NWS Tsunami Program: Then and Now

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(contract support)

EMForum
March 19, 2014
Tsunami Warning System
U.S. History

• 1949 Honolulu Observatory established
  – Co-located with existing Magnetics Observatory
  – Used data sent via teletype from seismic observatories
  – Established in time for major tsunamis of the 50s/60s
Tsunami Warning System
U.S. History

• 1967 Alaska Tsunami Warning System established
  – Followed tsunami destruction due to 1964 Great Alaska Earthquake
  – Originally 3 centers; later combined into 1
Tsunami Warning System
U.S. History

• 1968 Pacific Tsunami Warning Center established
  – Officially expanded scope of Honolulu Observatory to other nations
Tsunami Warning Centers
Tsunami Warning System – What is it?

Acronyms
- **NWS**: National Weather Service
- **EOC**: Emergency Operations Center
- **EMWIN**: Emergency Managers Weather Information Network
- **GTS**: Global Telecommunications System
- **FOS**: Family of Services
Tsunami Seismic Data

- Seismic Data
  - Virtual network
  - Multiple data paths
  - Redundancy
Tsunami Sea Level Data

- Sea Level
  - Virtual network
  - Satellite data transmission
  - Many formats
  - Many instrument types
  - Coastal tide gages and DART
Global Tsunamimeter Sites

Video link: http://youtu.be/Lo5uH1UJF4A
DART – Deep-Ocean Assessment and Reporting of Tsunamis – Buoy Network
NWS Tsunami Program

**Forecast and Warning**
- Pacific Tsunami Warning Center (PTWC)
- National Tsunami Warning Center (NTWC)
- DART Buoys—National Data Buoy Center (NDBC)
- Tide gauges—Center for Operational Oceanographic Products and Services (CO-OPS)
- Seismic Networks (AK, HI, Caribbean)
- Pacific Marine Environmental Laboratory (PMEL)—Models/Sensors
- National Geodetic Data Center (NGDC)—Digital Elevation Maps/archive

**Information and Mitigation**
- International Tsunami Information Center (ITIC)
- Caribbean Tsunami Warning Program (CTWP)
- NWS International Activities (Coordination)
- National Tsunami Hazard Mitigation Program (NTHMP)
- NWS Regions/WCMs/TsunamiReady Program
National Tsunami Hazard Mitigation Program

- Formed in 1995
- Strengthened in 2006
- NOAA, FEMA, USGS
- 29 States, Territories, and commonwealths

Mapping & Modeling, Mitigation & Education, Warning Coordination
Recognition program to reduce consequences of tsunamis in coastal sites

As of 19 March 2014: 164 sites
- Includes tsunami annex to response plans
- 24/7 notification coverage
- Outreach and education
- Planning and preparedness
Tsunami Preparedness Week
March 23–29, 2014
1964 Great Alaska Earthquake and Tsunamis

- March 27, 1964, 5:36 pm
- Prince William Sound
- Magnitude 9.2
- Largest earthquake ever recorded in U.S., 2nd largest in world
- Shaking lasted 4+ minutes
- Multiple tsunamis generated by earthquake and associated landslides

Video link: http://youtu.be/m_PWrx-cSo

Credit: NOAA
1964 Great Alaska Earthquake and Tsunamis (cont’d)

- Valdez, Anchorage, many villages along Alaska coast = significantly damaged or destroyed
- 130+ lives lost (Alaska, Oregon and California)
- Additional damage along west coasts of U.S. and Canada and in Hawaii
- Damage from tsunamis alone = almost $1 billion (2013 dollars)

Credit: NOAA
Tsunami Preparedness Week

- March 23-29, 2014
- Coordinated with National Tsunami Hazard Mitigation Program Partners
- Tsunami Preparedness Week Planning Team
- Tsunami Preparedness Week Website
Tsunami Preparedness Week (cont’d)

• Tsunami Warning Tests
  • Live Code
  • Monthly Tests
• Tsunami Exercises
  • Alaska Shield/Capstone 2014
  • SAFRR - Science Application for Risk Reduction (USGS)
• Tsunami Walks
• Tsunami Preparedness Events
• 1964 Great Alaska Earthquake and Tsunamis Commemorations
Tsunami Preparedness Week (cont’d)

Tsunami Walk
Know the Tsunami, Empower Yourself!
2014

Maine Tsunami Awareness

Are you prepared for when disaster hits?

MAINE PREPARES
maineprepares.com

50th Anniversary Tsunami Safe Historical Guided Walking Tour
Saturday, March 22nd

Free to the Public - Good for All Ages!

Start Out At the Cultural Center, 1001 Front Street, at 9:00am
Interactive Tsunami Displays - Vendors - Tsunami Safe Handouts
Tsunami Safe Quiz For Fabulous Prizes!

Sign Up For A Guided Downtown 8-Point Tsunami Walking Tour
Convenient Times Throughout the Day: 10:00 - 10:15 - 10:30 & 10:45
Break for Crescent City Harbor Ribbon Cutting Ceremony at 1:00
More Times In Afternoon: 2:00 - 2:15 - 2:30 - 2:45
*ADA accessible riding tour available - sign up at the Cultural Center
Make sure to wear comfortable walking shoes!

Light Rain Contingency:
It’s Del Norte!
We have rain ponchos for you to wear.

Heavy Rain Contingency:
We’ll stay inside the Cultural Center and give you a 90-minute virtual tour with a slideshow at 10:00, 11:00, 12:00, 2:00 & 3:00.
Tsunami Preparedness

- **WARNING**
  - Danger!
  - Run for high ground
  - Follow emergency instructions

- **ADVISORY**
  - Possible dangerous currents
  - Move off the beach & stay out of the water

- **WATCH**
  - Potential danger
  - Stay tuned for more information

- **INFORMATION STATEMENT**
  - Relax
  - No local danger
  - A distant ocean basin may be in danger
Tsunami Preparedness (cont’d)

- **DROP!**
  - Protect Yourself During Earthquakes

- **COVER!**
  - The Shaking is Your Tsunami Warning

- **HOLD ON!**
  - Tsunami Waves May Arrive for Hours

- **GO TO HIGH GROUND!**
  - Tsunami Hazards Zone

- **STAY THERE!**
  - In Case of Earthquake, Go to High Ground or Inland
NOAA Tsunami Links

- Tsunami Warnings: http://tsunami.gov
- Tsunami information: http://tsunami.noaa.gov
- TsunamiReady: http://www.tsunamiready.noaa.gov/
- Tsunami Preparedness Week: http://nthmp.tsunami.gov/tpw/tsunami-preparedness-week.html
- National Tsunami Hazard Mitigation Program: http://nthmp.tsunami.gov/
Thank You

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