



Mafic dykes of the Belomorian eclogite province (Gridino area) as monitor of evolution under high-pressure conditions

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In Gridino zone of tectonic melange (Belomorian mobile belt) recently Archaean eclogites of 2.7 Ga were found. It is assumed (Volodichev et al., 2004) that these eclogites were formed in the environment of "warm" subduction of the oceanic slab. Eclogitic lenses and pods are abundant in the felsic gneissic matrix of melange. Eclogite contained melange is cut by metamorphosed undeformed and deformed mafic dykes. Some of the studied dykes are assigned to complex of lherzolite-gabbro with age of 2.4 Ga and "coronitic gabbro" with age of 2.1 Ga (Stepanov, 1990). However, these dykes were not dated directly. The undeformed dykes have intrusive contacts and cross-cut the foliation of country felsic gneisses. Deformed dykes vary both in thickness and in style of strains. Some dykes save the relics of cross-cutting contacts with host gneisses. On extension they have been undergone to strong deformation, folding, boudinage and migmatization. At the limit of structural transformation the dykes form the pods and lenses concordant to foliation of the host gneisses. The structure of these highly deformed fragments is very similar to those of the Archaean eclogite bodies. The dykes of the different age underwent consequently of metamorphism of eclogite and granulite facies followed by amphibolite overprinting. Both in the dykes and Archaean eclogites there are the same mineral assemblages. P-T metamorphic evolution of the Paleoproterozoic dykes coincides with evolution trend of eclogites. Parageneses corresponding to eclogite/HP granulite facies have not yet found in the quartzofeldspathic rocks. It is a typical feature of all continental terranes subjected to transient high-pressure metamorphism during collision (Gilotti et al., 2004). Superposition of the Archaean and Paleoproterozoic eclogites casts some doubts. We believe that formation of high-pressure assemblages was caused by single metamorphic event in early Precambrian at subduction of continental crust.