



Soil-Earthquake Interactions in Buyukada/ Prinkipo (Istanbul)

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As the largest one of the nine islands comprising the Princes' Islands in the Marmara Sea, close to Istanbul, Buyukada ("Large Isle") consist of with an area of 5.46 km². The main factor controlling the earthquake hazard for Istanbul is a complex fault system, i.e. the North Anatolian Fault zone, which in the Marmara Sea region. Recent geophysical studies have carried out that this hazard is mainly associated within two active seismogenic areas: the Central Marmara Basin and the Adalar Fault zone, located about 15-30 km south-west and south of Istanbul. Earthquake ground motion affects the structures via the state of the soils. There are several historical buildings on Buyukada, such as the Ayia Yorgi Church and Monastery dating back to the sixth century, the Ayios Dimitrios Church, and the Hamidiye Mosque built by Abdul Hamid II and Greek Orphanage, a huge wooden building etc. The soils and buildings with characteristics of earthquakes could be caused an earthquake damage / loss. One of the most important factors in reducing the earthquake risk in urban areas due to the earthquake ground motion is to estimate ground motion level with interaction of soils. When we look at the geological structure of Buyukada, Paleozoic unites and alluvial deposit are located. Site response of alluvial deposits in Buyukada is also important for the behavior during an earthquake. Geophysical study in the study area in order to estimate the behavior of soils is carried out to obtain the dominant period (microtremor measurements) and shear wave velocity (MASW - MAM measurements) data. Soil geophysical results is input to earthquake motion for bedrock sites, and is important to the interaction with the ground movement and the soils to estimate Buyukada's earthquake ground motion. In the earthquake-soil interaction, spectral acceleration is an important criterion. In this study, spectral acceleration are also estimated for ground motion level in Princes' Islands by using several approaches.