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FRAGMENTS OF CRETACEOUS SEAMOUNTS IN ACCRETIONARY STRUCTURE OF THE KAMCHATSKY MYS PENINSULA (KAMCHATKA, RUSSIA)

Dmitry Savelyev[1], Olga Savelyeva[1] , Maxim Portnyagin[2, 3]
[1]Institute of Volcanology & Seismology, Petropavlovsk-Kamchatsky, Russia.
[2] GEOMAR Helmholtz Centre for Ocean Research Kiel, Kiel, Germany.
[3]V.I. Vernadsky Inst. of Geochemistry and Analytical Chemistry, Moscow, Russia

The geological structure of the Kamchatsky Mys peninsula is determined by its position at the junction of major structures in the NW Pacific - the Kuril-Kamchatka island arc, Aleutian island arc and submarine Emperor Ridge. The southern part of the peninsula is composed by the accretionary prism of the Kronotsky paleoarc (Khotin and Shapiro, 2006). A significant part of the accretionary complex is comprised by rocks of ophiolite association, namely mantle peridotites, gabbro, dolerites, basalts, hyaloclastites, jaspers and limestones. Our many-year studies showed that some Cretaceous volcanic and sedimentary rocks of the ophiolite complex can represent fragments of an intraplate seamount, which could belong to the Emperor Ridge.

Volcanic rocks in the ophiolites are represented by basalts ranging geochemically from trace element depleted MORB-type to enriched OIB-type (Savelyev, 2003). Trace element and isotopic composition of a peculiar type of rocks from the ophiolite, enriched tholeiites, are particularly close to basalts of the northernmost Emperor Seamounts, Meiji and Detroit (Portnyagin et al., 2008). Depleted tholeiites with ultradepleted melt inclusions in spinel were also found among the volcanic rocks of the Kamchatsky Mys peninsula. The extremely depleted compositions of the rocks and melt inclusions were interpreted to originate by high degrees of melting under the influence of mantle plume (Portnyagin et al., 2009). Highly depleted mantle peridotites from the ophiolites appear to have genetic link to these ultra-depleted magmas and were interpreted to be formed under influence of a mantle plume (Batanova et al., 2014). The most recent finding are cumulative picrites with MgO up to 20 wt% which were found in the serpentinite melange zone fringing the ultramafic massif in its south-western part. Their geochemical characteristics also indicate an origin under the influence of mantle plume [Savelyev, 2014]. The groundmass of these rocks and olivine phenocrysts contain abundant sulphide globules with micro inclusions of native gold, platinum and palladium compounds [Savelyev et al., 2015]. We interpret the strong enrichment in Au and PGE as additional evidence of plume-related origin of the rocks.

Paleoceanic sedimentary rocks exposed on the Kamchatsky Mys peninsula are represented by limestones and jaspers of the Albian-Cenomanian age according to their radiolarian assemblage (Palechek et al., 2010). The rocks were formed at seamount surface at a depth of 2-2.5 km. Two beds enriched in carbonaceous material were identified in the sedimentary sections. The formation of these beds is likely related to the oceanic anoxic events MCE and OAE2 (Savelyev et al., 2012). During the anoxic events, the seamount surface fell in the oxygen minimum zone, which led to the accumulation of rocks enriched in organics. Anoxic conditions promoted the accumulation of many ore elements in carbonaceous beds, including the platinum group elements, the source of which can be synchronous volcanic eruptions (Savelyeva et al., 2015).

Tectonic structure of the southern part of the Kamchatsky Mys peninsula corresponds to accretionary prism. Fragments of basalt flows and carbonate-siliceous sections occur as faulted blocks and olistoliths in siliceous tuff matrix of island-arc origin. The mantle peridotites and gabbro compose tectonic slices (Khotin and Shapiro, 2006). This structure was formed in the Paleogene, before the accretion of the Kronotsky paleoarc to Kamchatka in Pliocene (Lander and Shapiro, 2007). The peculiarity of this terrane is large diversity of paleoceanic

rocks that may be related to a complex structure of the subducted oceanic plate complicated by seamounts of the Hawaiian-Emperor chain.

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