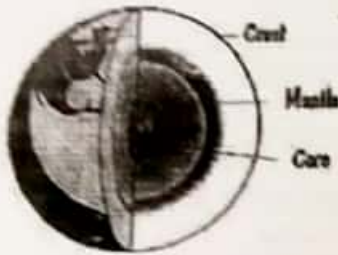


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What Causes the Earth to Quake?



An earthquake can be scary. It can make the ground shake so hard that lamps inside houses swing from the ceiling or crash to the floor. Earthquakes also can make buildings fall apart. Some earthquakes can cause the land to open up and swallow whole roads. Earthquakes under the ocean can create a huge wave called a tsunami.

Can Scientists Predict Earthquakes?

If scientists could predict earthquakes the way weather forecasters can predict rainy days, then many lives and homes would be saved from destruction. Scientists at the Geophysical Institute and other places around the world are working hard to find signs that can foretell earthquakes. A story in the Geophysical Institute Quarterly tells about one sign scientists hope to use to help them forecast earthquakes in the future.

CAUSES OF TSUNAMIS

Tsunamis occur when there is a sudden large displacement of water. There are three main causes of tsunamis: seismic activity, submarine landslides, and cosmic impacts.

1. Seismic Activity

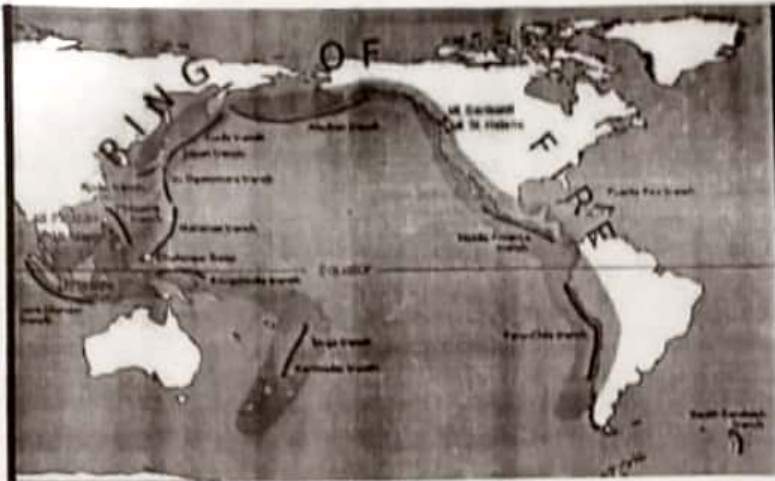
Seismic activity is the most common cause of tsunamis. Both tectonic and subduction earthquakes in and near the ocean may create tsunamis. During a tectonic earthquake, the sea floor becomes deformed, forcing a displacement of water. In a subduction earthquake, tectonic plates slip under each other, creating a massive disturbance, also resulting in a significant displacement of water.

2. Submarine Landslides

Submarine landslides can also cause tsunamis. Submarine landslides occur during earthquakes and the implosion of underwater volcanoes. The falling sediment and rock in these landslides can also trigger massive water movement, resulting in a tsunami.

3. Cosmic Impacts

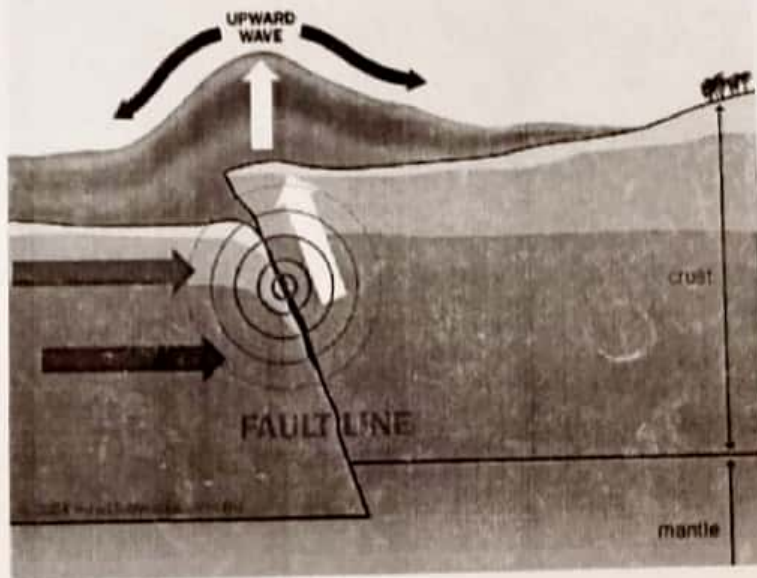
Cosmic impacts in the ocean are the least frequent cause of tsunamis. This is similar to throwing a rock into a pond, except on a much larger scale. When the rock hits the water, it creates small ripples of water moving away from the point of impact. In a cosmic impact, these ripples would instead be massive tsunamis, increasing in size as they near the shore.



The big concern right after the earthquake was the potential for a devastating tsunami across the Pacific...including in Hawaii. A Tsunami Warning was issued 10+ hours in advance. It turns out and thankfully so, the Tsunami only created slightly higher water levels around the island chain when it passed by.

