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Unusually long-lived Cenozoic Rifting and Magmatism in Southern Siberia: Correlations with Processes at convergent Boundaries of Asia

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Continental rifting in East Africa, Europe, and Central China was initiated in the Middle Eocene at ca. 45 Ma (Xu et al., 1996; Rogers et al., 2000; Laubscher, 2004) unlike rifting in Southern Siberia which began as early as in Campanian-Maastrichtian at ca. 80-70 Ma. We present records of the whole stratigraphic sequence of the rift-related volcano-sedimentary strata in the area to the east of Lake Baikal. Biostratigraphic results on sediments are consistent with K-Ar and 40Ar/39Ar ages obtained for related basaltic lavas. Sedimentary and volcanic rocks are described as constituents of formations: Mokhey (boundary layers of the Cretaceous and Paleogene), Irenga (Paleocene-Eocene), Kularikta (Oligocene), Dzhilinda (Middle-Late Miocene), Khoigot (Pliocene), and Bereya (Pleistocene). Two stages in evolution of neotectonic structure in the south of Eastern Siberia were distinguished: 1) Campanian-Oligocene and 2) Neogene-Quaternary which reflected development of the Tunka-Eravna and Baikal Rift Zones, respectively (Rasskazov, 1994).

Tectonic and magmatic activity in Central and East Asia was found to be coeval with processes at a convergent zone between Pacific plates and Eurasia. Study of spatial-temporal evolution of magmatism showed that the Oligocene-Miocene boundary exhibited one of the Late Phanerozoic structural reorganizations accompanied with increasing tectonic and magmatic activity in Asia at 79-74, 58-56, 48-44, 34-27, 21-17, 12-8, and $<$1.2 Ma. A succession of volcanic pulses in the Northeastern Japan arc with

initial points at 23, 20, 18, 15, 12.1, 9, 6.2, 4.4-3.6, and 2.0-1.5 Ma was suggested as a standard for correlation of events in the mainland of Asia related to subduction of the Pacific plate.

Late Cenozoic spatial-temporal distribution of extension and magmatism in the southwestern part of the Baikal Rift System was recognized to be governed by tectonic stress derived from Indo-Asian collision zone and responsible for activity of the Tunka-Verkhne-Okinskiy and Todzha-Okinskiy accommodation zones developed at boundaries between the Rephean Tuva-Mongolian massif and Caledonides. Also, the collision-derived stress caused cyclic evolution of K-rich and K-Na magmatic series in Central Mongolia expressed in prominent K peaks of the Baidarik, Uldziytin, and Chulutyn junctions between melting zones at 1) 23, 15.5 Ma, 2) 9.6, 7.1, 4.6 Ma, and 3) 1.9, 0.9, 0.4 Ma, respectively. This succession was proposed as a standard for correlation of collision-derived events in Central Asia.

We infer that unusually long-lived Cenozoic rifting and magmatism in Southern Siberia was connected with interplate processes at convergent boundaries of Asia.

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