

THE 24 OCTOBER 2006 GEMLIK (TURKEY) EARTHQUAKE (M=5.2)

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ABSTRACT: *Gemlik is one of the major town in the eastern Marmara region with large industrial areas. The population is around 75,000 and the town is located just on the southern branch of the North Anatolian Fault Zone (NAFZ) known as Iznik-Mekece fault. The Iznik-Mekece fault seems to be very quiet and did not produce even moderate earthquakes for a long time. For this reason, the 24 October 2006 Gemlik earthquake (M=5.2) is very important for the region. The earthquake occurred offshore of Gemlik at the local time 17:00 and did not cause human losses. Some cracks were observed in weak buildings. The earthquake and its aftershocks were well recorded by the Armutlu Network, which has been installed by the Kocaeli University (Turkey) and the GeoForschungsZentrum Potsdam (Germany) in the second half of 2005. This network consists of 22 seismic stations and azimuthal coverage of the network is better than other networks in the Marmara Region for this event. We calculated focal mechanism of the main shock by using moment tensor inversion, and by using first polarities and composite fault plane solutions for smaller aftershocks. The right lateral strike-slip mechanism (strike 14, dip 71, rake -12) of the Gemlik earthquake is consistent with the general characteristic of the Iznik-Mekece fault. Aftershocks are located within a N-S oriented rectangle with a width and length of 5 km and 10 km, respectively. This indicates that the N-S fault plane was ruptured rather than the E-W as could be expected from the general tectonics of the NAFZ. All aftershocks occurred at shallow depths of approximately 10 km. Focal mechanism solutions of smaller and moderate aftershocks have different type of mechanism. Recent seismic profiles and tectonic information of Armutlu peninsula show that the tectonic feature of this region is very complicated. The detailed analysis of the mainshock and as well as all recorded microearthquakes should be studied very carefully and we believe that these events can improve our understanding of the present day seismotectonics of this region.*