Department of Physical Geography and Quaternary Geology
Stockholm University

VALENTINA RADIĆ (ED.)

ANNUAL REPORT
2004
1. Introduction

The Department of Physical Geography and Quaternary Geology is one of the larger departments at the university, with about 100 employees: 10 professors, 30-40 lecturers and researchers, ca 30 PhD students and 24 technical/administrative staff. The staff now consists of a broad mix of people 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. In 2004 we reorganised the research fields and defined 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 around 1000 students attend our undergraduate education programmes.

Karin Holmgren
Head of 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 since 1997.

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 a 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), hydrology (Georgia Destouni), geomorphology (Karna Lidmar-Bergström), glaciology (Peter Jansson) and paleoglaciology (Arjen Stroeven). 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 newly defined research profiles described below.

2.1. Glaciers and polar environments

Research themes and areas

We investigate glaciers, ice sheets and adjacent polar and alpine environments from a past, present and future time perspective. Work is carried out across the globe with ongoing projects in the Nordic countries, North-America, Russia, Patagonia, Antarctica and Greenland.

Research on glaciers and ice sheets aims at understanding glacial processes and the ice-climate connection. Our studies include research on ice movement, glacial hydrology, mass balance and ice cores. Paleoglaciological research, encompassing studies on landforms and sediment sequences from former ice sheet areas, aims at presenting reconstructions of ice sheet and ice stream evolution that can be used for ice sheet and climate modelling. Research on ecosystems in polar and alpine environments aims to assess how sensitive periglacial areas will be affected by global warming and feedbacks between terrestrial ecosystems in permafrost regions and the global climate system.

The Department runs the Tarfala Research Station, located in the high-alpine environment of the Swedish Kebnekaise massif. The station is used as a platform for education, national and international research programmes, and monitoring activities.

An ancient ice stream: Abrupt lateral margin between a palaeo-ice stream and its neighbouring inter-ice stream ridge. King William Island, Nunavut, Arctic Canada (Landsat 7 ETM+ image). Figure provided by Hernán De Angelis.
Ongoing projects

1. Glacial dynamics and deglaciation chronology in southern Sweden / Alexanderson H.
2. Glacier monitoring within the "Northern View" Project - Global Monitoring for Environment and Security program / Brown I., Hock R.
3. Response of glacier melt and discharge to future climate / de Woul M., Hock R.
4. Deep ice core analyses of climate variations over glacial cycles / Hansson M., Jonsell U.
5. Climate change and impact on glaciers and permafrost in Northern Sweden / Holmlund P.
7. Glacial history and ice sheet dynamics of the Welsh Ice Cap / Jansson K.
8. Variations in cold surface layer thickness and its effect on the dynamics of polythermal glaciers / Jansson P.
9. Spatial distribution and temporal dynamics of ocean-terminating paleo-ice streams in the Laurentide ice sheet / Kleman J.
10. GLIMPSE (Global implications of Arctic climate processes and feedbacks) / Kuhry P.
11. Basal conditions and hydrology of continental ice sheets / Näslund J.-O., Jansson P.
12. Modelling of future sea level rise from the retreat of glaciers / Radić V., Hock R.
13. Determination of Antarctic snow accumulation / Richardson-Näslund C.
14. Post-Younger Dryas deglaciation of Fennoscandia / Stroeven A.
15. Glacial modelling of the Fennoscandian ice sheet through one glacial cycle / Stroeven A.

Staff affiliations
Per Holmlund, Professor (see also 2.2)
Peter Jansson, Professor
Johan Kleman, Professor (see also 2.2, 2.3)
Peter Kuhry, Professor (see also 2.2, 2.3)
Arjen Peter Stroeven, Professor (see also 2.2, 2.3)

Jan Lundqvist, Professor emeritus (see also 2.2)
Margareta Hansson, Docent (see also 2.2)
Regine Hock, Docent (see also 2.4)
Clas Hättestrand, Docent (see also 2.2)
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)
Krister Jansson, PhD (see also 2.2, 2.3)
Cecilia Richardson-Näslund, PhD (see also 2.2)
Postgraduate students:
Hernán De Angelis
Mattias de Woul (see also 2.4)
Bradley Goodfellow (see also 2.2)
Timothy Johnsen
Ulf Jonsell
Valentina Radić
Britta Sannel
2.2. Climate, environment and landscape

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.

