Name(s)	Project Number
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Project Title

Tsunami, Reducing the Damage: Testing Barriers and Non-Traditional Structural Designs

Abstract

Objectives/Goals

The objective of my project was to investigate ways of reducing tsunami damage to pinpoint the most effective means of doing so.

Methods/Materials

My wave tank was made from a 40 inch long plastic tub; a secured wave-paddle, made out of cutting boards, a wooden dowel and duct tape. I built the shore using wet-foam and structures using craft-sticks and wood glue.

For each test, I made waves with the tub filled to 1 inch, 2 inches, and 3 inches; the most dramatic structural results always coming from 3 inches of water, as this produced "sea-level" land; though 2 inches had the best-looking waves in the small tub.

Results

In my research I found that elevating structures, building sea walls, and growing reefs and mangroves can all have a major effect against the power of tsunami. I also found that changing the orientation of buildings, the direction the walls faced the shore, could produce a structure that can better withstand tsunami forces. It was this observation about orientation that gave me the idea to design a building that was diamond shaped; reducing the surface area forces of the impact. Just as the bow of a ship moves through water, the diamond shaped house didn't experience nearly as much impact force as the standard shaped building.

Conclusions/Discussion

Elevating structures was the most effective means of reducing damage. While other methods can greatly reduce damage due to impact forces of a tsunami; elevating, or building away from coastlines altogether, is the only solution to avoiding the costs and burdens of damages due to flood water.

Summary Statement

Testing various methods for reducing the damages caused by tsunami.

Help Received

My teacher encouraged us to go to the science fair and gave me the information and support I needed to do this project. My whole family helped me with my project at home, from running trials to printing photos.