Department of Physical Geography
and Quaternary Geology
Stockholm University

VALEN'TINA RADIC (ED.)

ANNUAL REPORT
2005
Cover photo by Peter Kuhry: Erratics of the Laurentide Ice Sheet in southwestern Alberta (Canada)
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. In 2005, following a strategic decision to develop the Department’s profile in hydrology, a new professorship in hydrology, hydrogeology and water resources was established. The position is held by Georgia Destouni.

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

The Department of Physical Geography and the Department of Quaternary Research amalgamated to create the Department of Physical Geography and Quaternary Geology on January 1, 2001. Research interests of other professorships at the department are in tropical geography (Carl Christiansson), paleoclimatology (Karin Holmgren), glaciology (Peter Jansson), remote sensing (Bengt Lundén) 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.

Glacier in southern Alaska (USA). Figure provided by Peter Kuhry.
Ongoing projects

1. Glacial dynamics and deglaciation chronology in southern Sweden / Alexanderson H.
2. Quaternary glaciations and ice-free periods on Jameson Land, East Greenland / Alexanderson H.
3. Preglacial, glacial and periglacial landforms in southern Härjedalen and northern Dalarna. (SGU-project) / Borgström I.
4. Parameterisation of ENVISAT ASAR Backscatter from snow and ice / Brown I.
5. Global Land Ice Measurements from Space / Brown I.
7. Response of glacier melt and discharge to future climate / de Woul M., Hock R.
8. EPICA-MIS / Hansson M.
9. Biogeochemical Processes and Climate Feedback Mechanisms, atmospheric composition over 1 million years through ice core studies / Hansson M.
10. Late Quaternary glaciation history in northern Fennoscandia and Kola peninsula / Hättestrand C.
11. Glacial history and ice sheet dynamics of the Welsh Ice Cap / Jansson K.
12. Subglacial hydrology beneath ice sheets. / Jansson P., Näslund J.-O.
13. Timing and rate of accumulation on Storglaciären determined by snow chemistry / Jansson P.
14. En- and subglacial hydrology, Storglaciären / Jansson P.
15. The Dynamics of an advancing cold glacier terminus, Storglaciären. / Jansson P., Pettersson R., Holmlund P.
16. Modelling and model verification of the glacier system: 'Svalbard'-type polythermal glaciers – a case study on Storglaciären, Sweden. / Jansson P.
17. Paleo-ice streams in the northern Laurentide Ice Sheet / Kleman J., De Angelis H.
18. Modelling of future sea level rise from the retreat of glaciers / Radić V., Hock R.
19. Temporal and Spatial Dynamics of Subarctic Peat Plateau; Thermokarst Lake Complexes / Sannel B.
20. Deciphering the finest imprint of glacial erosion: Objective analysis of striae patterns on bedrock / Stroeven A.
21. Glacial chronology and erosion patterns of the eastern margin of the Tibetan Plateau (using cosmogenic radionuclides) / Stroeven A.
22. Post Younger Dryas deglaciation of Fennoscandia / Stroeven A.
23. Modelling of the Fennoscandian ice sheet through one glacial cycle / Stroeven A.
24. Reconstructing the Cordillera Ice Sheet with geomorphology, cosmogenic isotopes and ice sheet modelling / 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, PhLic (see also 2.4)
Bradley Goodfellow (see also 2.2)
Timothy Johnsen
Ulf Jonsell
Torbjörn Karlin
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.

Mid-summer at Bodø, Norway. Lofoten in far background to left. Photo by Tim Johnsen.
Ongoing projects

1. Terrestrial response to DO-cycles and HE-events / Ampel L.
2. Dating and correlation of mid Holocene climate events in Scandinavia / Andersson S.
3. Regional and temporal patterns in climate / Holmgren K.
4. People Land and Time in Africa / Holmgren K.
5. EU-GLIMPSE (Global implications of Arctic climate processes and feedbacks) / Holzkämper S.
6. Palaeorelief, saprolites, uplift and denudation of cratons / Lidmar-Bergström K., Näslund J.-O., Jansson K.
7. Uplift, erosion and fault reactivation in southwest Greenland. SNF, Denmark. / Lidmar-Bergström K.
8. GEOS – Landskapsurvikling/dypforvittring. (Landscape evolution/deep weathering) / Lidmar-Bergström K.
9. Geochemical studies on stalagmites from Tanzania and South Africa. / Lundblad K., Holmgren, K.
10. Climate and vegetation changes in South Africa during the Holocene / Norström E., Holmgren K.
11. Shore displacement in northwestern Uppland / Risberg J.
12. Siliceous microfossils in a cooking hearth from a Mesolithic dwelling Site / Risberg J.
13. Palaeoenvironmental changes in southern Uppland / Risberg J.
14. Environmental history in the central Baltic Sea / Risberg J.
15. Shore displacement on the peninsula Södertörn / Risberg J.
16. Anthropogenic activities as deduced from siliceous microfossils attached on grinding stones / Risberg J.
17. Diatom stratigraphy in two isolation sequences on Hallandsåsen, southern Sweden / Risberg J.
18. Climate dynamics in the polar-front zone: Detecting atmospheric circulation changes using lacustrine stable isotope archives / Rosqvist G.
19. Sorted sediment deposits in a complex limestone cave; chronology and depositional processes in relation to cave formation and ice-age dynamics / Rubensdotter L., Sundqvist H.
20. A paleoclimatic study in northern Tanzania. / Ryner M., Holmgren K.
21. Environmental factors affecting speleothem growth, recorded in Swedish speleothems / Sundqvist H., Holmgren K.
22. 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 / Wastegård S.
23. 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.
24. Compilation of North European climate archives / Wohlfarth B., Hobb V.
25. A 2000-year climate reconstruction for Sweden / Wohlfarth B.
26. Terrestrial and limnic response to rapid climate variability between 20 000 and 60 000 years before present / Wohlfarth B.
27. Environmental variability in northern Tanzania during the last 1000 years / Öberg H.

