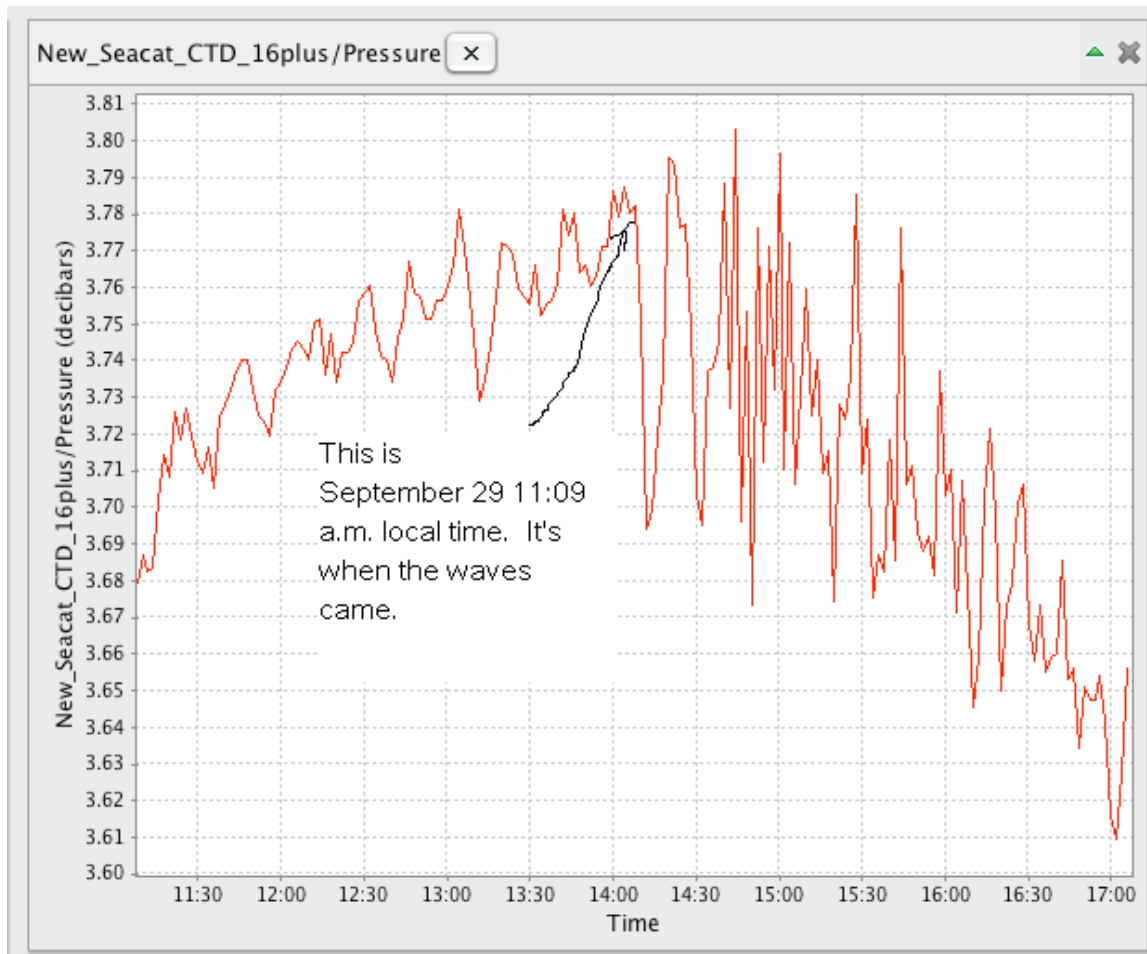


DataTurbine Captures Tsunami Signal At Moorea LTER Site

On the September 29, 2009, an 8.3-magnitude earthquake struck the Samoan Islands at 7:48 a.m. (French Polynesian time). As a results of the earthquake, five small waves between 25 -70 centimeters (9.9-27.6 inches) were measured off Papeete between 11:10 a.m and noon Tuesday according to the Tahiti Presse [<http://en.tahitipresse.pf/index.cfm?snav=see&presse=28105>].

The Digital Moorea system also captured this tsunami in Moorea, one of the French Polynesian islands. A Conductivity, Temperature and Depth (CTD) sensor is deployed in the water about 30 meters away from the Gump lab located in the Cooks Bay, in approximately 3.5 meter water depth.

The earthquake resulted in an unusually big fluctuations in pressure measured by the CTD. Typically, pressure changes due to surface waves were less than 0.05 decibar (1 decibar \approx 1 meter) before arrival of the tsunami. However, the CTD captured a pressure change over 0.1 decibar for twenty minutes beginning 11:09 local time. Tsunamis typical have periods of 20 – 30 min, consistent with these observations. Fluctuations due to the tsunami are superimposed on those due to wind waves in the graph below. A video frame captured the small debris from these waves soon after arrival of the tsunami.



After three hours, the reddish brown murky water started to come into the shore. This change in color of the water was observed through the video camera. The tsunami waves are often murky because the water contains the earth, corals and other materials that are picked up when the ocean floor is disturbed.

NSF MCR LTER Site, Moorea French Polynesia 2009-09-29 13:17:23



The Digital Moorea Real-Time Sensor System is described at ([http://mcr.lternet.edu/data/realtime/mcr-deployment with logo and bib.pdf](http://mcr.lternet.edu/data/realtime/mcr-deployment%20with%20logo%20and%20bib.pdf)).