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Neotectonics of the Pamir.

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We present a new map of the neotectonic activity in Pamir, building on Soviet-time maps and reports that give an overview of the Recent deformation in this region. Our new data stem from tectonic geomorphologic analysis employing remote sensing techniques, which are backed up by field measurements and terrace dating. We developed tools to simplify and automatize the extraction of morphological parameters from remote sensing data (TecDEM Matlab toolbox; Shahzad & Gloaguen, Computer and Geosciences). We infer the intensity of deformation from its influence on the reorganization of the drainage system. In situ observations and remote sensing investigations like river offsets and morphological signatures allow us to derive the sense of movements along the major structures. Rates are locally measured using cosmogenic isotopes and optically stimulated luminescence. We focus on Quaternary to present deformation.

Our results show that the southeastern edge of Pamir is dominated by SE-trending dextral faults propagating northward from the Karakorum fault. The northeastern edge is characterized by normal faulting in the Kongur Shan with complex interactions with oblique slip faults, like the Markansu fault. The northern margin is mainly affect by ca. E-trending thrusts with the Main Pamir Thrust being the most active. The western margin of the Pamir is most complex: the sinistral Darvaz fault is little expressed, in comparison to its role in tectonics models and as expected from the few available geodetic data. It seems to be the most prominent feature of a series of faults (e.g. Badarshan fault), merging with the Herat-Chaman system in Afghanistan. The central Pamir is affected by a series of NNE-trending extensional basins with associated oblique normal faults, cutting the plateau in two parts and determining the topographic contrasts in this part of the Pamir plateau. Our preliminary results indicate local uplift rates of ca. 4 mm/yr in southwestern Pamir, locally reaching 6-8 mm/yr.