The Investigation of Halabjah/ Iraq Earthquakes Effects From Turkish National Permanent GNSS Network Data

Gokhan Baskan, Ismail Sanlioglu and Mustafa Zeybek (Turkey)

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SUMMARY

It is an important issue to determine the magnitudes and effects of earthquakes in order to engineering projects to continue their quality, service sustainable and safe. Therefore, studies on determination of crust and structural deformations have been increasing day by day. Especially, before the major engineering projects accomplish, the feasibility studies have great importance. Among the geodesic methods, GNSS technique, which is widely used, with high sensitivity positioning facilitates the monitoring of fault lines by applying deformation analysis. Thanks to the availability of highly accurate location data from the Continuous Observing Reference Stations (CORS), these data have been made available for pre and post processing analysis of the earthquake.

Turkey is prone to earthquakes. The much destractions have been occasion of the various earthquakes which have plagued Turkey. The East Anatolian Fault System (EAFS) is the second significant fault system in Turkey, afterwards the NorthAnatolian Fault System (NAFS). The EAFS has the potential to produce large earthquakes. Near the EAFS, Halabjah earthquake occurred on 12 November 2017 (M=7.3), 19.0 km depth. The Halabjah is near the Iran-Iraq border in 220 km northeast of Baghdad, Iraq. The earthquake was a result of the collision of the Arabian and Eurasian plates.The positional displacements results from this earthquake were estimated by using data from the Turkish National Permanent GNSS Network (TNPGN)

The purpose of this study is to determine the magnitude and direction of earthquake-induced displacements with the help of Global Navigational Satellite Systems (GNSS) at certain periods. Rinex data obtained from TNPGN-active stations were evaluated and the results are presented . The data of the TNPGN-active stations, in particular southeastern of Turkey, near the Halabjah/ Iraq were analyzed 5 days before and after the earthquake to determine co-seismic deformations.