

Chemistry and Climate Change (5hp)

This is a specialized course that will utilize a reading seminar/peer-review format to revisit the state-of-the-knowledge regarding certain topical themes in atmospheric chemistry and climate. Previously, similar courses have focused on reviewing (i) a 2012 special edition “Atmospheric Chemistry” in Chemical Society Reviews and (ii) the IPCC WGI report, Climate Change 2013: The Physical Science Basis. Those courses were run in 2013 and 2014 respectively. For 2017 we propose to continue this very successful format for 3rd cycle students but will focus on recent topical publications. Three review publications have been identified, to cover broad topics from which students will be asked to identify specific areas for deeper investigation.

- O. Björneholm, et. al. Water at interfaces. Chemical Reviews, 116(13):76987726, 2016.
- C. George, et. al. Heterogeneous photochemistry in the atmosphere. Chemical Reviews, 115(10):42184258, 2015.
- P. K. Quinn, et. al. Chemistry and related properties of freshly emitted sea spray aerosol. Chemical Reviews, 115(10):43834399, 2015.

The course will be structured as weekly moderated discussions (10-15 students) complemented by 4-6 invited guest lectures from experts within the students chosen areas of specialty. The moderated discussions will be conducted in a University of Gothenburg videoconferencing room, in order to include distance learning (This was done with great success with students from Lund University for the 2014 IPCC course). Transportation to guest lectures will be funded for ClimBEco school participants. Student evaluation will be assessed on a pass/fail basis, based on the required student presentation and course attendance/participation.

Each student will be expected to give 1-2 detailed presentations. Each presentation will be focused on a specialized relevant sub-topic and the student presentations will be used to stimulate a peer-discussion regarding the most relevant research questions in the field and sub-fields. Students will be expected to prepare for the discussions with a critical eye, as if they were being consulted in the peer-review process. Local senior researchers from various sub-fields will be invited to participate in the discussion and guest lectures will be scheduled to coincide with course meetings such that invited speakers can augment the discussions.

In addition to the scientific focus the course will utilize several short readings and discussion to illuminate important themes for young career climate scientists. First, issues of gender bias (balance) and career development (C. A. Moss-Racusin, et. al. Science faculty’s subtle gender biases favor male students. PNAS, 109(41):16474 16479, 2012.). A second important theme will be relating fundamental process driven studies to global climate in a self-consistent manner (N. Oreskes, et. al. Verification, validation, and confirmation of numerical models in the earth sciences. Science, 263(5147):641646, 1994.).

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