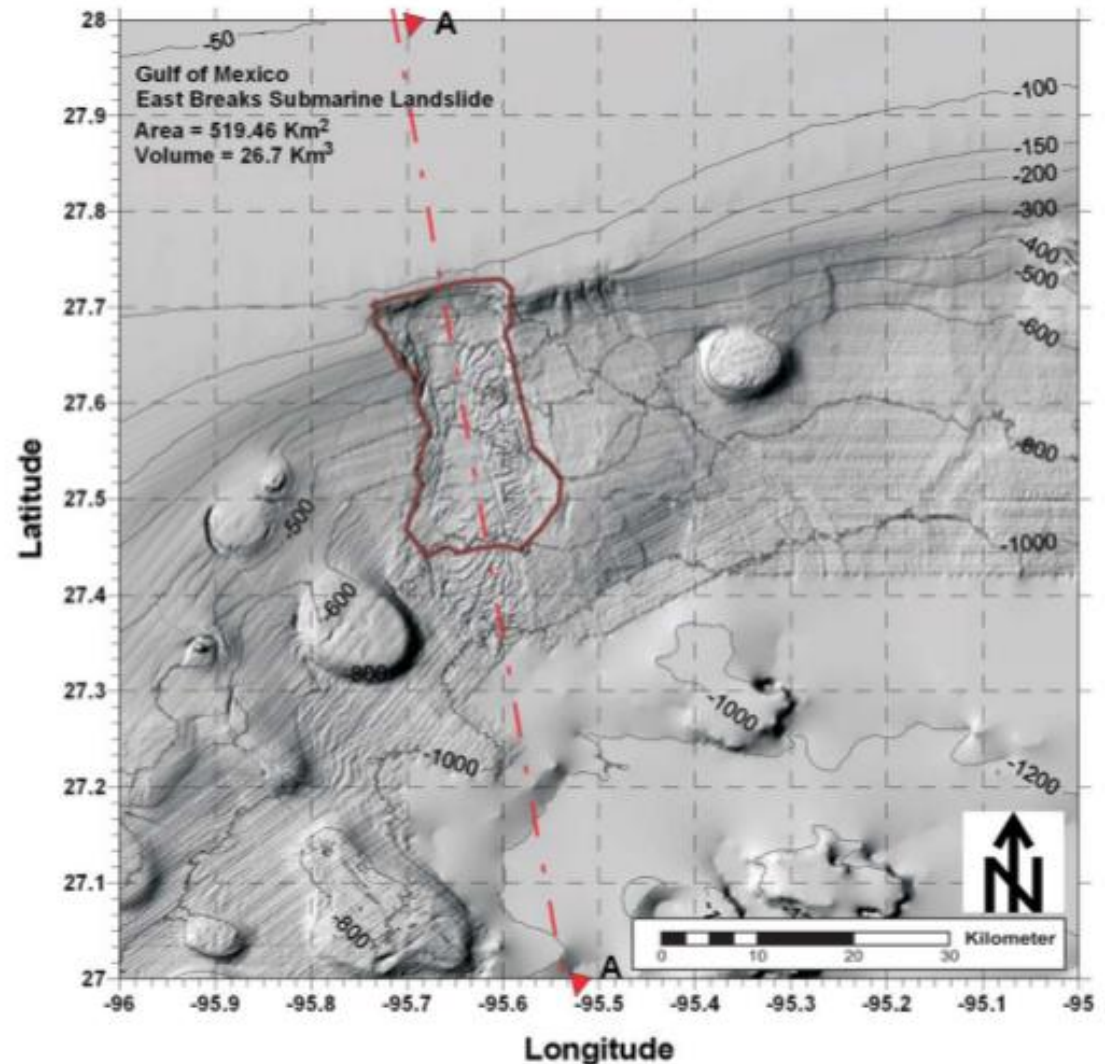
- March 26, 2014
- 14h00 UTC
- M 6.6
- North end of Mississippi Canyon
- Landslide: The slide is 100 cubic km volume; 22km wide; 65km long; 120m maximum thickness
- Kick off messages will be issued by PTWC and NTWC.



# Horillo study (Gulf of Mexico)

HORRILLO ET AL.: A SIMPLIFIED 3-D TSUNAMI NUMERICAL MODEL

- Three-Dimensional Navier-Stokes (3-D NS) model for two fluids (water-mudslide).
- Maximum generated wave height  $\sim 44\text{m}$
- Positive wave amplitude of  $\sim 20\text{ m}$
- Negative wave amplitude of  $\sim 24\text{ m}$



# CARIBE WAVE/LANTEX 2014

## Forecasted Tsunami Wave Heights

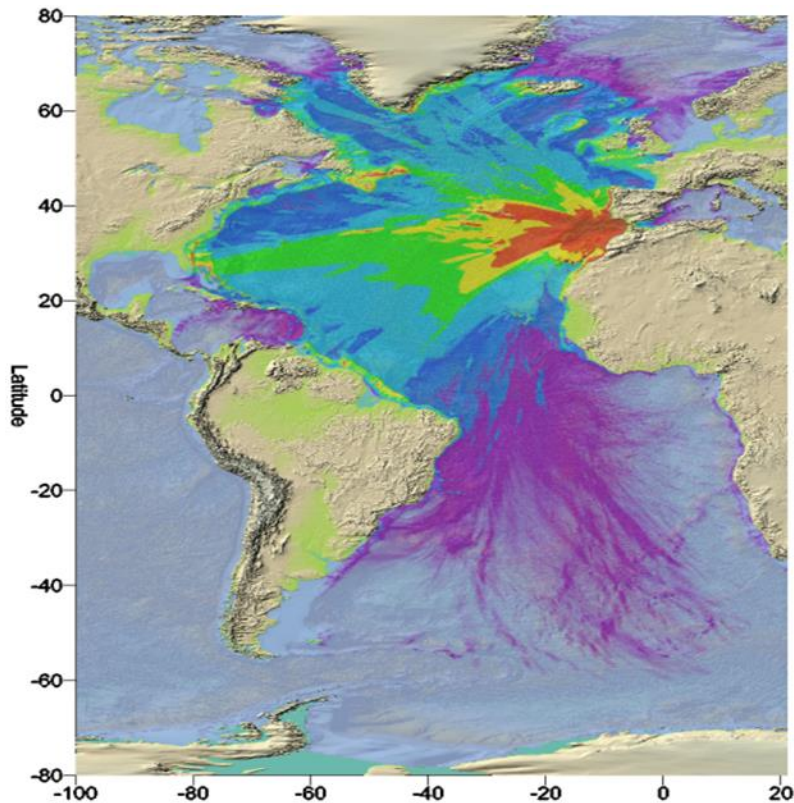


Figure A: Forecasted Tsunami Wave Heights for Portugal Tsunami Scenario

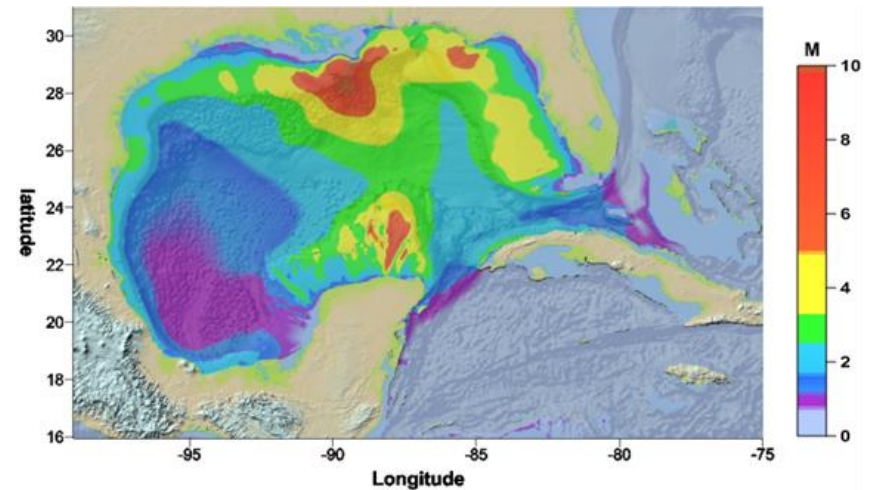


Figure B: Forecasted Tsunami Wave Heights for Gulf of Mexico submarine landslide tsunami scenario

