



Analysis of Strain Rate during 24 May 2014 Gökçeada Earthquakes (NW Turkey) Using GPS/GNSS Surveys

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During the period 2004-2014, before the Mw 6.5 Gökçeada earthquake of 24 May 2014, Turkey was horizontally rotating counterclockwise and moves westwards relative to Euroasian. After the earthquake, in order to determine the magnitude of displacement of each GPS/GNSS station, the absolute GPS positioning technique needs to be employed rather than the relative GPS positioning technique. Large co-seismic horizontal displacements were determined in the northwest of Gökçeada center, while small displacements were observed in the central and southern parts of Çanakkale. The GPS/GNSS data obtained from the permanent IGS stations were used to monitor the post-seismic displacements. This study focuses on the use of GPS data, acquired in 2014, selected from 7 GPS stations located at Turkey and surrounding area to derive changes in the strain rate during Gökçeada earthquake. The used methodology and the movement velocities of GPS/GNSS stations obtained by GPS surveys were used to calculate strain rate tensor for each triangle. Here, they were statistically tested with 0.001 of significance level. The principal strain rates were calculated for the triangles with significant strain accumulation. The results from this study showed that earthquake's deformation in Gökçeada is dominated by a certain trending extension. The used approach can present the distribution of significant principal strain accumulation using the velocities of GPS/GNSS stations. It is critical knowledge for crustal deformations and provide identify the areas of earthquake hazards.

Keywords: GPS/GNSS, strain analysis, Gökçeada earthquake, deformation, Turkey