

The new data on the seasonal distribution of diatoms in the Southern Baltic coastal lakes as a basis for diatom-based transfer functions to reconstruct past environmental changes in the Baltic coastal zone

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Lakes ecosystems are very sensitive to climate and environment changes. In lake sediments there are preserved remains of plant and animals that lived in the lake and its surroundings in the past. The species composition of past assemblages is a basis for quantitative and qualitative reconstruction of the past environmental changes (climate changes). One of the most commonly used bio-proxy for the reconstruction of lake development are subfossil diatoms which are sensitive to lake water pH, nutrient status, salinity and temperature.

In this poster we present the new data from the coastal lakes on the Southern Baltic coast. The main goal of this research was to quantify the relationships between modern diatom assemblages and present-day environmental conditions. These relationships will be used to develop diatom-based transfer functions that will be applied to future studies of environmental change on the Polish Baltic coast.

Water samples for diatom and chemical analyses were collected a few times per year between 2012 and 2014 from 12 coastal lakes located along the Polish Baltic coast as well as from the Baltic Sea. We analysed the whole phytoplankton composition. However the special focus was put on diatoms. At each site, a suite of important water quality parameters was collected, including chemical (e.g., chlorides, phosphorous and sulphur) and physical (e.g., Secchi depth) variables. Diatom assemblages from each site were counted and identified to the most specific taxonomic level possible. Diatom data were compiled for comparison to corresponding environmental data and development of indicator models.

The results of the analysis show seasonal changes in diatom distribution as well as the chemical and physical water properties which are mainly related to saltwater intrusions to the lakes. Lake Koprowo, Lake Resko Przymorskie, Lake Bukowo and Lake Łebsko are under the constant of seawater influence, which makes them similar to lagoons. In Lake Gardno seawater intrusions occur throughout most of the year but the lake water salinity is lower. Lake Jamno, is primarily a freshwater lake and seawater intrusions are rare. Nevertheless, the concentrations of chlorides and brackish-water diatoms in some parts of the lake can be enhanced. Lake Dołgie Wielkie, Dołgie Małe are typically freshwater lakes.

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