PGE in carbonaceous beds in the Cretaceous carbonate-siliceous section of the Kamchatsky Mys peninsula (Russia)

O. L. SAVELYEVA[1], S. V. PALESSKIY[2] AND D. P. SAVELYEV[1]

[1]Institute of Volcanology and Seismology FEB RAS, Petropavlovsk-Kamchatsky, Russia (*correspondence: savelyeva@kscnet.ru)

[2]V.S. Sobolev Institute of Geology and Mineralogy, Siberian Branch of the RAS, Novosibirsk, Russia

We have studied the carbonate-siliceous section of paleooceanic deposits on the Kamchatsky Mys Peninsula (Eastern Kamchatka, Russia). The section is represented by a rhythmic intercalation of planktonic limestones and jaspers and contains two beds enriched by organic carbon, corresponding to the two oceanic anoxic events - MCE and OAE2 [1] [2]. The maximum content of organic matter in those beds reaches 68%. Carbonaceous shales are enriched 50-500 times in Ba, Ni, Zn, As, V, Mo compared to host carbonate-siliceous rocks and contain abnormally high PGE and Re. Analytical data for PGE and Re concentrations were obtained by the method of isotope dilution ICP-MS.

The concentrations of PGE in the lower (at MCE) and the upper (at OAE2) beds are, respectively (ppb): Ru - 7.0 and 2.8, Rh - 2.9 and 4.1, Pd - 105 and 119, Os - 2.2 and 5.9, Ir - 5.3 and 3.1, Pt - 116 and 2176, Re - 206 and 347. These data confirm an iridium anomaly in the lower bed - 9 ppb Ir in the inorganic part of carbonaceous shales [2] that we found earlier by neutron activation analysis. The texture and composition of the host rocks exclude hydrothermal genesis. Sea water and simultaneous to sedimentation volcanism could become a source of PGE and other metals. Carbonate-siliceous rocks in the studied complex are closely associated with basalts, for which the relation with Cretaceous Hawaiian mantle plume activity is proved [3]. Accumulation of the ore elements in carbonaceous beds is associated with anoxic conditions during sedimentation. Different amounts of accumulation of various PGE in the upper and lower beds may be caused by different levels of anoxia during these episodes. The upper bed is richer in organic matter and its geochemical characteristics correspond to the stronger anoxia. Our research may bring us closer to understanding of a syngenetic mechanism of accumulation of metals in black shales.

[1] Palechek et al. (2010) *Stratigraphy and Geological Correlation* **18**, (**1**) 63-82. [2] Savelyev et al. (2012) *Geophysical Research Abstracts*, **14**, EGU2012-1940. [3] Portnyagin et al. (2008) *Geology*, **36**, (**11**) 903-906.