

O8-1**TSUNAMIS ALONG THE COASTS OF THE BLACK SEA****YILDIZ ALTINOK**

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It is well known that the majority of Mediterranean tsunamis occur in the eastern Mediterranean. In studies of eastern Mediterranean tsunamis, Black Sea tsunamis are also mentioned. But the data on these tsunamis are incomplete. Most of the information on this subject is for the 20th century. The first historical document about the Black Sea records a tsunami as early as the 1st century BC. The Armenian chronicler Mowes Khorenatsi (410-491AD) mentioned a sudden flooding of the southern shores of the Black Sea back in the legendary times (Nikonov, 1997b). The Byzantine chronicler Theophanes (760-818AD) reports that "In this year (544/545) the sea advanced on Thrace by four miles (6 km) and covered it in the territories of Odessus and Dionysopolis and also Aphrodisium. Many were drowned in the waters. By God's command the sea then retreated to its own place" (Guidoboni et al., 1994).

When we look at the geographical distribution of Black Sea tsunamis, most tsunami reports center on the Crimea. The first such reports for Crimea refers to the 2nd century AD (103). During this tsunami which occurred along the Sevastopol Bay, the sea first receded up to 0.5 km then returned. In the present century, the tsunami related to the earthquake of September 11, 1927 ($M = 6.8 \pm 0.1$) affected southern Crimea.

The tsunamis generated on the eastern part of Black Sea are also important. One of the first documents on these is from 20AD \pm 20. It records that the tsunami associated with an $M \geq 6.5$ earthquake affected the gulf of Sukhumi; the sea rose up more than 2.5 m. The tsunamis during the earthquake of October 4, 1905 ($M=5.1\pm 0.7$) affected Anapa. In the same place, according to the records of 8 stations, another tsunami during the earthquake of July 12, 1966 ($M = 5.8 \pm 0.5$) resulted in some changes of sea level (Nikonov, 1997a).

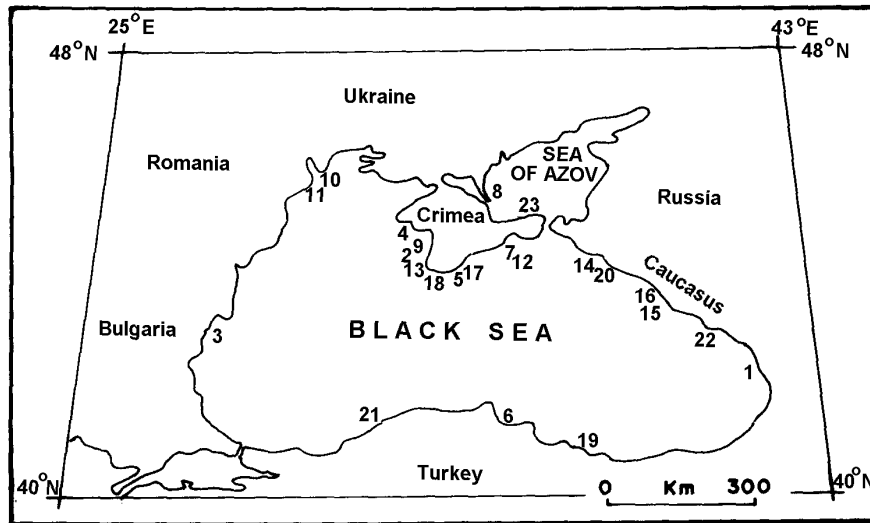
Up to now, there have been 3 tsunamis reported along the Black Sea coasts of Turkey. These were the Black Sea Tsunami of 1598, the Fatsa Tsunami of 1939 and the Amasra Tsunami of 1968 (Altinok and Ersoy, 1998). It is known that a tsunami in 1598 in the gulf between Sinop and Samsun connected with the Amasya-Corum Earthquake, advanced the sea for a mile (1.6km) inland on the coast of the Black Sea and drowned many people (Ambraseys and Finkel, 1995). On December 26/27, 1939, during the Erzincan Earthquake ($M_S=8.0$), in Fatsa the sea receded 50 m and after a while the sea returned 20 m inland from the coast (Parejas et al., 1942). The initial rise of sea level was recorded at 6 tidal stations on the northern coast of the Black Sea (Murty, 1977). Wedding (1968) stated that the sea inundated 100 m in Amasra and after the second wave advanced about 50-60 m from the shore during the Bartin Earthquake ($M_S=6.6$) on September 3, 1968. Ranguelov (1996) describes the rise of the sea to be about 3 m in Amasra.

Tsunamis were also observed in the Sea of Azov, connected to the Black Sea. The first information is for the year 1650. The geological traces of the tsunami, which generated during on $M=7\pm 0.5$ earthquake, were found in Sevastopol Bay. More recently there has been a 40 cm rise on the coast of the Sea of Azov on August 2, 1990 (Nikonov, 1997a).

More than 20 tsunamis have so far been observed in the Black Sea. Nikonov (1997a, citing Grigorash and Korneva, 1972) stated that the wave length in the Black Sea was 45-110 m, the velocity of travel was 120-140 km/h and the time of travel from one coast to the other was 10 to 110 minutes.

When sufficient data can be compiled for the Black Sea, necessary precautions could be taken against tsunami hazards.

Locations of tsunamis in the Black Sea with chronological order.



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