

Magnetotelluric imaging of western part of the North Anatolian Fault Zone

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Magnetotelluric (MT) surveys were carried out to investigate the deep resistivity structure in the western part of the North Anatolian Fault Zone (NAFZ), which was subject to a major rupture during the 17th August 1999, Izmit Earthquake. The geology of the study area is very complex since it is positioned between the two branches of the North Anatolian Fault. MT is preferred as a method for investigating the crustal structure of the fault zone, because it is an efficient method for detecting the presence of fluid in a media by monitoring the resistivity. Recent observations state that there is high correlation between the earthquakes and fluids.

Two-dimensional inversions were performed in four profiles by using the code developed by Ogawa and Uchida (1996). The frequency range for the inversions is between 240 Hz and 0.0005 Hz, which is enough to resolve upper-crust structures. The results show that the area is getting more conductive approaching west. The aftershocks tend to occur on the highly resistive areas around the mainshock hypocenter. On the western profiles, on the other hand, aftershocks are occurring in relatively conductive areas. This property of the fault may be related to the heterogeneity of the fault. Here, in this poster presentation we are showing two-dimensional inversion models of two profiles.