Geophysical Research Abstracts
Vol. 20, EGU2018-19410, 2018
EGU General Assembly 2018

Diatom assemblages from the sediments of the lakes of Taymyr Peninsula (North Siberia, Russia)

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Palaeoecological investigations in the larch forest-tundra ecotone in northern Siberia have the potential to reveal Holocene environmental variations, which likely have consequences for global climate change because of the strong high-latitude feedback mechanisms. A sediment core from Khatanga-12 Lake (Taimyr Peninsula, Krasnoyarsk krai, Russia) has been studied. The 131.5-cm-long core covers ca. 7100 years of sedimentation (Klemm et al., 2015). The age model was presented in more detail by Klemm et al. (2015).

Fieldwork was undertaken as part of a joint Russia-German Expedition to the Khatanga region in 2011. For diatom analysis, 65 fossil sediment samples of 1.5 ml were retrieved using plastic syringes. Diatom analyses were conducted according to the procedures of sample treatment, microscopy, and taxa identification and terminology described in Pestryakova et al. (2012).

We also used the results of diatom analysis of surface sediments samples from 36 lakes (4 lakes were investigated in 2011 and 32 in 2013) scattered through the gradient of natural zones from tundra to forest tundra and northern taiga of Khatanga River watershed. These lakes were selected to cover large gradient in geography, climate, vegetation and water chemistry. In total, 346 taxa were recorded in the modern diatom data set. They belong to 3 classes according to the systematics of the section Bacillariophyta by Round et al. (1990).

The class Bacillariophyceae shows the highest diversity, comprising 314 taxa (91 % of all taxa) in 62 genera. Highest taxa numbers are found in the genera Pinnularia (37), Eunotia (19), Navicula (15), Cyclotella and Gomphonema (13), Diploneis and Neidium (12), while 42.6 % of the genera are represented by only one or two species. Most abundant species are Cyclotella iris Brun & Héribaud-Joseph (maximum to 65.8 %), Staurosira venter (Ehr.) Cleve & Möller (64.1 %) and Staurosirella pinnata Ehr.(55.4 %).