Greenhouse Gas Budgets of Bavarian Peatlands

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European Geosciences Union – General Assembly 2022 | Vienna, Austria May 23– May 27 2022 | Session BG3.27 Peatland management and restoration

1 Background

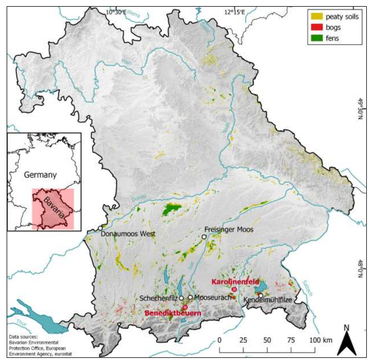
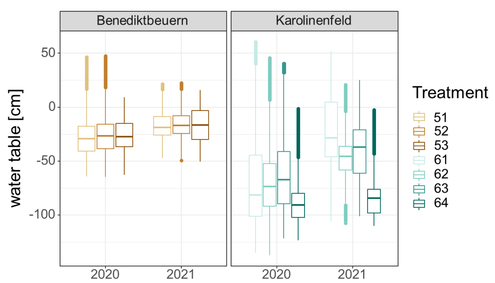


Fig. 1 Map of peatland categories and flux sites in Bavaria (KliMoBay sites highlighted in red)

The Bavarian peatland GHG budget dataset includes various peatland and land-use types, but a synthesis did uncover some data gaps. Within this project we aim to reduce the large uncertainty currently attached to GHG budgets of grasslands under intensive management on deeply drained peat soils.

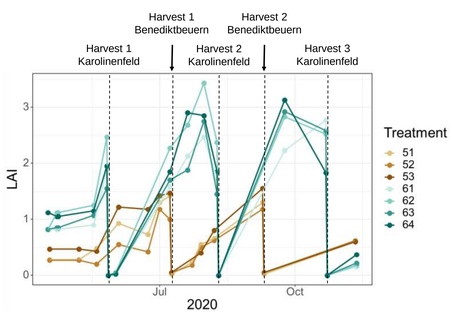
2 Study Sites

Permanent grassland sites *Karolinenfeld* (deeply drained) and *Benediktbeuern* (high water table; reference) were chosen for flux measurements. Various treatments at each site capture water table and vegetation intra-site variability.

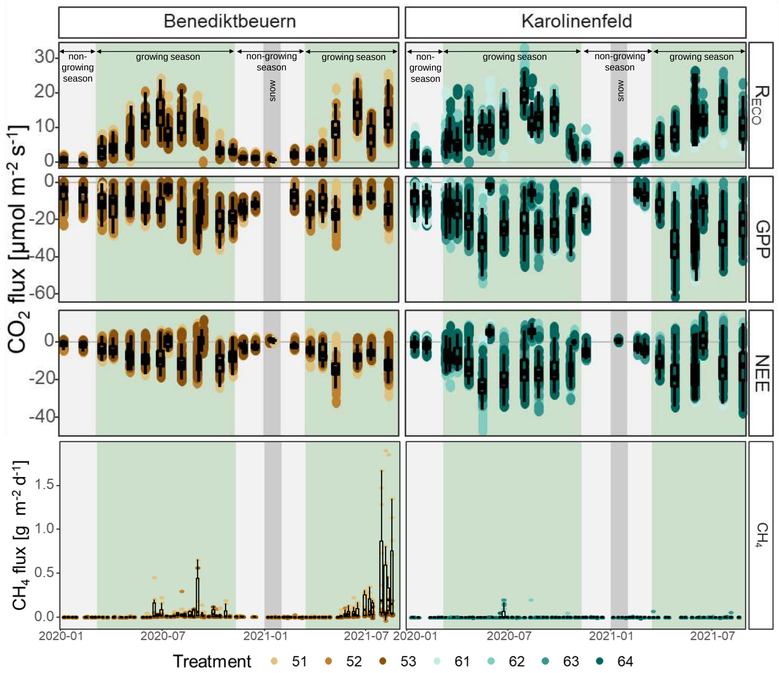


Water tables higher in both areas in 2021
Benediktbeuern: natural variability in climatic water balance
Karolinenfeld: rewetting

Different management intensities = different productivity
Benediktbeuern:
2 harvests, no fertilisation
Karolinenfeld:
3 harvests, with fertilisation



3 Preliminary Results



All **CO_2 flux components** are **larger** at the deeply drained grassland site, **Karolinenfeld.** Bigger C exports via harvests reflect larger GPP at this site.

