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EWA LIND (Ed.)
Diatoms are commonly used in studies of e.g. shore displacement and pH variations. Electron microscopy is sometimes necessary for identification to species level. In view *Amphora libyca*, a freshwater diatom. Photo: Shyhrete Shala.
1. Introduction

The Department of Physical Geography and Quaternary Geology is one of the larger departments at the university, with about 120 employees: 14 professors, ca 50 lecturers and researchers, ca 40 PhD students and ca 20 technical/administrative staff. Our personnel consist of an exciting mix of people coming from around the world, together creating a very dynamic and creative research and education environment.

Together with our neighbours, the Department of Geological Sciences, the Department of Applied Environmental Science 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 landscape ecology, 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 trends. The department is equipped with a state-of-the-art GIS and remote sensing cluster, and microscopy, sediment and dendroclimatology laboratories.

We also take pride in providing a broad high-quality education at basic, Masters and postgraduate levels. The goal of the undergraduate and Masters 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. We offer a wide range of Masters education subjects, tailored to our research profiles, and taught in English. Every year slightly more than 1700 students attend our undergraduate and Master education programmes. Postgraduate education consists of four years and, given its high standard and international staff, it constitutes an important cornerstone of the department’s profile.

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 Kuhry. 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 between 1997 and 2008. 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 and Gunhild Rosqvist), glaciology (Peter Jansson), remote sensing (Bengt Lundén), paleoglaciology (Arjen Stroeven) and Quaternary geology (Frank Preusser and 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.

Greenlandic meltwaterlake (Lake Z) located at position 66 ° 57'N and 48 ° 47'W in July 2010. The lake has an area of 12.3 km² and a circumference of 20 km. Photo: Malin Johansson.
Ongoing projects

1. Marginal ice dynamics / Ahlkrona J, Kirchner N.
2. Applying the optically stimulated luminescence (OSL) technique to date the Weichselian glacial history of south and central Sweden / Alexanderson H.
3. Arctic natural climate and environmental changes and human adaptation (SciencePub) – ice-sheet variability on Svalbard (project leader J. Landvik) / Alexanderson H.
4. Assessing the influence of ice sheet model parametric uncertainty on reconstructions of past ice sheets and projections of future ice sheet changes / Applegate P.
5. Learning about the history of the Greenland ice sheet through studies on glacial landforms: a pilot project / Applegate P, Kirchner N.
6. Estimating volume changes of Patagonian glaciers using inventory data and scaling techniques / De Angelis H.
7. Exploring the conditions for stability and modes of behaviour of glacier systems / De Angelis H.
8. Deglaciation of the British-Irish ice sheet / Greenwood S.
9. Mega-scale glacial geomorphology from the Laurentide ice sheet / Greenwood S, Kleman J.
10. The north Greenland Eemian ice drilling / Hansson M.
11. The European Programme on Ice Coring in Antarctica / Hansson M, Holmlund, Karlin T.
12. Climate, glaciers and permafrost in the Swedish mountains / Holmlund P.
13. Subglacial thermal conditions through a glaciation phase / Holmlund P.
15. Terrestrial history of the Muonionalusta meteorites / Hättestrand C.
16. Spatial and temporal snow accumulation patterns along an icedivide in Dronning Maud Land, Antarctica / Ingvander S.
17. Spatial and temporal variations in surficial melt on the Greenland ice sheet and the effects on glacier dynamics / Johansson M.
18. The north Greenland Eemian ice drilling / Karlin T.
19. Marine geophysical multibeam mapping and subbottom profiling in Pine Island Bay, Amundsen Sea and Ross Sea, Antarctica, Shipboard Scientist, Oden Southern Ocean 0910 Expedition / Kirchner N.
20. Assessing the timing, extent and volume of Tibetan Plateau ice during the last 130,000 years by numerical simulations: a model for interpreting its Quaternary glacial history / Kirchner N, Stroeven A.P, Heyman J.
21. Nuclei of glacial inception: The role of Novaya Zemlya during the MIS3-2 glaciation of the Barents-Kara Seas region / Kirchner N.
22. A Bayesian Hierarchial Modeling approach to investigate former ice shelf configurations in the Arctic Ocean region / Kirchner N.
23. CARBO-north project / Kuhry P.
24. Simulation of the Cordilleran Ice Sheet through a glacial cycle / Seguinot J.
25. Paleoglacialogy of the northern sector of the Cordilleran ice sheet / Stroeven A.P, Kleman J.
Staff affiliations

Per Holmlund, Professor
Peter Jansson, Professor, Vice President IACS, Editor in Chief Geografiska Annaler, Series A: Physical Geography
Johan Kleman, Professor, Program director of BBCC (see also 2.2, 2.3)
Peter Kuhry, Professor (see also 2.2)
Gunhild Rosqvist, Professor (see also 2.2)
Arjen Peter Stroeven, Professor (see also 2.2)
Jan Lundqvist, Professor emeritus (see also 2.2)

Helena Alexanderson, Docent (see also 2.2)
Margareta Hansson, Docent (see also 2.2)
Karin Helmens, Docent (see also 2.2)
Clas Hättestrand, Docent
Krister Jansson, Docent (see also 2.2, 2.3)

Patrick Appelgate, PhD
Ingmar Borgström, PhD (see also 2.2)
Ian Brown, PhD (see also 2.3)
Helen Dahlke, PhD (see also 2.4)
Hernán De Angelis, PhD
Karin Ebert, PhD (see also 2.2)
Sarah Greenwood, PhD (see also 2.2)
Jakob Heyman, PhD (see also 2.2)
Timothy Johnsen, PhD (see also 2.2)
Nina Kirchner, PhD (see also 2.2)
Britta Sannel, PhD (see also 2.2, 2.3)

Postgraduate students:
Annika Berntsson (see also 2.2)
Martial Duguay (see also 2.4)
Gustaf Hugelius, PhLic
Susanne Ingvander
Malin Johansson (see also 2.2)
Torbjörn Karlin (see also 2.2)
Martin Margold, PhLic (see also 2.2)
Julien Seguinot
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.

