



Arctic-Asian Mobile Belt - Global Structure in the North, Central, and East Asia

Sergey Shokalsky (1), Oleg Petrov (1), Igor Pospelov (2), Sergey Kashubin (1), Nikolay Sobolev (1), and Evgeny Petrov (1)

(1) A.P. Karpinsky Russian Geological Research Institute (VSEGEI), Director General, Saint-Petersburg, Russian Federation (vsmdir@vsegei.ru, +78123215706), (2) GIN RAS

Over the last decade under the international project of five countries, the geological surveys of Russia, China, Kazakhstan, Mongolia, and the Republic of Korea, with the participation of national academies of sciences in these countries compiled a set of digital maps at 1:2.5 M scale. It includes geological, tectonic, metallogenic maps and map of energy resources with databases for North, Central, and East Asia, area of more than 30 million km². Map compilation was supervised by the Subcommittee for Northern Eurasia and Subcommittee for Tectonic Maps of the Commission for the Geological Map of the World under the auspices of UNESCO (CGMW). The set of maps was displayed at the 33rd IGC (Oslo, 2008) and 34th IGC (Brisbane, 2012).

One of the largest accretion collages of orogenic belts of different ages on the planet (from the Neoproterozoic to Early Mesozoic) is clearly shown in the tectonic map compiled under the joint project. Extended polychronous mobile belt is bounded in the west by the East European Craton, in the east, by the Siberian Craton, in the south, by a chain of Gondwana cratonic blocks - North China, Tarim, Tajik. In the north it can be traced as a broad band within the Circumpolar Region, where it is limited by the North American Craton. The central part of the accretionary belt is hidden under the Meso-Cenozoic sediments of Western Siberia. Analysis of vast geological material shows that the Arctic-Asian mobile belt was formed on place of an extensive paleo-ocean, which closed with a successive rejuvenation of suture ophiolite zones from the marginal to axial zone and along strike to the north and east of the South Siberian segment towards Paleopacific.

Arctic-Asian mobile belt is characterized by a complex combination of accretionary and riftogenic tectonic-magmatic processes. At its early stages, accretionary tectonics with a wide development of volcanic belts dominated; at the late ones (in the Late Paleozoic, Mesozoic, and Cenozoic) stretching, rifting and postrift subsidence were widely shown with the formation of oil and gas sedimentary basins with a thick sedimentary cover (West Siberian, Turan, Caspian, Middle Amur, Songliao), large igneous provinces (South Urals, West and East Siberian, Central Kazakhstan, Trans-Baikal, etc.) and rift systems (Mongol-Transbaikal, Baikal, etc.). The aim of further research under the existing joint projects should be identifying and tracing the boundaries of the Arctic-Asian mobile belt, study and correlation of geological complexes-indicators of major tectonic events, reconstruction of the history of the accretionary belt with superimposed oil and gas bearing sedimentary basins as a tectonic structure of the global level.