

Annual Report 2015

Karin Persson and Malin Stenberg de Serves (ED)



© Sabina Pracic

Finance team controlling annual massbalance budget for Storglaciären, Tarfala Research Station. Photo: Sabina Pracic.

Department of
Physical Geography



Stockholm
University



Teamwork! The research unit "Hydrology, Water Resources and Permafrost" socialize on the water at Djurgårdsbrunnskanalen. Photo: Alexander Koutsouris



Department Day, this time arranged by research unit "Biogeography and Geomatics". Photo: Rolf Jacobson.

Words from the Head of Department - a new organisation

Year 2015 was the year when we launched a new organisation. We have created distinct subdivisions, our five research units. We have formed a postgraduate education committee. We have initiated "teaching colloquium", targeted fora for our educational programs at basic level. The growth in size of the department over the last years has driven the need to adapt the organisation to a new situation. Our organisation shall facilitate internal communication, engagement in decision-making processes and a sense of belonging. A good work environment is a prerequisite for enabling us to focus on our core tasks, expressed by our vision:

To be a world-class academic organisation that advances understanding and learning in the natural conditions and processes of the world we live in, the impacts of society on the natural environment, and societal responses to environmental challenges.

In parallel with the process of change, strong commitments by the academic staff to create excellent research and to provide high quality education have continued. The number of publications continues to be high and several research grants have been allocated, not the least to our junior researchers.

We have seen the completion of five PhD dissertations, seven Licentiate degrees, 35 Master thesis and 48 Bachelor theses. The research and education produced make a substantial contribution to a better understanding of the dynamics behind physical processes on earth and to a better integration of physical and social data. Based on the research carried out we provide our students with an understanding about the complexities that is related to natural resources, human resource use and the issue of sustainable development.

The most important resource of a university is its people! The Department of Physical Geography is populated by amazing people. People that contribute to a diverse, creative and productive department. A department where it is fun to be! And this is important – a bored scientist does not produce any good research, a bored teacher does not make any good teaching, a bored administrator does not provide any good service! I would like to thank you all for contributing to making this department a fun place to be at and for creating such a stimulating research and educational environment!

Professor Karin Holmgren

Words from the Head of Administration

During the spring a large office move took place where teachers, researchers and PhD students moved closer to colleagues belonging to the same research unit. The student administration moved closer to the entrance of corridor T3 while finance, HR, communication and general administration moved to T2. The move was coordinated by the Head of Administration together with geo-service and an external moving firm. The move enabled a larger space for a meeting room on the second floor called the Navarino room and the meeting room on the fourth floor changed name to the Tarfala room.

In the beginning of the spring semester the newly formed Head of Department council participated in a leadership course held by Anders Lundin from Värdegrundsfabriken.

In August the finance staff together with the Head of Administration visited Tarfala research station during four days. The reason for the visit was to learn more about Tarfala's financial dealings.

In the end of September the technical and administrative staff participated in a conference titled "Communication, stress and re-organization". The conference was held at Yasuragi, Hasseludden with Dan Hasson, stress researcher, and Petra Brask, efficiency consultant, as speakers.

The year was concluded with a Christmas lunch at Ulriksdals Wårdshus.

Head of Administration Sabina Pracic



New Department Structure

Department of Physical Geography

Department Board

- Budget committee
- Technology committee
- Equality committee
- Environment committee
- Education committee

Head of Department

Karin Holmgren

Deputy head of Dept.
Jerker Jarsjö

- Management group
- Advisory group
- Professor council

Head of Administration

Sabina Pracic

- Economy administration
- Department administration
- Staff administration
- Study administration
- Technical support

Director of Studies

Steffen Holzkämper

- Subject responsible
- Program responsible
- Study administration

Director of Studies

PhD level

Helle Skånes

- Research education committee
- Subject responsible

Research Units

- Biogeography and Geomatics
Head of Unit: Sara Cousins

- Geomorphology and Glaciology
Head of Unit: Clas Hättstrand

- Hydrology, Water Resources and Permafrost
Head of Unit: Georgia Destouni

- Climate Science and Quaternary Geology
Head of Unit: Anders Moberg

- Environment, Resource Dynamics and Management
Head of Unit: Håkan Berg

Financial Support received 2015

External Grants

Research Grant Receiver	Funding Authority	Project Name	Total Grant (TSEK)	
Auffret Alistair	FORMAS	Markanvändning- och klimatförändringars påverkan på växtdiversitet och utbredningar	3 704	
Hall Adrian	SKB	Impact of glacial erosion over timescales of 0,1 to 1 million years at Forsmark	1 486 (2015)	*
Hugelius Gustaf	VR	Svenskt deltagande i JPI Climate Arctic and Boreal system år 2014-2017	4 641	
Jaramillo Fernando	VR	Hydroklimat- observationer och rymdbaserad hydrologi för kvantifiering av mänskligt driven konsumtion av sötvatten från vattenreservoarer	3 150	
Lyon Steve	KVA	Ensuring disaster risk reduction via sustainable wetland development in Zambia	90	
Lyon Steve	SIDA	Linking Public -Private Partnership to Secure Sustainable Water Resources Management in the Kilombero-River Basin	3 750	
Palmtag Juri	FORMAS	BBCC-Workshop Potsdam	77	
Rosqvist Gunhild		Effekter av förändringar i klimat- och markanvändning på rennärning i norra lappland	54	
Rosqvist Gunhild	SLU/SITES	SITES	600	
Rosqvist Gunhild	SLU/SITES	SITES	1 260	
Schlyter Peter	UHR	Förberedande besök Erasmus+	20	
Schlyter Peter	UHR	Förberedande besök Erasmus+	20	
Sjöberg Ylva	FORMAS	Kopplade förändringar i permafrost och hydrologi i och med Arktisk uppvärmning. Kvantifiering av förändringar i permafrost och vatten-temperaturer med hjälp av ny modelleringsteknik och fältmätningar	3 582	
Skånes Helle		Minor research assignments	15	*
Skånes Helle	Ekerö Kmn	Biotopdatabas för Ekerö kommun	500	*
Stjernquist Ingrid	EU	EU/Adapt/Econ II	1 054 (EUR)	
Stroeven Arjen		När var glaciärerna i de svenska fjällen mindre än i dag?	40	
Stroeven Arjen	Arrhenius	Stipend for guest lecturer	20	
Wastegård Stefan	VR	Precise linking of late Quaternary paleoclimate records in the North Atlantic region	2 950	
			Sum	25 959 (exl. 1 054 EUR)

Internal Grants

Research Grant Receiver	Funding Authority	Project Name	Total Grant (TSEK)
Jansson Krister	SU	Development of webbased course, Paleoglaciologi	279
Stroeven Arjen	SU	Research grant	810
Trygger Sophie	SU	Project grant, Pedagogical ambassador	250
			Sum 1 339

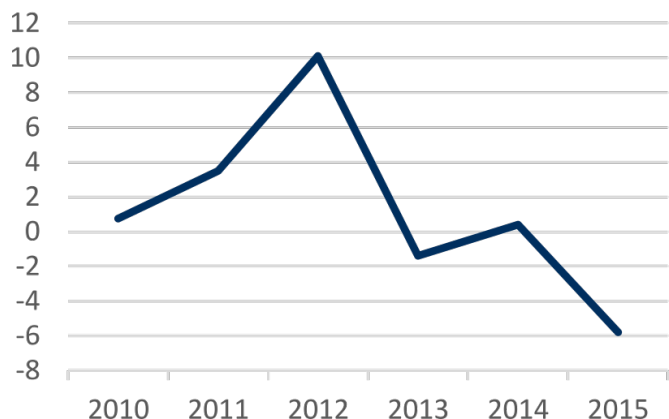
*Contract research

Grants (MSEK)



Research grants received 2010-2015.

