Japan Geoscience Union Meeting 2010
(May 23-28 2010 at Makuhari, Chiba, Japan)

SCG089-P04 Room:コンベンションホール Time: May 26 17:15-18:45

Evolution of the continental crust in Western Central Asia

Irina Sidorova[1*]

[1]Institute of Geology and Geophysics

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 this area evidently occurred in an intraplate setting. The present day Tien Shan mountains now lie more than 3000 km or more from the India-Eurasia plate boundary; they were within the Asian land mass when Indian-Asian collision began some 50 My ago. A similar situation holds for the Pamirs. The underlying crustal architecture formed from Late Palaeozoic times.
The present-day geology, including its numerous sedimentary basins and intervening uplifted areas including basement rocks, represents an intricate convolution of a series of crustal forming and deforming events from the Late Palaeozoic onwards. A general understanding of the regional tectonic and stratigraphic evolution of the area is not yet clearly established. The consensus is that Early to middle Palaeozoic orogenesis culminated with a Late Paleozoic final collision of microcontinents with Laurasia in the western Central Asia area, including, for example, the Karakum microcontinent in the case of Turan Plate and an unspecified continental entity in the case of the Scythian Plate (e.g. Zonenshain et al., 1990; Golonka, 2004; Thomas et al., 1999).
We propose the integrated model of regional tectonic evolution integrating various types of data from the Late Palaeozoic to the Cenozoic. Compilation of a general model of the crust and lithosphere of Uzbekistan (according to available information) from seismic, potential field, magneto-telluric and geothermal data and to interpret these in the context of their temporal and spatial development. Construction of a project spatial database using ESRI ArcGIS and RS methodologies, combining (i) a digital elevation model (DEM) on the base of ASTER space images ; (ii) 3-D models of basement and Moho from reinterpretations of potential field, DSS and magnetotelluric MT profiles; (iii) tables of existing tectonic, stratigraphic and geochronological data; (iv) geological maps; and (v) any other relevant geological information concerning the Late Palaeozoic to Present geological evolution of the western Central Asia region.

Keywords: crustal structure, continent, western Central Asia, accretion, collision, integrated model