

Lake sediments as witnesses of human impact and climate variations – a case study from Schweriner See (Northeast Germany)

Understanding landscape responses to global climate change is an essential issue of modern geoscientific research. North Germany has been subjected to constant hydrological changes since the Last Glacial Maximum (about 21,000 years ago). However, up to now only hydrological tendencies (e.g., higher or lower lake levels) have been described. Lake sediments are one of the best natural archives to track such environmental and climatic changes and hence offer a great potential for detailed reconstructions. Although, Mecklenburg-Western Pomerania is known as the land of thousand lakes, detailed investigations about the climate of the past are very scarce.

This was the reason why we decided to investigate Schweriner See (See = lake), which is especially suited to track environmental changes in the past as it is one of the largest lakes in Northern Germany. The lake was formed after the final retreat of glaciers covering the area until about 16,000 years ago. This offers a record reaching far back in time. We recently started geophysical investigations (e.g., mapping of the lake floor) to detect indicators of former lower lake levels but also to locate the most suitable locations for sediment corings. In 2021 we plan to recover sediment cores using a floating platform. Afterwards sediment cores will be investigated in the laboratory using modern, state-of-the-art methods (sedimentology, geochemistry, diatom analysis and pollen). We aim to investigate how the Schweriner See system reacted to lake-level variations (e.g., potential eutrophication tendencies) and how it responded to external forcing (e.g., temperature, solar insolation). This will be essential in order to be able to predict potential future scenarios against the background of Global Climate Change.

WHAT TO EXPECT.

You will be fully integrated in field- as well as laboratory activities of the Physical Geography department. Therefore, you should be willing to spend time outdoors and enjoy fieldwork (most likely including the support of the lake sediment coring). There are some potential projects, we would like to carry out with you. One might be the analysis of surface sediment samples from Schweriner See, which we will sample together during your stay. In this context, you can get familiar with different sedimentological and geochemical methods (e.g., magnetic susceptibility, grain size analysis). Alternatively, you can support the analyses of sediment cores. Therefore, it would be an asset if you already have a basic knowledge in paleolimnology, limnogeology, sedimentology or geochemistry as this is the focus of our working group. However, also an environmental or biological background bringing new ways of thinking and perspectives in our working group would be conceivable. Depending on your background and interests, we would like to discuss your project together with you.



WHO WE ARE.

Research activities within our department of Physical Geography focus on limnogeological, coastal marine and geoarchaeological challenges in various parts of the world. To achieve this, we analyze lacustrine and marine deposits in our sediment laboratory to reconstruct past environmental variations (induced by climate or human impact) in various ecosystems. We are a small working group who would like to integrate you in the above-mentioned project, which focuses on lakes in Northern Germany, in this case Schweriner See. My name is Marie and I am currently working on my PhD in this project. For your research stay I will be your mentor and I will be happy to discuss issues related to the project, our working group or your stay in Greifswald with you.



GREIFSWALD? NEVER HEARD OF THAT.

No worries, you are not the only one. However, Greifswald is a charming city directly at the coast of the Baltic Sea, which invites you to spend your leisure time at the beach. The University of Greifswald is one of the oldest universities in Germany and in the whole Baltic Sea region. With its small population of 60,000 inhabitants (~10,000 students), living in Greifswald is shaped by several student initiatives such as festivals,

which take place over the summer months. Greifswald is also known as one of Germany's bicycle cities in which you can reach everything within 20 minutes. Furthermore, the city is located in the proximity to the Mecklenburg Lake District, which offers many outdoor activities e.g., bird watching, stargazing, canoeing or hiking in the Müritznational Park. If you are looking for more urban life, the cities Hamburg and Berlin are easily accessible by train in 2-3 hours, which are great for trips at the weekend.

If you still have questions, please do not hesitate to contact me!

CONTACT INFORMATION.

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