Stóra and Lítla Dýmun, two of the many islands of Faroe Islands. Photo: Ewa Lind.
Ongoing projects

1. Late Holocene humidity variability in central Sweden / Andersson S.
2. Reconstruction of environmental and climate changes in Vindelfjällen, northern Sweden, using lake sediments / Berntsson A.
3. Bridging the gap between rhetoric and practice in integrated conservation and development efforts. Experiences from South Africa / Dahlberg A.
4. The role of land ownership and land use for sustainable landscape care and management: The case of Sweden in a European and global comparative analysis / Dahlberg A.
5. Meteoric $^{10}$Be dating of Miocene-Quaternary saprolites on plains with residual hills in northern Sweden / Ebert K.
6. Climate vs past human use in mountain forest ecotones, SwedenThe Scottish Pine Project / Gunnarson B
7. NEEM project / Hansson M, Wastegård S.
8. Holocene Climate Variability in southern Greece / Holmgren K, Finné M, Sundqvist H
9. The urban mind- cultural and environmental dynamics / Holmgren K, Finné M.
12. How do rivers respond to uplift? A study of river transience / Jansen J.
13. Holocene climate change in high latitudes recorded by stable isotopes in peat / Kaislahti Tillman P.
15. Tephrochronology of the north Atlantic region during the early Holocene / Lind E, Wastegård, S.
16. Landscape analysis for tectonic applications / Lidmar-Bergström K.
17. Reconstructing Climate in the last millennium / Moberg A.
18. Past climate variability and environmental change in southern Mozambique / Norström E.
19. Vegetation development and introduction of cultural landscape in Småländ, southern Sweden / Regnell M.
20. Prehistoric farming in Västra Götaland, south-western Sweden / Regnell M
21. Prehistoric plant use, agriculture and environment in southern Sweden / Regnell M
22. Human impact in the Fällnäs area, south of Stockholm, Sweden / Risberg J.
23. Environmental changes in the eastern parts of Lake Mälaren, west of Stockholm, during the last 3000 years / Risberg J.
24. Construction of palaeogeographical maps for eastern Svealand for the last 7000 years / Risberg J.
25. Sea level changes along the Mozambiquan coast during the last 7000 years / Risberg J.
26. Climate change in southern Mozambique during the last 4000 years / Risberg J.
27. Climate change in northwestern Tanzania / Risberg J.
28. Black carbon aspect of climate change / Rosqvist G.
29. Africa’s climate and the survival of communities – Eastern Africa during the 18th and 19th centuries / Ryner M, Holmgren K.
30. Understanding the spatial and temporal variability of climate in northern Tanzania during the last 1000 years / Ryner M.
31. Temporal and spatial dynamics of subarctic peat plateau / thermokarst lake complexes / Sannel B.
32. Modelling plant species dispersal in fragmentated landscapes / Schmucki R.
33. Early Holocene deglaciation and the Holocene thermal maximum at high latitudes as recorded by multi-proxy evidence / Shala S, Helmens K.
34. DAPHNE - dated speleothem archives of the paleoenvironment / Sundqvist H, Holmgren K.
35. Holocene climate variability over Scandinavia / Sundqvist H, Moberg A, Holmgren K.
36. Sharpening the tools – improving tephrochronology around the Atlantic Sea / Wastegård S.
37. SMART project (synchronising marine and ice-core records using tephrochronology) / Wastegård S.
38. Potrok Aike Lake sediment archive drilling project / Wastegård S.
40. Current expansion and past dynamics of small-holder irrigation farming in African drylands - measuring landscape, labour and climate interactions / Westerberg L-O.
41. Factors affecting mangroves of the Rufiji Delta and impact on the livelihood of surrounding communities / Westerberg L-O, Mwansasu S, Dahlberg A.
42. Environmental change in northern Tanzania during the last 1000 years / Öberg H.

Malagarasi wetland, western Tanzania. The project focuses on the movement and distribution of elephants in protected and surrounding areas; in a highly dynamic wetland landscape with different land use pressure. Photo: Sara Cousins.
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)
Gunhild Rosqvist, Professor (see also 2.1)
Arjen Peter Stroeven, Professor (see also 2.1)
Stefan Wastegård, Professor

Wibjörn Karlén, Professor emeritus
Karna Lidmar-Bergström, Professor emerita
Jan Lundqvist, Professor emeritus (see also 2.1)
Urve Miller, Professor emerita

Helena Alexanderson, Docent (see also 2.1)
Sara Cousins, Docent (see also 2.3)
Annika Dahlberg, Docent
Margareta Hansson, Docent (see also 2.1)
Karin Helmens, Docent
Krister Jansson, Docent (see also 2.1, 2.3)
Anders Moberg, Docent
Jan Risberg, Docent

Sofia Andersson, PhD
Ingmar Borgström, PhD (see also 2.1)
Karin Ebert, PhD (see also 2.1)
Håkan Grudd, PhD
Björn Gunnarson, PhD
Jakob Heyman, PhD (see also 2.1)
Alistair Hind, PhD
Martina Hättestrand, PhD
John Jansen, PhD (see also 2.4)
Timothy Johnsen, PhD (see also 2.1)
Sven Karlsson, PhLic
Nina Kirchner, PhD (see also 2.1)
Anders Nordström, PhLic
Elin Norström, PhD
Maria Ryner, PhD
Britta Sannel, PhD (see also 2.1, 2.3)
Reto Schmucki, PhD
Hanna Sundqvist, PhD
Lars-Ove Westerberg, PhD (see also 2.4)

Postgraduate students:
Annika Berntsson (see also 2.1)
Martin Finné
Gustaf Hugelius, PhLic (see also 2.3)
Malin Johansson (see also 2.1)
Päivi Kaislahti Tillman, PhLic
Torbjörn Karlin (see also 2.1)
Late Precambrian till on the Varanger Peninsula, Norway. Photo: Shyhrete Shala.
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 ecological 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.
Ongoing projects

1. Land use change and effects of functional and spatial connectivity on historical and present biodiversity patterns / Cousins S, Aggemyr E.
2. Historical land use influence on dispersal and diversity of grassland species in rural landscapes / Cousins S, Auffret A.
3. Modelling plant species dispersal in fragmented landscapes / Cousins S, Scmuki R.
4. Changes in wetland distribution and consequences for biodiversity and ecosystem services / Cousins S, Ermold M.
5. A multiscale, cross-disciplinary approach to the study of climate change on natural resources, ecosystem services and biodiversity (EKOKLIM) / Cousins S, Ermold M, Lindborg R, Plue J, Tränk L.
6. Linking management and feedback across scales in social-ecological systems - examples from forest ecosystems / Eriksson S.
7. The importance of shielding for farm resource use at the medeval farm of Snorre Sturlasson, Iceland / Ihse M.
8. Influence of Environmental and Social factors on Wildlife Dispersal Areas in Malagarasi-Moyovosi Ramsar Site, Western Tanzania / Kalumanga E, Cousins S.
9. Harnessing Biodiversity for Sustaining Agricultural Production and Ecosystem Services (SAPES) / Lindborg R.
10. Ecosystem services in agricultural landscapes: the development of a framework for assessing synergies and dealing with trade-offs among multiple services / Lindborg R.
11. How do seed banks contribute to species persistence in fragmented landscapes? / Plue J, Cousins S.
12. The effect of grazing and land use patterns in the inner archipelago / Reimark J, Cousins S.
13. Temporal and spatial dynamics in subarctic peat plateau / thermokarst lake complexes / Sannel B.
14. EMMA Environmental Mapping and Monitoring with Airborne laser and digital images / Skånes H.
15. NILS (National inventory of landscapes in Sweden) hosted by Swedish University of Agricultural Sciences / Skånes H.
Staff affiliations

Carl Christiansson, Professor (see also 2.4)
Johan Kleman, Professor, Program director for BBCC (see also 2.1, 2.2)
Bengt Lundén, Professor

Margareta Ihse, Professor emerita

Wolter Arnberg, Docent
Sara Cousins, Docent (see also 2.2)
Krister Jansson, Docent (see also 2.1, 2.2)
Regina Lindborg, Docent
Maj-Liz Nordberg, Docent

Ian Brown, PhD (see also 2.1)
Lars-Gunnar Bråvander, MSc
Jan Plue, PhD
Britta Sannel, PhD (see also 2.1, 2.2)
Peter Schlyter, PhD (see also 2.4)
Reto Schmuki, PhD
Helle Skånes, PhD

Postgraduate students:
Elsa Aggemyr
Alistair Auffret, PhLic
Sofia Eriksson, PhLic (Södertörn University College)
Matti Ermold
Gustaf Hugelius, PhLic (see also 2.2)
Elikana Kalumanga
Josefin Reimark
Dan Warghagen (Södertörn University College) (see also 2.4)
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.

