



Universidad de Puerto Rico

Recinto Universitario de Mayagüez

Red Sísmica de Puerto Rico

Puerto Rico Seismic Network, University of Puerto Rico, Mayagüez Campus

Departamento de Geología

Geology Department

# Puerto Rico and Virgin Islands Support Document, Timetable and Messages PRSN will issue for **LANTEX 09**

A northwest-Atlantic tsunami warning exercise:

April 2, 2009

Puerto Rico Seismic Network  
Dept. of Geology  
University of Puerto Rico at Mayaguez  
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## Introduction

On April 2, 2009, the National Tsunami Hazard Mitigation Program (NTHMP) will hold a northwest-Atlantic tsunami warning exercise. Puerto Rico and the Virgin Islands will be participating in this exercise. NTHMP has prepared a manual in English with the procedures that is available at <http://redsismica.uprm.edu/spanish/informacion/lantex.php>. This document contains the time table of the messages that the PRSN has prepared for this exercise and an evaluation form.

## Information Flow between PRSN and the Emergency Management Agencies in Puerto Rico and the Virgin Islands

Appendix A contains the four types of messages the PRSN/WCATWC would issue in the case of a tsunami. In addition to these messages, a cancellation product would be issued once the danger has passed. It is the responsibility of the emergency management authorities and governments to issue evacuation orders and “all clear” messages. Figure 1 is a schematic of the flow of information in the case of a Tsunami Warning.

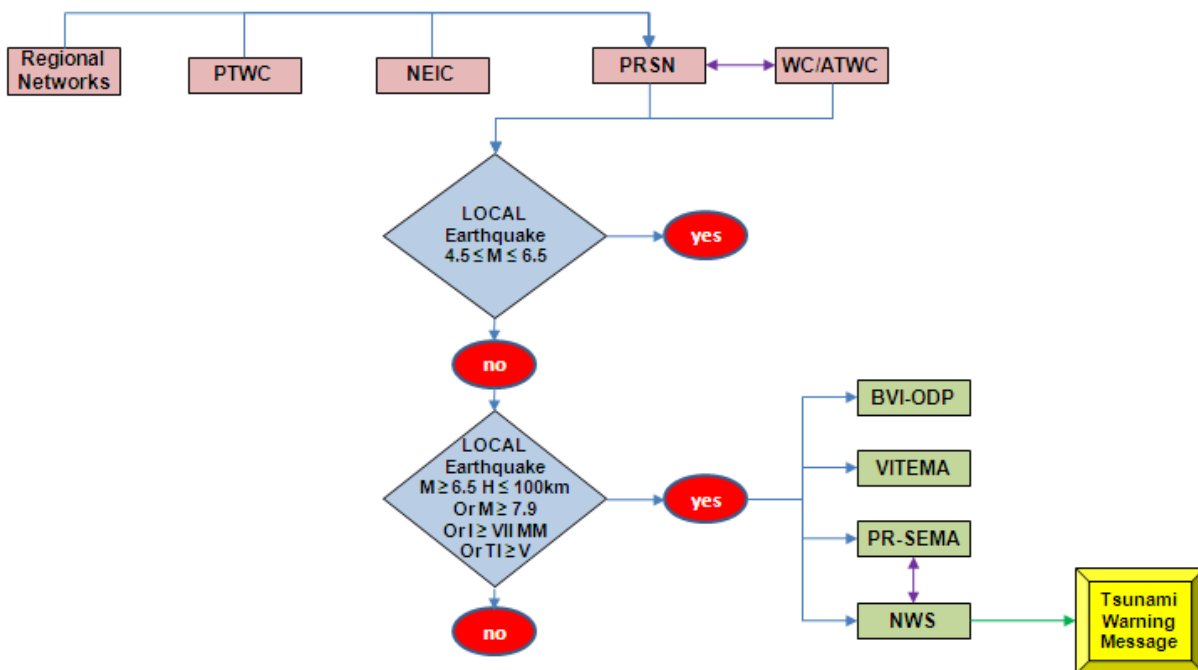


Figure 1. Flow of products for a Tsunami Warning in PR/VI .

## Timetable of Messages of the PRSN for LANTEX 09

Table 1 contains the products the PRSN and WCATWC will be issuing for LANTEX 09. For the WCATWC messages please refer to the LANTEX 09 manual. The PRSN will be calling and sending by fax to the corresponding 24 hour commonwealth and territorial warning points designated by PR, USVI and BVI and the NWS SJFO the bulletins that correspond to the tsunami messages 1, 2 7 and 13. This is to test the communication between PRSN and the commonwealth and territorial emergency management agencies and the NWS SJFO. All tsunami messages can be placed in folders along with the WCATWC messages, as suggested in the LANTEX Manual.

