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# Integrated geophysical GIS&RS model of the Amu Darya basin in Western Uzbekistan

I. Sidorova
Uzbekistan (sidoirina@yahoo.com)

An integrated approach has been applied to reveal the deep lithospheric structures of Amu Darya basin in Uzbekistan. The created GIS&RS models show the spatial interrelations between the peculiarities of the crustal structures associated with post-Permo-Triassic sedimentary basins and orogenic areas of the region and the geodynamic processes occurring there. Some of these structural discontinuities are poorly expressed in surface geology, but can be detected by remote sensed methods, as well as by magnetic and gravity anomalies. This study was made with complex deep seismic sounding profiles, 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 contain. The cross-section zonality by geophysical and RS data caused by presence of hidden long-living basement faults of the northeast direction alongside with longitudinal zonality, caused by sublatitudinal orientation of main structures in Southern Tien-Shan and Gissar spurs plays important role in tectonics and genesis ore and oil-gas deposits of the given region. Mapping of these zones helps select new ways in the search for mineral deposit. Construction of the integrated model spatial database using ESRI ArcGIS and RS methodologies, combining (i) the 3-D digital elevation model (DEM) on the base of ASTER and SRTM space images; (ii) 3-D models of surfaces of basement and Moho from reinterpretations of the potential fields and DSS profiles; (iii) geological maps of Amu Darya basin; and (iv) borehole subsidence analysis information, integrating with the regional geophysical data.