

Geodynamics of Kazakhstan Lithosphere in the Paleozoic

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The geodynamic model is based on data on deep structure of the lithosphere, available by methods of deep seismic sounding, magnetotelluric sounding and seismic tomography up to a depth of 300 km. Pre-Permian blocks of continental plates being submerged to multiple granitization, are underlain with the depleted mantle, which is characterized by high electrical resistance (1000 ohm·m). Blocks which were undergone to destruction with formation of basaltic magmatism are underlain with the undepleted mantle with low electrical resistance (50 ohm·m). Upwelling plumes, pockets of squeezed plates, zones of napping and deep faults were observed in the lateral direction within the mantle. On this base, interactions of continental and paleo-oceanic plates were examined and intraplate and interplate structures were characterized.

Kazakhstan- Jungar continental plate in V-O₂ was moved to the northwest up to the distance of 700 km, moving above two satellites of the mantle plume. Four ovate - cell megastructures of the Earth crust «burning out» with zones of dispersed spreading in the center and with terrestrial volcanic belts at the peripheries were formed. The Shu-Ili-Ermentau paleo-ocean was divided by moving plate during O₂₋₃, the northern part of the Issykkul -Moiynkum plate was moved to the west and the Kokshetau concentric-zonal terrane, formed by plume-tectonic processes, was attached to its linear structures.

The Chingiz-Tarbagatai microcontinent and Irtysh-Zaisan paleo-oceanic plate, located in the rear of moving Kazakhstan-Jungar plate, were undergone, accordingly, to rifting and growth of the oceanic crust. Ore Altai was developing in the regime of passive continental margin. Their geodynamic regime was changed drastically during Famennian due to the thrusting of the Gornyi Altai plate from the East. The Irtysh and Gornostayev-Charsk Benioff zones and island arcs were formed. During Late Paleozoic the paleo-ocean was closing. The compression and sharp bend to the southeast of the Irtysh-Zaisan structures and complete cutting of the Chingiz-Tarbagatai

belt occurring under influence of the Gornyi Altai plate. The Ermentau-Niyaz collisional belt was formed under three direction compression.