

Paper Number: 1600

Tectonic map of Northern-Central-Eastern Asia: New conception, new scientific results, new perspectives

Petrov O.V., Pospelov I.I., Shokalsky S.P.

VSEGEI; 74 Spedny pr., St. Petersburg, Russia 199106; vsgdir@vsegei.ru

New “Tectonic Map of Northern-Central-Eastern Asia and Adjacent Areas at scale 1:2,500,000” [1] was compiled by Russian Geological Research Institute (Subcommission CGMW for Northern Eurasia) and Geological Institute, Russian Academy of Sciences, (Subcommission CGMW for Tectonic Maps) in the framework of the International project “3D Geological Structures and Metallogeny of Northern, Central and Eastern Asia” and published in September, 2014 by VSEGEI Printing House in St. Petersburg. In February 2015 the Explanatory Note to this map [2] has been published ibidem.

Tectonic map as well as Explanatory Note to it is the result of 12-years international collaboration of geological experts from Russia, China, Mongolia, Kazakhstan, and the Republic of Korea. This map also demonstrates tectonic structure of a number of Central Asian countries: Uzbekistan, Turkmenistan, Kyrgyzstan, Tajikistan, as well as the Korean People's Democratic Republic.

Structurally, the “Tectonic map of Northern-Central-Eastern Asia and Adjacent Areas” covers three major Eurasian tectonic domains. The Central Asian mobile belt (as a domain) is the axial structure of the map. On the map, it includes such regions and structures as the Urals, Kazakhstan, Tien Shan, Altay and Sayan Mountains, Trans-Baikal region, Mongolia, and overlying younger platforms and sedimentary basins (West Siberian, Turan, Junggar, Amur-Zeya, and northern part of Songliao). The Central Asian mobile belt is located between the largest and most ancient cratons of the Earth: East European, Siberian, North China and Tarim. On the south, the Central Asian mobile belt is constrained by the Tethyan domain including structures of the Pamir, Kunlun - Tibet - Himalayas and Indochina. The eastern Pacific domain covers the following folded regions: Verkhoyansk-Kolyma, Chukotka-Koryak, Kamchatka, Sakhalin, and Sikhote Alin Mountains as well as the South-East Coast fold zone of Southern China.

Axial position belongs to the Central Asian fold belt (in Russian part – to the Ural-Mongolian mobile belt), originated as a result of long-time (more than 400 Ma) evolution at the place of the Paleasian Ocean as a part of the Paleopacific Ocean. During evolution of the Paleasian Ocean, accretion processes prevailed over others when isolated cratons (paleocontinents) “accreted” by paleoceanic, paleo-island arc and others complexes, joined to the paleocontinental margins by the processes of subduction or obduction. Simultaneously, separated blocks with continental crust (microcontinents) of different origination were accreted – Paleo-Siberian, Cathasian, Laurentian and others. Repeated processes of accretion and destruction in the internal parts of the Paleasian Ocean (in the modern structure – in the central part of the Central Asian fold belt), presence of numerous continental blocks with different sizes (microcontinents), repeated redistribution of the structures and fragments of new-formed crust have determined the mosaic structures of Kazakhstan, Altay-Sayan area, Northern Mongolia and other regions.

“Tectonic Map of Northern-Central-Eastern Asia and Adjacent Areas, 1:2,500,000” now is the base for creation of another CGMW project – “International Tectonic map of Asia, 1:5,000,000 – ITMA-5000”.

References:

- [1] Tectonic map of Northern-Central-Eastern Asia and Adjacent Areas, 1:2,500,000 (2014). SPb: VSEGEI: 15 sheets
- [2] Tectonics of Northern, Central and Eastern Asia (2014). SPb: VSEGEI: 1-192.

