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Western Central Asian Transregional structure

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This paper deals the results of comprehensive analysis of the geological and geophysical data on the territory of Western Central Asian regions – Uzbekistan and Kyrgyzstan, using GIS&RS methodic, which show in the spatial interrelations between the peculiarities of the tectonic structures of the region and geodynamical processes occurring there. Deciphering of structural units of Western Central Asia territory using SRTM (30' and 3') images allows us to reveal regional, deep strike-slip fault, extending in latitudinal direction over Uzbekistan territory and neighboring countries. This included the series of deep faults – Central Kyzylkum, North Nurata, South Ferghana, Atbashi-Inylchek , which are joint at acute angles into a single global structure that academician I.Kh.Khamrabaev called "Central Asian Transregional lineament". It stretches for more than 2000 km of Sultanuvais mountains (Karakalpakstan), through Kyzylkums and Nurata mountains (Uzbekistan), Turkestan-Alay and Atbashi-Inylchek ranges (Kyrgyzstan), to Chinese border with possible extension along the Chinese Tien-Shan. This continental-sized structure is multisutured long-term, and in the join nodes of some portions it is complicated with deep fault zones of "Anti Tien-Shan" trend. The faults of meridional direction (Urusai, Kokpatas-Tamdyn and etc.) are widespread in the western part of lineament, as it goes eastwards. For instance, on the territory of Kyrgyzstan it is a series of faults of mainly north-western spreading: Talas-Ferghana, Barsken, Orgocher and etc.
Some of these structural discontinuities are poorly expressed in surface geology, but can be detected by remote sensed methods (RS), as well as by the magnetic and gravity anomalies. This study was made with complex geophysical and geological observations by the DSS-MOVZ profiles, that cross Uzbekistan and Kyrgyzstan and revealed a number of features, which are characteristic of the upper mantle rocks, related to morphology of bodies, their physical properties, consisting mainly in their contrasting values for contiguous blocks, and general increased velocity and density of the rocks they contain.
The main objective of GIS&RS model was to associate the surface indicators as geological, geophysical and tectonic base of data with the purpose to identify the occurrence special geoobjects of economic interest. The following deposits are situated in such transregional strike-slip fault zone: the largest in Eurasia Muruntau gold deposit (Uzbekistan), a large deposit Kumtor (Kyrgyzstan), and the gigantic class deposit – Ashi in China. The alteration zones of strike-slip fault and the circular structures related to the cones and calderas determined in our GIS&RS model and checked by group truth studies may be target areas to explore for some new ore deposits. As a results, our investigations envelops more than 10 mineral deposits of such kind bearing Au, Ag, Pt, U, rare earth elements and diamonds.