



**Department of Physical Geography  
and Quaternary Geology  
Stockholm University**



JAKOB HEYMAN (ED.)

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Cover photo: Chang Jiang (Yangtze River) incising the eastern Tibetan plateau and creating a rejuvenated landscape of steep topography. Photo: Jakob Heyman.

## 1. Introduction

The Department of Physical Geography and Quaternary Geology is one of the larger departments at the university, with about 115 employees: 13 professors, nearly 40 lecturers and researchers, ca 30 PhD students and 30 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.

Karin Holmgren  
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, in 2002, 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 paleogeology, 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 SUCLIM 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
- Paleogeological 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.



An ice cap covering a small island in the Gerlache Strait east of the Antarctic Peninsula. Photo: Peter Jansson.

## Ongoing projects

1. Applying the optically stimulated luminescence (OSL) technique to date the Weichselian glacial history of south and central Sweden / *Alexanderson H.*
2. Late Quaternary glacial history of East Greenland / *Alexanderson H.*
3. Preglacial, glacial and periglacial landforms in southern Härjedalen and northern Dalarna. (SGU-project) / *Borgström I.*
4. ASAR backscatter from snow under different environmental conditions / *Brown I.*
5. Global Land Ice Measurements from Space / *Brown I.*
6. Polarview glacier monitoring / *Brown I.*
7. Ice streams in the northeastern Laurentide Ice Sheet / *De Angelis H.*
8. Response of glacier melt and discharge to future climate / *de Woul M., Hock R.*
9. Productivity changes influencing ocean-atmosphere carbon fluxes / *Hansson M.*
10. Biogeochemical Processes and Climate Feedback Mechanisms, atmospheric composition over 1 million years through ice core studies / *Hansson M.*
11. EPICA-MIS / *Hansson M., Karlin, T.*
12. Glaciers and Permafrost in Sweden / *Holmlund P.*
13. Ice sheet modelling and subglacial relief of the East Antarctic Ice Sheet, a contribution to EPICA / *Holmlund P., Näslund J.*
14. Climate influence on ice dynamics on Mårmaglaciären, Northern Sweden / *Holmlund P., Jansson P.*
15. The Japanese-Swedish Antarctic Expedition (JASE) / *Holmlund P., Hansson M., Karlin T.*
16. Late Quaternary glaciation history in northern Fennoscandia and Kola peninsula / *Hättestrand C.*
17. The dynamics of the North Patagonian Icefield / *Jansson K.*
18. The palaeoglaciology of the Welsh sector of the British-Irish Ice Sheet / *Jansson K.*
19. Remote Sensing of past ice sheet beds and current ice sheet surfaces - methods development and delivery of constraints for climate modelling / *Jansson K., Kleman J.*
20. A 3-D GIS reconstruction of the Quaternary relief evolution in northwestern Fennoscandia based on integrated terrestrial geomorphology and marine data / *Jansson K.*
21. Relief differentiation in basement rocks of the Laurentide Shield in relation to its sedimentary covers - A GIS analysis / *Jansson K., Lidmar-Bergström K.*
22. A field and theoretical study of sediment transport near the basal thermal transition of a polythermal glacier / *Jansson P.*
23. Glacier mass balance and tree rings as indicators of atmospheric circulation / *Jansson P.*
24. Subglacial hydrology beneath ice sheets. / *Jansson P.*
25. Modelling of future sea level rise from the retreat of glaciers / *Radić V., Hock R.*
26. Temporal and spatial dynamics of subarctic peat plateau – thermokarst lake complexes / *Sannel B., Kubry P.*
27. Deciphering the finest imprint of glacial erosion: Objective analysis of striae patterns on bedrock / *Stroeven A.*
28. Glacial chronology and erosion patterns of the eastern margin of the Tibetan Plateau (using cosmogenic radionuclides) / *Stroeven A.*
29. Post Younger Dryas deglaciation of Fennoscandia / *Stroeven A.*  
Glacial modelling of the Fennoscandian ice sheet through one glacial cycle / *Stroeven A.*
30. Reconstructing the Cordillera Ice Sheet with geomorphology, cosmogenic isotopes and ice sheet modelling / *Stroeven A.*

### Staff affiliations

Per Holmlund, Professor

Peter Jansson, Professor

Johan Kleman, Professor (see also 2.2, 2.3)

Peter Kuhry, Professor (see also 2.2)

Arjen Peter Stroeven, Professor (see also 2.2, 2.3)

Jan Lundqvist, Professor emeritus (see also 2.2)

Mark Dyurgerov, Docent, guest researcher

Margareta Hansson, Docent (see also 2.2)

Regine Hock, Docent (see also 2.4)

Clas Hättstrand, Docent (see also 2.2)

Krister Jansson, Docent (see also 2.2, 2.3)

Jens-Ove Näslund, Docent (see also 2.2)

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)

Steffen Holzkämper, PhD (see also 2.2)

Ulf Jonsell, PhD

### *Postgraduate students:*

Hernán De Angelis, PhLic

Mattias de Woul, PhLic (see also 2.4)

Bradley Goodfellow, PhLic (see also 2.2)

Jakob Heyman (see also 2.2)

Timothy Johnsen (see also 2.2)

Torbjörn Karlin (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, Antarctica and Greenland.

We make use of 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.



A very calm summerday in Rautasvalley. Photo: Karin Ebert.



