Puerto Rico Component of NTHMP Program

Tsunami Program

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Goals and Objectives of the Program

1. To help all the tsunami threatened coastal or exposed communities in Puerto Rico to keep the TsunamiReady recognition status, including the TsunamiReady supporters.
2. To update tsunami inventories, tsunami resources, materials and public tools
3. To increase the number of TsunamiReady Supporters
4. To conduct Tsunami Workshops, trainings, drills and exercises
5. To keep the current level of tsunami education and preparation
6. To support, maintain and improve the current communication infrastructure to receive and disseminate TWC (PTWC) messages.
7. To update the tsunami evacuation maps, vulnerability profiles and response plans.
8. To maintain the tsunami signage.
9. Help Emergency management officers and EOC personnel to improve the readiness
10. To make Puerto Rico a Tsunami resilient commonwealth.
• TsunamiReady Communities and Supporters in PR
• Partnership and Alliances in Puerto Rico
• Puerto Rico’s Organizational Flowchart
• Workshops, Education and Drills
• The project (working plan)
• Overcoming Challenges
• Puerto Rico TsunamiReady Team
• Discussion
TsunamiReady Communities Distribution

46 TsunamiReady Communities:
- Aguada
- Aguadilla
- Añasco
- Arecibo
- Arroyo
- Barceloneta
- Bayamón
- Cabo Rojo
- Camuy
- Canóvanas
- Carolina
- Cataño
- Ceiba
- Culebra
- Dorado
- Fajardo
- Guánica
- Guayama
- Guayanilla
- Guaynabo
- Hatillo
- Humacao
- Isabelo
- Juana Díaz
- Lajas
- Loíza
- Luquillo
- Manatí
- Maunabo
- Mayagüez
- Naguabo
- Patillas
- Peñuelas
- Ponce
- Quebradillas
- Rincón
- Río Grande
- Salinas
- San Juan
- Santa Isabel
- Toa Baja
- Vega Alta
- Vega Baja
- Vieques
- Yabucoa
- Yauco

10 TsunamiReady Supporters:
- Centro Vacacional Villas de Añasco
- Costa Salud Health Center Rincón
- Courtyard by Marriott, Carolina
- Estancia La Jamaca, La Parguera
- Hospicio San Francisco de Asis
- Hotel Villa Cofresi, Rincón
- Supermercados Econo Rincón
- Titi Millie Day Care
- Tribunal Supremo de Puerto Rico
- Centro Judicial de Aguadilla

PRSN Location (Mayagüez):
- 2.5 hours from San Juan
- 3.5 hours from Fajardo
- 1.4 hours from Ponce
Exposed Population

More than 250,000 residents at risk

Top 10 List
- Toa Baja
- San Juan
- Loiza
- Mayagüez
- Carolina
- Cataño
- Ponce
- Arecibo
- Vega Baja
- Humacao
- Other
Partnership and Alliances

Hundreds of communities throughout the island and all the 46 Local Emergency Management Offices and Municipalities, are our motivation to maintain our will to strengthen the TsunamiReady program.
In Puerto Rico, the NTHMP funds are administrated by the PRSN (URMP) in close collaboration with PREMA and NWS. Since PRSN is part of the University of Puerto Rico (UPRM), it allows the program:

- To involve the academy and the scientific community
- No political issues involved
- Community credibility
- Strong relation with State, Federal and Local agencies and entities
- Continuity of long term planning
- Administrative support and assistance
- Complement the PRSN education and outreach initiative
PREMA and PRSN Contribution

PREMA:
- Tsunami Warning Focal Point
  - TsunamiReady Contact
- Governmental support to the program
  - Logistical resources
  - Human resource availability
- PREMA Regional Offices support
  - Radio frequency channel access
- Support locals TWFP by the Regional Offices

PRSN - UPRM:
- Institutional support
- Physical and communication infrastructure
- Tsunami program
- Personnel and human resources
- TR Vehicle maintenance
- Outreach and education
- Technical support
- Professional assistance
- R&D Center

- Education and Outreach
Workshops, Education and Drills

- Workshops for different stakeholders:
  - TWFP operators, Emergency Managers, First Responders, Maritime, Media, Hotels and Tourist

- Community Evacuation Drill in Mayagüez, Caribe Wave 2019

- Hundreds of talks along the year

- TsunamiReady Supporters

- The 2018 earthquake centenary

- NDPTC Tsunami AWR-217
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<thead>
<tr>
<th>Task #1: TsunamiReady and TsunamiReady supporter Programs implementation and maintenance.</th>
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<tr>
<td>• Task 1.1 Continue the inventory process to document the damages to the tsunami warning system infrastructure in Puerto Rico caused by hurricanes and help to the communities in the recovery process.</td>
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<td>• Task 1.2 Help and support the fourteen (14) communities in the process of renewal the TsunamiReady recognition status.</td>
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<td>• Task 1.3 Identify and help two new TsunamiReady supporters to be recognized as TsunamiReady by the NWS.</td>
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<td>• Task 1.4 Maintain, update and keep online the tsunami educational materials, organize and participate in outreach events throughout Puerto Rico at schools, local, state and federal government agencies, faith-based organizations, industry, among others.</td>
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<td>• Task 1.5 Organize the “Tsunami Community Workshop” for emergency personnel first responders and community leaders to train them about the NWS tsunami products, the Puerto Rico tsunami protocol, response plans and alert criteria. An online module shall be developed and implemented via an on-line tsunami training portal.</td>
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| Task #2: Threat and hazard assessments |

| Task #3: Support to NTHMP Coordinating Committee, Subcommittees and Island Caucus |

| Task #4: Creating a Community-based Culture of Tsunami Preparedness and Response |

| Task #5: Tsunami outreach efforts to all audiences. |

| Task #6: Collaborative Projects. |
Task #1: TsunamiReady and TsunamiReady supporter Programs implementation and maintenance.

