1 INTRODUCTION

Meso-Neoproterozoic dolerite sills and dykes of the south-east margin of the Siberian Craton are commonly known as linked to the Sette-Daban LIP-related event.

There are several U-Pb and Sm-Nd isochron isotopic dates for the rocks of the Ulakhanbam complex, giving a range of values from 930 to 1000 Ma. Although there is an overlap of several dates within error, sites became younger westward from 974 ± 1005 Ma in the east part of the study area to 932 ± 846 Ma in its west part. Due to wide range of ages they likely represent at least 2 different magmatic events, although long event is possible as well. To resolve this issue, new accurate dates are needed.

2 GEOLOGY

3 PETROGRAPHY

In the result of the studying petrographic thin sections all the samples are classified as fine to medium-grained dolerite with mainly olivine, pigeonite, and quartz interlayers (grain size 0.2 to 2 mm).

4 GEOCHEMISTRY

Mantle sources of the magmatic intrusions of Sette-Daban event. Diagram A showing variations in (Nb/Th)PM and (Th/Yb)PM, Diagram B showing variations in (La/Sm)PM and (Nb/Th)PM. Upper Continental Crust (UCC) and Lower Continental Crust (LCC) compositions are from Taylor and McLennan (1985), and oceanic mantle (OM, OIB) and HIMU (high μ, low Sr, quartz), where μ0.01 (N-MORB). The parallel lines mark the limits of the Iceland island (Pitseis et al., 1997)

In the result of the studying petrographic thin sections all the samples are classified as fine to medium-grained dolerite with mainly olivine, pigeonite, and quartz interlayers (grain size 0.2 to 2 mm).

5 RESULTS

Combined with previous geological, petrological and geochronological studies on the Sette-Daban event dolerites, the following conclusions can be drawn:

(1) The Sette-Daban event is represented by a single complex of rocks that has been formed over 51 million years, starting from 1 Ga. The complex isn’t homogeneous, therefore, at different stages of its development, it is represented by rocks of different chemical composition, reflecting an antecedent geodynamic setting.

6 CONCLUSIONS

A plot of 87Sr/86Sr vs. 143Nd/144Nd. (A) The shown melt curve of spinel harzburgites and garnet harzburgites are calculated using non-modal batch melting equations of (Bhattacharyya, 1986). Numbers along melting curves are the degree of partial melting. (B) Depth and temperature conditions of melt formation (according to Suvorovs)

Geochemical features of Meso-Neoproterozoic dolerite sills on the South-East margin of the Siberian Craton

Andrei K. Khudoley
Sergey V. Malyshev

Andrei K. Khudoley
Sergey V. Malyshev