

Plant–Atmosphere Interactions in a Changing Environment

PhD course, 12-16 October 2020

Ongoing environmental change has profound impacts on plants in terrestrial ecosystems around the world, with important implications for ecosystem services such as food security, forest production, biodiversity, livelihood in low-income regions, and the regulation of biogeochemical cycles, hydrology and climate. This course deals with the responses of plants (mostly crops and forests) to global environmental change factors such as rising CO₂, warming, tropospheric ozone, and nitrogen deposition. Main emphasis is on ecophysiological plant responses and how they affect ecosystem processes such as productivity, carbon balance and water cycling. The representation of plants and vegetation in ecosystem and climate models will also be covered to some extent. The course content will suit PhD students with emphasis on plant ecology/ecophysiology as well as those with a broader interest in land–atmosphere interactions and modelling. The course is recommended to give 3 PhD student credits (equivalent to two weeks fulltime work).

These are the learning outcomes of the course:

- Understanding of the regulation of plant-atmosphere interactions at the leaf level
- Knowledge on plant and vegetation responses to environmental change drivers such as warming, rising atmospheric CO₂, tropospheric ozone and nitrogen deposition
- Understanding of how plant responses are represented in large-scale models
- Experience of calculations of leaf-atmosphere gas and energy exchange and its environmental dependencies
- Critical discussions of scientific papers with co-students and teachers
- Synthesis of course learning for writing a report at the end of the course

The course is given by the Dept of Biological and Environmental Sciences at the University of Gothenburg and the research school ClimBEco. Due to Covid-19, it will be given online, using Zoom. Literature will be provided for PhD students to be read before the start of the course. Participants need access to computer with Excel software for the two calculation exercises. On the first day, each student should present his/her research topic briefly during 5 minutes each, using a maximum of 5 PPT slides.

Teachers on the course include Swedish as well as international experts on plant responses to global warming, rising atmospheric CO₂, tropospheric ozone, nutrient availability, and biosphere-atmosphere modelling; see preliminary schedule on next page.

Contact Johan Uddling (johan.uddling@bioenv.gu.se) for questions or registration. When registering, please provide information following the template on the third page.

Participants:

Name: Xxx Xxx

Affiliation: [Department, University, Country]

Main supervisor: Xxx

Topic & Interest: [1-3 sentences]

Motivation to take the course: [1-3 sentences]