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Mantle structure and layering beneath the Siberian and other cratons produced by the interaction of the subduction and superplum events.

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The study of mantle columns under the < 50 kimberlite pipes of Siberian using the TP monomineral thermobarometry (Ashchepkov et al ., 2005, 2006) and original and more from the other cratons using published data shows that the layering to the 9-12 bends are the common feature of the mantle structure. It was formed during Precambrian when the mantle was hot and was stopped in Phanerozoic after appearance of the thick hydrosphere and mantle cooling.

The common division of mantle lithosphere onto upper and lower parts with the 3-5 individual horizons which are likely had the primary subduction origin. But the amount of the C-type eclogites in most of mantle columns do not exceed 1-5% judging on mantle xenoliths like in Udachnaya, Mir and other pipes (Snyder et al., 1997; Boyd et al .,1997; Pokhilenko et al., 2002). This suggests the eclogite layer to detached from the slab or re-melted or mixed and with the peridotites producing the hybrid rocks. The basement of the lithosphere everywhere was heated to 1400oC a- 1600oC suggests the interaction with melts from the low mantle or at least from 410 km boundary. These are sheared peridotite hot eclogites (A,B) and dunites with Hi-Cr Spinels commonly occurred in diamonds (Sobolev et al., 1997) and representing the melt channels. The

middle horizon heated to 1300 kbar is horizon keeping the H2O derived from the decomposition of amphiboles and serpentines during subduction (van Keken, Keifer, 2002). The next heating layer is corresponded to the upper asthenospheric lens 15-30 kbar.

Geochemistry of the peridotites of the lower horizons with U-Pb and Ba and sometimes LILE evidences about influence of the subducted related fluids. The pyroxenite lens contains the rocks varying in geochemistry and often showing Nb-Ta picks due to the amphibole decomposition. Te rocks in the upper ($<$40 kbar) part of the mantle section are more close in general to the primitive composition due to the impregnation by the melts derived from the pyroxenite layer.

The amount of the layer seems to be corresponded to the superplum events in the Precambrian. During the ancient time the superplums possibly were appeared in the vast territories and filled the thick asthenosphere beneath the 270 -250 km boundary density inversion (Agee, 2000) the olivine mush floated forming additional dunite layer at the bottom. Subducted layers composed from TTG and basaltic crust transformed to eclogites and residual mantle lithosphere were submelted. The remelted crust material formed the relatively more acid melts intruded the lower crust and erupted to surface. The residual mantle lithosphere was moved beneath continent similar to low angle subduction what was accompanied by the fast convection in the low viscous asthenosphere. After removal and cooling it was joined to the continental keel.

The difference between the structure and geochemical specialization of the mantle columns may be explain by the detachment of the lithosphere and moving this layer keeping all the peculiarities of the geodynamic environment beneath the continent. But more probable that the Siberian continent is collage of the different lithospheric blocks.

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