MES Business Meeting Agenda
NOAA Skaggs Research Center
Tuesday, Feb 2nd, 2016

9:45 – 10:45 Discussion: MES Priorities for 2013 & 2018 Strategic Plans (All)

- Post-tsunamis protocols and tsunami observer programs (Kong)

10:45 – 11:15 Consistent Preparedness Message, Strategy, Approach for the U.S.: Brainstorm of future products, including graphical/mobile products (open discussion**)**

11:15 – 11:45 Reports:

- MES Evacuation Guidance (Schelling, Wood)
- MES Maritime Guidance (Miller, Richards)
- Tsunami Awareness Safety Fact Sheet; Evacuation/inundation maps on line, Common Survey Questions. (Rabenold, Miller)

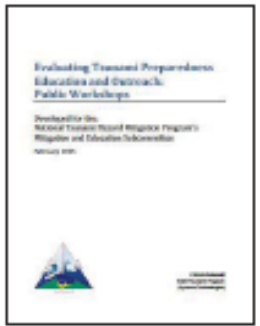
11:45 – 12:00 Vote: Co-Chair (All)

9:45 – 10:45 Discussion: MES Priorities for 2013 & 2018 Strategic Plans (All)

Mitigation and Education Subcommittee (MES) 2015 Accomplishments

- **Convened Annual Meeting in Portland, OR. Agenda included:**
  - MES Return of Investment Report
  - TsunamiReady Status Update
  - Evacuation Guidelines Update
  - FEMA Risk MAP Resilience process
  - Education & Outreach Plan Activities
  - Maritime Tsunami Mapping Update
  - Cascadia Subduction Zone Exercise 2016
  - FY15 Strategies & FY14 Achievements

- **Conducted May 27, 2015 Business Meeting**
  - HAZUS for Tsunami Update
  - MES Summer meeting overview
  - ITIC Update 50th Anniversary of International Tsunami Warning System in the Pacific
  - Post-tsunamis protocols and tsunami observer programs
- **Convened Summer Meeting in San Diego, CA. Agenda included:**
  - TsunamiReady
    - Approved 2 reps to be on National TsunamiReady Board: Alaska and Hawaii
    - Approved Tier 1 and Tier 2 guidelines
    - Agreed to finalize grandfathering
  - Developed framework for evacuation planning options for communities and discussed among membership
  - Formed Work Groups
    - Outreach/Social Media
    - Tsunami Awareness Safety Fact Sheet
    - Evacuation/Inundation Maps online
    - Maritime Planning
- **Conducted December 8, 2015 Business Meeting**
  - Approved update to Terms of Reference
  - Appointed representative to TsuInfo Editorial Review Board
  - Reviewed 2016 Annual Meeting MES Agenda
  - Reported on updates to HAZUS Tsunami Module and Vertical Evacuation P646
- **Reviewed grant reports for member states and territories**
  - FY13 Progress Reports (April, November)
  - FY14 Progress Reports (April, November)
  - FY15 Applications (February, March)
- **Produced NTHMP-wide and MES-specific publications**
  - Evaluating Tsunami Preparedness Education and Outreach: Public Workshops
  - NTHMP Fact Sheet
  - Tsunami Awareness and Safety Fact Sheet



National Tsunami Hazard Mitigation Program (NTHMP) Mitigation and Education (MES) 2015 Activities and Accomplishments

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National Tsunami Hazard Mitigation Program (NTHMP)
Mitigation and Education (MES)
2015 Activities and Accomplishments

- Developed framework for evacuation planning options for communities and discussed among membership
- Formed Work Groups
  - Outreach/Social Media:
    - (MES) Nate Wood, Chayne Sparagowski, Christa Rabenold, John Schelling, Steve Freidrich, Althea Rizzo, Kevin Richards, Vinnie Atofau, Nic Arcos; (MMS) Kelly Stoker, Cindi Preller, Kara Gately, Chip Guard, Landenfer, Glorymar Gomez
  - Tsunami Awareness Safety Fact Sheet:
    - Ann Gravier, Cindi Preller, Kevin Richards
  - Evacuation/Inundation Maps online:
    - John Schelling, Chip Guard, Kevin Miller, Vinnie Atofau
  - Maritime Planning:
    - Kevin Miller, Kevin Richards, Mona Barnes, Althea Rizzo

Conducted December 8, 2015 Business Meeting

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- Appointed representative to TsuInfo Editorial Review Board: Christa Von Hillebrandt
- Reviewed 2016 Annual Meeting MES Agenda
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Reviewed Grant Reports for member states and territories

