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Tsunamis Cannot Be Predicted Based on the Past

What is this research about?

A tsunami is a giant ocean wave caused by an underwater disturbance, such as an earthquake or a volcanic eruption. Even though tsunamis are rare, they can be much more devastating than storm surges like hurricanes and cyclones. In 2004, a severe earthquake in the Indian Ocean created a tsunami that struck the coast of Indonesia. The tsunami took over 300,000 lives, and resulted in billions of dollars in damage. An intense hurricane usually only affects thirty or forty kilometers of a coastline; the waves of a tsunami, on the other hand, can travel across an ocean and impact thousands of kilometers of coastline. As a result, those who aim to develop coastal areas need to take into account the potential threat of tsunamis. But it is hard to predict just when a tsunami will strike.

What you need to know:

Tsunamis cannot be predicted based on the past

What did the researcher do?

Niru Nirupama, an Associate Professor at York University, set out to determine if it is possible to predict when a tsunami will hit based on past occurrences. To try and find a pattern, she looked at data on the Web site of the National Geophysical Data Center (NGDC) in the United States. The NGDC database is the most comprehensive source in the world for info on tsunamis. It lists the tsunamis that are said to have occurred on the globe, in all of its oceans and four of its seas, going back to the first century A.D. (The list gets better and more credible in the last two or so centuries; in earlier centuries, most tsunamis were not documented.) In her analysis, Professor Nirupama included 998 documented events that definitely (or probably) qualify as tsunamis.

What did the researcher find?

Although Professor Nirupama found that the month of September has had the most tsunamis and the month of April the least, these were not statistically significant findings. A simple and straightforward statistical analysis suggests that the occurrence of tsunamis is almost completely random. No patterns can be used to predict

when a tsunami will take place. The day that has had the most tsunamis is November eighth, but again, this may not mean much.

How can you use this research?

This research reminds us that there is still a lot that is not known about tsunamis. Given the widespread devastation caused by these events, more research on tsunamis is required.

About the Researchers

Niru Nirupama is an Associate Professor of Disaster and Emergency Management in the Faculty of Liberal Arts and Professional Studies at York University.

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