

# ANNUAL REPORT 2012



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Cover photo: Tephra shard from the Hekla-3 eruption c. 2950 cal yr BP identified in Klaxåsmossarna, Värmland. Photo: M. Brosse

## 1. Introduction

The Department of Physical Geography and Quaternary Geology is one of the larger departments at the university, with about 144 employees: 16 professors, 50 lecturers and researchers, 48 PhD students and 25 technical/administrative staff. Our personnel consist of an exciting mix of people coming from around the world, together creating a very dynamic and creative research and education environment.

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

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

We also take pride in providing a broad high-quality education at basic, Masters and postgraduate levels. The goal of the undergraduate and Masters education is to offer high quality learning, reflecting the research profiles of the department, and meeting the society's need for a sound theoretical competence. The department carries out undergraduate education in geography, earth sciences, integrated biology-earth science, and in environmental sciences. We offer a wide range of Masters education subjects, tailored to our research profiles, and taught in English. Every year slightly more than 1700 students attend our undergraduate and Master education programmes. Postgraduate education consists of four years and, given its high standard and international staff, it constitutes an important cornerstone of the department's profile.

Arjen Stroeven  
Head of the Department

## *History*

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

*Gunnar Hoppe pioneered the incorporation and interpretation of aerial photographs in geomorphological research. His strong interest in remote sensing led to the creation of a professorship in remote sensing at the Department of Physical Geography in 1980, a position held by Leif Wastenson until 2001. Johan Kleman succeeded him. Leif Wastenson developed and expanded the field of remote sensing leading to the establishment of a professorship in ecological geography, held by Margareta Ihse between 1997 and 2008. In 2005, following a strategic decision to develop the Department's profile in hydrology, a new professorship in hydrology, hydrogeology and water resources was established. The position is held by Georgia Destouni.*

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

*The Department of Physical Geography and the Department of Quaternary Research amalgamated to create the Department of Physical Geography and Quaternary Geology on January 1, 2001. Research interests of other professorships at the department are in tropical geography (Carl Christiansson), paleoclimatology (Karin Holmgren and Gunhild Rosqvist), glaciology (Margareta Hansson and Peter Jansson), paleoglaciology (Clas Hättstrand and Arjen Stroeven), landscape ecology (Sara Cousins), and Quaternary geology (Frank Preusser and Stefan Wastegård). Together with the aforementioned professorships we successfully straddle both traditional and innovative directions in physical geography and Quaternary geology.*

## 2. Current Research

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

### 2.1. Glaciers and polar environments

#### *Research themes and areas*

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

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

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



Tarfalajaure and the Kebnepakte glacier, Tarfala. Photo: Ewa Lind

## *Ongoing projects*

1. Marginal ice dynamics / *Ahlkrona J, Kirchner N*
2. Snow volume estimation from InSAR / *Brown I*
3. Multi-scale investigations of microwave snowpack observations (MIMSO) / *Brown I, Ingvander S, Jansson P*
4. Estimating volume changes of Patagonian glaciers using inventory data and scaling techniques / *De Angelis H*
5. Exploring the conditions for stability and modes of behaviour of glacier systems / *De Angelis H*
6. Modelling the transfer of supraglacial meltwater to the bed of glaciers through moulins and lake drainages / *Clason C*
7. Modelling the Late Weichselian Scandinavian Ice Sheet and its sensitivity to surface meltwater-enhanced basal sliding / *Clason C*
8. The impact of glacial erosion on northern shields (GEONORTHS) / *Ebert K, Kleman J*
9. The north Greenland Eemian ice drilling / *Hansson M*
10. The European Programme on Ice Coring in Antarctica / *Hansson M, Holmlund K, Karlin T*
11. Climate, glaciers and permafrost in the Swedish mountains / *Holmlund P*
12. Subglacial thermal conditions through a glaciation phase / *Holmlund P*
13. The Japanese-Swedish Antarctic Expedition (JASE) / *Holmlund P, Hansson M, Ingvander S, Karlin T, Johansson M*
14. Terrestrial history of the Muonionalusta meteorites / *Hättestrand C*
15. Spatial and temporal snow accumulation patterns along an icedivide in Dronning Maud Land, Antarctica / *Ingvander S*
16. The hydrology and dynamics of the Greenland ice sheet / *Jansson, P*
17. Glacier mass balance and tree rings as indicators of atmospheric circulation / *Jansson P*
18. Spatial and temporal variations in surficial melt on the Greenland ice sheet and the effects on glacier dynamics / *Johansson M*
19. The north Greenland Eemian ice drilling / *Karlin T*
20. Weichselian Ice dammed lakes - formation and climatic significance
21. (WeIDFoCS) / *Kirchner N*
22. Nuclei of glacial inception: The role of Novaya Zemlya during the MIS3-2 glaciation of the Barents-Kara Seas region / *Kirchner N*
23. A Bayesian Hierarchical Modeling approach to investigate former ice shelf configurations in the Arctic Ocean region / *Kirchner N*
24. CARBO-north project / *Kuhry P*
25. PAGE21: Changing Permafrost in the Arctic and its Global Effects in the 21st Century / *Kuhry P, Hugelius G*
26. DEFROST: Impacts of a changing cryosphere - depicting ecosystem-climate feedbacks from permafrost, snow and ice / *Kuhry P, Hugelius G*
27. Landscape partitioning and lability mapping of soil organic matter in permafrost terrain / *Palmtag J*
28. On the age and origin of glacial overdeepening in the Alps / *Preusser F*
29. The fate of hydrocarbon pollution in Kebnekaise / *Rosqvist G, Jarsjö J*
30. Simulation of the Cordilleran Ice Sheet through a glacial cycle / *Seguinot J, Stroeven A.P, Kleman J, Zhang Q*
31. Paleoglaciology of the northern sector of the Cordilleran ice sheet / *Stroeven A.P, Margold, M*

32. Paleoglaciology of the Shaluli upland on the SE Tibetan Plateau / *Fu P, Stroeven A.P, Hättestrand C, Heyman J*
33. Post YD deglaciation of the Fennoscandian ice sheet / *Stroeven A.P, Hättestrand C, Goodfellow B, Kleman J, Jansson K, Heyman J, Lundqvist J*
34. Glacial and climate history of Central Asia / *Blomdin R, Gribenski N, Stroeven A.P, Hättestrand C, Jansson K, Preusser F, Heyman J*

*Staff affiliations*

Margareta Hansson, Professor (see also 2.2)

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Juri Palmtag

Julien Seguinot

Matthias Siewert

## 2.2. Climate, environment and landscape development

### *Research themes and areas*

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

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



Southern beech forest in Tongariro National Park, on a Geography field course to New Zealand. Photo: Britta Sannel.

