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Evidence of the regional Armov nappe in the crystalline basement of the Fore Range zone of the Greater Caucasus

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The Fore Range zone of the Greater Caucasus comprises the crystalline basement and four tectonic nappes overlaid by the Early-Middle Carboniferous molasses. The structural and metamorphic evolution of the basement is not clear yet. The crystalline basement is exposed in several salient of metamorphic rocks. The Blyb salient is the largest one and is composed of two units of the Blyb metamorphic complex. The upper Armovka Formation is considered to be of the Later Devonian age (Somin, 2011), while the reliable information about the age of the lower Balkan unit and granitic intrusions in the Blyb salient has been absent until now.

We obtained the U-Pb datings (SHRIMP II, zircons) of the largest Balkan massif located within the Balkan Formation amphibolites. Two probes from the quartz metadiorites yielded the ages of 574.1 $\pm$ 6.7 and 567.9 $\pm$ 6.9 Ma corresponding to the Later Ediacarian (Vendian). These data are close to the U-Pb age of 549 $\pm$ 7.4 Ma which was obtained earlier for the same intrusion.

Furthermore, we studied the contact zone of the Later Vendian metadiorites of the Balkan intrusion and the overlying Paleozoic garnet-bearing schists of the Armovka Formation. We found the sharp change of the composition, degree of metamorphism and the orientation of the planar metamorphic textures, as well as the magnetic fabric of rocks through the contact zone. Moreover, the thick pack of blastomylonites (200 m) is developed at the contact and indicates the bottom of the thrust sheet.

Based on the signs of the tectonic contact, different ages and degrees of metamorphism in two units of the Blyb complex, we conclude that the upper Armovka rocks compose the tectonic nappe. Thus, the Balkan Formation is the fragment of the ancient Precambrian basement, while the Armovka unit is the thrust sheet of younger metamorphites of higher stage.

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