- FY13, FY14 Progress Reports, FY15 Applications

Outcome	Strategy	Measure	Milestone	Status	Current Task
PRIORITY (color key)	HI	MED	LOW		
Tsunami evacuation products and strategies that support effective preparedness and response	Implement guidelines for tsunami evacuation maps based on guidelines developed by the MES in 2011	100% of NTHMP-funded maps available on-line	All NTHMP-funded maps follow the approved 2011 guidelines by end of 2013.	Done	
n/a	Establish guidelines for evacuation modeling procdeures so all at-risk communities can leverage the correct information for evauating their population.	n/a	Coordinate with experts to discuss proper strategies for evacuation studies of the inundation area (including horizontal evacuation and produce guidelines for evacuation studeis by end of 2014.	Ongoing	MES Evacuation Guidance
Creating a community-based culture of tsunami preparedness and response	Facilitate educational events	n/a	Finalize the NTHMP Education Plan and Strategy and make available on-line by the end of 2014.	Done	
n/a	Continue integrating tsunami educaiton into K-12 curriculum	50% of high-hazard state/territories will have K-12 educational guidelines or curricula by end of 2017		?	
n/a	Support tsunami outreach efforts to specific audiences such as coastal residents and businesses, media, maritime community, and tourism.	50% of high-hazard state/territories will have a media guidebook by end of 2017	Annually update the national tsunami media toolkit	?	

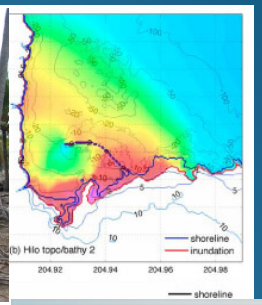
Outcome	Strategy	Measure	Milestone	Status	Current Task
n/a	n/a	n/a	Conduct evaluations to determine the effectiveness of tsunami education products and programs in 10 selected communities by 2014	Ongoing	Develop Survey / Common Questions
n/a	n/a	Ensure educational events are conducted at all at-risk communities over the period of this plan. (Events can include workshops, town-hall meetings, and outreach in schools).	Continue creation of updated outreach materials, such as brochures, posters, interpretive signs, etc.	Ongoing	
n/a	n/a	n/a	Maintain, update, and continue distribution of tsunami education products for the tourist community (e.g., hotels, cruises, and vacation rental homes) annually		
n/a	n/a	n/a	Support the maritime community in developing educational resources and preparedness efforts by end of 2017	Ongoing	Maritime guidance document; Outreach Products (w/MMS)

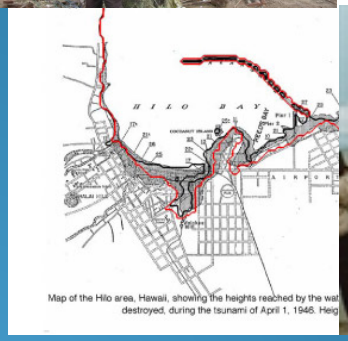
Outcome	Strategy	Measure	Milestone	Status	Current Task
n/a	Support the establishment and maintenance of state, local, and regional Tsunami Working Groups	50% of high-tsunami-hazard states/territories will have a regional or local tsunami working group by 2017			
Establishment of more Tsunami resilient communities	Provide funding through NTHMP grant program to provide communities resources necessary to obtain TsunamiReady recognition.	Increase the number of communities that have attained TsunamiReady recognition by 40 by the end of 2017.	Expand TsunamiReady Supporter program to acknowledge preparedness by small communities not able to meet the full TsunamiReady requirements.	Done? (via TR update)	
n/a	n/a	n/a	Create regional TsunamiReady Advisory Groups that include NOAA Weather Forecast Office and state/territory representation.	Done? (via TR update)	
n/a	Support reviews of the TsunamiReady program	n/a	Provide guidance annually to NOAA on proposed changes to TsunamiReady program	Ongoing	
n/a	Promote the integration of the tsunami hazard and risk into building codes and land use policy and planning efforts	n/a	Work with FEMA to inform communities of new building codes available for voluntary adoptions and new tools available to establish their risk to include in future mitigation planning by end of 2017		

Outcome	Strategy	Measure	Milestone	Status	Current Task
n/a	Promote development of tsunami emergency response procedures including collaboration among federal, state, local, and non-governmental agencies	n/a	Conduct state-level reviews of all local response plans for accuracy and effectiveness by the end of 2014.	Ongoing	

Post-tsunamis protocols and tsunami observer programs

Protocol components to guide post-tsunami science surveys





Pre-field planning

1) Contact event coordinator
2) Prepare and share field plan
3) Obtain official survey badge
4) Include local experts on your team
5) Coordinate and communicate with others

Field procedures

6) Follow check in procedures
7) Heed all safety regulations
8) Be prepared to answer questions of response personnel, officials, and survivors