## Ongoing projects

1. Reconstruction of environmental and climate changes in Vindelfjällen, northern Sweden, using lake sediments / *Berntsson A*
2. Measuring earthquake periodicity and calculating chemical weathering rates with a portable XRF and cosmogenic isotopes / *Fritzon R, Goodfellow B, Stroeven A.P, Skelton A*
3. Climate vs past human use in mountain forest ecotones, Sweden The Scottish Pine Project / *Gunnarson B*
4. NEEM project / *Hansson M, Wastegård S*
5. Holocene Climate Variability in southern Greece / *Holmgren K, Finné M, Sundqvist H*
6. Holocene climate variability in southern Africa / *Holmgren K, Sundqvist H, Zhang Q*
7. Late Quaternary climate variability and vegetation dynamics in southern Greece / *Holmgren K, Boyd M, Finné M, Norström E, Sundqvist H*
8. European isotope-climate reconstruction for the last 2000 years based on lake sediments, speleothems and tree-rings / *Sundqvist, Holmgren K*
9. Formation and age of Veiki moraine, northern Sweden / *Hättestrand M, Hättestrand C*
10. CARBO-North: Quantifying the carbon budget in northern Russia: past, present and future / *Kuhry P, Holzkämper S, Hugelius G, Palmtag J*
11. Holocene climate change in high latitudes recorded by stable isotopes in peat / *Kaislahti Tillman P*
12. A Bayesian Hierarchical Modeling approach to investigate former ice shelf configurations in the Arctic Ocean region / *Kirchner N*
13. Nuclei of glacial inception: The role of Novaya Zemlya during the MIS3-2 glaciation of the Barents-Kara Seas region / *Kirchner N*
14. Weichselian Ice dammed lakes-formation and climatic significance (WeIDFoCS) / *Kirchner N*
15. Cryo-CARB: Long Term Carbon Storage in Cryoturbated Arctic Soils / *Kuhry P, Hugelius G*
16. Landscape analysis, thermochronology, and the development of elevated passive continental margins / *Lidmar-Bergström K*
17. Stratigraphic Landscape Analysis and geomorphological paradigms: Scandinavia as an example of Phanerozoic uplift and subsidence / *Lidmar-Bergström K*
18. Plains, steps, and hilly relief in northern Sweden – review, interpretations, and implications / *Lidmar-Bergström K*
19. Tephrochronology of the north Atlantic region during the early Holocene / *Lind E, Wastegård S*
20. Landscape analysis for tectonic applications / *Lidmar-Bergström K*
21. Reconstructing Climate in the last millennium / *Moberg A*
22. Climate data-model comparisons for the last millennium / *Moberg A, Grudd H*
23. Past climate variability and environmental change in southern Mozambique / *Norström E*
24. Climate dynamics and environmental change during the Eemian Interglacial (MIS 5e) in Scandinavia inferred from a unique sediment sequence at Sokli (northern Finland) / *Pliikk A, Helmens K*
25. Vegetation development and introduction of cultural landscape in Småland, southern Sweden / *Regnell M*
26. Prehistoric farming in Västra Götaland, south-western Sweden / *Regnell M*
27. Prehistoric plant use, agriculture and environment in southern Sweden / *Regnell M*
28. Holocene climate and glacier change in northern Sweden / *Rosqvist G*
29. Reconstructions of past changes in precipitation using geochemical signatures in lake sediments / *Rosqvist G*

30. Environmental changes in the eastern parts of Lake Mälaren, west of Stockholm, during the last 8000 years / *Risberg J*
31. Construction of palaeogeographical maps for eastern Svealand for the last 7000 years / *Risberg J*
32. Climate change in southern Mozambique during the last 4000 years / *Risberg J*
33. Climate change in northwestern Tanzania / *Risberg J*
34. Black carbon aspect of climate change / *Rosqvist G*
35. Modelling plant species dispersal in fragmented landscapes / *Cousins S, Schmucki R*
36. Early Holocene deglaciation and the Holocene thermal maximum at high latitudes as recorded by multi-proxy evidence / *Shala S, Helmens K*
37. DAPHNE-dated speleothem archives of the paleoenvironment / *Sundqvist H, Holmgren K*
38. Constraining the chronology of glacial advances on Svalbard–Kapp Ekholm revisited / *Preusser F*
39. Reconstructing the environmental history of Arabia / *Preusser F*
40. Towards a revised chronology of the glaciation history of northern Switzerland / *Preusser F*
41. Geoarchaeology of Amiternum, central Italy / *Preusser F*
42. Sharpening the tools—improving tephrochronology around the Atlantic Sea / *Wastegård S*
43. SMART project (synchronising marine and ice-core records using tephrochronology) / *Wastegård S*
44. Potrok Aike Lake sediment archive drilling project / *Wastegård S*
45. Current expansion and past dynamics of small-holder irrigation farming in African drylands—measuring landscape, labour and climate interactions / *Westerberg L-O*
46. Factors affecting mangroves of the Rufiji Delta and impact on the livelihood of surrounding communities / *Westerberg L-O, Mwansasu S, Dahlberg A*
47. Environmental change in northern Tanzania during the last 1000 years / *Öberg H*

#### *Staff affiliations*

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## 2.3. Landscape analysis and geomatics

### *Research themes and areas*

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

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

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

### *Ongoing projects*

1. Measuring environmental change in Darfur, Sudan: implications for the conflict / *Brown I*
2. Land use change and effects of functional and spatial connectivity on historical and present biodiversity patterns / *Cousins S, Aggemyr E*
3. Historical land use influence on dispersal and diversity of grassland species in rural landscapes / *Cousins S, Auffret A*
4. Modelling plant species dispersal in fragmented landscapes / *Cousins S, Scmuki R.*
5. Changes in wetland distribution and consequences for biodiversity and ecosystem services / *Cousins S, Ermold M*
6. A multiscale, cross-disciplinary approach to the study of climate change on natural resources, ecosystem services and biodiversity (EKOKLIM) / *Cousins S, Ermold M, Lindborg R, Plue J, Tränk L*
7. Linking management and feedback across scales in social-ecological systems - examples from forest ecosystem / *Eriksson I*
8. Effect of agricultural land use on biodiversity and function in Swedish wetlands / *Ermold M*
9. Multiproxy dendroclimatology in Greece / *Grudd H, Krusic P*
10. Tree-ring density and stable isotopes from Torneträsk, northern Sweden / *Grudd H*
11. Pollution investigations in trees / *Grudd H*
12. Finding the key to shipwreck preservation / *Grudd H*
13. Studies of actual and medieval vegetation in summer farming areas of Snorre Sturlasson, Iceland / *Ihse M*

14. Influence of Environmental and Social factors on Wildlife Dispersal Areas in Malagarasi-Moyovosi Ramsar Site, Western Tanzania / *Kalumanga E, Cousins S*
15. Harnessing Biodiversity for Sustaining Agricultural Production and Ecosystem Services (SAPES) / *Lindborg R*
16. Ecosystem services in agricultural landscapes: the development of a framework for assessing synergies and dealing with trade-offs among multiple services / *Lindborg R*
17. Habitat restoration in fragmented landscapes: effects on biodiversity and ecosystem functions / *Lindborg R*
18. How do seed banks contribute to species persistence in fragmented landscapes/ *Plue J, Cousins S*
19. The effect of grazing and land use patterns in the inner archipelago / *Reimark J, Cousins S*
20. EMMA Environmental Mapping and Monitoring with Airborne laser and digital images / *Skånes H*
21. NILS (National inventory of landscapes in Sweden) hosted by Swedish University of Agricultural Sciences / *Skånes H*

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Jessica Lindgren

Emelie Waldén

## 2.4. Land and water resources

### *Research themes and areas*

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

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

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

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



Sea ice in Forlandssundet, Prins Karls Forlandet, Svalbard. Photo: Ewa Lind

## Ongoing projects

1. Untangling the role of permafrost in determining the distribution of subsurface hydrologic flow pathways in the sub-arctic / *Dahlke H*
2. Unraveling the spatial variation of organic and inorganic carbon fluxes in two sub-arctic catchments in northern Sweden / *Dahlke H*
3. Pan-Arctic ice-water-biogeochemical system responses and social-ecological resilience effects in a warming climate / *Destouni G, Bring A, Lyon S*
4. Pan-Arctic hydrological and biogeochemical responses to climate change / *Destouni G, Mård Karlsson J, Lyon S, Dyurgerov M, Peterson G*
5. The subsurface water system role for land-to-atmosphere and land-to-sea vapor-water partitioning and solute mass flows / *Destouni G, Asokan S, Prieto C, Darracq A.*
6. Risk quantification for accidental pollutant spreading through subsurface water / *Destouni G, Persson K, Prieto C, Darracq A, Jarsjö J*
7. Modelling multi-phase flow in porous and fractured media / *Jarsjö J, Frampton A, Dessirier B*
8. FutureLearn: Utveckling av ett simulerings- och visualiseringsverktyg för flöde- och transportprocesser inom hydrologisk utbildning / *Frampton A*
9. Flow and tracer transport in crystalline fractured media / *Frampton A*
10. The role of permafrost, hydrological and ecosystem shifts for arctic hydro-climatic interactions and carbon fluxes / *Jantze E*
11. Quantifying the potential of carbon dioxide storage, long-term retention and surface return flow minimization in Swedish bedrock / *Jarsjö J, Destouni G, Desouche C*
12. Mitigating agricultural pollution impacts on health and environment in the Aral Sea Basin / *Jarsjö J, Törnqvist R*
13. Modelling of regional hydro-climatic interactions, changes and feedbacks / *Gong L*
14. Modeling permafrost spatial distributions and thawing rates in arctic/sub-arctic Sweden using recession flow analysis / *Lyon S, Destouni G*
15. Water resources effects of land-water management in Tanzania, Africa / *Lyon S, Jarsjö J, Lindborg R, Dahlke H, Holmgren K*
16. Improved streamflow and flood monitoring using remotely sensed LiDAR data / *Lyon S, Nathansson M*
17. Cross-scale modeling of coupled hydrological-permafrost interactions and carbon transport in a changing climate / *Lyon S, Frampton A*
18. Analytical single-potential, sharp-interface solutions for regional seawater intrusion in sloping unconfined coastal aquifers, with pumping and recharge / *Mazi E, Destouni G*
19. Hydrological vulnerability thresholds and regime changes in coastal aquifers under sea-level change / *Mazi, E, Destouni G*
20. Classification and comparative study of Mediterranean coastal aquifers subject to climate changes with the use of the analytical single-potential, sharp-interface solution / *Mazi E*
21. Hydro-climatic trends and interactions in the Mediterranean region / *Mazi E, Destouni G*
22. Stream flow modeling and variation of runoff in a boreal landscape / *Nathanson M*
23. National Environmental Objectives in the Mountain Environment – management, future and conflict analysis / *Schlyter P, Stjernquist I*
24. The effect of biomass withdrawal on the nutrient balance in forest soils / *Schlyter P, Stjernquist I*
25. Hydrological modelling for climate-change impact assessment / *Seibert J, Teutschbein C*
26. Gruppmodelleringsbaserad analys av miljöanpassad upphandling av livsmedel och måltider: hinder, problem och möjligheter/ *Seibert J, Stjernquist I*