# Wave Height CARIBE WAVE 2014

- . VERACRUZ MX 0.0FT
- . MALIN HEAD IE 1.6FT
- . NEW LONDON CT 2.4FT
- . ATLANTIC CITY NJ 2.2FT
- . FORTALEZA BR 2.6FT
- . ARECIBO PR 4.0FT
- . PONTA DELGADA PT 12.2FT
- . LIMETREE VI 1.7FT
- . BERMUDA UK 6.0FT
- . CAP HAITIEN HT 2.3FT
- .LA PALMA ES 7.7FT
- .TRIDENT PIER FL 4.3FT
- .POINT FORTIN TT 3.4FT
- .LE ROBERT MQ 3.0FT
- .POINT A PITRE GP 3.1FT
- .PORT ST CHARLES BB 4.3FT
- .PUNTA CANA DO 2.7FT
- .CHARLOTTE-AMALIE VI 1.7FT
- .TORTOLA VI UK 1.6FT3
- .LE ROBERT MQ 3.0FT

# Product Types Issued for Dummy Message with Transmission Methods for Portugal (10:05 UTC) and GOM (14:02 UTC) Scenarios

CENTER	WMO ID	AWIPS ID	NWWS	GTS	EMWIN	AISR	FAX	EMAIL
NTWC	WEXX30 PAAQ	TSUATE	Yes	Yes	Yes	Yes	Yes	Yes
PTWC	WECA41 PHEB	TSUCAX	Yes	Yes	Yes	Yes	Yes	Yes

Table 3. Product types

NWWS            NOAA Weather Wire Service  
GTS              Global Telecommunications System  
EMWIN          Emergency Manager's Weather Information Network  
AISR             Aeronautical Information System Replacement

***In the case of NTWC the Dummy message will be issued with WMO ID WEXX30 PAAQ (instead of WEXX20 PAAQ) and AWIPS ID TSUATE (instead of TSUAT1).***

# Message Chronology

## Portugal Scenario

Date (UTC)	Time (UTC)	US NTWC Message				PTWC Message				
		#	Type	Dummy	Email	#	Type	Dummy	Email	
03/26/2014	1000		----- Earthquake Occurs -----							
03/26/2014	1005		Dummy	Yes	Yes		Dummy	Yes	Yes	
03/26/2014	1005	01	TIS #1 Watch?	No	Yes	01	Watch	No	Yes	
03/26/2014	1103	02	Watch	No	Yes	02	Watch	No	Yes	
03/26/2014	1204	03	Watch	No	Yes	03	Watch	No	Yes	
03/26/2014	1300	04	Watch	No	Yes	04	Watch	No	Yes	
03/26/2014	1400	05	Adv/Warn	No	Yes	05	Watch	No	Yes	
03/26/2014	1500	06	Adv/Warn	No	Yes	06	Watch	No	Yes	
03/26/2014	1602	07	Adv/Warn	No	Yes	07	Watch	No	Yes	
03/26/2014	1703	08	Adv/Warn	No	Yes	08	Watch	No	Yes	
03/26/2014	1805	09	Adv/Warn	No	Yes	09	Watch	No	Yes	
03/26/2014	1905	10	Adv/Warn	No	Yes	10	Watch	No	Yes	
03/26/2014	2002	11	Adv	No	Yes	11	Watch	No	Yes	
03/27/2014	2101	12	Adv	No	Yes	12	Watch	No	Yes	
03/27/2014	2201	13	Adv	No	Yes	13	Watch	No	Yes	
03/27/2014	2255	14	Can	No	Yes				Yes	
03/26/2014	2300	14				14	Watch	No	Yes	
03/26/2014	2355	15				15	Can	No	Yes	



# US NTWC Message Chronology

## Gulf of Mexico Scenario

Date (UTC)	Time (UTC)	NTWC Message			
		#	Type	Dummy	Email
03/26/2014	1400		***Earthquake Occurs***		
03/26/2014	1402	01	Warn	Yes	Yes
03/26/2014	1431	02	Warn	No	Yes
03/26/2014	1502	03	Adv/Warn	No	Yes
03/26/2014	1601	04	Adv/Warn	No	Yes
03/26/2014	1703	05	Adv/Warn	No	Yes
03/26/2014	1801	06	Adv/Warn	No	Yes
03/26/2014	1902	07	Adv/Warn	No	Yes
03/26/2014	2001	08	Adv/Warn	No	Yes
03/26/2014	2100	09	Adv	No	Yes
03/26/2014	2200	10	Adv	No	Yes
03/26/2014	2302	11	Can	No	Yes

# PTWC Message Chronology

## Gulf of Mexico Scenario

Date (UTC)	Time (UTC)	PTWC Message			
		#	Type	Dummy	Email
03/26/2014	1400		***Earthquake Occurs***		
03/26/2014	1403		Dummy	Yes	Yes
03/26/2014	1403	01	Information	Yes	Yes*
03/26/2014	1502	02	Watch	No	Yes*
03/26/2014	1602	03	Watch	No	Yes*
03/26/2014	1702	04	Watch	No	Yes*
03/26/2014	1802	05	Watch	No	Yes*
03/26/2014	1902	06	Watch	No	Yes*
03/26/2014	2002	07	Watch	No	Yes*
03/26/2014	2102	08	Watch	No	Yes*
03/26/2014	2202	09	Watch	No	Yes*
03/26/2014	2302	10	Can	No	Yes*

# Tsunami Messages

**West Coast & Tsunami Warning Center**  
<http://www.twc.srh.noaa.gov>  
**Puerto Rico Seismic Network**  
<http://tudisimio.usps.edu> Telephone: 787-633-8633  
**TSUNAMI MESSAGES**



- Danger!
- Run for high ground!
- Follow emergency instructions.

**WARNING**



**ADVISORY**

- Possible strong and dangerous local currents.
- Get out of the water and off the beach.
- Stay tuned for local emergency guidance.



- Potential danger.
- Stayed tuned for more information.

**WATCH**




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

**INFORMATION STATEMENT**

WEST COAST & ALASKA TSUNAMI WARNING CENTER

**Pacific Tsunami Warning Center**  
<http://www.weather.gov/ptwc/index.php>  
**Caribbean Tsunami Warning Program**  
<http://www.srh.noaa.gov/srh/ctwp>  
**TSUNAMI MESSAGES FOR THE CARIBBEAN EXCEPT FOR PUERTO RICO AND THE US VIRGIN ISLANDS**




- Danger for all coasts within the Caribbean Region!
- Run for High Ground!
- Follow the instructions of the emergency management officials.

**CARIBBEAN SEA-WIDE TSUNAMI WATCH**



- Danger for coasts within a thousand kilometers from Earthquake!
- Run for High Ground!
- Follow the instructions of the emergency management officials.

**REGIONAL TSUNAMI WATCH**



- Danger for coasts within a hundred kilometers from Earthquake!
- Run for High Ground!
- Follow the instructions of the emergency management officials.