## Resources

If you have questions on the exercise, please contact:

Rafael Muñoz	Dep. Director PRSEMA	787-7213562	<a href="mailto:rmunoz@aemead.gob.pr">rmunoz@aemead.gob.pr</a>
Mark Walters	Director VITEMA	340-774-2244	<a href="mailto:mark.walters@vitema.vi.gov">mark.walters@vitema.vi.gov</a>
Al Javois	Planner VITEMA	340-773-2244	<a href="mailto:alj7bari@viaccess.net">alj7bari@viaccess.net</a>
Sharlene DaBreo	Director BVI DDM	284-494-4499	<a href="mailto:Sharleen_Dabreo/government/VG@gov.vg">Sharleen_Dabreo/government/VG@gov.vg</a>
Rafael Mojica	NWS San Juan	787-253-4586 ext .223	<a href="mailto:rafael.mojica@noaa.gov">rafael.mojica@noaa.gov</a>
Christa von Hillebrandt	PRSN Director	787-833-8433	<a href="mailto:christa@midas.uprm.edu">christa@midas.uprm.edu</a>
Gisela Báez-Sánchez	Coord. Análisis PRSN	787-833-8433	<a href="mailto:gisela@prsn.uprm.edu">gisela@prsn.uprm.edu</a>
Wildaomaris González	Educación PRSN	787-833-8433	<a href="mailto:wilda@prsn.uprm.edu">wilda@prsn.uprm.edu</a>
Alfonso Jimenez	WPAB/EAS Chair PR	787-840-5190	<a href="mailto:tuto@wpabradio.com">tuto@wpabradio.com</a>
Melinda Bailey	NWS Southern Region	817-978-1100x107	<a href="mailto:melinda.bailey@noaa.gov">melinda.bailey@noaa.gov</a>
Paul Whitmore	WCATWC Director	907-745-4212	<a href="mailto:paul.whitmore@noaa.gov">paul.whitmore@noaa.gov</a>

## Evaluation of the Exercise

In addition to filling out the evaluation form in the LANTEX 09 Manual, which should be sent to the WCATWC, to help with the improvement of the PRSN operations, it is requested you fill out the form in Appendix C and send to:

Christa von Hillebrandt-Andrade, Director  
Puerto Rico Seismic Network  
PO BOX 9017  
Mayagüez, Puerto Rico 00681-9017



**Table 1. Timetable of messages of the PRSN and WCATWC for LANTEX 09.**


Date	Time	WCATWC	RSPR Response or Message				Comments
		# Exercise Message	# PRSN Bulletin	PRSN Type of Message	PRSN Fax	Ring Down, SAT Phone, Private Line	
04/02/2009	9:00 am	---	---	---	---	---	Earthquake Occurs, Drop, Cover and Hold
04/02/2009	9:02 am	---	---	---	---	---	AUTO LOC Review Early Bird / WORM01
04/02/2009	9:03 am	---	00	---	---	Yes	PRSN Activates Tsunami Protocol
04/02/2009	9:05 am	01- Dummy WCATWC	01	Bulletin/ Warning Message	Yes No	Yes	PRSN Felt Earthquake and Tsunami Message Bulletin + Tsunami Warning Message NO confirmation - Broadcast
04/02/2009	9:35 am	02	02	Bulletin/ Warning Message	Yes No	Yes	PRSN Felt Earthquake and Tsunami Bulletin + Tsunami Warning Message Confirmed Tsunami
04/02/2009	10:05 am	03	03	Warning Message	No	Yes	Tsunami Warning Message Confirmed Tsunami
04/02/2009	10:35 am	04	04	Warning Message	No	Yes	Tsunami Warning Message Confirmed Tsunami
04/02/2009	11:35 am	05	05	Warning Message	No	Yes	Tsunami Warning Message Confirmed Tsunami
04/02/2009	12:35 pm	06	06	Warning Message	No	Yes	Tsunami Warning Message Confirmed Tsunami
04/02/2009	1:35 pm	07	07	Bulletin/ Advisory Message	Yes No	Yes	PRSN Felt Earthquake and Tsunami Bulletin + Tsunami Advisory Message
04/02/2009	2:35 pm	08	08	Advisory Message	No	Yes	Tsunami Advisory Message
04/02/2009	3:35 pm	09	09	Advisory Message	No	Yes	Tsunami Advisory Message
04/02/2009	4:35 pm	10	10	Advisory Message	No	Yes	Tsunami Advisory Message
04/02/2009	5:35 pm	11	11	Advisory Message	No	Yes	Tsunami Advisory Message
04/02/2009	6:35 pm	12	12	Advisory Message	No	Yes	Tsunami Advisory Message
04/02/2009	7:35 pm	13	13	Bulletin/ CAN Message	Yes No	Yes	PRSN Felt Earthquake and Tsunami Bulletin + Tsunami Cancellation Message for Puerto Rico
04/02/2009	8:35 pm	14	---	---	---	---	---
04/02/2009	9:35 pm	15-CAN	---	---	---	---	Tsunami Cancellation for the Exercise

Appendix A.