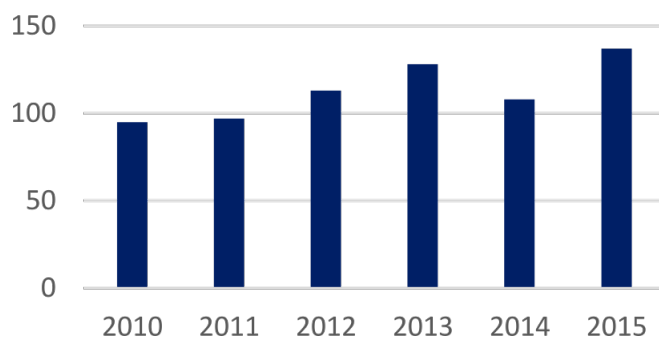
Balance (MSEK)



Department balance 2010-2015. The peak 2012 can be explained by administrating the Bolin centre economy.

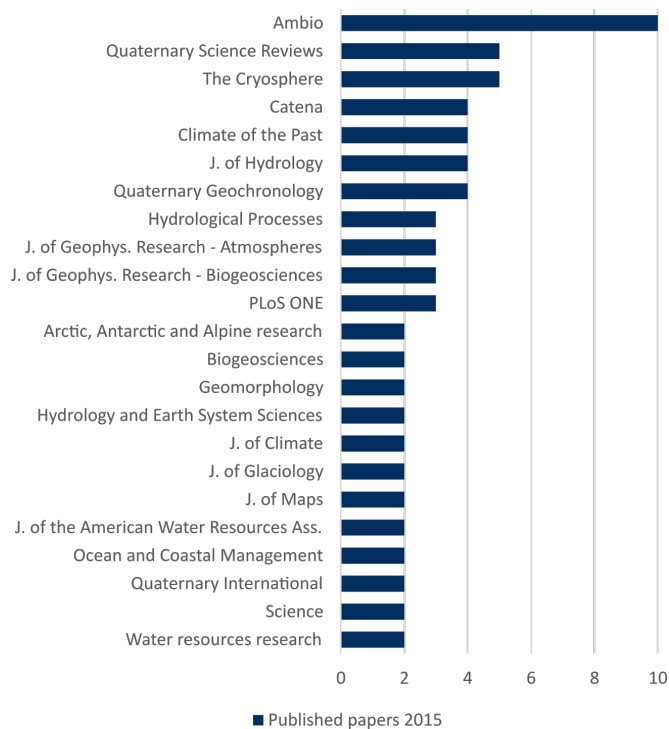
Publications 2015

Publications (peer reviewed)



Number of peer reviewed publications 2010-2015

Published Papers Per Journal



A total of 137 publications out of which the most frequent journals are listed above.

QR code to all NG Publications in 2015:



Research Unit Biogeography and Geomatics

Head of Research Unit: Sara Cousins

Biogeography is the study of the spatial distribution of plants and animals – “Life on Earth”. Our research focuses on understanding historical and present interactions of humans, plants and animals with landscapes, and their effects on biodiversity, conservation and ecosystem services. We work at multiple scales, from pastures to regions, from seeds to elephants, both in water and on land.

Geomatics is the acquisition, management and analysis of geospatial data. It includes geographical information science (GIS), Earth Observation (EO), surveying and geodesy. Our research develops methods to exploit the capabilities of geodata for a range of applications in Earth and environmental sciences. Presently our research focus is on questions related to the Arctic and sub-Arctic, including research into snow and permafrost. Both areas have become increasingly important for informing environmental policy relating to climate and land use change from the local to the international scale.

Our unit is responsible for two Master’s programs; Landscape Ecology and Geomatics with Remote Sensing and GIS, and we are engaged in all three of the department’s Bachelor level programs.

Some notable events, among others, in 2015: Elikana Kalumanga defended his Ph.D. thesis “How elephants utilize a miombo-wetland ecosystem in Ugalla landscape, Western Tanzania” and Simon Jakobsson defended his Ph.Lic. thesis “Woody or treeless pastures? Effects of EU tree density limitations on biodiversity in woody pastures”.

The research unit was responsible for “the department day” which was held in November. The unit presented their research showing methods for data collection and analysis.

For example seed identification and the spectral reflectance of plants.

The paper “Regional-scale land-cover change during the 20th Century and its consequences for biodiversity” (Cousins, Auffret, Lindgren, Tränk) was highlighted in national media, both radio and television.

Sara Cousins and Jessica Lindgren participated on national Swedish Radio “Naturmorgon” where they talked about landscape changes and species decline. Ian Brown was interviewed by the national Science Radio “Vetenskapsradion” regarding the thinning of the Greenland icesheet detected in laser scanning data.

Gustaf Hugelius was interviewed and featured in an article about permafrost and climate in the popular scientific journal “Forskning och Framsteg”. There was also a high interest in the feedback of permafrost thaw to global climate during the international COP21 climate negotiations. Gustaf Hugelius was featured in the national Swedish newspaper “Aftonbladet” and also participated in an open chat session with readers to answer questions about climate change and Arctic ecosystems. Gustaf Hugelius was co-author of a review paper in Nature which was extensively featured in international media, including the newspapers “The Washington Post”, “The New York Times” and “The Guardian”.

Albert et al. 2015 (together with Auffret, Plue and Cousins as co-authors) was highlighted as an Editors Choice for the September issue of the journal Oikos.

Ian Brown as a member of the European Space Sciences Committee (ESSC) met with the national inquiry on Space Strategy and with the ESSC submitted recommendations on future space strategy.

The EU Joint Programme Initiative Climate research consortium “Constraining uncertainties in the permafrost-climate feedback (COUP)” coordinated by Gustaf Hugelius had its kick-off in Geohuset, Stockholm University in January.



Wooded pasture in Högemålen, Gränna (Småland). Photo: Simon Jakobsson.



Sampling permafrost soils developed in non-sorted circles. Herschel Island in the western Canadian Arctic. Photo: Matthias Siewert.



Discussing grassland management with one of the stakeholders in Långmaren nature reserve. Södermanland County June 2015. Photo: Sara Cousins.

Research Unit Climate Science and Quaternary Geology

Head of Research Unit: Anders Moberg

We study climate and environmental changes, under present conditions and back in time during the glacial cycles of the Quaternary period.

