

Evolution of alkaline magmatism in the Central Asia

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Until recently, all nepheline-containing rocks and the spatially associated subalkaline basites of Central Asia were combined into a single alkaline-gabbroid province with an estimated Middle Paleozoic age. Based on the petrographic study of a number of reference arrays of this region, the petrographic and geochemical identity of such objects was established, however, a detailed analysis of their age revealed a fairly wide time interval from 509 to 265 million years. An important element in the genesis of these associations is the presence of inherited zircons with good magmatic zoning, which confirms the presence of deep magma chambers where interaction with the host carbonate substrate and the accumulation of alumina took place. The time interval for their formation varies from 490 to 450 million years.

An important element in the evolution of alkaline magmatism, which is considered as a manifestation of the Central Asian super plume, is the following geochronological dating. For the Overmaratgol massif, the absolute age is set at 425 million years by dating (U-Pb method for zircons). Another element of a likely event during this period is the Ar-Ar data for the nepheline of the Kiya-Shaltyr massif, where the age of 430 million years is recorded as the first high-temperature stage. An additional argument for such an interpretation is the development of diodes of foidolites within the Kiya-Shaltyr massif, which contain "xenoliths" or deep inclusions of full-crystalline urtites, similar to this deposit.

The data obtained show that events in the range of 500-400 Ma were important for the formation of structural ensembles in Central Asia, and also actively influenced possible climate changes and the extinction of the organic climate, in particular at the Ordovician-Silur border.

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