Ridge palsas in Northeast European Russia developed as a result of permafrost aggradation in the strings of an aapa mire. Photographed by Peter Kuhry.
Ongoing projects
1. Pleistocene glaciations and ice-free periods on East Greenland / Alexanderson H., Håkansson L.
2. EPICA / Hansson M., Jonsell U.
3. Reconstruction of past climate variability in Southern Africa through analyses stalagmites, trees, peat and lake sediments / Holmgren K., Lundblad K., Norström E., Ryner M.
4. Environmental factors affecting speleothem growth, recorded in Swedish speleothems. / Holmgren K., Sundqvist H.
5. Ice coring in rock caves in Romania and Norway / Holmlund P., Holmgren K., Hansson M.
6. Late Quaternary glaciation history in northern Fennoscandia and Kola peninsula / Hättestrand C.
7. A 3-dimensional GIS reconstruction of the Quaternary relief evolution in north-western Fennoscandia based on integrated terrestrial geomorphology and off-shore seismic data / Jansson K.
8. Pollenanalytiskt arbete / Karlsson S.
9. Paleorelief, saprolites, and uplift/denudation of cratons / Lidmar-Bergström K.
10. Shore displacement in northern Uppland / Risberg J., Alm G.
11. Vegetation changes and shore displacement along Norrortsleden in the northern outskirts of Stockholm / Risberg J., Karlsson S.
12. Salinity changes in the Baltic Sea offshore Forsmark based on siliceous microfossils / Risberg J.
14. Microfossil analyses of till and sediment samples from Forsmark, northern Uppland / Robertsson A.-M.
15. Determining climate variability using lacustrine stable isotopes on Gotland / Rosqvist G.
16. Climate variability in northern Lapland- determining atmospheric circulation changes over the last 1500 year using lacustrine stable isotopes / Rosqvist G.
17. Cosmogenic nuclide-based boundary conditions for numerical ice sheet models: A simulation of the Fennoscandian ice sheet through a glacial cycle / Stroeven A.
18. Glacial chronology and erosion patterns of the eastern margin of the Tibetan Plateau (using cosmogenic radionuclides) / Stroeven A.
19. 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.
20. Compilation of North European climate archives / Wohlfarth B., Hohl V.
22. Terrestrial and limnic response to rapid climate variability between 20 000 and 60 000 years before present / Wohlfarth B.

Staff affiliations
Per Holmlund, Professor (see also 2.1)
Johan Kleman, Professor (see also 2.1, 2.3)
Peter Kuhry, Professor (see also 2.1, 2.3)
Karna Lidmar-Bergström, Professor
Arjen Peter Stroeven, Professor (see also 2.1, 2.3)
Barbara Wohlfarth, Professor
Wibjörn Karlén, Professor emeritus
Jan Lundqvist, Professor emeritus (see also 2.1)
Urve Miller, Professor emerita
Margareta Hansson, Docent (see also 2.1)
Karin Holmgren, Docent (see also 2.4)
Clas Hättestrand, Docent (see also 2.1)
Stig Jonsson, Docent (retired)
Jens-Ove Näslund, Docent (see also 2.1)
Jan Risberg, Docent
Ann-Marie Robertsson, Docent
Bo Strömberg, Docent
Gunhild Rosqvist, Docent (see also 2.1)
Stefan Wastegård, Docent
Helena Alexanderson, PhD (see also 2.1)
Johan Bonow, PhD
Ingmar Borgström, PhD (see also 2.1)
Lars Brunnberg, PhD
Isabelle Gouirand, PhD
Steffen Holzkämper, PhD
Krister Jansson, PhD (see also 2.1, 2.3)
Sven Karlsson, PhLic
Cecilia Rickardson-Näslund, PhD (see also 2.1)
Peter Schlyter, PhD (see also 2.3)
Lars-Ove Westerberg, PhD (see also 2.4)
Tonie Wickman, PhD (see also 2.4)

Postgraduate students:
Linda Ampel
Sofia Andersson
Maria Bergström (see also 2.3)
Anders Borgmark, PhLic
Karin Ebert
Bradley Goodfellow (see also 2.1)
Jens Heimdahl, PhLic
Martina Hättestrand
Timothy Johnsen
Christina Jonsson
Katarina Lundblad, PhLic
Elin Norström
Lena Rubensdotter, PhLic
Maria Ryner, PhLic
Britta Sannel (see also 2.1, 2.3)
Hanna Sundqvist, PhLic
Daniel Veres
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 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.

An internationally recognised activity of the Department is the United Nations International Training Course on Remote Sensing Education for Educators organised in cooperation with the Government of Sweden. The Department has also been instrumental in the development of the National Atlas project and its GIS components.

The desert and intensely irrigated agriculture on the edge to Sahara in northern Egypt. Land use changes can in many cases adversely affect the environment, in this specific case non-renewable ground water aquifers. Remote sensing technology offers unique possibilities to follow land use development worldwide. Figure provided by Fredrik Hannerz.
Ongoing projects
2. Parameterisation of Envisat ASAR backscatter from snow and ice / Brown I.
3. Mapping of oldgrowth forest in Stockholm area for planning purposes of recreation / Ihse M.
4. Changing agricultural landscapes in Sweden - monitoring by CIR aerial photos and GIS, the LiMproject / Ihse M.
5. A 3-dimensional GIS reconstruction of the Quaternary relief evolution in northwestern Fennoscandia based on integrated terrestrial geomorphology and off-shore seismic data / Jansson K.
6. Development of a coupled sea-atmosphere model for MERIS data over the Baltic Sea / Kratzer S.
7. Assessment of changes in marine vegetation in eastern Africa using satellite remote sensing / Lundén B.
8. User project within RESE (Remote sensing for the environment) – Fusion of environmental quality indicators for environmental quality objectives / Nordberg M.-L., Arnberg W.
9. BIOHAB (Biodiversity and Habitats) / Skånes H.
10. Landscape memory as means to deal with human impact on biotope resilience and potential biodiversity. Development of integrated remote sensing methods / Skånes H.
11. Workshop on harmonisation of Nordic habitat classifications in an EU perspective / Skånes H.

