

Department of Physical Geography  
and Quaternary Geology



Stockholm  
University



JAKOB HEYMAN (ED.)

ANNUAL REPORT  
2007

Cover photo: Ground penetrating radar profiling helps to determine large-scale structures and the architecture of sedimentary units at Bröggerhalvöya, Svalbard. Photo: Helena Alexanderson.

## 1. Introduction

The Department of Physical Geography and Quaternary Geology is one of the larger departments at the university, with about 110 employees: 13 professors, 45 lecturers and researchers, ca 25 PhD students and 25 technical/administrative staff. The personnel now consists of a broad mix of people coming from around the world, together creating a very dynamic and creative research and education environment at the department.

Together with our neighbours, the Department of Geology and Geochemistry and the Department of Human Geography, in the Geosciences building at the campus of Stockholm University, we constitute one of the most complete geocentres in Scandinavia. Within one building, we have all the facilities of a modern university: library, laboratories, and equipment to conduct increasingly successful scientific studies and offer stimulating and advanced education to current and prospective students.

We conduct multi-disciplinary research in the fields of ecological geography, geomorphology and paleoglaciology, glaciology, hydrology, paleoclimatology, Quaternary geology, remote sensing and GIS, and tropical geography. Our research can be grouped under the following research profiles: i) climate, environment and landscape development; ii) glacier and polar environments; iii) land and water resources and iv) landscape analysis and geomatics. Basic research is oriented towards furthering our understanding of short- and long term processes and interactions that lead to landscape development and environmental and climate changes. The behaviour of past and present systems and interactions between systems are modelled for predictions of future likely trends. The department is equipped with sediment laboratories and a dendroclimatological laboratory.

We also take pride in providing a broad high-quality basic education. The goal of the undergraduate education is to offer high quality learning, reflecting the research profiles of the department, and meeting the society's need for a sound theoretical competence. The department carries out undergraduate education in geography, earth sciences, integrated biology-earth science, and in environmental sciences. Every year slightly more than 1000 students attend our undergraduate education programmes.

Arjen Stroeven  
Head of the Department

## **History**

*Geography was established at Stockholm University as a subject in its own right in 1912, but it was not until 1929 that the first professor, Hans W:son Ahlmann, was appointed. He held this position until 1950. Gunnar Hoppe was appointed professor in 1954, one year before the division between Physical Geography and Human Geography commenced. Professor Hoppe retired in 1980 and was succeeded by Gunnar Østrem, Wibjörn Karlén, and, in 2003, by Peter Kubry. Hans W:son Ahlmann, particularly interested in Arctic research, led several expeditions to the Arctic and initiated the establishment of a glaciological research station in the Swedish mountains, the Tarfala Research Station. Valter Schytt was appointed professor of glaciology in 1970 and held the position until 1985. Per Holmlund succeeded him in 1999.*

*Gunnar Hoppe pioneered the incorporation and interpretation of aerial photographs in geomorphological research. His strong interest in remote sensing led to the creation of a professorship in remote sensing at the Department of Physical Geography in 1980, a position held by Leif Wastenson until 2001. Johan Kleman succeeded him. Leif Wastenson developed and expanded the field of remote sensing leading to the establishment of a professorship in ecological geography, held by Margareta Ihse since 1997. In 2005, following a strategic decision to develop the Department's profile in hydrology, a new professorship in hydrology, hydrogeology and water resources was established. The position is held by Georgia Destouni.*

*As long as geology has been a subject at Stockholm University, Quaternary Geology has received considerable attention. Two early professors of geology, Gerard De Geer (1897-1924) and Lennart von Post (1929-1950) had international reputations in Quaternary geology, De Geer for his invention of the clay-varve dating method and von Post as the father of pollen analysis. In 1956 von Post's successor, Ivar Hessland, created an assistant professorship, the first holder of which was Carl-Gösta Wenner, who gave the department new direction towards applied geology. In 1962 Quaternary Geology became an independent subject and in 1963 a department on its own. Jan Lundqvist succeeded Wenner in 1980 and became the first full professor of Quaternary Geology at Stockholm University. Lundqvist retired in 1993 and was succeeded by Bertil Ringberg, and, from 2002 to 2007, by Barbara Wohlfarth.*

*The Department of Physical Geography and the Department of Quaternary Research amalgamated to create the Department of Physical Geography and Quaternary Geology on January 1, 2001. Research interests of other professorships at the department are in tropical geography (Carl Christiansson), paleoclimatology (Karin Holmgren), glaciology (Peter Jansson), remote sensing (Bengt Lundén), paleoglaciology (Arjen Stroeven) and Quaternary stratigraphy (Stefan Wastegård). Together with the aforementioned professorships we successfully straddle both traditional and innovative directions in physical geography and Quaternary geology.*

## 2. Current Research

Research groups in the fields of ecological geography, geomorphology and paleoglaciology, glaciology, hydrology, paleoclimatology, Quaternary geology, remote sensing and GIS, and tropical geography contribute to four research profiles described below. All research groups are involved in the BBCC program (2.5).

### 2.1. Glaciers and polar environments

#### Research themes and areas

Research focusses on glaciers, ice sheets and cold (permafrost) environments in a global perspective. Study areas include Antarctica and Greenland, alpine environments in Scandinavia (and elsewhere), and the tundra regions. In a temporal perspective we are working with three different time slots: the entire quaternary period (last 2 million years), the present (last 200 years) and the future. Research activities can be subdivided into:

- Climate related processes and impacts of Global Change.
- Glacial processes and ice physical properties
- Paleoglaciological inverse and numerical modelling of past and present ice sheets.
- Coupling between high latitude land ecosystems and the global climate system.

A significant number of projects are linked to Tarfala Research Station in the Kebnekaise massif where the department is running an extensive monitoring programme. Tarfala is used as a platform for both education and for national and international research programmes.



The clean ice/ice-cored moraine margin of Weigele Dangxiong outlet glacier from the Anyemaqen icefield – northeastern Tibetan Plateau, 4570 m a.s.l. Photo: Jakob Heyman.

### Ongoing projects

1. Applying the optically stimulated luminescence (OSL) technique to date the Weichselian glacial history of south and central Sweden / *Alexanderson H.*
2. Arctic Natural Climate and Environmental Changes and Human Adaptation (SciencePub) - ice-sheet variability on Svalbard (project leader J. Landvik) / *Alexanderson H.*
3. The glacial history of Jameson Land, East Greenland (with L. Håkansson) / *Alexanderson H.*
4. Application and refinement of SAR methods for identifying climate impacts on glaciers and ice sheets / *Brown I.*
5. Polarview Glacier Service / *Brown I.*
6. Swedish Regional Center for Global Land Ice Measurements from Space (GLIMS) / *Brown I.*
7. The effects of climate change induced glacier melt on water resources in the La Paz region, Bolivia / *Duguay M.*
8. Palaeo-ice streams in the northeastern Laurentide Ice Sheet / *De Angelis H.*
9. GMES Northern View Project / *De Angelis H.*
10. Response of glaciers to climate change – Mass balance sensitivity, sea level rise and runoff / *de Woul M.*
11. Spatial and temporal variations in surficial melt on the Greenland ice sheet and the effects on glacier dynamics / *Ericsson M.*
12. The Japanese-Swedish Antarctic Expedition, JASE / *Holmlund P., Hansson M., Karlin T., Ingvander S.*
13. Terrestrial history of the Muonionalusta iron meteorites / *Hättestrand C.*
14. Late Quaternary glaciation chronology on Kola Peninsula, NW Russia / *Hättestrand C.*
15. The polythermal structure of glaciers / *Jansson P.*
16. Identifiering av kväve-nedfall i vintersnön på Storglaciären, Kebnekaise - en pilotstudie för etablering av monitoring i alpin miljö / *Jansson P.*
17. A field and theoretical study of sediment transport near the basal thermal transition of a polythermal glacier / *Jansson P.*
18. Glacier mass balance and tree rings as indicators of atmospheric circulation / *Jansson P.*
19. Subglacial hydrology beneath ice sheets / *Jansson P.*
20. Paleoglaciology of the northern sector of the Cordilleran ice sheet / *Stroeven A.P.*
21. Paleoglaciology of the NE Tibetan Plateau / *Stroeven A.P., Hättestrand C., Alexanderson H., Kleman J., Heyman J.*

### Staff affiliations

Per Holmlund, Professor

Peter Jansson, Professor, Secretary UCCS, Vice President IACS

Johan Kleman, Professor, Program director of BBCC (see also 2.2, 2.3)

Peter Kuhry, Professor (see also 2.2)

Arjen Peter Stroeven, Professor (see also 2.2)

Jan Lundqvist, Professor emeritus (see also 2.2)

Mark Dyurgerov, Docent, guest researcher

Margareta Hansson, Docent (see also 2.2)

Clas Hättestrand, Docent (see also 2.2)

Krister Jansson, Docent (see also 2.2, 2.3)

Gunhild Rosqvist, Docent (see also 2.2)

Helena Alexanderson, PhD (see also 2.2)  
Ingmar Borgström, PhD (see also 2.2)  
Ian Brown, PhD (see also 2.3)  
Hernán De Angelis, PhD  
Steffen Holzkämper, PhD (see also 2.2)  
Ulf Jonsell, PhD

*Postgraduate students:*

Mattias de Woul, PhLic (see also 2.4)  
Martial Duguay (see also 2.4)  
Malin Ericsson  
Bradley Goodfellow, PhLic (see also 2.2)  
Jakob Heyman (see also 2.2)  
Susanne Ingvander  
Timothy Johnsen (see also 2.2)  
Torbjörn Karlin (see also 2.2)  
Martin Margold (see also 2.2)  
Valentina Radić, PhLic  
Britta Sannel (see also 2.2, 2.3)

## 2.2. Climate, environment and landscape development

### Research themes and areas

Our research is aimed at describing climate, environment and landscape changes in time and space, and understanding underlying processes and causes. Investigations address recent and rapid change as well as long term evolution over millions of years. We work over the whole world with ongoing projects in the Nordic countries, the rest of Europe, Africa, South-America, northern Russia, Canada, China, Antarctica and Greenland.

We make use of long instrumental records as well as natural archives such as lake sediments, peat deposits, ice cores, drip stones, tree rings, glacial sequences and archeological evidence to investigate changes in climate, environment and associated biological, chemical and physical processes. The comparison between multiple archives allows a better reconstruction of past changes at local, regional and global scales. We interpret landscape, landforms and sediment layers to understand landscape development. Regional reconstructions of landscape and ice sheet development are performed through a combination of spatial analyses based on aerial photos, satellite images, digital terrain models and field mapping with studies of sediments and their stratigraphy, and dating of landforms and sedimentary deposits. We also apply computer simulations to investigate how glaciers, ice sheets and global sea level are affected by climatic change.



Tor on the inselberg Tsåktso in northern Sweden, July 2007. Photo: Karin Ebert.