Staff affiliations
Karin Holmgren, Professor (see also 2.4)
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)
Arjen Peter Stroeven, Professor (see also 2.1, 2.3)
Barbara Wohlfarth, Professor

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

Margareta Hansson, Docent (see also 2.1)
Clas Hättestrand, Docent (see also 2.1)
Jens-Ove Näslund, Docent (see also 2.1)
Jan Risberg, Docent
Ann-Marie Robertsson, Docent
Gunhild Rosqvist, Docent (see also 2.1)
Stefan Wastegård, Docent

Helena Alexanderson, PhD (see also 2.1)
Anders Borgmark, PhD
Ingmar Borgström, PhD (see also 2.1)
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
Karin Ebert
Bradley Goodfellow (see also 2.1)
Jens Heimdahl, PhLic
Martina Hättestrand
Timothy Johnsen
Christina Jonsson
Katarina Lundblad, PhLic
Elin Norström, PhLic
Lena Rubensdotter, PhLic
Maria Ryner, PhLic
Britta Sannel (see also 2.1, 2.3)
Hanna Sundqvist, PhLic
Daniel Veres
Helena Öberg
2.3. Landscape analysis and geomatics

Research themes and areas
Research and education in these fields comprises methods development in satellite image processing, air photo interpretation, positioning, geographical information systems, and the application of these methods to a wide variety of geoscientific, bioscientific, landscape 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 includes 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, 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.

Coastal geomorphology of stacks and arch, Iceland. Photo by Tim Johnsen.
Ongoing projects

1. Studies of environmental change during the last century: The case of Awassa watershed, southern Ethiopia / Christiansson C., Dessie G.
3. Watershed management in Southeast Asia: With particular reference to case studies in Cambodia (Lower Se San River), China (Luishahe River), Laos (Nam Ou River) and Vietnam (Upper Se San River) / Christiansson C., Fahlén A.
4. Basic survey and inventory of vegetation and nature types in Natura 2000 and protected areas, development of interpretation manual for air photos / Helle S., Ihse M.
5. Drivers and causes to change in the agricultural landscape found in the LiM-survey / Ihse M.
6. Development of method and basis for management plans in Tyresta National Park and nature reserves, based on analyse of the digital data base to the vegetation map / Ihse M.
7. Lunden som begrepp och betydelse i kulturlandskapet / Ihse M.
8. Optical modelling in the Baltic Sea - algorithm development and adaptation of a coupled sea-atmosphere model for MERIS / Kratzer S.
9. Technical Assistance for the validation of MERIS products using the SU/SMHI CIMEL station located in Norrköping (Sweden) / Kratzer S.
10. Evaluation of "United Nations International Training Course on Remote Sensing of Educators / Lundén B.
11. Fusion of indicators of environmental quality objectives / Nordberg M.-L.
12. BIOHAB (Biodiversity and Habitats) / Skånes H.
13. Landscape memory as means to deal with human impact on biotope resilience and potential biodiversity / 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)
Bengt Lunden, Professor
Arjen Peter Stroeven, Professor (see also 2.1, 2.2)

Wolter Arnberg, Docent

Lars-Gunnar Brivander, Senior lecturer
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
Gessesse Dessie (see also 2.4)
Bo Eknert
Merit Kindström
Patrik Klintenberg, PhLic (see also 2.4)
Britta Sannel (see also 2.1, 2.2)
2.4. Land and water resources

Research themes and areas
We investigate natural and anthropogenic changes in space and time of land, soil and water resources, and contribute thereby to the knowledge of environmental dynamics and development, and societal possibilities and risks associated with various uses of land and water. We also study the effects of different strategies for handling environmental, health and natural disaster 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 Baltic Sea drainage basin and the rest of Fennoscandia, 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 associated socio-economic and engineered systems for meeting various human needs.

We focus primarily on historic and strategic future 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.

Tundra river in Arctic Russia. Photo by Peter Kuhry.
Ongoing projects
1. GIS-based hydrologic and solute transport modelling in catchments / Destouni G., Jarsjö J., Hannerz F., Shibuo Y.
2. Modelling coupled hydrological transport and reactions in integrated subsurface and surface water systems of catchments / Destouni G., Darracq A.
3. 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.
4. Geographic impacts of global environmental change; Impacts and adaptation of agro-ecological systems in Africa / Hannerz F.
5. Wetland runoff and its importance for spring-flood predictions / Seibert J.
6. The hydrological foundation of water quality predictions - Can improved validation make spatially distributed models meaningful? / Seibert J.