Staff affiliations
Carl Christiansson, Professor (see also 2.4)
Margareta Ihse, Professor
Johan Kleman, Professor (see also 2.1, 2.2)
Peter Kuhry, Professor (see also 2.1, 2.2)
Arjen Peter Stroeven, Professor (see also 2.1, 2.2)

Wolter Arnberg, Docent
Bengt Lundén, Docent

Ian Brown, PhD (see also 2.1)
Kristen Jansson, PhD (see also 2.1, 2.2)
Susanne Kratzer, PhD
Maj-Liz Nordberg, PhD
Peter Schlyter, PhD
Helle Skånes, PhD

Postgraduate students:
Maria Bergström (see also 2.2)
Gessesse Dessie (see also 2.4)
Bo Eknert
Anders Fahlén, PhLic (see also 2.4)
Patrik Klintenberg, PhLic (see also 2.4)
Marcus Liljeberg
Britta Sannel (see also 2.1, 2.2)
Reuben Sebego
2.4. Land and water resources

**Research themes and areas**

We investigate natural and anthropogenic changes in space and time of land, soil and water resources, and contribute thereby to the knowledge of environmental and societal development possibilities and risks associated with the use of land and water. We also study the effects of different strategies for handling risks, and relate research results to environmental monitoring and legislation, and to management of land, soil and water resources for sustainable development.

Study areas include Sweden, the rest of Fennoscanidia, other parts of Europe, central and Southeast Asia, and eastern and southern Africa.

The research addresses: (i) land and water resources in different physical, biogeochemical, ecological and cultural environments; (ii) the processes that determine the characteristics, dynamics and quality variations of soil and water in space and time; (iii) the interactions between freshwater, soils, land use, climate, coastal and marine waters, glaciers and ice caps, ecosystems, and the socio-economic and engineered systems that meet various human needs.

We focus primarily on historic and strategic time scales for integrated socio-economic and environmental development. We use, develop and couple tools such as hydrological flow and solute/pollutant transport models, geographical information systems, remote sensing, observations and measurements in the field and interview surveys. We aim for both basic process quantification and applications to land use, soil and water related environmental, engineering and socio-economic problems and their possible solutions.

![Schematic illustration of a surface water catchment](image)

*Schematic illustration of a surface water catchment, showing that the catchment may cross administrative-political (municipal) boundaries and that groundwater and coastal water flow paths associated with the catchment may cross the surface water divide, which constitutes the catchment boundary. Indicated mine waste sites represent water pollution sources within the catchment, each having its own water influence zone (example indication by green line); the water influence zones of pollution sources within a catchment may cross political-administrative, catchment, and surface water-groundwater-coastal water system boundaries. Reproduced from ERMITE Consortium (Mine Water and the Environment, 2004; see publication list). Figure provided by Georgia Destouni.*
Ongoing projects

1. Studies of environmental change during the last century: The case of Awassa watershed, southern Ethiopia / Christiansson C.
2. More Water, Less Grass? Assessment of resource degradation and stakeholders’ perceptions of environmental change in Ombua grasslands, northern Namibia / Christiansson C., Klintenberg P.
3. Watershed management in Southeast Asia: Case studies from Cambodia, China, Laos and Vietnam / Christiansson C., Fahlén A.
5. 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.
6. GIS-based modelling of catchment-scale solute transport / Destouni G.
8. The response of glacier melt and discharge to future climate change / Hock R.
9. CE ‘Climate and Energy’ / Hock R., de Woul, M.
10. People Land and Time in Africa / Holmgren K.
11. Mistra-projektet MiMi (Mitigating the Environmental Impact of Mining Waste)/ Jarsjö J.
12. GIS-based hydrologic modelling with PCRaster / Jarsjö J., Destouni G., Shibuo Y.
13. 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
Regine Hock, Docent  (see also 2.1)
Karin Holmgren, Docent  (see also 2.2)
Anders Clarhäll, PhD
Jerker Jarsjö, PhD
Lars-Ove Westerberg, PhD  (see also 2.2)
Tonie Wickman, PhD (see also 2.2)

Postgraduate students:
Amélie Darracq
Gessesse Dessie  (see also 2.3)
Mattias de Woul  (see also 2.1)
Anders Fahlén, PhLic  (see also 2.3)
Fredrik Hannerz
Patrik Klintenberg, PhLic  (see also 2.3)
Yoshihiro Shibuo
3. Publications

Reviewed articles


Other publications


4. Education

4.1. 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 around 1500 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.

"Earth Science in Northern Scandinavia, advanced course, 5 credits" is another field based summer course, which emphasises the northern Scandinavian environment with respect to bedrock geology, Quaternary geology, geomorphic processes and ecology.
Since 1990 the Department has organized annually "United Nations International Training Course on Remote Sensing Education for Educators", in cooperation with UN Office for Outer Space Affairs and mainly financed by the Swedish International Development Cooperation Agency (SIDA). The main objective of this six weeks Course has been to enable educators from developing countries to introduce or to enhance remote sensing courses in their respective academic institutions.
4.2. 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:**

Maria Bergström
*The use of natural resources in a Swedish parish - comparison between historical periods from Neolithicum to recent time*

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*

Anders Fahlén
*Watershed management in Southeast Asia: Case studies from Cambodia, China, Laos and Vietnam*

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

Fredrik Hannerz
*Dynamic GIS based modelling of catchment solute transport, an information perspective approach*