Exiting the field

9) Follow check-out procedures and provide out-briefings
10) Provide final data to the appropriate users in a timely fashion

10:45 – 11:15 Consistent Preparedness Message, Strategy, Approach for the U.S.: Brainstorm of future products, including graphical/mobile products (open discussion)

Outreach/Social Media Tag Team Volunteers: (MES) Nate Wood, Chayne Sparagowski, Christa Rabenold, John Schelling/Steve Freidrich, Althea Rizzo, Kevin Richards, Vinnie Atofau, Kevin Miller, Nic Arcos (ITIC); (MMS) Kelly Stoker, Cindi Preller, Kara Gately, Chip Guard/ Colleague Landenfer, Glorymar Gomez

- TsunamiZone
- Calendar of Commemorative Dates of Past Tsunamis, etc (as per project in education and outreach plan):
  - Jan 26th, 1700 - Cascadia
  - 1918/2018 Caribbean event
- Products of Tag Team?
  - Commemorative Template
  - Press Release Template
  - Key Talking Points Document(s)
  - Facebook Page, other social media
- Social Media Class – for NTHMP by NDPTC?
- Hashtags (#) for NTHMP live tweeting
- Maybe need social media sub-tag-team
- *NCEI Public Relations Team as resource and possible national-level model* (in Ashland, NC)

#CascadiaEQ
- TweetChat -

Expert Q & A, led by @ShakeOut

CASCADIA

Tuesday
1/26/16
10:00 AM (PST)

CASCADIA REGION EARTHQUAKE WORKGROUP CREW AHEAD OF THE WAVE

FEMA

USGS science for a changing world

AMERICA'S PrepareAthon! BE SMART. TAKE PART. PREPARE.

PNSN

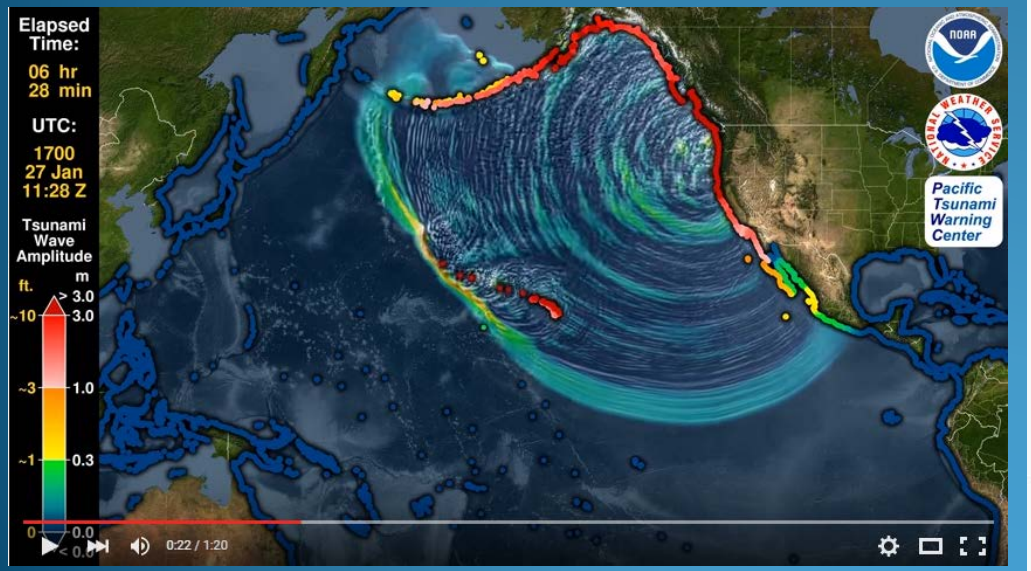
ShakeOut

SCEC AN NSF+USGS CENTER

BC Emergency Info

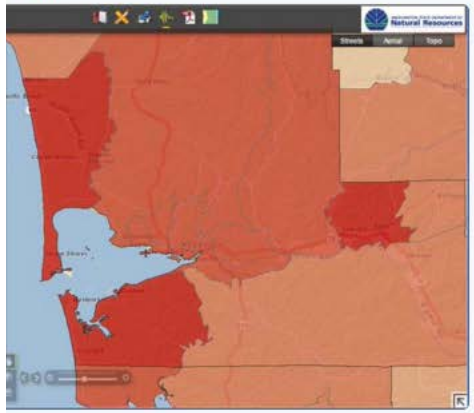
BC PreparedBC

The Tsunami Zone



ersary of the last mega #CascadiaEQ. What could the

hingto...



20 12

Oregon Geology @OregonGeology · Jan 26

Oregon has MANY tools for #CascadiaEQ preparedness. Today's a great day for #action. Thanks @ShakeOut for the chat!