**West Coast & Tsunami Warning Center**  
<http://wctwcc.wr.nose.gov>

**Puerto Rico Seismic Network**  
<http://redslsmica.upm.edu> Telephone: 787-833-8433  
TSUNAMI MESSAGES






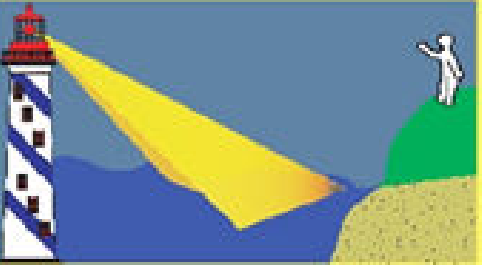
- **Danger!**
- **Run for High Ground!**
- **Follow Emergency Instructions.**

**W A R N I N G**

**A D V I S O R Y**

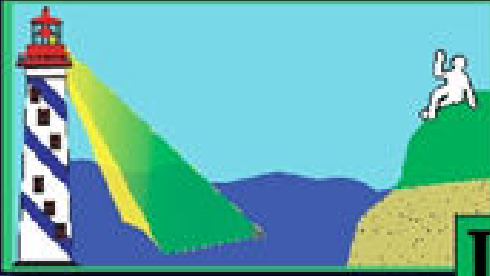
- **Possible Strong and Dangerous local Currents.**
- **Stay tuned for local Emergency guidance.**





- **Potential Danger.**
- **Stayed tuned for more information.**

**W A T C H**



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

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

## **Appendix B: PRSN Messages for LANTEX 09**

Puerto Rico Seismic Network Tsunami Message #1

Test...Tsunami message number 1...Test

Puerto Rico Seismic Network

9:04 am AST Thursday 2 April 2009

...a test tsunami warning is in effect for Puerto Rico and the Virgin Islands...

Recommended actions

It is not known - repeat not known - if a tsunami exists but a tsunami may have been generated. Persons in low-lying coastal areas should be alert to instructions from their local emergency officials. Evacuations are only ordered by emergency response agencies.

- Persons in tsunami warning coastal areas should move inland to higher ground.

This message is based mainly on earthquake data. As more information becomes available the warning areas will be refined.

Preliminary earthquake parameters

Magnitude – 8.6

Time – 9:00 am AST 2 April 2009

Location – 19.0 North 65.0 West

65 miles/105 km Northeast of Fajardo Puerto Rico

80 miles/129 km Northeast of San Juan Puerto Rico

44 miles/71 km North of St. Thomas

46 miles/74 km Northwest of Road Town, Tortola

Depth – 12 miles/20 km

Tsunami warnings mean that a tsunami with significant widespread inundation is imminent or expected. Warnings indicate that widespread dangerous coastal flooding accompanied by powerful currents is possible and may continue for several hours after the initial wave arrival.

This message will be updated in 30 minutes or sooner if the situation warrants. The tsunami message will remain in effect until further notice. Estimated times of initial wave arrival for selected sites in the warning are provided below.

San Juan – PR 9:17 am AST 2 April

Mayagüez – PR 9:36 am AST 2 April

Christiansted – VI 9:28 am AST 2 April

Charlotte Amalie – VI 9:41 am AST 2 April

For more information please visit the website of the Puerto Rico Seismic Network

<http://redsismica.uprm.edu/spanish/>

Or the website of the NWS West Coast/Alaska Tsunami Warning Center Palmer AK

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

Puerto Rico Seismic Network Tsunami Message #2

Test...Tsunami message number 2...Test

Puerto Rico Seismic Network

9:35 am AST Thursday 2 April 2009

...a test tsunami warning is in effect for Puerto Rico and the Virgin Islands...

Recommended actions

A tsunami has been generated which could cause damage to the warning and/or advisory regions listed in the headline. Persons in low-lying coastal areas should be alert to instructions from their local emergency officials. Evacuations are only ordered by emergency response agencies.

- persons in tsunami warning coastal areas should move inland to higher ground.

This message is based on earthquake data... Observed tsunami amplitudes... Historical information and forecast models.

A tsunami has been observed at the following sites

Location	lat	lon	time	amplitude
Charlotte Amalie, USVI	18.3 n	64.9 w	9:15 am	2.5 ft/0.77 m
Culebra Isl, PR	18.3 n	65.3 w	9:17 am	3.0 ft/0.93 m
Lameshur Bay, St John	18.3 n	64.7 w	9:22 am	3.5 ft/1.05 m

Preliminary earthquake parameters

Magnitude – 8.6

Time – 9:00 am AST 2 April 2009

Location – 19.0 North 65.0 West

65 miles/105 km Northeast of Fajardo Puerto Rico

80 miles/129 km Northeast of San Juan Puerto Rico

44 miles/71 km North of St. Thomas

46 miles/74 km Northwest of Road Town, Tortola

Depth – 12 miles/20 km

Tsunami warnings mean that a tsunami with significant widespread inundation is imminent or expected. Warnings indicate that widespread dangerous coastal flooding accompanied by powerful currents is possible and may continue for several hours after the initial wave arrival.