### Ongoing projects

1. RESOLuTION – Rapid climate and environmental shifts during OIS 2 and 3 – linking high-resolution terrestrial, ice core and marine archives / *Ampel L., Engels S., Helmens K., Wastegård S.*
2. Time-synchronous correlation of late Holocene climatic changes and their environmental impact in central Sweden / *Andersson S.*
3. NEEM project / *Hansson M., Wastegård S.*
4. Holocene climate variability over Scandinavia / *Holmgren K., Moberg A., Sundqvist H.*
5. CARBO-North: Quantifying the Carbon Budget in Northern Russia: Past, Present and Future / *Kubry P., Holzkämper S.*
6. Palaeorelief, saprolites and uplift/denudation of cratons / *Lidmar-Bergström K.*
7. Early Agricultural Remnants and Technical Heritage, the dynamics of non-industrial agriculture; 8,000 years of resilience and innovation / *Miller U.*
8. Climate in the last millennium / *Moberg A.*
9. Late Quaternary climate and environmental change in the summer rainfall region of South Africa / *Norström E.*
10. Den glaciala-interstadiala utvecklingen under Weichselistiden / *Robertson A.-M.*
11. Climate change in the polar front zones / *Rosqvist G.*
12. Holocene climate and environmental change in high latitudes as recorded by stable isotopes in peat deposits / *Kaislabti Tillman P.*
13. Sharpening the tools – improving tephrochronology around the Atlantic Sea / *Wastegård S.*
14. Potrok Aike Lake Sediment Archive Drilling Project / *Wastegård S.*
15. MILLENNIUM: European climate over the last millennium / *Wastegård S., Moberg A., Rosqvist G., Bergman J., Schoning K., Mohammad R., Gunnarson B., Grudd H., Kaislabti P.*

### Staff affiliations

Karin Holmgren, Professor (see also 2.4)

Johan Kleman, Professor, Program director for BBCC (see also 2.1, 2.3)

Peter Kuhry, Professor (see also 2.1)

Arjen Peter Stroeven, Professor (see also 2.1)

Stefan Wastegård, Professor

Wibjörn Karlén, Professor emeritus

Jan Lundqvist, Professor emeritus (see also 2.1)

Urve Miller, Professor emerita

Karna Lidmar-Bergström, Professor emerita

Margareta Hansson, Docent (see also 2.1)

Clas Hättestrand, Docent (see also 2.1)

Krister Jansson, Docent (see also 2.1, 2.3)

Anders Moberg, Docent

Jan Risberg, Docent

Ann-Marie Robertsson, Docent

Gunhild Rosqvist, Docent (see also 2.1)

Helena Alexanderson, PhD (see also 2.1)

Ingmar Borgström, PhD (see also 2.1)

Stefan Engels, PhD

Håkan Grudd, PhD

Björn Gunnarson, PhD  
Steffen Holzkämper, PhD (see also 2.2)  
Sven Karlsson, PhLic  
Rezwan Mohammad, PhD  
Maria Ryner, PhD  
Hanna Sundqvist, PhD  
Daniel Veres, PhD  
Lars-Ove Westerberg, PhD (see also 2.4)

*Postgraduate students:*

Linda Ampel  
Sofia Andersson  
Karin Ebert, PhLic  
Bradley Goodfellow, PhLic (see also 2.1)  
Thomas Grabs (see also 2.3, 2.4)  
Jakob Heyman (see also 2.1)  
Gustaf Hugelius (see also 2.3)  
Martina Hättestrand  
Timothy Johnsen (see also 2.1)  
Christina Jonsson  
Päivi Kaislahti Tillman  
Torbjörn Karlin (see also 2.1)  
Martin Margold (see also 2.1)  
Elin Norström, PhLic  
Britta Sannel (see also 2.1, 2.3)  
Helena Öberg

## 2.3. Landscape analysis and geomatics

### Research themes and areas

Research and education in these fields comprises methods development in satellite image processing, air photo interpretation, positioning, geographical information systems, and the application of these methods to a wide variety of geoscientific, bioscientific, landscape ecologic and environmental issues. Study areas are in Sweden, other Nordic countries, the British Isles, Russia, Canada, South America, Eastern Africa, Southeast Asia, Antarctica and Greenland.

Research in glacial and periglacial environments include glacial geomorphological mapping for reconstructions of paleoglaciological and long-term landscape evolution, the mapping of recent dynamics in permafrost landscapes, and glaciological remote sensing. Remote sensing and modelling techniques are developed to monitor changes in water quality and coastal ecosystems. The research of landscape ecological questions includes vegetation mapping for change detection in sensitive mountainous environments, analysis of landscape ecological structures, and mapping and monitoring of biodiversity and biological values in cultural landscapes. GIS is applied for monitoring and analysis of the cultural landscape and for environmental management and protection in urban/semiurban areas.

The Department has been instrumental in the development of the National Atlas project and its GIS components, as in applied projects of landscape and habitat inventory and monitoring in cooperation with the Swedish Environmental Protection agency in the Landscape Monitoring project of the agricultural landscapes, LiM, and the Natura 2000 program.



A view of a small-scale rural landscape in the archipelago (southern Askö in Baltic Sea) with grazed semi-natural grasslands, abandoned grasslands and grazed old fields (right-hand side). Semi-natural grasslands have decreased with 90% during the last 100 years but several typical grassland plants can persist in abandoned grasslands for a long time and later colonise newly created grassland habitats. Photo: Sara Cousins.

### Ongoing projects

1. Historical land use influence on dispersal and diversity of grassland species in rural landscapes / *Cousins S.*
2. Linking management and feedback across scales in social-ecological systems - Examples from forest ecosystems / *Eriksson S.*
3. Landscape planning strategies for biodiversity and nature conservation / *Ihse M.*
4. Assessment of changes in marine vegetation in Eastern Africa using Satellite remote sensing / *Lundén B.*
5. Natura 2000 baseline survey, aerial photographic interpretation. National applied project financed by Swedish Environmental Protection Agency / *Skånes H., Dellgar Hagström M., Runborg S., Ihse M.*
6. Natura 2000 baseline survey, aerial photographic interpretation manual revision / *Skånes, H.*
7. MISTRA Include - Integration of ecological and cultural dimensions in transport infrastructure, sub project B: Cumulative landscape impact and heritage and social values in relation to users and development of transport infrastructure / *Skånes H.*

### Staff affiliations

Carl Christiansson, Professor (see also 2.4)

Margareta Ihse, Professor

Johan Kleman, Professor, Program director for BBCC (see also 2.1, 2.2)

Bengt Lundén, Professor

Wolter Arnberg, Docent

Sara Cousins, Docent

Krister Jansson, Docent (see also 2.1, 2.2)

Maj-Liz Nordberg, Docent

Lars-Gunnar Bråvander, Senior lecturer

Ian Brown, PhD (see also 2.1)

Gessesse Dessie, PhD (see also 2.4)

Patrik Klintonberg, PhLic (see also 2.4)

Peter Schlyter, PhD (see also 2.4)

Helle Skånes, PhD

### *Postgraduate students:*

Bo Eknert, PhLic

Sofia Eriksson (Södertörn University College)

Thomas Grabs (see also 2.2, 2.4)

Gustaf Hugélius (see also 2.2)

Britta Sannel (see also 2.1, 2.2)

## 2.4. Land and water resources

### Research themes and areas

We investigate natural processes and anthropogenic effects in different land, soil and water environments and their changes in space and time.

The research relates also to other Earth and environmental sciences, and to environmental monitoring, management and regulation of land and water resources in different applications. We carry out research for different parts of the world on:

- Land, water and waterborne substance interactions, flow and transport dynamics and changes in space and time.
- Freshwater interactions with climate, coastal and marine waters, snow/ice and socio-economic systems.
- Land and water resources in different physical, biogeochemical, ecological and cultural environments.
- The interaction between climate extremes, air pollution, soil conditions and forest ecosystems.
- Climate feedbacks and effects on land-water systems within the cross-disciplinary Stockholm University Climate Research Environment (BBCC)

In this research, we use, develop and couple tools such as hydrological flow and solute-pollutant transport models, geographical information systems and remote sensing for both basic process quantifications and different applications.



Runoff measurement station (V-notch weir) at the outlet of the Östfora catchment. Photo: Jan Seibert.

### Ongoing projects

1. Distributed modelling of hydrological dynamics and waterborne mass fluxes in cold regions / *Bring A.*
2. Modeling spatial patterns of saturated areas: A comparison of the topographic wetness index and a dynamic distributed model / *Grabs T.*
3. Distributed assessment of contributing area and riparian buffering along stream networks: a new approach to separate contributions from different sides / *Grabs T.*
4. Mitigating agricultural pollution impacts on health and environment in the Aral Sea Basin / *Jarsjö J., Destouni G.*
5. Solute transport processes in coupled ground – surface – coastal water systems of Forsmark and Oskarshamn / *Jarsjö J., Destouni G., Persson K., Prieto C.*
6. Environmental risk propagation in groundwater downstream of contaminated land / *Persson K.*
7. Propagation of environmental risk from contaminant transport through groundwater and stream networks / *Persson K.*
8. Water quality modelling based on landscape analysis: importance of riparian hydrology / *Seibert J.*
9. Participatory governance in Swedish forestry / *Stjernquist I.*
10. Samband mellan luftföroreningsdeposition och vitalitet hos bok och ek i södra Sverige / *Stjernquist I.*

### Staff affiliations

Carl Christiansson, Professor (see also 2.3)

Georgia Destouni, Professor

Karin Holmgren, Professor (see also 2.2)

Jan Seibert, Docent

Amélie Darracq, PhD

Gessesse Dessie, PhD (see also 2.3)

Jerker Jarsjö, PhD

Patrik Klintonberg, PhLic (see also 2.3)

Peter Schlyter, PhD (see also 2.3)

Yoshihiro Shibuo, PhD

Ingrid Stjernquist, PhD

Lars-Ove Westerberg, PhD (see also 2.2)

### *Postgraduate students:*

Arvid Bring

Mattias de Woul, PhLic (see also 2.1)

Martial Duguay (see also 2.1)

Thomas Grabs (see also 2.2, 2.3)

Fredrik Hannerz

Klas Persson

## 2.5. The Bert Bolin Centre for Climate Research (BBCC)

The centre conducts a 10-year research and research environment-building program, funded by a Linné-grant from FORMAS and VR. The research program brings together the climate research expertise in four departments, and the program is coordinated by the Department of Physical Geography and Quaternary Geology. The research program focuses on five cross-disciplinary core themes; climate variability, atmospheric and ocean circulation, geodata for circulation system modeling, biogeochemical cycles, and climate governing small-scale processes. The financial framework is 10 Mkr (1.7 mill \$)/year over the 10-year period 2006-2016, with an additional 2 Mkr/year for the associated research school.

Important policy decisions for sustainable development are based on climate scenarios derived through numerical climate modeling. Such models are a synthesis of our current understanding of climate-influencing processes in the various components of the climate system. Our challenge and aim is to provide improved knowledge about climate-influencing processes, over a range of time-scales and subsystems. The BBCC research program embraces natural climate processes and variability, as well as changes imposed by man's ever-increasing impact on the climate system through emission of greenhouse gases and aerosols, and changes in land-use, vegetation and hydrology. With the present strong public and political interest in climate research, interaction with media and policy makers is an important task for many of the researchers involved in the program. There is already a strong involvement by BBCC researchers in IPCC, and on the policy side in the climate commission of the Swedish government.

Januari månad. Meteor. Obs. Stockh. Stn. år 1756.

Dag	före middagen	Vind			efter middagen	Hög	Låg	Vind
		Var.	Stv.	Wind.				
1	klart.	25,15	-8	NW, 1	klart hela natten, och skens maffa snö orolig vid 10 om kvällen, knappt 5 gr. hög	---	-9	0
2	klart. stark rinföfl.	25,32	-9	NW, 2	klart öfver midnatt, utan st. k.	---	-9	0
3	mulet eller rättare, dimbogl.	25,38	-10	l.	Trock dunna.	25,40	-7	0
4	mulet, bäfte fog	---	-7	NW	Klart till natten, utan NK.	---	-8	---
5	öfver mulet.	25,27	-9	NW, 2	mulet, bäfte fog.	25,26	-5	NO, 1 1/2
6	helt mulet, har ei mycket frögl.	25,40	-2	OSO, 1	Snögar hel natten, är utan åföre	---	-1	SO, 2
7	mulet, lät regnblandad Snö	25,20	+ 7	SO, 2	mulet, fullt t.	---	+ 1 1/2	SO, 2
8	Liknar sig at bli för klart.	25,12	+ 1	S, 1	mulet, slaktigt igen	---	+ 2	S,
9	mulet och regnar. Skof tals.	25,30	+ 2	S, 2 1/2	nåfari i et duggande till midn.	---	+ 3	S, 3 1/2
10	hvar förmod. till klart, men ei frögl.	25,19	+ 3	SW, 3	afjölige regn och åföre, in på natten	---	-1	N, 2

Section from the weather observation journal of Stockholm old astronomical observatory, January 1756. Source: MS Stockholm, Meteorologiska observationer 1-14:6. Center for History of Science, Royal Swedish Academy of Sciences.

