

PRECAMBRIAN RELICTS IN PALEOGENE ADJARA-TRIALETI FOLDED ZONE, LESSER CAUCASUS: IMPLICATIONS FOR ZIRCONS U-Pb GEOCHRONOLOGY

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Adjara-Trialeti is a rift zone, formed by the end of the Cretaceous, developed during the Paleogene, by the end of which it underwent folding [1]. It is mainly constructed by trachytic and trachytic-andesitic volcanogenic-sedimentary rocks, though plutonic rocks also play an important role in the structure, which are mainly represented by syenite, montzonite and gabbro.

The zircons from ore bearing plutons of folded zone were dated by U-Pb method at National Taiwan University, Taipei, Taiwan. Based on the results of the research these plutons (Merisi, Namonastrevi, Vakijvari, Zoti, Okros Gele, Rkviana) are considered as the products of one tectonic-magmatic activity developed through the shortest period of time, specifically between 46.77 ± 0.81 and 42.03 ± 0.83 million years, during which they intruded into hosting volcanogenic-sedimentary rocks [2].

During the research carried out in the Adjara-Trialeti folded zone an important geological data have been obtained. In particular, during the dating process of the zircons by U-Pb method, we found the out that the Vakijvari pluton is composed of the Precambrian, namely Neoproterozoic relics. These relics outcrop fragmentally to 30 m distance and are represented by oval blocks of diameter 0.7 – 1.5 m, which are also crushed into small parts (Fig. 1).



Fig. 1. Fragment of Precambrian Relics in Vakijvari Pluton.

The Precambrian relics are represented by massive, finegrained, dark olivine basalts with plagioclase (up to 70%), augite (up to 20%), olivine (up to 2%), epidote (up to 1%) and volcanic glass (up to 10%) composition. In these rocks zircon crystals of 50-200 micrometer have been identified, which were dated at National Taiwan University by U-Pb method on LA-ICP-MS equipment by Chew et al.[3].

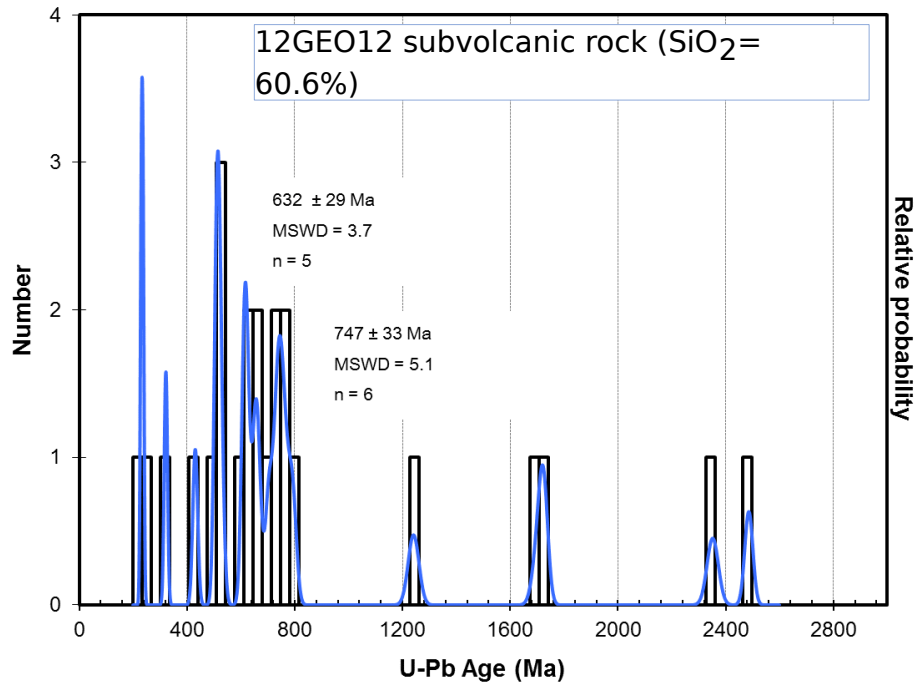


Fig. 2. Zircons Dating Histograms from Vakijvari Pluton Precambrian inclusions (sample - 12GEO12).

The results of this dating were quite unexpected for us, since the average isotope age of zircons defined 632 ± 29 million years, which corresponds to the Precambrian, Neoproterozoic era. The existence of Neoproterozoic relics in the Middle Eocene (43 Ma) intrusive demonstrates the complicated geodynamic evolution of the region. It is likely that we should consider this fact as an indicator of a large volcanic explosion of the Middle Eocene.

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