Thawing permafrost opens new flow paths for water in the tundra landscape, which leads to changes in the hydrological cycle and water balance. The picture shows a thaw lake in Seida, northeastern European Russia. Photo: Ylva Sjöberg.
Ongoing projects

1. Untangling the role of permafrost in determining the distribution of subsurface hydrologic flow pathways in the sub-arctic / Dahlke H.
4. The subsurface water system role for land-to-atmosphere and land-to-sea vapor-water partitioning and solute mass flows / Destouni G, Asokan S, Prieto C, Darracq A.
6. Water quality modeling based on landscape analysis: importance of riparian hydrology / Grabs T, Seibert J.
7. Building value from transboundary water management and development / Granit J.
8. The role of permafrost, hydrological and ecosystem shifts for arctic hydro-climatic interactions and carbon fluxes / Jantze E.
9. Quantifying the potential of carbon dioxide storage, long-term retention and surface return flow minimization in Swedish bedrock / Jarsjö J, Destouni G, Desouche C.
11. Modelling of regional hydro-climatic interactions, changes and feedbacks / Lebing G.
12. Investigating the scale dependency of hydrologic processes through the combination of innovative tracer techniques and landscape similarity analysis / Lyon S.
13. Modeling permafrost spatial distributions and thawing rates in arctic/sub-arctic Sweden using recession flow analysis / Lyon S, Destouni G.
14. Stream flow modeling and variation of runoff in a boreal landscape / Nathanson M.
18. The effect of biomass withdrawal on the nutrient balance in forest soils, funded by the Swedish Forest Agency / Schlyter P.
20. Water package - an information package for increased awareness in water issues / Seibert J.
21. Northern Watershed Ecosystem Response to Climate Change, NORTH-WATCH / Seibert J.
22. Modeling permafrost spatial distributions and thawing rates in arctic and sub-arctic Sweden using recession flow analysis / Sjöberg Y.
   How intensified land use due to expansion affects the use and management of a municipality’s water resource / Warghagen D.
Staff affiliations

Carl Christiansson, Professor (see also 2.3)
Georgia Destouni, Professor
Karin Holmgren, Professor (see also 2.2)

Jerker Jarsjö, Docent
Jan Seibert, Docent

Helen Dahlke, PhD (see also 2.1)
Lebing Gong, PhD
John Jansen, PhD (see also 2.2)
Steve Lyon, PhD
Anders Nordström, PhLic
Carmen Prieto, PhD
Peter Schlyter, PhD (see also 2.3)
Ingrid Stjernquist, PhD

Postgraduate students:
Ingela Andersson
Arvid Bring, PhLic
Martial Duguay (see also 2.1)
Thomas Grabs
Jakob Granit
Elin Jantze
Shilpa Muliyil Asokan
Johanna Mård Karlsson
Marcus Nathanson
Klas Persson, PhLic
Ylva Sjöberg
Claudia Teutschbein, PhLic
Rebecka Törnqvist
Dan Warghagen (Södertörn University College) (see also 2.3)
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.

![Sampling of physical and chemical parameters in the seasonal snow pack in the accumulation area of Storglaciers, Tarfala. Photo: Susanne Ingvander.](image-url)
2.6. Navarino Environmental Observatory (NEO)

Navarino Environmental Observatory (NEO), a cooperation between Stockholm University, the Academy of Athens and TEMES S.A., the developer of Costa Navarino, is dedicated to research and education on the climate and the environment of the Mediterranean region. Located at Costa Navarino, NEO will develop into a dynamic hub where scientists from all over the world conduct frontline research, develop new tools and methods, as well as meet to exchange knowledge and ideas.

Covering a wide range of topics of both local and global relevance, the research activities of NEO are carried out by scientists from the Bert Bolin Centre for Climate Research at Stockholm University and the Atmospheric Environment Division of Biomedical Research at the Academy of Athens. Atmospheric composition and meteorological parameters are continuously monitored in order to track the origin of particulate and gaseous pollutants and detect climate change signals. Global and regional scale modeling is applied for climate projections and future pollution level simulations. Hydrological research, monitoring and evaluation are undertaken in order to understand past, present and future processes and to develop suitable water resource management strategies for the region. Tectonic, climate, environment and landscape studies are carried out on a long-term perspective, in order to understand the physical science basis of our earth, and on a short-term perspective, in order to understand the role of natural versus human induced climate/environmental changes. An important perspective is to analyze the role of physical factors in the context of tourism and urbanism. All monitoring activities are linked to international networks.

The establishment of NEO is a very important step toward strengthening Swedish-Greek cooperation in the area of climate and environmental research. The operation of NEO presents a real example of how the academic community and the private sector can work together to focus on issues of great importance to society and nature.

View from Paleokastro looking east over Gialova lagoon and Navarino Bay. The future location of NEO is just outside the photo to the far right. Photo: Eric Skoglund.
3. Publications

Reviewed articles


2. Applegate, P.J. and Fisher, T.G. 2010: Ancient Perspectives on Arctic Climate Change and Ice Sheet Dynamics: Joint Meeting of the APEX Program and the MOCA Project: EOS Transactions, American Geophysical Union.


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
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

A small volcanic eruption on the island of Kyushu, Japan 2010. Photo: Ewa Lind
5. Education

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 theoretical and practical competence within the fields of education. 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.

Since 2007, Stockholm University has structured its education in accordance with the Bologna Model of higher education:

- 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.

Stockholm University uses 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.

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 100-120 students starts their Geography studies. 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 in a world where globalisation is steadily increasing.
Bachelor’s programme in Earth Science
The bachelor’s programme in *Earth Science* (180 HEC) 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. Within the programme, the first year (60 HEC) consists of compulsory courses where students learn the basics in earth science: Physical Geography and Quaternary Geology (30 HEC) and Geology (30 HEC), respectively. After the first year the students specialise within Physical Geography, Hydrology, Quaternary Geology, Geology, Marine Geoscience, or Geochemistry. The programme is completed 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, and is carried out in collaboration with the Department of Biology Education at Stockholm University. The programme consists of 90 HEC mandatory courses in earth sciences and environmental issues and 90 HEC in biology. A 15 HEC Degree Project (Bachelor’s Thesis) ends the programme. A distinctive feature of the programme is the integration between Earth Science and Biology. The Earth Science parts focus particularly on biogeography, climatology, geomorphology, cartography, soil science, aerial photograph interpretation and GIS, 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.