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

Regine Hock, Docent (see also 2.1)
Jan Seibert, Docent

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, PhLic (see also 2.1)
Fredrik Hannerz
Patrik Klintenberg, PhLic (see also 2.3)
Yoshihiro Shibuo, PhLic
3. Publications

Reviewed articles


70. Wastegård S., Bjärck S., Greve C. and Rasmussen T. L. 2005: A tephra-based correlation between the Faroe Islands and the Norwegian Sea raises questions about chronological relationships during the last interglacial, *Terra Nova*, 17, 7-12.


**Other publications**


14. Ihse M. 2005: Odlingslandskap i förändring – en uppföljning av LiM’s referensområden-Naturvårdsverket, Jordbruksverket, Riksantikvarieämbetet; flertal kapitel- Förord s 3,
Bakgrund s.8-13, Definitioner av markslag och landskapselement s 20-27, Metoder s. 27-31, 34-35, Tillstånd och förändringar i referensområden, 61-242.


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.
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*

Jakob Heyman
*Peleoglaciology of the eastern Tibetan plateau*

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

Christina Jonsson
*Stable isotopes in lake sediments from Läppland*

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

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

**Quaternary Geology:**

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

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

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

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*

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

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*
List of examinations for 2005

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anders Borgmark</td>
<td>20 Sep 2005</td>
<td>PhD, Quaternary Geology</td>
</tr>
<tr>
<td>Jens Heimdahl</td>
<td>18 Nov 2005</td>
<td>PhD, Quaternary Geology</td>
</tr>
<tr>
<td>Yoshihiro Shibuo</td>
<td>03 May 2005</td>
<td>PhLic, Quaternary Geology</td>
</tr>
<tr>
<td>Elin Norström</td>
<td>02 Jun 2005</td>
<td>PhLic, Physical Geography</td>
</tr>
<tr>
<td>Mattias de Woul</td>
<td>15 Dec 2005</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 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
6. Conferences and seminars

**January**

Christiansson, Holmgren & Norström: *Structures of Vulnerability, SU and Sida, Stockholm*

Hock: *Int. Arctic Science Committee, Working group on Arctic glaciology (LASC/MAGICS) workshop, Pontresina, Switzerland*

**February**

Destouni: *Geochemica Actie – Geochemistry Seminars, Utrecht University, the Netherlands*

Kratzer: *Erasmus Mundus Joint Masters Degree in Water and Coastal Management, University of Algarve, Faro, Portugal*

Lundén: *Regional Workshop on Evaluating the Impact of 1990-2004 Series of the UN/Sweden International Training Course on Remote Sensing of Educators, São José dos Campos, Brazil*

Nordberg: *Swedish National Space Board, Remote Sensing Seminar, Stockholm*

**March**

Christiansson: *Water and the Millennium Goals, Swedish Water House and SNF, Stockholm*

Holzkämper: *PAGES/DEKLIM conference, Mainz, Germany*

Seibert: *Ensemble modelling of land-use changes, modelling workshop in Giessen, Germany*

Ihse: *Seminarium om Lansbygdsutvecklingen, LBU-utredningen Jordbruksverket, Jönköping*

Ihse: *International Landscape Ecological Association (IALE) European Conference, Faro, Portugal*

Miller: *European Science Foundation (ESF) scientific programme- Plenary meeting in Glasgow, Scotland*

Wastegård: *Weichselian glacial history of Scandinavia, workshop, Stockholm*

**April**

Ampel, Darracq, Destouni, Seibert, Stroeven, Shibuo, Veres & Wohlfarth: *European Geosciences Union assembly, Vienna, Austria*

Hansson: *EPICA SSC Vienna, Austria*

Hock: *International Association of Hydrological Sciences (IAHS), Foz do Iguacu, Brasil*

Ihse: *Vegetationskartor och IRF-flygbilder -framtidens produkt eller gammal skäpmat?-Kartdagar, Jönköping*

Lidmar-Bergström: *Goldschmidt lecture, Geological Survey of Norway, Trondheim*

Veres & Wastegård: *ESF LESC Exploratory workshop: Building a tephrochronological framework for Europe, Swansea, UK*
May
Ampel & Risberg: Nordic Diatomists Meeting in Koguva, Muhu island, Estonia
Destouni: The 15th Annual Goldschmidt Conference: A voyage of discovery, Moscow, Idaho, USA
Holmgren & Öberg: HOLIVAR/ESF Workshop on Climate-Human society's interactions during the Holocene, Ännaboda
Ihse: Flora och fauna-konferensen, - En ny rödlista - och en föränderlig tid, SLU, Ultuna
Ihse: Natur- och kulturmiljövård i ett landskapsperspektiv, Naturvårdsverkets naturvårdskonferens 2005, Örebro
Kratzer: 3rd international workshop on Remote sensing and bio-optical modelling of the Baltic Sea, Gdansk
Kratzer: Workshop on atmospheric correction for retrieval of water constituents, NIVA, Oslo
Sannel: Inaugural Nordic Geographers Meeting, Lund