19 10

Readygov @Readygov · Jan 26

A7: Make sure you have a family emergency communication plan & practice it! ready.gov/make-a-plan #CascadiaEQ

Discussion: Common Media Outreach Opportunities & Strategies (messaging, story, anniversaries, etc.)

Opportunities / Teachable moments:

- Anniversaries (50th PTWC)
- Commemorations

(1964 Alaska, 2004 Indian Ocean, 2011 Japan)

- Preparedness Campaigns

(week, season, etc.)

Audiences:

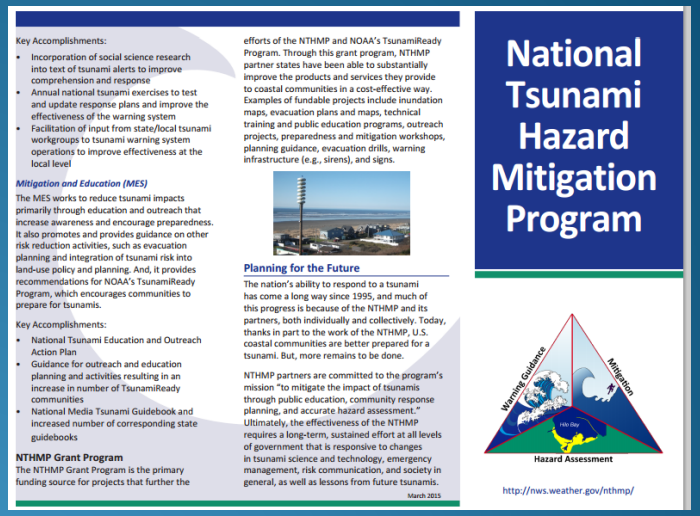
- Public
- Media
- Congress

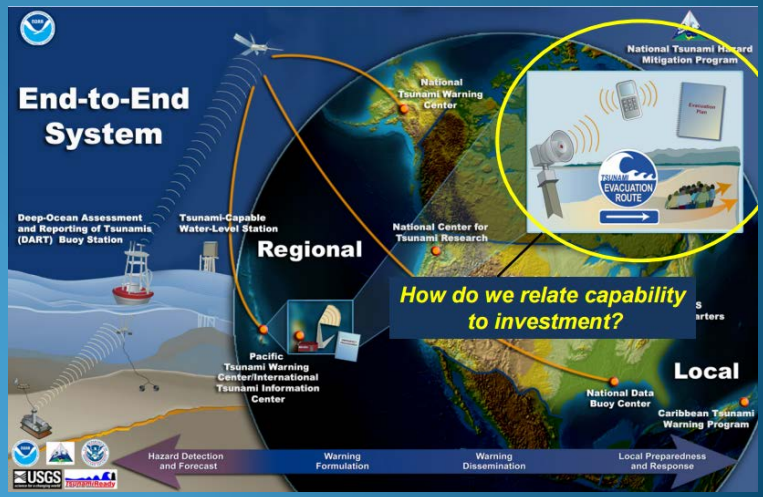
Purpose:

- Educated public
- Sustain funding
- Build and continue program

Goal:

- Develop strategies / goals
- Define policies





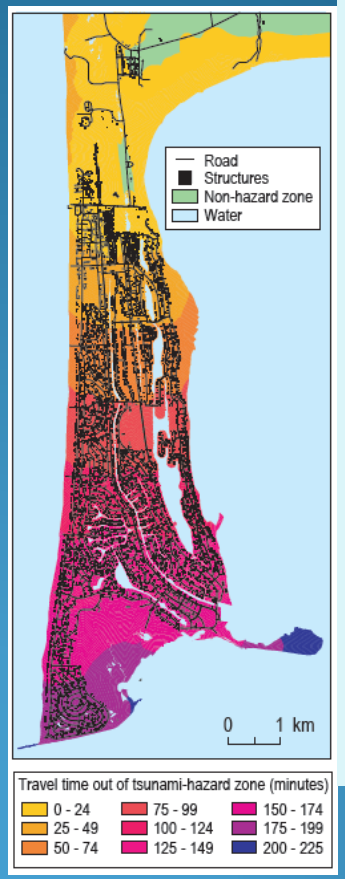
11:15 – 11:45 Reports:

- **MES Evacuation Guidance**
- **MES Maritime Guidance**
- **Tsunami Education and Outreach Project**

MES Evacuation Guidance

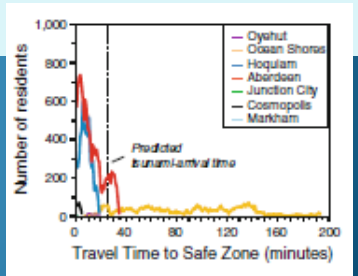
Suggested Guidelines and Resources for Tsunami Evacuation Modeling