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, 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
- Biology-Earth Sciences
- Environmental Analysis and Management
- Environment and Health Protection
- Environmental Protection and Physical Planning
- Geography
- Glaciology and Polar Environments
- Globalization, Environment and Social Change
- Hydrology, Hydrogeology and Water Resources
- Landscape Analysis with Remote Sensing, GIS and Cartography
- Physical Geography and Quaternary Geology
- Quaternary Science and Climate Development

**Other courses**
The course “Science Communication, 15 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”. 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:*

**Elsa Aggemyr**  
*Land use change and effects of connectivity on past and present plant patterns in the archipelago*

**Ingela Andersson**  
*The influence and concerns of the local physical landscape in regional planning of water quality*

**Alistair Auffret**  
*Historical land use effects on dispersal of grassland species in rural landscapes*

**Emma Bosson**  
*Water balances and water exchange between deep groundwater and surface water in a periglacial landscape with Permafrost*

**Arvid Bring**  
*Distributed modelling of hydrological dynamics and waterborne mass fluxes in cold regions*
Martial Duguay
The effects of climate change induced glacier melt on water resources in the La Paz region, Bolivia

Martin Finné
Holocene climate variability in southern Greece

Sofia Eriksson
Linking management and feedback across scales in social-ecological systems – Examples from forest ecosystems

Matti Ermold
Changes in wetland distribution and consequences for biodiversity and ecosystem services

Ping Fu
Glacial Geomorphology of the Haizi Shan area, SE Tibetan Plateau

Jakob Granit
Coping with global environmental change: water resources management and development

Christian Helanow
Theory for water routing through ice sheets

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

Elin Jantze
The role of permafrost, hydrological and ecosystem shifts for arctic hydro-climatic interactions and carbon fluxes

Fernando Jaramillo
Nutrient sources, retention-attenuation and transport in hydrological catchments under climate change

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

Elikana Kalumanga
Movement and distribution of wild mammals in Malagarasi-Muyovozi Ramsar site, North-West Tanzania

Paul Krusic
Dendroclimatic reconstruction: Eastern Mediterranean region
Martin Margold  
*Paleoglaciological reconstructions using digital elevation models and satellite imagery*

Andrew Mercer  
*Accuracy of methods used for monitoring regional glacier mass balance changes*

Shilpa Muliyil Asokan  
*Basin-scale hydrological impacts of climate and land use changes*

Simon Mwansasu  
*Factors affecting mangroves of the Rufiji Delta and impact on the livelihood of surrounding communities*

Johanna Mård Karlsson  
*Mapping Arctic social-ecological resilience to hydrological change*

Marcus Nathanson  
*Stream flow modeling and variation of runoff in a boreal landscape*

Klas Persson  
*Solute transport processes and risk propagation in coupled groundwater and surface water systems*

Josefin Reimark  
*Plant functional traits on grazed and abandoned satellite islands; effects of space and time*

Julien Seguiont  
*Simulation of the Cordilleran Ice Sheet through a glacial cycle*

Ylva Sjöberg  
*Determining and mapping spatial distributions and thawing rates of inland permafrost under climatic change in the Arctic and Sub-Arctic*

Claudia Teutschbein  
*Hydrological modelling for climate change impact assessment*

Rebecka Törnqvist  
*Basin-scale hydrological och pollutant load impacts of land use and climatic changes*

Dan Warhagen  
*Water management and changing land use. Coping with expansion – Norrtälje as a case study. How intensified land use due to expansion affects the use and management of a municipality’s water resource.*

Helena Öberg  
*Environmental change in northern Tanzania during the last 1000 years*
Quaternary Geology:

Annika Berntsson
*Reconstruction of environmental and climate changes in Vindelfjällen, northern Sweden, using lake sediments*

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*

Carl Lilja
*Synchronicity of late-glacial tephra horizons*

Ewa Lind
*Tephrochronology of the north Atlantic region during the early Holocene*

Shyhrete Shala
*Early Holocene deglacial environment and hypsithermal warming at high latitudes (N Fennoscandia) as recorded by multi-proxy evidence*

Mats Regnell
*Prehistoric plant use, agriculture and environment in southern Sweden*

List of examinations for 2010

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sofia Andersson</td>
<td>05 March 2010</td>
<td>PhD, Quaternary Geology</td>
</tr>
<tr>
<td>Jakob Heyman</td>
<td>02 June 2010</td>
<td>PhD, Physical Geography</td>
</tr>
<tr>
<td>Timothy Johnsen</td>
<td>04 June 2010</td>
<td>PhD, Quaternary Geology</td>
</tr>
<tr>
<td>Britta Sannel</td>
<td>01 Oct 2010</td>
<td>PhD, Physical Geography</td>
</tr>
<tr>
<td>Thomas Grabs</td>
<td>18 Oct 2010</td>
<td>PhD, Physical Geography</td>
</tr>
<tr>
<td>Päivi Kaislahti Tillman</td>
<td>23 April 2010</td>
<td>PhLic, Quaternary Geology</td>
</tr>
<tr>
<td>Claudia Teutschbein</td>
<td>25 May 2010</td>
<td>PhLic, Physical Geography</td>
</tr>
<tr>
<td>Martin Margold</td>
<td>08 June 2010</td>
<td>PhLic, Physical Geography</td>
</tr>
<tr>
<td>Arvid Bring</td>
<td>06 Sep 2010</td>
<td>PhLic, Physical Geography</td>
</tr>
<tr>
<td>Shilpa Muliyl Asokan</td>
<td>16 Nov 2010</td>
<td>PhLic, Physical Geography</td>
</tr>
<tr>
<td>Alistair Auffret</td>
<td>25 Nov 2010</td>
<td>PhLic, Physical Geography</td>
</tr>
</tbody>
</table>
6. Dissertations

The Department of Physical Geography and Quaternary Geology, Stockholm University

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


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 19th and 20th century. Dissertation No. 28. Fakultetsopponent: Dr. Georg Kaser


The Department of Physical Geography and Quaternary Geology, Stockholm University


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


The Department of Physical Geography and Quaternary Geology, Stockholm University


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-)

HÅKAN GRUDD, 2006: Tree rings as sensitive proxies of past climate change. Dissertation No. 1. Fakultetsopponent: Prof. Brian Luckman


ELIN NORSTRÖM, 2008: Late Quaternary climate and environmental change in the summer rainfall region of South Africa - A study using trees and wetland peat cores as natural archives. Dissertation No. 11. Fakultetsopponent: Prof. Michael Meadows.


7. International exchange

INK has the perfect preconditions for international exchange. Our department is popular among incoming students from our partner universities (and other universities). This has always been the case but English Master Courses have increased INKs popularity. Some students get back to us after their Erasmus-stay as visiting students to write their thesis here. We can observe an increased interest among our own students to study in other countries.

7.1. Lecturer exchange

International programs: Advanced Climate Dynamics Course on ice sheet-ocean interactions at Lyngen, Norway / Applegate P.

Lecturer on transbundary water resources management, benefit sharing, regional Baltic Sea development etc. in the following training programs sponsored by Sida and organized by SIWI and Ramboll, Stockholm, Sweden / Granit J.