### 3. Publications

#### Reviewed articles

1. **Alexanderson H.** 2007: Residual OSL signals from modern Greenlandic river sediments. *Geochronometria*, 26, 1-9.
2. **Alexanderson H.** and Murray A.S. 2007: Was southern Sweden ice free at 19–25 ka, or were the post LGM glacial sediments incompletely bleached?. *Quaternary Geochronology*, 2, 229-236.
3. Balouet J.-C., Oudijk G., Smith K.T., Petrisor I., **Grudd H.** and Stocklassa B. 2007: Applied Dendroecology and Environmental Forensics. Characterizing and Age Dating Environmental Releases: Fundamentals and Case Studies. *Environmental Forensics*, 8, 1-17.
4. Baresel C and **Destouni G.** 2007: Uncertainty-Accounting Environmental Policy and Management of Water Systems. *Environmental Science and Technology*, 41, 3653–3659.
5. Bayer-Raich M., **Jarsjö J.** and Teutsch G. 2007: Comment on “Analysis of groundwater contamination using concentration-time series recorded during an integral pumping test: Bias introduced by strong concentration gradients within the plume” by Alleign Zeru and Gerhard Schäfer. *Journal of Contaminant Hydrology*, 90, 240-251.
6. Bonow J.M., Japsen P., Green P.F., Wilson R.W., Chalmers J.A., Klint K.E.S., Gool J.A.M., **Lidmar-Bergström K.** and Pedersen A.K. 2007: A multi-disciplinary study of Phanerozoic landscape development in West Greenland. *Geological Survey of Denmark and Greenland Bulletin: Review of Survey activities 2006*, 13, 33 – 36.
7. Bonow J.M., **Lidmar-Bergström K.**, Japsen P., Chalmers J.A. and Green P.F. 2007: Elevated erosion surfaces in central West Greenland and southern Norway: their significance in integrated studies of passive margin development. *Norwegian Journal of Geology*, 87, 197 – 206.
8. Brunet M., Jones P.D., Sigró J., Saladié O., Aguilar E., **Moberg A.**, Della-Marta P.M., Lister D., Walther A. and López D. 2007: Temporal and spatial temperature variability and change over Spain during 1850-2005. *Journal of Geophysical Research: Atmospheres*, 112, D12117.
9. Campbell R., McCarroll D., Loader N.J., **Grudd H.**, Robertson I. and Jalkanen R. 2007: Blue intensity in *Pinus sylvestris* tree-rings: developing a new palaeoclimate proxy. *The Holocene*, 17, 821-828.
10. Cory N., Laudon H., Köhler S., **Seibert J.** and Bishop K. 2007: Evolution of soil solution aluminum during transport along a forested boreal hillslope. *Journal of Geophysical Research*, 112, G03014.
11. **Cousins S.A.O.**, Ohlson H. and Eriksson O. 2007: Effects of historical and present fragmentation on plant species diversity in semi-natural grasslands in Swedish rural landscapes. *Landscape Ecology*, 22, 723-730.
12. **Darracq A.** and **Destouni G.** 2007: Physical versus biogeochemical interpretations of nitrogen and phosphorus attenuation in streams and its dependence on stream characteristics. *Global Biogeochemical Cycles*, 21, GB3003. doi:10.1029/2006GB002901
13. Davies S.M., Elmquist M., **Bergman J.**, Wohlfarth B. and Hammarlund D. 2007: Developing age models for recent lacustrine sequences spanning the last 200 years: two case studies from west central Sweden. *The Holocene*, 17, 319-330.
14. **De Angelis H.** 2007: Glacial geomorphology of the east-central Canadian Arctic. *Journal of Maps*, v2007, 323-341.
15. **De Angelis H.** and **Kleman J.** 2007: Palaeo-ice streams in the Foxe/Baffin sector of the Laurentide Ice Sheet. *Quaternary Science Reviews*, 26, 1313-1331.
16. **De Angelis H.**, Rau F. and Skvarca P. 2007: Snow zonation on Hielo Patagónico Sur, Southern Patagonia, derived from Landsat 5 TM data. *Global and Planetary Change*, 59, 149-158.



17. de Jong R., **Schoning K.** and Björck S. 2007: Increased aeolian activity during humidity shifts as recorded in a raised bog in south-west Sweden during the past 1700 years. *Climate of the past*, 3, 411-422.
18. **Dessie G.** and **Kleman J.** 2007: Pattern and Magnitude of Deforestation in the South Central Rift Valley Region of Ethiopia. *Mountain Research And Development*, 27, 162-168.
19. Feurdean A., Wohlfarth B., Björckman L., Tantau I., Bennike O., Willis K.J., Farcas S. and **Robertsson A.-M.** 2007: The influence of refugial population on Lateglacial and early Holocene vegetational changes in Romania. *Review of Paleobotany and Palynology*, 145, 305-320.
20. Fischer H., Fundel F., Ruth U., Twarloh B., Wegener A., Udisti R., Becagli S., Littot G., Röthlisberger R., Mulvaney R., Hutterli M.A., Kaufmann P., Federer U., Lambert F., Bigler M., **Hansson M.E.**, **Jonsell U.**, de Angelis M., Bortron C., Siggaard-Andersen M.-L., Steffensen J.P., Barbante C., Gaspari V., Gabrielli P. and Wagenbach D. 2007: Reconstruction of millennial changes in dust emission, transport and regional sea ice coverage using the deep EPICA ice cores from the Atlantic and Indian Ocean sector of Antarctica. *Earth and Planetary Science Letters*, 260, 340-354.
21. **Goodfellow B.** 2007: Relict non-glacial surfaces in formerly glaciated landscapes. *Earth-Science Reviews*, 80, 47-73.
22. Gouirand I., **Moberg A.** and Zorita E. 2007: Climate variability in Scandinavia for the past millennium simulated by an atmosphere-ocean general circulation model. *Tellus A*, 59, 30-49.
23. **Hannerz F.** and Langaas S. 2007: Establishing a water information system for Europe: constraints from spatial data heterogeneity. *Water and Environmental Journal*, 21, 200-207.
24. Hanson C.E., Palutikof J.P., Livermore M.T.J., Barring L., Bindi M., Corte-Real J., Durao R., Giannakopoulos C., Good P., Holt T., Kundzewicz Z., Leckebusch G.C., Moriondo M., Radziejewski M., Santos J., **Schlyter P.**, Schwarb M., **Stjernquist I.** and Ulbrich U. 2007: Modelling the impact of climate extremes: an overview of the MICE project. *Climatic Change*, 81, 163-177.
25. **Helmens K.**, Bos J.A.A., Engels S., van Meerbeeck C.J., Bohncke S.J.P., Renssen H., Heiri O., Brooks S.J., Seppä H., Birks H.J.B. and Wohlfarth B. 2007: Present-day temperatures in northern Scandinavia during the Last Glaciation, *Geology*, 35, 987-990.
26. **Helmens K.F.**, Johansson P.W., Räsänen M.E., **Alexanderson H.** and Eskola K.O. 2007: Ice-free intervals at Sokli continuing into Marine Isotope Stage 3 in the central area of the Scandinavian glaciations. *Geological Society of Finland Bulletin*, 79, 17-39.
27. Hock R., Radić V. and **de Woul M.** 2007: Climate sensitivity of Storglaciären, Sweden: an intercomparison of mass-balance models using ERA-40 reanalysis and regional climate model data. *Annals of Glaciology*, 46, 342-348.
28. **Holmgren K.** and **Öberg H.** 2007: Climate Change in Southern and East Africa during the Past Millennium and its Implications for Societal Development. In: Hornborg A. and Crumley C.L. (Eds.): *The World System and the Earth System*, Left Coast Press.
29. **Hättestrand C.**, Kolka V. and **Stroeven A.P.** 2007: The Keiva ice marginal zone on the Kola Peninsula, northwest Russia: a key component for reconstructing the palaeoglaciology of the northeastern Fennoscandian Ice Sheet. *Boreas*, 36, 352-370.
30. **Hättestrand M.** 2007: Weichselian interstadial pollen stratigraphy from a Veiki plateau at Rissejauratj in Norrbotten, northern Sweden. *GFF*, 129, 287-294.
31. Håkansson L., Briner J., **Alexanderson H.**, Aldahan A. and Possnert G. 2007: <sup>10</sup>Be ages from central east Greenland constrain the extent of the Greenland ice sheet during the Last Glacial Maximum. *Quaternary Science Reviews*, 26, 2316–2321.
32. Ihse M. 2007: Colour infrared aerial photographs as a tool for vegetation mapping and change detection in environmental studies of Nordic ecosystems – a review. *Norwegian Journal of Geography*, 61, 170-191.

33. Isaksen K., Sollid J.L., **Holmlund P.** and Harris C. 2007: Recent warming of mountain permafrost in Svalbard and Scandinavia. *Journal of Geophysical Research: Earth Surface*, 112, F02S04.
34. Jakobsson M., Björck S., **Alm G.**, Andrén T., Lindeberg G. and Svensson N.O. 2007: Reconstructing the Younger Dryas ice dammed lake in the Baltic Basin: Bathymetry, area and volume. *Global and Planetary Change*, 57, 355-370.
35. **Jansson K.** and Glasser N. 2007: Paleaeoglaciological events in the Brecon Beacons area. In: Carr S.J., Coleman C.G., Humpage A.J. and Shakesby R.A. (Eds.): *The Quaternary of the Brecon Beacons: Field Guide*, Quaternary Research Association, London, 23-35.
36. **Jansson P.**, Linderholm H.W., Pettersson R., **Karlin T.** and Mörth C.-M. 2007: Assessing the possibility to couple chemical signals in winter snow on Storglaciären to atmospheric climatology. *Annals of Glaciology*, 46, 335-341.
37. **Jansson P.** and Pettersson R. 2007: Spatial and temporal characteristics of a long mass balance record, Storglaciären, Sweden. *Arctic, Antarctic and Alpine Research*, 39, 432-437.
38. **Jonsell U.**, **Hansson M.** and Mörth C.-M. 2007: Correlation between concentrations of acids and oxygen isotope ratios in polar surface snow caused by local redeposition. *Tellus B*, 59, 326-335.
39. **Jonsell U.**, **Hansson M.**, Siggard-Andresen M.-L. and Steffensen J.-P. 2007: Comparison of northern and central Greenland ice core records of methanesulfonate covering the last glacial period. *Journal of Geophysical Research, D-Atmospheres*, 112, D14313.
40. Juckes M.N., Allen M.R., Briffa K.R., Esper J., Hegerl G.C., **Moberg A.**, Osborn T.J. and Weber S.L. 2007: Millennial temperature reconstruction intercomparison and evaluation. *Climate of the Past*, 3, 591-609.
41. **Karlsson S.** 2007: Stone Age vegetation in Uppland, Southeastern Svealand, Sweden. *GFF*, 129, 295-305.
42. **Kleman J.** and Glasser N. 2007: The subglacial thermal organisation (STO) of ice sheets. *Quaternary Science Reviews*, 26, 585-597.
43. **Klintonberg P.**, Seely M.K. and **Christiansson C.** 2007: Local and national perceptions of environmental change in central northern Namibia: Do they correspond?. *Journal of Arid Environments*, 69, 506-525.
44. Laudon H., Sjöblom V., Buffam I. **Seibert J.** and Mörth M. 2007: The role of catchment scale and landscape characteristics for runoff generation of boreal streams. *Journal of Hydrology*, 344, 198-209.
45. Lemke P., Ren J., Alley R.B., Allison I., Carrasco J., Flato G., Fujii Y., Kaser G., Mote P., Thomas R.H. and Zhang T. 2007: Observations: Changes in Snow, Ice and Frozen Ground. In: Solomon S., Qin D., Manning M., Chen Z., Marquis M., Averyt K.B., Tignor M. and Miller H.L. (Eds.): *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge, United Kingdom and New York, USA. [Contributing authors: **Dyurgerov M.** and **Jansson P.**]
46. **Lidmar-Bergström K.**, Näslund J.-O., **Ebert K.**, Neubeck T. and Bonow J. 2007: Cenozoic landscape development on the passive margin of northern Scandinavia. *Norwegian Journal of Geology*, 87, 181-196.
47. Linderholm H.W. and **Jansson P.** 2007: Reconstruction of Storglaciären glacier mass balance from 1500 AD using tree-ring data. *Annals of Glaciology*, 46, 261-267.
48. Linderholm H.W., **Jansson P.** and Chen D. 2007: A high-resolution reconstruction of Storglaciären mass balance back to 1780/81 using tree-ring data and circulation indices. *Quaternary Research*, 67, 12-20.
49. Lindgren G.A., **Destouni G.** and **Darracq A.** 2007: Inland subsurface water system role for coastal nitrogen load dynamics and abatement responses. *Environmental Science and Technology*, 41, 2159-2164.