Our research can be divided into four themes:

- Recent climate change impacts on the environment
- Past climate and environment reconstruction
- Climate modelling
- Model-data comparison methods

Modern instrumental observational data are used together with information from natural archives such as lake sediments, peat bogs, ice cores, cave deposits, tree rings, glacial sediments, and archaeological material, to study changes in climate and the environment.

Our research material come from the entire world. We have ongoing projects in the Nordic countries, Europe, Africa, South America, Northern Russia, the Himalayas, Canada, Antarctica and Greenland.

We also perform simulations with climate models to study the functional behaviour of the climate system under conditions different from those of today and collaborate with statisticians to develop new methods to compare simulations and observational data. This helps to interpret the climatic information stored in the different natural archives.

Our unit is responsible for a Master's Programme in Quaternary Science and Climate Development and we are engaged in all three of the department's Bachelor level programmes.

Some notable events, among others, in 2015: Qiong Zhang started a French-Swedish collaboration about Greenland in a warmer Arctic, funded by a VR grant. With Qiang Li, she started preparing PMIP4/CMIP6 simulations with the climate model EC-Earth.

Karin Helmens led an international group, including Ph.D. student Anna Plikk, in a study that showed how disturbances in the Gulf Stream can lead to widespread cooling in Europe in a warm climate.

Stefan Wastegård was awarded a VR grant for the project "Precise linking of Late Quaternary paleoclimate archives in the North Atlantic region".

Anders Moberg and Alistair Hind contributed to an international PMIP3/PAGES 2k consortium study of continental-scale temperature variability over the last millennium.

Meighan Boyd defended her Ph.D. thesis "Speleothems in warm climates. Holocene records from the Caribbean and Mediterranean regions" and Hans Johansson defended his Ph.Lic. thesis "Towards a Holocene tephrochronology for the Azores".

A workshop on "Human-environment interaction in the Peloponnese" was arranged at Navarino Environmental Observatory on 9-11 November, with Karin Holmgren, Meighan Boyd, Martin Finné, Martina Hättestrand, Christos Katrantsiotis and Elin Norström among the participants.

Steffen Holzkämper and Björn Gunnarson arranged two connected workshops in Stockholm on 7-8 May; one to intensify collaboration between Swedish dendroclimatologists and forest ecologists, with funding from FORMAS, and another for national coordination of dendro research in Sweden.

Margareta Hansson participated as the Swedish national representative in the first SSC meeting, in Copenhagen, for the new deep ice core drilling project EGRIP on Greenland. She also gave a popular science lecture for 700 persons arranged by Senioruniversitetet.

Gunhild Rosqvist contributed to popular science outreach, with an essay about how Swedish glaciers are currently melting, in the report "Skog & Mark". She was also interviewed in the newspaper Svenska Dagbladet concerning how reindeer herding will be affected by the warming climate.

Håkan Grudd participated in a popular science article showing how X-ray fluorescence on wood from marine-archaeological shipwrecks can improve our understanding of biogeochemical processes at the seabed.

PhD student Lindsey Higgins attended the UNFCCC COP21 meeting in Paris as an observer for the American Association of Geographers. PhD student Paul Krusic produced the first eastern Himalayan temperature reconstruction from tree-rings, the publication of which earned a front-page article in the national daily newspaper of Bhutan.

Paul was also awarded the position of principal co-organizer of the 10th World Dendro Conference, an event held every 4 years somewhere in the world, to be held in Thimphu, Bhutan, in spring 2018.

Eva Rocha started as PhD student, with Steffen Holzkämper as supervisor. Stefan Bjursäter defended his Master's thesis "Luminescence based chronology of the postglacial coastal development in the Pärnu region, south-western Estonia" and eight new students started in autumn to follow our Master's Programme.

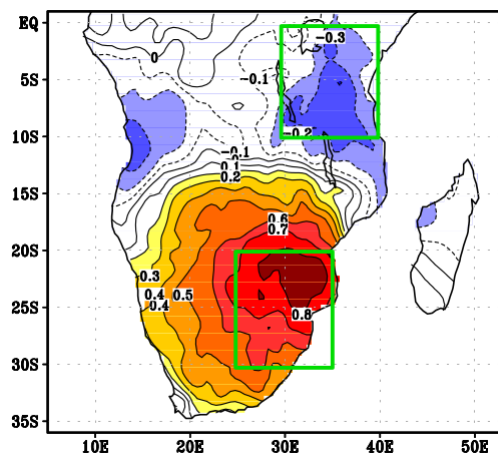


Jan Risberg and Christos Katrantsiotis with Master's students in field, interpreting a sediment core taken at Sjömossen, Tärnsjö, Uppland, central Sweden. Photo: Stefan Bjursäter.



Sampling of ice and snow for analysis of the effect of weather changes on accumulation and melt and for tracing pollution from an aircraft accident on the Kebnekaise mountain, northern Sweden. Photo: Oskar Kihlberg.

Rainfall dipole over southern Africa in December to March. From Zhang, Holmgren & Sundqvist (2015), Journal of the Atmospheric Sciences.



Research Unit Environment, Resource dynamics and Management

Head of Research Unit: Håkan Berg

Our education and research is transdisciplinary with a focus on sustainable use of natural resources and ecosystems. Theoretical and methodological perspectives vary, but we have a strong base in systems analysis and political ecology.

Environmental issues and concerns are often complex social-ecological linked problems; natural and social science, policy and economic concerns are highly intertwined and thus require a broad analysis to identify potential solutions. Our research, often in co-operation with stakeholders, is focused on the use and development of multidisciplinary approaches, for studying sustainability issues, landscape and resources, environmental planning, ecosystem services, indicators of development, institutions and governance.

We are involved in a number of international as well as national research and education projects. During 2015 we conducted for example research on environmental impacts from pesticides in the Mekong Delta in Vietnam. We have been active in studies on gender and climate adaptation in Tanzania. In the Baltic sea we have focused on the borderline between land and water and needs for better integration to tackle climate change.

Stakeholder consultations and systems modelling have also been a core element in a Swedish Antiquities Board and the Swedish EPA funded project on Integrated Nature and Culture Heritage Conservation in the Swedish Mountains.

In another study conflicts concerning the present and potential future management of a multifunctional mountain region in the county of Jämtland was investigated, with a focus on nature conservation and conflict mitigation.

This is of particular interest since a new national park is suggested in the area.

A project on “the multifunctionality in urban landscapes- the potential of urban agriculture in Stockholm”, was initiated and a multidisciplinary network on Sustainability Research on Food (SuRF) was set up, including some 20 researchers from 7 Swedish universities. Two workshops were held at NG.

A participatory learning action research, with 13 smallholder farms, where held in collaboration with Örebro university, under a pilot project on agroforestry and sustainable food production from perennial system.

One staff of ERD was appointed Academic Ambassador by SU with the aim to initiate a motivating pedagogic forum within the department, and to investigate and develop teaching methods, which mirror the management and use of information in the surrounding society. This is already an important part of the MSc programmes on Environmental and Health protection and Environmental management and Physical planning, which have strong links to societal needs and ERD's research.

