



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Michael P. Montgomery	Project Number J0118
Project Title Making Waves: How Water Depth Affects Tsunami Wave Speed	
Abstract Objectives/Goals The objective of my experiment was to see firsthand how water depth affects a tsunami wave's speed. I predicted that the shallower the water, the slower the wave would travel. Methods/Materials I built a 203.2 cm x 60.33 cm wave tank for my trials, and I used a 30.48 cm x 30.48 cm plywood board to initiate the tsunami waves. A stopwatch and tape measure were used to measure time and water depth. For each wave, I lifted the board, or wave-maker, up to nearly the free surface, generating a tsunami-type wave. After five trials at the depths of 2, 3, 4, 5, 7, 8, and 10 cm, I calculated all the wave speeds, plugged the water depths into an equation for theoretical tsunami wave speed, and graphed the results. Results My results showed a curve that, when matched up with the theoretical speeds, supported my hypothesis. The shallower the water was, the slower the generated waves travelled. Conclusions/Discussion After analyzing my data, I came to the conclusion that water depth has a great effect on tsunami wave speed. The shallower the water is, the slower the wave will travel.	
Summary Statement I performed this experiment to see for myself how water depth affects tsunami wave speed.	
Help Received My father got me started with a useful book on waves and helped me with timing and calculations in the trials. My mother proofread my paper, and my grandfather designed and ordered materials for the wave tank. Both my parents helped me build the wave tank.	