Using an Underwater Trench to Limit the Energy of a Tsunami

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Currently, the methods used to minimize the loss that a tsunami could cause are, for differing reasons, not effective enough. Breakwaters are also often not strong enough to combat a tsunami. This project has found a way in which tsunamis energy could, in theory, be drastically reduced. The hypothesis for the investigation was that if a long, deep trench is dug in the seabed in the direct path of a tsunami then most of the wave's energy will be lost after it passes over the trench. In order to test the hypothesis, a wave tank was built in which waves could be created and the inner topography could be changed to recreate a seabed with various trench lengths. This project was split into three different investigations, each testing different trench lengths with the only change being the power used to create the wave 972 waves were made several amounts of power and recorded going across various trench lengths ranging from 0cm to 110cm. The waves were recorded to ensure accurate readings made possible by stopping at the correct moment in the video. The data showed that as the length of the trench increased, the energy the wave had after the trench decreased; this is in agreement with the hypothesis.

Awards Won: