

Annual Report 2019

Malin Stenberg de Serves (ED)



Drones have been used to survey landscapes in several projects this year. One of the projects is Landscape indicators for biodiversity, funded by Swedish environmental protection agency and is ongoing within the unit Biogeography and Geomatics. Photo: Mark Ghaly.

**Department of
Physical Geography**



**Stockholm
University**

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Department Structure

Department Board

Extended Management Group

Executive Group

Head of Department

Georgia Destouni

Deputy

Regina Lindborg

Director of Studies

Jerker Jarsjö

Vice: *Björn Gunnarson*

HR Responsible

Susanna Blåndman

Head of Administration

Caroline Nielsen

Heads of Research Units

Biogeography and Geomatics

Sara Cousins

Climate Science and Quaternary Geology

Margareta Hansson, Stefan Wastegård

Environment, Resour. Dyn. & Manag. (ERD)

Salim Belyazid, Annika Dahlberg

Hydrology, Water Resources and Permafrost

Fernando Jaramillo, Stefano Manzoni

Geomorphology and Glaciology

Nina Kirchner

Director of PhD Studies

Helle Skånes

Words from the Head of Department

In 2019, we interacted with the public and schools at many events, like Forskardagarna (Researcher Days), Researchers Night, the Geology Day, the Bolin Centre Climate Festival, and the World Water Day. Our researchers were also active in many panel discussions and seminars, and often invited as experts in public discussions on sustainability issues.

The conference on “Challenges and Opportunities related to a new Climate Economy: Driving innovation for Sustainable Development” was a major outreach event in spring 2019, held at the Academy of Athens. This was organized by us and other partners of our collaborative research station Navarino Environmental Observatory, along with the Swedish Embassy in Greece. The conference was attended by more than 200 participants from academia, business, civil society and the public sector, and also honoured with the presence of The President of the Hellenic Republic Mr Prokopios Pavlopoulos, and HRH Crown Princess Victoria of Sweden.

World and national press highlighted the measurement by colleagues at our Tarfala research station of the two summits of Kebnekaise, the highest peaks in Sweden. This was made with high precision instrumentation and confirmed that the southern summit lost its position as the highest point in Sweden. National and local media also showcased Heather Wood’s launch of “Batmapper”, a citizen science project collecting locations of summer bat roosts.

As vice chair of the Climate Policy Council, Johan Kuylenstierna presented the Council’s new Climate Report, and was also involved, along with other department colleagues, in various climate, water and environmental programmes and films on Swedish television. Benedict Reinardy’s sailing with the International Ocean Discovery Program down to the Amundsen Sea was notable in collecting the longest drill cores recovered from a ship anywhere offshore of West Antarctica and the first in the Amundsen Sea. Some of our researchers and PhDs also contributed to the exhibition "Arktis - medan isen smälter" (The Arctic – while the ice melts) at the Nordic Museum.

Department colleagues recognized for excellent work and contributions in 2019 include, for example, Daniella Guasconi winning 1st prize and Simon Larsson coming 2nd for best presentations in the PhD Day of the Bolin Centre for Climate Research, and Nina Roth winning the poster competition for PhD students at the Bolin Days in November. Johan Kleman was awarded the Stockholm University Gold Medal in the 8th size, and Stefano Manzoni was again listed as a highly-cited researcher in the cross-field category of Clarivate Analytics.

Our educational volume remained stable after an earlier period of planned decrease, and also our recruitment of new PhD students returned to more normal level after the previous record high year. For the first time, our international student exchange within the Erasmus program had a higher number of outgoing than incoming students. The external part of our research grants continued to increase, as did also our annual financial result, while the number of our peer-reviewed science publications was again at the relatively high level of the previous year.

I thank and congratulate all department colleagues for making 2019 yet another successful year for us!

Professor Georgia Destouni



Photo: Rickard Kilström / Stockholm University.

Some of our Activities 2019



Department Day in May by the Environment, Resource Dynamics and Management Unit (ERD).



Fieldwork in the Arctic, Sweden and Antarctica. Photo: Margareta Hansson, Björn Gummarsen, Jessica Lindgren and Vivien Cumming.



Crown Princess Victoria talks with Professor Christos Zerefos, Academy of Athens, one of the collaborators at NEO. Photo: Johan Kuylenstierna.



June 3 we had summer lunch at Stora Skuggans Värdsbus and Christmas lunch December 17 in the Geoscience building.



Safety inspection in Tarfala in September. There was also a safety inspection at Navarino Environmental Observatory (NEO) in February. Photo: Caroline Nielsen.