June
Christiansson: Sverige och millenniemålsarbete, Stockholm International Water Institute, Stockholm
Darracq: LOICZ I, Egmond aan Zee, the Netherlands
Hansson & Jonsell: EPICA (European Project for Ice Coring in Antarctica) chemistry consortium meeting, Florence, Italy
Holzkämper: 3rd Holivar training course: Quantitative climate reconstruction and data-model comparisons, Toulouse, France
Risberg: Workshop on Relative sea level changes - from subsiding to uplifting coasts, Gdansk, Poland
Skånes: BioHab workshop, Poprad/High Tatra, Slovakia

July
Alexanderson: 11th International conference on luminescence and electron spin resonance dating, Cologne, Germany
Wohlfarth: Workshop on Bpeat, Mexico

August
Ampel & Veres: PAGES Second Open Science Meeting, Beijing, China
Christiansson, Darracq & Destouni: 15th Stockholm Water Symposium, Stockholm, Sweden
Hansson, Wastegård & Wohlfarth: Carlsberg Dating Conference, Copenhagen, Denmark
Ihse: IX INTECOL Congress, (International Ecological) Symposium on Applying ecological theories to multiple spatio-temporal scales and to different landscapes in Europe, Montreal, Canada
Jansson P.: Int. Association of Meteorology and Atmospheric Science (IAMAS) General Assembly 2005, Beijing, China

Wastegård: SCOTAV Workshop on tephrochronology and volcanism, Dawson City, Canada

September
Alexanderson & Hätestrand: Field Symposium on Quaternary Geology and Landforming Processes, Kola Peninsula, NW Russia
Ampel: Resolution meeting, Les Eyzie, France
Brown: Global change in mountain regions, Perth, Scotland
Hansson, Jonsell & Karlin: ESF Research Conference on Polar Regions and Quaternary Climate, Acquafredda di Maratea, Italy
Hansson, Jonsell & Karlin: EPICA science meeting Acquafredda di Maratea, Italy
Holzkämper: final GLIMPSE Conference, Potsdam, Germany
Ihse: Geologidagarna 2005; naturresurser eller naturvård?, Stockholm
Kratzer: MERIS-A(ATSR) workshop, ESRIN, Italy
Rosqvist: Past climate change in Antarctica, Scotia workshop, Tarfala Research Station, Sweden
Sannel: Quaternary geology and landforming processes, International Field Symposium, Kola Peninsula, NW Russia
Veres: INQUA-SEQS, Subcommission on European Quaternary Stratigraphy, The Quaternary record of Switzerland, Bern
Veres, Wastegård & Wohlfarth: EUROCORES workshop, RESOLUTION, Les Eyziez, France
Wohlfarth: ESF conferences

October
Hansson: IPICS II, Bryssels, Belgium
Ihse: WWF´s Ekoparksseminarium, Stockholm
Ihse: CTM, Stockholms Universitet, Stockholm
Ihse: Trondheim Seminarium om bruk av fjernmålsteknikker til overvåking av biologisk mangfold, Trondheim, Norway
Karlén: Global change in Mountain Regions, Perth, Scotland
Jarsjö: Joint NATO CLG and EU–INTAS conference on Physical and Chemical fluxes in the dying Aral Sea, Russian Academy of Sciences, Moscow, Russia
Miller: European Science Foundation (ESF) scientific programme - Workshop Team 3 – Landscape archaeology, Menorca, Spain
November
Andersson & Sundqvist: MUSCAD, Norrköping
Miller: European Science Foundation (ESF) scientific programme - Steering Committee meeting, Menorca, Spain
Sannel: ESF Workshop on Below-ground carbon pools in permafrost regions, Stockholm
Seibert: Technical Liaison Group (TLG) meeting for joint IHP-LAHS PUB (Prediction in Ungauged Basins) activities, Corvallis, Oregon
De Angelis, Hock & Radic: International Glaciological Society (IGS) Nordic branch meeting, Copenhagen, Denmark

December
Christiansson: EU Water facility and EU Water Initiative, SIWI, Stockholm
Destouni: Hydrological gaps in environmental science and management, Applied Geoscience Centre Seminars, University of Tübingen, Germany
## 7. Financial support