In 2015 the ERD Group consisted of 11 senior researchers, 11 PhD students and 5 administrative staff. 5 new PhD students were recruited by the end of the year. Two PhD students will model natural resource use and constraints within a EU funded ITN project “Adaptation to a New Economic Reality II” in cooperation with Univ. Blaise Pascal, Clermont-Ferrand, France and University of Iceland and the Swedish Defence College.

Two students from Tanzania started their PhD studies in late 2015 under the bilateral research cooperation between SU and the university of Dar Es Salaam within the Marine Science Programme 2015-2020: Research on Fisheries and Aquaculture Technologies for Food Security, Adapting to Climate Change. The station manager of NEO initiated his PhD studies on the Gialova Lagoon in Greece.



Using UAV for mapping of damage to vegetation cover from tourism and mineral exploration in the Swedish mountains. Photo: Peter Schlyter.



Giorgos Maneas, station manager at NEO started his PhD studies related to sustainable management of the Gialova lagoon in late 2015. Photo: Håkan Berg.



Field excursion and discussions about sustainable forestry with Environmental and Health protection students. Photo: Håkan Berg.



ERD members in Masdar City, UAE, for discussions on research and education exchange. Photo: Peter Schlyter.



Two new PhD students (not on the picture) from the University of Daar Es Salam started their studies and will work with integrated aquaculture and management of mangrove ecosystems in Tanzania. Photo: Håkan Berg.

Research Unit Geomorphology and Glaciology

Head of Research Unit: Clas Hättestrand

We study Earth surface processes and their effects on landscapes, glaciers and society. Analysis of the landscape enables us to reconstruct past environments and processes; with a particular focus on glaciated and formerly glaciated landscapes. We also conduct research on contemporary processes in glaciers and ice sheets, as well as on applied geomorphology in tropical regions.

Our methods include data collection and field-observations, remote sensing and GIS techniques, dating of glacial and other sediments, and numerical modelling.

Today, we conduct research in all glaciated regions in the world, including Antarctica, the Arctic, North America, Northern Europe and Eurasia, and the central Asian highlands; but also in non-glacial regions such as the Mediterranean and East Africa.

An important component of our research facilities is the Tarfala Research Station in northern Sweden, where our department runs an extensive glacier monitoring programme and has a well-equipped base for field education in arctic-alpine environments.

Our unit is responsible for one master's program; Glaciology and polar environments, where our permafrost colleagues from the Hydrology, water resources and permafrost unit also participate. Our unit is also responsible for several courses in the department's three bachelor's programs.

Some notable events from our unit in 2015 are:

The Research Unit for Geomorphology and Glaciology was formally instated January 1st 2015!

Several comprehensive research papers were finalized. Among these are the paper: *The deglaciation of Fennoscandia*, which is now in press for publication in Quaternary Science Reviews. This paper is the crowning of 15+ years of work conducted by many of the members in the research unit (Stroeven, Hättestrand, Kleman, Heyman, Harbor, Jansson), and

several other present and former staff (Fredin, Goodfellow, Jansen, Strömberg, Lundqvist) with Arjen Stroeven as the lead author (see figure).

The paper "Reconstructing Palaeo-Ice Sheets: Recent Advances and Future Challenges" was also published in 2015 in Quaternary Science Reviews, under the lead of Chris Stokes (Durham University, UK) and Lev Tarasov (Memorial U, Newfoundland) and co-authored by unit members Blomdin, Hättestrand, Heyman, Kirchner, Margold, and Stroeven.

In addition, a number of articles on the subglacial landform record in the Arctic Ocean was published in 2015, as a result of unit member Nina Kirchner's co-operation with University Centre in Svalbard (UNIS).

Several unit members (Hall, Ebert, Hättestrand, Stroeven) were involved in initiating and starting an applied research program funded by the Swedish Nuclear Waste management, where the goal is to assess the glacial erosion impact of future ice sheets over the planned Forsmark nuclear waste repository over the next 1 million years. The project will run over the time period 2015-2018.

Research relating to nuclear waste management were also led by Per Holmlund, who continued his research for the Swedish Radiation Safety Authority, finishing one project with Caroline Clason, and secured funding for a new project on glacially induced earth quakes and sediment redistribution in the Åland Sea.

The unit was responsible for a joint master's course with University of Purdue, USA, where Swedish and American students were brought together for a field course in Dalarna in late May, to the great benefit of both student groups!

Unit members appeared in media during the 2015, particularly Per Holmlund who at several occasions were addressing issues related to climate and glacier changes in national TV, radio and newspapers.

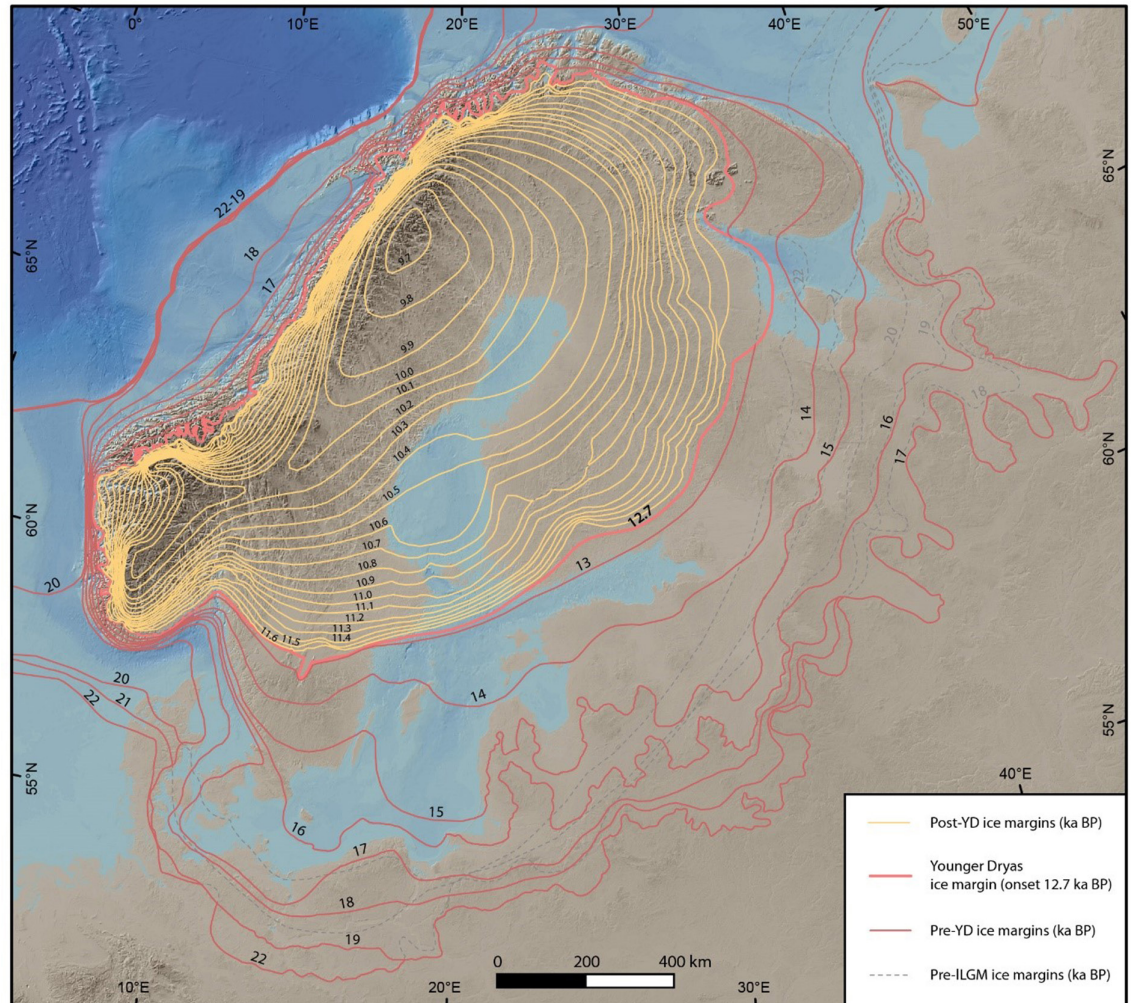
Two of our unit members also participated in Arctic Ocean cruises. Nina Kirchner was co-leader of a University Centre in Svalbard teaching cruise with "Viking Explorer" (see figure) and Per Holmlund participated in the polar expedition OATRC 2015.



