

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
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E-mail frietmet@gmail.com/ frida.keuper@ecology.falw.vu.nl
Place of Birth Amsterdam, the Netherlands
Date of Birth December 14th 1979
Nationality Dutch

WORKING EXPERIENCE

2007 **PhD candidate at the department of Systems Ecology,**
up to now 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 Various jobs; *i.a.* Salesroom assistant Cirque du Soleil,
up to 2002 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 **MSc course Environment and Resource Management**
up to 2006 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 **Barlaeusgymnasium,** Amsterdam, The Netherlands.
up to 1998 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 up to 2003 Member of the **board of students**, faculty of Earth & Life Sciences
- 1999 **Journey** to Peru, Bolivia, Chile

LANGUAGES

Dutch
English

native speaker
good speaking, reading and writing