# TsunamiReady® Panel

**Moderator:**
**Ernesto Morales, PR and VI TsunamiReady Verification Board**

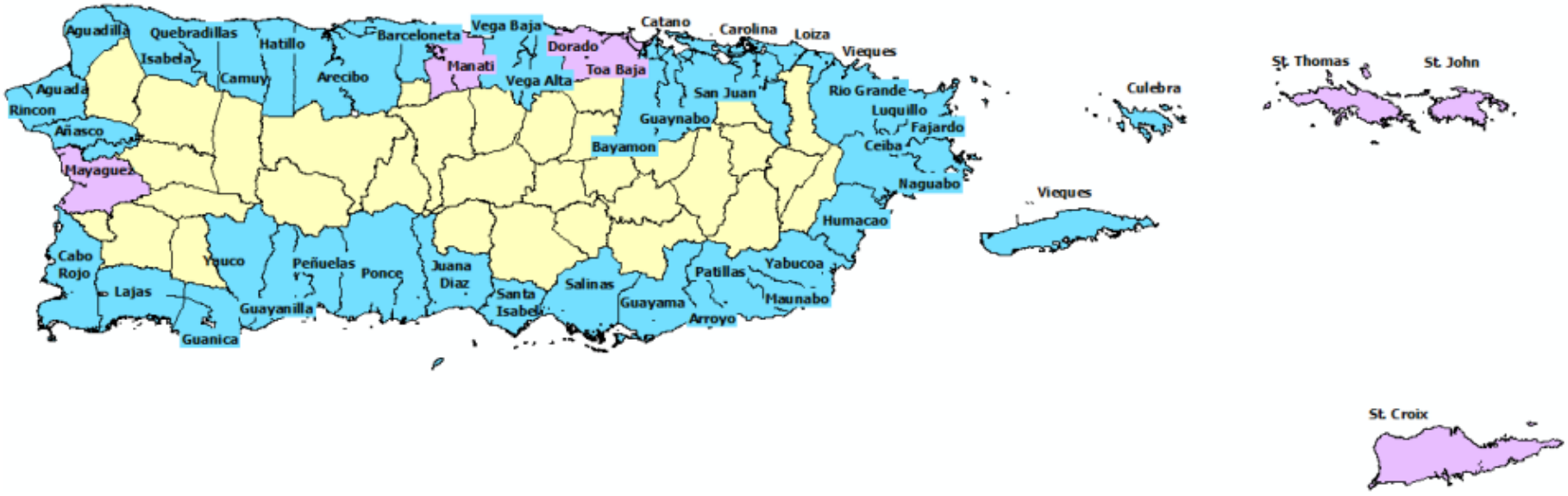
**Panelists:**
**Victor Huérfano, Puerto Rico Seismic Network**
**Carlos Rodríguez, Global Matrix Engineering**
**Mona Barnes, USVI Territorial Emergency Management Agency**
**Alejandro De La Campa, Federal Emergency Management Agency**

