

# 2011 Tohoku Tsunami in California

## High-Moderate wave amplitudes

- 9.2 Feet in Del Norte
- 2-7 Feet elsewhere

## Strong currents in harbors

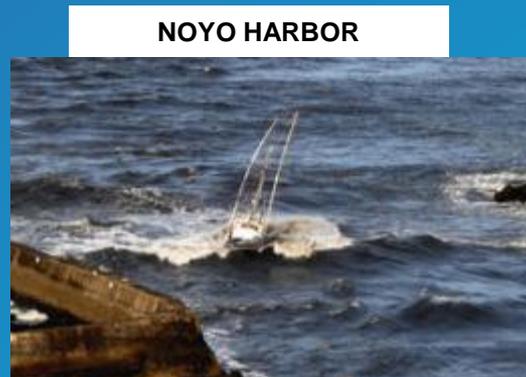
1 person swept out to sea at mouth of Klamath River. (Found 4/2/11 nr. Astoria, OR)

\$48 Million Statewide Damage  
(to public facilities)

27 Harbors Damaged (Boats sunk or damaged, Piers and Docks destroyed or damaged)

6 Counties: State of Emergency proclaimed by Governor Brown

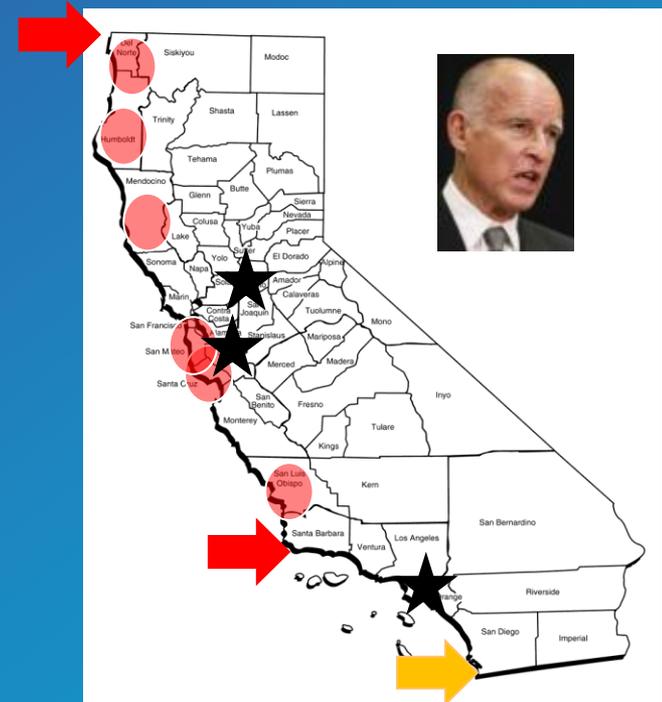
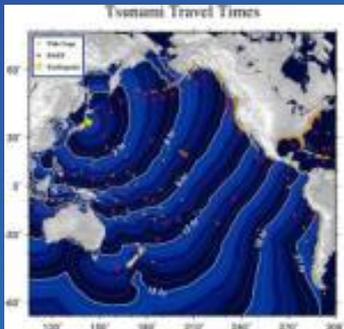
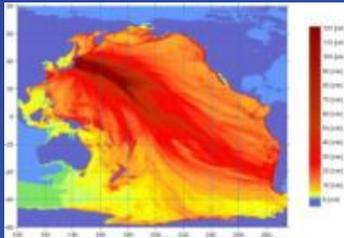
3 Counties Major Federal Disaster (DR-1968) declared by President Obama



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## State Response to: WARNING/ADVISORY

- 3 State Operations Centers
- Calls with Warning Centers
- Calls with Emergency Managers in 20 coastal counties
- CGS Observers in (safe) locations along the coast
- Public Information provided via CalEMA Headquarters
- Staff in the field assisting with clean-up and damage assessment



# Tohoku 2011 Lessons Learned (Public Understanding)

- Del Norte County Drill went well – due to previous exercise drill
- Crescent City Fishing Fleet evacuated successfully – due to previous exercise drill
- Monterey/Santa Cruz: people over-evacuated in some areas – Language Barriers (Spanish speaking population)
- Improve methods of keeping bystanders from danger
- Need educational materials for specific maritime communities
- Plan for long term evacuation at sea (maritime)
- Do not return to harbor during tsunami activity (maritime)



# Tohoku 2011 Lessons learned (Emergency Management)

- Need maritime plan/protocol for different scenarios.
- Provide scenario Playbooks to Coastal Counties.
- Encourage facilitation of better communication between counties and harbors.
- Provide temporary signs for Law/Fire at coastal access points.
- Consider tidal conditions (low vs. high tide) in evacuation decisions.
- Plan and staff for long duration events – 24-36 hours or more.



# CA Emergency Mgmt. After-Action Recommendations

**Issue:** Ensure media do not receive advance notification of information before emergency managers (jurisdictions reported 45 minute delay).

**Solution:** Establish Website for Emergency Management ONLY (Never saw Bulletin #2 - 2 hour gap in receipt of info).



**Issue:** Provide amplitudes/arrival times at more locations. Ask for state input for these locations. Put them into one table...amplitudes/times together.

**Issue:** Try not to have notification breakpoints within jurisdictions.

**Solution:** Provide info for all CA locations w/Tide Gauges. Preferred location list provided by state to WCATWC.



**Issue:** Provide more user-friendly bulletins (these last bulletins didn't include any wave height forecasts for CA).

**Issue:** The bulletins changed periodically during the event and at times were confusing; such as information being removed or dropped off from bulletins that should have remained.

**Solution:** NOAA/NTHMP is working on revised, consistently formatted, user-friendly, bulletins and continuing to deliver amplitudes/times.