This message will be updated in 30 minutes or sooner if the situation warrants. The tsunami message will remain in effect until further notice. Estimated times of initial wave arrival for selected sites in the warning are provided below.

San Juan – PR 9:17 am AST 2 April

Mayagüez – PR 9:36 am AST 2 April

Christiansted – VI 9:28 am AST 2 April

For more information please visit the website of the Puerto Rico Seismic Network

<http://redsismica.uprm.edu/spanish/>

Or the website of the NWS West Coast/Alaska Tsunami Warning Center Palmer AK

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

Puerto Rico Seismic Network Tsunami Message #3

Test...Tsunami message number 3...Test

Puerto Rico Seismic Network

10:05 am AST Thursday 2 April 2009

...a test tsunami warning is in effect for Puerto Rico and the Virgin Islands...

Recommended actions

A tsunami has been generated which could cause damage to the warning and/or advisory regions listed in the headline. Persons in low-lying coastal areas should be alert to instructions from their local emergency officials. Evacuations are only ordered by emergency response agencies.

- persons in tsunami warning coastal areas should move inland to higher ground.

This message is based on earthquake data... Observed tsunami amplitudes... Historical information and forecast models.

A tsunami has been observed at the following sites

Location	lat	lon	time	amplitude
Charlotte Amalie, USVI	18.3 n	64.9 w	9:50 am	6.8 ft/2.06 m
Culebra Isl, PR	18.3 n	65.3 w	9:45 am	6.5 ft/1.98 m
Lameshur Bay, St John	18.3 n	64.7 w	9:47 am	6.0 ft/1.82 m
Fajardo, PR	18.3 n	65.6 w	9:52 am	4.7 ft/1.43 m
San Juan, PR	18.5 n	66.1 w	9:56 am	3.5 ft/1.06 m
Christiansted Harbor, USVI	17.8 n	64.7 w	9:59 am	3.9 ft/1.20 m

Deep ocean pressure sensor data indicate a tsunami has been generated and will extend outside the source region.

Preliminary earthquake parameters

Magnitude – 8.6

Time – 9:00 am AST 2 April 2009

Location – 19.0 North 65.0 West

65 miles/105 km Northeast of Fajardo Puerto Rico

80 miles/129 km Northeast of San Juan Puerto Rico

44 miles/71 km North of St. Thomas

46 miles/74 km Northwest of Road Town, Tortola

Depth – 12 miles/20 km

Tsunami warnings mean that a tsunami with significant widespread inundation is imminent or expected. Warnings indicate that widespread dangerous coastal flooding accompanied by powerful currents is possible and may continue for several hours after the initial wave arrival.

This message will be updated in 30 minutes or sooner if the situation warrants. The tsunami message will remain in effect until further notice. Estimated times of initial wave arrival for selected sites in the warning are provided below.

Mayagüez – PR 9:36 am AST 2 April

For more information please visit the website of the Puerto Rico Seismic Network

<http://redsismica.uprm.edu/spanish/>

Or the website of the NWS West Coast/Alaska Tsunami Warning Center Palmer AK

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

Puerto Rico Seismic Network Tsunami Message #4

Test...Tsunami message number 4...Test

Puerto Rico Seismic Network

10:35 am AST Thursday 2 April 2009

...a test tsunami warning is in effect for Puerto Rico and the Virgin Islands...

Recommended actions

A tsunami has been generated which could cause damage to the warning and/or advisory regions listed in the headline. Persons in low-lying coastal areas should be alert to instructions from their local emergency officials. Evacuations are only ordered by emergency response agencies.

- persons in tsunami warning coastal areas should move inland to higher ground.

This message is based on earthquake data... Observed tsunami amplitudes... Historical information and forecast models.

A tsunami has been observed at the following sites

Location	lat	lon	time	amplitude
Charlotte Amalie, USVI	18.3 n	64.9 w	10:30 am	7.7 ft/2.34 m
Culebra Isl, PR	18.3 n	65.3 w	10:20 am	7.7 ft/2.35 m
Lameshur Bay, St John	18.3 n	64.7 w	10:25 am	7.4 ft/2.26 m
Fajardo, PR	18.3 n	65.6 w	10:15 am	7.8 ft/2.37 m
San Juan, PR	18.5 n	66.1 w	10:10 am	6.6 ft/2.00 m
Christiansted Harbor, USVI	17.8 n	64.7 w	10:00 am	6.9 ft/2.10 m
Arecibo, PR	18.5 n	66.7 w	10:22 am	9.0 ft/2.75 m
Mayagüez, PR	18.2 n	67.2 w	10:23 am	5.3 ft/1.61 m
Yabucoa, PR	18.1 n	65.8 w	10:20 am	3.6 ft/1.11 m

Reports indicate severe tsunami damage to water front regions on the North coast of Puerto Rico and to the British and US Virgin Is. Deep ocean pressure sensor data indicate a tsunami has been generated and will extend outside the source region.