**NOAA in the Caribbean**
**Stakeholders Meeting**
**San Juan, PR**
**May 9-11, 2016**

# TsunamiReady® in Puerto Rico/U.S. Virgin Islands

**48 TsunamiReady Communities*:**
**45 Municipios (Puerto Rico), 3 Islands (U.S. Virgin Islands)**

*Back to TsunamiReady Communities*
*TsunamiReady Home*



# Requirements as of June 1, 2016

## MITIGATION (MIT)

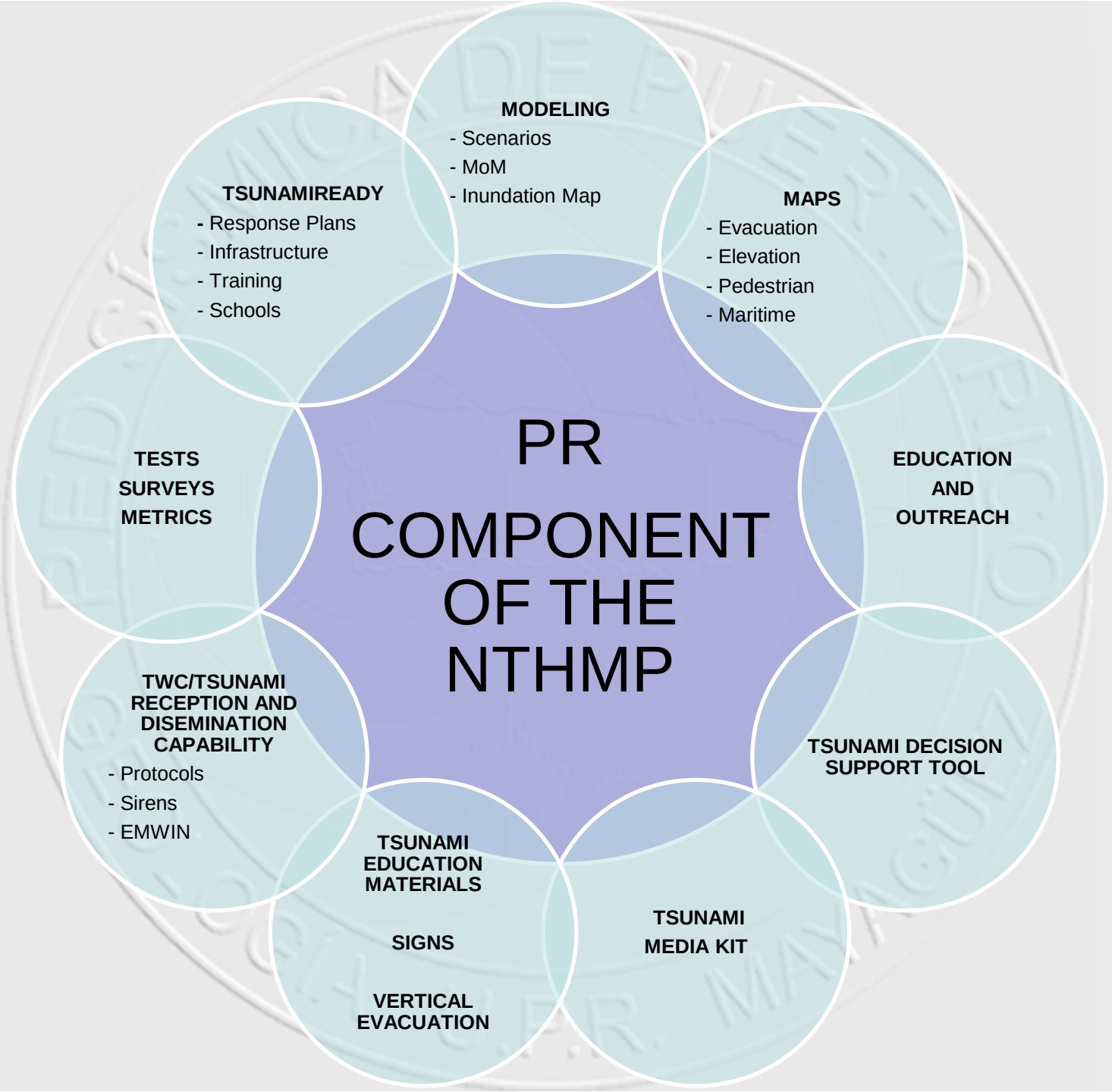
| | |
|---|---|
| MIT-1 | Have designated and mapped tsunami hazard zones. |
| MIT-2 | Include tsunami hazard and community vulnerability information in the community's FEMA-approved multi-hazard mitigation plan. |
| MIT-3 | Install signage, as needed, that identifies for example: (1) tsunami danger area and/or hazard zone (entering and leaving signs), evacuation routes, and assembly area; and (2) provides tsunami response education (go to high ground). |