Ulf Jonsell
*Sulphate in the climate system over glacial cycles*

Christina Jonsson
*Stable isotopes in lake sediments from Lappland*

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

Marcus Liljeberg
*Remote sensing for characterisation of waste water plumes*
Katarina Lundblad
*Geochemical studies of stalagmites and coral skeletons in Tanzania*

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

Valentina Radić
*Modelling the sea level rise from the retreat of glaciers*

Lena Rubensdotter
*The effect of different geomorphological processes on lake sedimentation, and their implications for Holocene palaeoclimatic reconstructions*

Maria Ryner
*Climate and environmental change in northern Tanzania*

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

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

**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*

Anders Borgmark
*Climate variations in Sweden during the Holocene, variations in peat decomposition as a climatic archive*

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

Jens Heimdal
*Plant macrofossils and lithostratigraphy as tools in tracing the urban archaeological, alluvial environment in two Swedish towns*

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 deglaciation in the central Fennoscandian mountain range*

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

Daniel Veres
*Terrestrial response to Dansgaard-Oeschger cycles and Heinrich events during OIS 2 and 3*
<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Klingbjer</td>
<td>23 Apr 2004</td>
<td>PhD, Physical Geography</td>
</tr>
<tr>
<td>Angelica Feurdean</td>
<td>6 May 2004</td>
<td>PhD, Quaternary Geology</td>
</tr>
<tr>
<td>Ola Fredin</td>
<td>26 May 2004</td>
<td>PhD, Physical Geography</td>
</tr>
<tr>
<td>Johan Bonow</td>
<td>28 May 2004</td>
<td>PhD, Physical Geography</td>
</tr>
<tr>
<td>Rickard Pettersson</td>
<td>3 Jun 2004</td>
<td>PhD, Physical Geography</td>
</tr>
<tr>
<td>Maria Bergström</td>
<td>27 Jan 2004</td>
<td>PhLic, Physical Geography</td>
</tr>
<tr>
<td>Patrik Klintenberg</td>
<td>24 Feb 2004</td>
<td>PhLic, Physical Geography</td>
</tr>
<tr>
<td>Maria Ryner</td>
<td>10 Mar 2004</td>
<td>PhLic, Physical Geography</td>
</tr>
<tr>
<td>Katarina Lundblad</td>
<td>10 Dec 2004</td>
<td>PhLic, Physical Geography</td>
</tr>
</tbody>
</table>
5. Dissertations

The Department of Physical Geography, Stockholm University,


The Department of Physical Geography and Quaternary Geology, Stockholm University
Thesis in Geography with emphasis on Physical Geography (2001-2004)


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\textsuperscript{th} and 20\textsuperscript{th} 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
6. Conferences and seminars

**January**

Alexanderson
Hättestrand:  
**26th Nordic Geological Winter Meeting, Uppsala, Sweden**

de Woul & Hock:
Destouni:

**February**

Holmgren:

**Holocene palaeodata integration and analysis, HOLIVAR, Bremen, Germany**

Holmlund:

**1st International Workshop on Ice Caves, Capus-Cluj, Romania**

Ihse, Johansson & Skånes:

**BioHab Nordic workshop, Stockholm, Sweden**

**March**

Hock:

**International workshop on automatic weather stations, Pontresina, Switzerland**

Ihse:

**IVL nationell miljökonferens, Från miljö till hållbar utveckling- ett nytt vägskäl för näringslivet, Stockholm, Sweden**

Nordberg:

**Kartdagarna 2004 (National Cartographic conference), Jönköping, Sweden**

Schlyter:

**The Commemorative Workshop for Prof. Norikazu Maeno, The institute of Low Temperature Science, Hokkaido University, Sapporo, Japan**

**April**

Holmgren & Ryner:

**African Environmental history and applied research, Sigtuna, Sweden**

Ihse:

**Flora- och fauna konferensen, Mål och verklighet för biologisk mångfald, Stockholm, Sweden**

Ihse & Skånes:

**BioHab workshop IV, Prague, Czech Republic**

Näslund, Rickardson-Näslund & Wolfarth:

**European Geosciences Union, Nice, France**

**May**

De Angelis:

**Canadian Geomorphology Research Group and Association Québécoise pour l’étude du Quaternaire, Québec, Canada**

Destouni, Jarsjö & Hock:

**Joint assembly of the American Geophysical Union (AGU) and the Canadian Geophysical Union (CGU), Montreal, Canada**
Ihse, Skånes & Eknert: LALE Sweden annual meeting, Angarnsjöängen/Vadadalen, Stockholm, Sweden
Kleman: J. Louis Agassiz symposium, University of Maine, Orono Maine, USA
Schlyter: Weather extremes and forest damage- Climate change and future risks, MICE Workshop, Lund University, Sweden
Shibuo: 18th Salt Water Intrusion Meeting (SWIM), Cartagena, Spain

June
Daracq & Destouni: 14th Goldschmidt Geochemistry Conference, Copenhagen, Denmark
Holmgren: 3rd PLATINA (People land and time in Africa) workshop, Futululu, South Africa

July
Holmlund: SCAR-COMNAP symposium, Bremen, Germany
Jansson P. & Näslund: International Symposium on Ice and Water Interactions: Processes across the Phase Boundary, Portland State University, Oregon, USA