1. Background
    a. NTHMP Strategic Plan
    b. NAS report?
2. Evacuation Modeling in General
    a. Methodologies and Uses
        i. Least Cost Distance (LCD)
            1. Pedestrian
        ii. Agent Based
            1. Pedestrian
            2. Vehicular
3. Resources
    a. Pedestrian Evacuation Analyst Tool (Wood)
    b. Japan Simulator (Yeh)
4. NTHMP Partner Examples
    a. WA Long Beach Agent Based
    b. WA Ocean Shores Least Cost Distance
    c. AK Least Cost Distance
    d. OR?
    e. HI?
    f. CA Alameda combo LCD/Agent Based

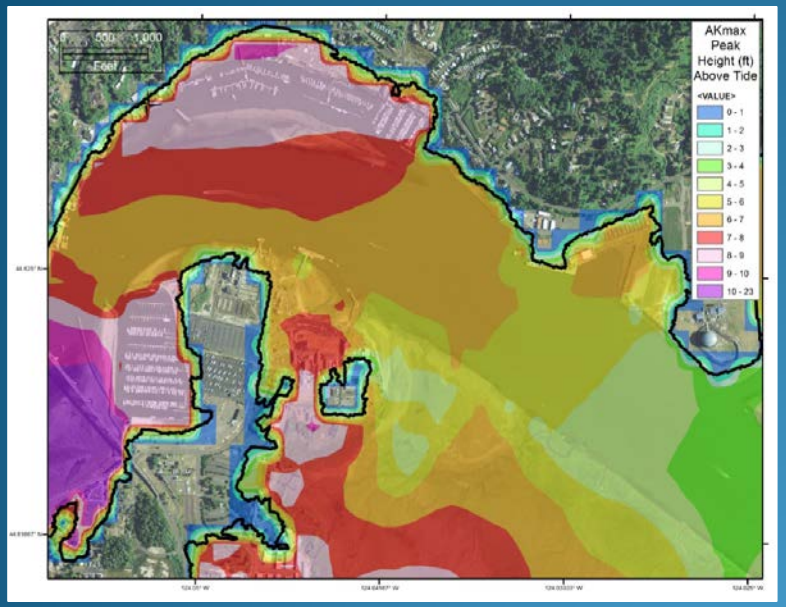


…evacuation times should be considered in population-exposure assessments for sudden-onset hazards, such as tsunamis... Risk-reduction efforts based purely on simple inventories of populations in hazard zones may be well meaning but may focus on the wrong type of risk-reduction strategy...

(Wood, Shmidtlein 2013 "Community variations in population exposure to near-field tsunami hazards as a function of pedestrian travel time to safety")



Maritime Guidance
Alert Level & Scenario – based planning



Part 1: Guidance for Tsunami Hazard Analysis, Modeling, and Mapping

Part 2: Guidance for Tsunami **Response, Preparedness, and Education**

- 2.1 General Maritime Guidance
- 2.2 Harbor/Port Specific Maritime Guidance
- 2.3 Scenario-Specific Tsunami Response Playbooks:

Part 3: Guidance for **Tsunami Mitigation and Recovery Planning**

- 3.1 Mitigation Planning Strategies
- 3.2 Recovery Planning Strategies

	2-LEVEL RESPONSE GUIDANCE	MULTIPLE-LEVEL RESPONSE GUIDANCE
Type of maritime community	Small open-coast harbors or harbors within rivers or bays which have not experienced significant tsunami damage in the past	Harbors and ports which have had damage in past events, especially during both Advisory and Warning level events
Basis for response planning	Response for either Advisory level events or Warning level events	Response specific to multiple scenarios between the Advisory and Warning level range
Scenario modeling required	Minimal modeling required, velocity and flow depth for one or two maximum considered distant source scenario	More comprehensive modeling is required for a variety of distant tsunami sources with the near-shore forecast peak wave amplitude range of 0.3m to 1.5m
Relative cost*	Minor cost for modeling single maximum scenario	Moderate cost for modeling multiple scenarios
Relative accuracy	Moderate accuracy for capturing tsunami conditions	Higher accuracy by selecting response plan with more specific information about severity and location of damaging currents
Decision making and response	Simplified approach with only two choices predetermined by the tsunami alert level	Advanced approach with a number of response choices based on forecast peak wave amplitude from the Warning Center
Real-time decision making assistance from state/NWS	Assistance to select the response level is not required	Assistance to select the response level is recommended; MINIMUM scenario plan may be recommended by state or NWS IDSS

