



## MarieCurie iLEAPS workshop

### Towards a process-based description of trace gas emissions in land surface models

16 -19 October 2007, Marina Plaza, Helsingborg, Sweden

## Call for abstracts from young scientists and application for financial support

We are pleased to invite PhD students and researchers of all nationalities with less than 10 years of research experience to participate in this conference that will bring together modellers and experimentalists who study the surface–atmosphere exchange of a range of compounds (e.g., BVOC, CH<sub>4</sub>, N-oxides). The meeting will provide a forum to discuss the processes underlying their emissions and how well (if at all) these are represented in terrestrial surface models, particularly in dynamic global vegetation models. Key gaps in our understanding and ways forward will be identified.



### **Background**

In recent years the feedbacks between processes that take place between the land surface and the physical and chemical properties of the climate system have received increasing attention. The most widely known example is probably the vegetation feedback on atmospheric CO<sub>2</sub> concentration (and hence climate) in fully coupled vegetation-carbon cycle-climate models. But there are more: interactions between methane sources, terrestrial productivity, BVOC emissions and the atmospheric sink strength for reduced carbon have been proposed to explain trends in glacial-interglacial atmospheric methane concentrations. Projections of future O<sub>3</sub> concentrations need not only to account for direct climate- and vegetation- related changes in BVOC emissions or changes in NO<sub>x</sub> sources but possibly also for the indirect effects, e.g., of O<sub>3</sub> on photosynthesis and thus BVOC emission. Human perturbation of the nitrogen cycle affects emission of nitrogen oxides, and thus tropospheric chemistry and climate. Changes in fire regimes (either caused by climate change, or by human practice) greatly affect fire-related emissions but they also influence vegetation distribution, canopy structure, and type (and in that way emission of non-fire related emissions). This list of examples could be extended much further.

To quantify these types of interactions in a changing environment, models of atmospheric processes need to proceed from using input from (static) emission inventories to dynamic, transient emission estimates that account for the physiological activity of vegetation, land surface cover changes or soil microbial processes. In turn, atmospheric properties beyond the mere physical climate must feed back onto the simulations of vegetation and soil processes, and thus emissions. A small number of dynamic, process-based algorithms have been put forward for a selection of trace gases such as CH<sub>4</sub>, BVOC or soil N emissions, but these are as yet fraught with large uncertainties, both in terms of process description as well as the calculated rates.

### **Objectives**

The workshop contributes to the IGBP iLEAPS project and is supported by the European Commission via a Marie Curie workshops and conferences grant and by European Science Foundation research networking programme VOCBAS.

The main goal of the workshop is to facilitate exchange between observationalists and modellers; schedule and venue will allow for ample discussion after presentations or in front of posters. Presentations and discussions should concentrate on the following:

What is the state of the art of our process understanding and how well (if at all) is this reflected in surface emission models?

Would an improved representation of the surface processes help to improve the description of atmospheric chemistry (or climate) models, if yes, how?

What are the key vegetation-atmospheric chemistry-climate feedbacks that need to be quantified?

What kind of data and observations are required (and from which region) to improve process descriptions in vegetation-emission models and/or to evaluate model output?

Are there any unidentified feedbacks to be expected?

### ***Venue, participation & financial support***

You will be encouraged to present new, unpublished or even incomplete results. Abstracts will be made public at the iLEAPS website but full presentations will be made available after the conference only upon consent of speakers & poster presenters. Helsingborg is a small city located in southern Sweden overlooking the Øresund (and Hamlet's castle). The closest international train station or airport is Copenhagen from which Helsingborg can be reached conveniently by train (and possibly ferry) within ca. one hour.

The total number of participants including invited speakers and non-supported researchers will be limited to ca. 70. A key aspect will be to actively engage PhD students and post-docs; bursaries for the young scientists are available on a competitive basis, to cover the workshop fee (250 €), accommodation and travel costs.

### ***Essential criteria to apply for participation and financial support are***

(i) You belong to one of the following groups:

(1): Ph.D. student with less than 4 years research experience (=time since gaining your MSc degree or equivalent, which enabled you to pursue your doctoral studies)

(2): Researcher with 4 to 10 years of research experience (as above, counted since the time you have gained your MSc degree or equivalent)

(3): Researcher with more than 10 years of research experience (as above, counted since the time you have gained your MSc degree or equivalent) and a national of an EU state or associated state and currently working outside of the EU and associated states.

(ii) Your research covers the quantitative, process-based understanding of surface trace gas emission or deposition, or surface-atmospheric chemistry interactions. We welcome contribution from model as well as field studies or controlled experiments, but it must be clearly identified how the research can contribute to the development of dynamic terrestrial emission models and/or the questions listed above.

### ***Application***

The application form can be found at

[http://www.atm.helsinki.fi/ILEAPS/marie-curie-ileaps/index.php?page=ev2\\_reg](http://www.atm.helsinki.fi/ILEAPS/marie-curie-ileaps/index.php?page=ev2_reg). Camera ready abstracts should be limited to ca. 600 words and one optional Figure or Table, in total not exceeding one page. Selected participants will be asked to provide a copy of their MSc degree (or equivalent) to prove their eligibility under the criteria set by the European Commission. Deadline for submission is Friday 1 June, selected participants will be notified by June 20.