August
Brown, De Angelis, de Woul, Hock, Holmlund & Jansson P.: International Glaciological Society (IGS) – Artic Glaciology, Geilo, Norway
Christiansson: Annual Review Panel Meeting, NCCR North-South, Berne, Switzerland
Daracq & Destouni: 32nd International Geological Congress 2004, Florence, Italy
Klintenberg: The Arid Zone Ecology Forum, Victoria West, South Africa

September
Destouni: Conference on Contaminated Land – Achievements and Aspirations, Loughborough University, UK
Holmlund: 7th EU-framework, Bryssel, Belgium
Jansson N.K.: British Branch of the International Glaciological Society Meeting, Sheffield, UK
Kuhry: Bjerknes Centenary Conference, ‘Climate Change in High Latitude’, Bergen, Norway
Wastegård: INTIMATE workshop, Bonn, Germany
**October**

Alexanderson & Hättestrand: *QUEEN Terminal Meeting, Brorfelde, Denmark*

Goodfellow: *Workshop on the Applications of Cosmogenic Isotope Analysis in Geomorphology and Quaternary Science, University of Edinburgh, UK*

Hansson: *EPICA Dust consortium science meeting, Grenoble, France*

Hansson, Jonsell & Rickardson-Näslund: *EPICA Science meeting (ESF), Paris, France*

Holmgren: *MUSCAD, Gothenburg, Sweden*

Schlyter: *MICE workshop: Modelling impacts of climate extremes, Florens, Italy*

**November**

Alexanderson, Hättestrand, Johnsen & Lundqvist: *Quaternary glaciations – a global perspective, Seminar in honour of Jan Mangerud, Bergen, Norway*

Ihse: *IUCN (International Union for Nature Conservation) World Conference, “People and Nature- only one world”, Bangkok, Thailand*

Johansson: *Monitoring the Effectiveness of Biological conservation, Vancouver, BC, Canada*

Kuhry: *The Arctic Climate Impact Assessment Symposium, Reykjavik, Iceland*

Skånes: *BioHab workshop VI, Wageningen, The Netherlands*

**December**

Destouni: *AGU Fall meeting, San Francisco, USA*

Risberg: *Holocene landscape changes and human impact- combined conference, field work and planning meeting, Colombo, Sri Lanka*
7. Financial support