MITIGATION MEASURES FOR REDUCING IMPACTS IN MARITIME COMMUNITIES

Real-time response ("soft") mitigation measures	Permanent ("hard") mitigation measures
Reposition ships within harbor	Increase size and stability of dock piles
Move boats and ships out of harbors	Fortify and armor breakwaters
Remove small boats/assets from water	Improve flotation portions of docks
Shut down infrastructure before tsunami arrives	Increase flexibility of interconnected docks
Evacuate public/vehicles from water-front areas	Improve movement along dock/pile connections
Restrict boats from moving during tsunami	Increase height of piles to prevent overtopping
Prevent boats from entering harbor during event	Deepen/Dredge channels near high hazard zones
Secure boat/ship moorings	Move docks/assets away from high hazard zones
Personal flotation devices/vests for harbor staff	Widen size of harbor entrance to prevent jetting
Remove hazardous materials away from water	Reduce exposure of petroleum/chemical facilities
Remove buoyant assets away from water	Strengthen boat/ship moorings
Stage emergency equipment outside affected area	Construct flood gates
Activate Mutual Aid System as necessary	Prevent uplift of wharfs by stabilizing platform
Activate of Incident Command at evacuation sites	Install debris deflection booms to protect docks
Alert key first responders at local level	Ensure harbor structures are tsunami resistant
Restrict traffic entering harbor; aid traffic evacuating	Construct breakwaters further away from harbor
Identify/Assign rescue, survey, and salvage personnel	Install Tsunami Warning Signs
Identify boat owners/live-aboards; establish phone tree, or other notification process	Identify equipment/assets (patrol/tug/fire boats, cranes, etc.) to assist response activities

Maritime Guidance
Alert Level & Scenario – based planning

Part 3: Guidance for **Tsunami Mitigation and Recovery Planning**

Should also include the following:

- Alignment with Nat'l Disaster Recovery Framework (FEMA)
- Examples from Chile (2010) and Japan (2011)
- Info from state (OR & WA) resilience plans
- Info from scenarios (FEMA Cascadia, USGS SAFRR)
- California work with Lauire Johnson Consultants to develop community guidance and state-level recovery plan

Tsunami Education and Outreach Project Update

&

Evaluation Questions Survey

Tsunami Education and Outreach Project Update

Christa Rabenold
National Weather Service
Tsunami Program
(Syneren Technologies)

2016 Annual MES Meeting

Tsunami Awareness and Safety Fact Sheet

Tsunami Awareness & Safety

National Tsunami Hazard Mitigation Program

If you live, work, or play at the coast, you should prepare for tsunamis. Tsunamis do not occur very often, but they pose a major threat to coastal communities. While they cannot be prevented, there are things you can do that could save your life and the lives of your loved ones.

How will I be warned about a tsunami?

There are two types of tsunami warnings: official and natural. Both are important. You may not get both. Respond immediately to whichever you receive first.

Official tsunami warnings are broadcast through radio, television, and wireless emergency alerts. They may also come through outdoor sirens, officials, text message alerts, and telephone notifications.

There may not be time to wait for an official warning. A natural tsunami warning may be your only warning. Natural warnings include:

- A strong or long earthquake
- A loud roar (like a train or an airplane) from the ocean
- Unusual ocean behavior (the ocean could look like a fast-rising flood or a wall of water or it could drain away suddenly like a very low tide)

If you experience any of these natural warnings, even just one, a tsunami could be coming.

How do I respond to a tsunami warning?

If you are in a tsunami hazard zone and receive an official warning:

- Stay out of the water and away from beaches and waterways.
- Get more information from radio, television, or your mobile device (text or data).
- If officials ask you to evacuate, move quickly to a safe place. Follow evacuation signs or go as high or far inland (away from the water) as possible.

If you are in a tsunami hazard zone and receive a natural warning, a tsunami could arrive within minutes:

- In case of an earthquake, protect yourself. Drop, cover, and hold on. Be prepared for aftershocks. Each time the earth shakes, drop, cover, and hold on.
- Take action. Do not wait for an official warning or instructions from officials.
- As soon as you can move safely, move quickly to a safe place. Follow evacuation signs or go as high or far inland (away from the water) as possible.
- If there is earthquake damage, avoid fallen power lines, and stay away from weakened structures.
- When you are in a safe place, get more information from radio, television, or your mobile device (text or data).

If you are on the beach or near water and feel an earthquake of any size and length, move quickly to high ground or inland (away from the water) as soon as you can move safely. Get more information from radio, television, or your mobile device (text or data).

If you are outside of the tsunami hazard zone and receive a warning, stay where you are unless officials tell you otherwise.

Knowledge saves lives!

If you live, work, or play on the coast, learn more about tsunamis and tsunami safety.

Tsunami Awareness & Safety

Knowledge saves lives!

