Potential of Georgian lakes sediments for environmental change reconstructions during the Holocene

Research project objectives

Despite growing, worldwide presence and importance of paleogeographic research, Caucasus and Anatolia are underrepresented in the global network of environmental reconstructions. However, there are numerous lakes located in the high mountains of this region offering promising material for paleolimnological investigations. Undoubtedly, low human impact is one of the region's advantages, as lakes situated there are most likely to represent natural changes occurring in the past environment.

This preliminary project aims at collecting surface cores from the three Georgian lakes. Offering a unique material, these sediments will be used to assess potential for further multiproxy research based on the sediments from Greater Caucasus and Lesser Caucasus. We are going to investigate three lakes: **Kelitsadi** (area 0.25 km^2, max depth 13.9 m, 3060 m alt.) in the northern Georgia and **Kakhisi** (0.05 km^2, 9.9 m, 1752 m alt.), and **Tabatskuri** (14.20 km^2, 42.2 m, 1991 m alt.) in the southern part of the country. We expect to choose one or two lakes that could be used for further studies spanning the entire Holocene.

Methodology

Project is divided into four steps:

1) Field work in Georgia: lake coring with gravity corer. Afterwards cores will be transported to the University of Gdansk (Poland).

2) Core opening and documentation, macroscopic description, and digital photography.

3) Elemental μXRF and hyperspectral (HSI) scans at the University of Bern (Switzerland). This will provide initial information on sediment chemistry (elemental) and pigments. This will serve as a first assessment of potential proxies that could be used in further studies.

4) The last step is development of chronology for each core based on C-14 dates.