

## Scientific report ClimMani Short Visit grant 2010

Project title: Synthesizing long-term data on the impact of induced climatic changes on vegetation composition and plant-moss interactions in a subarctic peatbog

Applicant: Frida Keuper, PhD student, VU Amsterdam, Dept. of Systems Ecology, The Netherlands

Host: Dr. Ellen Dorrepaal, Assistant Professor, Umeå University, Dept. of Ecology and Environmental Science, Climate Impacts Research Centre, Sweden

### Purpose of the visit

Synthesizing long-term data on the impact of induced climatic changes on vegetation composition and plant-moss interactions in a subarctic peatbog. Combining data of ten years of vegetation composition monitoring with the short-term and long-term measurements of growth and architecture of the shrubs and the moss *Sphagnum fuscum* and write a manuscript (draft).

### Description of the work carried out during the visit

Critical data analyses were brought together and discussed, and a draft of the manuscript was prepared.

#### Description of the main results obtained

- (1. Vascular plant community composition in our peatbog was much more stable than is typically observed in other (sub)arctic ecosystems: no changes in total vascular plant abundance, nor in individual species abundances, Shannon's diversity or evenness were found in response to eight years of either winter snow addition or experimental spring or summer warming. )
2. Contrasting with the observed stability at community level, both shrubs and the peatmoss showed sustained positive responses to several of the treatments. Apical growth of *B. nana* and *S. fuscum* vertical growth increased in response to summer warming, whereas *E. hermaphroditum* apical growth responded positively to spring warming.
3. Two key species showed signs of overgrowth by *S. fuscum*: there was (1) a higher percentage of overgrown *E. hermaphroditum* branches and (2) a lack of change in *B. nana* net shrub height in response to summer warming.
4. Our results illuminate the role of *S. fuscum* in modifying effects of climate change at the community level of the vascular vegetation of subarctic peatbogs, resulting in long-term stability of the vascular community composition. In a warmer world, vascular species of subarctic peatbogs appear to just keep pace with growing *Sphagnum* in their race for space.

Future collaboration with host institution (*if applicable*)

Co-operative contacts between the institutes of the applicant and the host were strengthened by this collaboration and ideas for future collaboration have been discussed.

Projected publications/articles resulting or to result from your grant

(Working title:) The role of *Sphagnum fuscum* in stabilizing vegetation composition of a subarctic peatbog during long-term climate manipulations

Autors: Frida Keuper, Ellen Dorrepaal, Peter van Bodegom, Rien Aerts, Richard S. P. van Logtestijn, Johannes H. C. Cornelissen

Other comments (*if any*)

(None)

## CURRICULUM VITAE

### PERSONAL DATA

Name Frida Keuper  
Address Nickeriestraat 50 I  
1058VZ Amsterdam, the Netherlands  
Telephone +31 624587374  
E-mail frietmet@gmail.com/ frida.keuper@ecology.falw.vu.nl  
Place of Birth Amsterdam, the Netherlands  
Date of Birth December 14<sup>th</sup> 1979  
Nationality Dutch

### WORKING EXPERIENCE

2007  
up to now PhD candidate at the department of Systems Ecology,  
Vrije Universiteit, Amsterdam. Promotor: Prof. Rien Aerts  
Project title: *Feedbacks between hydrological and  
nutritional changes as induced by permafrost melting  
and ecosystem functioning*  
Including:  
- Supervision of a 6-months master student project (2008)  
- Supervision of a bachelor student project (2008)

2005, 2003, 2001 Teacher assistant philosophy of science, Vrije  
Universiteit. Main job responsibility: assisting tutor groups  
on philosophy of science, grading reports

2004 Teacher assistant human evolution, Vrije Universiteit  
Main responsibility: assisting tutor groups on human  
evolution, grading essays

1995  
up to 2002 Various jobs; *i.a.* Salesroom assistant Cirque du Soleil,  
Secretary at Felix Meritis Centre for Art & Science,  
Resident attendance hotel Val Sinestra, Switzerland

### EDUCATION

2009 ClimMani workshop on *Ecosystem effects of  
precipitation change*. Basel, Switzerland

2008 NIBI workshop project management, Utrecht, The  
Netherlands

2007 OSL-APECS-PYRN training workshop on permafrost  
research methods, St. Petersburg, Russia

2007 Summerschool Ecohydrology, Vrije Universiteit  
Amsterdam

2004  
up to 2006 MSc course Environment and Resource Management  
Vrije Universiteit Amsterdam, Faculty of Earth & Life  
Sciences

2003 MSc course in Biology, specialization Ecology. Vrije  
Universiteit Amsterdam, Faculty of Earth & Life  
Sciences

up to 2006  
1999 BSc course in Biology. Vrije Universiteit Amsterdam,  
Faculty of Earth & Life Sciences

1992  
up to 1998 Barlaeusgymnasium, Amsterdam, The Netherlands.  
Equivalent to the International Baccalaureate

## PRESENTATIONS

- 2009 *Impact of changing precipitation patterns on tundra vegetation*, ClimMani workshop on Ecosystem effects of precipitation change. Basel, Switzerland
- 2008 *Young Researcher Field Research presentation* for HRH Princess Victoria of Sweden. Abisko Research Station, Abisko, Sweden
- 2008 *What's in the Freezer? Plant available nutrients in permafrost soils*. Darwin Days, Veldhoven, The Netherlands

## SCHOLARSHIP

- 2008 Abisko Scientific Research Station, Sweden  
Scholarship to undertake research at the station

## BIOLOGICAL PRACTICE EXPERIENCE

- 2009 One-month fieldwork campaign North-east Siberia, Kytalyk reserve
- 2007, 08, 09 Full-summer season fieldwork campaigns in Abisko, Sub-arctic Sweden
- 2008 Permafrost drilling in winter, mini-expedition. Abisko, with Dr. Margareta Johansson (Lund University)
- 2005 NIOO Centre for Limnology  
six months research traineeship on the effects of dissolved inorganic carbon [DIC] on competition between *C. aspera* and *P. pectinatus*, including fieldwork in Estonia
- 2003 IOI, interuniversitair oogheekkundig instituut

five months research  
traineeship on  
hemichannels in the

goldfish retina

- 2002 Department of experimental neurophysiology, Vrije Universiteit Amsterdam, five months research traineeship using extracellular recordings to measure the effect of bicuculline on the rat visual system

## EXTRA-CURRICULAR ACTIVITIES

- 2008 Newsletter officer of the Permafrost Young Researchers Network (PYRN)
- 2007 Co-initiation & organisation of young researchers meetings dept. Systems Ecology
- 2007 One-month cultural journey to St. Petersburg
- 2004 Initiation and organisation of a weekly documentary presentation to enhance student's social awareness, Vrije Universiteit
- 2004 Member of the board of the SRVU student union, Vrije Universiteit
- 2002 Member of the board of students, faculty of Earth & Life Sciences
- up to 2003
- 1999 Journey to Peru, Bolivia, Chile

## LANGUAGES

Dutch  
English

native speaker  
good speaking, reading and writing