CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
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Project Number
J0317

Project Title
Tsunami Hits California

Abstract

Objectives/Goals
My objective of this project is to test if placing walls underwater and above water will reduce the damage of a tsunami.

Methods/Materials
Methods: Make the wave tank and pulley system. Make wave for 5 tests against straight coast. Test bay and peninsula for 5 trials. Create wall 1 and test fro 5 trials. Repeat the last step for walls 2, 3, and 4. Analyze data.

Materials: Wave tank, pulley system, water, bricks, 13 lb weight

Results
Wall 1 completely stopped the wave to an average of 1.8 centimeters.
Wall 2 was almost as affective as wall 1, reducing the tsunami to an average of 7.4 centimeters up the coast.
Wall 3 held the wave to an average of 11.6 centimeters.
Wall 4 held the wave to an average of 10.2.

Conclusions/Discussion
The model used showed that tsunami waves are very powerful and severely damaged all three of the coastlines tested. There was still wave variability, even though a standard 13 pound weight was used. This was because the weight did not always fall on the same side, creating variations in the wave formation. Also, the sizes of the walls, particularly walls 1 and 3, were not very realistic because the sizes of the walls were much too big in all three dimension; length, width, and height. Wall 1 was the least realistic because it spanned the whole width of the model, which is about the length of the Santa Barbara coast. Even after not being realistic, wall 1 and 2 would be terribly expensive to build because they span about a mile long. Also, the fact that wall 1 and 3 were 1/3 out of the water would make them even more expensive. The walls that would be reasonable to build and reduced the wave substantially would be wall 3 because it did not span very long length wise, but was tall.

Summary Statement
This project is about trying to prevent tsunamis.

Help Received
Dad helped by assisting me in setting up the pulley system that dropped the weight to create the wave.