50. Lindgren G., Wrede S., **Seibert J.** and Wallin M. 2007: Nitrogen source apportionment modeling and the effect of land-use class related runoff contributions. *Nordic Hydrology*, 38, 317–331.
51. **Lundqvist J.** 2007: Surging ice and break-down of an ice dome - a deglaciation model for the Gulf of Bothnia. *GFF*, 129, 329-336.
52. Mangerud J., **Lundqvist J.**, Ehlers J. and Gibbard P.L. 2007: Late glacial events in northwest Europe. In: Elias S.A. (Ed.): *Encyclopedia of Quaternary Science, Volume 2*, Elsevier, Amsterdam, 1116-1122.
53. Meier M.F., **Dyurgerov M.**, Rick U.K., O'Neel S., Pfeffer W.T., Anderson R.S., Anderson S.P. and Glazovsky A.F. 2007: Glaciers dominate eustatic sea-level rise in the 21st Century. *Science*, 317, 1064-1067.
54. Napieralski J., Hubbard A., Li Y.K., Harbor J., **Stroeven A.P.**, **Kleman J.**, **Alm G.** and **Jansson K.** 2007: Towards a GIS assessment of numerical ice sheet model performance using geomorphological data. *Journal of Glaciology*, 53, 71-83.
55. **Olli G.** 2007: Determination of the historical variation of the trophic state in lakes using sediment stratigraphies. *Hydrology and Earth System Sciences*, 11, 1747–1756.
56. Pettersson R. and **Jansson P.**, Huwald H. and Blatter H. 2007: Spatial pattern and stability of the cold surface layer of Storglaciären, Sweden. *Journal of Glaciology*, 53, 99-109.
57. **Rosqvist G.**, Leng M.J. and **Jonsson C.** 2007: North Atlantic region atmospheric circulation dynamics inferred from a late-Holocene lacustrine carbonate isotope record, northern Swedish Lapland. *The Holocene*, 17, 867–873.
58. Rotschky G., **Holmlund P.**, Isaksson E., Mulvaney R., Oerter H., Van Den Broeke M.R. and Winther J.G. 2007: A new surface accumulation map for western Dronning Maud Land, Antarctica, from interpolation of point measurements. *Journal of Glaciology*, 53, 385-398.
59. **Ryner M.**, Gasse F., Verschuren D. and Rumes B. 2007: Climatic and hydrological instability in semi-arid equatorial East Africa during the late Glacial to Holocene transition: A multi-proxy reconstruction of aquatic ecosystem response in northern Tanzania. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 248, 440–458.
60. Scott L., **Holmgren K.** and Partridge T.C. 2007: Reconciliation of vegetation and climatic interpretations of pollen profiles and other regional records from the last 60 thousand years in the Savanna Biome of Southern Africa. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 257, 198-206.
61. **Seibert J.** and McGlynn B. 2007: A new triangular multiple flow-direction algorithm for computing upslope areas from gridded digital elevation models. *Water Resources Research*, 43, W04501.
62. **Seibert J.**, Stendahl J. and Sørensen R. 2007: Topographical influences on soil properties in boreal forests. *Geoderma*, 141, 139-148.
63. **Shibuo Y.**, **Jarsjö J.** and **Destouni G.** 2007: Hydrological responses to climate change and irrigation in the Aral Sea drainage basin. *Geophysical Research Letters*, 34, L21406.
64. **Sundqvist H.S.**, **Holmgren K.** and Lauritzen S.-E. 2007: Stable isotope variations in stalagmites from northwestern Sweden document changes in temperature and vegetation, during early Holocen. *The Holocene*, 17, 259-267.
65. **Sundqvist H.S.**, **Seibert J.**, **Holmgren K.** 2007: Understanding conditions behind speleothem formation in Korallgrottan, northwestern Sweden. *Journal of Hydrology*, 347, 13-22.
66. Sørensen R. and **Seibert J.** 2007: Effects of DEM resolution on the calculation of topographical indices: TWI and its components. *Journal of Hydrology*, 347, 79-89.
67. Temnerud J., **Seibert J.**, Jansson M. and Bishop K. 2007: Spatial Variation in Discharge and Concentrations of Organic Carbon in a Catchment Network of Boreal Streams in Northern Sweden. *Journal of Hydrology*, 342, 72-87.

68. **Veres D.**, Wohlfarth B., Andrieu-Ponel V., Björck S., De beaulieu J.-L., Digerfeldt G., Ponel P., **Ampel L.**, Davies S., Gandouin E. and Belmecheri S. 2007: The lithostratigraphy of the Les Echets basin, France: tentative correlation between cores. *Boreas*, 36, 326-340.
69. Vorren K.-D., Blaauw M., **Wastegård S.**, van der Plicht J. and Jensen C. 2007: High-resolution stratigraphy of the northernmost concentric raised bog in Europe: Sellevollmyra, Andoya, northern Norway. *Boreas*, 36, 253-277.
70. Öster M., **Cousins S.A.O.** and Eriksson O. 2007: Site area and heterogeneity rather than landscape context determine plant species richness in semi-natural grasslands. *Journal of Vegetation Science*, 18, 859-868.

#### Other publications

1. **Alexanderson H.** 2007: Brattforsheden: Vad sanden kan berätta om dess historia. *Rapport till Länsstyrelsen i Värmland*, 4 pp.
2. Björck S., Backman J., Bengtsson S., **Destouni G.** and Rodhe H. 2007: Uttalande från klimatgruppen inom akademiens klass för geovetenskaper angående Climate Change 2007: The Physical Science Basis. *Kungliga Vetenskapsakademien*, 5 pp.
3. **Brown I.A.** 2007: Uncertainties in Firn- Line Monitoring in Winter SAR Data. *Alaska Satellite Facility News and Notes*, 4, 2-4.
4. Brunet M., Sigró J., Jones P.D., Saladié O., Aguilar E., **Moberg A.**, Lister D. and Walther A. 2007: Long-term changes in extreme temperatures and precipitation in Spain. *The International Journal of the Institute for Catalan Studies, Contributions to Science*, 3, 333-344.
5. Ene S., **Hall O.** and Jansson U. 2007: Geografisk informationsbehandling och landskapsanalys - några exempel. In: Jansson U. (Ed.): *Kartlagt land: kartan som källa till de areella näringarnas geografi och historia*, Kungl. Skogs- och lantbruksakademien, Stockholm, 177-191.
6. **Grabs T.**, **Seibert J.** and Laudon H. 2007: *Distributed runoff modelling: Wetland runoff and its importance for spring-flood predictions*. Elforsk rapport, 07:16, 60 pp.
7. **Holmgren K.** and **Kuylentierna J.** 2007: Bredda perspektiven för klimatsäkrat bistånd. *Göteborgsposten*, 6th October 2007.
8. **Holmlund P.** 2007: Vit kontinent berättar om klimatets historia. *Miljöforskning: Formas tidning för ett uthålligt samhälle*, 1, 22-25.
9. **Ihse M.** 2007: Changes in Scandinavian cultural landscape of importance for biodiversity. *Kungl. Skogs- o lantbruksakademiens tidskrift*, årg 146, nr 5, 36-44.
10. **Ihse M.** 2007: Odlingslandskapet i Roslagen – Inledning. In: Bergström M. (Ed.): *Rapport från LALE-konferensen 4-5 oktober 2006*, Naturvård i Norrtälje kommun rapport nr 33, 3-4.
11. **Ihse M.** 2007: Hur har gräsmarkerna förändrats under de senaste 250 åren i ett landskapsperspektiv?. In: Bergström M. (Ed.): *Rapport från LALE-konferensen 4-5 oktober 2006*, Naturvård i Norrtälje kommun rapport nr 33, 9-10.
12. **Ihse M.** 2007: Values and threats in Swedish mountain landscapes – methods to assess landscape characteristics In: Bunce R.G.H., Jongman R.H.G., Hojas L. and Weel S. (Eds.): *Proceedings of the 7<sup>th</sup> LALE World Congress in Wageningen , the Netherlands, July 2007 – 25 years of Landscape ecology, Scientific principles in practice*, 710-711.
13. **Ihse M.** and Emanuelsson U. 2007: Introduction to valuable agricultural landscapes. *Kungl. Skogs- o lantbruksakademiens tidskrift*, årg 146, nr 5, 5-6.
14. **Karlin T.** 2007: EPICA to the bottom in Dronning Maud Land. In: Rickberg S. (Ed.): *Årsbok 2006: Polarforskningssekreteriatet*, Polarforskningssekreteriatet, Stockholm, 54-58.

15. **Karlsson S.** 2007: Hassleområdet vegetationshistoria. In: Karlenby L. (Ed.): *Om makt och offer.: Röster om centralmaktens utveckling i tiden före historien*, Riksantikvarieämbetets förlag, Stockholm, 71-90.
16. **Karlsson S.** 2007: Stenåldersvegetation i Uppland, östra Svealand. In: Stenbäck N. (Ed.): *Stenåldern i Uppland: Uppdragsarkeologi och eftertanke*, Societas Archaeologica Upsaliensis, Riksantikvarieämbetet, Upplandsmuseet, Uppsala, 137-153.
17. Kullander S., **Destouni G.**, Frank H., Fredga K., Fredholm B., Grandin K., Jagers P., Kasemo B., Lundin R., Mäler K.-G., Niblaeus K., Nordén B., Anderson L., Hedberg D., Danell K., Folke C., Gipperth L., Granéli W., Harms-Ringdahl M., Kessler E., Lundberg B., Sandahl I. and de Wit C. 2007: *En studie om klimatförändringar*. Kungliga Vetenskapsakademien, 10 pp.
18. Kullander S., **Destouni G.**, Frank H., Fredga K., Fredholm B., Gee D., Grandin K., Jagers P., Kasemo B., Lundin R., Mäler K.-G., Niblaeus K. and Nordén B. 2007: *Statements on Energy from Nuclear Fusion, by the Energy Committee at the Royal Swedish Academy of Sciences*. Kungliga Vetenskapsakademien, 8 pp.
19. Kullander S., **Destouni G.**, Frank H., Fredga K., Fredholm B., Gee D., Grandin K., Jagers P., Kasemo B., Lundin R., Mäler K.-G., Niblaeus K. and Nordén B. 2007: *Om fusionsenergi, Information från Kungl. Vetenskapsakademiens Energiutskott*. Kungliga Vetenskapsakademien, 4 pp.
20. **Lundqvist J.** 2007: Anmärkningsvärda grusförekomster i Jämtlands län. Länsstyrelsen i Jämtlands län. Natur i Jämtlands län 2007:11.
21. **Lundqvist J.** and Offerberg J. 2007: Harald Johansson. Svenska Dagbladet, 7th January 2007.
22. Marklund L., Allard A., Egberth M., Holmgren J., Högström M., Nilsson B., Olsson H., **Skånes H.** and Walter F. 2007: *Utveckling av metodik för flygbildstolkning inom NILS landskapsrutor (5x5 km)*. Sveriges Lantbruksuniversitet Institutionen för skoglig resurshushållning: Arbetsrapport, SLU Institutionen för skoglig resurshushållning, Umeå, 90 pp.
23. **Miller U.**, **Risberg J.** and **Wastegård S.** 2007: Quaternary stratigraphy, vegetation dynamics and human impact – current research projects and new results. Studies in honour of Ann-Marie Robertsson. *GFF*, 129, 273-276.
24. Mäler K.G., Li C.Z. and **Destouni G.** 2007: Pricing Resilience in a Dynamic Economy-Environment System: A Capital-Theoretical Approach. *Beijer Discussion Papers*, 208, The Beijer Institute of Ecological Economics.
25. Ptak T. and **Jarsjö J.** 2007: Characterisation of groundwater contamination and natural attenuation potential at multiple scales. In: Quevauviller P. (Ed.): *Groundwater Science and Policy: An International Overview*, Royal Society of Chemistry (RSC) Publishing, Cambridge, 240-268.
26. **Risberg J.**, **Alm G.**, Björck N. and Guinard M. 2007: Synkrona paleokustlinjer 7000 - 4000 kal.BP i mellersta och norra Uppland. In: Stenbäck N. (Ed.): *Stenåldern i Uppland, Vol 1 - Arkeologi E4 Uppland - studier: Uppdragsarkeologi och eftertanke*, Societas Archaeologica Upsaliensis, 99-135.
27. **Risberg J.**, **Berntsson A.** and **Kaislahti Tillman P.** 2007: Strandförskjutning under mesolitikum på centrala Södertörn, östra Mellansverige: Kvartärgeologiska undersökningar längs väg 73, Överfors – Västnora. *Rapporter från Arkeologikonsult*, 2006:2037, Arkeologikonsult, Stockholm, 57 pp.
28. **Rosqvist N.** 2007: Svenska glaciärer på allt snabbare reträtt: Tarfala forskningsstation. *Miljöforskning: Formas tidning för ett utbålligt samhälle*, 1, 29-31.
29. **Skånes H.**, Mäki A.-H. and Andersson A. 2007: *Flygbildstolkningsmanual för Basinventeringen Natura 2000 version 7.1*. Naturvårdsverket, Stockholm.

