

### Breakout Session 3: JAPAN TSUNAMI

#### basic research

- effectiveness of 'sea wall protection + evacuation'
- 'pre-disaster' recovery (simulation of potential impacts and cascading processes, cf. preparedness)
- Event-consequence and post-event recovery study, Cascadia (similar to shakeout drill for California)
- enhance resiliency of communication network
- seafloor deformation/tsunami source study
- inverse engineering to estimate hydrodynamics of tsunami flooding
  - geo-morphological impacts of tsunami, tsunami deposits (sand/boulder) to guide paleo-tsunami studies

#### new data

- Nation-wide tsunami height survey data
- voluminous data for time-history tsunami modeling – source, propagation, inundation and social responses
- sea floor topography/bathymetric data/sub-seafloor data
- GPS-buoy/sea bottom sensor measurement of offshore tsunami profile



Japan and NZ Earthquakes RAPID and Research Needs Workshop  
Arlington, VA Feb 9 and 10, 2012



### JAPAN TSUNAMI

#### unique aspects

- once in thousand year (larger-than-considered) event
- efficiency/limitation of JMA warning system/local guidance
- continuing environmental impacts
- tsunami developed in well-prepared area with shrinking population

#### lessons learned

- understanding the physical mechanisms of catastrophic tsunami
- variety of human responses to tsunami/ importance of historical knowledge
- limitation of evacuation building and 'hazard map'
- need for guideline for vertical evacuation
- effectiveness of robot application to underwater victim recovery/damage inspection under turbid/debris environment
- co-seismic subsidence should be considered
- role of paleo-tsunami information in understanding potential magnitude of catastrophic event



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