27. Determining and mapping spatial distributions and thawing rates of inland permafrost under climatic change in the Arctic and Sub-Arctic / *Sjöberg Y*
28. Mapping permafrost using ground penetrating radar for validation of hydrological modeling of permafrost distributions / *Sjöberg Y*
29. Modeling permafrost spatial distributions and thawing rates in arctic and sub-arctic Sweden using recession flow analysis / *Sjöberg Y*
30. Green Infrastructures for ecological sustainability and human well-being: a network of forest rural and urban landscapes as laboratories for integrative research / *Stjernquist I*
31. Near-coastal spatiotemporal variation of temperature in response to insolation / *Vercauteren N*

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## 2.5. The Bert Bolin Centre for Climate Research

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

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

## 2.6. Navarino Environmental Observatory (NEO)

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

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

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



Navarino Environmental Observatory in Peleponessos, Greece. Photo: Giorgos Maneas.

### 3. Publications

#### *Reviewed articles*

1. Abbott, P.M., Davies, S.M., Steffensen, J.P., Pearce, N.J.G., Bigler, M., Johnsen, S.J. and **Wastegård, S.** 2012. A detailed framework of Marine Isotope Stages 4 and 5 volcanic events recorded in two Greenland ice-cores. *Quaternary Science Reviews*, 36, 59-77.
2. **Aggemyr, E.** and **Cousins, S.A.O.** 2012. Landscape structure and land use history influence changes in island plant composition after 100 years. *Journal of Biogeography*, 39, 1645-1656.
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111. **Törnqvist, R.** and **Jarsjö, J.** 2012. Water Savings Through Improved Irrigation Techniques: Basin-Scale Quantification in Semi-Arid Environments. *Water resources management*, 26, 949-962.
112. **Öberg, H.,** Andersen, T. J., **Westerberg, L-O.,** **Risberg, J.** and **Holmgren, K.** 2012. A diatom record of recent environmental change in Lake Duluti, northern Tanzania. *Journal of Paleolimnology*, 48, 401-416.
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## Other publications

1. Bruce, Å. and **Ihse, M.** 2012. Vegetationsrutorna på Enaforsholm. In: Hans Antonsson (Ed.), *Vid fjällets fot: - Donatorn A.W. Bergsten och hans Enaforsholm i Västjämtland-från jaktvillan till fjällgård*, 251-261. Stockholm: Skogs- och Lantbruksakademien.
2. **Destouni, G.** 2012. Åtgärder på land för lösningar i havet: storskalig effektivitet från åtgärdssamspel i landskapet mellan jordbruk, avloppsreningsverk, industri, anlagda våtmarker.
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6. Stenseke, M., **Lindborg, R.**, **Dahlberg, A.** and Slätmo, E. 2012. System or arena?: Conceptual concerns around the analysis of landscape dynamics. In: Tobias Plieninger, Claudia Bieling. (Ed.), *Resilience and the cultural landscape: Understanding and managing change in human-shaped environments*, 80-94. Cambridge: Cambridge University Press.
7. Eckerberg, K., Friman, E., Gren, I-M, Gustafsson, B., Havnevik, K., Holmgren, P., Hornborg, A., Holmgren, K., **Ihse, M.**, Liljenström, H., Molander, S., Olsson, L., Robèrt, K-H., Rydén, L., Sanne, C., Silveira, S., Svanström, M., Swain, A., Sörlin, S., 2012: Varför brister politikerna när det gäller miljömålen? Debatt Dagens Nyheter, 27/12 2012
8. **Fu P**, Harbor J, 2012. Glacial erosion: Glaciological variables controlling glacial erosion. In Singh, Vijay P.; Singh, Pratap; Haritashya, Umesh K. : *Encyclopedia of Snow, Ice and Glaciers*, 332-341.
9. **Holmlund, P.** 2012. Sulitelmas isar. In: Eva Selin och Arthur Lindroth (Ed.), *Sommarland och Högfjäll: Till Fjälls 2012-2013*, 22-35. Stockholm: Svenska Fjällklubben.
10. **Holmlund, P.** 2012. Glaciärforskaren Axel Hamberg. In: Lars Andersson (Ed.), *Sarek, Arktis och akademisk vardag: En bok om geografen Axel Hamberg*, 113-134. Västerås: Acta Universitatis Upsaliensis.
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12. **Lundqvist, J.** (2012). När inlandsisen lämnade Jämtlandsfjällen. *Geologiskt Forum* (73), 10-17.
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14. **Stjernquist, I.** **Sverdrup, H.**, **Schlyter, P.**, Belyazid, D., Koca, U., Jönsson-Belyazid. 2012. Searching for the Magnificent Mountain Landscape; Environmental management in the Swedish mountain area. In: Husemann, E and Lane, D. (Eds.) *Proceedings of the 30th International Conference of the System Dynamics Society, July 22-26, 2012, St. Gallen, Switzerland*. The System Dynamics Society.
15. **Schlyter, I.**, **Stjernquist, H.**, **Sverdrup.** 2012. Handling Complex Environmental Issues – Formal Group Modelling as a Deliberative Platform at the Science-Policy- Democracy Interface. In: Husemann, E and Lane, D. (Eds.) *Proceedings of the 30th International Conference of the System Dynamics Society, July 22-26, 2012, St. Gallen, Switzerland*. The System Dynamics Society.

## 4. Publication series

### *Ongoing*

Dissertations from the Department of Physical Geography and Quaternary Geology, 2006-  
Reports from the Department of Physical Geography and Quaternary Geology, 2002-  
Tarfala Research Station Annual Reports, electronic pdf-based series, 1998-

### *Past*

Thesis in Quaternary Geology, 2002-2005  
Thesis in Geography with emphasis on Physical Geography, 2001-2006  
Quaternaria. Series A, 1995-2001  
Quaternaria. Series B, 1995-2001  
The Department of Physical Geography, Stockholm University Dissertation Series, 1994-2000  
Research Report, Department of Physical Geography, 1968-2000  
Meddelanden från Naturgeografiska institutionen, 1965-1994

## 5. Education

The goal of the undergraduate education at the Department of Physical Geography and Quaternary Geology is to offer a high quality education, reflecting the research profile of the Department, and meeting the society's need for theoretical and practical competence within the fields of education. The department offers education at undergraduate (bachelor's) level in geography, earth sciences, integrated biology-earth science, and in environmental studies. In addition, a wide spectrum of graduate (master's level) programmes and courses are given, reflecting the research profiles of the department. Every year almost 2000 students attend our undergraduate and graduate education.

At Stockholm University degrees are structured in accordance with the Bologna Model of higher education:

First cycle: Kandidatexamen (Bachelor's Degree) 3 years

Second cycle: Magisterexamen 1 year, Masterexamen (Master's Degree) 2 years;

Third cycle: Licentiatexamen 2 years, Doktorsexamen (Doctorate) 4 years.

