

TEPHROSTRATIGRAPHY IN THE CARPATHIAN–PANNONIAN BASIN: MINERAL CHEMICAL CONSTRAINTS

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Neogene volcanism in the Carpathian–Pannonian Region started with repeated explosive eruptions of silicic magmas. Volcanic products cover large areas, although presently most of them are overlain by Late Miocene to Quaternary sediments. This volcanism occurred during a long time interval, from 21 Ma to 13.5 Ma, and therefore these pyroclastic deposits have great stratigraphic importance. The Bükkalja Volcanic Field provides a good study area for tephrostratigraphy, because several units of the silicic volcanism can be found here on the surface. Our study showed that the geochemical data are the most effective correlation criteria to distinguish the main volcanic units, particularly the major and trace element data of the main mineral phases and the glass shards (HARANGI *et al.*, 2005). Then, we can extend our results to other areas, such as drilling cores to correlate the scattered occurrences of the ignimbrite units and define marker horizons for the Neogene stratigraphy.

Based on the results obtained from the Bükkalja study, we attempt to correlate and distinguish pyroclastic units in three boreholes drilled in 1986 east of the Bükk Mts. (Miskolc-7, Miskolc-8 and Nyékládháza-1). These three boreholes contain continuous drilling core sequence and therefore have great significance. Some of the pyroclastic units are divided by sedimentary formations, but they consist also of thick vol-

canic suite with fairly similar physical volcanological features. We sampled all the macroscopically defined units and then determined the mineralogical content and the chemical composition of the phenocrysts. In addition, 4 samples had been analysed by K/Ar radiometric method. Although these radiometric age data gave overlapping result, they fit in the age period of the pyroclastic rocks of the Bükkalja area. In contrast to the geochronological method, we could successfully use the geochemical data to distinguish different volcanic units. The most significant discriminating tools are the Mg, Ti, Al and Fe contents of biotites and anorthite contents of plagioclases. In addition, slight differences can also be observed in the major element composition of glass shards. These data enabled to distinguish at least three major volcanic units, which can be partly correlated with the pyroclastic units cropping out in the Bükkalja Volcanic Field. These results have significance in the further tephrostratigraphic studies in the Carpathian–Pannonian Region.

Reference

HARANGI, SZ., MASON, P.R.D. & LUKÁCS, R. (2005):
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237–257.