International Lectures: The role of landscape structure in hydrologic response and chemical transport, U.S. Department of Agriculture – Agricultural Research Service, New England Plant, Soil, and Water Laboratory, East Wareham, Massachusetts, USA / Lyon S.

International Student Exchange: Characterization of the winter of 2009/2010 by the stable water isotopes in the snow pack over Sweden, visiting student to Stockholm University from Université Pierre et Marie Curie / Lyon S.

Exchange programme and joint master programme with the Inst. of Environmental Science and Management, University of Latvia, Latvia / Schlyter P, Stjernquist I.

Nordic-Russian cooperation in heigher education with the Russian State Hydrometeorological University, St Petersburg, Russia; the Arkhangelsk State Technical University, Arkhangelsk, Russia; the The Nansen International Environmental and Remote Sensing Centre, St Petersburg, Russia, the The Department of Physics at the University of Helsinki, Finland; and the Royal Institute of Technology, Stockholm, Sweden / Schlyter P, Stjernquist I.

Green Enterprising and Innovation as a Component of Environmental Management Studies: A Swedish-Russian-Latvian Long-term Network Cooperation with the Russian State Hydrometeorological University, St Petersburg, Russia; the Arkhangelsk State Technical University, Arkhangelsk, Russia; Dept of Environmental Management, Univ of Latvia, Riga, Latvia and the Royal Institute of Technology, Stockholm, Sweden / Schlyter P, Stjernquist I.

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

*Erasmus exchange (coordinator: K. Ebert)*

Bern University, Switzerland
Innsbruck University, Austria
Freiburg University, Germany
University of Burgundy, Dijon, France
University of Grenoble, France
University of Ostrava, Czech Republic
Leuven University, Belgium
Universities of Leuven and Brussels, Belgium
La Sorbonne, Paris, France

Students coring in the Torneträsk area. Photo: Stefan Wastegård.
8. Conferences and seminars

**January**
Alexanderson: Nordic Geological Winter Meeting, Oslo, Norway

**February**
Lyon & Warghagen: Hydrologidagarna, Stockholm (KTH), Sweden
Schlyter & Stjernquist: Miljömål i fjälllandskapet. En syntes av problemställningar knutna till förvaltningen av en begränsad resurs. Presentation of research results. Naturvårdsverket, Stockholm, Sweden

Skånes: Seminar on Swedish vegetation mapping in Stockholm, Sweden

**March**
Granit: XI International Environmental Forum - Baltic Sea Day, St Petersburg, Russia.


Moberg, Rosqvist & Wastegård: MILLENNIUM 4rd Milestone Meeting, Cala Millor, Spain

**April**
Mård Karlsson: Lake Baikal Workshop, Irkutsk, Russia
CarboNorth open symposium, Stockholm, Sweden

Sannel: Spatio-temporal patterns in the carbon balance of northern high latitude regions, Stockholm, Sweden

Skånes: Kartdagarna i Jönköping, Sweden

**May**
Applegate, Alexandersson, Kirchner & Kaislathi Tillman: Arctic Paleoclimate and its Extremes (APEX): Arctic paleoclimate proxies and chronologies, Höfn, Iceland
Hansson & Karlin: TALDICE & EPICA Science Meeting, Rome, Italy

Heyman, Jansen, Lyon, Moberg, Törnqvist & Seibert: EGU General Assembly 2010, Vienna, Austria

Prieto: World Environmental & Water Resources Congress 2010, Challenges of Change, Providence, USA

Wastegård, Lind & Lilja: Active Tephra in Kyushu, Kirishima, Kagoshima, Japan

June
Applegate & Kirchner: International Glaciological Society meeting: "Comparing the sensitivities of low-order ice sheet models to changes in model parameters", Columbus, USA

Granit: Rework the World - The 5th Global YES Summit, Tällberg, Sweden

Hugelius & Sannel: Third European Conference on Permafrost” (EUCOP III) Longyearbyen, Svalbard

Kirchner: Forum for Research into Ice Shelf processes (FRISP), Bad Bederkesa, Germany

Moberg: CES Conference on Future Climate and Renewable Energy: Impacts, Risks and Adaptation, Oslo, Norway

Mård Karlsson: IPY Oslo Science Conference, Oslo, Norway

Johansson: Living planet symposium, Bergen, Norway

Sundqvist & Finné: DAPHNE, 3rd Workshop, Innsbruck, Austria

Sannel: European Conference on Permafrost, Longyearbyen, Norway

July
Granit: Almedalen Week (Swedish Political Week on Global and Domestic Issues), Visby, Sweden

August
Auffret: Gesellschaft für Ökologie 40th Annual Conference, Giessen, Germany
<table>
<thead>
<tr>
<th>Name</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margold</td>
<td>Field workshop: Giant Pleistocene glacial outburst floods in Siberian Altai Mountains, Altai Mountains, Russia</td>
</tr>
<tr>
<td>Schlyter</td>
<td>Hearing avseende hur Älvdalens kommun skall kunna klara kraven på ekonomisk, social och ekologisk hållbar utveckling i fjällområdet, Idre, Sweden</td>
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<tr>
<td>Schmucki</td>
<td>Annual Conference of Ecological Society of Germany, Austria, and Switzerland, Gö, Giessen, Germany</td>
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<tr>
<td>Stjernquist</td>
<td>The Delta Kappa Gamma Society International Conference, Aug 2010, Spokane, USA</td>
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<tr>
<td>Wastegård</td>
<td>SMART workshop (synchronising marine and ice-core records using tephrochronology), St. Andrews, UK</td>
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<tr>
<td><strong>September</strong></td>
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<tr>
<td>Eriksson &amp; Skånes</td>
<td>International Conference in Landscape Ecology &quot;Landscape structures, functions and management: response to global ecological change&quot;. Prag, Tjeckien</td>
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<tr>
<td>Ihse</td>
<td>Swedish LALE conference on &quot;Är det för långt för humlan att flyga? Tankar kring isolering och ekologiska nätverk i hagmarker. De svenska hagmarkerna- en juvel i det europeiska landskapet? Linköping, Sweden</td>
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<tr>
<td>Moberg</td>
<td>The Medieval Warm Period Redux - Where and when was it warm? Lisbon, Portugal</td>
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<tr>
<td><strong>October</strong></td>
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<tr>
<td>Ihse</td>
<td>Official European Green Cities seminar: Urban planning on landscape ecological basis-history and future, Stockholm, Sweden</td>
</tr>
<tr>
<td>Lindborg</td>
<td>Rethinking agricultural land abandonment to create socially responsive and biodiverse landscapes, Melbourne, Australia</td>
</tr>
<tr>
<td>Sannel</td>
<td>Monitoring of palsa mires, Sigtuna, Sweden</td>
</tr>
</tbody>
</table>
**November**

Granit: 
*Strategic Workshop on “Accounting for water scarcity and pollution in the rules of international trade”, Amsterdam, Netherlands*

World Ocean Week 2010 International Marine Forum, Xiamen, China

Hansson, Karlin & Iizuka: 
*NEEM Steering Committee meeting, Copenhagen, Denmark*