### Ongoing projects

1. Terrestrial response to DO-cycles and HE-events / *Ampel L.*
2. Time-synchronous correlation of mid-Holocene climatic changes and their environmental impact in central Sweden / *Andersson S.*
3. Pre-Quaternary landscape development in northern Scandinavia / *Ebert K.*
4. Regional and temporal patterns in climate / *Holmgren K.*
5. Regional and temporal patterns in climate, with focus on southern and eastern Africa / *Holzschläger S.*
6. Landscape patterns of soil organic matter quantity and lability in permafrost terrain / *Kuhry P.*
7. Quantifying the Carbon Budget in Northern Russia: Past, Present and Future / *Kuhry P., Holzschläger S.*
8. Palaeorelief, saprolites, uplift and denudation of cratons / *Lidmar-Bergström K.*
9. Håvingsfaser i Skandinavien: Fissionssporsprofil i det centrale Sydnorge / *Lidmar-Bergström K.*
10. Climate and vegetation changes in South Africa during the Holocene and late Pleistocene / *Norström E.*
11. Climate Change: Millennium reconstruction and century projection / *Moberg A.*
12. Reconstructing past climate changes in northern Tanzania / *Ryner M., Holmgren K.*
13. Environmental factors affecting speleothem growth, recorded in Swedish speleothems / *Sundqvist H., Holmgren K.*
14. Correlation and dating of marine, terrestrial and ice-core records from the Late Quaternary in the North Atlantic region through the common occurrences of tephra horizons / *Wastegård S.*
15. MILLENNIUM: European climate over the last millennium / *Wohlfarth B., Moberg A., Wastegård S., Rosqvist G., Bergman J., Schoning K., Mohammad R., Gunnarson B., Grudd H., Kaislahti P.*
16. RESOLuTION: Rapid climatic and environmental shifts during Oxygen Isotope Stages 2 and 3 – linking high-resolution terrestrial, ice core and marine archives / *Wohlfarth B., Wastegård S., Helmens K.*
17. Environmental change in northern Tanzania during the past 1000 years / *Öberg H.*

### Staff affiliations

Karin Holmgren, Professor (see also 2.4)

Johan Kleman, Professor (see also 2.1, 2.3)

Peter Kuhry, Professor (see also 2.1)

Arjen Peter Stroeven, Professor (see also 2.1, 2.3)

Stefan Wastegård, Professor

Barbara Wohlfarth, Professor

Wibjörn Karlén, Professor emeritus

Jan Lundqvist, Professor emeritus (see also 2.1)

Urve Miller, Professor emerita

Karna Lidmar-Bergström, Professor emerita (see also 2.3)

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

Jens-Ove Näslund, Docent (see also 2.1)

Jan Risberg, Docent  
Gunhild Rosqvist, Docent (see also 2.1)

Helena Alexanderson, PhD (see also 2.1)  
Ingmar Borgström, PhD (see also 2.1)  
Håkan Grudd, PhD  
Björn Gunnarson, PhD  
Steffen Holzkämper, PhD (see also 2.2)  
Sven Karlsson, PhLic  
Katarina Lundblad, PhD  
Lena Rubensdotter, PhD  
Peter Schlyter, PhD (see also 2.3)  
Lars-Ove Westerberg, PhD (see also 2.4)

*Postgraduate students:*

Linda Ampel  
Sofia Andersson  
Karin Ebert, PhLic  
Bradley Goodfellow, PhLic (see also 2.1)  
Jakob Heyman (see also 2.1)  
Gustaf Hugelius (see also 2.3)  
Martina Hättestrand  
Timothy Johnsen (see also 2.1)  
Christina Jonsson  
Torbjörn Karlin (see also 2.1)  
Elin Norström, PhLic  
Maria Ryner, PhLic  
Britta Sannel (see also 2.1, 2.3)  
Hanna Sundqvist, PhLic  
Daniel Veres  
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 typical Swedish agricultural landscape (southwestern Selaön in Lake Mälaren) with remnants of grassland habitats: road verges, midfield islets, deciduous woodlands and grazed semi-natural grasslands. These remnants are important for many organisms such as butterflies, bumblebees and plants. Photo: Sara Cousins.

### Ongoing projects

1. Detection of deserted Saami dwelling sites and reindeer pens in the Swedish mountain areas using remote sensing - A comparative study on color infrared aerial photography and very high-resolution satellite imagery / *Arnberg W., Nordberg M.-L.*
2. Assessment of changes in marine vegetation in Eastern Africa using satellite remote sensing / *Lundén B.*
3. Drivers and causes to change in the agricultural landscape found in the LiM-survey / *Ihse M.*
4. Development of method and basis for management plans in Tyresta National Park and nature reserves, based on analyse of the digital data base to the vegetation map / *Ihse M.*
5. Lunden som begrepp och betydelse i kulturlandskapet / *Ihse M.*
6. Landscape memory as means to deal with human impact on biotope resilience and potential biodiversity / *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.*
8. NordBio10 – Nordic Biodiversity Indicators 2010 / *Skånes H., Ihse M.*
9. 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.*

### Staff affiliations

Carl Christiansson, Professor (see also 2.4)

Margareta Ihse, Professor

Johan Kleman, Professor (see also 2.1, 2.2)

Bengt Lundén, Professor

Arjen Peter Stroeven, Professor (see also 2.1, 2.2)

Karna Lidmar-Bergström, Professor emerita (see also 2.2)

Wolter Arnberg, Docent

Sara Cousins, Docent

Krister Jansson, Docent (see also 2.1, 2.2)

Lars-Gunnar Bråvander, Senior lecturer

Ian Brown, PhD (see also 2.1)

Maj-Liz Nordberg, PhD

Peter Schlyter, PhD (see also 2.2)

Helle Skånes, PhD

### *Postgraduate students:*

Gessesse Dessie (see also 2.4)

Bo Eknert

Sofia Eriksson (Södertörn University College)

Thomas Grabs (see also 2.4)

Gustaf Hugelius (see also 2.2)

Patrik Klintenberg, PhLic (see also 2.4)

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 (SUCLIM)

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.



River Fyrisån where we test different water quality models. Photo: Jan Seibert.



Mountainous water. Photo: Jan Seibert.