Johan Kleman and Ingmar Borgström sampling for cosmogenic isotope dating of a glacial lateral moraine ridge in the Städjan-Nipfjället mountain in the southern Swedish Mountains. Photo: Martina Hättstrand.



Geophysical mapping of the seafloor and the submarine portions of the calving front of Esmarkbreen, Ymerbukta, western Svalbard. Photo: M. Laidla.



Ice-marginal retreat pattern and timing in Fennoscandia during the last deglaciation. From Stroeve et al. (in press) (<http://dx.doi.org/10.1016/j.quasci-rev.2015.09.016>)

Research Unit Hydrology, Water Resources and Permafrost

Head of Research Unit: Gia Destouni

We investigate natural processes and anthropogenic effects and their variability and change in water, land and permafrost environments. The conditions and changes of Earth's freshwater and permafrost systems affect people and ecosystems and are central in global change. We study these conditions and their changes in order to better understand and quantify them and thereby contribute to knowledge and capacity advancement needed for sustainable development.

Our research focuses on water quantity and quality, how liquid and frozen, subsurface and surface water interacts, and how water flows and carries other substances and energy with it through the landscape – locally, regionally and globally, and from past, through present, to future times.

We analyze soil water and groundwater, lakes and rivers, wetlands, permafrost and glacial water, engineered water systems and water use by vegetation - separately and linked in hydrological catchments, landscapes and water management districts – in different parts of the world.

We also study permafrost regions, not least the northern circumpolar region, regarding their possible fate under conditions of future global warming and the total amount, landscape distribution and vertical partitioning of soil organic carbon stocks in these regions. An additional focus is Holocene and recent permafrost dynamics in subarctic palsas and peat plateaus of Northern Europe.

In general, our studies include field and laboratory observations, measurements and experiments, as well as quantitative modeling and computational methods.

Some notable events, among others, in 2015:

Georgia Destouni was elected Fellow of the American Geophysical Union (AGU) and Vice-Chairman for International Association for Hydrological Sciences (IAHS).

Three students defended their Ph.D. thesis:

- Fernando Jaramillo defended his thesis: "Changes in the freshwater system: distinguishing climate and landscape drivers"
- Elin Jantze defended her thesis: "Waterborne carbon in northern streams – controls on dissolved carbon transport across sub-arctic Scandinavia"
- Ylva Sjöberg defended her thesis: "Linking water and permafrost dynamics".

Fernando Jaramillo and Georgia Destouni published a comment in Science to an article on the planetary boundary for global freshwater consumption. They further published an article in Science about the raise of global human consumption of freshwater due to dams and irrigation. This article was extensively featured in international media, including for example "The Washington Post", "BBC", "Discovery News" and "Science News" and other national media in several languages.

Furthermore, Peter Kuhry was co-author in two articles published in Nature and Emma Johansson was co-author in a Nature Geoscience article.

A workshop on wetland-hydrological interactions for the new Global Wetland Ecohydrology Network (GWEN) was organized by unit researchers and held at the Navarino Environmental Observatory at the end of April, with major international participation in addition to that of several members of the unit.

The unit also has systematic social building events. In 2015 we had one in summer, when we rowed together, and one in winter, when we bowled together.



Participants of the 2015 GWEN Workshop in the Navarino Environmental Observatory. Photo: Alice Guittard.



Ylva Sjöberg nails her thesis.



"Monks Nr. 3", oilpaint, crayon paper © 2010 Fernando Jaramillo



*Artistic covers of some of the years's theses.
PhD Fernando Jaramillo and PhD Elin Jantze.*

Tarfala Research Station (TRS)

Tarfala Research Station is operated by Stockholm University. The station is located in the Kebnekaise Mountains, northern Sweden, 200 km north of the Arctic circle. Every year researchers and students worldwide visit Tarfala to study the glaciers, rivers, landforms and ecosystems. The station is open between mid-March and mid-May and from mid-June to mid-September.

Stockholm University runs a monitoring program in Tarfala together with The Swedish Infrastructure for Ecosystem Science (SITES) which includes measurements of glacier mass balance, mountain meteorology, hydrology, snow structure and chemistry, permafrost, and vegetation development. The data provides for example detailed records of short- and long-term effects of climate change in the Tarfala valley but also elsewhere in the mountains of northern Sweden.

Four glaciers are located in the Tarfala valley of which Storglaciären is the most well-known. Storglaciären is one of the best studied glaciers in the world and the mass-balance data set now covers 70 years. The elevation of the Kebnekaise south summit, which consists of ice and therefore also is melting, was measured to be 2097.8 m in August 2015, the north summit which consists of bedrock is 2096.8 m.



Kebnekaise south summit. Photo: Ninis Rosqvist.

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 has developed 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. 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.

During an event, on May 18 2015, held under the Auspices of the Presidency of the Hellenic Republic, the collaboration between the three parties were renewed for the next five years. The event was honored by the presence of H.E. the President of the Hellenic Republic Mr. Prokopios Pavlopoulos and of the President of the Royal Swedish Academy of Sciences Professor Barbara Cannon. The renewal of the collaboration is expected to further enhance the environmental and educational work of NEO and reaffirms the commitment of the three parties in the top level research conducted in NEO.



The coast close to NEO. Photo: Rolf Jacobson.

