

# Distribution of contemporary Earth surface's 2D strain tensor in Pamir and Tien-Shan computed by triplets of GPS-observation points

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Based on catalogue of velocities of Central Asian GPS network's observation points we computed a distribution of values of contemporary 2D strain tensor of Earth surface for most part of Pamir and its neighbor tectonic formations and also for parts of Central and Western Tien-Shan. The velocity catalogue was gained as the result of processing data from many years of GPS observations conducted in the framework of field expeditions by Research station of Russian Academy of Sciences in Bishkek.

The computation of Earth crust strain was done with two different approaches: (1) using distance decaying constant to get smooth distribution and (2) using data from sets of three or four neighbor GPS points for computation of each single strain tensor value (triangulation). Then we compared results of these two approaches.

By matching the results of computations against maps of regional faults and tectonic structures we mark out the most tectonically active areas and describe types of contemporary surface deformations within them:

- (\* Main Pamir Thrust – transversal shortening with moderate right lateral shift;
- (\* Karakul graben on Pamir – transversal extension;
- (\* Normal faults in Kongur-Shan (East Pamir Pull-apart) – transversal extension in their northern part;
- (\* Central and eastern parts of Tajik Depression – latitudinal shortening;
- (\* Zone of conjunction between Tajik Depression and Gissar ridge – presumably right lateral shift;
- (\* Naryn basin – transversal shortening;
- (\* Area around Toktogul water storage reservoir – longitudinal shortening;
- (\* Suusamyr basin – longitudinal shortening;
- (\* Jungal and Kochkor basins – shortening along north-north-west direction;
- (\* Chu basin – two latitudinally-elongated zones of longitudinal shortening.