



Analysis of Coral Damage due to September, 29,2009 Samoa Tsunami on Tsunami Dynamics

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An earthquake of a magnitude $M_w=8.0$ occurred on September 29th, 2009 at 17:48 UTC in the central South Pacific Ocean with the epicenter at $15.5^\circ\text{S } 172^\circ$. The tsunami waves, generated by the earthquake, hit islands of Samoa and American Samoa in about 15-20 minutes, killing over 150 people. The tsunami wave forces also generated adverse impacts to environmentally and economically valuable coral reef ecosystems, particularly in Tutuila Island of American Samoa.

The aim of this research is to study coastal and near-shore tsunami impact and coastal tsunami damage with numerical techniques using high resolution bathymetry of Tutuila, to measure tsunami damage to the corals, to find a relationship between coral damage and tsunami impact, and to correlate this relationship with tsunami parameters. The results of a sensitivity study on the mitigation effects of corals on tsunami inundation will be presented.