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

### 5.1. Bachelor's level (First Cycle)

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

Bachelor's programme in Geography

Bachelor's programme in Earth Science

Bachelor's programme in Biology-Earth Science

### *Bachelor's programme in Geography*

The *Geography programme* includes courses up to 180 credits, which correspond to three years of full-time studies:

1-30 credits: Geography I, 30 credits

31-60 credits: Geography II, 30 credits

61-90 credits: Geography III, 30 credits

91-165 credits: Elective and Optional courses

166-180 credits: Geography, Degree Project (Bachelor's Thesis), 15 credits

The Department of Physical Geography and Quaternary Geology and the Department of Human Geography at Stockholm University collaborate within the geography education, and much of the education is integrated physical and human geography. Every year 100-120 students start their Geography studies. They study geography either as a part of ordinary university studies or as a part of the theoretical education within the teachers' training programme at Stockholm University. Geography can be studied within a programme framework or as independent courses. Seen over a period of ten years, the influx of students has increased substantially. One reason for this increase is the elevated interest, and need for knowledge, in the field of geography in a world where globalization is steadily increasing.

### *Bachelor's Programme in Earth Science*

The Bachelor's Programme in *Earth Science* (180 credits) is given in collaboration with the Department of Geological Sciences at Stockholm University. Courses can be taken within the programme framework or as stand-alone courses, both study paths leading to a Bachelor's Degree. Within the programme, the first year (60 credits) consists of mandatory courses where students learn the basics in earth science: Physical Geography and Quaternary Geology (30 credits) and Geology (30 credits), respectively. After the first year the students specialize within Physical Geography, Hydrology, Quaternary Geology, Geology, Marine Geoscience, or Geochemistry. The programme is completed with a 15 credits Degree Project (Bachelor's Thesis), which at the Department of Physical Geography and Quaternary Geology is either in Quaternary Geology, Physical Geography, or in Hydrology and Hydrogeology.

### *Bachelor's Programme in Biology-Earth Science*

The Biology-Earth Science study programme encompasses 180 credits, and is carried out in collaboration with the Department of Biology Education at Stockholm University. The programme consists of 90 credits mandatory courses in earth sciences and environmental issues and 90 credits in biology. A 15 credits Degree Project (Bachelor's Thesis) ends the programme. A distinctive feature of the programme is the integration between Earth Science and Biology. The Earth Science parts focus particularly on Biogeography, Climatology, Geomorphology, Cartography, Soil Science, Aerial Photograph Interpretation and GIS, and Environmental Issues and Nature Conservation.

### *Environmental Studies*

The Department of Physical Geography and Quaternary Geology offers a wide range of courses on Environmental Issues on Bachelor's level (first cycle). The courses are independent courses that are optional within the study paths of the bachelor programmes in Geography, Earth Science, Biology, and many other subjects.

## 5.2. Master's level (Second Cycle)

The Department of Physical Geography and Quaternary Geology offers advanced courses in Glaciology and Glacial Geomorphology, Climatology and Palaeoclimatology, Palaeoecology, Quaternary Geology, Hydrology and Hydrogeology, Geographic Information Systems, Cartography, Remote Sensing and Landscape Ecology. In addition the department offers courses in Political Ecology, Environmental Issues and Environment and Health Protection. The courses provide the prospective geoscientist and geographer with an overall breadth to be used in working with, for example, nature and environmental control, geoscientific examinations, planning, risk assessment and research.

The advanced courses are compiled in a number of Master's Programmes. These are all two years long and always include a research task in the form of a Degree Project. The programmes in general start with 1.5-2 semesters of mandatory courses with a certain topical emphasis. Thereafter the students take 1-1.5 semester of elective or optional courses and finish the programmes with a Degree Project of 1-2 semesters.

### *Master's Programmes*

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

### *Other courses*

The course "Science Communication, 15 credits" is an advanced course, which offers a generally deepened understanding of the role that scientific research plays in society and the problems attached to it, and offers a practice in the style of scientific writing and in communicating science in media.

### *Summer courses at field stations*

The summer course "Glaciers and High Mountain Environments 7.5 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. Another summer course, "Ecohydrology - a Mediterranean Perspective 7.5 credits", is based on theory and field-based experimentation relevant for ecohydrology. The field-based part of the course is held at the Navarino Environmental Observatory (NEO) in Greece. The last summer course offered by the department is "Urban Farming – Planning, Environment and Health 7.5 credits".

### 5.3. Postgraduate (Third Cycle) education

The postgraduate education program at the Department of Physical Geography and Quaternary Geology, Stockholm University, includes courses, seminars, excursions and the writing and defence of a Licentiate and a Doctoral thesis. Students can choose to either graduate in “Physical Geography” or in “Quaternary Geology”. The success of our postgraduate programme is reflected in the amount and quality of Doctoral theses produced (see section 6 in this report for a list of recent theses). Below, we will tabulate currently enrolled students and their projects within each examination subject.

#### **Geography, Physical Geography:**

Elsa Aggemyr

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

Josefin Ahlkrona

*Marginal ice dynamics: higher order modeling of ice streams and their impact on coupled ice sheet/ice shelf systems*

Alistair Auffret

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

Robin Blomdin

*Paleoglaciology and paleoclimate history of Central Asia bordered by the Kunlun Shan, Tian Shan and Altai Mountains*

Emma Bosson

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

Meighan Boyd

*Speleothems in Warm Climates – Holocene records from the Caribbean and Mediterranean*

Arvid Bring

*Arctic Climate and Water Change: Information Relevance for Assessment and Adaptation*

Benoit Dessirier

*Multi-phase flow in porous and fractured media*

Matti Ermold

*Changes in wetland distribution and consequences for biodiversity and ecosystem services*

Martin Finné

*Holocene climate variability in southern Greece*

Ruben Fritzon

*Earthquake periodicity in southern Greece from geochemical and geochronological studies of fault surfaces*

Ping Fu

*Glacial Geomorphology of the Haizi Shan area, SE Tibetan Plateau*

Natacha Gribenski

*Comparison of dating methods for glacier chronology in the Central Asia mountains*

Christian Helanow

*Theory for water routing through ice sheets*

Lindsey Higgins

*Environmental history and climate change in relation to historical land use changes in East Africa*

Elin Jantze

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

Fernando Jaramillo

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

Elikana Kalumanga

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

Alexander Koutsouris

*Land management effect on water resources in Tanzania, Africa*

Paul Krusic

*Dendroclimatic reconstruction: Eastern Mediterranean region*

Norris Lam

*Improving streamflow and flood monitoring using LiDAR*

Jessica Lindgren

*Small remnant habitats additive value for biodiversity and ecosystem services in intensively utilized landscapes*

Elidio Massuanganhe

*Modeling sustainability of the Mozambican coastal zone – Geomorphology and changes of the Mozambican coast*

Ekaterina Mazi

*Hydro-climatic trends and interactions in the Mediterranean region*

René Mbanguka

*Modelling water resources effects of land-water management in Tanzania, Africa*

Andrew Mercer

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

Shilpa Muliyl Asokan

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

Simon Mwansasu

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

Johanna Mård Karlsson

*Mapping Arctic social-ecological resilience to hydrological change*

Marcus Nathanson

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

Michaela Nylund

*Mass movements in the Kenyan highlands – Land use and vulnerability*

Juri Palmtag

*Landscape partitioning and lability mapping of soil organic matter in permafrost terrain*

Julien Seguinot

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

Matthias Siewert

*High-resolution mapping of soil organic matter storage and remobilization potential in periglacial landscapes*

Ylva Sjöberg

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

Claudia Teutschbein

*Hydrological modelling for climate change impact assessment*

Rebecka Törnqvist

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

Lucile Verrot

*Soil moisture and linked hydrological flow and transport changes*

Emelie Waldén

*Effects of local and regional processes on biodiversity in restored semi-natural grasslands*

### **Quaternary Geology:**

Annika Berntsson

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

Hans Johansson

*Late Quaternary tephrochronology of the Azores*

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

Carl Lilja  
*Synchronicity of late-glacial tephra horizons*

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

Anna Plikk  
*Climate dynamics and environmental change during the Eemian Interglacial (MIS 5e) in Scandinavia inferred from a unique sediment sequence at Sokli (northern Finland)*

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

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

Sandra Siteo  
*Reconstructing flooding events in the Limpopo River flood-plain area, Mozambique*

