Annually laminated sediments are a unique source of information on transformations occurring in the environment due to climate change, but also due to anthropopressure. An important advantage of these deposits is the precision and control of time. This makes laminated lake sediments increasingly interesting for multidisciplinary research teams.

The main driving force of climatic oscillation is the ocean circulation and the size of the so-called "thermohaline circulation" (Björck et al., 1997; Broecker et al., 1990a; Broecker et al., 1990b), therefore it can be expected that large fresh water supply from Lake Agassis into the North Atlantic in the Late Glacial (Younger Dryas) (Rind et al., 1986) and at the beginning of the Holocene (Preboreal Oscillation, Episode 8.2)(Björck et al., 1997; Fisher et al., 2002) must have caused disruption of the thermohaline circulation, which in turn affected the global climate change. This phenomenon was first described by Dawson (1875) who indicated that at the foreland of the Laurentian ice sheet a large freshwater glacial lake developed (FIG. Xxxx mine). Within a few thousand years the lake recorded some spectacular drainage events to the Atlantic Ocean (Clarke et al., 2004; Murton et al., 2010; Teller et al., 2002). One of these violent episodes was recorded in the early Holocene. In the Preboreal, at about 11,300 cal BP, part of the freshwater drained from Lake Agassiz and mixed with the waters of the Atlantic Ocean. The rapid delivery of large amounts of freshwater led to a distortion of the warm ocean current, the Gulf Stream. This episode caused a series of climate consequences including a sharp drop in air temperature. **The Preboreal Oscillation (PBO)**, as it was called, was recorded all around the world, i.e. in ice cores in Greenland (GRIP GIS and NEEM) (Johnsen et al., 1992; Rasmussen et al., 2007), in marine sediments (Björck et al., 1997; Combourieu-Nebout et al., 2013), stalagmites (Shakun et al., 2007), corals (Bard et al., 1996) as well as lake sediments (Bjune et al., 2005; Bos et al., 2007; Leroy et al., 2000; Wick, 2000). In Central and Eastern Europe, however, there are no sites showing how the natural environment in this part of the world responded to the PBO.

The authors propose a research project on a unique profile of biogenic sediments. In 2005, during the development of the Osiek sheet of the Detailed Geological Map of Poland at a scale 1: 50 000, Prof. Mirosław Błaszkiewicz discovered laminated deposits in Lake Jelonek (Tuchola Forest). These sediments were subjected to palynological analyses, the results of which have become the main part of the habilitation paper of Dr. Anna Filbrand-Czaja (2009). This analysis showed that the lake contains a full sequence of sediment from the Younger Dryas to the present. In 2014, within the framework of the Polish-German cooperation, another core of lacustrine sediments was collected from Lake Jelonek. During the scholarship in GeoForschungsZentrum in Potsdam, the preliminary results of the microlithofacial analyses (analysis of thin sections) conducted by the project manager confirmed that the sediments of Lake Jelonek are annually laminated; on the basis of three profiles a complete core was built. In addition, the project involved a team of scientists conducting advanced studies on the collected profile. What needs mentioning is that the profile has already been scanned regarding its geochemical composition using the µXRF scanner and a preliminary age depth model has been obtained based on ten AMS14C dates and the tephra Askja AD 1887; the dates were obtained from macroremains of terrestrial plants.

The main objective of the project is to analyse the episode of the so-called Preboreal Oscillation. In the next stage, we are planning to carry out high-resolution multiproxy analyses. The detailed, five-year (sic!) resolution of the planned analyses of laminated sediments of Lake Jelonek will determine how the environment in Central Europe responded to the rapid climatic impulse induced by the distortion of the ocean circulation. The objective will be implemented based on the results of several paleoecological analyses (**palynological analysis as well as analyses of macroremains, cladocerans and diatoms**) as well as analysis of stable isotopes **(δ18O and δ13C)** and geochemical elements using an **XRF scanner**.

Using the collected test results, we would like to focus on the answers to the questions regarding: **a) mechanisms which accompanied the formation of the natural environment during the Preboreal Oscillation; b) whether and how the PBO climate impulse contributed to the transformation of the species composition of the local and regional vegetation cover; c)differences and similarities of the response of the natural environment to the cooling in various sites in Europe; d) extent of the air temperature changes during the summer; e) whether the changes in environmental components also contributed to the changes in pH and trophy of the water in the lake?**

An important element of the project is chronostratigraphy of the deposits. The time scale will be based on annually laminated lake sediments and then "anchored" in the time frame using the results of the tephrachronological analyses, i.e. on the basis of the positions within the core of the tephra Hässeldalen from the eruption of Snæfellsjökull 11,300 cal yr BP (Davies et al., 2003; Wohlfarth et al., 2006) and tephra AskjaS 10,830 cal yr BP. The authors of the project have prerequisites to finding the aforementioned volcanic glass in the sediments of Lake Jelonek. This is indicated by recognising and identifying of both tephras - for the first time in Poland - during the research on the profile of Lake Czechowskie (15 km to the NW of Lake Jelonek)(Wulf et al., submitted). In addition, another tephra to be sought is the Saksunarvatn tephra dated at 10,210 cal yr BP, which was identified in Lake Tifersee in northern Germany (Wulf et al., submitted).