Some of our Activities 2019



Department Day arranged by Biogeography and Geomatics Unit (BG) in October.



Master student Robert Salmijärvi talks with a visitor in our Science booth at the "Gymnasiemässan" in Älvsjö.



Some of our researchers and PhDs have been involved in the work with the exhibition: "The Arctic - while the ice is melting" at the Nordic Museum.

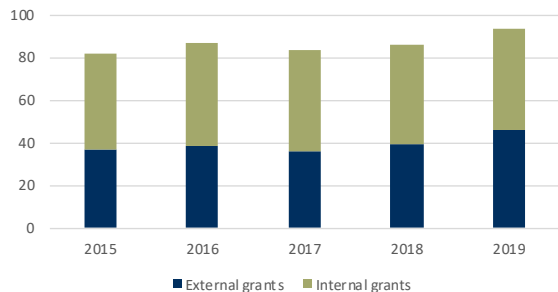
Research Grants Awarded 2019

Grant Receiver	Funding Organisation	Project Name	Total Grant (TSEK)
Aminjafari Saeid	Knut & Alice Wallenbergs stiftelse	Resestipendier 2019, University of Leeds - Storbritannien	6
Cousins Sara	Naturvårdsverket	Integrerad statistik och geodata för biodiversitetens indikationer i landskap	5000
Cousins Sara	Formas	Havstrandängar - ett rörligt habitat	2998
Destouni Georgia	Vinnova	Samverkanscheck Safir2-02	100
Hamm Alexandra	Knut & Alice Wallenbergs stiftelse	Resestipendier 2019, Svalbard - Norge	6
Hansson, Margareta	EU	Beyond EPICA	1050
Holmlund Per	Göran Gustafssons stiftelse	Forskningsbidrag	61
Jaramillo Fernando	Rymdstyrelsen	Hydrogeodesic assessment of man-made disconnections between Northern rivers and their coastal systems	3642
Kalantari Zahra	Stockholms läns landsting via KTH	Planning support for sustainable urban development - LEAM Stockholm	1000
Kalantari Zahra	Stockholm Environment Institute	Scoping for Resilience and Management of Arctic Wetlands - Phase 2	75
Kalantari Zahra	Vetenskapsrådet	Koldioxidneutrala städer: social-ekologiska system och modellering av förändringar i markanvändning, växthusgasutsläpp och planeringsscenarier	3887
Kirchner Nina	Vetenskapsrådet	Att förstå uppvärmningens påverkan i Arktis	1093
Lam Norris	Vinnova	Samverkanscheck Safir2-04	78
Lindborg Regina	STINT via Uppsala universitet	People and Ecosystems at Risk	50
Newall Jennifer	Knut & Alice Wallenbergs stiftelse	Resestipendier 2019, Missoula - USA	6
Norström, Elin	Vetenskapsrådet	Rekonstruktion av hydroklimatextremer i södra Afrika med hjälp av paleo-data och klimatmodellering	2794
Reinardy Benedict	Kungliga Vetenskapsakademien	A multi-method, glacial-geological, geophysical and remote-sensing approach to exploring moraines (MULTIPLX)	99
Stadlinger Nadja	Statens energimyndighet	Regionala effekter av helträdsuttag på försurning och näringsbalanser	1542
Wagner Julia	Knut & Alice Wallenbergs stiftelse	Resestipendier 2019, Lanzhou - Kina	10
Watts Hannah	Knut & Alice Wallenbergs stiftelse	Resestipendier 2019, University of Leeds - Storbritannien	6
Åhlén Imenne	Knut & Alice Wallenbergs stiftelse	Resestipendier 2019, Bogota - Colombia	11
Sum			23 514

Research Contracts Awarded 2019

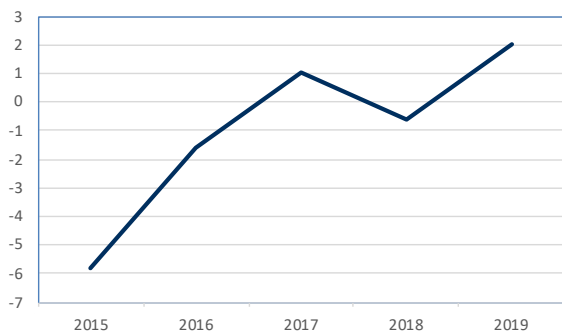
Grant Receiver	Funding Organisation	Project Name	Total Grant (TSEK)
Frampton Andrew	Svensk kärnbränslehantering AB	Flow and tracer transport in crystalline fractured media - 3D printing	50
Hall Adrian	Svensk kärnbränslehantering AB	Jacking-induced glaciotectionics of basement rocks	839
Skånes Helle	Solna stad	Biotop Stockholm	202
Skånes Helle	Stockholm stad	Biotop Stockholm	249
Sum			1 340

Research Grants (MSEK)



Research grants received 2015-2019.

