South-East Russia with its hydrothermal and hydrogenous uranium deposits is among the largest provinces of the world (Mashkovtsev et al., 1995; Kazansky, 2004; Samovich et al., 2012; Ishchukova et al., 2007). Its resource potential essentially exceeds 1 mln. tons. To the east of Baikal Lake and to the south of the Siberian Platform, hundreds of uranium manifestations, its tens deposits of different formation class, and a significant number of nodes and areas of its occurrence have been revealed. Major uranium-ore nodes are El’konsky (South Yakutia) and Strel’tsovsky (Trans-Baikal area). Each of them encloses about two tens of the spatially closed vein, stockwork-vein, and streaky-impregnated deposits of gold-brannerite and fluorine-molybdenum-uranium formations, correspondingly, grouped at El’konsky Horst (Aldan Shield) and in the Tulukuevskaya volcano-plutonic depression and in its basement (Kerulen-Argunsky superterrane).

The main factors, having influenced the localization of the nodes, are considered to be their placing: at the interaction of the long-lived deep-seated faults conjugate with the gradient zones of the gravity field and areas of the Earth’s crust deconsolidation; among shows of the many-phase differentiated subalkaline and alkaline Late Mesozoic magmatism; in blocks of early consolidation with the Proterozoic manifestations of the Th-U-TR mineralization in sialic rocks of the metamorphism low grades and their granitized varieties undergone the intensive potassium-silicic metasomatic transformations.

Au-U complex deposits of El’konsky node (Miguta, 1997, 2001; Boitsov, Piliipenko, 1998; Kazansky, 2004) are close in space to Au placers and gold deposits grouped in the Lebedinsky and Kuranakhsky ore nodes. Not far from them there are the placers of the platinum group minerals, whose original source – Inagliinsky ring (heterogenous) alkaline-ultrabasic massif – belongs to the extended Inagli-Konder-Feklistovsky (Khomich, Borisikina, 2012, 2013) magmatic and platinum-bearing belt. The formation of the latter is caused by the deep-seated geodynamic processes in the mantle transition zone along the flange (paleotransform) boundary of the stagnated oceanic slab (Khomich, Borisikina, 2013; Zhao et al., 2010). In the authors’ opinion, above the western (frontal) boundary of this slab, distinguished in due time by Zhao D., there is the Strel’tsovsky uranium-ore node. The geodynamic position of the El’konsky Au-U node is defined by its restriction to the joint of the frontal and flange boundaries of the slab.

Localization of both uranium-ore nodes above the slab boundary is, probably, a result of a complex action of the low- and upper-mantle plumes on the Archean-Proterozoic substratum. This action was accompanied by the origination of the fluid-magmatic columns, which transported the ore (including Th-U-TR) components towards the upper horizons of the Earth’s crust and paleosurface. The details of the structural-magmatic control of mineralization turned to be predetermined by the local conditions that influenced the distribution zonality of the different-type (Pt, Au, U, Mo, fluorite) mineralization at Aldan Shield and Kerulen-Argunsky superterrane. Spatial coincidence of the projection of the oceanic slab frontal part with the position of both unique uranium-ore nodes testifies, in the authors’ opinion, to the probable influence of the deep-seated geodynamics on the origination of the major uranium deposits that is supported by many common geological, magmatic, and petrological-geochemical characteristics of the nodes. This is evidenced also by the molybdenum and fluorite shows present in them, the synchronism (Neocomian) of the mineralization formation, a comparable (about 2 km) vertical span of its distribution, and the scales of the evaluated reserves (Aleshin et al., 2007; Kazansky, 2004; Samovich et al., 2012). Some differences in the ore
mineral composition are, probably, governed by the properties of the processed substratum and different depth of the deposit formation.

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References


