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Diatom-based reconstruction of the Lake Czechowskie trophy status in the last 2000 years (Tuchola Forest, Northern Poland)

Monika Rzodkiewicz (1), Thomas Hübener (2), Florian Ott (3), Mateusz Kramkowski (3,4), Milena Obremska (5), Michał Słowiński (4), Izabela Zawiska (6), Mirosław Błaszkiewicz (4), and Achim Brauer (3)

(1) Adam Mickiewicz University Poznań, Department of Quaternary Geology and Palaeogeography, Institute of Geoecology and Geoinformation, Poznań, Poland (lutynska@amu.edu.pl), (2) University of Rostock, Institute of Bioscience, Rostock, Germany, (3) Helmholtz-Centre Potsdam – GFZ German Research Centre for Geosciences, Section 5.2 Climate Dynamics and Landscape Evolution, Telegrafenberg, Potsdam, Germany, (4) Polish Academy of Sciences, Department of Environmental Resources and Geohazards, Torun, Poland, (5) Polish Academy of Sciences, Research Centre in Warsaw, Institute of Geological Sciences, Warsaw, Poland, (6) Polish Academy of Sciences, Department of Geoecology and Climatology, Warsaw, Poland

Lakes ecosystems are very sensitive to climate and environment fluctuation. In lake sediments there are preserved remains of plant and animals that lived in the lake and its surroundings in the past. In paleolimnological research we analyse the species composition of the assemblages preserved in the sediments and on this base reconstruct past environment changes (climate changes). One of the most commonly used bio-proxy for reconstruction of lake development are subfossil diatoms. Diatoms are commonly used to reconstruct such environment parameters as: pH, nutrient status, salinity or temperature.
In our study we analysed the sediments of Lake Czechowskie, which is located in the northern part of the Tuchola Forest region (Northern Poland). Lacustrine sediments of this lake are laminated and therefore are unique archive to reconstruct climate and environmental changes in Northern Polish Lowland. In this research we focused on the last 2000 years and with high resolution analyzed diatoms, pollen and sediment geochemistry. The core chronology is based varve counting, 14C AMS dating of terrestrial macro remains, 137Cs activity measurement. Diatoms communities during the last 2000 years were rich and mostly very well preserved. A characteristic feature of those communities is the dominance of typically planktonic species of the spring phytoplankton, as the oligo to mesotraphent Cyclotella comensis but also the eutraphent Stephanodiscus parvus.
We also aimed at quantitative reconstruction of the pH and eutrophication(TP) using diatom-based transfer functions in order to identify reference conditions for the Lake Czechowskie. Transfer function are based on the assumption that the modern biological proxies, which ecological requirements are known, can be used to quantitative reconstructions of the past changes.

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