### Ongoing projects

1. Hydrogeological controls of pollutant and nutrient loading to ground- and surface waters / *Destouni G., Prieto C., Persson K., Jarsjö J.*
2. GIS-based solute transport modelling in catchments / *Destouni G., Hannerz F., Jarsjö J.*
3. Modelling reactive transport in natural heterogeneous subsurface and surface waters: the LaSAR-PHREEQC method / *Destouni G., Darracq A.*
4. Bridging research and knowledge gaps for the effective use and management of groundwater resources in the Aral Sea region / *Destouni G., Jarsjö J., Shibuo Y.*
5. The impacts of the climate: Sea level rise and floods legends in Mozambique / *Holmgren K.*
6. People Land and Time in Africa / *Holmgren K.*
7. Solute transport processes in coupled ground – surface – coastal water systems of Forsmark and Oskarshamn / *Jarsjö J., Destouni G., Persson K., Shibuo Y., Prieto C.*
8. Water quality modelling based on landscape analysis: importance of riparian hydrology / *Seibert J.*
9. Distributed runoff modelling - Wetland runoff and its importance for spring-flood predictions / *Seibert J.*
10. Participatory governance in Swedish forestry / *Stjernquist I.*
11. Samband mellan luftföroreningsdeposition och vitalitet hos bok och ek i södra Sverige / *Stjernquist I.*
12. The role of climate-environmental change in relation to socio-economic factors in the rise and fall of Engaruka fossil land use system, Tanzania / *Westerberg L.-O., Holmgren K.*

### Staff affiliations

Carl Christiansson, Professor (see also 2.3)

Georgia Destouni, Professor

Karin Holmgren, Professor (see also 2.2)

Regine Hock, Docent (see also 2.1)

Jan Seibert, Docent

Jerker Jarsjö, PhD

Peter Schlyter, PhD

Ingrid Stjernquist, PhD

Lars-Ove Westerberg, PhD (see also 2.2)

### *Postgraduate students:*

Amélie Darracq

Gessesse Dessie (see also 2.3)

Mattias de Woul, PhLic (see also 2.1)

Thomas Grabs (see also 2.3)

Fredrik Hannerz

Patrik Klintenberg, PhLic (see also 2.3)

Yoshihiro Shibuo, PhLic

## 2.5. SUCLIM

The 10-year SUCLIM program, funded by a so-called Linné-grant from the two research councils VR and Formas, aims to develop climate research at Stockholm University (SU) into a strong and coherent research environment. The program embraces scientists and groups at four departments, spanning over a wide range of data types, time perspectives, and methodical approaches. The financial framework is 10 Mkr (1.4 mill \$)/ year over a 10-year period, with an additional 2 Mkr/year for the associated research school. The program involves more than 25 scientists with trans-disciplinary interests working within climate science. These scientists work on contemporary and past Earth System processes, paleo-climate research, the numerical modelling of climate processes and climate change including ocean-atmosphere coupling. The research is undertaken across, and integrating, a range of spatial and temporal scales. SUCLIM undertakes basic research into vital aspects of how the Earths climate system operates to improve our understanding of potential future changes providing policy makers, scientists and the public with the information they need.

With the present, and in all probability also future, strong public and political interest in climate research, interaction with media and policy makers will constitute a task for many of the researchers involved in the program. There is already a strong involvement by SUCLIM researchers in IPCC, and on the policy side in the climate commission of the Swedish government.

The research is initially organized in the following core themes

1. Climate variability
2. Atmospheric and oceanic circulation
3. Boundary conditions for circulation system modelling
4. Small-scale processes with large-scale impacts
5. Biogeochemical and hydrological cycles



The calving front of Nordenskiöldbreen retreating out of the water in the inner part of Isfjorden, Spitsbergen. Photo: Jakob Heyman.

### 3. Publications

#### Reviewed articles

1. Ansell T.J., Jones P.D., Allan R.J., Lister D., Parker D.E., Brunet M., **Moberg A.**, Jacobeit J., Brohan P., Rayner N.A., Aguilar E., Alexandersson H., Barriendos M., Brandsma T., Cox N.J., Della-Marta P.M., Drebs A., Founda D., Gerstengarbe F., Hickey K., Jónsson T., Luterbacher J., Nordli Ø., Oesterle H., Petrakis M., Philipp A., Rodwell M.J., Saladie O., Sigro J., Slonosky V., Srnc L., Swail V., Garcia-Suarez A.M., Tuomenvirta H., Wang X., Wanner H., Werner P., Wheeler D. and Xoplaki E. 2006: Daily mean sea level pressure reconstructions for the European-North Atlantic region for the period 1850-2003. *Journal of Climate*, 19, 2717-2742.
2. Baresel C. and **Destouni G.** 2006: Estimating subsurface nitrogen accumulation-depletion in catchments by input-output flow analysis. *Physics and Chemistry of the Earth*, 31, 1030–1037.
3. Baresel C., **Destouni G.** and Gren I.M. 2006: The influence of metal source uncertainty on cost-effective allocation of mine water pollution abatement in catchments, *Journal of Environmental Management*, 78, 138-148.
4. Bayer-Raich M., **Jarsjö J.**, Liedl R., Ptak T. and Teutsch G. 2006: Integral pumping test analyses of linearly sorbed groundwater contaminants using multiple wells: Inferring mass flows and natural attenuation rates. *Water Resources Research*, 42, W08411, doi:10.1029/2005WR004244.
5. Bayer-Raich M., **Jarsjö J.** and Schirmer M. 2006: Integral pumping tests: Average concentration and mass flow at the capture zone scale. In: Bierkens M.F.P., Kovar K. and Gehrels J.C. (Eds.): *From Uncertainty to Decision Making, ModelCare 2005*, International Association of Hydrological Sciences (IAHS) Redbook Publication, No. 304, 196-201.
6. Björck S., Rittenour T., Rosén P., França Z., Möller P., Snowball I., **Wastegård S.**, Bennike O. and Kromer B. 2006: A Holocene lacustrine record in the central North Atlantic: proxies for volcanic activity, short-term NAO mode variability, and long-term precipitation changes. *Quaternary Science Reviews*, 25, 9-32.
7. Bonell M., McDonnell J.J., Scatena F.N., **Seibert J.**, Uhlenbrook S. and van Lanen H.A.J. 2006: HELPIng FRIENDs in PUBs: charting a course for synergies within international water research programmes in gauged and ungauged basins. *Hydrological Processes*, 20, 1867-1874.
8. Bonow J.M., **Lidmar-Bergström K.** and Japsen P. 2006: Palaeosurfaces in central West Greenland as reference for identification of tectonic movements and estimation of erosion. *Global and Planetary Change*, 50, 161-183.
9. Bonow J.M., Japsen P., **Lidmar-Bergström K.**, Chalmers J.A. and Pedersen A.K. 2006: Cenozoic uplift of Nuussuaq and Disko, West Greenland – elevated erosion surfaces as uplift markers of a passive margin. *Geomorphology*, 80, 325-337.
10. Dean A., **Brown I.A.**, Huntley B. and Thomas C. 2006: Monitoring snowmelt across the Arctic forest-tundra ecotone using Synthetic Aperture Radar. *International Journal of Remote Sensing*, 27, 4347-4370.
11. **De Angelis H.** and **Kleman J.** 2006: Palaeo-ice streams in the northern Keewatin sector of the Laurentide Ice Sheet. *Annals of Glaciology*, 42, 135-144.
12. **Destouni G.** and **Darracq A.** 2006: Response to comment on "In-stream nitrogen attenuation: model-aggregation effects and implications for coastal nitrogen impacts". *Environmental Science and Technology*, 40, 2487-2488.
13. **Destouni G.**, Lindgren G., and Gren I.M. 2006: Effects of inland nitrogen transport and attenuation modeling on coastal nitrogen load abatement, *Environmental Science and Technology*, 40, 6208 – 6214.