Preliminary earthquake parameters

Magnitude – 8.6

Time – 9:00 am AST 2 April 2009

Location – 19.0 North 65.0 West

65 miles/105 km Northeast of Fajardo Puerto Rico

80 miles/129 km Northeast of San Juan Puerto Rico

44 miles/71 km North of St. Thomas

46 miles/74 km Northwest of Road Town, Tortola

Depth – 12 miles/20 km

Tsunami warnings mean that a tsunami with significant widespread inundation is imminent or expected. Warnings indicate that widespread dangerous coastal flooding accompanied by powerful currents is possible and may continue for several hours after the initial wave arrival.

This message will be updated in 60 minutes or sooner if the situation warrants. The tsunami message will remain in effect until further notice.

For more information please visit the website of the Puerto Rico Seismic Network

<http://redsismica.uprm.edu/spanish/>

Or the website of the NWS West Coast/Alaska Tsunami Warning Center Palmer AK

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

Puerto Rico Seismic Network Tsunami Message #5

Test...Tsunami message number 5...Test

Puerto Rico Seismic Network

11:35 am AST Thursday 2 April 2009

...a test tsunami warning is in effect for Puerto Rico and the Virgin Islands...

Recommended actions

A tsunami has been generated which could cause damage to the warning and/or advisory regions listed in the headline. Persons in low-lying coastal areas should be alert to instructions from their local emergency officials. Evacuations are only ordered by emergency response agencies.

- persons in tsunami warning coastal areas should move inland to higher ground.

This message is based on earthquake data... Observed tsunami amplitudes... Historical information and forecast models.

A tsunami has been observed at the following sites

Location	lat	lon	time	amplitude
Charlotte Amalie, USVI	18.3 n	64.9 w	10:30 am	7.7 ft/2.34 m
Culebra Isl, PR	18.3 n	65.3 w	10:20 am	7.7 ft/2.35 m
Lameshur Bay, St John	18.3 n	64.7 w	10:25 am	7.4 ft/2.26 m
Fajardo, PR	18.3 n	65.6 w	10:15 am	7.8 ft/2.37 m
San Juan, PR	18.5 n	66.1 w	10:10 am	6.6 ft/2.00 m
Christiansted Harbor, USVI	17.8 n	64.7 w	10:00 am	6.9 ft/2.10 m
Arecibo, PR	18.5 n	66.7 w	10:22 am	9.0 ft/2.75 m
Mayagüez, PR	18.2 n	67.2 w	10:23 am	5.3 ft/1.61 m
Yabucoa, PR	18.1 n	65.8 w	10:20 am	3.6 ft/1.11 m

The tsunami amplitudes listed here are not the highest in Puerto Rico. Reports indicate larger waves producing inundation of 1km in some locations. The tsunami is still inflicting damage in Puerto Rico and the Virgin Islands and is expected to continue for several more hours.

Preliminary earthquake parameters

Magnitude – 8.6

Time – 9:00 am AST 2 April 2009

Location – 19.0 North 65.0 West

65 miles/105 km Northeast of Fajardo Puerto Rico

80 miles/129 km Northeast of San Juan Puerto Rico

44 miles/71 km North of St. Thomas

46 miles/74 km Northwest of Road Town, Tortola

Depth – 12 miles/20 km

Tsunami warnings mean that a tsunami with significant widespread inundation is imminent or expected. Warnings indicate that widespread dangerous coastal flooding accompanied by powerful currents is possible and may continue for several hours after the initial wave arrival.

This message will be updated in 60 minutes or sooner if the situation warrants. The tsunami message will remain in effect until further notice. Estimated times of initial wave arrival for selected sites in the warning are provided below.

For more information please visit the website of the Puerto Rico Seismic Network

<http://redsismica.uprm.edu/spanish/>

Or the website of the NWS West Coast/Alaska Tsunami Warning Center Palmer AK

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

Puerto Rico Seismic Network Tsunami Message #6

Test...Tsunami message number 6...Test

Puerto Rico Seismic Network

12:35 pm AST Thursday 2 April 2009

...a test tsunami warning is in effect for Puerto Rico and the Virgin Islands...

Recommended actions

A tsunami has been generated which could cause damage to the warning and/or advisory regions listed in the headline. Persons in low-lying coastal areas should be alert to instructions from their local emergency officials. Evacuations are only ordered by emergency response agencies.

- Persons in tsunami warning coastal areas should move inland to higher ground.

This message is based on earthquake data... Observed tsunami amplitudes... Historical information and forecast models.

