



Cenozoic crustal state of stress of Mongolia

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The territory of Mongolia is a good example of wide variety of tectonic regimes in space. The paleo- and present-day stress reconstructions from the microfault slip data and earthquake focal mechanisms data and active faulting investigations allow us to determine the sequence of deformation types at formation of the recent structures. We have used the TENSOR program for stress-tensors determination and separation and stress regimes classification proposed by D. Dalvaux (Dalvaux et al., 1997).

Within studied area we recognize several domains and sub-domains distinguished on the basis of main structural and deformation features. The transtension Darkhat-Hovsgol domain in North Mongolia is a part of Baikal rift system. In the south it bordered by North Hangay strike-slip domain which can be divided on three parts: Khan-Khukhey (transpression), Bolnay (strike-slip) and Selenga (transtension) sub-domains. The well known Mongolian Altay and Goby Altay transpression domains we complete by Goby transpression domain in the east. Two mosaic domains Khentii and Hangay were distinguished. Both domains include extension, transtension and transpression sub-domains and based on dome-like uplifts.

With regard to space evolution of paleo- and present-day stress of state on Mongolia we reveal as follow:

- the fan-like reorientation of SH axis from submeridional in the west to NE and ENE in the east with some exceptions;
- the replacement of the NE transpression in the west by strike-slip and transtension in the east along North Hangay fault zone for northern part of the territory;
- the increasing of the role of transtension condition from the south to the north.

With regard to state of stress temporal evolution we consider the expansion of transpression conditions from the south to the north during Pliocene-Quaternary. It is shown on the examples of deformation styles evolution in North Mongolian rift basins and Basin of Lakes in Hangay - Goby Altay intermediate zone. The evolution of state of stress within Goby domain from Early Cenozoic submeridional transpression to present-day strike-slip regime with ENE compression axes is not yet well founded because of lack of stratigraphy data.

The interaction of three main driving forces can explain of space-time state of stress evolution in Mongolia during Cenozoic: (1) the friction forces on the base of lithosphere from NW-SE asthenospheric flow, (2) NE compression caused by Hindustan and Eurasia convergence and (3) buoyancy forces from local mantle anomalies.