30. **Stjernquist I., Schlyter P.** and Sonesson K. 2007: Samband mellan luftföroreningsdeposition och vitalitet hos bok och ek i södra Sverige. Länsstyrelsen i Skåne Län, Rapport, Nov 2007.
31. Wohlfarth B., **Helmens K., Wastegård S.**, Bohncke S., Renssen H., Sanchez-Goni M.F., d'Errico F., Rasmussen T.L., Johnsen S. and Spötl C. 2007: RESOLuTION – Rapid climatic and environmental shifts during Oxygen Isotope Stages 2 and 3 – linking high-resolution terrestrial, ice core and marine archives. *PAGES News*, 15, 7-8.



Digging a section in an end moraine for collection of cosmogenic exposure and OSL samples, aiming at constraining the timing of moraine formation – central Bayan Har Shan, northeastern Tibetan Plateau, 4653 m a.s.l. Photo: Jakob Heyman.

#### 4. Publication series

##### Ongoing

Dissertations from the Department of Physical Geography and Quaternary Geology, 2006-

Reports from the Department of Physical Geography and Quaternary Geology, 2002-

Tarfala Research Station Annual Reports, electronic pdf-based series, 1998-

##### Past

Thesis in Quaternary Geology, 2002-2005

Thesis in Geography with emphasis on Physical Geography, 2001-2006

Quaternaria. Series A, 1995-2001

Quaternaria. Series B, 1995-2001

The Department of Physical Geography, Stockholm University Dissertation Series, 1994-2000

Research Report, Department of Physical Geography, 1968-2000

Meddelanden från Naturgeografiska institutionen, 1965-1994

## 5. Education

In July 2007 Stockholm University shifted to the Bologna Model of higher education together with all other universities in Sweden. In short this means that new degrees were introduced:

- First cycle: Högskoleexamen 2 years, Kandidatexamen (Bachelor's Degree) 3 years
- Second cycle: Magisterexamen 1 year, Masterexamen (Master's Degree) 2 years;
- Third cycle: Licentiatexamen 2 years, Doktorsexamen (Doctorate) 4 years.

In addition a new system of credits was introduced, compatible with the European Credit Transfer and Accumulation System, ECTS. One academic credit (Sw. *högskolepoäng* or hp; Eng. translation *Higher Education Credit* or HEC), corresponds to one ECTS credit or approximately 3 days of full time studies. One semester is composed of 30 HEC, corresponding to approximately 20 study weeks, and a full study year is composed of 60 HEC, corresponding to 40 study weeks.

At Stockholm University it has also been decided that a new system of grading will be fully introduced 1 July 2008. This system corresponds roughly to the ECTS standard grading scale, but at Stockholm University a criterion-referenced grading is practised, while the ECTS system is a relative grading system, i.e. with a set distribution of grades among the student population.

The goal of the undergraduate education at the Department of Physical Geography and Quaternary Geology is to offer a high quality education, reflecting the research profile of the Department, and meeting the society's need for a sound theoretical competence.

The department carries out undergraduate education in geography, earth sciences, integrated biology-earth science, and in environmental issues. In addition a wide spectrum of graduate (master's level) programmes and courses are given, reflecting the research profiles of the department. Every year about 1500 students attend our undergraduate and graduate education.

### 5.1. Undergraduate (First Cycle) education

Three undergraduate (Bachelor's) programmes are given by the Department of Physical Geography and Quaternary Geology:

- Bachelor's programme in Geography
- Bachelor's programme in Earth Science
- Bachelor's programme in Biology-Earth Science

#### Bachelor's programme in Geography

The *Geography programme* includes courses up to 180 Higher Education Credits (HEC), which correspond to three years of full-time studies (1 HEC is roughly 3 days of full-time studies):

- 1-30 HEC: Geography I, 30 HEC
- 31-60 HEC: Geography II, 30 HEC
- 61-90 HEC: Geography III, 30 HEC
- 91-165 HEC: Optional courses
- 166-180 HEC: Geography, Degree Project (Bachelor's Thesis), 15 HEC

The Department of Physical Geography and Quaternary Geology and the Department of Human Geography at Stockholm University collaborate within the geography education, and much of the education is integrated physical and human geography. Every year 400-600 students attend the Geography programme. They study geography either as a part of ordinary university studies or as



a part of the theoretical education within the teachers' training programme at Stockholm University. Geography can be studied within a programme framework or as stand-alone courses. Seen over a period of ten years, the influx of students has increased substantially. One reason for this increase is the elevated interest, and need for knowledge, in the field of geography.

#### Bachelor's programme in Earth Science

The education in *Earth Science* is given in collaboration with the Department of Geology and Geochemistry at Stockholm University. Courses can be taken within the programme framework or as stand-alone courses, both study paths leading to a Bachelor's Degree. The programme encompasses 180 HEC. Within the study programme, the first year (60 HEC) consists of compulsory courses where students learn the basics in earth science: Geology and Marine Geoscience, Physical Geography, Geochemistry, and Hydrology and Quaternary Geology. After the first year the students specialise within either Geology, Marine Geoscience and Geochemistry, or Physical Geography, Hydrology and Quaternary Geology. The programme is ended with a 15 HEC Degree Project (Bachelor's Thesis), which at the Department of Physical Geography and Quaternary Geology is either in Quaternary geology, physical geography, or in hydrology/hydrogeology.

#### Bachelor's programme in Biology-Earth Science

*The Biology-Earth Science Study Programme* encompasses 180 HEC. The programme is carried out in collaboration with the Department of Biology Education at Stockholm University. The programme consists of 75 HEC mandatory courses in earth sciences and environmental issues and 90 HEC are in biology. A 15 HEC Degree Project (Bachelor's Thesis) in either biology, earth science or environmental issues ends the programme. The distinctive feature of the programme is the integration between earth science and biology. Earth sciences include geology, Quaternary geology, climatology, geomorphology, cartography, aerial photograph interpretation and GIS, hydrology, and environmental issues and nature conservation.

#### Environmental Studies

The Department of Physical Geography and Quaternary Geology offers a wide range of courses on environmental issues on basic level (first cycle) and advanced level (second cycle). The courses are stand-alone courses that are optional within the study paths of the bachelor programmes in Geography, Earth Science, Biology, and many other subjects. The following basic level (First Cycle) courses are included:

- Environmental Issues, 15 HEC
- International Environmental Issues, 15 HEC
- Nature Conservation, 15 HEC
- Energy and Environment, 15 HEC
- Environmental Management Systems, 7.5 HEC
- Swedish Environmental Targets, 15 HEC
- Climate Change, Risks, Hazards and Planning, 15 HEC
- Environment, sustainability and private forestry, 15 HEC

## 5.2 Graduate (Second Cycle) education

The Department of Physical Geography and Quaternary Geology offers advanced courses in glaciology and glacial geomorphology, climatology and palaeoclimatology, palaeoecology, Scandinavian Quaternary geology, hydrology and hydrogeology, soil science, Geographic Information Systems, cartography and map production, remote sensing, ecological geography, and natural resources, environment, and land use in the tropics. The courses provides the

prospective geoscientist and geographer with an overall breadth to be used in working with, for example, nature and environmental control, geoscientific examinations, planning, risk assessment and research.

The advanced courses are compiled in a number of Master's Programmes. These are all two years long and always include a research task in the form of a Degree Project, which may be one semester long (20 weeks), one and a half semester long (30 weeks) or a full study year long (40 weeks). The programmes in general start with 1.5-2 semesters of mandatory courses with a certain topical emphasis. Thereafter the students take 1-1.5 semester of optional courses and finish the programmes with a Degree Project of 1-2 semesters.

#### Master's Programmes

- Master in Physical Geography and Quaternary Geology
  - Emphasis: Land and Water Resources
  - Emphasis: Landscape Analysis and Geomatics
  - Emphasis: Climate, Environment and Landscape Development
  - Emphasis: Glaciers and Polar Environment
- Master in Biology-Earth Science
- Master in Geography
- Master in Environmental Protection and Physical Planning
- Master in Environmental Analysis and Management
- Master in Environment and Health Protection

#### Other courses

The course "Science Communication, 30 HEC" is an advanced course, which offers a generally deepened understanding of the role that scientific research plays in society and the problems attached to it, and offers a practice in the style of scientific writing and in communicating science in media.

The summer course "Glaciers and high mountain environments, 7.5 HEC" is a glaciology field course held at the Tarfala Research Station, northern Sweden. The field-based part of the course introduces different methods of measurement and analysis and the study of glacial or periglacial landscapes and processes.

### 5.3. Postgraduate (Third Cycle) education

The postgraduate education program at the Department of Physical Geography and Quaternary Geology, Stockholm University, includes courses, seminars, excursions and the writing and defence of a Licentiate and a Doctoral thesis. Students can choose to either graduate in "Physical Geography" or in "Quaternary Geology". Postgraduate students are expected to participate in an annual "symposium" within the Department where they present their progress (research and education) and plans for the coming year(s). The success of our postgraduate programme is reflected in the amount and quality of Doctoral theses produced (see section 6 in this report for a list of recent theses). Below, we will tabulate currently enrolled students and their projects within each examination subject.

