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LATE MESOZOIC GRANITOIDS OF THE WESTERN TRANSBAIKALIA (RUSSIA) AND THEIR RELATION TO FORMATION OF METAMORPHIC CORE COMPLEXES

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Early Cretaceous metamorphic core complexes (MCCs) are widespread in North-East Asia and indicate a large-scale crustal extension in this area [*Wang et al., 2011, 2012*]. Traditionally one of the formation mechanisms of MCCs is related to various magmatic activities including granitoid magmatism [*Anderson et al., 1988, Hill et al., 1995; Lister, Baldwin, 1993*]. *Wang et al.* [*2012*] have subdivided the intrusion associated with MCCs in NE Asia into pre-kinematic (~170–140 Ma), syn-kinematic (~150–125 Ma) and post-kinematic (~125–110 Ma). $^{40}Ar/^{39}Ar$ biotite and hornblende ages of 140–110 Ma are overlapping for all MCCs of NE Asia and represent the time of the final stage of the MCCs formation [*Wang et al., 2012*]. Here, we present overview of geochronological and geochemical data for Late Mesozoic granitoids of the Western Transbaikalia and our view on their role in formation of Transbaikalian MCCs.

Jurassic pre-kinematic granitoids are exposed locally within footwalls of some Transbaikalian MCCs including Buteel, Zagan and Bezymyan MCCs. All these granitoids form small veins and massifs. Zircon from the syenite of the Naushki massif of the Buteel MCC has yielded a U-Pb age of 178±3 Ma [*Mazukabzov et al., 2006*]. U-Pb zircon ages of 161±1 Ma and 153±1 Ma were reported for granitoids of the Pokrovka massif of the Zagan MCC [*Sklyarov et al., 1997*], as well as 152±1 Ma for peralkaline granites of the Mangirtui massif of some MCC [*Donskaya et al., 2008*]. A U–Pb zircon age of granites of the Bezymyan MCC is 165±2 Ma [*Donskaya et al., 2016*]. All these studied Jurassic granitoids are ferroan, alkali-calcic and alkalic [*Donskaya, Mazukabzov, 2014; Donskaya et al., 2016*]. Granitoids of the Buteel and Zagan MCCs show geochemical *A*-type characteristics [*Donskaya, Mazukabzov, 2014*]. At the same time, granitoids of the Bezymyan MCC are close to transitional *I*–*S*-type granites [*Donskaya et al., 2016*]. Our data indicate that Jurassic granitoids are not abundant in Western Transbaikalia. They were emplaced after the Late Paleozoic – Early Mesozoic large-scaled magmatism within the Western Transbaikalia and Northern Mongolia which was directly related to the evolution of the Mongol-Okhotsk active margin of the Siberian continent [*Donskaya et al., 2013*]. We assume that the intrusions of Jurassic granitoids were emplaced during the transition from a subduction to a collisional setting [*Donskaya et al., 2013; Donskaya, Mazukabsov, 2014*]. According to *Wang et al.* [*2012*], Jurassic granitoids of Western Transbaikalia can be classified as pre-kinematic intrusions. However, it is unlikely that their emplacement caused a large-scale crustal extension in Transbaikalia.

Early Cretaceous syn-kinematic granitoids were only found on the periphery of small Oshurkovo massif of the Ulan-Ude (Selenga) MCC. These granitoids include weakly deformed leucocratic granites and quartz syenites [*Ripp et al., 2013*]. The U-Pb zircon ages of these granitoids vary from 133 to 128 Ma [*Ripp et al., 2013; Wang et al., 2012*]. U-Pb zircon ages of these rocks are close to $^{40}Ar/^{39}Ar$ hornblende age (132±1 Ma) of migmatites of the footwall of the Ulan-Ude MCC [*Mazukabzov et al., 2014*]. The leucocratic granites are ferroan and alkalic. They demonstrate *A*-type geochemical affinities. We assume that these granitoids were emplaced in an intracontinental extension setting related to the Ulan-Ude MCC formation.

Early Cretaceous post-kinematic intrusions were described in the Ulan-Ude, Malkhan and Yablonov MCCs. Similar to Jurassic granitoids, the Early Cretaceous granitoids form small dykes, veins and massifs. Post-kinematic intrusions in the Oshurkovo massif of the Ulan-Ude MCC include non-deformed gabbroids and syenites, as well as dykes of carbonatites, lamprophyres, and granite pegmatites. Their U-Pb zircon ages are 126–124 Ma for the gabbroids of the Oshurkovo massif [*Ripp et al., 2013*]. $^{40}Ar/^{39}Ar$ ages of biotites and hornblendes from lamprophyres and granite pegmatites vary from 123–112 Ma [*Ripp et al., 2013*]. *Ripp et al.* [*2014*] suggested EM-1 enriched mantle source for the gabbroids, syenites and carbonatites of the Oshurkovo massif. $^{40}Ar/^{39}Ar$ mica and K-feldspar ages are 128–124 Ma for the granites and rare-metal pegmatites of the Malkhan MCC [*Zagorsky, Peretyazhko, 2010*] and granites of the Yablonov MCC [*Gordienko et al., 2012*]. We assume that the post-kinematic intrusions could be emplaced in the final stage of extension that led to formation of dome structure of Transbaikalian MCCs.

Distribution of Late Mesozoic granitoids in NE Asia is uneven. Maximal occurrence of such granitoids is typical for the eastern and north-eastern China and Russian Far East. The Western Transbaikalia is deficient in Jurassic and Early Cretaceous granitoids. On the contrary, the number of MCCs in Western Transbaikalia is much more than that in any other regions of NE Asia. All the Late Mesozoic granitoids of Western Transbaikalia and MCCs formed in an intracontinental extension setting [*Donskaya, Mazukabzov, 2014; Donskaya et al., 2013*]. However, it is unlikely that the formation of MCCs was controlled by intrusion of granitoids.

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