14. **de Woul M., Hock R.**, Braun M., Thorsteinsson T., Jóhannesson T. and Halldórsdóttir S. 2006: Firn layer impact on glacial runoff – a case study at Hofsjökull, Iceland. *Hydrological Processes*, 20, 2171-2185.
15. **Dyurgerov M.B.** 2006: Case Study: northern hemisphere glaciers responding to climate warming by increasing their sensitivity and their contribution to sea level rise. In: Knight P.G. (Ed.): *Glacier Science and Environmental Change*, Blackwell Publishing Ltd, Oxford, 133-134.
16. **Dyurgerov M.B.** and McCabe G. 2006: Associations between accelerated glacier mass wastage and increased summer temperature in coastal regions. *Arctic, Antarctic Alpine Research Journal*, 38, 190-197.
17. EPICA community members (incl. **Hansson M., Karlin T.**) 2006: One-to-one coupling of glacial climate variability in Greenland and Antarctica. *Nature*, 444, 195-198.
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Crushing rock samples in preparation for cosmogenic exposure dating. Photo: Helena Alexanderson.

#### 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

### 5.1. Undergraduate programme

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 sciences. Every year slightly more than 1000 students attend our undergraduate education programmes.

#### Geography

The *Geography programme* includes courses up to 100 credits, i.e. 2.5 years in total (one Swedish credit is roughly the equivalent of one week of full-time study or 1.5 ECTS):

- 1-20 credits: Geography, basic course, 20 credits
- 21-40 credits: Geography, intermediate course, 20 credits
- 41-60 credits: Geography, advanced course, 20 credits
- 61-80 credits: Geography, specialised course I, 20 credits
- 81-100 credits: Geography, specialised course II, 20 credits
- Included in the advanced and/or specialised courses is a Bachelor or Master thesis of 10-20 credits.

The Department of Physical Geography and Quaternary Geology and the Department of Human Geography collaborate within the geography education. 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 the Stockholm Institute of Education. Seen over a period of ten years, the influx of students has increased. One reason for this increase is probably the elevated interest in, and need for knowledge, in the field of geography. Another reason is the return of geography as an independent subject at senior high-school level.

#### Earth Science

Courses in the *Earth Science* are carried out in collaboration with the Department of Geology and Geochemistry. The courses can be taken within the *Earth Science Study Programme* or as stand-alone courses outside the study programme. The Earth Science Study Programme encompasses 160 credits but final degrees are either 120 credits (Bachelor) or 160 credits (Master). Within the study programme, the first 80 credits consist of compulsory courses where students learn the basics of the Earth's evolution, geology, geomorphology, soils, hydrology, meteorology, climatology, remote sensing and Geographical Information Systems (GIS). For the remaining 40 or 80 credits of the programme, the students can specialise within the earth science spectrum. The Department of Physical Geography and Quaternary Geology offers advanced courses in historical geomorphology, glaciology and glacial geomorphology, climatology and palaeoclimatology, palaeoecology, Scandinavian Quaternary geology, risk assessment in geosciences, hydrology, soil science, GIS for earth scientists, cartography and map production, remote sensing, geographic analysis and visualisation in GIS, ecological geography, and natural resources, environment, and land use in the tropics. The programme provides the prospective geoscientist with an overall breadth to be used in working with, for example, nature and environmental control, geoscientific examinations, planning, and research.



### Biology-Earth Science

The *Biology-Earth Science Study Programme* encompasses 160 credits but final degrees are either 120 credits (Bachelor) or 160 credits (Master). The programme is carried out in collaboration with the Department of Biology Education. The programme starts with a basic education of 110 credits consisting of about 45 credits of earth sciences, 55 credits of biology and 10 credits of environmental management and conservation. 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 and nature control. After the basic education the student has the option to do a 10 credits degree project towards a 120 credits Bachelor degree. If the students wish to opt for a 160 credits degree, they can either take the Environment and Health Protection course of 40 credits or other advanced courses, finishing their studies with a 20 credits Master project.

### Environmental Sciences

The Master programme in *Environment and Health Protection* accepts students with 120 credits in Biology, Chemistry, Earth Sciences or Biology-Earth Sciences. The programme consists of four courses of 10 credits each, Environment Studies and Health Protection, Environment Technology, Law and Planning, and a degree project in Environment and Health Protection.