The tsunami continues to produce damaging waves in Puerto Rico and the Virgin Islands. Do not return to the coast until local officials declare it safe to do so. The tsunami is expected to be dangerous in Puerto Rico and the Virgin Islands for several more hours.

Preliminary earthquake parameters

Magnitude – 8.6

Time – 9:00 am AST 2 April 2009

Location – 19.0 North 65.0 West

65 miles/105 km Northeast of Fajardo Puerto Rico

80 miles/129 km Northeast of San Juan Puerto Rico

44 miles/71 km North of St. Thomas

46 miles/74 km Northwest of Road Town, Tortola

Depth – 12 miles/20 km

Tsunami warnings mean that a tsunami with significant widespread inundation is imminent or expected. Warnings indicate that widespread dangerous coastal flooding accompanied by powerful currents is possible and may continue for several hours after the initial wave arrival.

This message will be updated in 60 minutes or sooner if the situation warrants. The tsunami message will remain in effect until further notice. Estimated times of initial wave arrival for selected sites in the warning are provided below.

For more information please visit the website of the Puerto Rico Seismic Network

<http://redsismica.uprm.edu/spanish/>

Or the website of the NWS West Coast/Alaska Tsunami Warning Center Palmer AK

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

Puerto Rico Seismic Network Tsunami Message #7

Test...Tsunami message number 7...Test

Puerto Rico Seismic Network

1:35 pm AST Thursday 2 April 2009

...a test tsunami advisory is in effect for Puerto Rico and the Virgin Islands...

Recommended actions

A tsunami has been generated which could cause damage to the warning and/or advisory regions listed in the headline. Persons in low-lying coastal areas should be alert to instructions from their local emergency officials. Evacuations are only ordered by emergency response agencies.

- Persons in tsunami advisory areas should move out of the water... off the beach and out of harbors and marinas.

This message is based on earthquake data... Observed tsunami amplitudes... Historical information and forecast models.

The tsunami warning has been downgraded to an advisory for Puerto Rico and the Virgin Islands. Large inundating waves are no longer expected but strong currents are expected for the next several hours. Do not return to the coast and inundated areas until instructed from local officials that it is safe to return. The tsunami is still expected to be dangerous in Puerto Rico and the Virgin Islands for several more hours.

Preliminary earthquake parameters

Magnitude – 8.6

Time – 9:00 am AST 2 April 2009

Location – 19.0 North 65.0 West

65 miles/105 km Northeast of Fajardo Puerto Rico

80 miles/129 km Northeast of San Juan Puerto Rico

44 miles/71 km North of St. Thomas

46 miles/74 km Northwest of Road Town, Tortola

Depth – 12 miles/20 km

Tsunami advisories mean that a tsunami capable of producing strong currents or waves dangerous to persons in or very near the water is imminent or expected. Significant widespread inundation is not expected for areas under an advisory. Currents may be hazardous to swimmers... Boats... And coastal structures and may continue for several hours after the initial wave arrival.

This message will be updated in 60 minutes or sooner if the situation warrants. The tsunami message will remain in effect until further notice.

For more information please visit the website of the Puerto Rico Seismic Network

<http://redsismica.uprm.edu/spanish/>

Or the website of the NWS West Coast/Alaska Tsunami Warning Center Palmer AK

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

Puerto Rico Seismic Network Tsunami Message #8

Test...Tsunami message number 8...Test

Puerto Rico Seismic Network

2:35 pm AST Thursday 2 April 2009

...a test tsunami advisory is in effect for Puerto Rico and the Virgin Islands...

Recommended actions

A tsunami has been generated which could cause damage to the warning and/or advisory regions listed in the headline. Persons in low-lying coastal areas should be alert to instructions from their local emergency officials. Evacuations are only ordered by emergency response agencies.

- Persons in tsunami advisory areas should move out of the water... off the beach and out of harbors and marinas.

This message is based on earthquake data... Observed tsunami amplitudes... Historical information and forecast models.

Moderate size tsunamis and strong currents continue in Puerto Rico and the Virgin Islands.

Preliminary earthquake parameters

Magnitude – 8.6

Time – 9:00 am AST 2 April 2009

Location – 19.0 North 65.0 West

65 miles/105 km Northeast of Fajardo Puerto Rico

80 miles/129 km Northeast of San Juan Puerto Rico

44 miles/71 km North of St. Thomas

46 miles/74 km Northwest of Road Town, Tortola

Depth – 12 miles/20 km

Tsunami advisories mean that a tsunami capable of producing strong currents or waves dangerous to persons in or very near the water is imminent or expected. Significant widespread inundation is not expected for areas under an advisory. Currents may be hazardous to swimmers... Boats... And coastal structures and may continue for several hours after the initial wave arrival.

This message will be updated in 60 minutes or sooner if the situation warrants. The tsunami message will remain in effect until further notice.