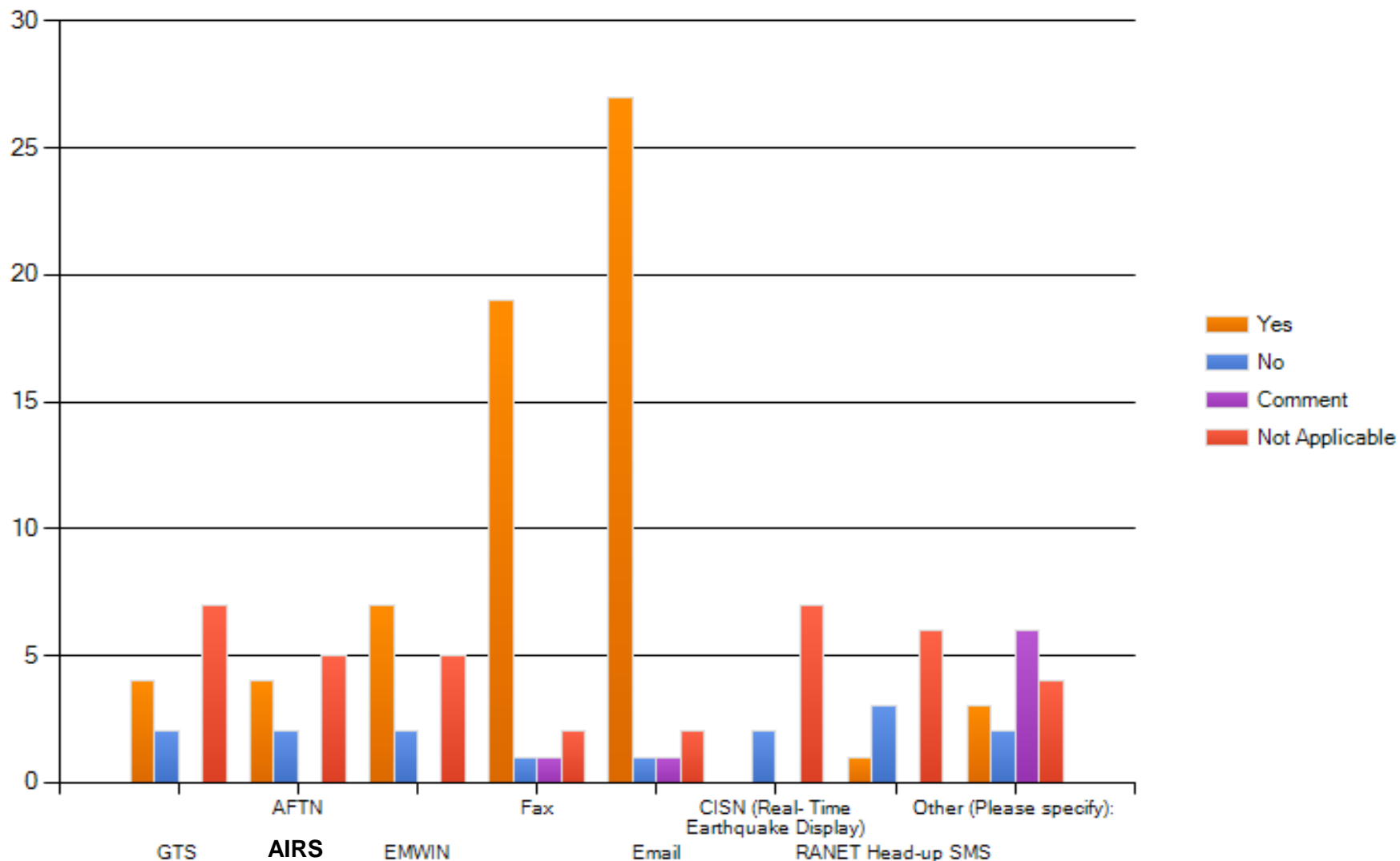
**LOCAL TSUNAMI WATCH**



- Relax.
- No Danger.
- A more distant place may be in danger.

**INFORMATION STATEMENT**

**1B.5 :Indicate thru which systems the initial PTWC or WCATWC CARIBE WAVE 13 scenario exercise start message was received by your country TWFP.**



**ALL THE SIMULATED MESSAGES WILL BE SENT OUT LIVE  
VIA EMAIL, BUT ONLY TO THOSE WHO HAVE  
REGISTERED.**

**PRSN supported Registration**

**[http://www.prsn.uprm.edu/caribewave-  
lantex2014/registro/](http://www.prsn.uprm.edu/caribewave-lantex2014/registro/)**

**Link also available thru**

**<http://caribewave.info>**

**DEADLINE FOR REGISTRATION:  
MONDAY MARCH 24, 2014**

# Registration

As of Feb. 19, 2014

Type of Participant	Number of Participants	Number of Registrations
Tsunami Warning Focal Points	697	26
Tsunami National Contacts	50	1
State Agencies	517	6
International Agencies	3	2
Private Companies	10	1
Educational Organizations	1274	3
Media (Includes Social Media)	2766	2
Health Facilities	0	0
Community Organizations	37	3
Individuals/Families	54	20
TOTAL:	6065	72

# Registration by Country/Territory

## 17% of CARIBE EWS MS

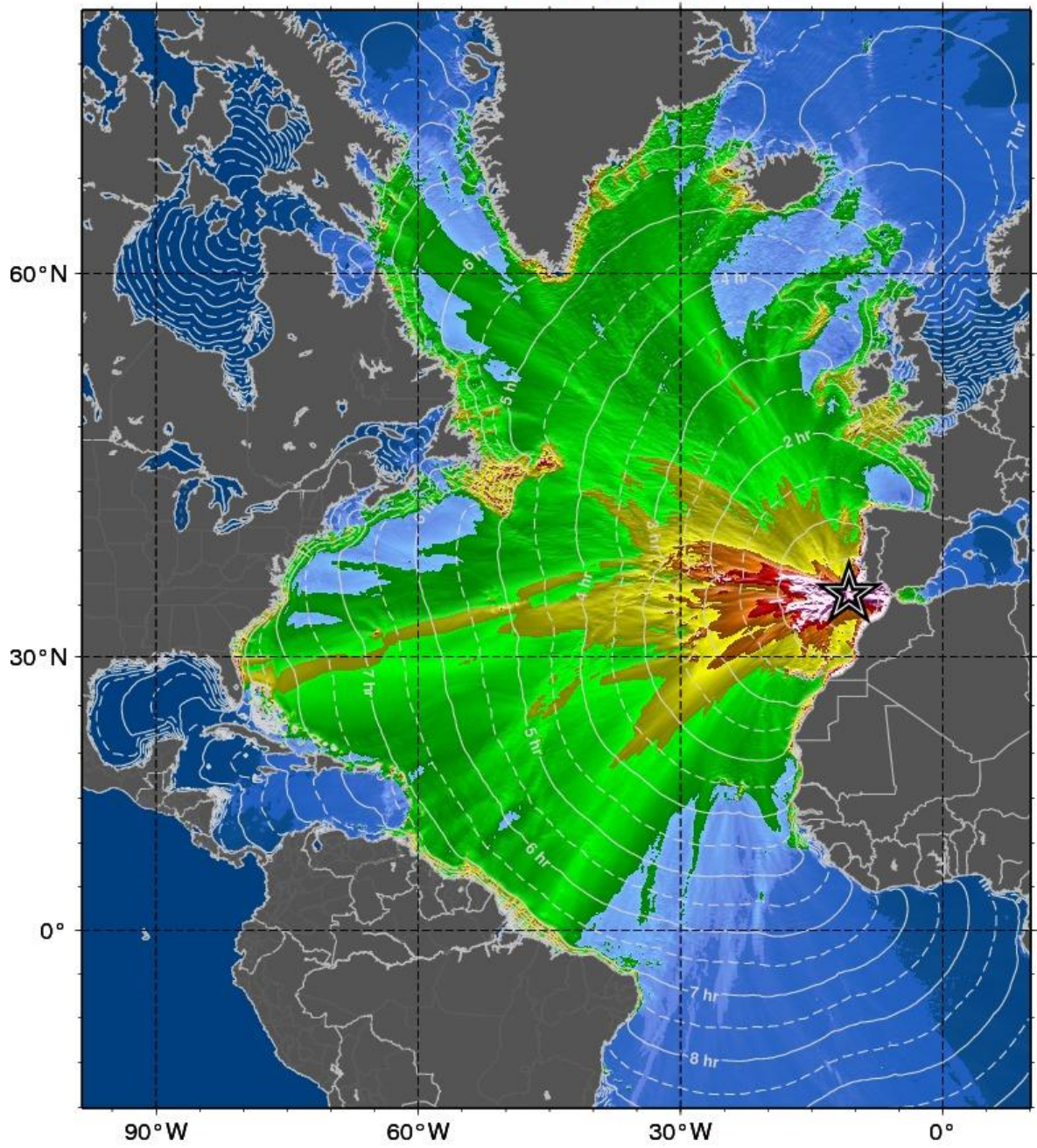
(Updated Feb. 19, 2014)

Country	Number of Registrants
Anguilla (TNC/TWFP)	35
Aruba (TNC/TWFP)	5
Costa Rica	10
Panama (Alternate TWFP)	5
UK Turks & Caicos (TNC)	90
UK British Virgin Islands (TNC/TWFP)	1
US Puerto Rico (TWFP)	4972
US US Virgin Islands (TWFP)	129
US Mainland	31
Venezuela (TWFP/TNC)	60
<b>Total</b>	<b>5299</b>

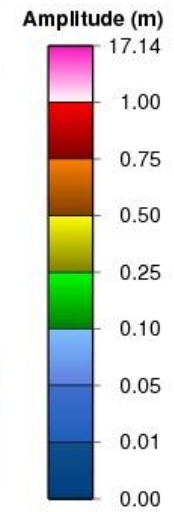
Note: If TWFP and or TNC has registered, it is indicated, this does not mean that the full number of registered participants is associated with the TWFP/TNC

