PTHA in California
Pilots Studies, Map Production, and Applications

Hazard Identification  →  Mitigation and Preparedness

1946  1964  Today  Tomorrow

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NTHMP Hazard/Risk Analysis Workshop
July 25, 2012
Tsunami Hazard Preparedness Community Needs

- Evacuation/Emergency response planning
- Maritime planning
- Land-use planning
Tsunami Land–Use Planning

• Misuse of deterministic tsunami inundation maps for land-use decision making

• California Seismic Hazard Mapping Act of 1990 (for residential construction)
  • Primarily for liquefaction and seismically induced landslide zonation
  • “Zones of Required Investigation” initiates site-specific evaluation
  • If hazard exists, mitigate
  • Real estate disclosure if in zone

• 1992 – added tsunami to CA-SHMA; produce PTHA maps when funding and ability to produce maps exists
PTHA – Development in CA

1980s – Prob. Seismic Hazard Analysis

1990 – Seismic Hazard Mapping Act

[2006-08 – Seaside, Oregon PTHA study]

2009 – NTHMP funding proposal for CGS

2010 – CA-PTHA – work initiated

• Developed paleotsunami/seismic deposit DB
• Coordinated with URS/Caltrans/PEER
• Held first CA-PTHA workshop with PEER on methods
• Pilot Studies developed:
  • Crescent City (low vulnerability, high hazard)
  • Huntington Beach (high vulnerability, low/moderate hazard)
• URS completes Year One modeling – Distant sources

2011 – CA-PTHA – work continued

• Developed Crescent City as pilot comparison between Thio and Gonzalez methods
• Established CA Tsunami Policy Work Group
• NTHMP finalized tsunami hazard modeling/mapping guidance and held model validation workshop
• Held second CA-PTHA workshop with PEER on Cascadia and Aleutians sources
PTHA Applications

- Land-use planning (CA-SHMA)
- Real estate disclosure (CA-SHMA)
- Standardized hazard analysis for evacuation planning (CalEMA)
- Building design and construction (ASCE, UBC/IBC)
- Flood insurance (FEMA, Risk MAP, CA-DWR)
- Input for consistent risk analysis and damage estimates (HAZUS)
• Establishing review work group(s) for:
  • Sources
  • Map accuracy/DEMns
  • Methodology
  • Application/Policy

• Review and compare first-generation results and reports from Thio and Gonzalez

• Determine probabilistic risk levels (average return periods) based on applications

• Develop second-generation maps/products, intended to including:
  • Flow depth
  • Flow velocity
  • Inundation area
  • Modeled time series
  • Momentum flux

• Projected state-wide map completion 2013-14