Physical Geography / Geography with emphasis on Physical Geography:

Arvid Bring

*Distributed modelling of hydrological dynamics and waterborne mass fluxes in cold regions*

Mattias de Woul

*Response of glaciers to climate change – Mass balance sensitivity, sea level rise and runoff*

Martial Duguay

*The effects of climate change induced glacier melt on water resources in the La Paz region, Bolivia*

Karin Ebert

*Cenozoic landscape development in northern Fennoscandia. Geomorphologic interpretation within a GIS-framework*

Bo Eknert

*Changing biotopes in the agricultural landscape and the effects of the bird fauna*

Malin Ericsson

*Spatial and temporal variations in surficial melt on the Greenland ice sheet and the effects on glacier dynamics*

Sofia Eriksson

*Linking management and feedback across scales in social-ecological systems - Examples from forest ecosystems*

Bradley Goodfellow

*Relict surfaces of Northern Fennoscandia: process, rates, and formative conditions*

Thomas Grabs

*Water quality modeling based on landscape analysis: importance of riparian hydrology*

Fredrik Hannerz

*Spatial information support for water science and policy*

Jakob Heyman

*Peleoglaciology of the northeastern Tibetan Plateau*

Gustaf Hugelius

*Landscape patterns of soil organic matter quantity and quality in permafrost terrain*

Susanne Ingvander

*Spatial and temporal snow accumulation patterns along an ice divide in Dronning Maud land, Antarctica*

Christina Jonsson

*Stable isotopes in lake sediments from Lappland*

Martin Margold

*Paleoglaciological reconstructions using digital elevation models and satellite imagery*

Elin Norström

*Reconstruction of past climate variability in South Africa through studies of trees and pollen*

Gull Olli

*Sediment and pollutant input loads to and accumulation in Bay Karlskärsviken at Lake Mälaren, Sweden*

Britta Sannel

*Temporal and Spatial Dynamics of Subarctic Peat Plateau / Thermokarst Lake Complexes*

Helena Öberg

*Environmental variability in northern Tanzania during the last 1000 years*

Quaternary Geology:

Linda Ampel

*Limnic responses to Heinrich events and DO-cycles at Les Echets, France*

Sofia Andersson

*Time-synchronous correlation of late Holocene climatic changes and their environmental impact in central Sweden*

Martina Hättestrand

*Vegetation and climate in N Sweden during Weichselian Interstadials, as compared with early Holocene and recent pollen floras*

Timothy Johnsen

*Dynamics and chronology of ice sheet dynamics in the central Fennoscandian mountain range*

Päivi Kaislahti Tillman

*Holocene climate and environmental change in high latitudes as recorded by stable isotopes in peat deposits*

Torbjörn Karlin

*Deep ice core analysis of processes in the climate system*

List of examinations for 2007

<b>Name</b>	<b>Date</b>	<b>Degree</b>
Hanna Sundqvist	26 Jan 2007	PhD, Physical Geography
Patrik Klintonberg	11 Apr 2007	PhD, Physical Geography
Maria Ryner	01 Jun 2007	PhD, Physical Geography
Daniel S. Veres	05 Jun 2007	PhD, Quaternary Geology
Yoshihiro Shibuo	08 Jun 2007	PhD, Physical Geography
Gessesse Dessie	14 Jun 2007	PhD, Physical Geography
Hernán De Angelis	07 Nov 2007	PhD, Physical Geography
Amélie Darracq	15 Nov 2007	PhD, Physical Geography
Bo Eknert	13 Dec 2007	PhLic, Physical Geography

## 6. Dissertations

The Department of Physical Geography and Quaternary Geology, Stockholm University

Thesis in Geography with emphasis on Physical Geography (2001-2006)

SARA A. O. COUSINS, 2001. Plant species diversity patterns in a Swedish rural landscape: Effects of the past and consequences for the future. Dissertation No. 17. Fakultetsopponent: Dr. Roy Haines-Young

CECILIA RICHARDSON-NÄSLUND, 2001. Spatial distribution of snow in Antarctica and other glacier studies using ground-penetrating radar. Dissertation No. 18. Fakultetsopponent: Prof. Robert W. Jacobel

THOMAS SCHNEIDER, 2001. Hydrological processes in firn on Storglaciären, Sweden. Dissertation No. 19. Fakultetsopponent: Prof. Andrew Fountain

HANS W. LINDERHOLM, 2001. Temporal and spatial couplings between tree-ring variability and climate in Scandinavia. Dissertation No. 20. Fakultetsopponent: Dr. Astrid Ogilvie

MARIANNE I. LAGERKLINT, 2001. Marine multi-proxy records of late Quaternary climate change from the Atlantic Ocean. Dissertation No. 21. Fakultetsopponent: Dr. Lloyd H. Burckle

RICHARD Y. M. KANGALAWA, 2001. Changing land-use patterns in the Irangi hills, central Tanzania. A study of soil degradation and adaptive farming strategies. Dissertation No. 22. Fakultetsopponent: Prof. William Adams

ANDERS CLARHÄLL, 2002. Glacial Erosion Zonation - Perspectives on Topography, Landforms, Processes and Time. Dissertation No. 23. Fakultetsopponent: Dr. Chris Clark

KRISTER N. JANSSON, 2002. Glacial geomorphology of north-central Labrador-Ungava, Canada. Dissertation No. 24. Fakultetsopponent: Dr. Andrée Bolduc

BJÖRN E. GUNNARSON, 2002. Holocene climate and environmental fluctuations from subfossil pines in central Sweden. Dissertation No. 25. Fakultetsopponent: Prof. Mike G. L. Baillie

KATARINA. LÖFVENHAFT, 2002. Spatial and temporal perspectives on biodiversity for physical planning – Examples from urban Stockholm, Sweden. Dissertation No. 26. Fakultetsopponent: Prof. Jan Bengtsson

ANNA ALLARD, 2003: Vegetation changes in mountainous areas - A monitoring methodology based on aerial photographs, high-resolution satellite images, and field investigations. Dissertation No. 27. Fakultetsopponent: Doc. Timo Helle

PER KLINGBJER, 2004: Glaciers and climate in northern Sweden during the 19<sup>th</sup> and 20<sup>th</sup> century. Dissertation No. 28. Fakultetsopponent: Dr. Georg Kaser

OLA FREDIN, 2004. Mountain centred ice fields in northern Scandinavia Dissertation No. 29. Fakultetsopponent: Prof. Jon Landvik

JOHAN M. BONOW, 2004. Paleosurfaces and paleovalleys on North Atlantic previously glaciated passive margins-reference forms for conclusions on uplift and erosion. Dissertation No. 30. Fakultetsopponent: Dr. Adrian Hall

RICKARD PETTERSSON, 2004. Dynamics of the cold surface layer of polythermal Storglaciären, Sweden. Dissertation No. 31. Fakultetsopponent: Prof. Helgi Björnsson

KATARINA LUNDBLAD, 2006. Studies on Tropical Palaeo-variation in Climate and Cosmic Ray Influx. Geochemical Data from Stalagmites Collected in Tanzania and Northern South Africa. Dissertation No. 32. Fakultetsopponent: Prof. Augusto Mangini

LENA RUBENSDOTTER, 2006. Alpine lake sediment archives and catchment geomorphology; causal relationships and implications for paleoenvironmental reconstructions. Dissertation No. 33. Fakultetsopponent: Prof. Catherine Souch

The Department of Physical Geography and Quaternary Geology, Stockholm University

Thesis in Quaternary Geology, published in *Quaternaria*, ser A. (2001)

KRISTIAN SCHONING, 2001. Marine conditions in middle Sweden during the late Weichselian and early Holocene as inferred from foraminifera, Ostracoda and stable isotopes. Dissertation No. 8.

LAIMDOTA KALNINA, 2001. Middle and Late Pleistocene environmental changes recorded in the Latvian part of the Baltic Sea basin. Dissertation No. 9.

ANNA HEDENSTRÖM, 2001. Early Holocene shore displacement in eastern Svealand, Sweden, based on diatom stratigraphy, radiocarbon chronology and geochemical parameters. Dissertation No. 10.

TIIT HANG, 2001. Proglacial sedimentary environment, varve chronology and late Weichselian development of the Lake Peipsi, eastern Estonia. Dissertation No. 11.

The Department of Physical Geography and Quaternary Geology, Stockholm University

Thesis in Quaternary Geology (2002-2005)

GREGGER LINDEBERG, 2002. The Swedish varved clays revisited: Spectral- and image analysis of different types of varve series from the Baltic Basin. Dissertation No. 1. Fakultetsopponent: Prof. Björn Malmgren

RATHNASIRI PREMATHILAKE, 2003: Late Quaternary palaeoecological event stratigraphy in the Horton Plains, central Sri Lanka - with contributions to the recent pollen flora. Dissertation No. 2. Fakultetsopponent: Prof. Françoise Gasse

ANGELICA FEURDEAN, 2004: Palaeoenvironment in north-western Romania during the last 15,000 years. Dissertation No. 3. Fakultetsopponent: Prof. Katherine J. Willis

ANDERS BORGMARK, 2005: The colour of climate: changes in peat decomposition as a proxy for climate change. Dissertation No. 4. Fakultetsopponent: Dr. Bas van Geel

JENS HEIMDAHL, 2005: Urbanised nature in the past – site formation and environmental development in two Swedish towns, AD 1200-1800. Dissertation No. 5. Fakultetsopponent: Dr. Jane Sidall

- HÅKAN GRUDD, 2006: Tree rings as sensitive proxies of past climate change. Dissertation No. 1. Fakultetsopponent: Prof. Brian Luckman
- ULF JONSELL, 2006: Sulfur in polar ice and snow. Interpretations of past atmosphere and climate through glacial archives. Dissertation No. 2. Fakultetsopponent: Dr. Mark Curran.
- HANNA S. SUNDQVIST, 2007: Speleothems as environmental recorders – A study of Holocene speleothems and their growth environments in Sweden. Dissertation No. 3. Fakultetsopponent: Prof. Frank McDermott.
- PATRIK KLINTENBERG, 2007: More water, less grass? An assessment of resource degradation and stakeholders' perceptions of environmental change in Ombuga grassland, northern Namibia. Dissertation No. 4. Fakultetsopponent: Prof. Stein Bie.
- MARIA RYNER, 2007: Past environmental and climate changes in northern Tanzania. Vegetation and lake level variability in Empakaai Crater. Dissertation No. 5. Fakultetsopponent: Prof. Henry Lamb.
- DANIEL S. VERES, 2007: Terrestrial response to Dansgaard-Oeschger cycles and Heinrich events: the lacustrine record of Les Echets, south-eastern France. Dissertation No. 6. Fakultetsopponent: Prof. John J. Lowe.
- YOSHIHIRO SHIBUO, 2007: Modelling water and solute flows at land-sea and land-atmosphere interfaces under data limitations. Dissertation No. 7. Fakultetsopponent: Dr. Clifford Voss.
- GESSESSE DESSIE, 2007: Forest Decline in South Central Ethiopia: Extent, history and process. Dissertation No. 8. Fakultetsopponent: Prof. Mats Widgren.
- HERNÁN DE ANGELIS, 2007: Palaeo-ice streams in the north-eastern Laurentide Ice Sheet. Dissertation No. 9. Fakultetsopponent: Dr. Colm Ó Cofaigh.
- AMÉLIE DARRACQ, 2007: Long-term development, modeling and management of nutrient loading to inland and coastal waters. Dissertation No. 10. Fakultetsopponent: Prof. Andrea Rinaldo.

## 7. International exchange

International exchange has been increasing at INK since some years back. Our department is popular among incoming students from our partner universities (and other universities), and we can observe an increased interest among our own students to study at our partner universities. The Bologna process is a pushing factor for international exchange. We get more support and encouragement for internationalization from a national level. Masters courses that can be given in English find large interest outside Stockholm University. The transformation of the Erasmus-programme to the Lifelong Learning Programme (LLP) triggered new partnerships for student and teacher exchange, and plans for other forms of international co-operation, as common course development and joint degrees.

