



Kovdor magmatic complex of the Late Neoproterozoic – Early Cambrian active continental margin in the southwest of the Siberian craton

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The southwestern margin of the Siberian craton was an active transform continental margin during the late Neoproterozoic – Early Cambrian time. Fragments of this active continental margin are preserved in the South Yenisey Ridge and Eastern Sayan, where compositionally diverse rocks from tholeiitic to shoshonitic series occur, including dykes and sills of dolerites, adakites, granites and syenites. These rocks are distributed along the Kovdor and Birusa transform faults and subsidiary faults, oriented NW-SE and extended for over 700 km along the southwestern margin of the Siberian paleocontinent. Previously, these magmatic rocks were associated with several magmatic complexes (Posolnaya, Ust-Angara, Zimovey and Nersa), ranging in age from Archean to Neoproterozoic. Recent and new U/Pb geochronological data on zircons from dolerites, subalkaline granites, adakites and gabbro-anorthosites in the South Yenisey Ridge suggest formation ages for these rocks between 626 and 511 Ma (Vernikovskaya et al., 2004; 2017). Similar formation age (511 Ma, U/Pb) is shown for the high-K doleritic dykes from the Eastern Sayan, associated with the Birusa fault (Gladkochub et al., 2006). Based on geochemical data and geochronological constraints on the timing of magmatism associated with the Kovdor and Birusa transform faults we combine these magmatic rocks into a single Kovdor magmatic complex. The transform faulting, geochemical variation and prolonged formation time of the Kovdor magmatic complex indicate complicated tectonic history of the southwestern margin of the Siberian craton during the late Neoproterozoic – Early Cambrian time. Development of the active transform margin began shortly after accretion and obduction of tectonic blocks of Priyenisey island arc complex, ceasing of subduction processes, opening of a slab window and accompanied by a transform-strike-slip drift of lithospheric plates. An input of depleted and enriched mantle material contributed to the generation of new continental crust during the orogenesis along the southwestern margin of the Siberian craton.

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