



Tornado project – The impact of catastrophic deforestation on the lake and peatland ecosystems of the Tuchola Pinewoods, Northern Poland

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An increase in extreme weather phenomena has been observed over the last decades as a result of global climate warming. This project aims to investigate the effects of tornado events on the lake and peatland ecosystems of the Tuchola Pinewoods, Northern Poland. Deforestation by tornado events can cause severe perturbations of the soil hydrology and erosion that, in turn, affects adjacent lakes and peatlands. The Tuchola Pinewoods provide an exceptional possibility of studying the impact of such extreme events as it was struck by a tornado in 2012. This project focuses on lake – peatlands ecosystems that were directly affected by this tornado, with respect to the general transformation of the vegetation (mainly forests) over the last 300 years. Extensive clearing of the forest occurred in the nineteenth century due to human agricultural activity, and we compare this with the impact of the 2012 tornado. Accurate reconstructions will rely on a broad range of palaeoecological techniques such as Cladocera, Chironomidae, diatoms, pollen, macroremains, testate amoebae, but also on geochemistry, i.e. μ XRF scanning. We plan to analyse sediments of Kałębie and Martwe Lakes, as well as the adjacent Martwe peatland located along the path of the tornado. The chronology of the records collected will be based on ^{210}Pb , ^{137}Cs and radiocarbon dating as well as relative (crypto)tephra markers of the Eyjafjöll (2010) and Askja (1875) eruptions. This research addresses the emerging issue of the impact of extreme phenomena and more general climate changes on lake and peatland ecosystems, which potentially helps to adaptations to the environmental consequences of extreme events in the future.

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