### 7.1. Lecturer exchange

INNOLEC: Lectures for students at Masaryk University, Brno, Czech Republic / *Moberg A.*

NordPlus: Bilateral teaching exchange with University of Turku, Finland / *Skånes H.*

ERASMUS: Visiting lecturer from Innsbruck, Austria, Dr. Maria Wastl

### 7.2. Student exchange

Erasmus exchange (coordinator: K. Ebert)

Bern University, Switzerland

Innsbruck University, Austria

Freiburg University, Germany

Bordeaux University, France

University of Burgundy, Dijon, France



## 8. Conferences and seminars

### January

Lidmar-Bergström: *Nordiska geologiska vintermötet, Stavanger, Norway*

### February

Bergman, Gunnarson,  
Grudd, Johnsson, Moberg,  
Mohammad, Rosqvist,  
Schoning & Wastegård: *MILLENNIUM 1st milestone meeting, Cala Millor, Spain*  
Cousins: *Annual OIKOS-meeting, Stockholm, Sweden*  
Dellgar Hagström &  
Ericsson: *Fjärranalysseminarium, Stockholm, Sweden*  
Grabs: *Hydroschool Workshop, Luxembourg*  
Ihse: *Mistraprogrammet INCLUDE och KSLA seminarium, Stockholm, Sweden*  
Miller: *EARTH Plenary Conference and Steering Committee Meeting, Granada, Spain*  
Persson: *Räddningsverkets forskardagar, Karlstad, Sweden*

### March

Alexanderson, Hansson,  
Heyman, Holzkämper,  
Hättestrand, Jansson K,  
Karlin, Lundqvist, Sannel,  
Stroeven & Wastegård: *First Conference on Arctic Palaeoclimate and its Extremes (APEX), Stockholm, Sweden*  
  
Dellgar Hagström,  
Runborg & Skånes: *Natura 2000 workshop - aerial photographic interpretation, Luleå, Sweden*  
Dellgar Hagström,  
Runborg & Skånes: *Natura 2000 photogrammetric workshop, Umeå, Sweden*  
Grabs: *Fourth annual Krycklan symposium, Umeå*  
Grabs & Persson: *Uncertainty in environmental modelling workshop, Uppsala, Sweden*  
Stjernqvist: *The International Scholarship Committee Workshop, The Delta Kappa Gamma Society International, Austin, USA*

### April

Alexanderson: *9<sup>th</sup> International Conference "Methods of absolute chronology", Gliwice, Poland*  
Alexanderson,  
Goodfellow, Heyman,  
Hättestrand, Jansson K,  
Johnsen, Kleman,  
Lundqvist, Rosqvist &  
Stroeven: *Workshop on the Deglaciation of Fennoscandia, Tarfala Research Station, Sweden*  
  
Ampel, de Woul, Ebert,  
Grabs, Hannerz, Heyman,  
Kleman, Seibert, Shibuo &  
Stroeven: *EGU General Assembly, Vienna, Austria*

- Lundqvist: *Crafoord Prize Jubilee Symposium – Polar Regions and Global Change, Lund, Sweden*
- Norström: *SASQUA (Southern African Society for Quaternary Research) XVII Biennial congress, Howick, South Africa*
- Rosqvist: *IBiS British Geological Survey, Nottingham, UK*

### May

- Bring & Rosqvist: *ARCUS Arctic Forum, Washington DC, USA*
- Holzkämper, Jonsson,  
Sundqvist & Wastegård: *NEPAL opening meeting, Palmse, Estonia*
- Ihse: *International Standardisation Organisation ISO/TC 211 24 Plenary and working group meeting, Rome, Italy*
- Kaislahti Tillman & Miller: *Nordic Diatomists' Meeting, Lillehammer, Norway*
- Karlin: *Ocean Controls in Abrupt Climate Change, Obergurgl, Austria*
- Miller: *EARTH Team 3 Workshop, Tallin, Estonia*
- Seibert: *From Catchment Scale Process Conceptualisation to Predictive Capability, Ballater, Scotland*

### June

- Schlyter & Stjernqvist: *The 8th Nordic Environmental Social Science Research Conference, Oslo, Norway*
- Seibert: *International Perspectives on Spatial Modelling in Catchment Research, Manchester, UK*

### July

- Cousins: *International Association for Vegetation Science, Swansea, UK*
- Cousins, Ihse & Skånes: *LALE (International Association of Landscape Ecology) World congress, Wageningen, Netherlands*
- Helmens, Kuhry, Rosqvist,  
Stroeven & Wastegård: *XVII INQUA Congress, Cairns, Australia*
- Ihse: *SBSTTA – 12<sup>th</sup> meeting of the UNEP Subsidiary Body for Scientific, Technical and Technological Advice to Convention of Biodiversity Meeting, Paris, France*

### August

- Dellgar Hagström &  
Runborg: *Natura 2000 workshop - mire classification, Värmland, Sweden*
- Duguay: *Glacier in watershed and global hydrology, Obergurgl, Austria*
- Moberg: *MILLENNIUM Analytical Workshop, Instrumental and Documentary Archives, Freiburg, Germany*
- Schlyter: *Conference on Scientific Framework of Environmental and Forest Governance - The role of discourses and expertise, Göttingen, Germany*
- Stjernqvist: *The Delta Kappa Gamma Society International European Regional Conference, London, UK*

## September

- Alexanderson: *Fennoscandian paleo-environment and ice sheet dynamics during MIS 3, Lidingö, Sweden*
- Bring: *Third International Conference on Climate & Water*
- Ericsson: *Sveriges Rymdforskarears Sällskap, Kiruna, Sweden*
- Grudd & Gunnarsson: *MILLENNIUM SG2 meeting, Stockholm, Sweden*
- Ihse: *Swedish IALE SU conference on "the outfield of the landscape", Siljansnäs, Sweden*
- Ihse: *Nordiskt seminarium om den Europeiska landskapskonventionen, Runö, Sweden*
- Ihse: *Mångfaldskonferensen 2007, Växjö, Sweden*
- Moberg: *ESF Workshop on Econometric methods in Climate Research, Frascati, Italy*
- Moberg & Mohammad: *MILLENNIUM SG5 meeting, Stockholm, Sweden*

## October

- Ampel, Engels, Helmens & Wastegård: *RESOLuTION workshop, De Lutte, the Netherlands*
- Bring: *LOICZ-LASC-AMAP workshop on Arctic Coastal Zones at Risk, Tromsø, Norway*
- Darracq: *Managing Water Resources in European Mountain Environments, Belluno, Italy*
- Ericsson: *IGS Nordic Branch Meeting, Uppsala, Sweden*
- Grudd & Gunnarsson: *MILLENNIUM SG2 meeting, Stockholm, Sweden*
- Hansson & Karlin: *1st European Ice Core Forum- European Partnerships in Ice Core Science (EPICS) - Developing a strategy for European Research Programmes, Bernin, France*
- Holzkämper, Kaislahti  
Tillman & Wastegård: *Peat workshop, Stockholm, Sweden*
- Ihse: *Kultur dagar på Dunkers kulturhus, Helsingborg, Sweden*
- Ihse: *International Standardisation Organisation ISO/TC 211 24 Workshop, Ispra, Italy*
- Jarsjö: *NATO Advanced Research Workshop "Environmental Problems of Central Asia and Their Economic, Social and Security Impacts", Tashkent, Uzbekistan*

## November

- Bergman, Rosqvist,  
Schoning & Wastegård: *MILLENNIUM calibration workshop 1, Oulu, Finland*
- Bring & Rosqvist: *First IPY workshop on Sustaining Arctic Observing Networks, Stockholm, Sweden*
- De Angelis: *International Glaciological Society, Nordic Branch, Uppsala, Sweden*
- Holzkämper: *CARBO-North meeting, London, UK*
- Miller: *EARTH Steering Committee meeting, Strasbourg, France*

## December

Alexanderson: *Prosjektmote SciencePub, Selbu, Norway*  
Brown, Destouni, Duguay,  
Grudd, Gunnarsson,  
Hansson, Helmens,  
Holmgren, Holmlund,  
Holzkämper, Hättestrand,  
Ingvander, Jansson P,  
Kaislahti Tillman, Kleman,  
Kuhry, Moberg, Rosqvist,  
Stroeven & Wastegård: *SUCLIM workshop, Waxholm, Sweden*  
Goodfellow & Persson: *AGU Fall Meeting, San Francisco, USA*  
Goodfellow: *Gilbert Club Meeting, Berkeley, USA*



Camp on a beach ridge at Tönsneset, Kongsfjorden area, Svalbard. Photo: Helena Alexanderson.

## 9. Financial support

GRANT ORGANIZATIONS	
EU	<i>European Union</i>
FORMAS	<i>The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Forskningsrådet för miljö, areella näringar och samhällsbyggande)</i>
GRID	<i>Global Resource Information Database</i>
KVA	<i>The Royal Swedish Academy of Sciences (Kungliga Vetenskapsakademien)</i>
NV	<i>Swedish Environmental Protection Agency (Naturvårdsverket)</i>
RS	<i>Swedish National Space Board (Rymdstyrelsen)</i>
SAU	<i>Societas Archaeologica Upsaliensis</i>
SIDA	<i>Swedish International Development Cooperation Agency (Styrelsen för internationellt utvecklingssamarbete)</i>
SLU	<i>Swedish University of Agricultural Sciences (Sveriges lantbruksuniversitet)</i>
SGU	<i>Geological Survey of Sweden (Sveriges geologiska undersökning)</i>
SKB	<i>Swedish Nuclear Fuel and Waste Management (svensk kärnbränslehantering AB)</i>
SKI	<i>Swedish Nuclear Power inspectorate</i>
VR	<i>The Swedish Research Council (Vetenskapsrådet)</i>

RESEARCH GRANT RECEIVER	FUNDING AUTHORITY	PROJECT	AMOUNT
Alexanderson	SGU	Optisk stimulerad luminiscensdatering (OSL) av nedisningshistorien under Weichsel i södra och mellersta Sverige	250 000
Brown	RS	The application and refinement of SAR methods for identifying climate impacts on glaciers and ice sheets, RS121/06:1	553 500
Cousins	FORMAS	Historiska källor och geografi för analys av markanvändningens påverkan på spridning av gräsmarksarter och dess konsekvenser för mångfald i framtidens jordbrukslandskap	1 619 500
Destouni	SGU	Hydrological controls of pollutant and nutrient loading to ground- and surface waters	500 000
Destouni	VR	Mark-grundvattensystemets roll för flöden av vatten, ånga och lösta ämnen och föroreningar mellan mark och atmosfär och från land till hav - The subsurface water system role for land-to-atmosphere and land-to-sea water-vapor, solute and pollutant flows	472 500
Destouni/Jarsjö/ Persson	Räddnings- verket	Risikkvantifiering vid olyckor med föroreningsspridning i mark o grundvatten 061127 Överenskommelse RV 621-6092-2005	428 100
Ebert	Gustafssons Stift	Inselbergs in the plains east of the northern Scandes - witnesses for Pre-Quaternary landscape development in northern Scandinavia	7 000
Hannerz	GRID	Information management system and infrastructures for the transboundary Daugava/Zapadnaya Dvina and Nemunas/ Neman river basins	188 000

RESEARCH GRANT RECEIVER	FUNDING AUTHORITY	PROJECT	AMOUNT
Hansson	FORMAS	Biogeokemiska processer med återkopplingar på klimatet - atmosfärens sammansättning över 1 miljon år genom iskärnestudier - Biogeochemical Processes and Climate Mechanisms - atmospheric composition over 1 million years through ice core studies	594 000
Hansson	FORMAS	Havets produktivitet och atmosfärens koldioxidhalt över tiden - Productivity changes influencing ocean-atmosphere carbon fluxes	1 000 000
Hansson	VR	Nationellt bidrag till starten av djupborrningsprojektet NEEM på Grönland - A national contribution to the start of the deep ice coring project NEEM on Greenland, 327-2007-841	540 000
Helmens	SKB	Weichselian climate variability in Scandinavia based on a unique sediment sequence preserved at Sokli, best.nr.16495	1 310 000
Heyman	KVA	Hierta-Retzius Stip fond - Glacial chronology of the northeastern Tibetan plateau	40 000
Hock	SIDA	The effects of climate change induced glacier melt on water resources in the La Paz region, Bolivia, SWE-2005-347	550 000
Hock	FORMAS	Modelering av framtida havsnivåförändringar orsakade av minskade glaciärer - Modelling of future sea level rise from the retreat of glaciers (Dnr214-2005-409)	490 000
Holmgren	VR	Klimatvariationer i tid o rum, med fokus på södra o östra Afrika - Regional and temporal patterns in climate, with focus on southern and eastern Africa	416 000
Holmgren/Öberg	SIDA	Climatic and hydrological variability in Engaruka, Tanzania, during the last millennium	600 000
Holmgren	SIDA	The role of Geological Sciences for Sustainable Development in Mozambique	300 000
Holmlund	VR	Den japansk-svenska Antarktisexpeditionen 2007/08 - ett bidrag till det fjärde internationella polaråret - The Japanese Swedish Antarctic Expedition 2007/08 - A contribution to the 4th International Polar Year	1 065 000
Holmlund	SKI	Glaciers and permafrost in Sweden, SKI2007/423/200710245	150 000
Ihse	NV	Landskapsekologisk planering för regionala landskapsstrategier - kunskapssammanställning	250 000
Ingvander	VR	Startbidag från IPY till Swedish Youth Steering Committee, VR 327-2007-194	28 570
Jansson K	VR	En 3-dimensionell rekonstruktion av den kvartära reliefutvecklingen i nordvästra Fennoscandia baserad på integrerade terrestra och marina data - A 3-dimensional GIS reconstruction of the Quaternary relief evolution in northwestern Fennoscandia based on integrated terrestrial geomorphology and off-shore seismic data. dnr621-2003-3221	783 000
Jansson P/ (Näslund)	SKB	Inlandsisars bottenförhållanden och hydrologi - Basal conditions and hydrology of continental ice sheets - best.nr.15770	750 500
Jansson P	M Bergwalls Stiftelse	Högupplöst mätning av nedfall av atmosfärsburna föroreningar i högfjällsmiljö	40 000