<table>
<thead>
<tr>
<th>GRANT ORGANIZATIONS</th>
<th>RESEARCH GRANT RECEIVER</th>
<th>FUNDING AUTHORITY</th>
<th>PROJECT</th>
<th>AMOUNT FOR 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-Core</td>
<td>Brown / Hock</td>
<td>C-Core, CA</td>
<td>&quot;Northern View&quot; Project - Global Monitoring for Environment and Security program.</td>
<td>468 000</td>
</tr>
<tr>
<td>EU</td>
<td>Brown</td>
<td>RS</td>
<td>Parameterisation of Envisat ASAR backscatter from snow and ice</td>
<td>330 750</td>
</tr>
<tr>
<td>FORMAS</td>
<td>Brown</td>
<td>RS</td>
<td>Deltagande i international Symposium on Arctic Glaciology, Geilo, Norge, 2004-08-23--27</td>
<td>13 000</td>
</tr>
<tr>
<td>IFS</td>
<td>Christiansson</td>
<td>SIDA</td>
<td>Studies of environmental change during the last century: The case of Awassa watershed southern Ethiopia</td>
<td>260 000</td>
</tr>
<tr>
<td>KVA</td>
<td>Dessie</td>
<td>IFS</td>
<td>Studies of environmental change during the last century: The case of Awassa watershed southern Ethiopia</td>
<td>45 000</td>
</tr>
<tr>
<td>LHS</td>
<td>Destouni</td>
<td>FORMAS</td>
<td>Modellering av reaktiv transport i naturliga, heterogena grund-, mark- och ytuvatten: La SAR-PHREEQC-metoden. (dnr21.0/2002-1494)</td>
<td>585 000</td>
</tr>
<tr>
<td>METRIA</td>
<td>Destouni</td>
<td>SIDA</td>
<td>Bridging research and knowledge gaps for the effective use and management of groundwater resources in the Aral Sea region. (Garanterat t.o.m. 2005, SWE-2003-261)</td>
<td>400 000</td>
</tr>
<tr>
<td>NMD (NMR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAÄ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIDA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SKB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SKI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STINT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESEARCH GRANT RECEIVER</td>
<td>FUNDING AUTHORITY</td>
<td>PROJECT</td>
<td>AMOUNT FOR 2004</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------</td>
<td>---------</td>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>Destouni</td>
<td>VR</td>
<td>GIS-baserad modellering av ämnestransport i avrinningsområden - GIS-based modelling of catchment-scale solute transport (Garanterat t.o.m. 2006, 621-2003-2997)</td>
<td>351 000</td>
<td></td>
</tr>
<tr>
<td>Hansson</td>
<td>VR</td>
<td>Djupiskärneanalyser av klimatvariationer över istidscykler.</td>
<td>325 000</td>
<td></td>
</tr>
<tr>
<td>Hock</td>
<td>VR</td>
<td>Framtida klimatförändringars påverkan på glaciärers avsmältning och avrinning. (Garanterat t.o.m. 2005, 621-2001-2503)</td>
<td>630 032</td>
<td></td>
</tr>
<tr>
<td>Hock</td>
<td>VR</td>
<td>Projektbidrag enligt ovan.</td>
<td>130 000</td>
<td></td>
</tr>
<tr>
<td>Hock</td>
<td>FORMAS</td>
<td>Modeleing av framtida havsnivåförändringar orsakade av mänskade glaciärer - Modelling of future sea level rise from the retreat of glaciers. (Garanterat t.o.m. 2005, dnr2003-0387)</td>
<td>486 000</td>
<td></td>
</tr>
<tr>
<td>Holmgren</td>
<td>VR</td>
<td>Klimatets variationer i tid och rum.</td>
<td>650 000</td>
<td></td>
</tr>
<tr>
<td>Holmgren</td>
<td>SIDA</td>
<td>Reconstruction of past climate variability in Southern Africa through analyses of trees and pollen.</td>
<td>450 000</td>
<td></td>
</tr>
<tr>
<td>Holmgren/Holmlund</td>
<td>SKI</td>
<td>Utvärdering av klimatförändringars påverkan på ett slutförvar - säkerheten efter forslutning av SFI. 2/200409107</td>
<td>43 210</td>
<td></td>
</tr>
<tr>
<td>Holmlund</td>
<td>VR</td>
<td>Klimatets växlingar och dess påverkan på glaciärer och permafrost i norra Sverige. (621-2002-5580)</td>
<td>202 800</td>
<td></td>
</tr>
<tr>
<td>Hättestrand</td>
<td>VR</td>
<td>Senkvartär nedisningshistoria i norra Fennoscandia och Kolahalvön. (621-2001-1977))</td>
<td>156 000</td>
<td></td>
</tr>
<tr>
<td>Hättestrand</td>
<td>KVA</td>
<td>Projektsamarbete med forskare i f.d. Sovjetunionen</td>
<td>120 000</td>
<td></td>
</tr>
<tr>
<td>Ihse</td>
<td>SLL</td>
<td>Komplettering av Flygbildkartering av äldre, tätortsnära skog, avtal BMS0302. Delt i seminarium 040514.</td>
<td>36 000</td>
<td></td>
</tr>
<tr>
<td>Jansson K</td>
<td>VR</td>
<td>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. (Garanterat t.o.m. 2008, dnr621-2003-3221)</td>
<td>434 700</td>
<td></td>
</tr>
<tr>
<td>Jansson P.</td>
<td>VR</td>
<td>Variationer i kalla yrskittets tjocklek och dess effekt på polytermala glaciärers dynamik. (621-2001-1996)</td>
<td>260 000</td>
<td></td>
</tr>
<tr>
<td>Jansson P.</td>
<td>SKB</td>
<td>Färdigställande av paleohydrologisk datavas enl underlag o offert.</td>
<td>42 000</td>
<td></td>
</tr>
<tr>
<td>Jarsjö</td>
<td>MISTRA</td>
<td>Mistra-projektet MIMI.</td>
<td>23 000</td>
<td></td>
</tr>
<tr>
<td>Jarsjö / Destouni</td>
<td>SKB</td>
<td>GIS-baserad hydrologisk modellering med PCRaster-POLFLOW</td>
<td>101 500</td>
<td></td>
</tr>
<tr>
<td>RESEARCH GRANT RECEIVER</td>
<td>FUNDING AUTHORITY</td>
<td>PROJECT</td>
<td>AMOUNT FOR 2004</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>Karlsson S.</td>
<td>RÅ</td>
<td>Pollenanalytiskt arbete (040701--050630).</td>
<td>228 849</td>
<td></td>
</tr>
<tr>
<td>Karlsson S.</td>
<td>RÅ</td>