## PREPAREDNESS (PREP)

| | |
|---|---|
| PREP-1 | Produce easily understood tsunami evacuation maps as determined to be appropriate by local authorities. |
| PREP-2 | Support an ongoing sustained tsunami public education effort. This effort should include the development and distribution of outreach materials. |
| PREP-3 | Support an ongoing sustained tsunami education effort specific to public schools in coastal community pursuing TsunamiReady® recognition. |
| PREP-4 | Hold at least one community-wide outreach or education activity annually. |
| PREP-5 | Conduct community exercises that reinforce the concepts contained in Prep-1 through Prep-4. |
| PREP-6 | Conduct evacuation drills for all public schools in the mapped tsunami evacuation zone to reinforce the concepts contained in Prep-1 through Prep-4. |

## RESPONSE (RESP)

| | |
|---|---|
| RESP-1 | Address tsunami hazards in the community's emergency operations plan (EOP). |
| RESP-2 | Address tsunami hazards in the emergency operations plans (EOP) for all public schools in the tsunami hazard zone. |
| RESP-3 | Commit to supporting the emergency operations center (EOC) during tsunami incidents if an EOC is opened and activated. |
| RESP-4 | Have redundant and reliable means for a 24-hour warning point (and EOC if activated) to receive official tsunami watch, advisory, and warning alerts. |
| RESP-5 | Have redundant and reliable means for 24-hour warning point and/or EOC to disseminate official tsunami watch, advisory, and warning alerts to the public. |
| RESP-6 | Have Public Alert-certified NOAA Weather Radio (NWR) receivers in critical facilities and public venues. |
| RESP-7 | Conduct emergency operations plan exercises that test at least one component of the community's EOP or one item from Resp-4 through Resp-6. |


MODELING
- Scenarios
- MoM
- Inundation Map
TSUNAMIREADY
- Response Plans
- Infrastructure
- Training
- Schools
MAPS
- Evacuation
- Elevation
- Pedestrian
- Maritime
PR
COMPONENT
OF THE
NTHMP
TESTS
SURVEYS
METRICS
EDUCATION
AND
OUTREACH
TWC/TSUNAMI
RECEPTION AND
DISEMINATION
CAPABILITY
- Protocols
- Sirens
- EMWIN
TSUNAMI DECISION
SUPPORT TOOL
TSUNAMI
EDUCATION
MATERIALS
SIGNS
VERTICAL
EVACUATION
TSUNAMI
MEDIA KIT

# TSUNAMI EXPOSURE : PR Rev 2015.

| | California | Hawaii | Oregon | Washington | **Puerto Rico** |
|---|---|---|---|---|---|
| Report publication date | Wood et al., 2012 | Wood et al., 2007 | Wood et al., 2007 | Wood and Soulard, 2008 | PRSN, Tsunami Ready Program |
| Date of population/economic data | 2010, 2011 | 200, 2006 | 200, 2006 | 200, 2006 | 2008, 2010, 2012 |
| Geographic extent | Open-ocean coast and San Francisco Bay | Entire coastline | Entire coastline | Olympic Peninsula counties | Entire coastline |
| Tsunami-hazard zone | Maximum based on multiple scenarios | Maximum based on multiple scenarios | Cascadian subduction zone | Cascadian subduction zone | Maximum based on multiple scenarios |
| Number of residents in hazard zone | 267,347 | 80,443 | 22,201 | 42,972 | 247,696 |
| Numer of employees in zone | 168,565 | 67,113 | 14,857 | 24,934 | 110,091 |
| Number of public venues in zone | 1,152 | 603 | 231 | 252 | 1,152 |
| Number of dependent-care facilities in hazard zone | 1,388 | 313 | 43 | 121 | 336 |
| Average estimated daily visitors to coastal State and/or National Parks | 166,322 | . | 53,714 | 17,029 | 6,338.00 ↑ |
| Average estimated daily visitors to city or county beaches | 384,801 | . | . | . | 13, 401 ↑ |

# *What has worked in the partnerships?*

A. *Sharing Cartographic and GIS Data to develop different products and web services.*
B. *Defining and specify main goal for scheduling the procedures over the time.*
C. *Subdivide huge project in a small components to develop more realistics and expected products.*

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# *Did you have a champion to spearhead or support the work?*