***List of examinations for 2012***

<b>Name</b>	<b>Date</b>	<b>Degree</b>
Helena Öberg	3 February	PhD, Physical Geography
Martin Margold	10 February	PhD, Physical Geography
Marcus Nathanson	12 March	PhLic, Physical Geography
Malin Johansson	20 April	PhD, Physical Geography
Päivi Kaislahti Tillman	11 May	PhD, Quaternary Geology
Jakob Granit	7 June	PhD, Physical Geography



Excursion with students from Biogeo to Kuopervagge. Photo: Ewa Lind

## 6. Dissertations

The Department of Physical Geography and Quaternary Geology, Stockholm University

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

- SARA A. O. COUSINS, 2001. Plant species diversity patterns in a Swedish rural landscape: Effects of the past and consequences for the future. Dissertation No. 17. Faculty opponent: Dr. Roy Haines-Young
- CECILIA RICHARDSON-NÄSLUND, 2001. Spatial distribution of snow in Antarctica and other glacier studies using ground-penetrating radar. Dissertation No. 18. Faculty opponent: Prof. Robert W. Jacobel
- THOMAS SCHNEIDER, 2001. Hydrological processes in firn on Storglaciären, Sweden. Dissertation No. 19. Faculty opponent: Prof. Andrew Fountain
- HANS W. LINDERHOLM, 2001. Temporal and spatial couplings between tree-ring variability and climate in Scandinavia. Dissertation No. 20. Faculty opponent: Dr. Astrid Ogilvie
- MARIANNE I. LAGERKLINT, 2001. Marine multi-proxy records of late Quaternary climate change from the Atlantic Ocean. Dissertation No. 21. Faculty opponent: Dr. Lloyd H. Burckle
- RICHARD Y. M. KANGALAWÉ, 2001. Changing land-use patterns in the Irangi hills, central Tanzania. A study of soil degradation and adaptive farming strategies. Dissertation No. 22. Faculty opponent: Prof. William Adams
- ANDERS CLARHÄLL, 2002. Glacial Erosion Zonation - Perspectives on Topography, Landforms, Processes and Time. Dissertation No. 23. Faculty opponent: Dr. Chris Clark
- KRISTER N. JANSSON, 2002. Glacial geomorphology of north-central Labrador-Ungava, Canada. Dissertation No. 24. Faculty opponent: Dr. Andrée Bolduc
- BJÖRN E. GUNNARSON, 2002. Holocene climate and environmental fluctuations from subfossil pines in central Sweden. Dissertation No. 25. Faculty opponent: Prof. Mike G. L. Baillie
- KATARINA. LÖFVENHAFT, 2002. Spatial and temporal perspectives on biodiversity for physical planning – Examples from urban Stockholm, Sweden. Dissertation No. 26. Faculty opponent: Prof. Jan Bengtsson
- ANNA ALLARD, 2003: Vegetation changes in mountainous areas - A monitoring methodology based on aerial photographs, high-resolution satellite images, and field investigations. Dissertation No. 27. Faculty opponent: Doc. Timo Helle
- PER KLINGBJER, 2004: Glaciers and climate in northern Sweden during the 19<sup>th</sup> and 20<sup>th</sup> century. Dissertation No. 28. Faculty opponent: Dr. Georg Kaser
- OLA FREDIN, 2004. Mountain centred ice fields in northern Scandinavia Dissertation No. 29. Faculty opponent: Prof. Jon Landvik

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

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

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

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

The Department of Physical Geography and Quaternary Geology, Stockholm University  
Thesis in Quaternary Geology, published in Quaternaria, ser A. (2001)

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

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

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

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

The Department of Physical Geography and Quaternary Geology, Stockholm University  
Thesis in Quaternary Geology (2002-2005)

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

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

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

ANDERS BORGMARK, 2005: The colour of climate: changes in peat decomposition as a proxy for climate change. Dissertation No. 4. Faculty opponent: 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. Faculty opponent: Dr. Jane Sidall

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

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

ULF JONSELL, 2006: Sulfur in polar ice and snow. Interpretations of past atmosphere and climate through glacial archives. Dissertation No. 2. Faculty opponent: Dr. Mark Curran.

HANNA S. SUNDQVIST, 2007: Speleothems as environmental recorders – A study of Holocene speleothems and their growth environments in Sweden. Dissertation No. 3. Faculty opponent: Prof. Frank McDermott.

PATRIK KLINTENBERG, 2007: More water, less grass? An assessment of resource degradation and stakeholders' perceptions of environmental change in Ombuga grassland, northern Namibia. Dissertation No. 4. Faculty opponent: Prof. Stein Bie.

MARIA RYNER, 2007: Past environmental and climate changes in northern Tanzania. Vegetation and lake level variability in Empakaai Crater. Dissertation No. 5. Faculty opponent: Prof. Henry Lamb.

DANIEL S. VERES, 2007: Terrestrial response to Dansgaard-Oeschger cycles and Heinrich events: the lacustrine record of Les Echets, south-eastern France. Dissertation No. 6. Faculty opponent: Prof. John J. Lowe.

YOSHIHIRO SHIBUO, 2007: Modelling water and solute flows at land-sea and land-atmosphere interfaces under data limitations. Dissertation No. 7. Faculty opponent: Dr. Clifford Voss.

GESSESSE DESSIE, 2007: Forest Decline in South Central Ethiopia: Extent, history and process. Dissertation No. 8. Faculty opponent: Prof. Mats Widgren.

HERNÁN DE ANGELIS, 2007: Palaeo-ice streams in the north-eastern Laurentide Ice Sheet. Dissertation No. 9. Faculty opponent: Dr. Colm Ó Cofaigh.

AMÉLIE DARRACQ, 2007: Long-term development, modeling and management of nutrient loading to inland and coastal waters. Dissertation No. 10. Faculty opponent: Prof. Andrea Rinaldo.

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

- FREDRIK HANNERZ, 2008: Making water information relevant on local to global scale - the role of Information Systems for Intergrated Water Management. Dissertation No. 12. Faculty opponent: Prof. Dennis Lettenmaier.
- MATTIAS DE WOUL, 2008: Response of glaciers to climate change – Mass balance sensitivity, sea level rise and runoff. Dissertation No. 13. Faculty opponent: Dr. Roger Braithwaite.
- BRADLEY W GOODFELLOW, 2008: Relict non-glacial surfaces and autochthonous blockfields in the northern Swedish mountains. Dissertation No. 14. Faculty opponent: Dr. Adrian Hall.
- MARTINA HÄTTESTRAND, 2008: Vegetation and climate during Weichselian ice free intervals in northern Sweden – interpretations from fossil and modern pollen records. Dissertation No. 15. Faculty opponent: Prof. Donatella Magri.
- LINDA AMPEL, 2008: Dansgaard-Oeschger cycles and Heinrich events in western Europe – A diatom perspective. Dissertation No. 16. Faculty opponent: Prof. Sherilyn Fritz.
- GULL OLLI, 2008: Waterborne sediment and pollutant transport into lakes and accumulation in lake sediments. Dissertation No. 17. Faculty opponent: Prof. Ingmar Renberg.
- CHRISTINA E. JONSSON, 2009: Holocene climate and atmospheric circulation changes in northern Fennoscandia – interpretations from lacustrine oxygen isotope records. Dissertation No. 18. Faculty opponent: Dr. Philip Barker.
- KARIN EBERT, 2009: Cenozoic landscape evolution in northern Sweden. Geomorphological interpretation within a GIS-framework. Dissertation No. 19. Faculty opponent: Prof. Paul Bishop.
- SOFIA ANDERSSON, 2010: Late Holocene humidity variability in central Sweden. Dissertation No. 20. Faculty opponent: Prof. Frank Chambers.
- JAKOB HEYMAN, 2010: Palaeoglaciology of the northeastern Tibetan Plateau. Dissertation No. 21. Faculty opponent: Prof. Frank Lehmkuhl.
- TIMOTHY JOHNSEN, 2010: Late Quaternary ice sheet history and dynamics in central and southern Scandinavia. Dissertation No. 22. Faculty opponent: Prof. James T. Teller.
- BRITTA SANNEL, 2010: Temporal and spatial dynamics in subarctic peat plateaus and thermokarst lakes. Dissertation No. 23. Faculty opponent: Prof. Serge Payette.
- THOMAS GRABS, 2010: Water quality modelling on landscape analysis: importance of riparian hydrology. Dissertation No. 24. Faculty opponent: Dr. Irena Creed.
- ERIKSSON SOFIA, 2011: Cross-scale perspectives on heterogeneity in Swedish boreal forests. Dissertation No. 25. Faculty opponent: Prof. Risto Kalliola.
- HUGELIUS GUSTAF, 2011: Quantity and quality of soil organic matter in permafrost terrain. Dissertation No. 26. Faculty opponent: Prof. Philip Wookey.