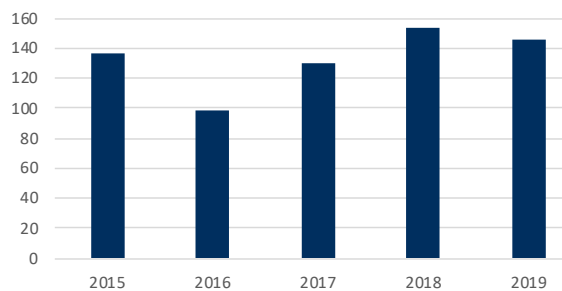
Financial Results (MSEK)



Department annual financial result 2015-2019.

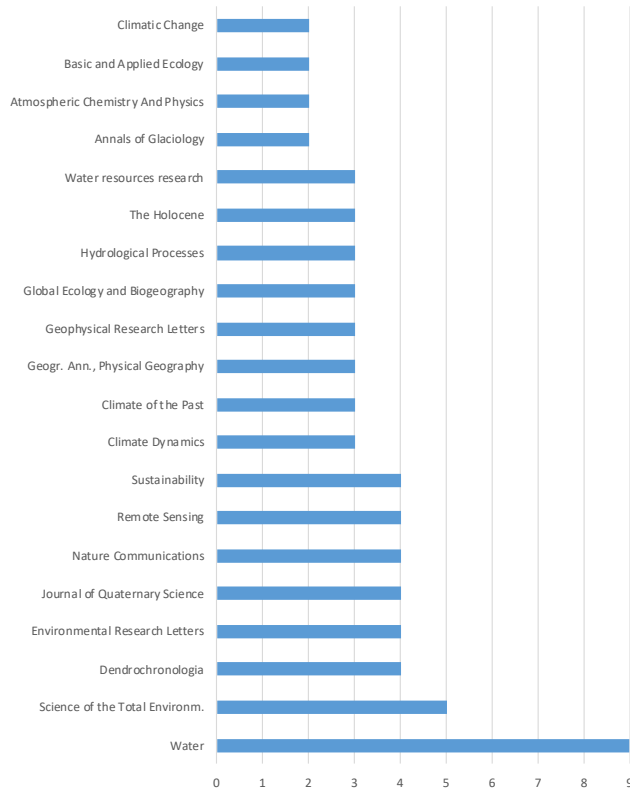
Publications 2019

Publications (Peer Reviewed)



Number of peer reviewed publications 2015-2019.

Published Papers per Journal



A total of 146 papers were published in peer reviewed journals 2019, out of which the most frequent journals are listed above. Statistics for 2019 reported in DiVA as of 2020-01-31.

QR Code to All NG Publications in 2019



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 genetic diversity to ecosystems, 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.

We have three research area leaders in the Bolin Climate Research Centre; Gustaf Hugelius - Biogeochemical Cycles and Climate (RA4), Regina Lindborg - Landscape processes and Climate (RA7), and Sara Cousins - Biodiversity and Climate (RA8). Many of the unit members are also part of the Bolin Centre.

This year our scientists collect data from Greenland, Scandinavian Arctic, Canadian Arctic, and UK, besides many regions in Sweden. We worked in snow, peat, grasslands, mangroves, forests, sea and streams using a multitude of methods to collect data.

We welcomed Daniela Guasconi as new PhD-students to our unit. She will work on Effects of soil carbon management and climate on belowground biodiversity.

Daniela Guasconi and Nina Roth set up a long-term drought and carbon sequestration experiment on grasslands in Tovetorp, using 12 rain-out shelters, following the guidelines of the International Drought Experiment network.

Nina Roth and Sara Cousins started a winter warming and grazing experiment in Teesdale (UK) in collaboration with Durham University and Natural England. 30 open-top-chambers will increase the winter temperature over several seasons to record effects on a unique flora.

Edmund Alavaisha was awarded the first prize for the best postgraduate project during the 5th research week in University of Dar es Salaam.

Daniela Guasconi won the Bolin PhD prize for the best student presentation.

Nina Roth was awarded the first prize for her poster on the Bolin days.