National Tsunami Hazard Mitigation Program

http://nws.weather.gov/nthmp/tsunamisafety.html

Evaluation Questions Survey

The purpose of this ranking exercise is to identify 3-4 questions that MES partners can use to evaluate outreach workshop outcomes to collectively "determine the effectiveness of tsunami education products and the level of preparedness" (from the NTHMP Strategic Plan). The questions come from the guide Evaluating Tsunami Preparedness Education and Outreach: Public Workshops.

Before you rank the questions, please review the prototype evaluation form (also in Appendix B of the guide) to see the questions with their possible answers (where provided) in context. There are five types of questions, including post-then-pre questions, which ask participants (at the same time) about their knowledge, beliefs, and intent both before and after the workshop.

Please rank, in order of preference (1 being the most preferred, 9 the least) the questions you feel would best show effectiveness and that you would like to see each partner ask on their outreach workshop evaluation forms. Questions are randomized, so each time the exercise is opened, the questions will appear in a different order.

Note: these questions are designed to capture data about participants' learning and reactions. Behavior outcomes cannot be evaluated at the immediate conclusion of a public workshop and would require more resources to measure. For more information, please refer back to the guide.

Evaluation Questions Survey

How prepared do you think you are for a tsunami? (post-then-pre)

What do you know about tsunamis and tsunami preparedness? (post-then-pre)

What do you plan to do to prepare for a tsunami in the next three months? (post-then-pre)

A tsunami is not a single wave. It is a series of waves. (true/false)

A tsunami can reach the coast within minutes of an earthquake. (true/false)

Please describe the difference between a local and a distant tsunami. (open-ended)

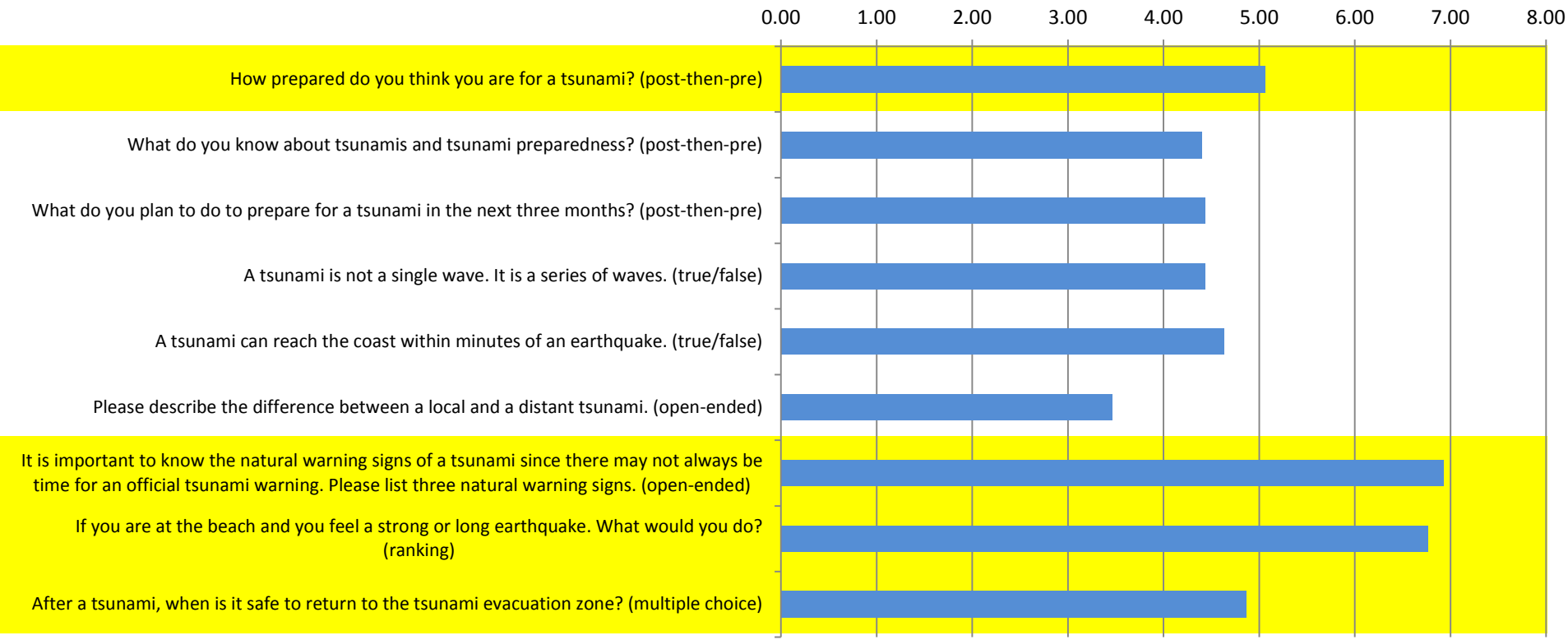
It is important to know the natural warning signs of a tsunami since there may not always be time for an official tsunami warning. Please list three natural warning signs. (open-ended)