The Department of Physical Geography and Quaternary Geology offers an *Environmental Science Programme* of up to 95 credits. The programme accepts students with a background in Geography, Earth Science, Biology, and many other subjects. The following courses are included:

- Environmental Studies (basic course), 10 credits.
- International Environmental Issues (intermediate course), 10 credits.
- Environmental management and nature conservation in Swedish landscapes (intermediate course), 10 credits.
- Energy and environment (intermediate course), 10 credits.
- Environmental management systems (intermediate course), 5 credits.
- Swedish environmental quality objectives (intermediate course), 10 credits.
- Environmental Technology (intermediate course), 5 credits
- Case studies in environmental impact assessments (advanced course), 10 credits.
- Soil remediation in theory and in practice (advanced course), 10 credits.
- Environmental management in agriculture and forestry (advanced course), 10 credits.
- Environmental management in planning (advanced course), 10 credits.

### Other courses

”The Science communication course” of 20 credits is a specialised 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.

The summer course ”Glaciers and high mountain environments, advanced course, 5 credits” 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.

## 5.2. Postgraduate programme

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 “Geography with emphasis on 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 4 in this report for a list of recent theses). Below, we will tabulate currently enrolled students and their projects within each examination subject.

### Geography with emphasis on Physical Geography:

Amélie Darracq

*Coupled modelling of reactive solute transport and geochemical reactions in subsurface and surface water systems*

Hernán De Angelis

*Paleo-ice stream dynamics and evolution in the north-western Laurentide Ice Sheet*

Gessesse Dessie

*Environmental Change during the Last Century: the Case of Awassa Watershed, Southern Ethiopia*

Mattias de Woul

*Modelling of glacier mass balance - Sensitivity and response to predicted future climate changes*

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*

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*

Christina Jonsson

*Stable isotopes in lake sediments from Lappland*

Patrik Klintonberg

*Analysing environmental change in arid and semi-arid Namibia using environmental indicators*

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*

Valentina Radić

*Modelling future sea level rise from the retreat of glaciers*

Maria Ryner

*Climate and environmental change in northern Tanzania*

Britta Sannel

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

Yoshihiro Shibuo

*GIS-based hydrological modelling -coupling groundwater-surface water*

Hanna Sundqvist

*Environmental factors affecting speleothem growth, recorded from Swedish speleothems*

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

*Dating and correlation of mid Holocene climate events in Scandinavia*

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*

Torbjörn Karlin

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

Daniel Veres

*Terrestrial response to Dansgaard-Oeschger cycles and Heinrich events during OIS 2 and 3*

List of examinations for 2006

<b>Name</b>	<b>Date</b>	<b>Degree</b>
Katarina Lundblad	05 May 2006	PhD, Physical Geography
Lena Rubensdotter	12 May 2006	PhD, Physical Geography
Håkan Grudd	02 Jun 2006	PhD, Physical Geography
Ulf Jonsell	08 Jun 2006	PhD, Physical Geography
Karin Ebert	13 Jan 2006	PhLic, Physical Geography
Hernán De Angelis	01 Jun 2006	PhLic, Physical Geography
Bradley Goodfellow	07 Jun 2006	PhLic, Physical Geography
Valentina Radić	19 Sep 2006	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.

TITT 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

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

HAKAN 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.

## 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

Socrates/Erasmus: Bilateral teaching exchange with University of Nottingham, UK / *Arnberg W.*, *Skånes H.*

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

### 7.2. Student exchange

Erasmus exchange (coordinator: K. Ebert)

Bern University, Switzerland  
Innsbruck University, Austria  
Freiburg University, Germany  
Nottingham University, UK  
Dublin University, Ireland  
Bordeaux University, France  
La Laguna University, Spain



## 8. Conferences and seminars

### January

de Woul, Hock &  
Holmlund:

*International workshop on the mass budget of Arctic glaciers (MAGICS),  
International Arctic Science Committee (IASC, Working group on Arctic  
glaciology), Obergurgl, Österrrike*

Ihse:

*KSLA, Stockholm, Sweden*

Lidmar-Bergström:

*Nordic geological winter meeting, University of Oulu, Finland*

### February

Ihse:

*EU-project COST 27 Profor, Barcelona, Spain*

Wohlfarth, Moberg,

Wastegård, Rosqvist,

Bergman, Schoning,

Mohammad, Gunnarson,

Grudd & Henriksson:

*MILLENNIUM Startup meeting, Cala Millór, Spain*

### March

Alexanderson:

*36th International Arctic Workshop, Boulder, Co., USA*

Ihse:

*KSLA, Stockholm, Sweden*

Kuhry:

*NCEAS Workshop: Vulnerability of Carbon in Permafrost. Santa Barbara,  
USA*

Kuhry:

*Arctic Science Summit Week (IASC). Potsdam, Germany*

Shibuo:

*Hydrologidagarna, Stockholm, Sweden*

Wastegård:

*ICDP Workshop, "PASADO", Rio Gallegos, Argentina*

Stroeven:

*First TopoNorge workshop, Trondheim, Norway*

### April

Hansson:

*EPICA SSC, Vienna, Austria*

Hättestrand & Stroeven:

*EGU General Assembly, Vienna, Austria*

Ihse:

*Workshop om Regionala landskapsstrategier – processarbete i lokal förankring  
KSLA och Naturvårdsverket, Stockholm, Sweden*

Ihse:

*KSLA, Romanian-Swedish seminar on cultural landscape in Europe, Stockholm,  
Sweden*

Kuhry:

*HERC Workshop, Helsinki, Finland*

### May

Ihse:

*Earsel symposium, Warsaw, Poland*

Sundqvist:

*CLIMATE CHANGE: The Karst Record IV, Baile Herculane, Romania*

## June

- Hansson & Rosqvist: *Frontier Science Conference for Young Researchers with a focus on Climate Change (ESF/JSPS), Nynäshamn, Sweden*
- Hansson & Holmlund:  
Holmgren, Norström,  
Ryner, Sundqvist &  
Öberg: *HOLIVAR 2006 Final open scientific meeting: Natural climate variability and global warming, London, UK*
- Ihse, Skånes, Hagström &  
Runborg: *Natura 2000 Basinventeringen flygbildstolkning. Calibration workshop, Stockholm, Sweden*
- Radić: *Workshop on Understanding Sea-level Rise and Variability – A World Climate Research Programme (WCRP) Workshop in support of the WCRP's Strategy 2005-2015 and a WCRP contribution to the Global Earth Observation System of Systems (GEOSS), Paris, France*

