



CALIFORNIA STATE SCIENCE FAIR  
2014 PROJECT SUMMARY

<b>Name(s)</b> Christie P. Lum	<b>Project Number</b>  34402
<b>Project Title</b> The Science behind Tsunamis: Studying the Effect of Water Depth on Wave Velocity	
<b>Abstract</b> <b>Objectives/Goals</b> The purpose of my project is to study the effect of water depth on wave velocity in tsunamis. <b>Methods/Materials</b> In my experiment, I simulate waves by dropping a wood block into a water tank filled with 4 different water depths (independent variable) and record their wave velocity (dependent variable). For each depth, I perform 3 trials and 10 tests per trial. In addition to my tsunami simulation experiment, I also calculate the wave velocity as a function of water depth using a math equation - velocity is the square root of the product of the acceleration of gravity (9.8 sec/m <sup>2</sup> ) and the water depth. <b>Results</b> Based on my tsunami simulation experiment, the wave velocity for water depths of 0.5, 1, 2, and 3 cm were 45, 53, 62 and 70 cm/seconds respectively. Based on my math equation calculation, the wave velocity for water depths of 50, 100, 200, 500 and 1000 meters were 22, 31, 44, 70 & 99 m/seconds respectively. Both my experimental results and calculated results show similar shaped curves on a graph. <b>Conclusions/Discussion</b> The result after 120 tests supported my hypothesis that wave velocity decreases as depth reduces. I hope that by studying the science behind tsunamis, we can understand these killer waves more thus building a better warning system to save more lives.	
<b>Summary Statement</b> My project studies the effect of water depth on wave velocity in tsunamis.	
<b>Help Received</b> Mom helped gather materials; sister helped do the timing and take some pictures; Home Depot donated a wood block.	