



The Recent Seismic Activity and Faulting System in Southern Marmara Region

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The North Anatolian Fault Zone (NAFZ) and its branches are the most active tectonic system in the Marmara Region of Turkey. Its northern part is dominated by the northern branch of the NAFZ and the southern branch of the fault is dominated throughout the southern Marmara Sea. This region is characterized by the normal and oblique slip E–W-trending faults and shows evidence of spatial and temporal partitioning of deformation. According to the previous research, the slip rate of the southern strand of NAFZ is less than the northern strand and having the moderate size earthquakes. The recent moderate size earthquakes occurred at the Gulf of Gemlik and north of Manyas Lake show that new seismic activity associated with the southern strand of NAFZ. An earthquake with magnitude 5.2 occurred in Manyas Lake at October 20, 2006 and another earthquake with magnitude 5.3 occurred in gulf of Gemlik October 24, 2006. Both moderate earthquakes are well recorded at regional distance due to recent deployments of broadband station in Turkey by Kandilli Observatory. The analysis of these regional earthquakes provides useful information to better characterize the geology and seismotectonics of the Marmara Region. These events and their aftershocks have been analyzed by this study and the solutions and the sequences of aftershocks of both events have been correlated with faulting frame of the region. The observed solutions for Gemlik event, shows NW-SE oriented strike-slip faulting. The aftershocks determination occurring by this event also aligns in the north-west directions in accordance with the mainshock mechanism.