

## Constraining Northern Hemisphere glaciation and Greenland Ice Sheet sensitivity during the past ~30My

Palynological analysis on the material from the recent IODP X400 to constrain the age of the sediments and the first paleoenvironmental interpretations

Department: Earth Sciences

Research group: Marine Palynology and Paleoceanography

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### Project description

The goal of this project is to work on the recently drilled (late 2023) material from International Ocean Discovery Program Expedition 400 offshore northwestern Greenland. The unique material from the polar region that has been drilled during this expedition will provide new insights in the timing, nature and intensity of northern hemisphere glaciation, which is still poorly constrained. Furthermore, this material will be used to reconstruct the sensitivity of the Greenland Ice Sheet to changes in temperature and CO<sub>2</sub> during the last 30 million years. That includes periods, for example the Miocene Climatic Optimum and the Mid-Piacenzian Warm Period, which serve as a good analogue for future climate change. Exact age models of the drilled material is crucial for such reconstructions, to put the changes into the right time frame. During this project, the student will work on updating shipboard age models by looking at the distributions of dinocysts species in the recovered sediments. Additionally, this project will show which key climatic intervals have the potential for paleoenvironmental interpretations using palynology.

The student will work within the Marine Palynology and Paleoceanography research group with supervision from Mei Nelissen (who joined X400 as a shipboard palynologist), Francesca Sangiorgia and Peter Bijl. Together with other international team members from IODP X400, the palynological data generated in this project will be integrated with other fossil groups for an integrated picture.

### Job requirements

Affinity for working in the lab. Affinity for (or enthusiasm to learn to use) microscope for fossil identification is a plus.

During this assistantship, the student will be working in the palynology lab, which includes supervised training in sample processing with acids as well as slide preparation. In addition to labwork, the student will be trained in microscope work involving the identification of dinocysts and other (e.g., terrestrial) palynomorphs.