## July

- Kuhry: *18th World Congress of Soil Science, Philadelphia, USA*

## August

- Heyman: *Asian Conference on Permafrost, Lanzhou, China*
- Jansson P.: *Arctic Glaciology 2006, Cambridge, UK*
- Radić: *International Symposium on Cryospheric Indicators of Global Climate Change – A joint WCRP-CliC/IGS/IUGG-CCS Symposium, Cambridge, UK*

## September

- Ampel: *2<sup>nd</sup> Resolution workshop, Skåne, Sweden*
- Brown: *Radarsat-2 Symposium, Canadian Space Agency, Montreal, Canada*
- Grudd, Gunnarson,  
Moberg, Mohammad &  
Wastegård: *MILLENNIUM SG5 meeting, Stockholm, Sweden*
- Ihse: *LALE Deutschland Yearly Conference, Kiel, Germany*
- Lundén: *The 7th International Seagrass Biology Workshop, Zanzibar, Tanzania*
- Skånes: *RAÄ workshop regarding methods for analysis and monitoring of landscape qualities in a landscape perspective*
- Stroeven: *INQUA workshop on Timing and nature of mountain glaciation, from High Asia to the World, Xining, China*
- Öberg: *6th International Meeting on Phytolith Research, Barcelona, Spain*
- Veres: *ESF Resolution Meeting, Österlen, Sweden*

## **October**

- Hansson & Karlin: *Epica Science Conference, Il Giocco, Italy*  
Ihse: *Svenska LALEs nationella konferens om Odlingslandskapet, Campus Roslagen, Norrtälje, Sweden*
- Ihse & Skånes: *Nationell konferens om vegetations- och biotopkartering för en ekologiskt hållbar samhällsplanering, Stockholm, Sweden*
- Jarsjö, Destouni & Shibuo: *International workshop on the Aral Sea basin - Water resources and aquatic ecology, Stockholm, Sweden*
- Wohlfarth & Moberg: *MUSCAD workshop, Lund, Sweden*

## **November**

- Brown, Gunnarson,  
Hansson, Holmgren,  
Holmlund, Kleman,  
Moberg, Rosqvist &  
Wastegård: *SUCLIM, Vaxholm, 8-9 November, 2006*  
Hansson, Wastegård  
Holmgren, Holzkämper  
& Sundqvist: *2<sup>nd</sup> Carlsberg Dating Conference, Copenhagen, Denmark*  
Moberg, Rosqvist,  
Schoning & Wastegård: *FG-DAPHNE, 1<sup>st</sup> Workshop, Innsbruck, Austria*  
*MILLENNIUM SG3 workshop, Stockholm, Sweden*

## **December**

- Darracq: *Man and River Systems II, Paris, France*  
Ihse: *Workshop for Norway's "Nasjonal program for kartlegging og overvåking – kulturlandskap", Norsk institutt for landskap og skog, Oslo, Norway*

## 9. Financial support

GRANT ORGANIZATIONS	
C-Core	<i>Centre for Cold Ocean Research Engineering</i>
ELFORSK	<i>Svenska elföretagens forsknings- o utvecklings - ELFORSK - AB</i>
ESA	<i>European Space Agency</i>
ESF	<i>European Science Foundation</i>
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>
KVA	<i>The Royal Swedish Academy of Sciences (Kungliga Vetenskapsakademien)</i>
NV	<i>Swedish Environmental Protection Agency (Naturvårdsverket)</i>
RAÄ	<i>Cultural Heritage Manegment (Riksantikvarieämbetet)</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>
VR	<i>The Swedish Research Council (Vetenskapsrådet)</i>

RESEARCH GRANT RECEIVER	FUNDING AUTHORITY	PROJECT	AMOUNT FOR 2005
Alexanderson	SGU	Optisk stimulerad luminiscensdatering (OSL) av nedisningshistorien under Wechsel i södra o mellersta Sverige, (60-1356/2005)	330 000
Alexanderson	Granholms Stiftelse	Senkvartär nedisningshistoria på Östgrönland	35 000
Borgström	SGU	Preglaciala, glaciala o periglaciala jordar o landformer i södra Härjedalen o norra Dalarna (60-1376-2005)	300 000
Brown	RS	ASAR backscatter from snow under different environmental conditions	352 350
Brown	C-Core	Polar View Project - 19276-05-I-EC	580 000
Christiansson/ Klintenberg	SIDA	More Water, Less Grass? Assessment of resource degradation and stakeholders' perceptions of environmental change in Ombuga grasslands, northern Namibia. (SWE-2004-343)	550 000
Destouni	FORMAS	Modellering av reaktiv transport i naturliga heterogena grund-, mark- och ytvatten: LaSAR-PHREEQC-metoden - The LaSAR-PHREEQC approach to modeling multi-component reactive solute transport in subsurface and surface water flows	729 000
Destouni	VR	GIS-baserad modellering av ämnestransport i avrinningsområden - GIS-based modelling of catchment-scale solute transport (621-2003-2997)	351 000
Destouni	SIDA	Bridging research and knowledge gaps for the effective use and management of groundwater resources in the Aral Sea region, (SWE-2003-261)	400 000