The EU H2020 consortium Nunataryuk and a grant from the Swedish Research council supports studies Arctic coastlines under environmental change, permafrost thaw, carbon dynamics

and mapping of contaminants in soils. In 2019, a second field campaign in the Canadian Arctic to study permafrost soils, environmental contaminants and lateral fluxes was organized by Gustaf Hugelius and Julia Wagner.

Linnéa Joandi and Sabine Sigfridsson established experimental plots in Tullgarn, south of Stockholm, to study long-term effects of soil management on soils and plant communities

Gustaf Hugelius presented permafrost science at the COP25 climate summit in Madrid, December 2019. The Bolin Centre supported a “Cryosphere Pavilion” at COP25 that focused on presenting policy-relevant climate science, including the climate feedbacks of thawing permafrost.

Gustaf Hugelius and Julia Wagner led the “Nunataryuk”-Expedition to NW-Canada. “Nunataryuk is an EU Horizon 2020 project that brings together physical and social scientists to investigate the impact of permafrost thaw and Arctic coasts.

Björn Gunnarson participated in the Ryder expedition to northern Greenland with the aim to provide a detailed history for the past millennia, from tree-ring evidence in driftwood, of sea-ice and ocean current changes, especially the Transpolar Drift (TPD), in the Arctic

Regina Lindborg travelled to Ecuador (Cuenca and Gayaquil) within the research and education collaboration within the EU-funded project WATERMAS.

Regina Lindborg was one of the delegates representing Stockholm University at the South Africa/Sweden Forum (SASUF) in Stellenbosch, South Africa.

Marianne Stoessel put GPSs and accelerometers on reindeers in Northern Sweden to monitor their movements, behaviour and grazing patterns in relation to tourism and climate change.

Heather Wood launched “Batmapper” a citizen science project collecting locations of summer bat roosts. She and Sara Cousins was interviewed in national and local media and participated in Naturmorgon (national radio).

Maricela de la Torre Castro participated in the FAO international symposium on fisheries Rozisustainability – strengthening the science-policy nexus (FAO ISFS, 2019) in Rome

Maricela de la Torre Castro’s started up her project on Social-ecological Analysis of gendered impacts from Marine Protected Areas – SEAgender.

Jessica Lindgren together with Sara Cousins finalised an intensive field campaign within the LiM-project (Landscape indicators) was finalised where we surveyed plant species and genetic richness in landscapes from Skåne in southern Sweden to Norrbotten in the north. The northernmost specimen of *Vicia villosa* was found during the campaign and is curated at the Botanical museum in Lund. Ian Brown, Jan Plue and Marika Wennbom also participate in the project.

Helle Skånes organized two public seminars on the status of BIOTOP Stockholm method development for regional biotope database generation. In addition, there was a three-day course in aerial photographic interpretation for consultancy firms.

Adam Kimberly, Regina Lindborg, Rozália Kapás and Marianne Stoessel presented at the British Ecological Society conference in Belfast were Sara Cousins also hosted a thematic session on historical ecology and the future of restoration science.

The unit hosted the Department day where we showed our research in several outdoor activities around the campus.



Marianne Stoessel fitted accelerometers on reindeer in northern Sweden.



The research unit visited OHB Space, a manufacturer of small satellites in April.



Colour infrared images provide the baseline for the biotope mapping of Stockholm.



Nina Roth using warming chambers in Teesdale.



Michael Hovemyr and Ian Brown measuring snow depths in northern Sweden.



Hans Linderholm and Björn Gunnarson cutting driftwood on Greenland.



Julia Wagner analysing soils and permafrost along the Yukon coast in Arctic Canada .

Climate Science and Quaternary Geology

Heads of Research Unit: Margareta Hansson and Stefan Wastegård

We study climate and environmental changes, under present conditions and back in time during the glacial cycles of the Quaternary period. 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 and we have ongoing projects in the Nordic countries, Europe, Africa, South America, the Himalayas, Antarctica and Greenland. We also perform simulations with climate models on large computers to study the functional behaviour of the climate system under conditions different from those of today. That helps us to better interpret the information stored in the different natural archives.

Common activities in 2019 included a workshop at the Tovetorp research station and a visit to the Arctic exhibition, “While the ice is melting” at Nordiska museet in November. Researchers from the unit and the department have contributed to the exhibition.

The drilling phase of the deep ice core drilling project in Antarctica, Beyond EPICA, started in June with support from the EU with Margareta Hansson as one of the WP leaders. She is responsible for International and Cross-disciplinary Exchange. She is also leading the Swedish participation in the ongoing international East Greenland Ice-core Project (EGRIP) and spent one month as chief scientist in the camp on the Greenland Ice Sheet. Margareta was also elected to the International Glaciological Society (IGS) Council in 2019.

