



Stages of Late Mesozoic granitoid magmatism of Chukotka (NE Russia)

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The main tectonic structure of Chukotka is Anyui-Chukotka fold system with Precambrian crystalline basement and Paleozoic–Mesozoic cover (platform, shelf, and passive margin deposits). In the eastern part its structures are overlain by Albian–Campanian Okhotsk-Chukotka volcanic belt. Age and geodynamic setting of Late Mesozoic granitoid complexes of Anyui-Chukotka fold system (Chukotka Mesozoides) are always the subject of discussions. Different researchers distinguish various complexes, phases, duration and beginning of Late Mesozoic (mainly Cretaceous) granitoid activity in Chukotka region [1–16].

Our previous data [17–19] indicate that we have 117–112 Ma timespan (U-Pb SHRIMP zircon data) of granitoid activity in Alarmaut granite-metamorphic dome (W.Chukotka) related to extension following collision between Arctic Alaska – Chukotka microcontinent and North-Asian continent. Granitoid magmatism of Koolen' and Velitkenay granite-migmatite domes (E.Chukotka) is younger, 109–94 Ma. [20–22].

We used SHRIMP-II to date zircons from three granitoid plutons in E.Chukotka (interfluve of Vel'may, Bolshoy Vel'may and Amguem rivers), referred to Early Cretaceous Taureransky complex on regional geologic maps, scale 1:500000.

The first pluton intrudes Devonian-Lower Carboniferous terrigenous and carboniferous (?) deposits in the central part of brachyanticline structure. These deposits are metamorphosed from greenschist to amphibolite facies. The structure is similar to Alarmaut granite-metamorphic dome. We sampled foliated granites and cutting them granite-porphrye. 10 analyses from foliated granites give discordant ages with intercepts at 487 ± 300 and 968 ± 54 Ma. Nine of 10 analyses from granite-porphrye yield a concordant age of 93.74 ± 0.97 Ma.

The second and third plutons cut Lower-Middle Tirassic shales. We sampled quartz monzonite and syenite from both plutons, which comprise early phase of Taureransky complex. Syenite yields a weighted mean age U-Pb of 135 ± 0.5 Ma for 10 of 10 individual analyses and quartz monzonite, 110.39 ± 0.78 Ma.

We interpret Paleozoic and Late Proterozoic ages of foliated granitoids as protolith ages and Upper Cretaceous age of granite-porphrye corresponds to slab-related Okhotsk-Chukotka volcanic and plutonic rocks. The Albian age of quartz monzonite may reflect the late stages of post-collisional extension during granite-migmatite domes evolution. It is difficult to relate Valanginian age of syenite to distinct tectonic event in the region. Zhulanova et al. [11] consider that Valanginian-Hauterivian age is the peak time of Late Jurassic-Early Cretaceous magmatism activity in Chukotka, when amphibole-biotite subalkaline granodiorites and granites intruded. Biotite granites and leucogranites intruded in Barremian. At the same time effusions of trachybasalt-trachyandesite magmas took place, probably related to rifting [11].

Conclusions. On the basis of our U-Pb SHRIMP zircon data and published data on the Late Mesozoic granitoid magmatism ages in Chukotka we suppose three stages of granitoid activity: 1) Valanginian-Hauterivian, probably syn-collisional; 2) Aptian-Albian, related to post-collisional extention in granite-migmatite domes; 3) Late Cretaceous, slab-related Okhotsk-Chukotka volcanic belt activity.

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