RESEARCH GRANT RECEIVER	FUNDING AUTHORITY	PROJECT	AMOUNT FOR 2005
Destouni	SGU	Hydrological controls of pollutant and nutrient loading to ground- and surface waters (60-1396/2005)	430 000
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	581 000
Helmens	SKB	Weichselian climate variability in Scandinavia based on a unique sediment sequence preserved at Sokli, best.nr.14356	465 000
Hock	SIDA	The effects of climate change induced glacier melt on water resources in the La Paz region, Bolivia, (SWE-2005-347), Garanterat t.o.m. 2007	550 000
Hock	FORMAS	Modellering av framtida havsnivåföroreningar orsakade av minskade glaciärer - Modelling of future sea level rise from the retreat of glaciers (Dnr214-2005-409)	490 000
Hock	EU	Acceleration of glacier wastage and sea level rise GLASEAL - Marie Curie Actions - MIF1-CT-2006-020269	2 000 000
Holmgren/Norström	SIDA	Reconstruction of past climate variability in Southern Africa through analysis of trees and pollen (SWE-2002-252)	600 000
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	497 000
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	222 000
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	270 000
Holmlund	Granholms Stiftelse	Radarutrustnings till den japansk-svenska Antarktisexpeditionen 2007-2008	45 000
Holzkämper	KVA	210-Pb dating of lake sediments and peat deposits	11 000
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	783 000
Jarsjö	SKB	Konceptuell och kvantitativ modellering av transport av lösta ämnen i ytvatten och yt nära grundvatten i Forsmark och Oskarshamn - Solute transport processes in coupled ground - surface - coastal water systems of Forsmark and Oskarshamn, best.nr. 14211	862 000
Karlsson	SAU	Steg 2 E4 vegetationsartikel stenåldersboken	135 000
Kleman m.fl	FORMAS/VR	Linnéansökan - Climate evolution, variability and sensitivity	5 000 000
Kleman, Moberg m.fl	FORMAS/VR	Linnéansökan - Forskarskola	1 000 000

RESEARCH GRANT RECEIVER	FUNDING AUTHORITY	PROJECT	AMOUNT FOR 2005
Kratzer	ESA	ESTEC 19379/05/NL/FF - Technical assistance for the validation of MERIS products using the SU/SMHI CIMEL station located in Norrköping, Sweden	93 000
Kratzer	RS	Optical modelling in the Baltic Sea - algorithm development and adaptation of a coupled sea-atmosphere model for MERIS, RS dnr94/04	756 000
Kratzer	RS	Delt i MERIS och ATSR workshop, Esrin, Frascati Italien, 050926--30	8 200
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	Klimatförändringar - 1000 års rekonstruktion och 100 års framtidprojektion	540 000
Näslund/Jansson	SKB	Inlandsisars bottenförhållanden och hydrologi - Basal conditions and hydrology of continental ice sheets - best.nr.14309	1 340 000
Regnell	Västmanl läns museum	Makrofossilsanalys av jordprover från en arkeologisk undersökning - Erikslund, Dingtuna sn. Proj.nr20-501	36 000
Regnell	RAÄ	Basdokumentation - kv Hallonet, O/Gbg Kullings Skövde SU RAÄ 54	100 000
Regnell	RAÄ	Pollen- o makrofossilsanalys - Äpsätter o V Via, Bergslagen Dnr423-2322-2005	60 000
Regnell	Kulturhist museum	Makrofossilsanalys - Nordre Moer, Ås kommune, Akershus	68 600
Regnell	Kulturhist museum Oslo	Makrofossilsanalys - Gråfjellsprosjektet (Kode 211052, Tiltakskode 759023), Hedmark, Åmot	56 000
Regnell	Gbgs Stads-museum	Växtmakrofossilsanalyser av jordprover "Nya Varvet", Göteborg	4 500
Regnell	Väner-museet, Lidköping	Växtmakrofossilsanalyser av jordprover Odensvik 5:4, Kållandsö, Västergötland	7 500
Regnell	Wallin Kulturlandskap o Arkeologi	Växtmakrofossilsanalyser av jordprover Karlsund, Skåne	4 500
Regnell	Arkeologi-centrum	Växtmakrofossilsanalyser av jordprover Högåsen, Aringsås s:n, Småland; Aringsås 151, Aringsås s:n (10500,-)	13 500
Regnell	Jönköpings länsmuseum	Växtmakrofossilsanalyser av jordprover från Vrigstad s:n, Småland	6 000
Regnell	RAÄ	Växtmakrofossilsanalyser av jordprover fr Spångastugan, Lilla Malma s:n, RAÄ 69, Södermanland	9 500
Regnell	Mittuniv. Härnösand	Botaniska analyser av jordprover fr Grannäs, Alfta sn, Hälsingland	4 500
Regnell	RAÄ	Pollen- o makrofossilsanalys - Bengtstorp, RAÄ 34 o 35, Täby sn, Nr 1810128	50 800
Regnell	Arkeologi-centrum	Växtmakrofossilsanalys av jordprover fr Ågårdberget, Småland; Aringsås 15:1, Aringsås s:n	15 000
Regnell	Bohusläns museum	Makrofossilsanalys UN Tega Prästgård 1:1, Ytterby sn, Proj.nr. 4316, (24000,-); Hallerne, Norum sn RAÄ 276 (50000,-); Hoga (4000,-); Rämne 1:12, Skee (3000,-)	81 000