# PTWC Energy Forecast

*EXPERIMENTAL - Not For Distribution*



**Earthquake:**  
26 Mar 2014  
10:00:00 Z  
Lat: 36.04°N  
Lon: 10.75°W  
Depth: 5 km  
 $M_w$  : 8.58  
CMT:

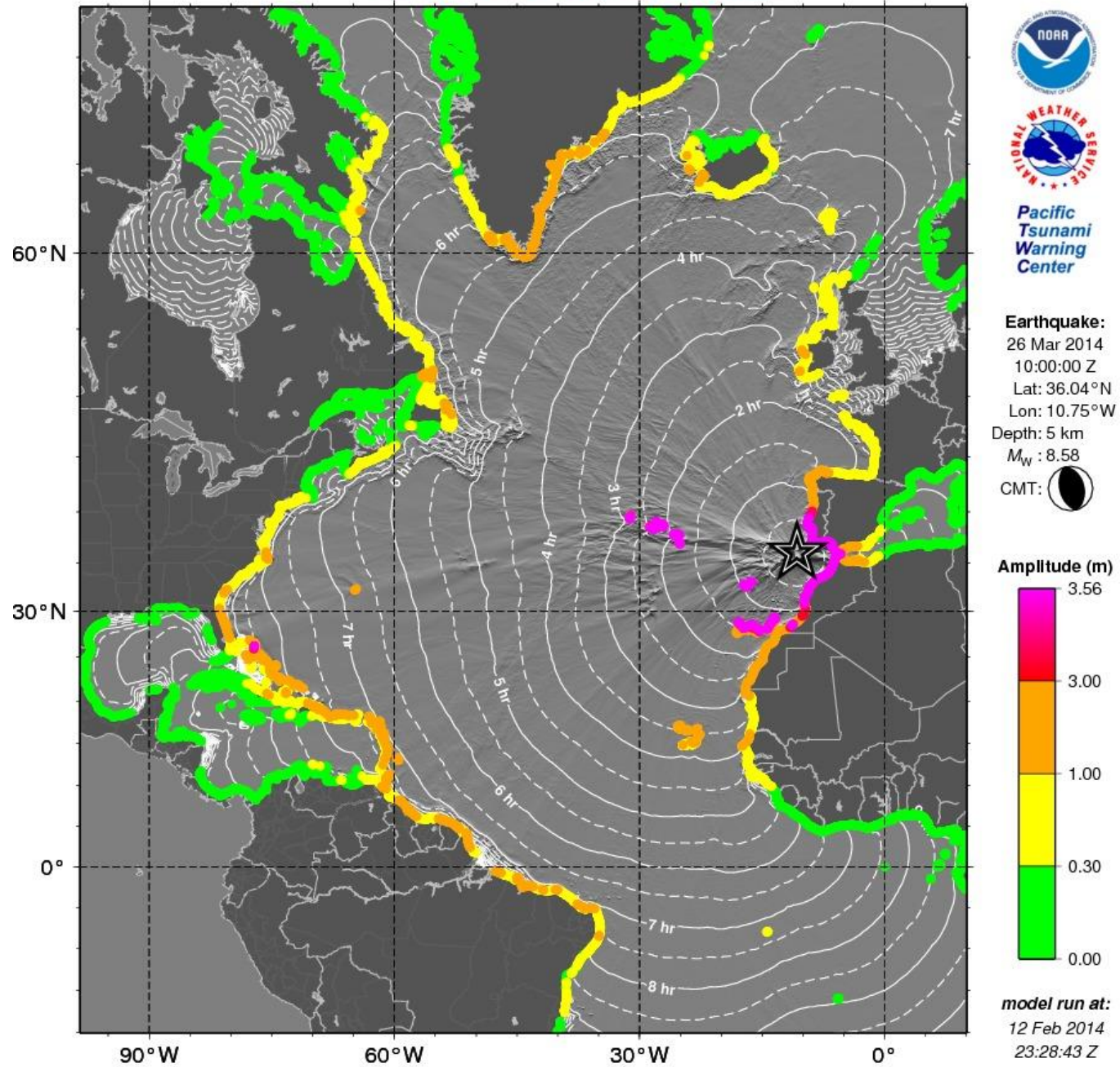


**model run at:**  
09 Feb 2014  
17:49:14 Z

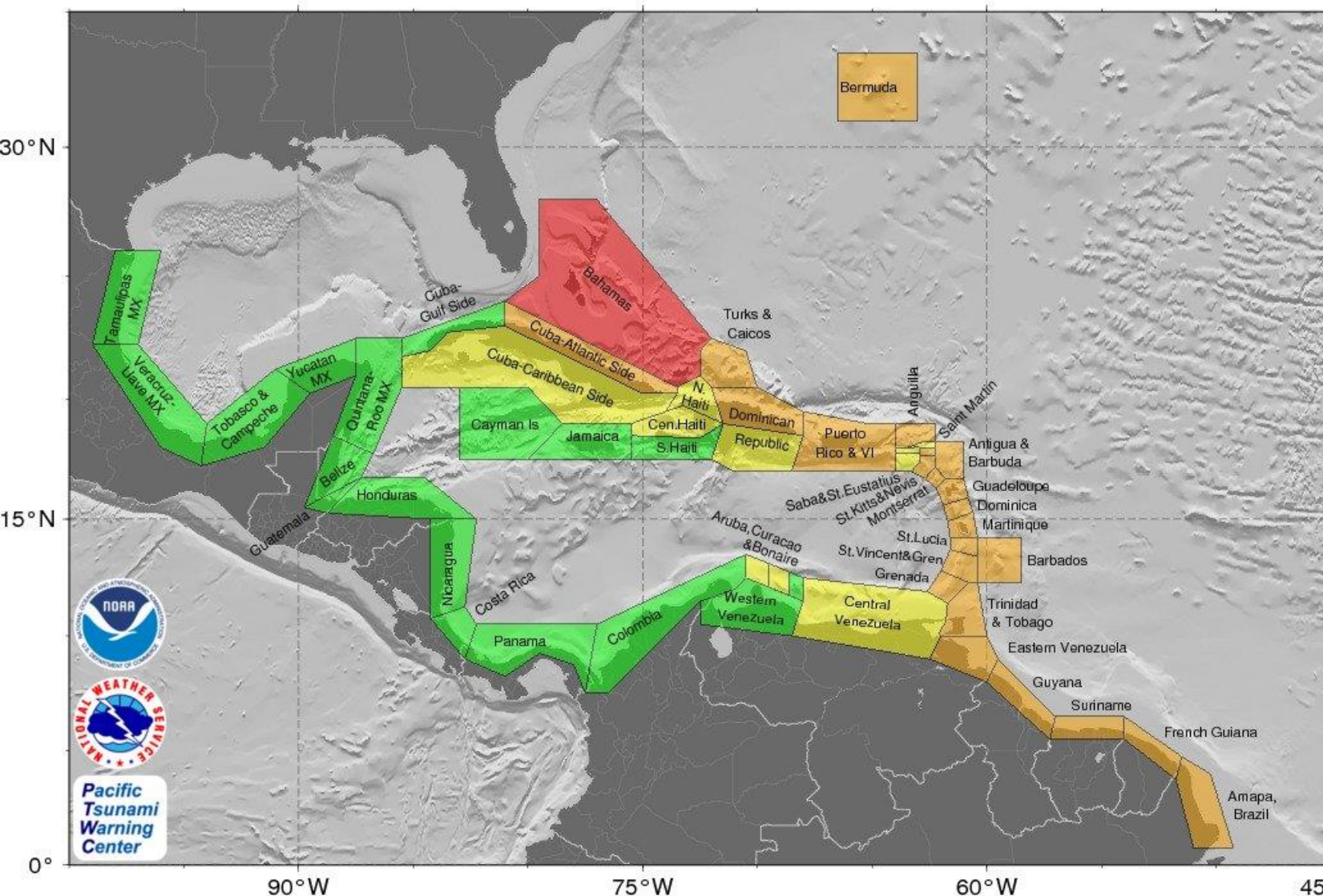


# PTWC Coastal Forecast

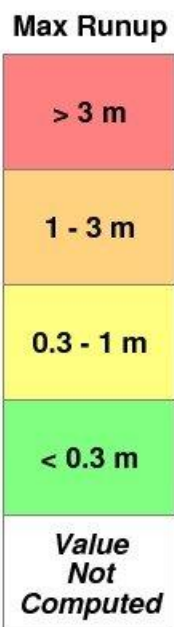
**EXPERIMENTAL - Not For Distribution**



# PTWC Forecast Polygons *EXPERIMENTAL - Not For Distribution*



**Earthquake:**  
 26 Mar 2014  
 10:00:00 Z  
 Lat: 36.04°N  
 Lon: 10.75°W  
 Depth: 5 km  
 $M_w$ : 8.58  
 CMT:



**model run at:**  
 09 Feb 2014  
 17:49:14 Z

# Missing Text Products that would accompany the Enhanced Products

Will be posted at

<http://caribewave.info>

# ComMIT

CARIBE WAVE/LANTEX 2014 Source was added as a unit source to ComMIT



# NEW: Tsunami Checklists for NDMO/TWFP

IOC Technical Series, 109 (1)  
Annex I – page 4

DISTANT 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. Distant tsunami wave arrival time expected more than 3 hours after earthquake origin time.	Earthquake Origin Time: 0000	
	Agency(ies) / Department(s):	Time (mins):
	_____	
Prepare to start electrical generators	_____	Tbd
If your facility is located in a tsunami evacuation zone: <ul style="list-style-type: none"> <li>• Prepare to shutoff utilities (e.g. electrical, gas, water)</li> <li>• Protect key equipment (e.g. computers)</li> <li>• Remove key documents (e.g. financial, personal information)</li> </ul>	_____	Tbd
Determine if tsunami has caused coastal damage / injuries and the need to initiate search and rescue operations	_____	Tbd
Determine when to declare the "all clear"	_____	Tbd
Prepare for post tsunami impact operations	_____	tbd
Do roll call for workers_____ and volunteers_____	_____	Tbd

Table I-1. Actions, agencies, and timing for a distant tsunami event

EVENT	TIME (WHEN)	ACTIVITY (WHAT INFO)	AUTHORITY (WHO)	MEDIUM (HOW)	TO (TARGET)
EQ Occurs					
Tsunami might come					
Evacuate					
Tsunami comes					
Safe to return					

Table I-2. Table to be used as a guide for timing, actions, authority, communication means, and target audiences in case of a tsunami event.

