

Comparing Main Volcanism Products of Various Alpine Fold Belt Structural Zones in Eastern Europe

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While comparing magmatic rocks the key problem most researchers encounter is the right choice of methodological approaches, so that the ultimate result obtained to be maximally accurate. In this case, the most informative are deemed geochemical methods, particularly when correlating subsurface rocks that are homotypic in their chemical composition, whereas the petrochemical ones are more objective in comparing the buildups, which differ in silica acidity. On the grounds of the above, a cluster analysis of the main volcanism products from different structural zones of the Alpine Fold Belt in Eastern Europe has been carried-out using average data on both major and trace elements. Based on the mathematical calculations done, the general structure has been obtained as to the cluster of the examined basalts according to which the main effusives within the positive value of correlation coefficient fall into four groups. The first group includes the basalts of the Central Transcarpathian Region. The second one is presented by the petrotypes of the Pannonian Depression, West Carpathians and Georgia's Massive, which is the evidence of the near geodynamical conditions for volcanic rocks formation despite their considerable regional disconnectedness. These structures are also characterized by the minimal crustal thickness, which implies the presence of the asthenospheric bumps (plumes) below them. As expected, the Armenian Upland basalts in accordance with their structural confinedness have been divided into two groups: the third group has geographically coincided with the West Volcanic Zone while the fourth one – with the East Volcanic Zone. It only goes to confirm the appropriateness of Armenian geologists to have defined them, with traditional research methods applied, as the separate block structures. For the purposes of visual picture of the results obtained, a factor diagram has been constructed with the analysis of the latter showing regional disconnectedness of the above grouped basalts composition imaging points' fields. On the one hand, it is an additional argument in favour of the rock separation correctness (points abnormally outlying from the main groups are absent) based on the results of the clustering. On the other hand, it speaks of their belonging to different petrogeochemical types.