

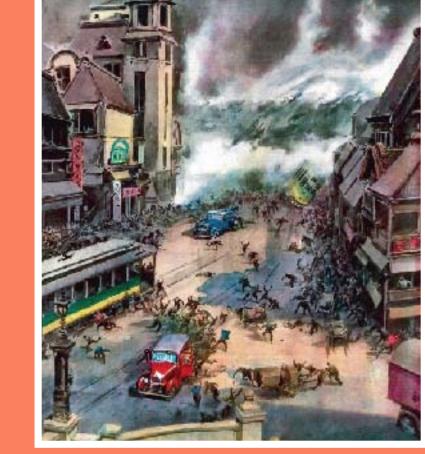
What is a tsunami

A tsunami is a series of sea waves with very long wavelengths (typically hundreds of kilometres) caused by large-scale disturbances of the ocean. The word derives from Japanese and means "harbor wave". When reaching a shore, it develops a destructive force and can cause enormous damage and many casualties. Tsunami arises from a significant shift of water masses in the ocean, the seas or even a lake. Main reasons for this are earthquakes, but tsunami can also be caused by volcanic eruptions, landslides close to a shore or underwater, or by a meteorite impact.

On one hand, tsunami causes disaster by sheer impact force, which depends more on the length and speed of the waves than on their height. On the other hand, retreating water masses can cause greater damage by dragging along everything on their way. A tsunami develops a speed between 50 and 800 km/h.

Recent great Tsunamis

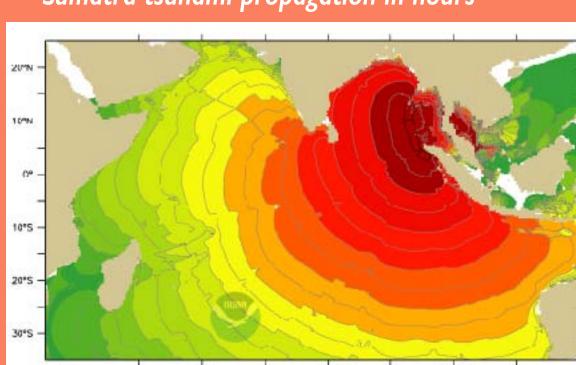
Of the most disastrous tsunami was the one caused by a marine earthquake rated 9 on the Richter's scale that swallowed the coastline of Natori (Honshu Island, Japan) on March 11th, 2011. The waves reached 7 meters in height, there are more than 11 000 reported casualties and 16 000 people are missing. It followed the most devastating tsunami recorded, that of Sumatra which was caused by the 9.2 of Richter's scale earthquake December 26, 2004, resulted in



A 1945 painting by W. Molino about the great 1923 Tokyo EQ and tsunami.

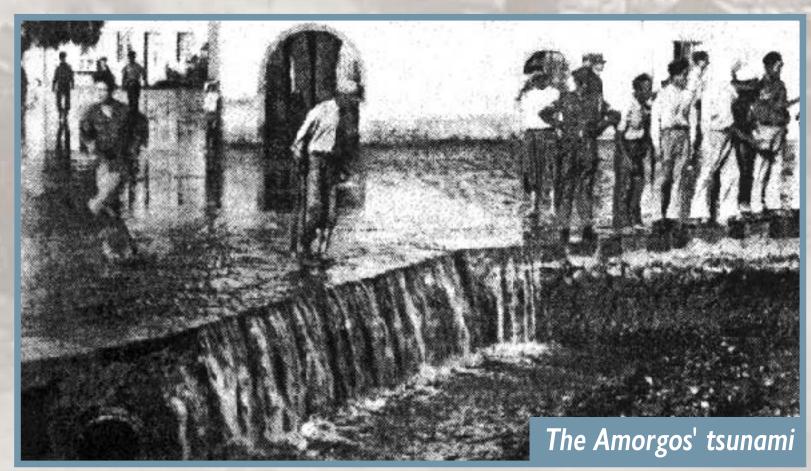
Sumatra tsunami propagation in hours

more than 150.000 deaths.





9 July 1956: The best documented and most recent tsunamigenic earthquake in the Aegean Sea is the one that occurred near the south-west coast of the island of Amorgos, killing 53 people, injuring 100 and destroy-ing hundreds of houses. The waves were particu-



larly high on the south coast of Amorgos and on the north coast of the island of Astypalaea. At these two places, the reported heights of the tsunami were 25 and 20 m, respectively.

I November 1755: The Portuguese capital of Lisbon and its inhabitants were particularly badly hit by an earthquake that occurred in the eastern

Atlantic Ocean. Two thirds of the city was de-stroyed from resulting fires. The people seeking refuge from the flames on the banks of the Tejo River were surprised by huge flood waves produced by the earthquake. Approximately 60.000 people lost their lives.