Bolin Centre for Climate Research

Founded in 2006, the Bolin Centre for Climate Research is a multi-disciplinary consortium of researchers led by Stockholm University that conducts fundamental research on critical processes in the climate system. It involves researchers mainly from the Faculty of Science, Stockholm University as well as the Rossby Centre and KTH. The research program strives to understand natural climate evolution and variability, as well as changes imposed by the increasing human impact on the Earth System. It aims to build next generation expertise and knowledge on climateinfluencing processes, over a range of time-scales and subsystems while addressing related societal issues. The challenge is to effectively harness national scientific expertise in a growing international effort to understand, mitigate and adapt to climate change. The research is structured into six multidisciplinary cross departmental research areas:

- Oceansatmosphere dynamics and climate
- Clouds, aerosols, turbulence and climate
- Hydrosphere, Cryosphere and Climate
- Biogeochemical cycles and climate
- Historical to millennial climate variability
- Orbital to tectonic climate variability



Professor Bert Bolin (1925-2007). Photo: Orasis.

Infrastructure

Field stations:

Tarfala Research Station
Navarino Environmental Observatory

Other facilities:

Stockholm tree ring laboratory
Chemical laboratory
Mikroscope facilities
Optically stimulated luminescence (OSL) laboratory
Sediment laboratory
GIS and remote sensing cluster
Ice laboratory
Geomorphology laboratory



Tree rings studied in the Stockholm tree ring laboratory. Photo: Björn Gunnarson.



Chemical laboratory. Photo: Sven Karlsson.

Education

The goal of the undergraduate education at the Department 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 profile of the department. Every year almost 2000 students attend our undergraduate and graduate education.

Bachelor Programmes (180 credits)

Bachelor's Programme in Biology-Earth Sciences

Bachelor's Programme in Geography

Bachelor's Programme in Earth Sciences

Master's Programmes (120 credits)

Master's Programme in Geomatics with Remote Sensing and GIS

Master's Programme in Glaciology and Polar Environments

Master's Programme in Quaternary Science and Climate Development

Master's Programme in Landscape Ecology

Master's Programme in Environment and Health Protection, (60/120 credits)

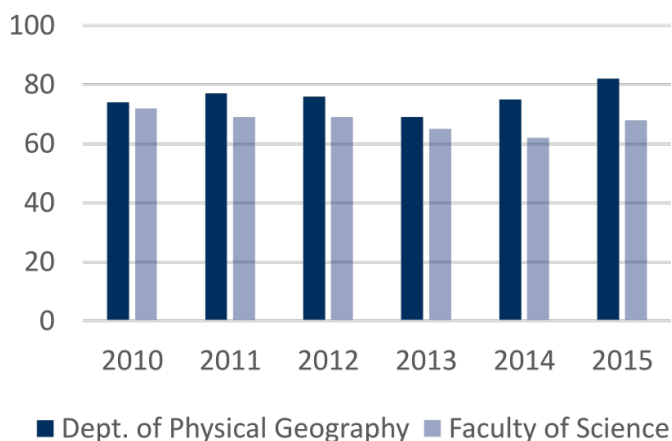


Landscape ecology mapping and analysis master course

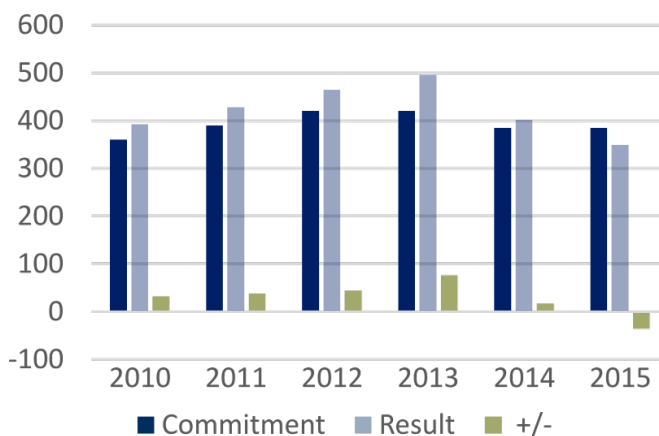


*Geographers on Fox Glacier, New Zealand.
Photo: Britta Sannel.*

Student Completion Rate in % (genomströmning)

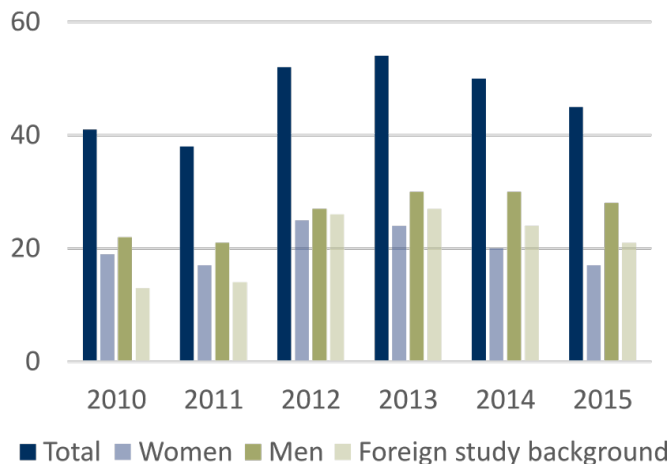


Annual Performance (HÅP)

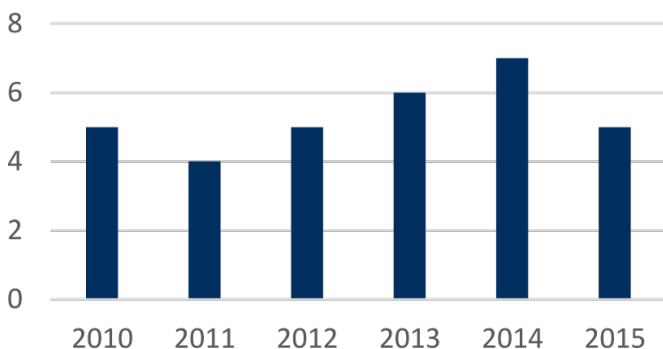


PhD education

PhD Students, five new accepted 2015



Dissertations between 2010-2015



Doctoral Theses

Boyd, M. Speleothems from Warm Climates: Holocene Records from the Caribbean and Mediterranean Regions.

Jantze, E. Waterborne Carbon in Northern Streams: Controls on dissolved carbon transport across sub-arctic Scandinavia.

Jaramillo, F. Changes in the Freshwater System: Distinguishing Climate and Landscape Drivers.

Kalumanga, E. How elephants utilize a miombo-wetland ecosystem in Ugalla landscape, Western Tanzania.

Sjöberg, Y. Linking water and permafrost dynamics.

Licentiate Theses

Fritzon, R. Evaluation of a geochemical method for investigating paleoseismic activity of the Sparta Fault. Greece. Research school for teachers.

Jakobsson S. Woody or treeless pastures? Effects of EU tree density limitations on biodiversity in woody pastures

Johansson H. Towards a Holocene tephrochronology for the Azores. Research school for teachers.

Nylund, M. Landslides in the central Kenyan highlands: Risks and actors. Research school for teachers.