DISTANT 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. Distant tsunami wave arrival time expected more than 3 hours after earthquake origin time.	Earthquake Origin Time: 0000	
	Agency(ies) / Department(s):	Time (mins):
	_____	
Tsunami message received	_____	+10
Call in staff	_____	+15
Activate emergency centers/ Notify public safety agencies	_____	+25
Coordinate sounding of public sirens and alarm notifications	_____	+45
Initiate media notifications and evacuation announcements	_____	+45
Initiate evacuation of people away from coast (Tsunami Evacuation Maps)	_____	Tbd
Put boats/ships out to sea if wave impact time permits	_____	Tbd
Setup road-blocks and evacuation routes	_____	Tbd
Guide people through traffic points to shelter	_____	Tbd
Initiate recall of disaster response workers	_____	Tbd
Open and operate refuge centers	_____	Tbd

## Appendix D. TWC Dummy Messages

### US NTWC

WEXX30 PAAQ 201305  
TSUATE

TEST...TSUNAMI EXERCISE MESSAGE NUMBER 1...TEST  
NWS NATIONAL TSUNAMI WARNING CENTER PALMER AK  
205 AM AST WED MAR 26 2014

...CARIBE WAVE/LANTEX14 PORTUGAL EVENT TSUNAMI EXERCISE MESSAGE. REFER TO NTWC  
MESSAGE 1 IN THE EXERCISE HANDBOOK. THIS IS AN EXERCISE ONLY...

THIS MESSAGE IS BEING USED TO START THE CARIBE WAVE/LANTEX14 PORTUGAL EVENT  
TSUNAMI EXERCISE. THIS WILL BE THE ONLY EXERCISE MESSAGE BROADCAST FROM THE  
NATIONAL TSUNAMI WARNING CENTER EXCLUDING SPECIAL EMAIL MESSAGES DISCUSSED IN  
THE HANDBOOK. THE HANDBOOK IS AVAILABLE AT THE WEB SITE NTWC.ARH.NOAA.GOV. 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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### PTWC

WECA41 PHEB 201305  
TSUCAX

TEST...TSUNAMI EXERCISE MESSAGE NUMBER 1...TEST  
NWS PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS  
ISSUED AT 1005Z 26 MAR 2014

...CARIBE WAVE/LANTEX14 PORTUGAL EVENT 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 CARIBE WAVE/LANTEXWAVE14 PORTUGAL EVENT  
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 NTWC.ARH.NOAA.GOV. THE  
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TSUNAMI RESPONSE PLANS.

THIS IS ONLY AN EXERCISE.

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## Appendix E. US TWC Exercise Messages

The following messages, created for the CARIBE WAVE/LANTEX14 tsunami exercise, are representative of the official standard products issued by the US NTWC and PTWC during a large magnitude 8.5 earthquake and tsunami originating 270 miles west of Gibraltar at 36.04°N, 10.75°W. 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.

### US NTWC Message #1

WEXX32 PAAQ 261005  
TIBATE

PUBLIC TSUNAMI INFORMATION STATEMENT NUMBER 1  
NWS NATIONAL TSUNAMI WARNING CENTER PALMER AK  
605 AM EDT WED MAR 26 2014

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

#### EVALUATION

- \* EARTHQUAKES OF THIS SIZE ARE KNOWN TO GENERATE TSUNAMIS POTENTIALLY DANGEROUS TO COASTS OUTSIDE THE SOURCE REGION.
- \* THE U.S. NATIONAL TSUNAMI WARNING CENTER IS ANALYZING THE EVENT TO DETERMINE THE LEVEL OF DANGER.
- \* MORE INFORMATION WILL BE ISSUED AS IT BECOMES AVAILABLE.
- \* THIS EARTHQUAKE HAS THE POTENTIAL TO GENERATE A DESTRUCTIVE TSUNAMI IN THE SOURCE REGION.

#### PRELIMINARY EARTHQUAKE PARAMETERS

* MAGNITUDE	8.0
* ORIGIN TIME	0600 EDT MAR 26 2014
	0500 CDT MAR 26 2014
	0600 AST MAR 26 2014
	1000 UTC MAR 26 2014
* COORDINATES	36.0 NORTH 10.8 WEST
* DEPTH	3 MILES
* LOCATION	NORTH ATLANTIC OCEAN

#### NEXT UPDATE AND ADDITIONAL INFORMATION

- \* MESSAGES WILL BE ISSUED HOURLY TO KEEP YOU INFORMED OF THE PROGRESS OF THIS EVENT.
- \* REFER TO THE INTERNET SITE [NTWC.ARH.NOAA.GOV](http://NTWC.ARH.NOAA.GOV) FOR ADDITIONAL INFORMATION.
- \* CARIBBEAN COASTAL REGIONS OUTSIDE PUERTO RICO... U.S. VIRGIN ISLANDS AND BRITISH VIRGIN ISLANDS SHOULD REFER TO THE PACIFIC TSUNAMI WARNING CENTER MESSAGES AT [PTWC.WEATHER.GOV](http://PTWC.WEATHER.GOV).

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CARIBE WAVE/LANTEX 14 Handbook

TSUNAMI WARNING CENTER MESSAGES AT PTWC.WEATHER.GOV.

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**US NTWC Bulletin #14**

WEXX30 PAAQ 262255  
TSUATE

BULLETIN  
PUBLIC TSUNAMI MESSAGE NUMBER 14  
NWS NATIONAL TSUNAMI WARNING CENTER PALMER AK  
655 PM EDT WED MAR 26 2014

...THE TSUNAMI ADVISORY IS CANCELLED...

CANCELLATIONS

- \* THE TSUNAMI ADVISORY IS CANCELED FOR THE COASTAL AREAS OF FLORIDA - GEORGIA - SOUTH CAROLINA - NORTH CAROLINA - VIRGINIA - MARYLAND - DELAWARE - NEW JERSEY - NEW YORK - CONNECTICUT - RHODE ISLAND - MASSACHUSETTS - NEW HAMPSHIRE - MAINE - NEW BRUNSWICK - NOVA SCOTIA - NEWFOUNDLAND AND LABRADOR FROM FLAMINGO FLORIDA TO CAPE CHIDLEY LABRADOR
- \* THE TSUNAMI WARNING IS CANCELED FOR PUERTO RICO - THE U.S. VIRGIN ISLANDS AND THE BRITISH VIRGIN ISLANDS

IMPACTS - UPDATED

- \* TSUNAMI ACTIVITY HAS SUBSIDED ALONG THE COASTS OF PUERTO RICO... U.S. VIRGIN ISLANDS... BRITISH VIRGIN ISLANDS... AND U.S. AND CANADIAN COASTS IN THE ATLANTIC.
- \* ONGOING ACTIVITY MAY PERSIST IN SOME AREAS CAUSING STRONG CURRENTS DANGEROUS TO SWIMMERS AND BOATS.
- \* THE DETERMINATION TO RE-OCCUPY HAZARD ZONES MUST BE MADE BY LOCAL OFFICIALS.

RECOMMENDED ACTIONS - UPDATED

- \* DO NOT RE-OCCUPY HAZARD ZONES UNTIL LOCAL EMERGENCY OFFICIALS INDICATE IT IS SAFE TO DO SO.

