



New Tsunami Inundation Maps for California

Aggeliki Barberopoulou (1), Jose Borrero (1), Burak Uslu (1,2), Utku Kanoglu (1,4), Costas Synolakis (1,3)

(1) Tsunami Research Center, University of Southern California, Los Angeles, California, (2) NOAA Center for Tsunami Research, Pacific Marine Environmental Laboratory, Seattle, Washington, (3) Laboratory of Natural Hazards, Technical University of Crete, Chanea, Greece, (4) Department of Engineering Sciences, Middle East Technical University, Ankara, Turkey

California is the first US State to complete its tsunami inundation mapping. A new generation of tsunami inundation maps is now available for 17 coastal counties.. The new maps offer improved coverage for many areas, they are based on the most recent descriptions of potential tsunami farfield and nearfield sources and use the best available bathymetric and topographic data for modelling.

The need for new tsunami maps for California became clear since Synolakis et al (1998) described how inundation projections derived with inundation models that fully calculate the wave evolution over dry land can be as high as twice the values predicted with earlier threshold models, for tsunamis originating from tectonic source. Since the 1998 Papua New Guinea tsunami when the hazard from offshore submarine landslides was better understood (Bardet et al, 2003), the State of California funded the development of the first generation of maps, based on local tectonic and landslide sources. Most of the hazard was dominated by offshore landslides, whose return period remains unknown but is believed to be higher than 1000 years for any given locale, at least in Southern California.

The new generation of maps incorporates local and distant scenarios. The partnership between the Tsunami Research Center at USC, the California Emergency Management Agency and the California Seismic Safety Commission let the State to be the first among all US States to complete the maps. (Exceptions include the offshore islands and Newport Beach, where higher resolution maps are under way). The maps were produced with the lowest cost per mile of coastline, per resident or per map than all other States, because of the seamless integration of the USC and NOAA databases and the use of the MOST model. They are a significant improvement over earlier map generations. As part of a continuous improvement in response, mitigation and planning and community education, the California inundation maps can contribute in reducing tsunami risk.

References

- Bardet, JP et al (2003), Landslide tsunamis: Recent findings and research directions, *Pure and Applied Geophysics*, 160, (10-11), 1793-1809.
- Eisner, R., Borrero, C., Synolakis, C.E. (2001) Inundation Maps for the State of California, *International Tsunami Symposium, ITS 2001 Proceedings, NHTMP Review Paper #4*, 67-81.
- Synolakis, C.E., D. McCarthy, V.V. Titov, J.C. Borrero, (1998) Evaluating the Tsunami Risk in California, *CALIFORNIA AND THE WORLD OCEAN '97*, 1225-1236, *Proceedings ASCE*, ISBN: 0-7844-0297-3.