Palmtag, J. Storage, landscape partitioning and lability of soil organic matter in permafrost terrain

Siewert, M. High-resolution mapping of soil organic carbon storage and soil properties in Siberian periglacial terrain

Wahlstrand, A. Landslide scars in the Kenyan highlands: Physical and chemical topsoil changes and landslide susceptibility assessment under tropical conditions. Research school for teachers.



Elin Jantze is nailing her thesis

Collaboration

Alumni network

We wish to stay in touch with former students and researchers. Our alumni are part of the valuable network that supports us in a range of different ways: by being important ambassadors and by engaging in the development of research and education.

Alumnievents during 2015:

Alumni event for all SU alumni March 11
Alumni event with faked interviews March 26
Alumni event for geographers May 21
Alumni event for Biogeo June 11
Alumni event with alumni from SWECO, Vattenfall Livsmedelsverket, and Länsstyrelsen October 2
We made a new film about Earth Science with four alumni in order to recruit new students.



Alumni event celebrating Biogeo 40 years, June 11.



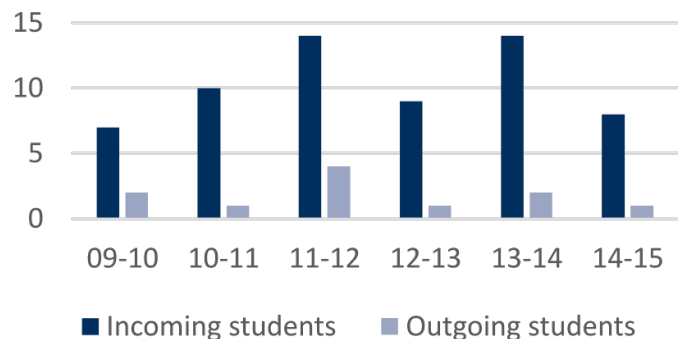
The Geopub at our alumni event October 2.

International Exchange

Partner Universities

Leuven och Bryssel i Belgien
Grenoble i Frankrike
Bern i Schweiz
Freiburg i Tyskland
Aachen i Tyskland
Innsbruck i Österrike
Ostrava i Tjeckien
Turku i Finland
Trondheim i Norge
Oslo i Norge

Erasmus Exchange



Awards and Prizes

Georgia Destouni has been appointed member in the government's scientific council for sustainable development.

Stefano Manzoni received the Early Career Hydrologic Sciences Award at the AGU meeting.

We got a new professor, Regina Lindborg in "geografi med inriktning mot naturresurs- och hållbarhetsfrågor".

Per Holmlund received the ÅForsks Kunskapspris.

In the QS World University Ranking in 2015 by subject, Geography (23) and Environmental Science (27) at Stockholm University are among the top one hundred in the world. These are also the best results for SU in this ranking.



Our colleague, Jon Harbor, professor at Purdue University was appointed new honorary doctor. Photo: Medieproduktion, Stockholm University.

ECOPOLIS Award 2015 to NEO for environmental projects

GeorgiaDestouni has been elected for two international positions: a Fellow of the American Geophysical Union (AGU) and Vice-Chairman for International Association for Hydrological Sciences (IAHS).

Our student Michael Nyirenda got the Swedish Junior Water Prize 2015 for glacier study with global potential. Michael had Christian Helanow as supervisor last year in Tarfala at “forskarskolan för gymnasieelever”.

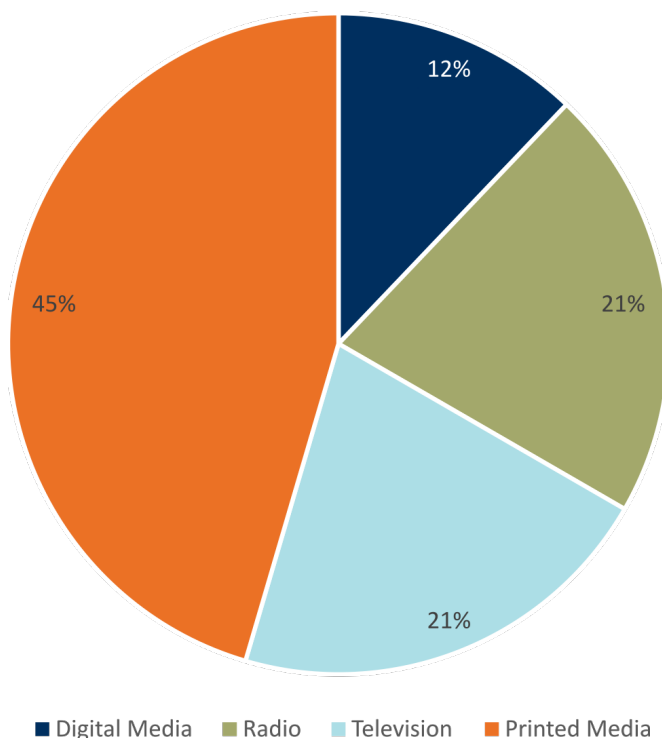
Ninis Rosqvist recieved ”Arméns jägarbataljons vapensköld” for good collaborations after the Hercules accident.

The Swedish University of Agricultural Sciences (SLU) Board appointed Karin Holmgren the new deputy vice-chancellor of SLU.

Our Department in media

Advances in research are not just for us but for the public. Through the media, we can contribute to the dissemination of knowledge and debate. With communication we can increase understanding, interest and broaden the views for the future.

Almost every week our researchers and teachers show up in media. The diagram below shows the distribution in different kinds of media.

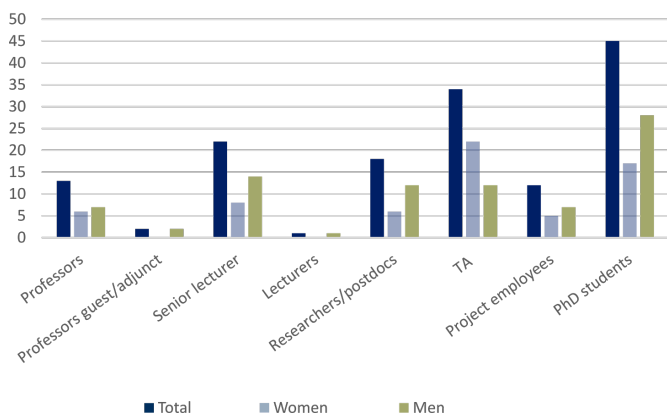


7. Staff 2015

Head of Department: Professor Karin Holmgren
Deputy Head of Department: Docent Jerker Jarsjö
Head of Administration: Sabina Pracic

The list reflects employments longer than three months during any part of the calendar year 2015.