OBSERVATIONS OF TSUNAMI ACTIVITY - UPDATED

SITE	TIME OF MEASUREMENT	OBSERVED MAX TSUNAMI HEIGHT
HUELVA SPAIN	1130 UTC 03-26	07.1FT
TARIFA SPAIN	1145 UTC 03-26	05.9FT
CASCAS PORTUGAL	1151 UTC 03-26	09.9FT
LA PALMA SPAIN	1250 UTC 03-26	02.1FT
ARRECIFE SPAIN	1252 UTC 03-26	03.1FT
POINT DELGADA AZORES	1342 UTC 03-26	05.6FT
FERROL SPAIN	1410 UTC 03-26	01.7FT
DAKAR SENEGAL	1515 UTC 03-26	00.4FT
CHRISTIANSTED USVI	1745 UTC 03-26	01.3FT
LAMESHUR BAY USVI	1752 UTC 03-26	03.2FT
CHARLOTTE AMALIE USVI	1845 UTC 03-26	04.1FT
LIMTETREE USVI	1832 UTC 03-26	01.1FT



## CARIBE WAVE/LANTEX 14 Handbook

MAYAGUEZ PR	1757 UTC	03-26	02.7FT
FAJARDO PR	1751 UTC	03-26	02.7FT
ARECIBO PR	1815 UTC	03-26	05.2FT
BERMUDA	1811 UTC	03-26	02.9FT
SAINT JOHNS CANADA	1833 UTC	03-26	02.9FT
HALIFAX CANADA	1848 UTC	03-26	01.9FT
MONTAUK NY	1912 UTC	03-26	00.9FT
OCEAN CITY MD	1919 UTC	03-26	01.1FT
NANTUCKET MA	1949 UTC	03-26	01.9FT
ATLANTIC CITY NJ	1951 UTC	03-26	02.6FT
VIRGINIA BEACH VA	1955 UTC	03-26	02.1FT
DUCK NC	2020 UTC	03-26	01.3FT
WATCH HILL RI	2033 UTC	03-26	00.7FT
PORTLAND ME	2034 UTC	03-26	00.2FT
TRIDENT PIER FL	2037 UTC	03-26	02.1FT
CHARLESTON SC	2037 UTC	03-26	00.4FT
KEY WEST FL	2104 UTC	03-26	00.3FT

HEIGHT - OBSERVED MAX TSUNAMI HEIGHT IS THE WATER LEVEL ABOVE THE TIDE LEVEL AT THE TIME OF MEASUREMENT.

ALL US EAST COAST - PUERTO RICO - USVI AND BRITISH VI LOCATIONS REPORTED WAVE HEIGHTS HAVE SUBSIDED TO LESS THAN 0.30 M.

### NEXT UPDATE AND ADDITIONAL INFORMATION

- \* THIS WILL BE THE FINAL U.S. NATIONAL TSUNAMI WARNING CENTER MESSAGE ISSUED FOR THIS EVENT.
- \* REFER TO THE INTERNET SITE [NTWC.ARH.NOAA.GOV](http://NTWC.ARH.NOAA.GOV) FOR MORE INFORMATION.
- \* CARIBBEAN COASTAL REGIONS OUTSIDE PUERTO RICO... U.S. VIRGIN ISLANDS AND BRITISH VIRGIN ISLANDS SHOULD REFER TO THE PACIFIC TSUNAMI WARNING CENTER MESSAGES AT [PTWC.WEATHER.GOV](http://PTWC.WEATHER.GOV).

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### **US NTCW Spanish Bulletin #1**

WEXX42 PAAQ 261005  
TIBSPN

NUMERO BOLETIN INFORMATIVO TSUNAMI EXPERIMENTAL EN ESPANOL 1  
NWS NATIONAL TSUNAMI WARNING CENTER PALMER AK  
605 AM EDT WED MAR 26 2014

... BOLETIN INFORMATIVO ACERCA DEL PELIGRO DE TSUNAMI PARA LAS COSTAS DEL ESTE DE LOS ESTADOS UNIDOS Y CANADA/ GOLFO DE MEXICO/ PUERTO RICO/ ISLAS VIRGENES DE LOS ESTADOS UNIDOS Y ISLAS VIRGENES BRITANICAS...

### EVALUACION

- \* SE CONOCE QUE TERREMOTOS DE ESTE TAMAÑO GENERAN TSUNAMIS POTENCIALMENTE PELIGROSOS PARA COSTAS FUERA DEL LUGAR DE ORIGEN.
- \* EL CENTRO NACIONAL DE ALERTA DE TSUNAMIS ESTA ANALIZANDO EL EVENTO PARA DETERMINAR EL NIVEL DE PELIGROSIDAD.
- \* INFORMACION ADICIONAL SERA EMITIDA CUANDO ESTE DISPONIBLE.

CARIBE WAVE/LANTEX 14 Handbook

	PUERTO_CARRETO	8.8N	77.6W	2006Z	26	MAR
	PUERTO_OBALDIA	8.7N	77.4W	2018Z	26	MAR
	COLON	9.4N	79.9W	2040Z	26	MAR
	BOCAS_DEL_TORO	9.4N	82.2W	2052Z	26	MAR
MEXICO	COZUMEL	20.5N	87.0W	2028Z	26	MAR
	MADERO	22.3N	97.8W	2308Z	26	MAR
	VERACRUZ	19.2N	96.1W	2313Z	26	MAR
	TEXAS_BORDER	26.0N	97.1W	2323Z	26	MAR
	PROGRESO	21.3N	89.7W	0014Z	27	MAR
	CAMPECHE	19.9N	90.5W	0310Z	27	MAR
HONDURAS	FUERTO_CORTES	15.9N	88.0W	2032Z	26	MAR
	TRUJILLO	15.9N	86.0W	2119Z	26	MAR
GUYANA	GEORGETOWN	6.8N	58.2W	2033Z	26	MAR
SURINAME	PARAMARIBO	5.9N	55.2W	2033Z	26	MAR
COSTA_RICA	PUERTO_LIMON	10.0N	83.0W	2038Z	26	MAR
NICARAGUA	PUNTA_GORDA	11.4N	83.8W	2130Z	26	MAR
	PUERTO_CABEZAS	14.0N	83.4W	0057Z	27	MAR
BELIZE	BELIZE_CITY	17.5N	88.2W	2142Z	26	MAR
GUATEMALA	PUERTO_BARRIOS	15.7N	88.6W	2225Z	26	MAR

ADDITIONAL BULLETINS WILL BE ISSUED BY THE PACIFIC TSUNAMI WARNING CENTER FOR THIS EVENT AS MORE INFORMATION BECOMES AVAILABLE.

**PTWC Message #15**

WECA41 PHEB 262355  
TSUCAX

TEST...TSUNAMI MESSAGE NUMBER 15...TEST  
NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI  
2355 UTC WED MAR 26 2014

THIS MESSAGE APPLIES TO COUNTRIES WITHIN AND BORDERING THE CARIBBEAN SEA...EXCEPT FOR PUERTO RICO...THE U.S. VIRGIN ISLANDS...AND THE BRITISH VIRGIN ISLANDS.

... THE TSUNAMI WATCH IS CANCELLED ...

THE TSUNAMI WATCH IS NOW CANCELLED FOR

BERMUDA / DOMINICA / MONTSERRAT / BARBADOS / SAINT LUCIA /  
GUADELOUPE / SINT EUSTATIUS / SABA / MARTINIQUE / ANGUILLA /  
ANTIGUA / SAINT KITTS / BARBUDA / SINT MAARTEN / SAINT VINCENT /  
BRAZIL / DOMINICAN REP / TURKS N CAICOS / SAINT BARTHELEMY /  
TRINIDAD TOBAGO / BAHAMAS / GRENADA / SAINT MARTIN / HAITI /  
CUBA / FRENCH GUIANA / VENEZUELA / JAMAICA / GUYANA / SURINAME

THIS BULLETIN IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY NATIONAL AND LOCAL GOVERNMENT AGENCIES HAVE THE AUTHORITY TO MAKE DECISIONS REGARDING THE OFFICIAL STATE OF ALERT IN THEIR AREA AND ANY ACTIONS TO BE TAKEN IN RESPONSE.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 1000Z 26 MAR 2014  
COORDINATES - 36.0 NORTH 10.8 WEST  
LOCATION - AZORES-CAPE ST. VINCENT RIDGE  
MAGNITUDE - 8.5

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

GAUGE LOCATION	GAUGE COORDINATES		TIME OF MEASURE	MAXIMUM TSUNAMI HEIGHT	WAVE PERIOD
	LAT	LON	(UTC)	(M)	(MIN)
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CARIBE WAVE/LANTEX 14 Handbook

EVALUATION

A SIGNIFICANT TSUNAMI WAS GENERATED BY THIS EARTHQUAKE. HOWEVER...SEA LEVEL READINGS NOW INDICATE THAT THE THREAT HAS DIMINISHED OR IS OVER FOR MOST AREAS. THEREFORE THE TSUNAMI WATCH ISSUED BY THIS CENTER IS NOW CANCELLED.

