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Deformation Revealed by GPS in Greater Caucasus, Azerbaijan

Shen et. al., 1996 method has been applied to the GPS measurements results in order to investigate crustal deformation of the Azerbaijan and surrounding areas. Compression observed along the Greater Caucasus, Gobustan, Kura depression, Nakhchivan and the border areas with Iran. Compression axis show that reduction of the Earth's crust in the Greater Caucasus happens towards N-NE direction. The maximum value of the strain rate of about 200 × 10-9 per year was observed in the area between GPS points KHID and SHIK and here compression axis sharply changes direction to the SW-NE. Extension zones are observed in the small Caucasus: in Gedebey, Shusha areas and in the area located between the GPS measurement points DAMO and the PIRM in Iran, where the dilatation rate reaches 100 ×10-9 per year. The zone of the epicenters of strong earthquakes is correlated to the gradient zone in the crustal strain rates. The analysis of GPS data for the territory of Azerbaijan and neighboring countries reveals the heterogeneous patterns of strain field in the region. The increase in the number of continuous GPS stations would promote increasing the degree of detail in the reconstructions of the deformation field and identifying the microplate boundaries.

Primary author: SAFAROV, Rafig (Institute of Geology and Geophysics, Azerbaijan National Academy of Sciences)

Presenter: SAFAROV, Rafig (Institute of Geology and Geophysics, Azerbaijan National Academy of Sciences)

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