



The Pleistocene glaciations as evidences of the rejuvenation of the Altai Mountains Province in direction opposite to the propagation of the deformation related to India-Eurasia collision

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The Altai mountain province is the northern part of Central-Asia collision belt and is bordered by the West Siberian plate on the north. Altai stretches out more than 1500 km from south-east to north-west and widens from 50 up to 500 km in this direction. The Altai neotectonic uplift formation is usually connected with India-Eurasia collision. The more young age (3-5 million years.) of this mountain province in comparison with Himalaya (20 million years) and Tien Shan (7-11 million years) is explained by its location on much longer distance from India intender (De Grave et al, 2007). By now the Altai neotectonic structure is studied mainly on the basis of morphotectonic analysis and analysis of sediment fillings of intermontane depressions and piedmont plains. However the analysis of surface processes (exogenous processes) can provide important information about the magnitudes, directions, rates and ages of tectonic movements within a mountain province.

With this relation we study the distribution and extension of the Pleistocene glaciations within Altai Cenozoic uplift. The mountain glaciations depend mainly on climate variations and tectonic movements – mainly the increasing of ridges altitudes. To reveal the tectonic factor of glaciations in Altai Mountains first of all we analyze the complicated regional climatic zonality. The main feature of this zonality is aridity strengthening in both southern and eastern directions. Then we compare the extension and distribution of each glaciation, altitudes, interrelation and positional relationship of moraines and troughs of different ages, interglacial and glacial deepening of the valleys. All these allow us to mark the areas with different interrelation between extension of the middle- and the late- Pleistocene glaciations. And finally we analyze and compare marked areas using such morphostructural characteristics of the Altai neotectonic uplift as altitudes of base level of orogen and peneplain remnants and magnitudes of relative vertical displacement of tectonic blocks in scale of mountain ranges and intermontane depressions.

This investigation revealed the varied tectonic movements within Altai Mountains Province. Obtained results are evidenced of consecutive increasing of mountain range altitudes from south-eastern part of Russian Altai to Gobi Altai where due to later uplift glaciation appeared just only in the late Pleistocene in spite of arid climate.

These data according with the simplification of neotectonic structure of the Altai uplift and rejuvenation of sediment fillings of intermontane depressions in south-eastern direction argue for the rejuvenation of orogenic movements within Altai Mountains in the direction which is opposite to the propagation of the deformation related to India-Eurasia collision. This phenomenon can be explained on the basis of tectonic wave concept as the reflection of tectonic deformation wave from Western Siberia plate which cause following consecutive uplifting of southern mobile areas clamped between Djungar and Tuva-Mongolian microplates.

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