Zircon U-Pb and FT dating on clastic dykes in the Matsukawa Geothermal field, Japan, with reference to the Quaternary Kakkonda granite

H. ITO[1]*, A. TAMURA[2], T. MORISHITA[2] AND S. ARAI[3]

[1]Central Research Institute of Electric Power Industry, Chiba 270-1194, Japan (*correspondence: ito_hisa@criepi.denken.or.jp)
[2]Frontier Science Organization, Kanazawa Univ., Ishikawa 920-1192, Japan
[3]Department of Earth Sciences, Kanazawa Univ., Ishikawa 920-1192, Japan

We have determined both U-Pb and fission-track (FT) zircon ages from Quaternary clastic dykes in the Matsukawa Geothermal field, northeast Japan [1]. Since the dykes contain granitic xenoliths, the dated zircons may have derived from granitic basements underneath. A weighted mean LA-ICP-MS U-Pb (^{238}U-^{206}Pb) age of 1.30±0.04 Ma (1σ error) and a weighted mean FT age of 1.0±0.1 Ma (1σ error) were obtained from the zircons. This indicates that if zircons are of granitic origin, the granite intruded ~1.3 Ma and cooled to ~300 ºC at ~1.0 Ma, considering closure temperatures of both the dating methods.

Adjacent to the Matsukawa geothermal area, the Quaternary Kakkonda granite with K-Ar ages of 0-0.2 Ma resides below 1.5-3 km depths. The intrusion of the Kakkonda granite is assumed to be ~1.0 Ma based on geological and geochronological evidence [2]. Therefore strong correlation is plausible between the two granites.

U-Pb zircon dating of the Kakkonda granite is now under way. We will report the dating results and the relevance of the Quaternary granite for the related geothermal systems.

Sample code	Number of grains	Dosimeter number	Dosimeter density x 10^5 cm^{-2}	Spontaneous number	Spontaneous density x 10^5 cm^{-2}	Induced number	Induced density x 10^6 cm^{-2}	P(χ^2) %	T ± 1σ Ma
SP-2	30	2270	3.487	88	1.27	2096	3.03	75	1.0 ± 0.1

Ages are calculated using ζ=142.1±5.7 (1σ error). Dosimeter glass CN-1 used.

Table 1: Zircon fission-track dating result.

[1] Hanano (2003) *Geothermics* **32**, 311-324. [2] Doi *et al.* (1998) *Geothermics* **27**, 663-690.

Two flood basalt events and contemporary granites within the same LIP: Siberian Traps case study

A.V. IVANOV[1], H. HE[2], L. YAN[2], V.V. RYABOV[3], A.Y. SHEVKO, S.V. PALESSKY AND I.V NIKOLAEVA[3]

[1]Institute of the Earth's Crust SB RAS, Irkutsk, Russia, (aivanov@crust.irk.ru)
[2]Institute of Geology and Geophysics CAS, Beijing, China, (huaiyuhe@mail.iggcas.ac.cn)
[3]Institute of Geology and Mineralogy SB RAS, Novosibirsk, (Russia, trapp@igm.nsc.ru)

Siberian Traps LIP contains effusive, intrusive and volcanoclastic rocks of variable composition from ultrabasic to acidic, though low-Ti basalts and their intrusive analogues are predominant rock types. Our new ^{40}Ar/^{39}Ar results combined with published values suggest that basaltic magmatism appeared during different periods of time (Fig. 1). Among four episodes, at least two (at the Permo-Triassic boundary and one at the Early/Middle Triassic) can be considered as flood basalt events on merit of the volume and geochemistry. Two other episodes of basaltic volcanism were probably less voluminous. U-Pb data for granites show that granites in peripheral parts of the Siberian Traps LIP were contemporaneous to the two flood basalt events, but the latest Bolgokhtokh intrusion is younger than any of basalt. Thus Siberian Traps LIP is much more complex then usually considered.

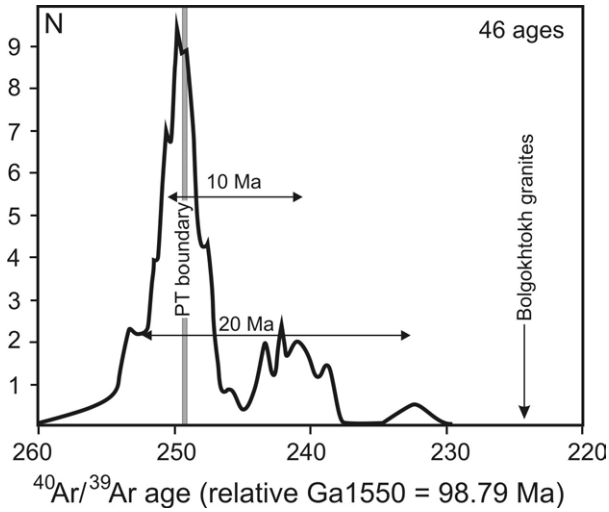

Figure 1: Probability distribution of ^{40}Ar/^{39}Ar ages.