INGVANDER SUSANNE, 2011: Snow particle size investigations using digital image analysis - implications for ground observations and remote sensing of snow. Dissertation No. 27. Faculty opponent: Prof. Matti Leppäranta.

PERSSON KLAS, 2011: Quantifying pollutant spreading and the risk of water pollution in hydrological catchments - A solute travel time-based scenario approach. Dissertation No. 28. Faculty opponent: Prof. Aldo Fiori.

ÖBERG HELENA, 2012: Diatoms in Lake Duluti - Tracking Environmental Variability in Northern Tanzania during the Past 1000 Years. Dissertation No. 29. Faculty opponent: Prof. Dr. Robert Marchant.

MARGOLD MARTIN, 2012: Retreat pattern and dynamics of glaciers and ice sheets: reconstructions based on meltwater features. Dissertation No. 30. Faculty opponent: Dr. Reader Chris Stokes.

JOHANSSON MALIN, 2012: Remote sensing of supra-glacial lakes on the west Greenland Ice Sheet. Dissertation No. 31. Faculty opponent: Dr. Andreas Ahlstrøm.

KAISLAHTI TILLMAN PÄIVI, 2012: Holocene climate and environmental change in high latitudes as recorded by stable isotopes in peat deposits. Dissertation No. 32. Faculty opponent: Prof. Thomas W.D. Edwards.

GRANIT, JAKOB, 2012: The Collective Action Dilemma in Managing Transboundary Freshwaters - An Analysis of an Outcome-Driven Framework. Dissertation No. 33. Faculty opponent: Prof. Carl Christiansson.



Fieldwork at Prins Karls Forlandet, Svalbard. Photo: Ewa Lind

## 7. International exchange

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

### 7.1. Lecturer exchange

Lecture at Purdue University in School of Civil Engineering, Ecological Sciences and Engineering Interdisciplinary Graduate / *Steve Lyon*

Visiting lecturer in water conflict management, UNESCO-IHE Institute for Water Education, Delft, the Netherlands / *Arvid Bring*

Exchange programme and joint master programme with the Inst. of Environmental Science and Management, Univ. of Latvia, Latvia / *Peter Schlyter, Ingrid Stjernquist*

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

### 7.2. Student exchange

*Erasmus exchange (coordinator: K. Ebert)*

Freiburg/Tyskland

Innsbruck/Österrike

Bern/Schweiz

Dijon/Frankrike

Leuven/Belgien

Ostrava/Tjeckien

Grenoble/Frankrike

La Sorbonne, Paris/Frankrike

Coventry/UK

Murcia/Spanien

Aachen/Tyskland

Gent/Belgien

Turku/Finland

Novia/Finland

Patras/Grekland

## 8. Conferences and seminars

### January

Lind: *Nordic Geological Winter Meeting Reykjavik, Iceland*

### February

Ihse: *Kungliga Skogs- och Lantbruksakademins sammankomst*

Kirchner: *Arctic Council at the Swedish Polar Research Secretariat, Stockholm, Sweden*

Sundqvist: *Daphne 4th Workshop, Heidelberg, Germany*

Lam: *International LiDAR mapping forum, Hyatt Regency Denver at Colorado Convention Center, Denver, Colorado, USA*

Waldén: *Meeting of the Swedish Oikos Society in Linköping, Sweden*

### March

Ebert: *Arctic Workshop, Winter Park, Colorado, USA*

Holmgren: *Environmental studies in Africa – Past and Present Perspectives, Stockholm, Sweden*

Kirchner: *Nordic Grand Challenge Research Programme on eScience in Climate and Environmental Research Workshop Arlanda, Sweden*

Sjöberg:  
Stjernquist: *March, Polarforum, Stockholm, Sweden*  
*Framtidens allér – förändring, funktion och forskning. Idéseminarium, SLU, Alnarp, Sweden*

### April

Frampton, Hind: *EGU, General Assembly, Vienna, Austria*

Kirchner, Lind, Lyon,  
Nathanson, Wastegård

Ihse: *Introduction to Northscape Workshop, Stockholm, Sweden*

*Landskapets helhet – utgångspunkt och strategi för kunskapsuppbyggnad och analys av landskapets värden – Festseminarium för Ann Norderhaug, Bioforsk Midt-Norge, Kvithamar, Norge*

*Den svenska hagen i våra hjärtan- Observatoriekullen, Stockholm, Sweden*

**May**

Berntsson, Lind: *BBCC Climate Research PhD Conference 2012, Körunda, Sweden*  
Plikk, Shala, Sjöberg,

Frampton: *International Conference on Groundwater in Fractured Rocks, Prague, Czech Republic*

Kirchner: *6th Arctic Paleoclimate and its Extremes (APEX), Oulu, Finland.*

Moberg: *Natural and man-made climate change, The Royal Swedish Academy of Sciences, Stockholm, Sweden*

Plikk: *Nordic Diatomists' Meeting 2012, Copenhagen Denmark*

Preusser: *German Subcommission on Stratigraphy, Illmensee-Höchsten, Germany*

**June**

Bring, Sjöberg: *Tenth International Conference on Permafrost, Salekhard, Russia*

Holzkämper & Wastegård: *BioCold field workshop, Longyearbyen, Svalbard*

Seguinot: *IGS Symposium on Glaciers and ice sheets in a warming climate, Fairbanks, Alaska*

**July**

Preusser: *Luminescence and ESR dating conference, Torun, Poland*  
*Climate change and prehistoric occupation of the Arabian Peninsula, University of Bern, Switzerland*

**August**

Berntsson, Rosqvist & Shala *International Paleolimnology Symposium (IPS2012), Glasgow, Scotland*

Regnell: *History and evolution of agriculture in the Nordic countries and beyond. ". Kongsvold, Norway*

Stjernquist: *The Delta Kappa Gamma Society International Conference, Baden-Baden, Germany*

*30th International Conference of the System Dynamics Society, St. Gallen, Switzerland*

**September**

Clason: *International Glaciological Society British Branch Meeting at University of Aberdeen, UK*

## **October**

- Bring: *Arctic Resilience Report Workshop, Kautokeino, Norway*
- Anpassning till klimatförändringar – Särskilt med avseende vattnets roll i jord- och skogsbruk, KSLA, Stockholm*
- Frampton: *Future permafrost hydrology research in Svalbard*
- Holmgren, Sundqvist: *The 2nd NEO Research Workshop: Climate and Environmental Change in the Mediterranean Region, Costa Navarino, Messinia, Greece*
- Ihse: *Vad vi äter- och hur det på påverkar biodiversitet och landskap- Seminarium om Future Agriculture, SLU, Ultuna, Sweden*
- Lyon: *Association of Polar Early Career Scientists (APECS) – Stockholm, Sweden*
- Preusser: *Earthtime-EU, Santorini, Greece*  
*German Luminescence and ESR Dating (LED) Conference, Mannheim, Germany*
- Clason, Seguinot: *IGS Nordic Branch meeting, Stockholm, Sweden*
- Stjernquist: *The Excellence in Education Worldwide. Workshop, International Education Excellence Committé, DKG Society International, Austin, Texas, US*
- Green Enterprising and University Innovation for a Sustainable Future. International Conference, GESBAR, Lomonosov Moscow State University, Russia*

## **November**

- Preusser: *INTIMATE meeting, Bludenz, Netherlands*
- Schlyter & Stjernquist: *Green Enterprising and the Innovation for a Sustainable Future. Conference within the project Green Enterprising and Innovation as a Component of Environmental Management Studies: A Swedish-Russian-Latvian Long-term Network Cooperation, Stockholm, Sweden*

## **December**

- Bring, Clason:  
Hugelius, Rosqvist,  
Stroeven: *AGU Fall Meeting, San Francisco, USA*

Ihse: *Vegetation I IRF-flygbilder. Workshop, Direktoratet for Naturforvaltning, Trondheim, Norway*

*Om man ser det lite grand från ovan”-att förstå världen från kartor och bilder från flygplan o satelliter- Senioruniversitet, Stockholm, Sweden*

## 9. Conference/Seminar convers, Editorships, PhD opponents

Clason: Organiser and chair of session ”Surpaglacial and Englacial Hydrology” at AGU Fall Meeting, San Francisco, USA, December

Eknert: Organizing a seminar together with Svenska golfförbundet: Multifunktionella golfbanor - hur kan golfbanor utformas och skötas för att gynna biologisk mångfald? Sweden, May

Finné, Lind: Organizing committee: BBCC PhD Climate Research Conference, Körunda, Sweden, May

Holmgren: Organized conference: Environmental studies in Africa – Past and Present Perspectives, Sweden, March

Organized the 2nd NEO Research Workshop: Climate and Environmental Change in the Mediterranean Region, Costa Navarino, Messinia, Greece, October

Hättestrand,  
Hättestrand,  
& Kleman Organising of 3rd Annual SWEDQUA field trip to Northern Sweden, August

Jansson: Editor-in-Chief, Geografiska Annaler, an international Wiley-Blackwell journal in Physical Geography, 2010–.

