

Doctoral researcher position on “Boreal peatlands under stress: plant water-carbon interactions during and after drought”

Host institution: Institute of Atmospheric and Earth System Research (INAR), University of Helsinki

Location: Department of Physics, Gustaf Hällströmin katu 2, Helsinki

Starting date: 1 November 2024 (later is possible)

Duration: 3 years (possible extension by 1 year)

Background

Boreal peatlands store vast amounts of carbon and are important carbon sinks that help mitigate global warming. Increasing drought in the boreal zone threatens these carbon sinks as limited water availability can drastically reduce plant production. The water use strategies of boreal peatland plants in response to drought and their impact on peatland production, however, are largely unknown. Therefore, we urgently need to understand the water use of peatland plants and its implications for peatland carbon sink potentials. To address this knowledge gap, our project will assess the drought response of distinct peatland types, i.e., pristine and forestry-drained peatlands.

We will systematically characterize the impact of plant water use strategies on peatland productivity by combining 1) novel in-situ water stable isotope methods and state-of-the-art machine learning techniques for process understanding with 2) eddy-covariance carbon and water flux monitoring and multi-sensor remote sensing for vegetation and soil water dynamics. We will integrate our results in a process-based land surface model to provide improved predictions for future carbon emissions of boreal peatlands.

The doctoral researcher will work with the extensive observations collected during the project. The observations include novel in situ plant and soil water isotope data, greenhouse gas exchange measurements, as well as ecosystem level eddy covariance measurements, collected at different peatland sites. The doctoral researcher will actively conduct and participate in observations.

The doctoral researcher will work as part of the new Academy of Finland fellowship PeatStress. The position will be located in the micrometeorology group at INAR. The work will be done in close collaboration with the Finnish Meteorological Institute, the German Aerospace Center (Munich, Germany) and University College Dublin (Ireland), including visits to our collaborators.

What is expected from you

- A MSc degree, preferably in meteorology, environmental sciences, hydrology or statistics. MSc students near the completion of their degree are also encouraged to apply.
- Willingness to pursue a PhD degree in environmental sciences or meteorology.
- Some experience in programming (e.g., R, python) and statistical analysis of scientific data. Experience in working with remote sensing data (e.g., with products from Copernicus) as well as greenhouse gas measurements (e.g. eddy covariance, chamber, sap flux) is an asset.
- Willingness and suitability for field work, with partially long working days.
- Driver's license class B.
- Sufficient skills in written and spoken English.
- Interest in doing research and ability to independent creative thinking, combined with good self-discipline and reasonable communication skills.
- Enjoy working collaboratively.

What we can offer

- A 3-year PhD student position, an extension to 4 years is planned.
- Starting salary of ca. 2600-2800 € per month, depending on the appointees' qualifications and experience

- A multi-disciplinary research environment at the University of Helsinki Kumpula Campus, which also hosts the FMI headquarters
- Flexibility between on-site and remote working
- Desk space and sufficient computing resources

For more information, you can contact Angelika Kübert (angelika.kuebert@helsinki.fi). You can apply via the following link:

<https://jobs.helsinki.fi/job/Helsinki-Doctoral-Researcher%252C-Boreal-Peatlands/803576102/>

The application should include:

- A short motivation letter (maximum 1 page), clearly highlighting research/educational accomplishments,
- Your CV (maximum 2 pages), clearly highlighting earlier relevant experience in environmental sciences.
- Bachelors/Masters degree grade card including Bachelors/Masters thesis topic and its grade
- Publication list (if applicable)
- Names and contact details of 2 references

Deadline for applications: **** 21 October 2024 ****, or until a suitable candidate is found.