Geophysical Research Abstracts
Vol. 12, EGU2010-6197, 2010
EGU General Assembly 2010

Geodynamic models for the Neoproterozoic Yenisey Ridge orogenic belt (western Siberian Craton continental margin) and evolution of granitoid and alkaline magmatism

Valery Vernikovsky (1,2) and Antonina Vernikovskaya (1)

(1) Trofimuk Institute of Petroleum Geology and Geophysics, Novosibirsk, Russia(vernikovskyva@ipgg.nsc.ru/ +73833309853), (2) Novosibirsk State University, Pirogova St., 2. Novosibirsk, Russia (vernikovskyva@ipgg.nsc.ru/ +73833309853)

We assume that the genesis of the Yenisey Ridge accretional orogen is a result of three events: a) syn-collisional events (probably outside the Siberian craton), which resulted in the forming of the S- and I-type 880-860 Ma Teya granites in the Central Angara terrane; b) the collision between the Central Angara terrane and the Siberian craton and the forming of the syn- and post-collisional S- and A- type 760-720 Ma Ayakhta and Glushikha granites; c) the forming of island arcs and ophiolites along the margin of the Siberian craton, their accretion and obduction onto the continent in the interval of 700-630 Ma. The last event is of special interest because at the same time in the Tatarka-Ishimba suture zone of the Yenisey Ridge, which is subparallel to the continental margin, the forming of intrusive and volcanic rocks of various composition and heightened alkalinity was taking place, including alkaline syenites as well as carbonatites and A-type granites, whose magmatic sources vary from mantle to mantle-crustal and crustal. These rocks form small plutons of round or oval shape, dikes, bedded bodies, tracing this tectonic zone along its entire length. Some of the A-type granites may be considered as hybrid rocks as suggested by mineralogical-petrographical features: inclusions of rocks of basic composition and magma-mingling structures. These granites are slightly peraluminous rocks. In contrast to the 760–720 Ma A-type granites, they have higher REE and Nb and Ta contents. They formed synchronously with the rocks of the island arc complex and their accretion and obduction onto the continental margin of Siberia in the interval of 700-630 Ma. It is quite probable that their forming in the back-arc suprasubduction zone was taking place at the same time that the oceanic plate was subducting below the continent from the western margin of the Siberian craton and reached the asthenospheric layer. The obtained data and the developed models uncover the geodynamic evolution of the forming of accretional orogens in the western margin of the Siberian craton in the Neoproterozoic.