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Recent Crustal Movements and Results of Studies on The North Anatolion Fault System

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Geodetic methods of repeated determination of position serve as the source of information on movements at the Earth's surface. Geodetic observations have been performed by Bogazici University, Kandilli Observatory and Earthquake Research Institute, Geodesy Department for monitoring both local and regional crustal movements by establishing microgeodetic networks on the North Anatolian Fault Zone (NAFZ). At the western NAFZ, 3 microgeodetic networks with 27 points were established in 1990 and have been observed by geodetic terrestrial methods with the combination of space geodetic techniques. Also at the eastern NAFZ (on Karliova triple juction area), a 16 point-geodetic network, which covers 350x200 km square in size and 7 administrative provinces, was established in 2003, and 3 GPS campaigns were performed so far. These geodetic networks were designed to provide optimal GPS observations during the measurement campaigns. Repeated GPS campaigns in the regions are used for local scale monitoring of strain accumulation along faults by analysing relative displacement of the stations to detect potential earthquake activity. Seismic hazard for the cities around these regions is extremely high because of the region's tectonics. Both study areas are pointed out seismic gaps on the NAFZ. The active fault pattern of the east region indicates that maximum crustal shortening and crustal deformation in Turkey takes place in this region. And the Yedisu segment of the eastern NAF has not been broken entirely since the 1784 earthquake. Studies performed and results obtained from these geodetic observations are presented.