Since we have now had 2 very large earthquakes occur in the past two months, let's take a look at how a Tsunami forms. The image below shows the center of an earthquake labeled by the red circles. The shifting of the earth caused a push up and down in the water...creating an upward wave. This is the start of a Tsunami.

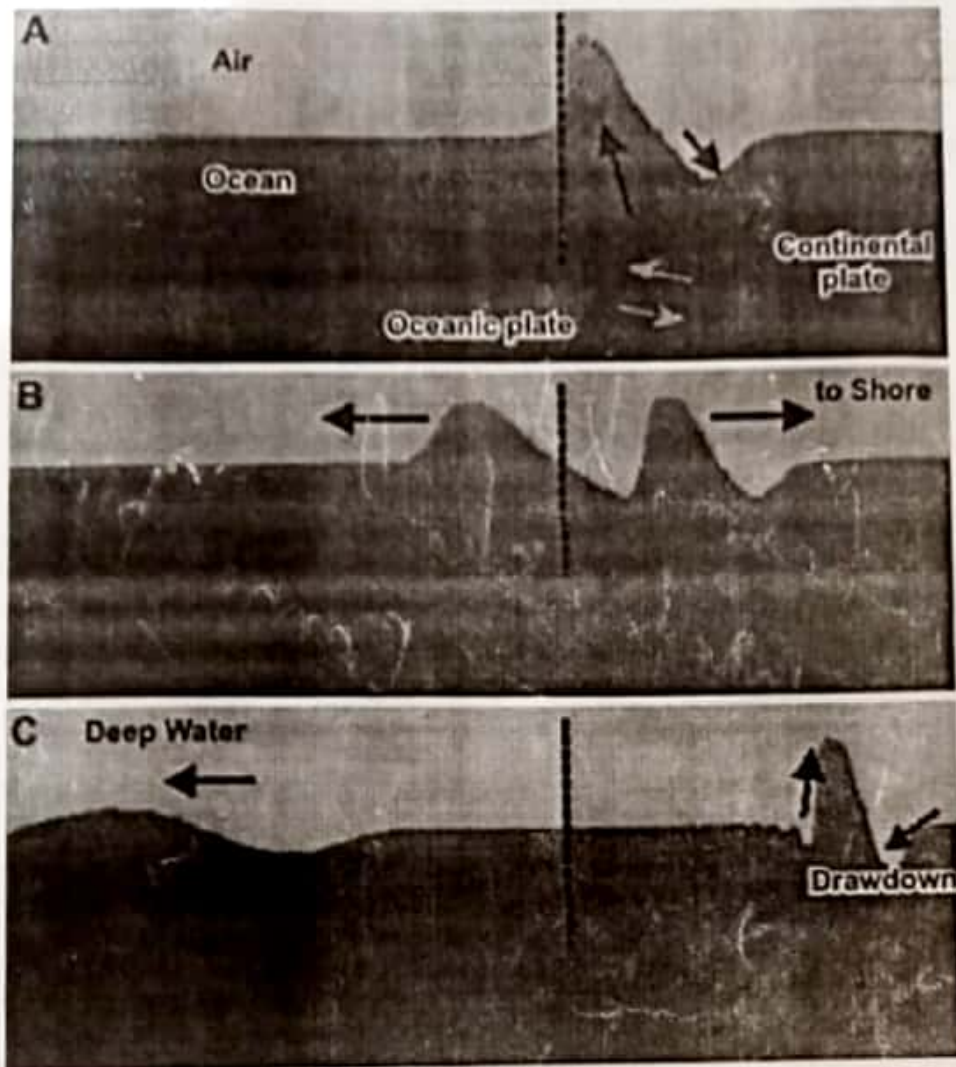
How Tsunamis Work: Tsunamigenesis



A more detailed explanation is below including 3 images to highlight what happens after the Tsunami forms.

A) An earthquake results from plate shifting at a subduction zone (oceanic plate being subducted under continental plate). Displaced water forms a tsunami. B) Tsunami separates into two distinct waves – local (to right) and distant (to deep water). C) As local wave

encounters continental slope, it gains amplitude (height) and slows down. The trough of the wave, if it encounters the coast first, will cause a drop in water level (drawdown). Note the distant wave traveled much farther from the point of origin since it is moving faster in deep water (adapted from USGS). *Note: Wave heights and slopes are exaggerated in comparison to water depths.*



If you have questions about the earthquake information or Tsunamis please let us know by leaving your question in the comments section of the blog.

Overall our weather looks very quiet heading into the start of March. The models have been underdoing temperatures to the tune of about 2-4 degrees each day for Milwaukee. To me that means we should be in the mid 30s to low 40s over the next week. The 40s will probably hold off until Thursday at the earliest. It is safe to say that our snowpack will take a hit over the next week.

Make sure to check back to the blog on Sunday, Mark will have an update on the weather conditions we are expecting and possibly touch on the wet storm that looms for the 7-9 timeframe. If you are wondering...this is a storm that was highlighted in the long range March forecast in the blog entry below. Check it out!