Stefan Wastegård and colleagues from the BG and HWP units visited and gave talks at the Universities in Cuenca and Guayaquil, Ecuador in February-March, as part of the Erasmus+ and EU-funded WATERMAS project.

Benedict Reinardy sailed with the International Ocean Discovery Program (IODP) Expedition 379 (West Antarctic Ice Sheet history) down to the Amundsen Sea in February-March. During the cruise the longest drill cores recovered from a ship anywhere offshore of West Antarctica and the first in the Amundsen Sea were collected. The cores, covering the last 6 million years over a depth of nearly 1 km below the sea floor, were collected in an area that drains parts of the West Antarctic Ice Sheet that currently is experiencing the largest ice mass loss in Antarctica. The expedition was covered by several international media outlets including the BBC.

Anders Moberg was appointed as a domain specialist for spatial data within the Swedish National Data Service. Thereby, he extended his earlier engagement in the development of infrastructure for research data at SU.

Stefan Wastegård and Marit Hichens-Bergström carried out

fieldwork in northern Fennoscandia together with two master students and Britta Sannel from the HWP unit.

Elinor Andrén, Lena Norbäck Ivarsson, Södertörn University, and Jan Risberg organized the 24th Nordic Diatomists’ meeting April 23-26 at Tovetorp.

The climate modeling group led by Qiong Zhang organised the GRASS meeting, focusing on the VR-funded Green Sahara project, with invited colleagues from Helsinki University, Lund University and other experts from UK, France and Germany. The modelling group also completed the PMIP4/CMIP6 simulations and prepared data for publication. In total 12 peer-reviewed articles were published by the group in 2019.

Benjamin Chandler, Simon Larsson, Benedict Reinardy, Stefan Wastegård and Hannah Watts participated in the INQUA conference in Dublin, Ireland in July. Stefan has now taken over as the Swedish INQUA delegate until the next conference in Rome 2023. Qiong Zhang, Ellen Bertell, Josefine Axelsson attended EC-Earth meeting in ECMWF Reading in May. Ellen Bertell, Zixuan Han attended IUGG meeting in Canada in July. Josefine Axelsson attended PAGES workshop on speleothem in October in Xi’an, China. Qiong Zhang was invited to an international workshop “Multiscale climate variability and dynamics”, 13-19 Oct, Xi’an, China.

There were in total 13 Chinese PhD/master students who joined our course “climate model simulations” in May, supported by STINT funds.

Christos Katrantsiotis defended, in June, his PhD thesis about the Holocene in the Eastern Mediterranean: Holocene environmental changes and climate variability in the Eastern Mediterranean – Multiproxy sediment records from the Peloponnese peninsula, SW Greece. NG half financed PhD student Tongmei Wang defended her thesis on 29 November, “Seasonality and variability of stratospheric water vapour”.

One new PhD student started in 2019, Josefine Axelsson who joined us in February. Josefine is working with South Asian monsoon variability from stable water isotope perspective with Qiong Zhang as main supervisor. A visiting PhD student, Jie Chen joined us in September and will work with us for two years, she is working with East Asian monsoon boundary variabilities in the past. A visiting scientist Yan Zhang joined us in March and work with us for one year, she is working with the Arctic amplification from satellite measurements.

Benjamin Chandler started as a postdoc in October and is working together with Benedict Reinardy on a project entitled “A multi-method, glacial geological and geophysical approach to exploring moraines (MULTIPLEX)”. Over the next 2 years, we will be doing spring (geophysical surveys) and summer (mapping, glacial sedimentology, drone surveys) fieldwork to investigate moraine complexes in Sarek, northern Sweden. This project is funded by a Leverhulme Trust (UK) mobility grant and a KVA Geosciences scholarship.



Britta Sannel from the HWP unit hammering down a Russian corer into partly frozen peat in Finnmark, Norway. Unit member Marit Hichens-Bergström is holding the rod and Master student Brittany Tarbier is watching. Photo: Stefan Wastegård.



Benjamin Chandler using the GPR (Ground-Penetrating Radar).



The EGRIP drilling site on the Greenland Ice Sheet. Photo: Margareta Hansson.



Benedict Reinardy sailed with the International Ocean Discovery Program (IODP) Expedition (West Antarctic Ice Sheet history) to the Amundsen Sea. Photo: Vivien Cumming.