<table>
<thead>
<tr>
<th><strong>Grant Organizations</strong></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C-Core</td>
<td>Centre for Cold Ocean Research Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELFORSK</td>
<td>Svenska elföretagens forsknings- o utvecklings - ELFORSK - AB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESA</td>
<td>European Space Agency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESF</td>
<td>European Science Foundation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FORMAS</td>
<td>The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Forskningsrådet för miljö, areella näringar och samhällsbyggnade)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KTH</td>
<td>The Royal Institute of Technology (Kungliga Tekniska högskolan)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KVA</td>
<td>The Royal Swedish Academy of Sciences (Kungliga Vetenskapsakademien)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>METRIA</td>
<td>part of Swedish Land Survey (Lantmätiverket)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEFP</td>
<td>Nordiska Energiforskningsprogrammet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NV</td>
<td>Swedish Environmental Protection Agency (Naturvårdsverket)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAÄ</td>
<td>Cultural Heritage Management (Riksantikvarieämbetet)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RS</td>
<td>Swedish National Space Board (Rymdstyrelsen)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIDA</td>
<td>Swedish International Development Cooperation Agency (Styrelsen för internationellt utvecklingsamarbete)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGU</td>
<td>Geological Survey of Sweden (Sveriges geologiska undersökning)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SKB</td>
<td>Swedish Nuclear Fuel and Waste Management (svensk kärnbränslehantering AB)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VR</td>
<td>The Swedish Research Council (Vetenskapsrådet)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Research Grant Receiver</strong></th>
<th><strong>Funding Authority</strong></th>
<th><strong>Project</strong></th>
<th><strong>Amount for 2005</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alexanderson</td>
<td>KVA</td>
<td>Att data istida händelser: luminiscensdatering av glaciala o coliska sediment</td>
<td>33 000</td>
</tr>
<tr>
<td>Borgmark</td>
<td>SKB</td>
<td>Klimatpåverkan av myrar i östra Uppland enligt projektbeskrivning, best.nr 13339, (dnr463-3-05 Dok18)</td>
<td>113 000</td>
</tr>
<tr>
<td>Borgström</td>
<td>SGU</td>
<td>Geoturistkarta Fulufjället</td>
<td>60 000</td>
</tr>
<tr>
<td>Brown</td>
<td>RS</td>
<td>Delt i konferens Global Change in Mountain Regions, Perth, Scotland, 2005-10-02-06. RS 238/05 (dnr463-18-05 Dok50)</td>
<td>12 800</td>
</tr>
<tr>
<td>Brown/Hock</td>
<td>C-CORE/ESA</td>
<td>Polar View- Global Monitoring for Environment and Security</td>
<td>540 000</td>
</tr>
<tr>
<td>Christiansson/ Klintenberg</td>
<td>SIDA</td>
<td>More Water, Less Grass? Assessment of resource degradation and stakeholders’ perceptions of environmental change in Ombuga grasslands, northern Namibia (Garanterat t.o.m. 2006, SWE-2004-343)</td>
<td>600 000</td>
</tr>
<tr>
<td>Destouni</td>
<td>FORMAS</td>
<td>Modellering av reaktiv transport i naturliga, heterogena grund-, mark- och ytvatten: La SAR-PHREEQC-metoden. The LaSAR-PHREEQC approach to modeling multi-component reactive solute transport in subsurface and surface water flows (Garanterat t.o.m. 2006)</td>
<td>729 000</td>
</tr>
<tr>
<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>RESEARCH GRANT RECEIVER</td>
<td>FUNDING AUTHORITY</td>
<td>PROJECT</td>
<td>AMOUNT FOR 2005</td>
</tr>
<tr>
<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>
</tr>
<tr>
<td>Destouni</td>
<td>KTH</td>
<td>Projekt WATCH (Water Resources in Catchments)</td>
<td>150 000</td>
</tr>
<tr>
<td>Grudd</td>
<td>Triassic Techn.</td>
<td>X-ray fluorescence analysis (dnr 463-3-05 Dok14)</td>
<td>23 000</td>
</tr>
<tr>
<td>Hall</td>
<td>Wallenbergs Stiftelse</td>
<td>Postdoktoral stip inom Stiftelsens program inom miljö och hållbar utveckling</td>
<td>278 887</td>
</tr>
<tr>
<td>Hansson</td>
<td>FORMAS</td>
<td>Biogokemiska processer med återkopplingar på klimatet - atmosfärernas sammansättning över 1 miljon år genom iskärnestudier - Biogeochemical Processes and Climate Mechanisms - atmospheric composition over 1 million years through ice core studies (Garanterat t.o.m. 2007)</td>
<td>689 000</td>
</tr>
<tr>
<td>Hansson</td>
<td>EU</td>
<td>EPICA-MIS Enhanced Paleoreconstruction and Integrated Climate Analysis through marine and ice core studies. (Contract No 003868)</td>
<td>630 000</td>
</tr>
<tr>
<td>Hock</td>
<td>VR</td>
