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ВОЗМОЖНЫЕ ПУТИ ЭВОЛЮЦИИ ДИАТОМЕЙ В ПЛЕЙСТОЦЕНЕ

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SOME WAYS OF THE PLEISTOCENE MARINE DIATOM EVOLUTION

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The Kurile Arc-Island region characterized by strong volcanic and tectonic activity is considered as a very important geological region to clear understand the evolution of Diatom flora during the late Pliocene and Pleistocene. The analysis both of the first and last evolutionary appearance of the diatoms through North Pacific allow us to conclude that this region was one of the Diatom origin center. We can see the highest Diatom species diversity as well as interspecies morphological changes of the diatom valves recorded in the Kurile Arc-Island shelf deposits (Pushkar, Cherepanova, 2001, 2008, 2011; Pushkar, Razzhigaeva, 2003).

The Pleistocene age was such geological epoch when contrast multiple paleoclimatic changes with high amplitudes and short-time periods influenced on spreading of the Diatom species populations and interspecies diversity of the morphological signs. On the one side, the developing of the geographical and ecological barriers inside of the paleopopulation areas leaded to gaps of the paleopopulations and forming of the geographical subspecies, and then – new species under the polyphyletic or monophyletic evolutionary ways (Cherepanova et. al, 2010). On the other side, the high species diversity and morphological variability considered as phenotypes inside of such paleopopulation as, for example, *Actinocyclus ochotensis* s.l., *Thalassiosira gravida* s.l., *Proboscia barboi*, *P. curvirostris*, and *Neodenticula koizumii* etc. give us a key to describe such evolutionary process as phenotypic selection. We may consider *Actinocyclus ochotensis* phenotype "*ochotensis*" and phenotype "*ochotensis fossilis*, *Proboscia* phenotype "*curvirostris*" and phenotype "*barboi*", *Thalassiosira* phenotype "*gravida*" and phenotype "*gravida fossilis*" as climatic modifications of the "sensu lato" species – types. V. Pushkar and M. Cherepanova wrote early (Pushkar, Cherepanova, 2001, 2008) about the morphological evolution of the *Neodenticula seminae* var. *fossilis* (= *N. koizumii*) and *Neodenticula seminae*. All observed morphotypes have been classified into two main groups based on their valve configuration and morphological structures connecting with the fixed ecological habitats. These groupings were described as function of the paleoclimatic changes and confirmed by discriminate analysis using the frequencies of the valves of the concrete morphotypes along the "cold" and "warm" sequences of the marine isotopic stages established in the shelf and pelagic Pleistocene sediments. We consider that phenotypes "*ochotensis fossilis*", "*barboi*", and "*gravida fossilis*" are the clear reaction on more moderate climate impact, while the another phenotypes namely as "*ochotensis*", "*curvirostris*", and "*gravida*" correspond to glacial impact.

At the late Pliocene-beginning early Pleistocene morphological plasticity of the diatom valve structural signs was very high, while during the early-middle Pleistocene the morphological plasticity was reduced, so "moderate" phenotypes become extinct. The low selective frequency of the non-plasticity signs is the cause of the elimination of the corresponding alleles in chromosomes, and changes in the genotypes and genofunds of the diatom populations in whole. These phenotype sequences in the marine sediments may be used to reconstruct the paleoclimatic changes within the latest Pliocene-Pleistocene as well as to correlate the sediments between marginal seas and open Pacific. The Kurile Arc-Island shelf sediments with high morphological diversity of the certain species should be considered as a key to such correlation.

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