Environment, Resource Dynamics and Management (ERD)

Heads of Research Unit: Salim Belyazid and Annika Dahlberg

The mission of the Environment, Resource Dynamics and Management (ERD) unit is to contribute to a deeper understanding of the dynamic interactions between society and the environment, particularly concerning the interdependencies between resource management and natural resource sustainability. ERD's aim is to consistently deliver high quality innovative research and education employing a variety of methods including interdisciplinary and transdisciplinary approaches in cooperation with societal actors and targeted towards societal and environmental needs.

The strong link between the environment and society is reflected in ERD's teaching. ERD hosts the Masters' program in Environmental Management and Physical Planning, the MSc course in Political ecology and other elective courses. The high employability of our Masters students are an indication of both the quality of our recruited students and the success of the contents and pedagogics used. The value of our external teachers in bringing other disciplinary perspectives or practical experiences to our courses, also at basic level such as Miljövärd och miljöarbete (GE2012), are of fundamental importance for applied and multi-disciplinary courses – and greatly appreciated by students and prospective employers. The courses at MSc level attract many international students and we continue to supervise master student's projects with high societal relevance and applicability through joint collaborations with governmental institutions, NGO's and companies. A project funded by SU to further advance cartographic education was started up during the fall led by Sophie Trygger. Cartography as a method to effectively visualize geospatial patterns has a long tradition within the department, and is as relevant in environmental sciences as in geography.

In the spring we organized the departmental day, with an outdoor excursion on campus with stops for short presentations by group members, an outing that was highly appreciated.

The initiative in 2018 by PhD students from the ERD group to create a PhD course on “transdisciplinary research for sustainability” was in 2019 taken a further step through an organised writing workshop with the aim to write a scientific article based on their findings and experiences.

Deogratias Mulokozi, presented his research on integrated aquaculture and agriculture (IAA) in a half time seminar, and completed a field experiment and initiated another experiment on different IAA systems. Giorgos Maneas, a PhD student based at NEO, also finalized his half time seminar and presented the results from his research in the Gialova Lagoon based on three research papers.

Giorgos and Håkan Berg (who is the supervisor for the two PhDs) have continued to work with the EU funded project COASTAL.

The Marie Skłodowska Curie EU project AdaptEconII entered its last year and was finalized together with the partner universities. Our two PhD students within the program, as well as our cotutelle students, are expected to finish their PhDs in 2020. The FORMAS project “Green Infrastructure for ecological sustainability and human well-being” ended in 2017. Lucas Dawson presented his PhD thesis in 2019. PhD student Jonathan Stoltz is in the last stages of his thesis (Feb 2020).

PhD candidate Carl Österlin, who has been engaged in the project Integrated natural- and cultural environmental management for the Swedish mountains funded by the Swedish National Heritage Board, is finalizing his thesis and intends to defend in 2020.

Daniel Ketzer has submitted his thesis for internal review and is expected to defend shortly. His PhD work is within the project APV-RESOLA on land use conflicts between biomass and agrophotovoltaic power production.

Ingrid Stjernquist has continued to cooperate with colleagues from SLU and Vytautas Magnus University, Lithuania focusing on co-management of landscapes and wetlands. The Vinnova project “Restorative green environments” has been prolonged for a year and got extra funding.

The project “Negotiating Pathways to Multifunctional Landscapes” (Annika Dahlberg with KTH and the Mid Sweden University, financed by SEPA, finished 2017), has two new publications: on different perceptions of mountain landscapes; on how mountain trails can both cause and mitigate conflicts. The FORMAS project “Accessing urban nature”. (Annika Dahlberg with KTH and SRC) presented results at the Nordic Geographers Meeting in Trondheim. A workshop in Stockholm gathered over 60 participants from different actors outside academia. Several MSc and BSc theses were completed.

Research on sustainable nutrient cycles in forestry by Nadja Stadlinger and Salim Belyazid has continued with support from Energimyndigheten. Nadja Stadlinger received a grant from Energimyndigheten to investigate regional effects of whole tree harvesting on acidification and nutrient balances. The project will be ongoing from the end of 2019 until 2021. A new FORMAS project will complement this work by focusing on green house gas balances from organic forest soils, with a new PhD starting in 2020.

Christina Schaffer presented “Experiences from a participatory action research project on agroforestry in Sweden” at the International Transdisciplinary Conference 2019, “Joining forces for changes”, University of Gothenburg, organized by the Network for Transdisciplinary Research td-net together with the University of Gothenburg School of Global Studies and Mistra Urban Futures.



ERD PhDs on a writing retreat to document a trans-disciplinary PhD course they designed.



Mont Meru from Arusha, Tanzania, where Nadja Stadlinger attended the signature of the Arusha Call on Pesticides.