Scientific Editor, Zeitschrift für Gletscherkunde und Glazialgeologie 2005–.

Kirchner: Convenor of the 26th FRISP workshop (Forum for Research into Ice Shelf Processes), Utö, Stockholm Archipelago, Sweden, May

Opponent at the PhD defense of Anne Munck Solgaard, Faculty of Science, University of Copenhagen, Centre for Ice and Climate, Denmark, December

Lyon: Doctoral examination board for John Juston, Land and Water Resources Engineering, KTH, Sweden, November

Mård Karlsson,  
Ingvander, Sjöberg Organizing committee: APECS Sweden’s workshop on field methods and project design, Sweden

- Preusser: Editor Quaternary Geochronology
- Sannel: Winner of the Stockholm regional final and fourth place in the national final of Research Grand Prix, a national competition among researchers. Co-ordinated by Vetenskap & Allmänhet and arranged by the research councils FAS, Formas, Vetenskapsrådet and VINNOVA.
- Schlyter, Stjernquist: Green Enterprising and the Innovation for a Sustainable Future. Conference within the project Green Enterprising and Innovation as a Component of Environmental Management Studies: A Swedish-Russian-Latvian Long-term Network Cooperation at Stockholm University Green Enterprising and University Innovation for a Sustainable Future. Lomonosov Moscow State University. Member of the organisation committee.
- Stjernquist: Member of the International Education Excellence Committé, DKG Society International, US
- Wastegård: Convener of NORDVULK summer school on tephra studies, Leirubakki and Kirkjubæjarklaustur, Iceland, August



Geography students at the slope of the active volcano Mt Ruapehu, New Zealand. Photo: Britta Sannel.

## 10. Financial support

### GRANT ORGANIZATIONS

EU	<i>European Union</i>
FORMAS	<i>The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (Forskningsrådet för miljö, areella näringar och samhällsbyggande)</i>
I PRO	<i>International Programme Office for Education and Training</i>
RS	<i>Swedish National Space Board (Rymdstyrelsen)</i>
SI	<i>Swedish Institute</i>
SGU	<i>Geological Survey of Sweden (Sveriges geologiska undersökning)</i>
SIDA	<i>Swedish International Development Cooperation Agency (Styrelsen för internationellt utvecklingssamarbete)</i>
SKB	<i>Swedish Nuclear Fuel and Waste Management (Svensk kärnbränslehantering AB)</i>
SSM	<i>Swedish Radiation Safety Authority</i>
SU	<i>Stockholm University</i>
TRI	<i>Top-level Research Initiative</i>
VR	<i>The Swedish Research Council (Vetenskapsrådet)</i>

RESEARCH GRANT RECEIVER	FUNDING AUTHORITY	PROJECT	AMOUNT
Berg	SIDA	Mainstreaming an ecosystem based approach to climate change into biodiversity conservation planning in Vietnam.	423 594
Berg	SIDA	Sustainable management of ecosystem services for long term aquaculture production in the Mekong Delta, Vietnam	1 500 000
Brown	SIDA	Measuring environmental change in Dafur, Sudan: implications for the conflict	400 000
Brown	RS	Multi-scale investigations of microwve snowpack obeservations (MIMSO)	1 364 000
Cousins	FORMAS	Biodiversity and ecosystem services of small forest fragments in European landscapes	100 000
Cousins	FORMAS	Hur kan fröbanker bidra till växters uthållighet i fragmenterade landskap vid en klimatförändring?	507 500
De la Torre Castro	VR	Genus, fattigdom och marina resurser i en kontext av klimatförändringar	1 000 000
Destouni	SU	Ekoklim - A multiscale, cross-disciplinary approach to the study of climate change on natural resources, ecosystem services and biodiversity.	3 825 000

RESEARCH GRANT RECEIVER	FUNDING AUTHORITY	PROJECT	AMOUNT
Destouni	SU	Klimatmodeller	696 000
Destouni	VR	Källor, retention-självrening och transport av närsalter i avrinningsområden under klimatförändring	1 300 000
Destouni	SU	BEAM (Baltic Ecosystem Adaptive Management)	655 000
Destouni	Oskarshamns kommun	Nova FoU - KLIV (Climate-land-water changes and integrated water resource management)	500 000
Frampton	SKB	Flöde och transport i sprickigt kristallint berg	204 830
Hansson	VR	Vilken källa har den klimatpåverkade sulfataerosolen idag och igår, och vilken betydelse har framtida miljöförändringar för sulfataerosolens klimatpåverkan? - att förstå relevanta processer	810 000
Holmgren	SIDA	Agreement regarding fund entrusted to the Swedish Institution as part of the Agreement on Research Cooperation between Sweden and The University of Dar es Salaam (UDSM) - Integrated Natural resource Mangement	367 500
Holmgren	VR	Holocena klimatvariationer i södra Afrika. Konfrontation av paleoklimatdata, särskilt från speleothems, med isotop- och klimatmodeller	1 031 000
Holmgren	TEMES/SU	"TEMES - Cooperation and partnership for climate and Environmental Research in the Mediterranean area through Navarino Environmental Observatory (NEO) Research Program	2 850 000
Holmgren	SIDA	Environment and Climate Research Programme	315 000
Holmgren	SIDA	Environment and Natural Resource Management	367 500
Holmlund	VR	Klimat och miljödata från Arktis 1880-1980	800 000

RESEARCH GRANT RECEIVER	FUNDING AUTHORITY	PROJECT	AMOUNT
Holmlund	SSM	Temperaturförhållanden i en inlandsis	1 093 000
Jansson K	VR	- Vattenflöde och erosionsförmåga Katastroftappningar av smältvattensjöar i Patagonien, Sydamerika: omfattning, timing, organisation och smältvattnets inverkan på den termohalina oceancirkulationen	540 000
Jansson P	SKB	Water routing through ice sheets based on Greenland field data and its application to the Fennoscandian Ice Sheet	352 400
Jansson P	SKB	Glaciologiskt expertstöd in GAP (the Greenland Analogue Project)	257 000
Jansson P	Marianne & Marcus Wallenbergs Stiftelse	Workshop on Measurement and Uncertainty Assessment of Glacier Mass Balance	200 000
Helmens	SKB	Weichselian - Holocene climate variability and environmental change in Scandinavia based on the Sokli sediment sequence	453 000
Helmens	SKB	Review of Early Weichselian climate	729 328
Helmens	SKB	Climate dynamics and environmental change during the Eemian interglacial (MIS 5e) in Scandinavia inferred from a unique sediment sequence at Sokli (northern Finland)	345 000
Kleman	FORMAS	Linnéansökan - Climate evolution, variability and sensitivity, Bertil Bolin Climate Center	2 935 000
Kleman	VR	Norra hemisfärens paleotopografi under den glaciala sista cykelns uppbyggnads-faser 115-21 kyr BP, och dess inverkan på atmosfärens circulation	372 000
Kuhry	VR	Long-term Carbon Storage in Cryoturbated Arctic Soils	675 000
Kuhry	TRI	Impacts of a changing cryosphere - depicting ecosystem-climate feedbacks from permafrost, snow and ice	414 227
Kuhry	EU-FP7	Changing Permafrost in the Arctic and its Global Effects in the 21st Century	900 000