<td>Framtida klimatförändringars påverkan på glaciärers avsmältning och avrinning, 621-2001-2503</td>
<td>630 032</td>
</tr>
<tr>
<td>Hock</td>
<td>VR</td>
<td>Projektbidrag enligt ovan.</td>
<td>130 000</td>
</tr>
<tr>
<td>Hock</td>
<td>FORMAS</td>
<td>Modelering av framtidshavsnivåförändringar orsakade av minskade glaciärer - Modelling of future sea level rise from the retreat of glaciers, dnr2003-0387</td>
<td>473 000</td>
</tr>
<tr>
<td>Hock</td>
<td>NEFP</td>
<td>Climate Energy, subproject Hydropower, Snow and Ice (CE) No.10-02</td>
<td>70 000</td>
</tr>
<tr>
<td>Holmgren/Westerberg</td>
<td>VR</td>
<td>Klimatvariationer i tid och rum - mönster, styrmekanismer och samhällseffekter - Regional and temporal climate variability - patterns, forcing and human responses</td>
<td>405 000</td>
</tr>
<tr>
<td>Holmgren/Norström</td>
<td>SIDA</td>
<td>Reconstruction of past climate variability in Southern Africa through analysis of trees and pollen (Garanterat t.o.m. 2006, SWE-2002-252)</td>
<td>600 000</td>
</tr>
<tr>
<td>Holmgren</td>
<td>ESF</td>
<td>Holivar-Workshop</td>
<td>275 650</td>
</tr>
<tr>
<td>Holmgren</td>
<td>Granh Stif</td>
<td>Gästföreläsare vid symposium 2005-05-20</td>
<td>15 000</td>
</tr>
<tr>
<td>Holmlund</td>
<td>NEFP</td>
<td>Climate Energy, subproject Hydropower, Snow and Ice (CE) No.10-02</td>
<td>70 000</td>
</tr>
<tr>
<td>Hättestrand</td>
<td>VR</td>
<td>Muonionalusta-jämmeteoriternas terrestriks historia - Terrestrial history of the Muonionalusta iron meteorites, dnr 621-2004-5287 (dnr463-905)</td>
<td>180 000</td>
</tr>
<tr>
<td>Ihse</td>
<td>NV</td>
<td>Drivkrafter o orsaker till de förändringar i landskapet som registrerats i LIM-karteringen</td>
<td>300 000</td>
</tr>
<tr>
<td>Ihse</td>
<td>NV</td>
<td>Basinventering av Natura 2000 och skyddade områden, dnr235-3676-05Ns, (dnr463-3-05 Dok15)</td>
<td>200 000</td>
</tr>
<tr>
<td>Ihse</td>
<td>NV</td>
<td>Tillägg (dnr235-3676-05Ns) Basinventering av Tullgarn</td>
<td>35 600</td>
</tr>
<tr>
<td>Research Grant Receiver</td>
<td>Funding Authority</td>
<td>Project</td>
<td>Amount for 2005</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Ihse</td>
<td>Tyresta-skogen</td>
<td>Bearbetning av digital databas till vegetationskartan över Tyresta Nationalpark (dnr463-3-05, Dok20)</td>
<td>23 000</td>
</tr>
<tr>
<td>Jansson K</td>
<td>VR</td>
<td>En 3-dimensionell rekonsstruktion av den kvartära relieftvcklingen 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. (Garantiert t.o.m. 2008, dnr621-2003-3221)</td>
<td>918 000</td>
</tr>
<tr>
<td>Jarsjö</td>
<td>SKB</td>
<td>GIS-baserad hydrologisk modellering med PCRaster-POLFLOW - best.nr. 11656</td>
<td>203 000</td>
</tr>
<tr>
<td>Kleman</td>
<td>VR</td>
<td>Paleo-iströmmars rum-tidsfördelning</td>
<td>338 000</td>
</tr>
<tr>
<td>Kratzer</td>
<td>RS</td>
<td>Optical modelling in the Baltic Sea - algorithm development and adaptation of a coupled sea-atmosphere model for MERIS, RS dnr94/04.</td>
<td>735 750</td>
</tr>
<tr>
<td>Kratzer</td>
<td>RS</td>
<td>Delt i &quot;Workshop on atmospheric correction for retrieval of water constituents, NIVA Oslo, 050531--0601&quot;, RS 202/05 (463-18-05 Dok51)</td>
<td>5 000</td>
</tr>
<tr>
<td>Kratzer</td>
<td>RS</td>
<td>Delt i MERIS o ATSR workshop, Esrin, Frascati, Italien 2005-09-26--30, (RS 240/05) (463-18-05 Dok 49)</td>
<td>8 200</td>
</tr>
<tr>
<td>Kratzer</td>
<td>ESA</td>
<td>ESTEC 19379/05/NL/FF - Technical assistance for the validation of MERIS products using the SU/SMHI CIMEL station located in Norrköping (Sweden)</td>
<td>93 000</td>
</tr>
<tr>
<td>Lidmar-Bergström</td>
<td>VR</td>
<td>Nedårvda landformer, vittringstäcken och upphöjning/erosion av kratoner (resistensområden) - Paleocorelief, saprolites, and uplift/denadation of cratons. (dnr621-2003-3325)</td>
<td>270 000</td>
</tr>
<tr>
<td>Näslund/Jansson</td>
<td>SKB</td>
<td>Inlandisirs bottenförhållanden och hydrologi - Basal conditions and hydrology of continental ice sheets - best.nr.12617. (Garantiert t.o.m. 2006, 7166/2)</td>
<td>1 680 000</td>
</tr>
<tr>
<td>Näslund</td>
<td>SKB</td>
<td>Avtappning av resultat avs: Inlandisirs bottenför-hållanden och hydrologi - Basal conditions and hydrology of continental ice sheets - best.nr.12667.</td>
<td>39 2000</td>
</tr>
<tr>
<td>Regnell</td>
<td>Smålands-museet</td>
<td>Makrofossilanalys Ryssby kyrka, Kalmar</td>
<td></td>
</tr>
<tr>
<td>Regnell</td>
<td>Kalmar Läns Museum</td>
<td>Biskopshagen i Växjö</td>
<td>27 500</td>
</tr>
<tr>
<td>Regnell</td>
<td>Upplands-museet</td>
<td>Makrofossilanalys - Kv SnickarenSU/UM, Enköping proj.nr. 8117, dnr 463-03-05 Dok 1</td>
<td>28 500</td>
</tr>
<tr>
<td>Regnell</td>
<td>Upplands-museet</td>
<td>Makrofossilanalys - Forsa S/UM, Uppland, proj.nr.8118, (dnr463-03-05 Dok2)</td>
<td>28 500</td>
</tr>
<tr>
