

## **Project Summary**

### **Rocky Mountains Cooperative Ecosystem Studies Unit**

**Project Title:** Marine Safety Assessment and Risk Reduction from Tsunamis

**Discipline:** Natural  
**Type of Project:** Research  
**Funding Agency:** USGS  
**Other Partners/Cooperators:** University of Colorado Boulder  
**Effective Dates:** 2/1/2014 - 1/31/2016  
**Funding Amount:** \$32,000

**Investigators and Agency Representative:**

USGS Contact: Stephanie Ross, Pacific Marine and Coastal Science Center, 345 Middlefield Rd, MS-999, Menlo Park, CA 94025; 650-329-5326; sross@usgs.gov

Investigator: Keith Porter, Structural Engineering and Structural Mechanics, University of Colorado, Boulder, CO 80309, Phone: (626) 233-9758, keith.porter@colorado.edu

**Project Abstract:** The physical-damages portion of the US Geological Survey's Science Application for Risk Reduction (SAFRR) Tsunami Scenario (Porter et al. 2013) produced new engineering knowledge about the vulnerability of California's coastal infrastructure to a teletsunami. It highlighted the potentially large risk posed by marina pilings whose height is insufficient to restrain floating docks in the event of a tsunami. It used remote sensing procedures to estimate piling heights in California coastal marinas, but given the importance of these data, recognized the need to create a more reliable database of piling heights. The SAFRR Tsunami Scenario research also highlighted the need for better knowledge about the fragility of vessels and docks to tsunami currents. The research proposed here aims to address both these research needs.

The objectives include:

1. Establish a statewide database of piling heights in California coastal marinas.
2. Develop empirical fragility functions for vessels and floating docks.
3. Develop estimates of costs to lengthen pilings.
4. Update damage and loss estimates from the SAFRR scenario related to tsunami waves overtopping marina pilings.

**Outcomes with completions dates:** January 1, 2016

**Keywords:** safety assessment, coastal infrastructure, Tsunamis, University of Colorado Boulder