RESEARCH GRANT RECEIVER	FUNDING AUTHORITY	PROJECT	AMOUNT
Lindborg	FORMAS	Träd på naturbetesmarker - effekter av ersättningsssystem och skötsel på mångfald och artsammansättning	1 379 000
Lindborg	FORMAS	SAPES (Multifunctional Agriculture: Harnessing Biodiversity for Sustaining Agricultural Production and Ecosystem Services)	402 300
Lindborg	FORMAS	Habitat restoration in fragmented landscapes: effects on biodiversity and ecosystem functions	800 000
Lyon	VR	LiDAR data: ett innovativt verktyg för övervakning av flödet i vattendrag	750 000
Lyon	SGU	Modeling permafrost spatial distributions and thawing rates in arctic/sub-arctic Sweden using recession flow analysis	330 000
Lyon	SIDA	Water resources effects of land-water management in Tanzania, Africa	800 000
Moberg	VR	Klimatdata och klimatmodeller för senaste millenniet	900 000
Moberg	VR	Rekonstruktion av klimatet under senaste millenniet	1 051 000
Holmlund	SSM	Hantering av klimatrelaterade frågor i säkerhetsanalysen SR-Site	200 000
Regnell	Jönköpings läns museum	Människans skog under 3500 år i sydvästra Småland	199 400
Regnell	Kalmar läns museum	Analys av jordprover från Trafikplats Jenny, Västervik, Småland	100 000
Rosqvist	FORMAS	Utveckling och effekter av flygbränsleförorening i Kebnekaise	200 000
Schlyter	SI	Konferens - Green innovation and entrepreneurship for a sustainable future - how can education contribute?, S:t Petersburg 111023--24, inom ramen för Svenska institutets Östersjöprogram/ Visbyprogrammet	216 000
Schlyter	IPRO Programkontoret	TEMPUS IV	28 000
Schlyter	IPRO Programkontoret	TEMPUS IV	28 000
Stroeven	VR	Klimat- och nedsningshistorik i Centralasien och Tibet	1 000 000
<b>Totalt</b>			<b>37 266 579</b>

## 11. Staff (autumn 2012)

Department Chairman/Head: Professor Arjen Stroeven  
Vice Chairman: Dr Ingrid Stjernquist

### PROFESSORS

Christiansson, Carl	Professor of Physical Geography,
Cousins, Sara	Professor of Physical Geography
Destouni, Georgia	Professor of Hydrology, Hydrogeology and Water Resources
Hansson, Margareta	Professor of Environmental Science with emphasis on Physical Geography/Quaternary Geology
Holmgren, Karin	Professor of Physical Geography
Holmlund, Per	Professor of Glaciology
Hättestrand, Clas	Professor of Physical Geography
Jansson, Peter	Professor of Physical Geography
Kleman, Johan	Professor of Remote Sensing
Kuhry, Peter	Professor of Physical Geography
Kuylenstierna, Johan	visiting Professor of Water Resources
Preusser, Frank	Professor of Quaternary Geology with emphasis on Environmental Reconstruction
Rosqvist, Gunhild	Professor of Geography, especially Physical Geography
Stroeven, Arjen	Professor of Physical Geography
Sverdrup, Harald	visiting Professor
Wastegård, Stefan	Professor of Quaternary Geology

### ACADEMIC STAFF

#### *Associate Professors (PhD, Docenter)*

Brown, Ian	senior lecturer
Dahlberg, Annika	senior lecturer
Gunnarson, Björn	director of studies, researcher
Helmens Femke, Karin	researcher
Holzkämper, Steffen	senior lecturer
Jansson, Krister	senior lecturer
Jarsjö, Jerker	senior lecturer
Lindborg, Regina	senior lecturer
Lyon, Steve	senior lecturer
Moberg, Anders	researcher, also senior lecturer
Risberg, Jan	senior lecturer
Seibert, Jan	senior lecturer

#### *PhD*

Borgström, Ingmar	senior lecturer
Clason, Caroline	postdoctor
Dahlke, Helen	postdoctor
De Angelis, Hernán	research associate
Frampton, Andrew	associate senior lecturer
Gong, Lebing	postdoctor
Goodfellow, Bradley	postdoctor

Grudd, Håkan	research engineer
Hind, Alistair	postdoctor
Hugelius, Carl-Gustaf	researcher
Hättestrand, Martina	researcher
Ingvander Susanne	postdoctor
Kirchner, Nina	senior lecturer
Kaislahti Tillman, Päivi	researcher
Kirchner, Nina	senior lecturer
Margold, Martin	researcher
Norström, Elin	researcher
Plue, Jan	postdoctor
Prieto, Carmen	research engineer
Quin, Andrew	postdoctor
Rader, Romina	postdoctor
Rogberg, Peter	researcher
Sannel, Britta	senior lecturer
Schlyter, Peter	senior lecturer
Selroos, Jan-Olof	researcher
Skånes, Helle	senior lecturer
Stjernquist, Ingrid	senior lecturer
Sundqvist, Hanna	researcher
Vercauteren, Nikki	postdoctor
Westerberg, Lars-Ove	senior lecturer, director of undergraduate studies
Zhang, Qiong	senior lecturer
Öberg, Helena	postdoctor

*PhLic, MSc, BSc*

Eknert, Bo	PhLic, lecturer
Fridfeldt, Anders	BSc, lecturer, director of undergraduate studies
Karlsson, Sven	PhLic, researcher
Nordström, Anders	PhLic, senior lecturer
Regnell, Mats	PhLic, researcher
Yrgård, Anders	PhLic, lecturer

*Postgraduate students (PhLic, MSc, BSc)*

Aggemyr, Elsa  
Ahlkrona, Josefin  
Auffret, Alistair  
Berntsson, Annika  
Bosson, Emma  
Boyd, Meighan  
Bring, Arvid  
Dessirier, Benoit  
Ermold, Matti  
Finné, Martin  
Fritzson, Ruben  
Fu, Ping  
Gribenski, Natacha  
Helanow, Christian

Higgins, Lindsey  
Jantze, Elin  
Jaramillo, Fernando  
Johansson, Hans  
Kalumanga, Elikana  
Karlin, Torbjörn  
Koutsouris, Alexander  
Krusic, Paul  
Lam, Norris  
Lilja, Carl  
Lind, Ewa  
Lindgren Jessica  
Massuanganhe, Elidio  
Mazi, Ekaterina  
Mbanguka, René  
Mercer, Andrew  
Mulyil Asokan, Shilpa  
Mwansasu, Simon  
Mård Karlsson, Johanna  
Nathanson, Marcus  
Nylund, Michaela  
Palmtag, Juri  
Plikk, Anna  
Seguinot, Julien  
Siewert, Matthias  
Shala, Shyhrete  
Siteo, Sandra  
Sjöberg, Ylva  
Teutschbein, Claudia  
Törnqvist, Rebecka  
Verrot, Lucile  
Waldén, Emelie  
Wahlstrand, Anna  
Weiss, Niels

*Teaching assistants*

Dawson, Lucas  
Delrue, Josefien  
Gilljam, Carl  
Yotis Petersson, Lena  
Wennbom, Marika

**ADMINISTRATIVE STAFF**

Blåndman, Susanna	BSc, BA, human resources administrator
Damberg, Maria	MSc, study advisor
Ebert, Karin	PhD, educational administrator
Hansson, Erik	MSc, educational administrator
Henriksson, Carina	University certified administrator, senior administrative officer

Hörnby, Kerstin	MSc, educational administrator
Isdal, Maija-Liisa	BSc, financial administrative officer
Maneas, Giorgos	PhD, station manager Navarino Environmental Observatory
Kesselberg, Margareta	BA, BBCC administrator and informant
Reuterswärd, Karin	PhLic, educational administrator
Richert, Linus	administrator
Schaffer, Christina	MSc, educational administrator
Stenberg de Serves, Malin	PhD, information officer
Sturesson, Elisabeth	MSc, educational administrator
Trygger Bergman, Sofie	MSc, educational administrator
Åkerblom, Lena	higher administrative officer

#### **TECHNICAL STAFF**

Alm, Göran	PhLic, systems engineer
Brotén, Bengt	technician
Cabrera, Yanduy	caretaker
Jacobson, Rolf	web editor
Berglöf, Rasmus	systems engineer
Skantz, Johan	caretaker
Spångberg, Martin	systems engineer
Wolff, Jennifer	research assistant
Österlin, Carl	research assistant

#### **PROFESSORS EMERITI**

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