Why do Tsunami Waves have such Destructive Power?

Tsunamis are progressive waves up to several 100 kilometers long in the ocean generated by submarine earthquakes, volcanic eruptions, or landslide on the coast or in the sea. They are in motion. The very long wavelengths combined with relatively low wave heights around one meter ensure that tsunamis are not perceptible by ships on the open sea. The waves spread out from the source of the event (source). In a trigon graph, over 600 kilometers per hour. They can therefore pass through large ocean spaces in a short time, such as the entire Pacific Ocean from South America to South Asia in 24 hours. When the tsunami wave reaches shallow coastal waters, it slows down considerably. At the same time, it gets higher and higher and can thus achieve an enormous destructive effect on the coast.

Is there Protection Against Tsunamis?

Following a tsunami that caused extensive damage, the world’s first tsunami early warning system was set up in Japan as early as 1894. Since 1965, the Pacific Tsunami Warning Center (PTWC) in Hawaii has been monitoring the formation of tsunamis, calculating their travel times and issuing Pacific-wide warnings. The PTWC has its own seismic and level measurement data, as well as an excellent data-sharing network that is updated regularly. When an earthquake occurs, the PTWC in Hawaii can issue a warning within 20-30 minutes. Regional tsunami warning centers exist today in Japan, South Korea, Taiwan, the Philippines, Thailand, India, and Australia. However, 90 percent of damaging tsunamis occur less than 400 kilometers (30 minutes travel time) from the nearest coast. Only regional tsunami centers can effectively provide advance warning in this area. The PTWC provides the appropriate information. Today, warnings can be issued in the time of 20-30 minutes. Regional tsunami warning centers exist today in Japan, South Korea, Taiwan, the Philippines, Thailand, India, and Australia. However, with a tsunami run-up of less than 10 meters, there is little chance for an effective warning.