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*A. Government of Puerto Rico*
*B. Government of US Virgin Islands*
*C. Government of Anguilla*
*D. Government of St. Kitts and Nevis*
*E. Puerto Rico Seismic Network*

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# *What were the strongest aspects?*

A. *Team work Professionalism (Caribbean Region)*
B. *Team Responsibility and well know To Do's*
C. *Data sharing – Trouble less*
D. *Communication and conference thought the web platforms (WebEx)*
E. *Data Publishing through  different format and platforms*

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# *What's been accomplished so far?*

*A. Massive Data and Product Online available 365/24/7*
*B. Massive Training and Education programs (live or WebEx)*

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# *What opportunities exist for future partnerships associated with these activities?*

A. *Educational Programs using You Tube Platforms (Moment to Teach concepts)*
B. *Apple and Android Apps to show real time information on Mobile Device*

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# US Virgin Islands Tsunami Ready Program

## Accomplishments

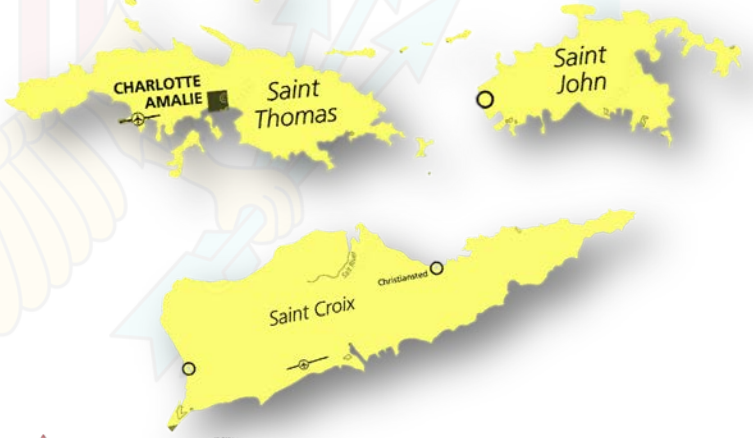
- ✓ Tsunami Incident Annex
- ✓ 24 outdoor warning sirens
- ✓ Tsunami signage
- ✓ USVI Tsunami Evacuation Maps
- ✓ Robust tsunami awareness program
- ✓ Annual participation in Caribe Wave
- ✓ Tsunami Preparedness Maritime Task Force
- ✓ IPAWS

## Future Endeavors

- Tsunami Inundation Modeling
- Maritime Playbook
- Updated Tsunami Evacuation Maps
- Additional Sirens at Highly-Populated Areas/ Water Island
- Community Awareness & Education

## Contributing Factors to Tsunami Program Successes

- ❖ Caribbean Tsunami Warning Program – NOAA NWS
- ❖ National Tsunami Hazard Mitigation Program – NOAA
- ❖ Puerto Rico Seismic Network
- ❖ Roy Watlington, TsunamiReady Champion
- ❖ FEMA- R2-CAD



# FEMA Caribbean Area Division (CAD)

## Puerto Rico Catastrophic Plan

- Completed in 2012, reviewed annually
- Includes Emergency Support Functions (ESFs)
  - Operations
  - Logistics
  - Search & Rescue
  - Communications
  - Mass Care (shelters, feeding, pets, special needs populations, etc.)
  - Medical Services

## Catastrophic Planning Analysis

- Sea and Air Port Assessment, Opening and Operation
- Survivor Sheltering, Feeding, and Responders Billeting
- Commodity Distribution/Staging
- Search and Rescue Operations
- Medical/Veterinary/Mortuary Support
- Responder Support/Billeting
- Power Generation
- Debris Management

## Additional Plans

- Threat and Hazard Identification & Risk Assessment (THIRA)
- Multi Hazard Mitigation Plans

## Emergency Management Phases

- Preparedness
- Response
- Recovery
- Mitigation

## Funds disbursed

- Hazard Mitigation Grant Program (HMGP) - $280,854,523.00
- DHS/FEMA Preparedness Grants - $194,966,221.00
- Disaster Assistance - $3,373,030,573.00

# QUESTIONS?