RESEARCH GRANT RECEIVER	FUNDING AUTHORITY	PROJECT	AMOUNT
Jansson P	Gustafssons Stift	Högupplöst mätning av nedfall av atmosfärsburna föroreningar i högfjällsmiljö	50 000
Jarsjö	SIDA	Mitigating pollution impacts on health and environment in the Aral Sea Basin, SWE-2006-308	550 000
Kleman	RS	Remote Sensing of past ice sheet beds and current ice sheet surfaces - methods development and delivery of constraints for climate modelling RS126/06:1	486 000
Kleman and others	VR/FORMAS	Linnéansökan - Climate evolution, variability and sensitivity	10 000 000
Kleman, Moberg and others	FORMAS	Linnéansökan - Forskarskola	2 000 000
Kuhry	VR	Landskapsmönster, mängder och stabilitetsgrad hos markens organiska material i områden med permafrost - Landscape patterns of soil organic matter quantity and lability in permafrost terrain	473 000
Lundén	SIDA	Assessment of changes in marine vegetation in eastern Africa using satellite remote sensing	400 000
Moberg	VR	Rådsforskaranställning - Rekonstruktion av klimatet under de senaste årtusendena, perioden 070101--091231, VR622-2006-453	965 000
Moberg	VR	Klimatet under det senaste millenniet - Climate in the last Millennium	324 000
Regnell	Lödöse Museum	Växtmakrofossilanalyser Tapetsören, Kullings-Skövde s:n, V Götaland	3 300
Risberg/Alm	SAU	Avtal ang steg 2 E4 med Synkrona paleokustlinjer stenåldersboken	247 500
Risberg/Alm/Karlsson	SAU	Tillägg Avtal ang steg 2 E4 för korrektur	4 950
Risberg	SGU	Arkivprovtagning och prov-hantering för SKB Forsmark 08-322/2007	85 315
Risberg	Vägverket	Färdigställande av artikel ang landskapsförändringar till NOL-boken	400 000
Risberg	Arkeolog- konsult	Färdigställande av vetenskaplig artikel ang landskapsförändringar kring Riksväg 73 med avssende på boplatstillägg o naturmiljö	109 800
Risberg	Gbg's Stads- museum	Analys av kiselmikrofossil, karbonater o svavel i sediment avsatta i vallgraven runt Gamla Älvsborgs fästning	197 560
Robertsson	SKB	Den glaciala - interstadiala utvecklingen under Weichseltiden, best.nr. 16310	124 000
Rosqvist	VR	Virtuell expedition till svenska forskningsplattformar i Arktis	13 000
Rosqvist	Granholms Stiftelse	Deltagande i XXVII INQUA kongress, Cairns, Australien 070728--070803	20 000
Seibert	VR	Hydrologisk landskapsanalys för modellering av vattenkvalitén: betydelse av den bäcknära zonen - Water quality modelling based on landscape analysis: importance of riparian hydrology	608 000
Seibert	SLU	Hydrologiska modeller – Fallstudier på utvalda avrinningsområden för bedömning av effekter av klimatförändring på källfördelning, retention o transport av näringsämnen till Östersjön	75 000
Skånes	SLU	Basinventering av Natura 2000 och skyddade områden	1 496 913

RESEARCH GRANT RECEIVER	FUNDING AUTHORITY	PROJECT	AMOUNT
Stjernqvist	Lst Skåne	Vidareutveckling av spridningsmodellen - emission - deposition, halter - skogsvitalitet, 502-37177-04	242 500
Stroeven/Zhou	SIDA/VR	Glacial chronology and erosion patterns in the Central Tibetan Plateau, 348-2004-5684	150 000
Stroeven	VR	Erosionsmönster under Kordilleraisen i Kanada under- sökta med kosmogen-datering och geomorfologi - Spatial and temporal pattern of erosion under the Cordilleran ice sheet deduced using terrestrial cosmogenic nuclides and geomorphology	810 000
Stroeven	VR	International workshop: The deglaciation history of northern Fennoscandia	40 500
Stroeven	Granholms Stiftelse	International workshop: The deglaciation history of northern Fennoscandia, Tarfala forskningsstation, April 2007	35 000
Wastegård	VR	Att slipa verktygen - förbättring av tefrokronologiska dateringar runt Atlanten - Sharpening the tools - improving tephrochronology around the Atlantic Sea	1 046 000
Wastegård and others	EU	MILLENNIUM – European climate of the last millennium (Contr No. 017008) 2006-2009 2007 funding also included in the Annual Report 2006	2 298 046
Westerberg	VR/SIDA	The role of climate-environmental change, in relation to socio-economic factors, in the rise and fall of Engaruka fossil land use system, Tanzania, SWE-2004-390	550 000
Wohlfarth	VR	ESF Eurocores Euroclimate Programme Proposal: Rapid climatic and environmental shifts during oxygen isotope stages (OIS) 2 and 3 - linking high-resolution terrestrial, ice core and marine archives (Resolution), dnr629-2004- 7960	710 000
Wohlfarth	VR	Utrustning för forskning - Equipment for research	630 200
Approved external research grants			38 071 254
RESEARCH GRANT RECEIVER	FUNDING AUTHORITY	PROJECT	AMOUNT
Bäckstrand/Stjernqvist Schlyter and others	Lunds univ FORMAS	Legitimitet och effektivitet i styrning för hållbar utveckling: Deltagande och samrådsprocesser inom löimat-, skogspolitik och matsäkerhet - Participation, Deliberation and Sustainability: Governance beyond rhetoric in the domains of Climate, Forestry and Food Safety	400 000
Destouni	SU	½ lektorat i fem år med 300 tkr/år under 2006-2010 (SU611-2777-04)	300 000
Kuhry	EU	CARBO-North - Quantifying the Carbon budget in Northern Russia: past, present and future	4 500 000
<b>Total</b>	<b>Approved research grants</b>		<b>43 271 954</b>



## 10. Staff (late autumn 2007)

Department Chairman /Head: Professor Karin Holmgren  
Vice Chairman: Professor Arjen Stroeven

### **PROFESSORS**

Christiansson, Carl	professor of Physical Geography,
Destouni, Georgia	professor of Hydrology, Hydrogeology and Water Resources
Duyrgerov, Mark	visiting professor of Hydrology and Water Resources
Holmgren, Karin	professor of Physical Geography
Holmlund, Per	professor of Glaciology
Ihse, Margareta	professor of Ecological Geography
Jansson, Peter	professor of Physical Geography
Kleman, Johan	professor of Remote Sensing
Kuhry, Peter	professor of Physical Geography
Kuylensstierna, Johan	visiting professor of Water Resources
Lundén, Bengt	professor of Remote Sensing
Stroeven, Arjen	professor of Physical Geography
Wastegård, Stefan	professor of Quaternary Geology

### **ACADEMIC STAFF**

#### Associate Professors (PhD, Docenter)

Arnberg, Wolter	senior lecturer
Cousins, Sara	senior lecturer
Hansson, Margareta	senior lecturer
Hock, Regine	research associate
Hättestrand, Clas	senior lecturer, director of undergraduate studies
Jansson, Krister	senior lecturer, also research associate
Moberg, Anders	researcher, also senior lecturer
Nordberg, Maj-Liz	senior lecturer
Risberg, Jan	senior lecturer
Rosqvist, Gunhild	senior lecturer
Seibert, Jan	senior lecturer, also research associate

#### PhD

Alexanderson, Helena	research associate
Bergman, Jonas	researcher
Borgström, Ingmar	senior lecturer
Brown, Ian	researcher
Engels, Stefan	researcher
Grudd, Håkan	researcher
Gunnarson, Björn	researcher
Hall, Ola	researcher
Helmens Femke, Karin	researcher
Holzkämper, Steffen	researcher
Jarsjö, Jerker	researcher

Jonsell, Ulf	senior lecturer
Jan Kristiansson	senior lecturer
Lundblad, Katarina	senior lecturer
Mohammad, Rezwan	researcher
Regnell, Mats	researcher
Ryner, Maria	senior lecturer
Schoning, Kristian	researcher
Schlyter, Peter	senior lecturer, director of undergraduate studies
Shibuo, Yoshihiro	researcher
Skånes, Helle	senior lecturer
Stjernquist, Ingrid	senior lecturer
Sundqvist, Hanna	researcher
Väliranta, Minna	researcher
Westerberg, Lars-Ove	senior lecturer, headdirector of undergraduate studies

#### PhLic, MSc, BSc

Bråvander, Lars Gunnar	MSc, senior lecturer
Delteus, Åke	BSc, lecturer
Eknert, Bo	PhLic, lecturer, director of undergraduate studies
Eriksson, Camilla	MSc, lecturer
Fridfeldt, Anders	BSc, lecturer, director of undergraduate studies
Karlsson, Sven	PhLic, researcher
Nordström, Anders	PhLic, senior lecturer
Perhans, Karl-Erik	BSc, lecturer
Yrgård, Anders	PhLic, lecturer

#### Postgraduate students (PhLic, MSc, BSc)

Ampel, Linda  
 Andersson, Sofia  
 Bring, Arvid  
 Darracq, Amélie  
 de Angelis, Hernán  
 de Woul, Mattias  
 Duguay, Martial  
 Ebert, Karin  
 Ericsson, Malin  
 Eriksson, Sofia  
 Goodfellow, Bradley  
 Grabs, Thomas  
 Hannerz, Fredrik  
 Heyman, Jakob  
 Hugelius, Carl-Gustaf  
 Hättestrand, Martina  
 Ingvander, Susanne  
 Johnsen, Timothy  
 Jonsson, Christina  
 Kaislathi Tillman, Päivi

Karlin, Torbjörn  
Margold, Martin  
Norström, Elin  
Persson, Klas  
Sannel, Britta  
Öberg, Helena

#### Teaching assistants

Holmlund, Moa	BSc
Liljewalch-Fogelmark, Klara	BSc
Mercer, Andrew	BSc

#### **ADMINISTRATIVE STAFF**

Berggren, Berit	senior administrative officer
Bländman, Susanna	BSc, personnel administrator
Damberg, Maria	MSc, study advisor
Envall, Berit	financial administrative officer
Hansson, Erik	MSc, educational administrator
Henriksson, Carina	university certified administrator, senior administrative officer
Hultblad, Gertrud	university certified administrator, senior administrative officer
Jacobsson, Henrik	BSc, study advisor
Kruckenbergs, Anita	PhD, senior administrative officer
Norén, Anna	MSc, informant
Schuber Johansson, Pernilla	MSc, study advisor
Åkerblom, Lena	higher administrative officer

#### **TECHNICAL STAFF**

Alm, Göran	PhLic, systems engineer
Berntsson, Annika	MSc, specific project assistant
Brotén, Bengt	technician
Cabrera, Yanduy	caretaker
Dellgar Hagström, Mirja	MSc, specific project assistant
Granell, Håkan	supervisor of office services
Jacobson, Rolf	web editor
Prieto, Carmen	PhD, specific project assistant
Runborg, Siv	BSc, research assistant
Spångberg, Martin	systems engineer
Svanered, Ola	BSc, systems engineer
Törnberg, Henrik	MSc, technician, Tarfala Research Station

#### **PROFESSORS EMERITI**

Lidmar-Bergström, Karna  
Lundqvist, Jan  
Karlén, Wibjörn  
Miller, Urve

Ringberg, Bertil  
Wastenson, Leif  
Østrem, Gunnar

DSc

**Postadress**  
**Mailing address**  
Stockholms universitet  
106 91 Stockholm

**Besöksadress**  
**Visiting address**  
Svante Arrheniusv. 8c

**Telefon/phone**  
+46 8 16 20 00  
**Telefax**  
+46 8 16 48 18

**Internet**  
[www.ink.su.se](http://www.ink.su.se)