6.1 Community Level Preparedness and education
Schools and businesses, Special Needs Population, Tourism Sector

Christa G. von Hillebrandt-Andrade, Chair
CTWP/CARIBE EWS
Schools

- Administration, teachers, students and caretakers (guardians)
  - Management of students that are not picked up
- Family plans of teachers and administrators
- Plans for schools in evacuation zone and outside of evacuation zone (all hazards, education and lockdown)
Schools

- Need for conducting exercises, participation in exercises, eg. CARIBE WAVE (March 26, 2014)
- Integration into curricula (science, history, math, language arts) – materials recently developed by the Puerto Rico Seismic Network, Chile
- Ensure age appropriate materials.
- Tilly Smith UK helps people survive in Thailand in 2004
Schools

- Communication systems needed in schools
  - US NOAA Weather Radios/alert radios
  - AM/FM Radio
  - TV
  - Dependant on time of event, if they need to be contacted
  - Special call down/email lists for schools
Businesses

- Procedures
  - Clients
  - Employees
- Evacuate vs Not Evacuate
- Business continuity plans
- Hawaii guide for preparing business
- If planning workshops for this sector
  - Keep them short
  - Provide them ready to use materials
  - Cost/Benefit analysis
Businesses

- Mandatory ER plans for licensing of businesses
- Integrate the topic of Tsunami readines into their regular meetings vs inviting them to a training session
- Engage Industry through Chambers of Commerce, Ministries of Labor, Industry
It is our responsibility (and in many cases, the law) to include this population in preparedness efforts.

In the Great Japan Earthquake and Tsunami, the average age of the more than 9,000 dead is 68-years-old, and providing adequate care for surviving elderly special needs victims will remain at the forefront of the recovery effort.
Special (Action and Function) Needs Population

- **Feeling Safe, Being Safe**
- **Action and Functional Needs (AFN)**

**Information for First Responders**

- Foreigners, Visitors, 50% of cruise ship passengers are 50+
- Puerto Rico has a 311 line for people with special needs to register
- Important to listen to their needs, integrate them into the planning process
Puerto Rico has a 311 line for people with special needs to register
Tourism and Hotels

- Economic Impact goes beyond the local area
- Caribbean welcomed nearly 25 million tourists in 2012 (50% in USVI, DR, Puerto Rico and Cuba)
- Statistics on Caribbean Tourism
- NEAMTIC Tsunami A Guide to Tsunamis for Hotels
  - Rooms, Restaurants, Beaches/Pools and Administration Department
- TsunamiReady Hotels (Indonesia)
- Washington State guide for Hotels and Motels
- Hawaii Hotel Guide
- Planes con Embajadas/Consulados
- Languages
- Post Disaster needs of tourists, funding issues
Diagram 3.1. Decision Making on Tsunami Evacuation When Earthquake is felt in the Area, no tsunami warning is issued

1. Earthquake felt in the area
   - Who is responsible to do this task?

2. Warns all guests and visitors that an earthquake has occurred
   - The warning should include guidance on what to do
   - Who is responsible to do this task?
   - The shaking stops
     - No
       - Who is responsible to do this task?
     - Yes
       - Contact the local Disaster Management Office and/or the National Tsunami Warning Center to get more information

3. Evacuate all guests, visitors, and staff to the designated assembly area outside / open space
   - Who is responsible to do this task?
   - If no Tsunami Warning is issued:
     - Be aware:
       - Earthquake is a natural warning for tsunamis (see tsunami signs page 6)
       - NTWC need time to issue the warning
       - Communication might be cut off due to the earthquake

---

Room Evacuation Procedures:
- Restaurants, Lobby, Function rooms (Ball room, Meeting rooms) evacuation procedures
- Beach and/or swimming pool evacuation procedures
- Administration and department unit evacuation procedures

---

Who is responsible to do this task?
TSUNAMI SAFETY

A tsunami consists of a series of waves, when they reach the coast they can cause serious damage and also death. In Puerto Rico tsunamis are very infrequent but they have occurred in the past (1919, 1946) and could affect us again. For your safety, consider the following tips:

- Protect yourself. During an earthquake drop, cover and hold (if possible under a sturdy furniture). Take into account natural tsunami warning signs: when the shaking is so strong you can barely stand, see a drastic change in sea level, hear a loud noise from the sea and/or the official agency has issued a tsunami alert.

- Activate your emergency plan immediately. Run inland away from the coast. If you do not have enough time to move out of the evacuation zone, go to the highest place you can find: the top floor of a building, the roof of a house, a tree, etc. Getting out of harm’s way should be your priority.

- Walk. Don’t drive. There will be traffic jams and roads will be blocked.

- Stay outside of the evacuation zone. Wait for the emergency officials to declare it safe before returning to the evacuated areas. Stay tuned to local Radio / TV.

