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# Correlation between active deformations in the crust and upper mantle of Mongolia-Siberia mobile area

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We analyzed the degree of vertical coherention of the deformations on different levels of the earth crust and upper mantle in Mongolia-Siberia mobile area and surroundings using several strain indicators:
- direction of the elongation axes of GPS derived horizontal strain field (Lukhnev et al., in press);
- direction of SHmin of the present-day stress-tensors, calculating using earthquake focal mechanisms data;
- direction of SHmin of the Late Cenozoic stress tensors, reconstructing using microtectonic data (383 tensors);
- direction of upper mantle anisotropy (), deduced from SKS splitting (Gao et al., 1994, 1997; Dricker et al., 2002; Oreshin et al., 2002; Barruol et al., 2008).
The first two parameters can be considered as indicators of short term deformation and the last two – as indicators of long term one. We exclude the directions of mantle anisotropy which are interpreted as ancient PR and PZ structures influence.
We part the area under study on western (Tuva, Western Mongolia) and eastern (South Siberian platform, Baikal rift system, Central Mongolia) main divisions. The data show that the peak of SHmin direction of the Late Cenozoic stress tensors within western division is about N285ºW which is in consistent with the mean direction of mantle anisotropy. The tendency of the mantle anisotropy direction changing from sublatitudinal in the west of the division to NW-SE in the east should be underlined. The main directions of elongation axes and SHmin of present-day stress field are very similar (about N310ºW).
Within eastern division the main direction of SHmin of the Late Cenozoic stress field varies from WNW-SSE (Tunka section of Baikal rift system) to NNW-SSE (NE part of Baikal rift system). The general direction of mantle anisotropy for most part of the structures, including South Siberian platform, is similar to mean SHmin direction of tectonic stress. The main directions of GPS derived elongation axes and SHmin of present-day stress field are close to azimuth N310ºW. Local deviations of  in Goby Altay range and Hangay dome are in agreement with deviations of crustal deformation parameters.
We can conclude that in every case active deformation in the crust correlates with deformation in the upper mantle. The most probable origin of both crustal and upper mantle deformations is the influence of mantle flow drag on the basis of the lithosphere and its interaction with NNE compression forces from India-North Eurasia convergence.