

California Tsunami Program

2014 Accomplishments



150 Planning, Outreach & Coordination

- Workshops,
- Presentations,
- Meetings, and
- Community Events

Targeting

- 94 Incorporated Cities
- 83 Unincorporated Communities
- 20 Counties
- 267,347 Residents (in inundation zone); millions of visitors
- 38 Million Total Pop

Tsunami Preparedness Week 2014

- Activities in 20 Coastal Counties
 - Proclamations, Preparedness Fairs, Workshops, and Outreach
- Exercises (full-scale/tabletop using Pacifex /SAFRR) in 5 counties
- Tsunami Walk public drills in 6 counties
- Media events in San Francisco, LA & San Diego
- Alert & Warning tests statewide
 - 6th Tsunami Warning Communications Test
 - Required Monthly Test (using tsunami code)
 - First time message delivered live to TV/Radio in both Spanish/English
- Airplane flights from Oregon line to Golden Gate scheduled testing on-board broadcast systems
- 50th Anniversary Commemorations Crescent City



Launch of TsunamiZone.org

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Tsunami Preparedness Week
March 23-29, 2014

[Register Here!](#)

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WELCOME TO THE TSUNAMIZONE!

This March 23-29*, thousands of Californians will learn and practice how to survive a tsunami.

Join them today by [registering](#) what you will do in your home, organization, or community. Participating is a great way for [your family or organization](#) to "[know your zone](#)" if you live or work near the ocean (or may visit), and to learn what to do to be safe.

This year's Tsunami Preparedness Week commemorates the 50th anniversary of the March 27, 1964 Great



TSUNAMI WEEK EVENTS

[Tsunami Awareness and Preparedness Event](#)

Mar. 24, Southern California West

[La Jolla Tsunami Walk](#)

Mar. 26, San Diego

[Full-scale Evacuation Drill](#)

Mar. 26, North Coast

[Huntington Beach Tsunami Walk](#)

Mar. 27, Southern California West

[Exploratorium Lab and Lunch: Preparing for a](#)

Tsunami Evacuation Playbook Work Update/Schedule

- ▶ NTHMP review and Warning Center/WFOs partnership and support of Playbook/FASTER approaches
- ▶ FASTER approach now automated program developed by NWS-WFO Monterey
- ▶ Multiple workshops have been held in Humboldt, Monterey, Ventura, Orange, and San Diego Co's.
- ▶ Over 50 draft Playbook "evacuation" plans completed for all communities in those five counties; will exercise and make operational by summer 2015
- ▶ Work Group report and guidance for using Playbooks now available (California Geological Survey Special Report 236)
- ▶ NTHMP Coordination and Collaboration:
 - ▶ Partnering with Hawaii to develop draft Playbook for pilot community there
 - ▶ Partnering with USGS to analyze benefits and cost-effectiveness of Playbook evacuation versus Maximum evacuation



Working example: Formula for determining playbook evacuation line to use (FA-S-T-E-R):

FA: Forecasted Amplitude (Wave Height) from Warning Center
+

S: Storm surge or existing ocean conditions
+

T: Maximum tidal height (first 5 hours of tsunami)
+

E: Forecast error potential (30%; analysis of 2010-11 events)
+

R: Site amplified run-up potential (from existing modeling, unique to each location; applied if inundation expected)

= Maximum tsunami run-up height
= Playbook elevation line

Draft tsunami evacuation "playbook" lines based on elevation for City of Imperial Beach

Tsunami Emergency Response Playbooks and FASTER Tsunami Height Calculation: Background Information and Guidance for Use
By Rick L. Wilson* and Kevin M. Miller*

2014

California Geological Survey Special Report 236
Completed November 13, 2014

Funding by the National Tsunami Hazard Mitigation Program and the National Oceanic and Atmospheric Administration

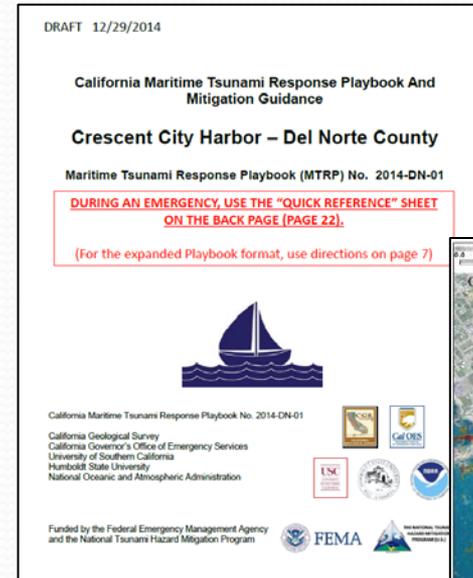
1) California Geological Survey, California Department of Conservation
*Professional License and Certification
PG 5676, CEG 1881