RESEARCH GRANT RECEIVER	FUNDING AUTHORITY	PROJECT	AMOUNT FOR 2005
Regnell	Wallin Kul- turlandskap o Arkeologi	Botaniska analyser av jordprover fr Möllebackszonen, RAÅ 136, Östra Karups sn, Halland	16 000
Risberg	SKB	Bestämning av kolinnehåll och sedimenthastighet m m enligt AP PS 400 06 027, (ID 1, 3-7) Best.nr. 14283	50 000
Rosqvist	Granolms Stiftelse	Instrumentering för övervakning och visualisering av meteorologiska och hydrologiska data insamlade vid Tarfala forskningsstation	92 000
Seibert	ELFORSK	Proj HUVA - Myrmarkskarealens betydelse för vårflods- prognoser, Elforsk proj nr 1707	397 040
Seibert	VR	Hydrologisk landskapsanalys för modellering av vatten- kvalitén: betydelse av den bäcknära zonen - Water quality modelling based on landscape analysis: impor-tance of riparian hydrology	743 000
Skånes	Granolms Stiftelse	Landskapsanalys och geomatik - laboratorium för masterprogram o examensarbeten samt bildverkstad	100 000
Skånes	SLU/NV	Basinventering av Natura 2000 och skyddade områden	1 021 000
Stjernquist	Lst Skåne	Vidareutveckling av spridningsmodellen - emission - deposition, halter - skogsvitalitet, 502-37177-04	242 500
Stjernquist	Malmö HS	Samband mellan luftföroreningsdeposition och vitalitet hos bok och ek i Hallans och Skåne	80 833
Stroeven/Zhou	SIDA/VR	Glacial chronology and erosion patterns in the Central Tibetan Plateau	200 000
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 cosmo-genic nuclides and geomorphology	810 000
Wastegård	VR	Tefrokronologisk datering och korrelation av senkvartära klimatarkiv runt Nordatlanten - Correlation and dating of marine, terrestrial and ice-core records from the Late Quaternary in the North Atlantic region through the common occurrences of tephra horizons, dnr2003-3529	607 500
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	SKB	A 2000-year climate reconstruction for Sweden best nr 12388	289 000
Wohlfarth	VR	Effekter av plötsliga klimatförändringar i terrestra och limniska system: en case-study från den klimatiskt dynamiska perioden 20 000 - 60 000 år före nutid - Terrestrial and limnic response to rapid climate variability between 20 000 and 60 000 years before present., dnr621-2003-3607	486 000
Wohlfarth	VR	ESF Eurocores Euroclimate Programme Proposal: Rapid climatic and environmental shifts during oxygen isotope stages (OIS) 2 and 3 - linking high-revolution terrestrial, ice core and marine archives (Resolution), dnr629-2004- 7960	710 000
Wohlfarth	VR	Utrustning för forskning - Equipment for research Garanterat t.o.m. 2011-06-30	375 100
Wohlfarth (INK)	EU	Millennium - European climate of the last millennium (Contr No.017008) 2006-2009	4 410 850
Approved external research grants			33 476 773

<b>RESEARCH GRANT RECEIVER</b>	<b>FUNDING AUTHORITY</b>	<b>PROJECT</b>	<b>AMOUNT FOR 2005</b>
Bäckstrand/Stjernquist	Lunds univ FORMAS	Legitimitet och effektivitet i styrning för hållbar utveckling: Deltagande och samrådsprocesser inom klimat-, skogspolitik och matsäkerhet - Participation, Deliberation and Sustainability: Governance beyond rhetoric in the domains of Climate, Forestry and Food Safety (Tot bev 1280000 t.o.m. 2008)	440 000
Destouni	SU	½ lektorat i fem år med 300 tkr/år under 2006-2010 (SU611-2777-04)	300 000
Holmgren	SU	Gästforskare H Linge, Norge (Utveckling av dateringsmetodik för droppstenar)	50 000
INK	SU	Bolognaarbetet (Fak.besl. 060308)	625 689
<b>Total</b>		<b>Approved research grants</b>	<b>34 892 462</b>



## 10. Staff (late autumn 2006)

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
Dyurgerov, 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, director of post-graduate studies
Lundén, Bengt	professor of Remote Sensing
Stroeven, Arjen	professor of Physical Geography
Wastegård, Stefan	professor of Quaternary Geology
Wohlfarth, Barbara	professor of Quaternary Geology, director of post-graduate studies

### **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, director of SUCLIM
Näslund, Jens-Ove	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	research associate
Grudd, Håkan	researcher
Gunnarson, Björn	researcher
Hall, Ola	researcher
Helmens Femke, Karin	researcher
Holzkämper, Steffen	researcher

Jarsjö, Jerker	researcher
Jan Kristiansson	senior lecturer
Mohammad, Rezwan	researcher
Nordberg, Maj-Liz	senior lecturer
Regnell, Mats	researcher
Schoning, Kristian	researcher
Schlyter, Peter	senior lecturer, director of undergraduate studies
Skånes, Helle	senior lecturer, also research associate
Stjernquist, Ingrid	senior lecturer
Westerberg, Lars-Ove	senior lecturer, headdirector of undergraduate studies

#### PhLic, MSc, BSc

Bråvander, Lars Gunnar	MSc, senior lecturer
Delteus, Åke	BSc, lecturer
Eknert, Bo	BSc, lecturer, director of undergraduate studies
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  
 Darracq, Amélie  
 De Angelis, Hernán  
 de Woul, Mattias  
 Dessie, Gessesse  
 Duguay, Martial  
 Ebert, Karin  
 Eriksson, Sofia  
 Goodfellow, Bradley  
 Grabs, Thomas  
 Hannerz, Fredrik  
 Heyman, Jakob  
 Hugelius, Carl-Gustaf  
 Hättstrand, Martina  
 Ingvander, Susanne  
 Johnsen, Timothy  
 Jonsson, Christina  
 Karlin, Torbjörn  
 Klintenberg, Patrik  
 Norström, Elin  
 Persson, Klas  
 Radić, Valentina  
 Ryner, Maria  
 Sannel, Britta

Shibuo, Yoshihiro  
Sundqvist, Hanna  
Veres, Daniel  
Öberg, Helena

Teaching assistants

Johansson, Olov	MSc
Jonsell, Ulf	PhD
Lundblad, Katarina	PhD
Mercer, Andrew	

**ADMINISTRATIVE STAFF**

Berggren, Berit	senior administrative officer
Blåndman, Susanna	BSc, personnel administrator
Damberg, Maria	MSc, study advisor
Envall, Berit	financial administrative officer
Hansson, Erik	MSc, educational administrator
Henkow, Månika	higher administrative officer
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
Granel, Håkan	supervisor of office services
Jacobson, Rolf	web editor
Kaislahti Tillman, Päivi	MSc, specific project assistant
Prieto, Carmen	PhD, specific project assistant
Runborg, Siv	BSc, research assistant
Spångberg, Martin	systems engineer
Svanered, Ola	BSc, systems engineer
Söderman, Malin	laboratory assistant
Törnberg, Henrik	MSc, technician, Tarfala Research Station

**PROFESSORS EMERITI**

Lidmar-Bergström, Karna  
Lundqvist, Jan

Karlén, Wibjörn  
Miller, Urve  
Ringberg, Bertil  
Wastenson, Leif  
Østrem, Gunnar

**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)