<td>Forts. Pollenanalys och avrapportering - Fågelsta. Resultatet redovisas i form av pollendiagram senast 041231 (projnr 1510176)</td>
<td>358 490</td>
<td></td>
</tr>
<tr>
<td>Kleman</td>
<td>VR</td>
<td>Paleo-isströmmars rums-tidsfördelning och sediment-transportdynamik - isströmmar med oceankontakt i den Laurentiska inlandsisen. (Garanterat t.o.m. 2005, 621-2002-5571)</td>
<td>351 520</td>
<td></td>
</tr>
<tr>
<td>Klingbjer</td>
<td>RS</td>
<td>Deltagande i international Symposium on Arctic Glaciology Geilo, Norge, 2004-08-23—27</td>
<td>13 000</td>
<td></td>
</tr>
<tr>
<td>Kratzer</td>
<td>RS</td>
<td>Development of a coupled sea-atmosphere model for MERIS data over the Baltic Sea.</td>
<td>261 900</td>
<td></td>
</tr>
<tr>
<td>Kuhry</td>
<td>EU</td>
<td>GLIMPSE (EVR2.CT.2002-00164)</td>
<td>360 000</td>
<td></td>
</tr>
<tr>
<td>Lundén</td>
<td>SIDA</td>
<td>Assessment of changes in marine vegetation in eastern Africa using satellite remote sensing.</td>
<td>75 000</td>
<td></td>
</tr>
<tr>
<td>Lidmar-Bergström</td>
<td>VR</td>
<td>Nedärvda landformer, vittringstäcken och upphöjning/erosion av kratoner (resistensområden) - Paleorelief, saprolites, and uplift/denudation of cratons. (Garanterat t.o.m. 2005, drn621-2003-3325)</td>
<td>270 000</td>
<td></td>
</tr>
<tr>
<td>Nordberg/Arnberg</td>
<td>METRIA</td>
<td>Användarprojekt inom RESE Miljömål - Fusion av miljömälsindikatorer</td>
<td>50 000</td>
<td></td>
</tr>
<tr>
<td>Regnell</td>
<td>Smålands museum</td>
<td>Beställning av växtmakrofossilanalyser av jordprover från arkeologiska lämningar.</td>
<td>55 000</td>
<td></td>
</tr>
<tr>
<td>Regnell</td>
<td>Läns- museum Gävleborg</td>
<td>Växtmakrofossilanalyser av jordprover från Halsingtuna socken, Hälsingland</td>
<td>14 400</td>
<td></td>
</tr>
<tr>
<td>Näslund/Jansson</td>
<td>SKB</td>
<td>Inlandsisars bottenförhållanden och hydrologi - Basal conditions and hydrology of continental ice sheets. (Garanterat t.o.m. 2006, 7166/2)</td>
<td>1 330 000</td>
<td></td>
</tr>
<tr>
<td>Richardson-Näslund</td>
<td>FORMAS</td>
<td>Determination of Antarctic snow accumulation. (Garanterat t.o.m. 2005, 21.4/2003-1442)</td>
<td>730 000</td>
<td></td>
</tr>
<tr>
<td>Risberg</td>
<td>RAÄ</td>
<td>Mikrofodssilanalyser av kokgrop.</td>
<td>75 000</td>
<td></td>
</tr>
<tr>
<td>Risberg/Karlsson S</td>
<td>RAÄ</td>
<td>Pollendiagram från strandförskjutningar - sjöarna Fjaturen och Gullsjön - uppdraget anknyter till de arkeologiska undersökningarna för vägsträckningen Norrortsleden, Sollefuna - Täby, södra Uppland.</td>
<td>1 295 000</td>
<td></td>
</tr>
<tr>
<td>Robertsson</td>
<td>SKB</td>
<td>Preparering och analyser av polen- och diatoméprover</td>
<td>75 000</td>
<td></td>
</tr>
<tr>
<td>Rosqvist</td>
<td>Bergvalls Stiftelse</td>
<td>Bestämning av klimatets variabilitet med hjälp av stabila isotoper i sjösediment från Gotland.</td>
<td>30 000</td>
<td></td>
</tr>
<tr>
<td>Research Grant Receiver</td>
<td>Funding Authority</td>
<td>Project</td>
<td>Amount for 2004</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------------</td>
<td>---------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>Rosqvist</td>
<td>G Gustafsson's Stif</td>
<td>Klimatvariationer i norra Lappland - Bestämning av förändringar i atmosfärscirkulationen under de senaste 1500 åren med hjälp av stabila isotoper i sjösediment</td>
<td>55 000</td>
<td></td>
</tr>
<tr>
<td>Skånes/Ihse</td>
<td>EU</td>
<td>BIOHAB (Biodiversity and Habitats) Contr No: EVK2-CT-2002-20018 BioHab, Proposal No: EVK2-2001-00362.</td>
<td>175 000</td>
<td></td>
</tr>
<tr>
<td>Skånes</td>
<td>FORMAS</td>
<td>Landskapets &quot;minne&quot; som nyckel till förståelsen av människans inverkan på biotoper och potentiell biodiversitet. Utveckling av integrerad fjärranalysmetodik. (21.5/2002-0080)</td>
<td>488 728</td>
<td></td>
</tr>
<tr>
<td>Skånes</td>
<td>NMD (NMR)</td>
<td>Workshop kring harmonisering av nordisk habitatklassificering i EU perspektiv - Workshop on harmonisation of Nordic habitat classifications in an EU perspective.</td>
<td>100 000</td>
<td></td>
</tr>
<tr>
<td>Stroeven</td>
<td>VR</td>
<td>En simulering av den Skandinaviska inlandsisen under en nedisningscykel med hjälp av kosmogena radio-nuklider och en numerisk inlandsismodell. (621-2001-2331)</td>
<td>390 000</td>
<td></td>
</tr>
<tr>
<td>Wastegård</td>
<td>VR</td>
<td>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. (Garanterat t.o.m. 2006, dnr2003-3529)</td>
<td>675 000</td>
<td></td>
</tr>
<tr>
<td>Wohlfarth/Hohl</td>
<td>SKB</td>
<td>Sammanställning av Nordeuropeiska klimatarkiv</td>
<td>135 000</td>
<td></td>
</tr>
<tr>
<td>Wohlfarth/Moberg</td>
<td>SKB</td>
<td>A 2000-year climate reconstruction for Sweden (Garanterat t.o.m. 2005)</td>
<td>551 000</td>
<td></td>
</tr>
<tr>
<td>Wohlfarth</td>
<td>STINT</td>
<td>Samarbete m John Clague, Earth Sciences, Simon Fraser Univ, Canada. (IG2001-2008)</td>
<td>500 000</td>
<td></td>
</tr>
<tr>
<td>Wohlfarth</td>
<td>VR</td>
<td>Effekter av plötsliga klimatförändringar i terrestra och limniska system: en case-study från den klimatiska 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. (Garanterat t.o.m. 2006, dnr621-2003-3607)</td>
<td>594 000</td>
<td></td>
</tr>
</tbody>
</table>