Nadja Stadlinger giving an invited lecture at the Pesticides Politics in Africa conference in Arusha, Tanzania.

Geomorphology and Glaciology

Head of Research Unit: Nina Kirchner

We study Earth surface processes and their effects on landscapes, glaciers and society, in glaciated and non-glaciated regions. Analysis of the landscape enables us to reconstruct past environments and processes, and to better understand contemporary Earth surface processes.

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. Our report for 2019 highlights research and teaching that we conducted in Greenland, Tibet, Northern Sweden, and Spain.

Abhay Prakash and Felicity Holmes partook in the Ryder 2019 expedition on board Icebreaker Oden, which visited both the Ryder and Petermann glaciers in North West Greenland. The aim of their project was to investigate ice-ocean interactions and calving through the ice of a time lapse camera system, complemented by the collection of additional data such as ocean temperatures. See also <https://polar.se/om-polarforskning/expeditioner/ryder-2019/> and <https://polar.se/nyheter/kartlagger-hur-isberg-slapper-fran-gronlands-glaciarer/>

Robin Blomdin, Ramona Schneider (MSc candidate) and Arjen Stroeven visited the Shaluli Shan region of the Southeastern Tibetan Plateau by invitation from the Chinese Academy of Sciences in June 2019. Ramona produced a geomorphological map using TanDEM-X imagery, which guided where to perform field studies. The field party sampled boulders on end moraines for cosmogenic nuclide age determination and sand from downstream suites of fluvial terraces for optically-stimulated luminescence dating. Through combining both dating techniques, the timing of glacial expansions can be compared with the depositional ages of the terraces to tease out the effects of exogenic and endogenic drivers on terrace formation and to formulate a conceptual model of landscape evolution.

Per Holmlund, together with Kerstin Lidén from the Department of Archeology and Classical Studies, visited Salajekna and Stuurjekna glaciers with the aim to find artefacts on newly deglaciated areas giving information on early human settlements and activities in the area.

Dated findings also provide information on the history of glacier extents, thus a proxy climate data. In connection to the search of artefacts, the team also did rephotography, and examined the ancient fieldcamp used by the meteorologist Jonas Westman between 1897 and 1908. Dated findings also provide information on the history of glacier extents, thus a proxy climate data. In connection to the search of artefacts, the team

also did rephotography, and examined the ancient fieldcamp used by the meteorologist Jonas Westman between 1897 and 1908. The glacial lake into which Salajekna glacier calves was mapped using autonomous surface vehicles by Nina Kirchner, Annika Granebeck (IGV) and colleagues from KTH. A large number of glacial landforms was detected at the lakefloor, and which will be analysed now.

Our unit also offers a summer course regarding the study of glaciers and high mountain environments, Glaciers and High Mountain Environments (teachers Blomdin, Mas e Braga, Stroeven). This course includes a 10 day field study out of the Tarfala Research Station in the Kebnekaise massif. During the field trip, which includes full-day hikes to and from the station and on Storglaciären, the students plan and execute a methodological study in the high alpine catchment. The students present their study for researchers and staff at the station.

Our course Paleoglaciology (teachers Blomdin, Stroeven), a first-year component of our Master programme in “Polar Landscapes and Quaternary Climate”, prepares the students to learn how to interpret the geomorphology of formerly glaciated regions in terms of ice sheet properties and dynamics. We traditionally visit the southern mountains around Idre Fjäll in May, where the students lecture about the glaciation and deglaciation of this region including spectacular traces of an ice-dammed lake and its catastrophic drainage into Norway.

Rounding off an intense year of researching and teaching in the field, teachers from our unit under the lead of Arjen Stroeven and Lars-Ove Westerberg arranged a student excursion to Andalusia, Spain, in November. The objective of the excursion is to acquaint students with non-glaciated landscapes. Students carried out field work in various environments, e.g. badlands fluvially dissected mountains, gypsum karst and coastal landscapes.



Studying Coastal Processes. Photo: Lars-Ove Westerberg.



*Icebergs in Sherard Osborn Fjord, calved from Ryder Glacier.
Photo: Felicity Holmes.*



*Glacial Lake Sulitelma and Sálajieña glacier.
Photo: Nina Kirchner.*



*Glaciofluvial terraces along the Litang river on the SE Tibetan Plateau,
China. Photo: Ramona Schneider.*



Idre fjäll. Photo: Ramona Schneider.



*The glacier archaeological field team of 2019 in front of Stuorajekna.
Photo: Per Holmlund.*



Badlands. Photo: Lars-Ove Westerberg.

