

The aim of this project is to extend the knowledge about the occurrence and dispersal of the cryptotephra (volcanic glass shards nonvisible to the naked eye) in northern Poland using annually laminated lake sediments. Tephra from explosive volcanic eruptions is ideal for dating and synchronising sedimentary records in order to obtain information about 'leads' and 'lags' of environmental responses during past abrupt climatic changes. There were numerous tephra studies on the influence of the large-scale eruptions from Iceland and the Eifel Volcanic Field on continental northern and central Europe, but so far studies paid only little attention to sites in Poland and Eastern Europe. The proposed scientific project will concern the occurrence of volcanic ash in Poland, which is a niche issue, mainly due to the large distance from the European volcanoes.

We hypothesize that cryptotephra occur more commonly in northern Poland than previously proposed, that those can be detected using appropriate novel methods. We also think that annually laminated lake sediments in a main W-E and subordinate S-N transect are best suitable for tracking the distal tephra dispersal.

The project implementation will require fieldwork, laboratory work and data analysis. Main tasks will use microfluorescence and microanalysis of the volcanic glass shards in order to discriminate and identify the single eruptive events. In addition, varve chronologies of the selected sites from northern Poland will be used to validate the absolute age of tephra and time intervals between volcanic eruptions. Therefore, our project will combine the two geochronological methods in order to develop a tool for precise stratigraphic correlation of different research sites.