



Tectonic Studies in Turkey Using CORS-TR Observations

Kamil Eren (1), Turgut Uzel (2), Engin Gulal (3), Ibrahim Tiryakioglu (4), Ahmet Anil Dindar (5), and Haluk Yilmaz (6)

(1) Turkey (keren@ags-group.com), (2) Turkey (t.uzel@iku.edu.tr), (3) Turkey (egulal@yildiz.edu.tr), (4) Turkey (itiryakioglu@aku.edu.tr), (5) Turkey (adindar@iku.edu.tr), (6) Turkey (hyilmaz@iku.edu.tr)

Continuously Operating Reference Stations, called CORS-TR, were established in Turkey during 2006-2009. This network, which consists of 147 stations, is now serving surveying and mapping community for real time and post positioning. In addition, this network is serving scientific community for the studies related to plate tectonics, crustal deformations, earthquake engineering and atmospheric research.

One of the scientific applications of CORS-TR is the studies of tectonic movements. We exhibit here the versatility of the space based monitoring systems and their immediate use in Turkey where the active fault lines and surface deformations (subsidence) exist. The data collected during November 2009 – February 2011 are being processed using the GAMIT/GLOBK program. The results, which have already represented the motion of the Anatolian plate with respect to the Eurasian plate, are being presented and analyzed in this paper. According to the initial results using the data collected during the first 11 months of 2010 indicate that the maximum displacement estimated is 19.9 mm/year (southwest direction) and 23.2 mm/year (northwest direction) at FINI and UDER stations, respectively. FINI is located in Antalya (southern Turkey), whereas UDER is located in Erzurum (north eastern Turkey). Keeping in mind that several researchers have commented that the Anatolian Plate has a slip rate of 24mm/year after studying many years of data, the good result from processing only 11 months of CORS-TR observations encourages the reliability, stability and effectiveness of such a young network.

This paper also discusses the future use of CORS-TR data together with InSAR techniques. Recently, Istanbul was selected as one of the Geohazard Super sites, which provide datasets derived from different sources and different disciplines, including InSAR data. This approach of using InSAR and other data provides the unique potential in making scientific steps in narrowing down the uncertainty of future disastrous events.