

From CO₂ in situ measurements to carbon balance maps as a tool to support national carbon accounting

This is a PhD-course run by INES with input from ICOS Carbon Portal and ICOS Sweden. The course is supported by ClimBEco and is included in the ClimBEco research school course program (CEC, Lund University, Sweden).

Course period:

Week 11: 9 March-13 March at campus (Lund University, Dept. of Physical Geography and Ecosystem Science).

Preparatory reading is required the week before campus time. Material and links will be sent out in beginning of week 9.

After campus time, the students summarize the reflection on max two pages. Deadline for submission is end of week 13.

Course description:

The course aims at introducing the concept of assessing the **carbon balance of a geographical region from in situ measurements and how the results can be used as a tool to support national carbon accounting**. The course will focus on the user perspective and different ways of upscaling the carbon dioxide exchange to assess the carbon budget of a larger region (e.g. Sweden). This will include scientific motivation of the different types of analyses that are used in the different steps to assess the (terrestrial) carbon balance and knowledge about their uncertainties and limitations. An important part of the course is the need for transparency in the data used and how to handle uncertainty in research results.

The course starts with background theory on flux data measurements including a field visit to the ICOS measurement station Hyltemossa. This is followed by lectures on data processing and includes FAIR principles on science data management and stewardship and introduction to Jupiter Notebook and measurement data acquisition to be used in the following exercises.

Basic theory of different up-scaling methods such as inverse modelling, vegetation modelling, and remote sensing are introduced and how the results can be used for national carbon accounting. The students perform exercises to assess possibilities and limitations if the different methods.

During campus time, the students will work on a reflection/learning diary. The students present their reflection/learning diary during the last day of the campus week and discuss the results with lecturers and involved teachers. After presentation and feedback on their reflection, the students write a two page summary that, together with participation in the campus activities, is the base for approval of the course.

Course points:

3 points. To pass the course, the student must participate in the lectures, exercise(s) and write the diary and present this. The written reflection + presentation will be examined with the score pass/fail.

Application:

The registration link is:

<https://www.nateko.lu.se/form/registration-for-phd-course-from-co2-in-situ-measurements-to-carbon-balance-maps>

Deadline for application is 1 February 2020.

Eligibility and course fee:

The course is open free of charge for PhD-students.

ClimBEco PhD students and PhD students at INES are prioritized. External PhD students may participate if there is space. (Please note that travel and accommodation is not included in the course.)

More information:

The course will be announced and information will be updated continuously at the ClimBEco homepage.

<https://www.cec.lu.se/climbeco-graduate-research-school>

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