

EGU21-12192

<https://doi.org/10.5194/egusphere-egu21-12192>

EGU General Assembly 2021

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Wet in the Anthropocene – a report of exceptionally stable hydrological conditions in a small bog over the last 1500 years

Katarzyna Marcisz¹, Piotr Kołaczek¹, Mariusz Gałka², Andrei-Cosmin Diaconu³, and Mariusz Lamentowicz¹

¹Climate Change Ecology Research Unit, Institute of Geoecology and Geoinformation, Adam Mickiewicz University, Poznań, Poland (marcisz@amu.edu.pl)

²Department of Geobotany and Plant Ecology, Faculty of Biology and Environmental Protection, University of Lodz, Lodz, Poland

³Department of Geology, Babeş-Bolyai University, Cluj-Napoca, Romania

Over the last few hundred years peatlands worldwide are experiencing substantial drying that is lowering their carbon storage potential. However, our high-resolution reconstruction of hydrological changes in a small *Sphagnum*-dominated peatland show that we can still observe healthy bogs in the fragmented landscape of Europe (Marcisz et al., 2020). We investigated last 1500 years history of a bog located in a young glacial landscape in Central Eastern Europe (NE Poland) using a multi-proxy approach and high-resolution dating. Our reconstruction showed a rare case of hydrological stability in the peatland that did not experience any dry shift over the last 1500 years, allowing for an undisturbed growth of *Sphagnum*, stable microbial communities, and high peat accumulation rates. High water tables (>12 cm depth to water table) influenced high resilience of the bog which was not affected by disturbances (deforestations, grazing or farming). Our palaeoecological data suggest that nature conservation practices which target high water tables are essential to maintain peatlands as a sink and not as a source of carbon in the future, supporting an earlier study that concluded a ca. 11-12 cm water table depth as a target number for peatland protection (Lamentowicz et al., 2019).

References:

Lamentowicz, M., Gałka, M., Marcisz, K., Słowiński, M., Kajukało-Drygalska, K., Druguet Dayras, M., Jasse, V.E.J., 2019. Unveiling tipping points in long-term ecological records from *Sphagnum*-dominated peatlands. *Biology Letters* 15, 20190043.

Marcisz, K., Kołaczek, P., Gałka, M., Diaconu, A.-C., Lamentowicz, M., 2020. Exceptional hydrological stability of a *Sphagnum*-dominated peatland over the late Holocene. *Quaternary Science Reviews* 231, 106180.