C export 2020 [g C m^{-2}]

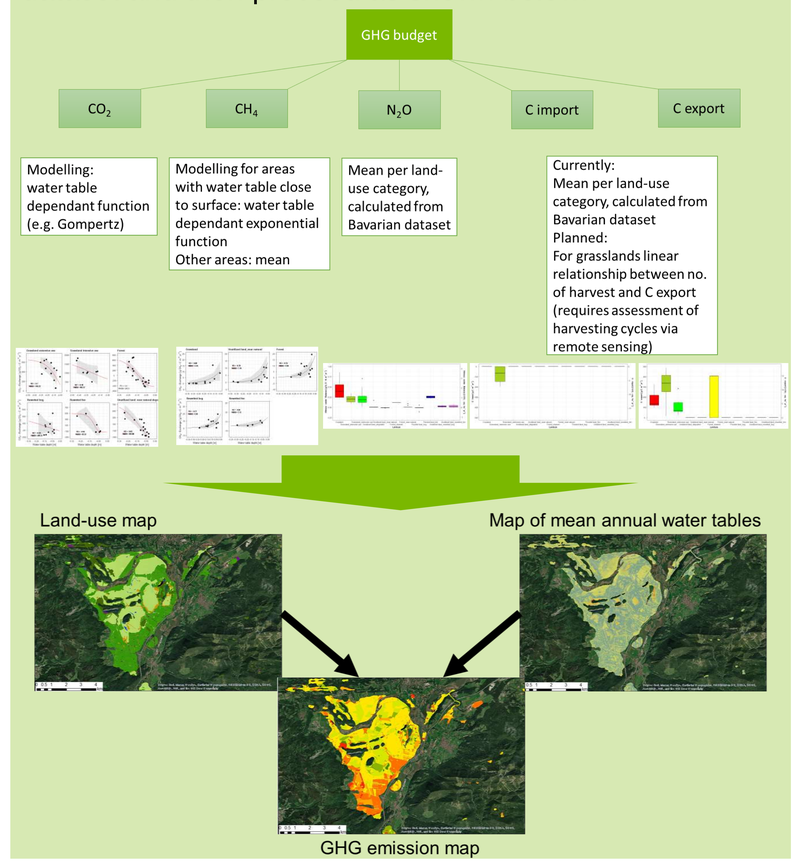
	Benediktbeuern	Karolinenfeld
Harvest 1	141.8 ± 22.2	185.1 ± 19.8
Harvest 2	108.8 ± 35.3	190.1 ± 29.1
Harvest 3	-	146.4 ± 33.4
Total	250.7 ± 57.1	521.6 ± 79.1

Notable methane fluxes occurred only in the wetter site, **Benediktbeuern**, and were larger in 2021 as a result of a higher mean water table that year.

Nitrous oxide fluxes were **negligible** at both sites in both years despite N input via fertilisation in Karolinenfeld.

4 Further Steps

Next:
Analyse remaining data and calculate annual budgets for CO_2, CH_4 and N_2O. Integrate this data into the Bavarian dataset and then proceed as shown below:



5 Acknowledgements

We would like to thank Clarisse Brehier and our voluntary and student helpers for carrying out the field measurements. We are grateful to the Bavarian State Properties (Bayerische Staatsgüter) and the Centre for Environment and Culture Benediktbeuern (ZUK) for access to the field sites. Lastly, we want to thank our project partners at the Technical University of Munich, the Ludwig Maximilians University Munich and the Bavarian State Research Center for Agriculture as well as our funding agencies, the Bavarian State Ministry of the Environment and Consumer Protection and the European Regional Development Fund.

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