

The Lower Pre-Cambrian, the Urals

A.M. PYSTIN AND YU.I. PYSTINA

Institute of Geology, Komi Science Centre, Uralian Branch of RAS, Syktyvkar

The presence of Early Pre-Cambrian complexes is mostly proved in the western paleocontinental part of the Urals (to the west from the Main Uralian Deep Fault). Polymetamorphic complexes, different in material composition, structure, and metamorphic peculiarities of rocks, are related to them. The main types can be established among them: gneiss-granulite, gneiss-migmatite, crystallo-schist, granulite-metabasite, eclogite-gneiss, and eclogite-schist one [1].

The metamorphic evolution of rocks constituting the polymetamorphic complexes in the western part of the Urals (the western slope of the Urals) falls down within the interval 2.7–0.35 Ga.

Distinctions in material composition, as well as facial conditions, and especially the type of rock metamorphism allow for distinguishing two groups of the polymetamorphic complexes. One of them is characterized by moderate-pressure metamorphism and prevalence of acidic rocks in a section, mainly of initially-sedimentary origin. In the other group, the essential role belongs to initially-magmatic formations, mainly of the basic series, which underwent high-pressure metamorphism. It is possible to allocate vertical (age) series of the polymetamorphic complexes in each of the named two groups. The first vertical (age) series is composed of (from below-upwards): gneiss-granulite → gneiss-migmatite → crystallo-schist complexes. The second vertical series is made of (from below-upwards): granulite-metabasite → eclogite-gneiss → eclogite-schist complexes.

Along with the vertical series, certain lateral relations between the various complexes, indicating their formation in different geodynamic settings, are outlined.

Available geochronological data allow one to conclude that distinctions in geodynamic settings during formation of the considered structural-material complexes existed, beginning at least with the Late Archaean and then lasting throughout the Early Proterozoic. The established regularities in composition and structure of the polymetamorphic complexes of the Western Uralian slope, as well as ages of initial high-temperature metamorphic manifestations (the granulitic and eclogitic facies) give reason to think that they are fragments of the crystalline basement of Volgo-Uralian part of Baltica.

[1] Pystin A. M. *et al.* (2009) *Typification of the Lower Pre-Cambrian, Timan-Northern Urals region*. Syktyvkar, Geoprint. 36 p.