FOR ANY AFFECTED AREAS - WHEN NO MAJOR WAVES HAVE OCCURRED FOR AT LEAST TWO HOURS AFTER THE ESTIMATED ARRIVAL TIME OR DAMAGING WAVES HAVE NOT OCCURRED FOR AT LEAST TWO HOURS THEN LOCAL AUTHORITIES CAN ASSUME THE THREAT IS PASSED. DANGER TO BOATS AND COASTAL STRUCTURES CAN CONTINUE FOR SEVERAL HOURS DUE TO RAPID CURRENTS. AS LOCAL CONDITIONS CAN CAUSE A WIDE VARIATION IN TSUNAMI WAVE ACTION THE ALL CLEAR DETERMINATION MUST BE MADE BY LOCAL AUTHORITIES.

THIS WILL BE THE FINAL PRODUCT ISSUED BY THE PACIFIC TSUNAMI WARNING CENTER FOR THIS EVENT UNLESS ADDITIONAL INFORMATION BECOMES AVAILABLE

Exercise

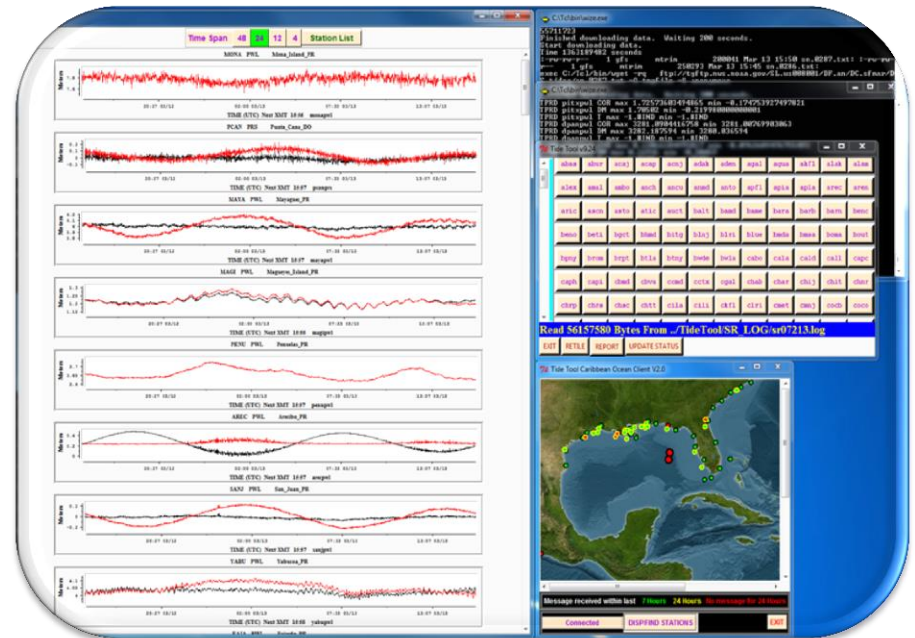
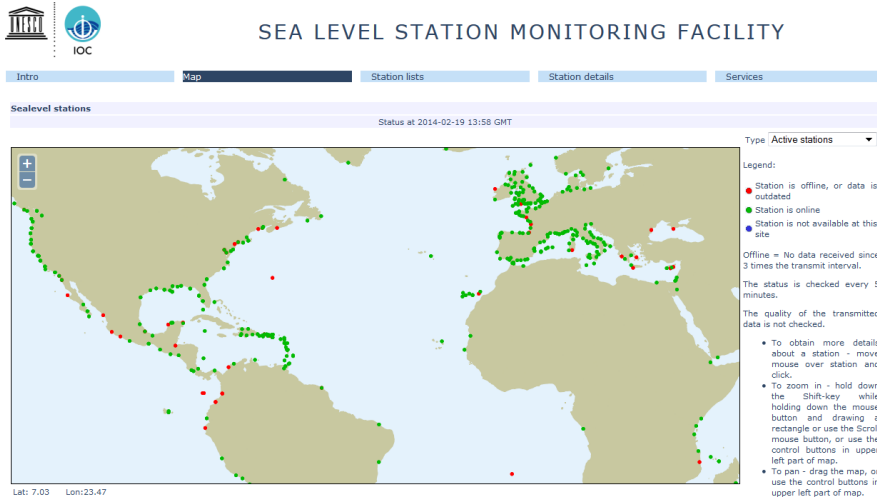
# Sea Level Monitoring

## IOC Sea Level Monitoring Facility

(<http://www.ioc-sealevelmonitoring.org/>)

## Tide Tool

[Hector.crespo@noaa.gov](mailto:Hector.crespo@noaa.gov) or  
[stuart.weinstein@noaa.gov](mailto:stuart.weinstein@noaa.gov)



# Member State Participation

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



# Media Arrangements

- PRSN Tsunami Media Guide (Spanish)
- UWI Seismic Research Center Tsunami and other Coastal Hazards WS Media Information Kit (English)
- Sample press release in Handbook which can be adapted as necessary.
- NOAA might issue press release
- UNESCO planning to issue press release March 21, 2014 – like to include activities, will use the registrations as of March 19 to prepare press release
- Country inputs.....

# Actions in Case of a Real Event

- In the case of a real event occurring during the exercise, the TWCs will issue their normal messages for the event. Such messages will be given full priority and a decision will be made by the TWCs whether to issue the dummy message and to send email messages to registered 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 14/LANTEX 14**” and “**Exercise.**”



# Procedure for False Alarm

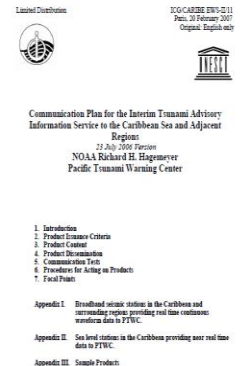
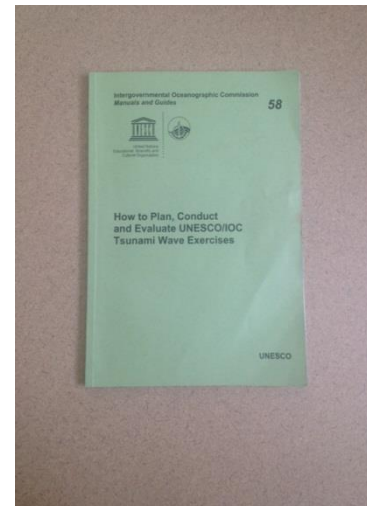
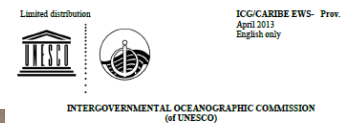
- Any time disaster response exercises are conducted, the potential exists for the public or media to interpret the event as real. Procedures should be set up by all participating entities to address public or media concerns involving this exercise in case of mis-interpretation by media or the public.

# Post-Exercise Online Evaluation

- All participating agencies are requested to complete online evaluation.
- For CARIBE EWS, one completed form per TWFP/TNC
- Open to all participants (just Section 5 – 6 multiple choice and 1 open ended)
- The deadline for submitting is **April 11, 2014.**
- Survey Monkey through the following link, where the questionnaire can be downloaded in PDF:  
<https://www.surveymonkey.com/s/VHM92KG>
- One can begin answering and next login using same computer will take you to the questionnaire form

# Resources

- IOC Manual “How to plan, conduct and evaluate tsunami exercises” which will also be a useful resource.
- CARIBE WAVE 2011 and 2013 Manuals
- CARIBE WAVE 2013 Final and Media Report
- PTWC Communications Plan for the Caribbean
- Available at



# CARIBE WAVE LANTEX 2014 Task Team

- Christa von Hillebrandt-Andrade, Chair CARIBE EWS and Manager NWS Caribbean Tsunami Warning Program
- Victor Hugo Cano, Dawn French y Philippe Sarron, CARIBE EWS Vice Chairs
- Jean Marie Saurel, Chair of Working Group 1, Martinique Volcano Observatory.
- Narcisse Zahibo, Chair of Working Group 2, Université des Antilles et Guyane, Guadeloupe
- Kerry Hinds, Chair of Working Group 4, Dept. of Disaster Management, Barbados
- Alison Brome, Interim Director of Caribbean Tsunami Information Center
- Charles McCreery and Gerard Fryer, Pacific Tsunami Warning Center
- Paul Whitmore and James Waddell, US National Tsunami Warning Center
- Ronald Jackson, Director of CDEMA or his Designee
- Roy Barboza, Secretario Ejecutivo/Wilfried Strauch of CEPREDENAC
- Bernardo Aliaga, Technical Secretary ICG CARIBE EWS
- Melinda Bailey, NWS Southern Region
- Wilfredo Ramos, PRSEMA
- Víctor Huérfano, Puerto Rico Seismic Network
- Fernando Carrilho, Instituto Portugues do Mar e da Atmosfera

