

Tapescript:

Tsunami

Today we are going to look at natural hazards connected with the oceans. As you know more than 2/3 of the earth's surface is covered by water. And the greatest hazards at sea and along the coast are caused by waves. Now, waves can be measured in various ways. So first of all I want to clarify a few of the terms we are going to use. If you could just turn to the diagram on page 82, right, now, you see waves running across the centre? And the sea floor at the bottom? Ok. Well, the highest point of the wave is called the crest. Remember the saying "to be on the crest of the wave"? To be successful? Yeah? Then the important measurement: wave length, which is the distance between the highest point of one wave and the next. Wave lengths can vary enormously from a few meters to hundreds of kilometers, believe it or not. So far so good. What else? There's wave period, which isn't marked, because this is the measurement of time. This is the time between one crest passing and the next. Then the lowest point of the wave is called a trough. Can you see that? That leaves a wave's height, which is the measurement of the vertical distance between the crest of the wave and the trough. And finally: depth, which I'm sure you know, is the distance between the mean sea level and the sea bed.

Right, well, most waves are produced by the effect of wind, but the most destructive waves are not in fact wind-generated. These are the famous tsunami. The word "tsunami" is by the way, a Japanese word for harbor wave. The majority of tsunami are the effect of earthquakes which occur under the seabed, although a few are also caused by underwater volcanic eruptions. Most tsunami, that is between 80 and 90% take place in the Pacific Ocean. That is because the majority of the earth's earthquakes happen in that ocean in the so called "Ring of Fire". While they are at the open sea, tsunami waves are generally quite small, rarely more than half a meter high, in fact, which usually surprises people. It's only when they reach the shore that tsunami waves reach that enormous heights. As a matter of interest, the largest tsunami ever recorded was 64 meters high. That was in Russia in 1737. It's also worth noting that tsunami have an extremely long wave length. In the Pacific Ocean, for example, the average wave length is 480 km. This low height and long wave length make it so difficult to detect tsunami in the open sea. The deeper the water, the faster the tsunami travels.

And in the Pacific they can reach speeds up to 700 km an hour. In 1960, a tsunami generated by an earthquake in Chile, reached Japan in only 22 hours. Let's look at another example now. The 1964 tsunami which hit Crescent City in far north of California, this was caused by an earthquake which happened in Alaska four and a half hours earlier. The first two waves only hit the area around the harbor but the third washed inland for a distance of 500 meters. It flooded 30 city blocks and destroyed a number of one-storey buildings. Luckily, there'd been enough warning for the people to evacuate the low lying areas close to the seashore. But the city authorities learned an important lesson and they took steps to prevent the worst damage from happening ever again. They turned the main risk area into a public park and relocated all the businesses on higher ground. Incidentally, this approach has also been taken in Hawaii and Japan. Now, before we finish I'd just like to