Task #2: Threat and hazard assessments
- Task 2.1 Extend the tsunami evacuation pedestrian analysis to two new communities (municipalities).
- Task 2.2 Maintain the TDST and the GIS data base updated.
- Task 2.3 Evaluate the new data that will be provided by NCEI (NOAA National Center for Environmental Information) and the feasibility to update the Puerto Rico tsunami inundation maps using state-of-the-art technology.

Task #3: Support to NTHMP Coordinating Committee, Subcommittees and Island Caucus

Task #4: Creating a Community-based Culture of Tsunami Preparedness and Response

Task #5: Tsunami outreach efforts to all audiences.

Task #6: Collaborative Projects.
**Task #1:** TsunamiReady and TsunamiReady supporter Programs implementation and maintenance.

**Task #2:** Threat and hazard assessments

**Task #3:** Support to NTHMP Coordinating Committee, Subcommittees and Island Caucus

- Task 3.1 Fully support the NTHMP activities via conference calls and virtual talks.
- Task 3.2 Participate in the NTHMP CC, Subcommittee and caucus face-to-face meetings.

**Task #4:** Creating a Community-based Culture of Tsunami Preparedness and Response

**Task #5:** Tsunami outreach efforts to all audiences.

**Task #6:** Collaborative Projects.
**Working Plan**

**Task #1:** TsunamiReady and TsunamiReady supporter Programs implementation and maintenance.

**Task #2:** Threat and hazard assessments

**Task #3:** Support to NTHMP Coordinating Committee, Subcommittees and Island Caucus

**Task #4:** Creating a Community-based Culture of Tsunami Preparedness and Response

- Task 4.1 Coordinate the local CaribeWave (2020) tsunami exercise.
- Task 4.2 Encourage and help local tsunami information focal points to fully participate in the TWC monthly communication test and local test procedures.
- Task 4.3 Maintain the local warning dissemination via the upgrade and repair of the EMWIN systems currently installed in the tsunami warning focal points as well as replacement of nonfunctional NOAA radios among other efforts like the app, rss, social media, etc.

**Task #5:** Tsunami outreach efforts to all audiences.

**Task #6:** Collaborative Projects.
Task #1: TsunamiReady and TsunamiReady supporter Programs implementation and maintenance.

Task #2: Threat and hazard assessments

Task #3: Support to NTHMP Coordinating Committee, Subcommittees and Island Caucus

Task #4: Creating a Community-based Culture of Tsunami Preparedness and Response

Task #5: Tsunami outreach efforts to all audiences.
   • Task 5.1 Promote the effective and reliable tsunami outreach efforts to all audiences via the dissemination of island wide tsunami audio clips.

Task #6: Collaborative Projects.
Task #1: TsunamiReady and TsunamiReady supporter Programs implementation and maintenance.

Task #2: Threat and hazard assessments

Task #3: Support to NTHMP Coordinating Committee, Subcommittees and Island Caucus

Task #4: Creating a Community-based Culture of Tsunami Preparedness and Response

Task #5: Tsunami outreach efforts to all audiences.

Task #6: Collaborative Projects.

- Task 6.1 Continue the cooperation to improve the capability and geographic audience expansion of TsunamiZone.org tsunami preparedness website and the Tsunami Preparedness Campaigns.
- Task 6.2 Coordinate a local activity during the World Tsunami Awareness Day (nocturnal evacuation community).
Overcoming Challenges

- Changes in the emergency and first responders personnel
- Budget limitations and economical challenges in Puerto Rico
- Limited technological skills
- Lack of interest in some officers
- Vandalism and hardware problems
- Lack of interest in several communities
- External situations
Puerto Rico TsunamiReady Team

TsunamiReady Committee:
- Ernesto Morales (WCM – NWS SJU)
- Dr. Víctor Huérfano (PRS – PI)
- Christa von Hillebrandt (CTWP - NWS)
- Carlos Irigoyen (PREMA – TR Contact)

Tsunami Program Coordinators @PRSN:
- Roy Ruiz Vélez (PRS – TR)
- Bienvenido Prosper (PRS – TR)
- Gisela Báez (Geophysics Data Analyst)
- Dr. Elizabeth Vanacore (Associate Research Professor)

Co-PI:
- Gisela Báez (Geophysics Data Analyst)

Outreach and Education Personnel @PRSN:
- Glorymar Gómez (PRS
- Jesenia Figueroa (PRS
- Alejandro Torres (Undergraduate Student - TR)

DISCUSSION

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