For more information please visit the website of the Puerto Rico Seismic Network

<http://redsismica.uprm.edu/spanish/>

Or the website of the NWS West Coast/Alaska Tsunami Warning Center Palmer AK

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

Puerto Rico Seismic Network Tsunami Message #9

Test...Tsunami message number 9...Test

Puerto Rico Seismic Network

3:35 pm AST Thursday 2 April 2009

...a test tsunami advisory is in effect for Puerto Rico and the Virgin Islands...

Recommended actions

A tsunami has been generated which could cause damage to the warning and/or advisory regions listed in the headline. Persons in low-lying coastal areas should be alert to instructions from their local emergency officials. Evacuations are only ordered by emergency response agencies.

- Persons in tsunami advisory areas should move out of the water... off the beach and out of harbors and marinas.

This message is based on earthquake data... Observed tsunami amplitudes... Historical information and forecast models.

Moderate size tsunamis and strong currents continue in Puerto Rico and the Virgin Islands.

Preliminary earthquake parameters

Magnitude – 8.6

Time – 9:00 am AST 2 April 2009

Location – 19.0 North 65.0 West

65 miles/105 km Northeast of Fajardo Puerto Rico

80 miles/129 km Northeast of San Juan Puerto Rico

44 miles/71 km North of St. Thomas

46 miles/74 km Northwest of Road Town, Tortola

Depth – 12 miles/20 km

Tsunami advisories mean that a tsunami capable of producing strong currents or waves dangerous to persons in or very near the water is imminent or expected. Significant widespread inundation is not expected for areas under an advisory. Currents may be hazardous to swimmers... Boats... And coastal structures and may continue for several hours after the initial wave arrival.

This message will be updated in 60 minutes or sooner if the situation warrants. The tsunami message will remain in effect until further notice.

For more information please visit the website of the Puerto Rico Seismic Network

<http://redsismica.uprm.edu/spanish/>

Or the website of the NWS West Coast/Alaska Tsunami Warning Center Palmer AK

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

Puerto Rico Seismic Network Tsunami Message #10

Test...Tsunami message number 10...Test

Puerto Rico Seismic Network

4:35 pm AST Thursday 2 April 2009

...a test tsunami advisory is in effect for Puerto Rico and the Virgin Islands...

Recommended actions

A tsunami has been generated which could cause damage to the warning and/or advisory regions listed in the headline. Persons in low-lying coastal areas should be alert to instructions from their local emergency officials. Evacuations are only ordered by emergency response agencies.

- Persons in tsunami advisory areas should move out of the water... off the beach and out of harbors and marinas.

This message is based on earthquake data... Observed tsunami amplitudes... Historical information and forecast models.

Moderate size tsunamis and strong currents continue in Puerto Rico and the Virgin Islands.

Preliminary earthquake parameters

Magnitude – 8.6

Time – 9:00 am AST 2 April 2009

Location – 19.0 North 65.0 West

65 miles/105 km Northeast of Fajardo Puerto Rico

80 miles/129 km Northeast of San Juan Puerto Rico

44 miles/71 km North of St. Thomas

46 miles/74 km Northwest of Road Town, Tortola

Depth – 12 miles/20 km

Tsunami advisories mean that a tsunami capable of producing strong currents or waves dangerous to persons in or very near the water is imminent or expected. Significant widespread inundation is not expected for areas under an advisory. Currents may be hazardous to swimmers... Boats... And coastal structures and may continue for several hours after the initial wave arrival.

This message will be updated in 60 minutes or sooner if the situation warrants. The tsunami message will remain in effect until further notice.

For more information please visit the website of the Puerto Rico Seismic Network

<http://redsismica.uprm.edu/spanish/>

Or the website of the NWS West Coast/Alaska Tsunami Warning Center Palmer AK

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

Puerto Rico Seismic Network Tsunami Message #11

Test...Tsunami message number 11...Test

Puerto Rico Seismic Network

5:35 pm AST Thursday 2 April 2009

...a test tsunami advisory is in effect for Puerto Rico and the Virgin Islands...

Recommended actions

A tsunami has been generated which could cause damage to the warning and/or advisory regions listed in the headline. Persons in low-lying coastal areas should be alert to instructions from their local emergency officials. Evacuations are only ordered by emergency response agencies.

- Persons in tsunami advisory areas should move out of the water... off the beach and out of harbors and marinas.

This message is based on earthquake data... Observed tsunami amplitudes... Historical information and forecast models.

Moderate size tsunamis and strong currents continue in Puerto Rico and the Virgin Islands.

Preliminary earthquake parameters

Magnitude – 8.6

Time – 9:00 am AST 2 April 2009

Location – 19.0 North 65.0 West

65 miles/105 km Northeast of Fajardo Puerto Rico

80 miles/129 km Northeast of San Juan Puerto Rico

44 miles/71 km North of St. Thomas

46 miles/74 km Northwest of Road Town, Tortola

Depth – 12 miles/20 km

Tsunami advisories mean that a tsunami capable of producing strong currents or waves dangerous to persons in or very near the water is imminent or expected. Significant widespread inundation is not expected for areas under an advisory. Currents may be hazardous to swimmers... Boats... And coastal structures and may continue for several hours after the initial wave arrival.