Moberg: 
*CLIMATE 1k Workshop, Carry-le-Rouet, France*

Seguinot, Stjernquist: 
*IUFRO conference: FAGUS 2010 “Is there future for beech – Changes, Impacts and Answers”, Oct. 27th – 29th 2010, Organised by by CFI and ERTI, Varazdin, Croatia*

**December**

Granit: 
*East West Institute (EWI) Consultation on Enhancing Security in Afghanistan and Central Asia through Regional Cooperation on Water, Brussels*

Applegate, Dahlke, Gong, Kirchner, Lyon, Mård Karlsson & Seibert: 
*AGU, Fall Meeting, San Francisco, USA*

Skånes: 
*NIPS, Annual landscape meeting, Umeå, Sweden*

Stroeven: 
*GSA, Annual meeting, Denver, Colorado, November*
9. Conference/Seminar convenors, Editorships, PhD opponents

Granit: Organizer, Chair, speaker and facilitator of 3 seminars at World Water Week, Stockholm, Sweden, September

Jansen: Chairperson and Co-convenor at European Geosciences Union General Assembly “Sediment transport, erosion and channel morphology”, Vienna, Austria, May

Kirchner: Member of the Scientific Steering committee of the IGS symposium "Earth's Disappearing Ice Cover" held on the occasion of the 50th anniversary of the Byrd Polar Research Center at Ohio State University, USA, August

Lyon: Opponent for Doctoral thesis at KTH, Stockholm, Sweden, March

Convener of session: “Observational hydrology: Snap-shot sampling of streams and catchments”, EGU Vienna, Austria, May

Convener of session: “From pores to catchments: Coupling hydrologic concepts and models across multiple scales” AGU San Francisco, USA, December

Moberg: Convener at CLIMATE 1k Workshop, Carry-le-Rouet, France, November

Moberg, Holmgren & Sundqvist: Editor for Climate of the Past, Special Issue: Holocene climate variability over Scandinavia

Skånes: Member of editorial board of Fennia, international journal of geography

Schlyter & Stjernquist: Green Enterprising. Conference within the project Green Enterprising and Innovation as a Component of Environmental Management Studies: A Swedish-Russian-Latvian Long-term Network Cooperation, Stockholm University, Sweden, February

Stjernquist: Member of examining committee for Maria Birkedal. SLU, Alnarp, Sweden, March


Seibert: Convener: European Geosciences Union (EGU), General Assembly, Vienna, Austria, May

Stroeven: Invited speaker: Geological Society of America, annual meeting, Denver, Colorado, November

Wastegård: Faculty opponent for Esther Ruth Gudmundsdóttir, University of Iceland, Reykjavík, Iceland, April
10. Financial support

