Geophysical Research Abstracts, Vol. 9, 00299, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-00299

Diatoms as proxies of Holocene environmental changes in the East-Arctic Seas shelf

M.S. Obrezkova, I.B. Tsoy

V.I. Il'ichev Pacific Oceanological Institute, Far Eastern Branch of the Russian Academy of Sciences, Vladivostok, Russia, (obrezkova@poi.dvo.ru / +7 4232-312573 / +7 4232-312372)

The Arctic is a crucial region for study of Global Climate Change as it will be one of the first regions where changes will be rapid and severe and show visible effects. The Siberian marginal seas are key regions to monitor the Arctic climate system. Diatoms are unicellular algae with an external box-like skeleton of opaline silica. They are one of the most important primary producers in the Arctic seas. Diatoms accurately reflect environmental changes and they are successfully employed for paleoreconstructions.

We have studied diatoms from the sediments of the Laptev and East-Siberian seas sampled by gravity cores. According to our and published data (Polyakova, 1997, Cremer, 1998, Bauch, Polyakova, 2000; Tsoy, 2001) 453 diatom taxa, belonging to 71 genera, are identified in the Laptev Sea sediments. Pennate diatoms are most diverse, such genera as *Navicula* (85 taxa), *Pinnularia* (33 taxa), *Fragilaria* (25 taxa), *Nitzschia* (24 taxa) and *Eunotia* (22 taxa). Most of them are freshwater taxa (2/3 of total diatom flora), marine and brackishwater taxa constitute 1/3 of total diatom flora. Although the species diversity occurring in this region is relatively high, only few species (freshwater *Aulacoseira subarctica* (Műller) Harworth and brackishwater *Thalassiosira hyperborea* (Grunow) Hasle et Lange) are dominant. The ecological composition of diatom assemblages suggest changes of the Lena River flow intensity or direction during last 1000 years.

In the East-Siberian Sea sediments 140 diatom taxa, belonging to 52 genera, are identified, where 94 species are marine and brackishwater, 20 – freshwater and 18 – extinct. The most diverse genera are *Navicula* (21 taxa), *Thalassiosira* (9 taxa), *Coscinodiscus* (7 taxa), *Chaetoceros*, *Pinnularia* and *Nitzschia* (6 taxa in each genera). Marine neritic diatoms *Thalassiosira antarctica* Comber è *Th. gravida* Cleve (spores) and brackish-

water *Thalassiosira hyperborea* (Grunow) Hasle et Lange are dominant. According to diatom data the most favorable conditions of so called “hydrobiological optimum” (Polyakova, 1997) on the East-Siberian Sea shelf occurred approximately from 5700 to 2500 years BP. It is confirmed by high diatom productivity and diverse taxonomic composition. Similar conditions were observed in the other Arctic seas and in the northern shelf of the Sea of Okhotsk. During 2500-1300 years BP period conditions were severe that is evidenced of diatom content decrease and poor taxonomic composition. The Laptev and East-Siberian seas sediments contain reworked Paleogene and Neogene marine diatoms proved the presence of marine Cenozoic basins in the region. It should be noted that reworked Cenozoic species are typical for the North Pacific and it can be interpreted as a link between North Pacific and Arctic basins in Paleogene and early Neogene.