<td>Regnell</td>
<td>Upplands-museet</td>
<td>Makrofossilanalys - Örtedalen SU/UM, Uppsala, proj.nr. 8120, (dnr463-05-03 Dok3)</td>
<td>12 000</td>
</tr>
<tr>
<td>RESEARCH GRANT RECEIVER</td>
<td>FUNDING AUTHORITY</td>
<td>PROJECT</td>
<td>AMOUNT FOR 2005</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------</td>
<td>---------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Regnell</td>
<td>Upplands-museet</td>
<td>Makrofossilanalys - Tibble/UM proj.nr. 8123, Uppland, (dnr463-03-05 Dok4)</td>
<td>25 500</td>
</tr>
<tr>
<td>Regnell</td>
<td>Upplands-museet</td>
<td>Makrofossilanalys - Stenhagen 3 proj.nr. 8127, (dnr463-03-05 Dok5)</td>
<td>28 500</td>
</tr>
<tr>
<td>Regnell</td>
<td>Upplands-museet</td>
<td>Makrofossilanalys - Stenhagen 4 proj.nr. 8135, (dnr463-03-05 Dok6)</td>
<td>18 000</td>
</tr>
<tr>
<td>Regnell</td>
<td>Upplands-museet</td>
<td>Makrofossilanalys - Danmarks-Kumla/UM proj.nr. 8139, (dnr463-03-05 Dok7)</td>
<td>9 000</td>
</tr>
<tr>
<td>Regnell</td>
<td>Länsmuseet Gävleb</td>
<td>Makrofossilanalys - Hålsingtuna RAÄ 126, proj.nr. 510134</td>
<td>4 500</td>
</tr>
<tr>
<td>Regnell</td>
<td>Länsmuseet Gävleb</td>
<td>Makrofossilanalys - Grannäs, Alfta sn, Hälsingland</td>
<td></td>
</tr>
<tr>
<td>Regnell</td>
<td>Institut f Historie, Odense</td>
<td>Växtrasterofofossilanalys av jordprover från Årsta gård, RAÄ 39, Osterhanginge sn, Södermanland</td>
<td></td>
</tr>
<tr>
<td>Richardson-Näslund</td>
<td>FORMAS</td>
<td>Determination of Antarctic snow accumulation. (21.4/2003-1442)</td>
<td>709 000</td>
</tr>
<tr>
<td>Risberg</td>
<td>SKB</td>
<td>Analyser av marinekologisk sedimentkärna - best.nr.12519, (dnr463-3-05 Dok10)</td>
<td>248 000</td>
</tr>
<tr>
<td>Risberg</td>
<td>Arkeologi konsult</td>
<td>Riksväg 73 - Slutundersökning, beteckn 2005/2037/02 (dnr463-3-05 Dok16)</td>
<td>299 670</td>
</tr>
<tr>
<td>Risberg</td>
<td>RAÄ</td>
<td>Bedömning av sediment, samt diatomeanalyser, Knutstorp, RAÄ 107, Hidinge sn, Närke, proj.nr. 1810125 (dnr463-3-05 Dok17)</td>
<td>80 000</td>
</tr>
<tr>
<td>Risberg</td>
<td>RAÄ</td>
<td>Kvartrågeologisk analys i o bedömning inom ramen för en arkeologisk undersökning av den mellanneolitiska boplatens RAÄ 68 i Ösmo socken, Södermanland, kallad Sittesta, RAÄ422-1874-2005, Lst431-05-23573 (dnr463-3-05 Dok19)</td>
<td>265 000</td>
</tr>
<tr>
<td>Seibert</td>
<td>ELFORSK</td>
<td>Proj HUVA - Myrmarkskearealens bygdeled för värflods- prognoser, Elforsk proj nr 1707</td>
<td>388 920</td>
</tr>
<tr>
<td>Stroeven/Zhou</td>
<td>SIDA/VR</td>
<td>Glacial chronology and erosion patterns in the Cetnral Tibetan Plateau... (Garanterat t.o.m. 2007, 348-2004-5684)</td>
<td>500 000</td>
</tr>
<tr>
<td>Wastegård</td>
<td>VR</td>
<td>Tefrokrönologisk datering och korrelation av senkvartära klimatarvika 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>607 500</td>
</tr>
<tr>
<td>Westerberg</td>
<td>VR/SIDA</td>
<td>The role of climate-environmental change, in relation to socio-economic factors, in the rise and fall of Engaruka fossil land use system, Tanzania (Garanterat t.o.m. 2007, SWE-2004-390)</td>
<td>600 000</td>
</tr>
<tr>
<td>Wohlfarth/Moberg</td>
<td>SKB</td>
<td>A 2000-year climate reconstruction for Sweden best nr 12388 (Garanterat t.o.m.apr 2006)</td>
<td>785 000</td>
</tr>
<tr>
<td>RESEARCH GRANT RECEIVER</td>
<td>FUNDING AUTHORITY</td>
<td>PROJECT</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------------</td>
<td>---------</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 klimatiskt dynamiska perioden 20 000 - 60 000 år före nutid - Terrestrial and limnic response to rapid climate variability between 20 000 and 60 000 years before present. (Garanterat t.o.m. 2006, dnr621-2003-3607)</td>
<td></td>
</tr>
<tr>
<td>Wohlfarth</td>
<td>VR</td>
<td>ESF Eurocores Euroclimate Programme Proposal: Rapid climatic and environmental shifts during oxygen isotope stages (OIS) 2 and 3 - linking high-revolution terrestrial, ice core and marine archives (Resolution) (Garanterat t.o.m. 2008, dnr629-2004-7960)</td>
<td></td>
</tr>
<tr>
<td>Summa beviljade forskn ansl o medel för uppdragsverks 05 (+ sent ink 04)</td>
<td></td>
<td>18 388 909</td>
<td></td>
</tr>
<tr>
<td>Destouni</td>
<td>SU</td>
<td>United Nations Remote Sensing Course 2004.</td>
<td>500 000</td>
</tr>
<tr>
<td>Destouni</td>
<td>SU</td>
<td>United Nations Remote Sensing – uppföljning</td>
<td>300 000</td>
</tr>
<tr>
<td>Christensen/Laurila/</td>
<td>ESF</td>
<td>United Nations Remote Sensing – uppföljning</td>
<td>175 000</td>
</tr>
<tr>
<td>Martikainen/Callaghan/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kuhry/Krinner/Bleuten</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>Approved research grants</td>
<td><strong>19 363 909</strong></td>
</tr>
</tbody>
</table>
8. Staff (late autumn 2005)

