

EGU24-5277, updated on 08 Sep 2024

<https://doi.org/10.5194/egusphere-egu24-5277>

EGU General Assembly 2024

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## Climatic functioning of peatlands in the context of microrefugia - the MIRECLIM project

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Peatlands often function as glacial microrefugia, as shown by palaeoecological research and the contemporary occurrence of glacial species (e.g. *Betula nana*). The bogs and poor fens of Poland's lowlands that we will focus on are islands of the young glacial landscape, which were mainly preserved within forests. Although microclimatic conditions have been identified as one of the most supportive factors for peatland microrefugia functioning, they have not yet been recognized on a larger scale.

In response to this need, in 2023 we initiated the MIRECLIM project, which aims to comprehensively investigate the climatic functioning of numerous mid-forest bogs and poor fens in Poland.

As multiple feedback mechanisms influence microclimatic conditions, our research will consider meteorological conditions, peatland characteristics, conservation measures, and their surrounding environment. We will also assess the impact of peatland overgrowth due to hydrological disturbance on microclimate, the rate of organic matter decomposition, moss growth and the corresponding changes in the composition of the testate amoeba communities. These indicators serve as valuable proxies for inferring moisture dynamics of peatlands in palaeoecological research.

Our studies will be carried out in a multi-scale approach, from in situ measurements to the analysis of multispectral satellite images Sentinel-2 and Landsat. Measurements will be carried out for at least the next three years, so we encourage all interested people to participate.

One of the significant outcomes of our project will be the development of the MIRECLIM database. It will also serve as a platform to integrate the data obtained from the in situ field measurements

with analysed satellite imagery. Another important aspect of our project will be to educate children and local communities about the importance of peatlands as key ecosystems for climate change mitigation, both globally and locally.

Research carried out as part of research project number 2022/45/B/ST10/03423 financed by the National Science Center in Poland.