This message will be updated in 60 minutes or sooner if the situation warrants. The tsunami message will remain in effect until further notice.

For more information please visit the website of the Puerto Rico Seismic Network

<http://redsismica.uprm.edu/spanish/>

Or the website of the NWS West Coast/Alaska Tsunami Warning Center Palmer AK

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

Puerto Rico Seismic Network Tsunami Message #12

Test...Tsunami message number 12...Test

Puerto Rico Seismic Network

6:35 pm AST Thursday 2 April 2009

...a test tsunami advisory is in effect for Puerto Rico and the Virgin Islands...

Recommended actions

A tsunami has been generated which could cause damage to the warning and/or advisory regions listed in the headline. Persons in low-lying coastal areas should be alert to instructions from their local emergency officials. Evacuations are only ordered by emergency response agencies.

- Persons in tsunami advisory areas should move out of the water... off the beach and out of harbors and marinas.

This message is based on earthquake data... Observed tsunami amplitudes... Historical information and forecast models.

Moderate size tsunamis and strong currents continue in Puerto Rico and the Virgin Islands.

Preliminary earthquake parameters

Magnitude – 8.6

Time – 9:00 am AST 2 April 2009

Location – 19.0 North 65.0 West

65 miles/105 km Northeast of Fajardo Puerto Rico

80 miles/129 km Northeast of San Juan Puerto Rico

44 miles/71 km North of St. Thomas

46 miles/74 km Northwest of Road Town, Tortola

Depth – 12 miles/20 km

Tsunami advisories mean that a tsunami capable of producing strong currents or waves dangerous to persons in or very near the water is imminent or expected. Significant widespread inundation is not expected for areas under an advisory. Currents may be hazardous to swimmers... Boats... And coastal structures and may continue for several hours after the initial wave arrival.

This message will be updated in 60 minutes or sooner if the situation warrants. The tsunami message will remain in effect until further notice.

For more information please visit the website of the Puerto Rico Seismic Network

<http://redsismica.uprm.edu/spanish/>

Or the website of the NWS West Coast/Alaska Tsunami Warning Center Palmer AK

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

Puerto Rico Seismic Network Tsunami Message #13

Test...Tsunami message number 13...Test

Puerto Rico Seismic Network

7:35 pm AST Thursday 2 April 2009

...the test tsunami warning/watch/advisory status is canceled for Puerto Rico and the Virgin Islands...

Tsunami amplitudes have dropped below danger thresholds for most of the Puerto Rico and virgin island regions the tsunami warning/advisory is cancelled in these zones. Local emergency officials will provide the all clear for these regions based on local observations.

Preliminary earthquake parameters

Magnitude – 8.6

Time – 9:00 am AST 2 April 2009

Location – 19.0 North 65.0 West

65 miles/105 km Northeast of Fajardo Puerto Rico

80 miles/129 km Northeast of San Juan Puerto Rico

44 miles/71 km North of St. Thomas

46 miles/74 km Northwest of Road Town, Tortola

Depth – 12 miles/20 km

For more information please visit the website of the Puerto Rico Seismic Network

<http://redsismica.uprm.edu/spanish/>

Or the website of the NWS West Coast/Alaska Tsunami Warning Center Palmer AK

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

## **Appendix C: PRSN Evaluation form Tsunami Response Exercise**

### **Puerto Rico Seismic Network - LANTEX 09 Evaluation Form For Official Use Only**

Participant Location: \_\_\_\_\_

Participant Agency: \_\_\_\_\_

#### **Agency Contact Information:**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

#### **Please answer the following questions and provide any suggestions.**

Was the exercise format satisfactory?

Did you receive the felt earthquake bulletins #1, 2, 7, and 13 from the Puerto Rico Seismic Network?

If so, through what channel(s) and approximately what time was it received?

Was the content and intention of the tsunami messages clear?

Should any other content be added to the messages, or was any superfluous?

Did your agency have a tsunami response plan in place prior to the exercise?

If so, was the response plan adequate to address the event?

Were the emergency management actions during the event clearly laid out by the plan?

During a real event, how is the local population notified of any tsunami danger?

Was any feedback received from the public?

Are the potential tsunami danger zones known in your area?

Was the exercise helpful in validating the response plan or showing that it was not sufficient?

Please complete and send to:

Christa von Hillebrandt-Andrade, Director  
Puerto Rico Seismic Network  
Dept. Geology, UPRM  
PO BOX 9017  
Mayagüez, Puerto Rico 00681-9017

It could also be scanned and sent to: [christa@prsn.uprm.edu](mailto:christa@prsn.uprm.edu) .

These are for official use and will only be used by the PRSN and NTHMP and not distributed to third parties.