2) California Governor's Office of Emergency Services

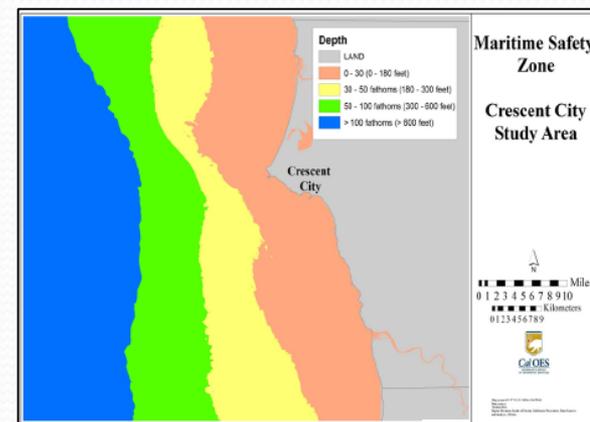
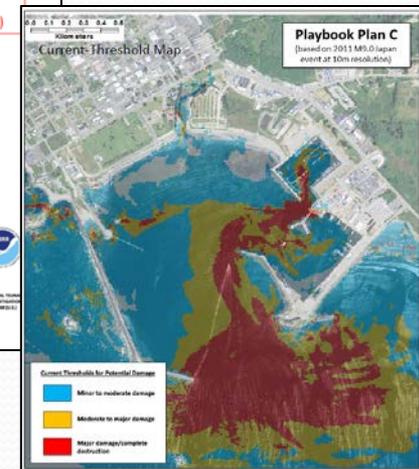
CGS Special Report 236

Maritime Work Update/Schedule

- ▶ Held meetings with dozens of maritime authorities and other stakeholders
- ▶ USC completed modeling for all harbors and ports statewide (FEMA supported)
- ▶ By March 2015, will complete hazard maps (in-harbor and offshore) and Maritime Response Playbooks for all harbors and ports; operational by Summer 2015 (FEMA supported)
- ▶ Working on guidance and products for maritime hazard mitigation and recovery planning (FEMA supported)
- ▶ NTHMP Coordination and Collaboration:
 - ▶ CGS and USC coordinated NTHMP MMS tsunami current model benchmark workshop, and will complete report this Summer
 - ▶ Facilitating NTHMP Offshore Guidance Work Group with Coast Guard
 - ▶ Participating in Oregon Maritime Advisory Council for producing maritime response products
 - ▶ Facilitating NTHMP MMS development of Maritime Modeling and Map Products Guidance
 - ▶ Collaborating with other NTHMP partners on maritime brochures and other guidance for large ships



Maritime Response Playbook for Crescent City with example Playbook Response Map

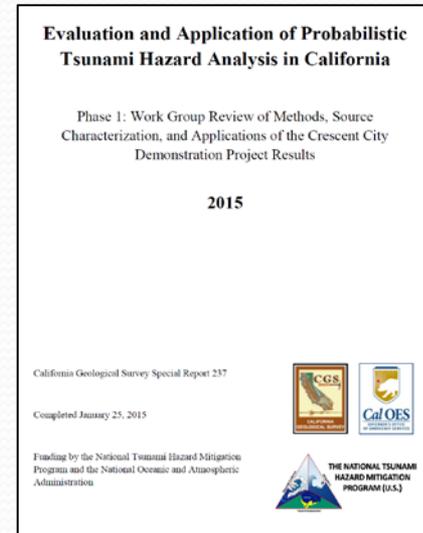


Guidance on minimum offshore safe distance near Crescent City

Other Projects

- ▶ California Probabilistic Tsunami Hazard Analysis Project
 - ▶ Completed Phase 1 Work Group report (California Geological Survey Special Report 237)....Thank you to NTHMP members who participated!
 - ▶ Implementing Phase 2 work, including:
 - ▶ Additional analysis of new Crescent City results and current velocities with Univ. of WA
 - ▶ URS/AECOM modeling results complete in six counties; evaluating results
 - ▶ Initiate PTHA Applications Work Group with Coastal Commission and community land-use planners
 - ▶ Continued membership in ASCE 7 Subcommittee on Tsunami Loads

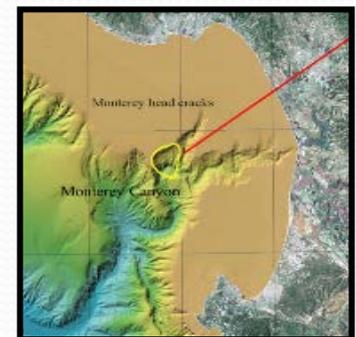
- ▶ Improving Lower-Threshold Warning Criteria
 - ▶ Facilitating NTHMP partner collaboration analyzing earthquake threshold for triggering tsunamigenic landslides
 - ▶ Initiated work in Monterey Canyon for evaluation



CGS Special Report 237

Preliminary risk levels for different applications

Risk levels (ARP)	Annual rate of exceedance	SHMA Zones	FEMA FIRM	Evacuation planning	Evacuation design	DWR Flood Zones	ASCE - IBC
100	50% in 50yr		yes				yes
200	25% in 50yr					yes	
500	10% in 50yr	yes	yes				
1000	5% in 50yr			maybe			
2500	2% in 50yr			maybe	yes		yes
3000	1.67% in 50yr			maybe			



Analysis of potential earthquake-triggered landslides in Monterey Canyon