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Investigation of Crustal Deformation in Eastern Turkey Using InSAR

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The North Anatolian Fault Zone (NAFZ) is one of the world's most seismically active structures. Although the eastern part of NAFZ has high seismic hazard, there is a lack of geodetic information about the present tectonics of this region. In order to investigate contemporary neotectonic deformation on the eastern NAFZ and in its neighborhood, a relatively dense Global Positioning System (GPS) monitoring network was established in 2003. Geodetic observations were performed in three GPS campaigns in an area of 350km$\times$200km with 12-month intervals. Since this region includes the intersection of the NAFZ and the East Anatolian Fault Zone (EAFZ), deformation is complex and estimating seismic hazard is difficult. One important segment is the Yedisu segment and it has not broken since the 1784 earthquake. GPS-derived velocities relative to Eurasia are in the range of 16–24 mm/year, which are consistent with the regional tectonics. Now we go for the next step of detecting changes in Earth's crust and mapping surface deformation using InSAR on our study area. Geographical and logistical problems make performing scientific research in this area difficult. We use radar interferometry to make surface deformation maps, to study the earthquake cycle and to investigate the future seismic hazard for this area.