

Evolution of the orogenic belt and basins in western Central Asia: regional geophysics in Uzbekistan

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Central Asia represents an unusually complicated collage of different aged tectonic blocks and zones both of accretion and collision character, with associated suture zones. This is dominated by Alpine deformation associated with the collision of India and Arabia, distributed in large belts running from the Caspian Sea to the Pamir and the Tien Shan range. North of this belt are the Turan and the South Kazakh platforms. The large area between the Caspian Sea and the Tien Shan/Pamir ranges is mainly covered by Upper Permian to Quaternary sedimentary successions. The most recent deformation of much of this area occurred in an intraplate setting. The underlying crustal architecture formed from Late Palaeozoic times. Thus, the tectonic evolution of the western Central Asia area, in which Uzbekistan lies central, is complex, includes several phases of basin opening and inversion, and probably of collisions of “blocks” with the Eurasian margin since the Late Palaeozoic. No integrated model of regional tectonic evolution integrating various types of data from the Late Palaeozoic to the Cenozoic has been proposed. Here, we present preliminary maps showing the crustal structure associated with post-Permo-Triassic sedimentary basins and intrabasinal areas in Uzbekistan, integrating all the available seismic, potential field, and magnetotelluric data. Paleothermal indicators and present-day heat flow measurements have also been compiled as well as a digital elevation model. The further aims of the DARIUS project include constraining the timing and style of the tectonic (extensional and inversion) events that have formed and deformed the sedimentary basins of western Central Asia, from (re)interpreting extant seismic reflection profiles and from borehole subsidence analysis and integrating these results with the regional geophysical data.