<table>
<thead>
<tr>
<th>RESEARCH GRANT RECEIVER</th>
<th>FUNDING AUTHORITY</th>
<th>PROJECT</th>
<th>AMOUNT</th>
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<tbody>
<tr>
<td>Brown</td>
<td>RS</td>
<td>The application and refinement of SAR methods for identifying climate impacts on glaciers and ice sheets, 63/08:2</td>
<td>688 500</td>
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<tr>
<td>Brown</td>
<td>RS</td>
<td>ISIS – Interpretation and evaluation of snow and ice from remote sensing using indigenous and scientific expertise</td>
<td>60 000</td>
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<td>Cousins</td>
<td>FORMAS</td>
<td>Markanvändningsförändringar och effekten av funktionell och rumslig konnektivitet på historiska och nutida diversitetsmönster, 215-2007-1428</td>
<td>1 297 350</td>
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<tr>
<td>Cousins</td>
<td>FORMAS</td>
<td>Modellering av växters spridning i fragmenterande landskap - Modelling plant species dispersal in fragmented landscapes, 217-2008-1024</td>
<td>425 000</td>
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<tr>
<td>Dahlberg</td>
<td>VR</td>
<td>Spatiell och temporal dynamik i tillgång och tillgänglighet vad gäller mark och naturresurser som bidrar till lokala levnadsförhållanden och välmående i urbaniserande miljöer, 348-2009-6454</td>
<td>75 000</td>
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<td>Destouni</td>
<td>FORMAS</td>
<td>Pan-Arktisk hydrologisk och biogeokemisk respons på klimatförändringar, 214-2007-1263</td>
<td>567 000</td>
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<td>Destouni</td>
<td>VR</td>
<td>Pan-arktiska glaciar-vatten-biogeokemiska systemförändringar och effekter på socio-ekologisk resilient i ett varmare klimat, 311-2007-8393</td>
<td>1 900 000</td>
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<tr>
<td>Destouni/Cvetkovic</td>
<td>VR</td>
<td>Källor, retention-självrening och transport av närsalter i avrinningsområden under klimatförändring – Nutrient sources, retention-attenuation and transport in hydrological catchments under climate change, 621-2009-3221</td>
<td>1 300 000</td>
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<tr>
<td>Ebert</td>
<td>SGU</td>
<td>Meteoric 10Be dating of Miocene-Quaternary saprolites on plains with residual hills in northern Sweden, 60-1652/2008</td>
<td>220 000</td>
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<td>RESEARCH GRANT RECEIVER</td>
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<tr>
<td>Frampton/Jarsjö</td>
<td>SKB</td>
<td>Äspö Task Force, Task8, best nr. 3822</td>
<td>177 250</td>
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<tr>
<td>Gunnarson</td>
<td>SLU</td>
<td>Analysarbete inom Anpassningar av naturresursbaserade samhällen till klimat- o samhällsforändringar - Samisk rennäring i dåtid, nutid o framtid – Adoptions of natural resource-based communities to climate and societal changes – The case of Sami reindeer herding in the past, present and future</td>
<td>50 000</td>
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<tr>
<td>Hansson</td>
<td>VR</td>
<td>Nationellt driftsbidrag till det internationella djupbörningsprojektet NEEM på Grönland - framtagande av isborkärna för unika klimatstudier – A national contribution (a member fee) to the international deep ice core drilling project NEEM on Greenland – producing an ice core for unique climate studies, 821-2007-3926</td>
<td>135 000</td>
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<td>Hansson</td>
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<td>Vilken källa har den klimatpåverkade sulfataerosolen idag och igång, och vilken betydelse har framtid miljöforändringar för sulfataerosolens klimatpåverkan? - att förstå relevanta processer – Sulphur isotope studies of the atmospheric aerosol at present and in the past for predicting future climate change – understanding climate regulating processes, 621-2009-3596</td>
<td>540 000</td>
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<td>Helmens</td>
<td>SKB</td>
<td>Klimatet under Weichsel och Holocen - Weichselian-Holocene climate variability and environmental change in Scandinavia based on the Sokli sedimentary sequence, best nr. 2430</td>
<td>1 077 000</td>
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<td>Holmgren</td>
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<td>Holocena klimarvariationer i södra Afrika. Konfrontation av paleoklimatdata, särskilt från speleothems, med isotop och klimatmodellering – Holocene climate variability in southern Africa. Confronting climate proxy data, especially from speleothems, with isotope- and climate modelling, 621-2009-4397</td>
<td>1 031 000</td>
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<td>Holmgren</td>
<td>Gbg universitet (SIDA)</td>
<td>Agreement regarding fund entrusted to the Swedish Institution as a part of the Agreement on Research Cooperation between Sweden and The University of Dar es Salaam (UDSM) – Integrated Natural resource Management, 2009-001882</td>
<td>367 500</td>
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<tr>
<td>Holmlund</td>
<td>Strålskyddsmyndigheten</td>
<td>Temperaturförhållandet i en inlandsis – Vattenföde och erosionsförmåga, 2010/1454</td>
<td>392 000</td>
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<td>Jansson K/m fl.</td>
<td>VR</td>
<td>Katastroftappningar av smålvattensjöar i Patagonien, Sydamerika: omfattning, timing, organisation och smålvattnets inverkan på den termohalina oceancirkulationen – Glacial lake outburst floods of Patagonia, South America: Size, Timing, Organisation and Impact, 621-2009-4411</td>
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<tr>
<td>Jansson P</td>
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<td>Dynamiskt volym-area förhållande för arktiska och sub-arktiska glaciärer för korrekt uppskattning av glaciär-smältning under ett allt varmare klimat - Dynamic volume-area relationship for Arctic and sub Arctic glaciers for correct glacier melt assessments in a warming climate, 621-2007-3752</td>
<td>594 000</td>
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<tr>
<td>Jansson P</td>
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<td>Greenland Analogue Project, GAP, delprojekt A, best nr. 1783</td>
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<td>Vetenskapligt stöd inom glaciohydrologi inom ramen för GAP – Deltagande i GAP-projektets Technical Coordination Comittee (TCC), best nr. 2922</td>
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<td>Jansson P</td>
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<td>Glacialhydrologi på Grönland och i Fennoscandia – PhD project to develop theory for water routing through ice sheets based on Greenland field data and its application to the Fennoscandian ice Sheet, best nr. 2729</td>
<td>267 000</td>
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<tr>
<td>Jarsjö/Frampton, Destouni, Cvetkovic</td>
<td>SGU</td>
<td>Quantifying the potential of CO2 storage, long-term retention and surface return flow minimization in Swedish bedrock, 60-1661/2008</td>
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<td>Kleman m.fl</td>
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<td>Den Laurentiska inlandsensens utveckling och dynamik - Laurentide Ice Sheet evolution and dynamics, 621-2007-4978</td>
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<td>Kleman</td>
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<td>Remote Sensing of past ice sheet beds and current ice sheet surfaces, 110/08:1</td>
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<td>Kuhry</td>
<td>VR/ESF</td>
<td>Long-term Carbon Storage in Cryoturbated Arctic Soils CryoCARB, 824-2009-7357</td>
<td>675 000</td>
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<td>Lindborg</td>
<td>FORMAS</td>
<td>Effekter av nutida och historisk markanvändning på framtida biologisk mångfald i jordbrukslandskapet, 215-2008-474</td>
<td>820 000</td>
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<td>Lyon</td>
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<td>Modeling permafrost spatial distribution and thawing rates in arctic/sub-arctic Sweden using recession flow analysis, 60-1626/2009</td>
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<td>Moberg</td>
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<td>Forskaranställning perioden100101-121231 - Rekonstruktion av klimatet under de senaste årtusendena, 622-2009-7515</td>
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<td>Moberg</td>
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<td>Klimatet under det senaste millenniet - Climate in the last Millennium, 621-2007-4542</td>
<td>818 000</td>
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<td>Norström</td>
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<td>Past climate variability and environmental change in southern Mozambique, 2009-080</td>
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<td>Peterson</td>
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<td>Regnell</td>
<td>Smålands museum, Växjö</td>
<td>Växtmakrofossilanalyser av jordprover fr Kv Prosten Västavik, Småland. RAÅ 420 Köping sn, Öland</td>
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<td>Växtmakrofossilanalyser av jordprover fr Stenholm 166; 382; Hjärtlanda 368, Småland. Herrestad RAÅ 371; Upphårad RAÅ 127, 124, 128; Skepp RAÅ 1575; 1571; Bohuslän; Björktorp RAÅ 166, Västergötland; Västra Tunhem; Slamby; Lillevå; Valla 486, Tjörns kn, Västra Götaland</td>
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<td>Uppdragsskontrakt vid paleoekologisk analys av pollenanalys av sedimentstatigraphi i Röshults mosse, Månsarps sn, RAÅ220, 222</td>
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<td>Arkeologiscenrum</td>
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<td>Lödöse museum</td>
<td>Växtmakrofossilanalyser av jordprover från S:t Peders 51; Gingri RAÅ73; Nödinge RAÅ32, V Götaland</td>
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<td>Vänermuseet</td>
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<td>Kulturarnet Vestfold, Norge</td>
<td>Växtmakrofossilanalyser av jordprover fr Heierstad, Hof kn; Herlandseter övre, Larvik kn; Herlandseter nedre, Larvik kn; Veseter söndre, Sande kn; Veseter mellom, Sande kn, Vestfold, Norge</td>
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<td>Kulturhistoriskt museum, Norge</td>
<td>Botaniska analyser av prov fr Söndre By, Hole kommune, Buskerud fylke, Norge</td>
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<td>Risberg</td>
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<td>Paleoeologiska undersökningar vid Kanaljorden – mesolitisk boplats norr om Göta Kanal, Motala (RAÄ 187)</td>
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<td>127 490</td>
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<td>Risberg</td>
<td>SAU</td>
<td>Framställande av tre paleogeografiska kartor över Rasboområdet NO Uppsala</td>
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<td>Schlyter</td>
<td>Sv Institutet (SI)</td>
<td>Green enterprising and innovation as a component of environmental management studies - A Swedish-Russian-Latvian long-term network cooperation i samarbete med Lettland, Ryssland, St Petersburg, Archangelsk (Barents). SI:s Östersjöprogram/ Visbyprogrammet, 00914/2009</td>
<td>172 500</td>
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<td>Seibert</td>
<td>FORMAS</td>
<td>Hydrologisk modellering av klimatförändringens effekter - Hydrological modelling for climate-change impact assessment, 214-2007-1433</td>
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<td>Skånes</td>
<td>SLU/NV</td>
<td>Kartering och miljöövervakning med flygbyren laserskanning och digitala bilder - Environmental Mapping and Monitoring with Airborne laser and digital images (EMMA)</td>
<td>276 360</td>
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<td>Skånes</td>
<td>Granholms stiftelse</td>
<td>Datorisering/Förstärkning av laboratorieresurserna inom landskapsanalys och geomatik vid INK, 33-1021-10</td>
<td>245 000</td>
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<td>Stroeven</td>
<td>VR</td>
<td>Glaciärer eller inlandsisar: En studie om landskapsutveckling och glaciationshistoria på den nordöstra Tibetanska högplatån - Glacial history and landscape evolution in the north-east Tibetan Plateau: Was there a Huang He ice sheet? 348-2007-6924</td>
<td>150 000</td>
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<td>Stroeven/Claugel/Fabel/Hubbard/Kirchner</td>
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<td>En simulering av Koordilleraisen under en nedningscykel - Simulation of the Cordilleran Ice Sheet through a glacial cycle, 621-2008-3449</td>
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Approved external research grants 26 463 234
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<td>Destouni</td>
<td>SU</td>
<td>½ lektorat i fem år med 300 tkr/år under 2006-2010 (SU611-2777-04)</td>
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<td>INK/SU (Kleman)</td>
<td>NEO</td>
<td>TEMES – Cooperation and partnership for climate and Environmental Research in the Mediterranean area through Navarino Environmental Observatory (NEO) Research Program</td>
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<td>Kuhry</td>
<td>EU</td>
<td>CARBO-North – Quantifying the Carbon budget in Northern Russia: past, present and future</td>
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<td>Schlyter/Stjernquist, Sverdrup</td>
<td>Lunds univ</td>
<td>Miljömål i fjällregionen</td>
<td>160 000</td>
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</table>