Number of Employees



Academic Staff

Professors

Cousins, Sara
Destouni, Georgia

Hall, Adrian

Hansson, Margareta

Harbor, Jonathan
Holmgren, Karin
Holmlund, Per
Hätttestrand, Clas
Jansson, Peter

Kleman, Johan
Kuhry, Peter
Kuylenstierna, Johan
Lindborg, Regina

Näslund, Jens-Ove

Preusser, Frank

Rosqvist, Gunhild

Stroeven, Arjen
Sverdrup, Harald
Wastegård, Stefan

prof. in Physical Geography
prof. in Hydrology, Hydrogeology and Water Resources
adjunct prof. in Geomorphology
prof. in Environmental Science with emphasis on Physical Geography/ Quaternary Geology
affiliate prof.
prof. in Physical Geography
prof. in Glaciology
prof. in Physical Geography
prof. in Physical Geography, subject responsible for post graduate studies
prof. in Remote Sensing
prof. in Physical Geography
adjunct prof. in Water Resources
prof. in Geography with emphasis on Natural Resource Management and Sustainability
adjunct prof. in Environmental Risk Assessment
prof. in Quaternary Geology with emphasis on Environmental Reconstruction
prof. in Geography, especially Physical Geography
prof. in Physical Geography
visiting prof.
prof. in Quaternary Geology

Associate Professors (Docenter)

Berg, Håkan
Brown, Ian
Dahlberg, Annika
De La Torre Castro, Maricela
Gunnarson, Björn
Helmens Femke, Karin
Holzkämper, Steffen

Jansson, Krister
Jarsjö, Jerker
Kirchner, Nina
Lyon, Steve
Moberg, Anders
Risberg, Jan
Seibert, Jan

senior lecturer
senior lecturer
senior lecturer
senior lecturer
researcher
researcher
senior lecturer, director of undergraduate studies
senior lecturer
senior lecturer
senior lecturer
senior lecturer
senior lecturer
senior lecturer
senior lecturer

PhD

Auffret, Alistair
Ballarotta, Maxime
Berntsson, Annika
Borgström, Ingmar
Bring, Arvid
Ebert, Karin
Finné, Martin
Frampton, Andrew
Gowan, Evan
Grudd, Håkan
Hind, Alistair
Hugelius, Carl-Gustaf
Hätttestrand, Martina
Heyman, Jakob
Ingvander, Susanne
Jaramillo, Fernando
Jonason, Dennis
Kalantari, Zahra
Lea, James
Manzoni, Stefano
Margold, Martin
Mård Karlsson, Johanna
Persson, Klas
Plue, Jan
Queiroz, Cibelé
Quin, Andrew
Rogberg, Peter
Sannel, Britta
Schlyter, Peter
Skånes, Helle

Stjernquist, Ingrid
Westerberg, Lars-Ove
Winterdahl, Mattias
Zhang, Qiong
Öberg, Helena

researcher
postdoctor
researcher
senior lecturer
researcher
senior lecturer
postdoctor
senior lecturer
postdoctor
postdoctor
data base coordinator
researcher
senior lecturer
researcher
postdoctor
researcher
postdoctor
researcher
postdoctor
senior lecturer
postdoctor
postdoctor
senior lecturer
researcher
postdoctor
researcher
senior lecturer
senior lecturer, director of post graduate studies
senior lecturer
senior lecturer
postdoctor
senior lecturer
postdoctor

PhLic, MSc, BSc

Ekner, Bo
Fridfeldt, Anders

Karlsson, Sven

PhLic, lecturer
BSc, lecturer, director of undergraduate studies
PhLic, researcher

PhD students

Aggemyr, Elsa
Blomdin, Robin
Boyd, Meighan
Dawson, Lucas
Dessirier, Benoit
Ermold, Matti
Fritzon, Ruben
Gribenski, Natacha
Helanow, Christian
Higgins, Lindsey
Högberg, Charlotta
Jakobsson, Simon
Jantze, Elin
Johansson, Emma
Johansson, Hans
Kalumanga, Elikana
Katransiotis, Christos
Ketzer, Daniel
Koutsouris, Alexander
Krusic, Paul
Lam, Norris
Lindgren, Jessica
Massuanganhe, Elidio
Mbanguka, René
Mercer, Andrew
Mwansasu, Simon
Newall, Jennifer
Nylund, Michaela
Palmtag, Juri
Pannetier, Roman
Pietron, Jan
Plikk, Anna
Rocha, Eva
Siewert, Matthias
Sitoe, Sandra
Sjöberg, Ylva
Stoltz, Jonathan
Than Nguyen, Tam
Thorslund, Josefin
Verrot, Lucile
Waldén, Emelie
Wahlstrand, Anna
Weiss, Niels
Österlin, Carl

Teaching assistants

Andersson, Marcus, BSc
Arnström, Jesper BSc
Bjursäter, Stefan MSc
Ekstedt, Karin. MSc
Hamré, Moa, Msc

teaching assistant (amanuens)
teaching assistant (amanuens)
teaching assistant (amanuens)
teaching assistant (amanuens)
teaching assistant (amanuens)

Administrative Staff

Bländman, Susanna, BSc, MA
Damberg, Maria, MSc
Hansson, Erik, MSc
Henriksson, Carina

Holmlund, Moa, MSc
Hultman-Boye, Kerstin, MSc
Hörnby, Kerstin, MSc
Isdal, Majja-Liisa, BSc
Karlin, Torbjörn, MSc

Karpegård, Madeleine
Maneas, Giorgos, MSc

Persson, Karin, BSc
Pracic, Sabina, MSBA
Reuterswård, Karin, PhLic

Schaffer, Christina, MSc
Stadlinger, Nadja, PhD
Stenberg de Serves, Malin, PhD
Stolarska, Monika
Sturesson, Elisabeth, MSc
Trygger Bergman, Sophie, MSc
Åkerblom, Lena

human resources, administrator
study advisor
educational administrator
University certified administrator,
senior administrative officer
educational administrator
educational administrator
educational administrator
financial administrative officer
station manager Tarfala research
station
financial administrative officer
station manager Navarino
Environmental Observatory
administrator
head of administration
educational
administrator, study advisor
educational administrator
educational administrator
communicator
financial administrative officer
educational administrator
educational coordinator
educational administrator

Technical Staff

Alm, Göran, PhLic
Brotén, Bengt
Burger, Mikael
Cabrerá, Yanduy
Eriksson, Pia, MSc
Fischer, Ida, MSc
Goldenberg, Romain, MSC
Jacobson, Rolf
Levi, Lea, MSc
Li, Qiang, PhD
Lind, Ewa, PhD
Lindgren, Amelie, MSc
McGlynn, Laura, MSc
Prieto, Carmen, PhD
Segerström, Rebecka
Skantz, Johan
Spångberg, Martin
Vigouroux, Guillaume, MSc
Wennbom, Marika, MSc

systems engineer
technician
systems engineer
caretaker
research assistant
research assistant
research assistant
web editor
research assistant
scientific programmer
research assistant
research engineer
research assistant
research engineer
research assistant
research engineer
research assistant
caretaker
systems engineer
research assistant
research engineer

Professors Emeriti

Christiansson, Carl
Ihse, Margareta
Lidmar-Bergström, Karna
Lundén, Bengt
Lundqvist, Jan
Karlén, Wibjörn
Ringberg, Bertil
Wastenson, Leif
Østrem, Gunnar



Geoscience Building. Photo: Per Larsson.