



## **The 29 September 2009 Samoa tsunami**

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The 29 September 2009 Samoa tsunami provided an unexpected exercise for the NOAA's tsunami forecast system, undergoing operational testing at U.S. Tsunami Warning Centers (TWCs). Both TWCs and staff of the Pacific Marine Environmental Laboratory exercised the forecast system to provide tsunami prediction for the Pacific U.S. coastal communities where forecast models have already been developed. The forecast model from a tsunameter-constrained tsunami source, giving the U.S. coastlines more than three and half hours of lead time to respond to the approaching tsunami waves. Even with this unusual and complex earthquake source, the forecast provided required accuracy for important emergency management decisions. During the event, a high-resolution inundation model was quickly developed to compute the tsunami inundation in Samoa Islands - particularly in Tutuila Island. This allowed for the first test of the real-time inundation forecast capability of the system. In addition, the model inundation estimates provided valuable guidance for disaster recovery activities and for the post-tsunami survey guidance. The results illustrate recent improvements and new capabilities of the tsunami forecast system. The problems and lessons learned for both far-field and local tsunami forecast will be discussed.