



Traces of the Late Eocene – Early Oligocene volcanic activity in the Buda Hills (Transdanubian Range, Hungary): link to the volcanism along the Periadriatic – Mid-Hungarian – Sava-Vardar zone

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Paleogene volcanic activity was determined along the Periadriatic – Mid-Hungarian – Sava Vardar zones. These tectonic belts were developed by the horizontally displacement of ALPACA megaunit eastward which was the consequence the convergence between the Adriatic microplate and stable Europe. The Buda Hills is a part of the ALCAPA megaunit, is in the north-eastern of the Transdanubian Range, Hungary and to the north of the Mid-Hungarian zone included the Balaton Line. The Balaton Line is interpreted as the eastern continuation of the Periadriatic Line.

Volcanogenic layers as intercalations can be found within the all Upper Eocene – Lower Oligocene formations in the Buda Hills. Our aim to determine the age of those pyroclastite and tuffaceous sandstone layers, which are located at the basal part of the Eocene succession. For a reason that the Upper Eocene basal coarse-grained succession does not have any indicator fossils, its age was defined according to only its stratigraphic position (older than the overlying limestone formation and younger than the underlying Triassic dolomite formation). According to our new zircon U-Pb data, the pyroclastite/tuffaceous sandstone layers can be dated more precisely, they were formed in the Late Priabonian (36.6-35.3 Ma). Together with the former biostratigraphic data, the onset of the volcanism was in the Late Priabonian and it has terminated in the Kiscellian.

According to the detailed petrographical investigations the volcanogenic layer was formed as a result of a silica-rich explosive eruption and the eruption center could be found about 30-100 km from Buda Hills. The tuffaceous sandstone is re-deposited after the eruption in a terrestrial (and after the transgression in a marine) environment. Their petrographic features are very similar to the younger Paleogene tuffaceous rocks of the Buda Hills.

Considering the duration of the volcanism, the probable source area can be connected to the Paleogene volcanic arc which volcanic centers can be found along the Balaton-Line from the Zala Basin through the Velence Mountain to Reck Region. However, the investigated basal tuffaceous sequence can represent the oldest traces of the Paleogene volcanic event. All things considered, the volcanism can be fitted to this volcanic event which can be observed not only along Balaton Line, but also with similar ages along the Periadriatic and the Sava Vardar zone.

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