If you are at the beach and you feel a strong or long earthquake. What would you do? (ranking)

After a tsunami, when is it safe to return to the tsunami evacuation zone? (multiple choice)

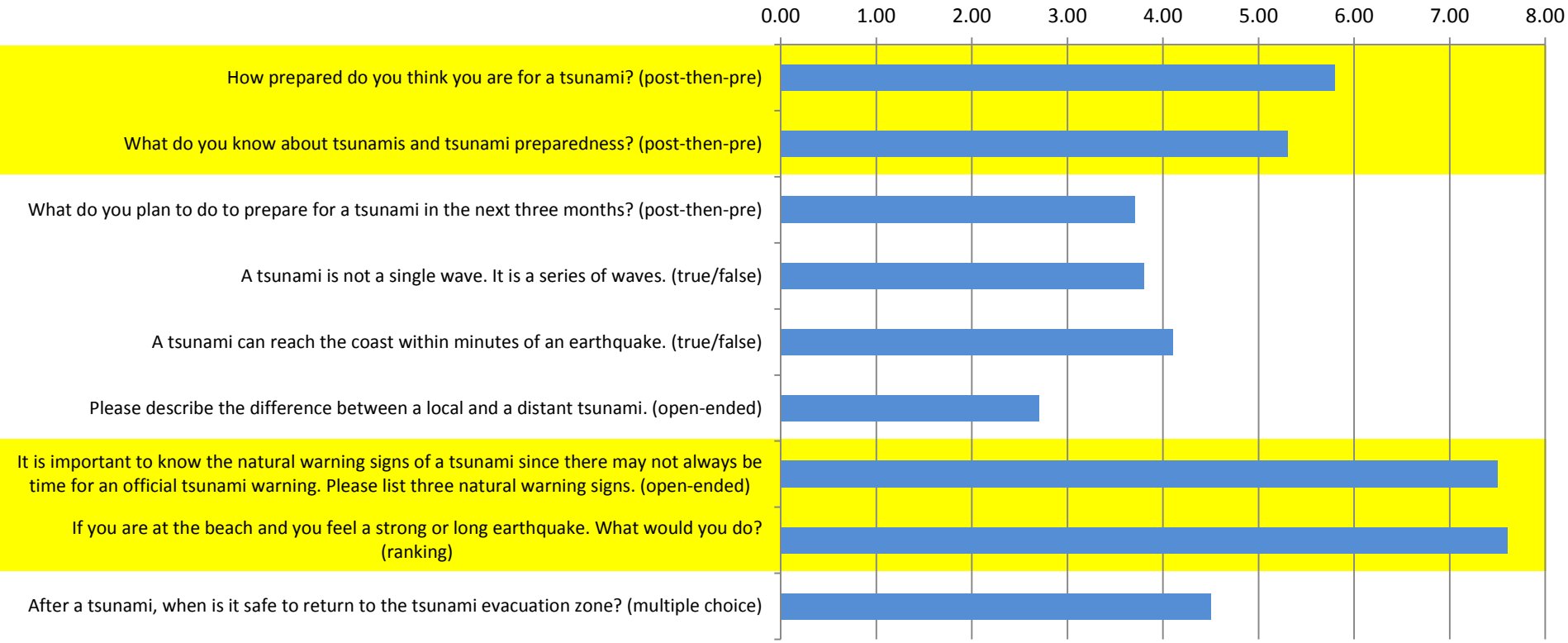
http://nws.weather.gov/nthmp/documents/PublicWorkshopsEvaluationManual.pdf

Evaluation Questions Survey: All Valid Results



30 Responses

Evaluation Questions Survey: NTHMP Results (as identified)



10 Responses

Evaluation Questions Survey: Summary

Question	Valid	NTHMP
It is important to know the natural warning signs of a tsunami since there may not always be time for an official tsunami warning. Please list three natural warning signs. (open-ended)	1	2
If you are at the beach and you feel a strong or long earthquake. What would you do? (ranking)	2	1
How prepared do you think you are for a tsunami? (post-then-pre)	3	3
After a tsunami, when is it safe to return to the tsunami evacuation zone? (multiple choice)	4	5
A tsunami can reach the coast within minutes of an earthquake. (true/false)	5	6
What do you plan to do to prepare for a tsunami in the next three months? (post-then-pre)	6	8
A tsunami is not a single wave. It is a series of waves. (true/false)	6	7
What do you know about tsunamis and tsunami preparedness? (post-then-pre)	8	4
Please describe the difference between a local and a distant tsunami. (open-ended)	9	9