



Petrology, Geochemistry and $^{40}\text{Ar}/^{39}\text{Ar}$ Geochronology of basalts from the Franz Josef Land: Geodynamic implications

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The age of Franz Josef Land (FJL) basalts is the topic of discussion in modern geology. There are two main points of view to the question. The 1st is short-term one-stage formation of a large eruptive province (LIP) at the beginning of the Cretaceous, based on geology, stratigraphy and some U-Pb dates. The 2nd is a long-lived (from the beginning of the Jurassic on the early Cretaceous) a hot spot with several brief pulses of magmatic activation. It is connected with Ar-Ar dates, which allows us to distinguish three stages of magmatism (196 – 186 Ma, 160—153 Ma and 145—125 Ma).

More than 50 samples of FJL basalts were studied. Petrochemical, geochemical, radiological data were obtained. According to the material characteristics the basalts are tholeiitic, with geochemical features of intraplate origin. Paleomagnetic data shows the Age was investigated in 12 samples by the Ar-Ar method in plagioclase and pyroxene monofractions. In 11 samples, the age corresponds to the interval from 125 to 145 Ma. By comparison on a one scale they line up into a single continuous episode of active volcanism. In the 12th sample, two equal-sized plateaus are clearly distinguished, corresponding to the age of 130 Ma (45%) and 186 Ma (40%). Such specific Ar-Ar spectra are in evidence in other hypabyssal formations in the intraplate conditions. For example, some lamprophyres of chuya complex (SE Altai-NW Mongolia) show the same characteristics (276 Ma (30%) and 258 Ma (40%) for the one rock).

As a result of our investigation we suggest that the basalts of FJL were formed at one episode of intraplate magmatism. Dates 186-196 Ma reflect the intratelluric stage of phenocrysts forming. And the interval 125-145 Ma corresponds to the crystallization of the whole rock.

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