Be prepared and enjoy your stay!

For more information:

Puerto Rico State Emergency Management Agency
787-724-0124 (San Juan) • http://www.eem.gobierno.pr

Puerto Rico Seismic Network, UPRM • 787-833-4422 ext. 5462
787-285-9452 • http://www.uprm.edu

National Weather Service (NOAA) • 787-253-4596 (San Juan)
787-832-4640 ext. 5167 (Mayaguez) • http://www.nws.gov

SEVEN TIPS FOR RESPONDING TO AN EARTHQUAKE

1. Upon arrival to your destination, review your response plan and note your emergency contact phone numbers.

2. Notify any special assistance (for you or your companions) in case of an emergency.

3. Check the emergency exits, evacuation routes and assembly points of the places you visit during your stay, including the hotel.

4. Identify non-structural hazards in indoor and outdoor places. Objects might fall and cause injuries, for example, lamps, acoustic, glass, ornaments, facades, signs, trees, electric wires, etc.

5. Protect yourself during an earthquake: Drop, cover and hold (if possible, under a sturdy furniture). If you are at the pool area, move away. If outdoors, stay outside. If driving, pull over your vehicle and look for the safest place.

6. Once the shaking stops, go to the assembly area to reunite with your companions. If you are in the hotel, follow the staff instructions. Strong earthquakes can cause tsunamis, run inland or go to high ground.

7. Pay attention to local news.

Be prepared and enjoy your stay!
## Boaters and Marinas

- **Area of increasing research**

<table>
<thead>
<tr>
<th></th>
<th>Sept. 29, 2009</th>
<th>Feb. 27, 2010</th>
<th>March 11, 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Earthquake</strong></td>
<td>M8.1 Tonga/Samoan</td>
<td>M8.8 Maule, Chile</td>
<td>M9.0 Tohoku, Japan</td>
</tr>
<tr>
<td><strong>magnitude/location</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Warning Center Alert Level for California</strong></td>
<td>Advisory</td>
<td>Advisory</td>
<td>Advisory, then Advisory</td>
</tr>
<tr>
<td><strong>Approximate travel time of tsunami to Santa Cruz Co.</strong></td>
<td>11 hours</td>
<td>13 hours</td>
<td>10 hours</td>
</tr>
<tr>
<td><strong>Approximate peak wave amplitude in Santa Cruz Co. (Andy Ritchie, USGS)</strong></td>
<td>1-2 feet</td>
<td>2-3 feet</td>
<td>+5-6 feet</td>
</tr>
<tr>
<td><strong>Approximate duration of strong wave action in parts of California</strong></td>
<td>~ 4 hours</td>
<td>~ 8 hours</td>
<td>+ 24 hours</td>
</tr>
<tr>
<td><strong>Effects/Damage in State</strong></td>
<td>- Minor to moderate currents in harbors</td>
<td>- Moderate currents in harbors</td>
<td>- Strong currents in harbors</td>
</tr>
<tr>
<td></td>
<td>- $0 in damages</td>
<td>- $3M in damage</td>
<td>- $50M in damage</td>
</tr>
<tr>
<td><strong>Effects/Damage in Santa Cruz Co.</strong></td>
<td>- Moderate currents</td>
<td>- Mod to Strong currents</td>
<td>- Strong to very strong currents</td>
</tr>
<tr>
<td></td>
<td>- $0 in damages</td>
<td>- Tens of thousands</td>
<td>- $22M in damage</td>
</tr>
</tbody>
</table>
The danger within a port can vary

Countries with many cruise ship arrivals should consider conducting studies of the ports to identify areas of greatest danger.
Resources

- Tsunami Guidelines for Ports Authorities – Puerto Rico
  - English and Spanish
- Hawaii Guide to Boaters
- Fisherman and Boater Associations
Airports/Bus Terminals – Mass Transport

- Low lying
- Rerouting
- Lodging of airplane personnel
- Management of passengers
What is your priority?

- Number of people at risk
- Economic considerations
- Legal responsibilities
Hospitals

- Specific response plans
  - Employees
  - Patients
  - Family

- Consideration in evacuation plans
  - When is it appropriate to evacuate vs relocating patients to a higher floor
Critical Infrastructure

- Power Plants
- Production Fields (petroleum, gas)
- Emergency Services in Hazard Zones
Military Units

- Equipment
- Materials
  - Explosive
  - Hazardous
- Personnel
Mass Event

- Plans to deal with emergencies in large/massive events
  - Beach Festivals
  - Games, eg. Central American, Panamerican Games, facilities along the coast
  - Stadiums located in hazard zones
Thank You

Christa von Hillebrandt-Andrade
NOAA Caribbean Tsunami Warning Program