| Total | Approved research grants | 29 754 134 |
11. Staff (autumn 2010)

Department Chairman/Head: Professor Arjen Stroeven
Vice Chairman: Professor Georgia Destouni

PROFESSORS
Christiansson, Carl professor of Physical Geography,
Destouni, Georgia professor of Hydrology, Hydrogeology and Water Resources
Holmgren, Karin professor of Physical Geography
Holmlund, Per professor of Glaciology
Jansson, Peter professor of Physical Geography
Kleman, Johan professor of Remote Sensing
Kuhry, Peter professor of Physical Geography
Kuylenstierna, Johan visiting professor of Water Resources
Lundén, Bengt professor of Remote Sensing
Preusser, Frank professor of Quaternary Geology with emphasis on Environmental Reconstruction
Rosqvist, Gunhild professor of Geography, especially Physical Geography
Stroeven, Arjen professor of Physical Geography
Sverdrup, Harald visiting professor
Wastegård, Stefan professor of Quaternary Geology

ACADEMIC STAFF

Associate Professors (PhD, Docenter)
Alexanderson, Helena senior lecturer
Arnberg, Wolter senior lecturer
Cousins, Sara senior lecturer
Dahlberg, Annika senior lecturer
Hansson, Margareta senior lecturer
Helmens Femke, Karin researcher
Hättestrand, Clas senior lecturer, director of undergraduate studies
Jansson, Kristian associate senior lecturer
Jarsjö, Jerker senior lecturer
Lindborg, Regina senior lecturer
Moberg, Anders researcher, also senior lecturer
Nordberg, Maj-Liz senior lecturer
Risberg, Jan senior lecturer
Seibert, Jan senior lecturer

PhD
Applegate, Patrick postdoctor
Borgström, Ingmar senior lecturer
Brown, Ian researcher
Dahlke, Helen postdoctor
De Angelis, Hernán research associate
Ebert, Karin researcher
Framton, Andrew  
Gong, Lebing  
Greenwood, Sarah  
Grudd, Håkan  
Gunnarson, Björn  
Hind, Alistair  
Hättestrand, Martina  
Jansen, John  
Kirchner, Nina  
Lyon, Steve  
Malmström Ryner, Maria  
Norström, Elin  
Plue, Jan  
Prieto, Carmen  
Regnell, Mats  
Schlyter, Peter  
Schmucki, Reto  
Selroos, Jan-Olof  
Skånes, Helle  
Stjernquist, Ingrid  
Sundqvist, Hanna  
Vercauteren, Nikki  
Westerberg, Lars-Ove  

PhLic, MSc, BSc  
Bråvander, Lars Gunnar  
Ekert, Bo  
Fridfeldt, Anders  
Karlsson, Sven  
Nordström, Anders  
Trygger Bergman, Sophie  
Yrgård, Anders  

Postgraduate students (PhLic, MSc, BSc)  
Aggemyr, Elsa  
Andersson, Ingela  
Andersson, Sofia  
Auffret, Alistair  
Berntsson, Annika  
Bosson, Emma  
Bring, Arvid  
Duguay, Martial  
Eriksson, Sofia  
Ermold, Matti  
Finné, Martin  
Fu, Ping  
Grabs, Thomas
Helanow, Christian
Heyman, Jakob
Hugelius, Carl-Gustaf
Ingvander, Susanne
Jantze, Elin
Jaramillo, Fernando
Johansson, Malin
Johnsen, Timothy
Kaislahti Tillman, Päivi
Kalumanga, Elikana
Karlin, Torbjörn
Krusic, Paul
Lilja, Carl
Lind, Ewa
Margold, Martin
Mercer, Andrew
Muliyil Asokan, Shilpa
Mwansasu, Simon
Mård Karlsson, Johanna
Nathanson, Marcus
Persson, Klas
Regnell, Mats
Reimark, Josefine
Sannel, Brittta
Seguinot, Julien
Shala, Shyhrete
Sjöberg, Ylva
Teutschbein, Claudia
Törnqvist, Rebecka
Warghagen, Dan
Öberg, Helena

Teaching assistants
Wennbom, Marika

ADMINISTRATIVE STAFF
Berggren, Berit senior administrative officer
Blåndman, Susanna BSc, BA, human resources administrator
Crepin, Karin Ulfsdotter BA, Coordinator Strategic Partnerships
Damberg, Maria MSc, study advisor
Hansson, Erik MSc, educational administrator
Henriksson, Carina University certified administrator, senior administrative officer
Holmlund, Moa MSc, educational administrator, also director of studies
Hörnby, Kerstin MSc, educational administrator
Isdal, Maija-Liisa BSc, financial administrative officer
Kesselberg, Margarreta BA, BBCC administrator and informant
Stenberg de Serves, Malin PhD, informant
Sturesson, Elisabeth MSc, educational administrator
Åkerblom, Lena higher administrative officer
**TECHNICAL STAFF**

Alm, Göran PhLic, systems engineer  
Brotén, Bengt technician  
Cabrera, Yanduy caretaker  
Herned, Claes caretaker  
Jacobson, Rolf web editor  
Lybäck, John systems engineer  
Spångberg, Martin systems engineer  
Tränk, Louise MSc, GIS modelling  
Törnberg, Henrik MSc, technician, Tarfala Research Station

**PROFESSORS EMERITI**

Ihse, Margareta  
Lidmar-Bergström, Karna  
Lundqvist, Jan  
Karlén, Wibjörn  
Miller, Urve  
Ringberg, Bertil  
Wastenson, Leif  
Østrem, Gunnar DSc

Field camp at Russell Glacier (Greenland) as seen from helicopter on 31 July 2010. Meltwater lakes formed in depressions in the ice. The camp is located at 66 ° 57'N and 48 ° 47'W. The large lake in the background is called FP Lake. Photo: Malin Johansson.
Postadress  Besöksadress  Telefon/phone  Internet
Mailing address  Visiting address  +46 8 16 20 00  www.ink.su.se
Stockholms universitet  Svante Arrheniusv. 8c  +46 8 16 48 18  
106 91 Stockholm