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Research on tsunami traces on Marmara Island, Sea of Marmara, Turkey

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Marmara Island (Proconnesus) is located on the south of the northern branch of the North Anatolian Fault Zone (NAFZ) and to the west of the Marmara Sea. The island is the largest of the Marmara island group (others being Paşalimani, Koyun, Avsa, Ekinlik) and has a landmass of 117 km2. Earthquakes that occur in and around the Marmara Island are of medium sized and shallow depth. We have information that some of these earthquakes have triggered tsunamis. During the earthquakes dated 1265 and 1935 known as the Marmara Island earthquakes, observational data such as tumbling rocks and abnormal sea waves have necessitated an investigation into the tsunami potential of the island (Altinok and Alpar, 2006). It is for this reason that paleotsunami studies have been conducted on the northern coast. Four separate locations in the study field were investigated and due to the frequency of steep hills in the area, Viranköy (Location 4) was picked as the most suitable. Nine trenches were dug in the location; however the selection of appropriate samples was hindered due to the high level of underground water. The age of the core sample obtained from a trench 42 m away from the coast and 0.93 m deep was determined using Optically Stimulated Luminescence (OSL) Method. According to the OSL results, the age of the sample was determined to be between 1300-400 BC. If we are to relate this with the data on historical earthquakes in the region, we concurred that the age of the sample overlaps with the 427 BC / 399-395 BC Marmara Ereglisi (Perinthus) earthquake whose tsunami information we lack. However, there is significant amount of data missing on this earthquake therefore further detailed studies are required. This work was supported by Scientific Research Projects Coordination Unit of Istanbul University Project number 6384.