CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)
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Project Number
J0316

Project Title
Tsunami Cloak

Abstract

Objectives/Goals
Tsunamis kill thousands of people and cause billions of dollars in damage each year, so I decided to test if it was possible to protect vulnerable shorelines from large destructive waves. When I researched tsunamis I found a science journal that was discussing abnormally long wave lengths that are attributed to tsunamis in the same journal I found a device, by a French scientist, that diverted light waves away from a certain object and therefore making the image of that object distorted or non-existent. I thought I could use the basic design of the device with wooden pillars arranged in a circular array that got smaller towards the middle. I thought that if I built a replica of the device out of wood it could divert a water wave the same way that it diverted a light wave and it could redirect a tsunami away from a city.

Methods/Materials
To test this I built a wave tank that was made of wood and had been fiber-glassed to make it waterproof. Once I had built the wave tank I filled it tank to three inches deep and set a ruler at the far end of the tank to measure the wave heights of each wave. To make the wave I let fall a piece of wood from a set distance. I made twenty five wave without the device in the tank and recorded all of the wave heights. I repeated the test in the same manner with the device in the tank.

Results
My hypothesis was partially incorrect due to the fact that originally I thought that the wave would be totally redirected, but in reality it just slightly decreased the size.

Conclusions/Discussion
My conclusion was that even though my original hypothesis was proven incorrect the experiment was a success because I learned that this device can successfully decrease the size of a wave and maybe save city's such as Fukushima in Japan in the future.

Summary Statement
The test of a "Tsunami Cloak" to divert large wave away from a coastline.

Help Received
Father helped type report and build wave tank,