

New data on the upper Paleocene - lower Eocene stratigraphy of West Kamchatka region, the North Pacific

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In West Kamchatka there are some excellent sequences of marine Paleogene and Neogene, which were described many times in literature. However up to recently the important part of the Paleogene, i.e., upper Paleocene – lower Eocene, remained unstudied. Deposits of this age are missing in the region because of tectogenesis. Lately V.I. Volobueva discovered them in northwestern Kamchatka and referred them to the Unel and Ommai formations (sandstones, siltstones, up to 3000 m thick). Previously, in the 1950s, these formations were considered as the upper Eocene and Oligocene.

V.I. Volobueva passed her paleontological materials to the Geological Institute of Russian Academy of Sciences in Moscow. Their examination yielded the following results. In the sequences 7 local beds with mollusks (more than 70 identified species), 6 beds with benthic foraminifers, and 8 levels with planktonic foraminifers were established. Mollusks were studied by V.N. Sinelnikova and the author and foraminifers by V.N. Benyamovsky and N.A. Fregatova. The benthic assemblages show a great similarity with (appeared to be very similar to) the Zelandian-Thanetian and Ypresian associations of adjacent regions (including California). In particular, 50–57% of molluscan species are identical with the California forms. They are mostly warm-water species (“moderate” or “paratropical” forms). The planktonic foraminifers discovered only in the Ommai Formation clearly indicate its Ypresian (*Acarinina*, *Morozovella*, *Subbotina* and others) and possibly early Lutetian (*Turborotalia* and others) ages. The Ypresian planktonic foraminifers have been found in West Kamchatka for the first time. At this time interval there was no connection between the Pacific and Arctic basins (the first opening of the Bering Strait took place only in the latest Miocene - early Pliocene). Shelf basins of the Asiatic and American provinces of the North Pacific were intimately related and characterized by similar relatively warm-water conditions. Biota of the basins was not “boreal” from the present-day standpoint.

The formation of the marine Thanetian and Ypresian sequences in northwestern Kamchatka was due to the appearance of a basin connected by straits with the North Pacific water areas. Thus, in Kamchatka the molluscan and foraminiferal assemblages that mark the most significant warming event of the Cenozoic (Thanetian-Ypresian) have been identified for the first time. This makes us to introduce some corrections into the regional Paleogene stratigraphic schemes and paleogeographic reconstructions for Kamchatka.