# Additional Info

- Additional materials will be added to websites of CTWP (caribewave.info ) and PRSN (prsn.uprm.edu).
- Send links of other national pages to include on CTWP and PRSN websites
- This presentation will be made available on CTWP website

## Additional Links and Information for CARIBE WAVE 2014 exercise

### Webinars for CARIBE WAVE/LANTEX 2014

- 15h00 UTC, Wednesday, January 22, 2014 in English  
<https://www1.gotomeeting.com/register/805670672>
- 15h00 UTC, Jueves, 23 de Enero de 2014 en Español  
<https://www1.gotomeeting.com/register/548199432>
- 15h00 UTC, Vendredi, 24 Janvier de 2014 en Francais  
<https://www1.gotomeeting.com/register/284320289>
- 15h00 UTC, Wednesday, February 19, 2014 in English  
<https://www1.gotomeeting.com/register/167785881>
- 15h00 UTC, Jueves, 20 de Febrero de 2014 en Español  
<https://www1.gotomeeting.com/register/828228521>
- 15h00 UTC, Vendredi, 21 Fevrier en Francais  
<https://www1.gotomeeting.com/register/898800658>
- PTWC Enhanced Products for CARIBE WAVE/LANTEX 2014 (pending)
- Register by March 24, 2014 to receive Tsunami Messages during CARIBE WAVE/LANTEX 2014
- Exercise CARIBE WAVE/ LANTEX14 Portugal Scenario [Participant Handbook](#)
- Exercise LANTEX 14 Gulf of Mexico Scenario, [Participant Handbook](#)
- How to Plan, Conduct and Evaluate Tsunami Exercises ([English](#) | [Español](#))
- [CARIBE WAVE/LANTEX 2014 Post-Exercise evaluation. Deadline: April 11, 2014](#)

### Additional Online Resources for CARIBE WAVE/LANTEX 2014:

- [US National Tsunami Warning Center](#)
- [UNESCO IOC](#)

### Additional Links and Information for CARIBE WAVE 2013 exercise

- [Preliminary Executive Summary](#) CARIBE WAVE/LANTEX 2013 Tsunami Exercise
- [CARIBE WAVE/LANTEX 2013 Final Report](#)
- [Media Releases](#)
- Exercise CARIBE WAVE/ LANTEX13 [Participant Handbook](#)
- How to Plan, Conduct and Evaluate Tsunami Exercises ([English](#) | [Español](#))
- LANTEX 2013 [Presentation](#) (English)
- [Animation of the Tsunami Propagation](#) of the Caribe Wave Scenario in the Caribbean
- Animations of Tsunami Inundation of the CARIBE WAVE Scenario in Puerto Rico
  - [West Coast](#) | [Central/Central](#) | [East Coast](#)

Fecha del evento: 26 de marzo de 2014

Home Mapas Documentos Manuales Enlaces Registro

¿Qué es Lantex?  
El ejercicio LANTEX es un ejercicio de tsunami (maremoto) que se realiza anualmente a lo largo de la costa este de EUA y Canadá, la costa del Golfo de México, en Puerto Rico...

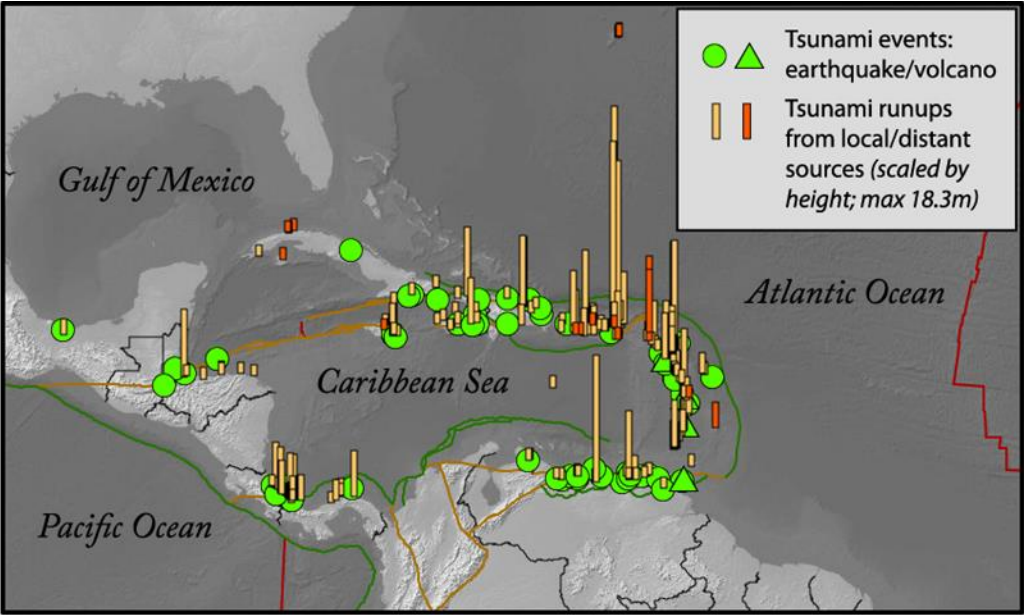
Regístrate

Fallan 34 days 18 hours 10 minutes 45 seconds para que comience el ejercicio CaribeWaveLantex 14

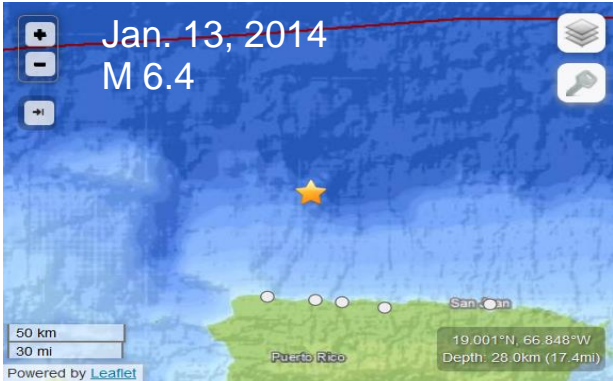
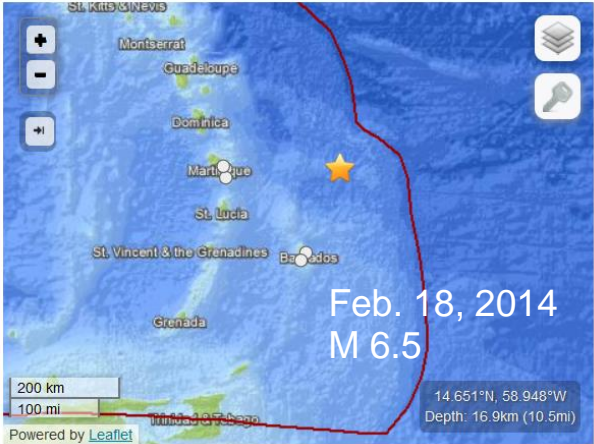
Participa YA!  
Participa de este importante Ejercicio CARIBE WAVE/LANTEX 14. Aprovecha esta oportunidad

Manuales para participantes

The CARIBE EWS has experienced at least 75 tsunamis over the past 500 years; upwards of 500,000 people could be killed within hours if the response is not adequate. We do not know when the next one will strike, already this year we have had 2 events very close to the threshold of issuing Tsunami Warning and Watch Products..... We all need to be Ready!!!



Map of tsunami run-ups in the Caribbean  
1493-2013  
(National Geophysical Data Center,  
<http://www.ngdc.noaa.gov/hazards/tsu.shtml>)



# Questions, Comments

Thank you for participating

# Updated Timeline

Action	Due Date
Draft Circulated among ICG CARIBE EWS TNC/TWFP	August 15, 2013
Deadline for Comments	September 16, 2013
Final Exercise Manual Available on Line	January, 2014
Circular Letter Issued by IOC to MS	January 16, 2014
1st Webinar	January 22, 23 and 24, 2014
2nd Webinar	February 19, 20 and 21, 2014
Exercise	March 26, 2014
Exercise Evaluation Questionnaire Due	April 11, 2014
Final CARIBE WAVE 2014 Report	ICG CARIBE EWS IX _ May 13- 15, 2014, USVI