**Delsumma** 15 779 879

| Natgeo/Lundén          | SIDA             | United Nations Remote Sensing Course 2004. | 3 341 826 |
| Natgeo/Lundén          | SIDA             | United Nations Remote Sensing – uppföljning | 1 510 156 |
| GU                     | LHS              |                                             | 709 000 |

**Total Approved research grants** 21 340 861
8. Staff (31 December 2004)

Department Chairperson/Head : Associate Professor Karin Holmgren
Vice Chairperson: Professor Barbara Wohlfarth

**PROFESSORS**

- Christiansson, Carl: Professor of Physical Geography,
- Destouni, Georgia: Guest Professor, Professor of Hydrology
- 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
- Lidmar-Bergström, Karna: Professor of Physical Geography
- Stroeven, Arjen Peter: Professor of Physical Geography
- Wohlfarth, Barbara: Professor of Quaternary Geology

**ACADEMIC STAFF**

**Associate Professors (PhD, Docent)**

- Arnberg, Wolter: Senior lecturer
- Hansson, Margareta: Senior lecturer
- Hock, Regine: Research associate
- Hättestrand, Clas: Senior lecturer, also research associate
- Lundén, Bengt: Senior lecturer, also Professor at Oslo University
- Näslund, Jens-Ove: Senior lecturer
- Risberg, Jan: Senior lecturer
- Robertsson, Ann-Marie: Senior lecturer
- Rosqvist, Gunhild: Senior lecturer
- Wastegård, Stefan: Senior lecturer

**PhD**

- Alexanderson, Helena: Research associate
- Bonow, Johan: Researcher
- Borgström, Ingmar: Senior lecturer
- Brown, Ian: Research associate
- Brunnberg, Lars: Senior lecturer
- Clarhäll, Anders: Senior lecturer
- Gouirand, Isabelle: Researcher
- Holzkämper, Steffen: Researcher
- Jansson, Kristoffer: Senior lecturer, also research associate
- Jarsjö, Jerker: Researcher
- Kratzer, Susanne: Researcher
- Kristiansson, Jan: Senior lecturer
- Nordberg, Maj-Liz: Senior lecturer
- Richardson-Näslund, Cecilia: Research associate
- Schlyter, Peter: Senior lecturer, director of undergraduate studies
- Skånes, Helle: Senior lecturer, also research associate
Westerberg, Lars-Ove Senior lecturer, head director of undergraduate studies
Wickman, Tonie Senior lecturer

PhLic, MSc, BSc
Bråvander, Lars Gunnar MSc, senior lecturer
Delteus, Åke BSc, lecturer
Eknert, Bo BSc, lecturer
Fridfeldt, Anders BSc, lecturer, director of undergraduate studies
Karłsson, 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
Bergström, Maria
Borgmark, Anders
Darracq, Amélie
De Angelis Hernán
Dessie, Gessesse
de Woul, Mattias
Ebert, Karin
Fahlén, Anders
Goodfellow, Bradley
Hannerz, Fredrik
Heimdahl, Jens
Hättestrand, Martina
Johnsen, Timothy
Jonsell, Ulf
Jonsson, Christina
Kindström, Merit
Klintenberg, Patrik
Liljeberg, Marcus
Lundblad, Katarina
Norström, Elin
Radić, Valentina
Rubensdotter, Lena
Ryner, Maria
Sannel, Britta
Shibuo, Yoshihiro
Sundqvist, Hanna
Veres, Daniel

Teaching assistants
Frödin Nyman, Sara MSc
Öberg, Helena MSc
**ADMINISTRATIVE STAFF**

Berggren, Berit  
Senior administrative officer

Blåndman, Susanna  
BSc, personnel executive

Envall, Berit  
Financial executive

Geltner, Petra  
BSc, personnel executive

Henkow, Månika  
Higher administrative officer

Henriksson, Carina  
University-certified administrator, senior administrative officer

Hultblad, Gertrud  
University-certified administrator, senior administrative officer

Lenngren, Maria  
MSc, study advisor

Persdotter, Eva  
Higher administrative officer

Schuber, Pernilla  
MSc, study advisor

Åkerblom, Lena  
Higher administrative officer

**TECHNICAL STAFF**

Alm, Göran  
PhLic, systems engineer

Beskow, Andreas  
MSc, systems engineer

Brotén, Bengt  
Technician

Cabrera, Yanduy  
Caretaker

Granell, Håkan  
Supervisor of office services

Hansson, Erik  
MSc, research engineer

Jacobson, Rolf  
IT-manager

Johansson, Eva-Maria  
MSc, research engineer

Karlsson, Ann  
Laboratory assistant

Svanered, Ola  
BSc, systems engineer

Törnberg, Henrik  
MSc, technician, Tarfala Research Station

Walter, Ola T  
Supervisor of security

Willis, Karin  
BSc, research assistant, lecturer

**PROFESSORS EMERITI**

Hoppe, Gunnar  
DSc

Lundqvist, Jan

Karlén, Wibjörn

Miller, Urve

Ringberg, Bertil

Wastenson, Leif

Østrem, Gunnar  
DSc