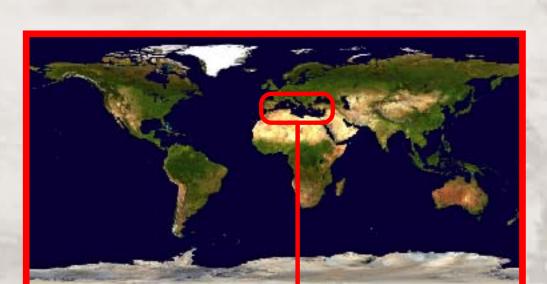
365 AD: The quake of 8,2 in Richter scalecaused heavy destruction on the whole of Crete and eastern Mediterranean. The tsunami that followed destroyed completely coastal regions as far as Middle East, Egypt and eastern Sicily. Records indicate that 50 000 people lost their lives in Alexandria.

The tsunamis of the Mediterranean

Tsunamis can occur in Mediterranean area due to plate convergence and related marine earthquakes.

bigger as water gets shallower

On average, one disastrous tsunami takes place in the Mediterranean region every century. Greece and southern Italy are mostly affected.

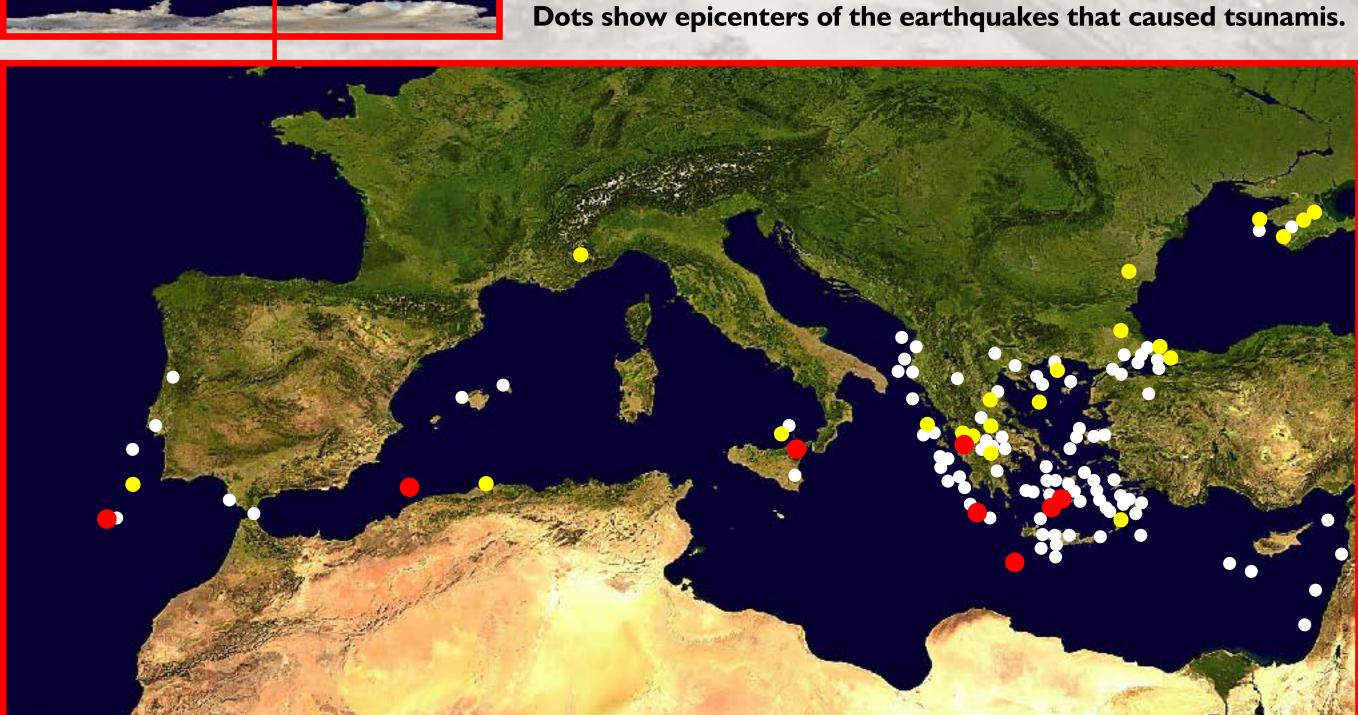


Historical occurrences in the

Mediterranean

Serious Moderat





Geological research and historical records report many powerful tsunamis

that have taken the lives of thousands of people over the ages. 30 12 2002 Stromboli Volcano tsunami - Aeolian islands (Sicily)

During a phase of intense eruptive activity of Stromboli volcano, in the North of Sicily, a massive landslide both sub aerial and submarine in the North Western flank occurred. The detachment of about 20 million cubic meters of material generated a tsunami that in a few minutes reached 11 meters height wave.

December 1908, Messina earthquakes tsunami (Sicily - Southern Italy)

The Messina earthquake, occurred on 28th of December 1908, is one of the strongest earthquakes occurred in Italy, causing 60,000 victims in total. A strong



tsunami originated in the Strait of Messina, causing serious damage and about a thousand victims. Fluctuations in sea level lasted many hours. The maximum wave height was from 11 up to 13 meters .The tsunami affected the whole eastern coast of Sicily and also spread to Malta where a wave of about 1 meter arrived.