Department Chairperson/Head: professor Karin Holmgren
Vice Chairperson: professor Arjen Stroeven

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
Ihse, Margareta professor of Ecological Geography
Jansson, Peter  professor of Physical Geography
Kleman, Johan professor of Remote Sensing
Kuhry, Peter  professor of Physical Geography
Lundén, Bengt professor of Remote Sensing
Stroeven, Arjen professor of Physical Geography
Wohlfarth, Barbara professor of Quaternary Geology

ACADEMIC STAFF
Associate Professors (PhD, Docenter)
Arnberg, Wolter  senior lecturer
Hansson, Margareta senior lecturer, director of undergraduate studies
Hock, Regine  research associate
Hättestrand, Clas  senior lecturer
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
Bergman, Jonas  researcher
Borgmark, Anders  researcher
Borgström, Ingmar  senior lecturer
Brown, Ian  research associate
Clarhäll, Anders  senior lecturer
Gourrand, Isabelle  researcher
Hall, Ola  researcher
Helmens Femke, Karin  researcher
Holzkämper, Steffen  researcher
Jansson, Kristi senior lecturer, also research associate
Jarsjö, Jerker  researcher
Kratzer, Susanne  researcher
Kristiansson, Jan  senior lecturer
Nordberg, Maj-Liz  senior lecturer
Rickardson-Näslund, Cecilia  research associate
Schlyter, Peter
Seibert, Jan
Skånes, Helle
Vikhamar Schuler Thomas
Westerberg, Lars-Ove
Wickman, Tonie

Schlyter, Peter senior lecturer, director of undergraduate studies
Seibert, Jan research associate
Skånes, Helle senior lecturer, also research associate
Vikhamar Schuler Thomas researcher
Westerberg, Lars-Ove senior lecturer
Wickman, Tonie senior lecturer

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

Postgraduate students (PhLic, MSc, BSc)
Ampel, Linda
Andersson, Sofia
Darracq, Amélie
De Angelis Hernán
de Woul, Mattias
Ebert, Karin
Dessie, Gessesse
Goodfellow, Bradley
Hannerz, Fredrik
Heimdahl, Jens
Heyman, Jakob
Hättestrand, Martina
Johnsen, Timothy
Jonsell, Ulf
Jonsson, Christina
Karlin, Torbjörn
Klintenberg, Patrik
Lundblad, Katarina
Norström, Elin
Radić, Valentina
Rubensdotter, Lena
Ryner, Maria
Sannel, Britta
Shibuo, Yoshihiro
Sundqvist, Hanna
Veres, Daniel
Öberg, Helena

Teaching and Research Assistants (MSc, BSc)
Grabs, Thomas
Hansson, Erik
Hugelius, Carl-Gustaf
Johansson, Olov
Persson, Klas
Tillman Kaislahti, Päivi

**ADMINISTRATIVE STAFF**

Berggren, Berit senior administrative officer
Ekengren Reeder Ingrid higher administrative officer
Envall, Berit financial administrative officer
Damberg, Maria MSc, study advisor
Geltner, Petra BSc, personnel supervisor
Henkow, Mårina higher administrative officer
Henriksson, Carina university-certified administrator, senior administrative officer
Hultblad, Gertrud university-certified administrator, senior administrative officer
Kruckenberg, Anita PhD, senior administrative officer
Schuber, Pernilla MSc, study advisor

**TECHNICAL STAFF**

Alm, Göran PhLic, systems engineer
Beskow, Andreas MSc, systems engineer
Brotén, Bengt technician
Cabrera, Yanduy caretaker
Granell, Håkan supervisor of office services
Jacobson, Rolf IT-manager
Spångberg, Martin systems engineer
Törnberg, Henrik MSc, technician, Tarfala Research Station

**PROFESSORS EMERITI**

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