

GPS Study of N-S Trending Karaburun Belt (Turkey) and its E-W Trending Eastern Part

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SUMMARY

In the study area generally, there are N-S trending main faults and fault zones from Karaburun Peninsula through to the east. On the east of these faults, the characters of the tectonic elements rapidly turn to E-W trending basins after passing a certain border. Therefore, it can be thought that the kinematic of the area is affected by multiple influences. In order to investigate this kinematic structure in detail, episodic GPS campaigns were carried out in the area at 21 GPS stations in the years 2009, 2010 and 2011. GPS observations were processed by using GAMIT/GLOBK software. The computed displacements of the study area were analyzed with the relative Anatolian block fixed frame solutions and in these solutions it was pointed out that the velocity directions were generally towards S-SE. Finally, these solutions were presented with tectonic structures of the study area, therefore, the borders of the N-S trending main faults and fault zones were determined and at the east, the initial border of the E-W trending basins was defined by noticing the changes of the GPS velocity directions. In particular, the non-uniformity of the fault zones were monitored in the Anatolian block fixed solutions. These results were examined with the earthquakes occurred in the study area since 1973. It was identified that the seismicity was higher on the Karaburun belt and its surrounding respectively to the east part wherein the E-W trending tectonic elements located. The border which separates the seismicity differences is coherent with the velocity direction changing border of GPS vectors. Additionally, the orientation of the seismic activity and the trending of the tectonic structures at eastern part of Karaburun are figured out coherent with the GPS velocity directions.