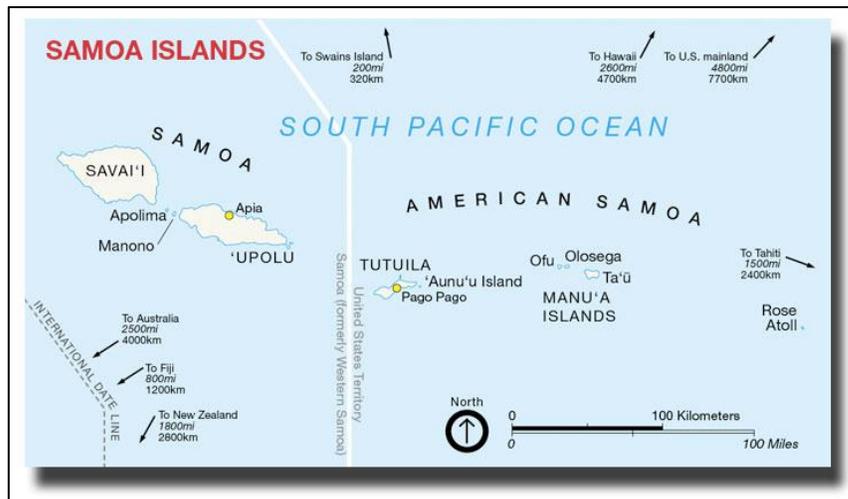


## 2009 Samoa Tsunami

### Description

A magnitude 8.1 submarine earthquake took place along the Tonga Trench subduction zone in the Samoan Islands region on September 29, 2009. It generated a tsunami which hit the coastline within 15 minutes, before an official warning could be issued; wave heights of up to 46 feet were recorded on the islands of American Samoa, Samoa and Tonga. Fortunately, because of public



awareness and education after the 2004 Indian Ocean tsunami, many of the residents knew to immediately self-evacuate based upon the strength of the shaking or the receding of the ocean; as a result, only 149 people died from the waves that caused substantial devastation on property throughout the region.

### Impact

On the islands comprising American Samoa, more than 34 people were killed and hundreds were injured. The combination of the earthquake, tsunami, and flooding resulted in a devastating amount of damage on the island of Tutuila, with most of the damage caused by the tsunami. A total of 241 homes and one school were destroyed, 3,058 homes and four other schools were damaged. Loss of power affected the operation of water and sewage treatment facilities.

### Lessons learned

The importance and effectiveness of public education programs was highlighted by this event, as the majority of survivors were saved by their decision to self-evacuate. It was discovered that planning needed to take into consideration barriers to evacuation in planning evacuation routes. Some of the Samoa and American Samoa residents had difficulty getting to high ground because of rivers, mangrove swamps, landslides or fences that separated them from the most direct evacuation routes; others did not have the ability to evacuate due to special needs. It was also recommended that emergency plans and warnings be short, precise, and recorded in English and Samoan. American Samoa had already been aware of deficiencies with its emergency alert system; although it had begun implementing improvements, there had not been sufficient time since they were identified to get them all in place. Another problem was that the Weather Service Office (WSO) in Pago Pago was not authorized to release official tsunami warnings, and communication with the Pacific Tsunami Warning Center, the official notification group, was hampered after the earthquake; the WSO's decision to send out an "unofficial" warning caused some confusion for residents. Subsequent to the tsunami, the WSO was given the authority to release official tsunami warnings.



*Above left: The tsunami drove a car into a building. Image USGS*

*Above right: A house in Fagasa was reduced to its foundation. Image: USGS*

### **References and Additional Resources**

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