Master project on greenhouse gas and oxygen dynamics in littoral zones of lakes

Department: Department of Ecology and Genetics, Uppsala University (limnology unit)
Place: EBC, Uppsala
Start: Spring 2025 or later
Application: charlotte.grasset@ebc.uu.se
Credits: preferably 45-60 but can be discussed

Here is an opportunity to combine field measurements, laboratory experiment and modelling in order to investigate how emergent aquatic plants influence greenhouse gas and oxygen cycling in aquatic ecosystems.

Background

Lakes are affected by climate change that can trigger a dangerous feedback loop by increasing the amount of greenhouse gases (GHG, i.e. carbon dioxide (CO_2) and methane (CH_4)) released by lakes. This research project specifically deals with GHG emissions and oxygen (O_2) dynamics in littoral zones of lakes, which are hotspots for lake CH_4 emissions but can also take up atmospheric CO_2 and act as carbon sinks.

Project aims and description

In this project, the student will **determine how emergent macrophytes affect O_2 and GHG dynamics over short time scales in a greenhouse experiment and in situ at the lake Erken.** The student will then model GHG and O_2 dynamics over diurnal cycles using the collected data to estimate net ecosystem productivity, gross productivity and respiration. This master project is connected to two large projects RELITORATE and CLIMIPHY, the student will work in team and have multiple possibilities for interaction

Qualifications

Interest in biogeochemistry. Interest in working in the field and lab but also in modelling. The project will involve spending time on a small boat or docks close to the shore of lakes.