Hydrology, Water Resources and Permafrost

Heads of Research Unit: Fernando Jaramillo and Stefano Manzoni

We investigate hydrological processes in water and land environments, the anthropogenic effects on these processes and their variability and change, both in time and space, to contribute to the knowledge and capacity advancement needed for sustainable development. We also develop methods and tools for decision support in urban development and planning, watershed/urban modelling integration, and water resources management, by combining subdisciplines such as hydro climatology, remote sensing, geodesy and ecology.

Our research focuses on water quantity and quality, how liquid and frozen, subsurface and surface water compartments interact, and how water flows and carries other substances through the landscape – in plants, locally, regionally and globally, and from past, through present and into the future. We study the possible fate of permafrost under global warming and the total amount, landscape distribution and vertical partitioning of soil organic carbon stocks in these regions. We also inform decision makers and planners on managing current and mitigating future hydrologic impacts of weather extremes.

Some notable events in 2019:

- Five new Ph.D. students: Jacopo Cantoni, Jessica Page, Saeed Aminjafari, Elisie Jonsson, Alexandra Hamm
- One new Assistant Professor: Fernando Jaramillo
- One new postdoc: Mehdi Darvishi
- Two new docents: Stefano Manzoni and Fernando Jaramillo
- Two new University lecturers: Zahra Kalantari and Mattias Winterdahl
- Three long-term visiting PhD students: Dan Liu (Beijing Normal Univ.) and Bo Zhang (China Inst. Water Re. and Hydropower Research), Susana Torres (Autonomous University of Barcelona)
- Gia Destouni was the Boussinesq Lecturer 2019 of the Dutch-Belgian Boussinesq Center for Hydrology, under the auspices of the Royal Netherlands Academy of Arts and Sciences.

Funded research:

We received three major external research projects led or co-led by researchers in 2019: Fernando Jaramillo, Ian Brown and Jerker Jarsjö obtained

funding from the Swedish Space Agency, to study coastal systems of Northern rivers with radar interferometry.

Gia Destouni (i) and Stefano Manzoni (ii) were co-authors of two new FORMAS projects, dealing with: (i) conflicts between sustainable development goals in transformations towards more green-blue areas in cities; and (ii) soil processes in agricultural systems aiming at improving agricultural sustainability and agriculture-related services and disservices.

In addition, we received eight Bolin Centre-funded grants (Jessica Page, Imenne Åhlen, Sonia Borja, Davood Moshir and Andrew Framton). Mehdi Darvishi, Zarah Kalantari, Britta Sannel and Fernando Jaramillo also obtained funding from the Arctic Avenue program, between Stockholm University and University of Helsinki, to study glacier changes in the Tarfala valley and in permafrost peatlands under climate warming.

Activities:

In June, we organized a workshop in the NEO Observatory in Romanos, Greece, attended by 24 members of the Research Unit. Besides enjoying the spring sun and working hard to plan a future collaboration for a joint manuscript, we organized a trekking hike that included a visit to different plant life zones (forests, forest limit, alpine vegetation), observation of glacial and periglacial landforms and processes and discussion of soil carbon and surface hydrology.

Britta Sannel, expert in permafrost environments, was also invited to give an oral presentation with title "Palsa mire research in Sweden", Mires and wetlands of the North Calotte, Vadsø, Norway, and presented at the Klimatfestival arranged by the Bolin Centre for Climate Research in May and at Senioruniversitetet in October.

As other outreach, Fernando Jaramillo communicated the activities of the Unit in three of the most prestigious Universities in the capital and Central China, with invited oral presentations at Tsinghua University, Beijing Normal University and Northwest A&F University in Yangling, Shaanxi. In the latter, he was also invited to present in the International Expert Meeting "Local Water Management in a Global Context" in November.

Gia Destouni participated in the documentary "Efter Floden" (After the Flood), broadcasted by SVT 1, and in the spotlight podcast of the Royal Swedish Academy of Engineering Sciences (IVA-podden) "Hur vattenförsörjningen påverkas av klimatförändringar" (How climate change affects water resources).



Visit of the Unit to Navarino Environmental Observatory in Greece. Photo: Stefano Manzoni.



John Livsey and Anna Scaini sampling in a rice plot in Vietnam. Photo: Stefano Manzoni.



Imenne Åhlen and Jerker Jarsjö installing a water level station in a floodplain in Northern Colombia.



Visit of the Unit to Navarino Environmental Observatory in Greece. The picture is taken from the top of Palaiokastro, with the Gialova lagoon and Voidokilia Beach in the background. Photo: Stefano Manzoni.

Tarfala Research Station (TRS)

Director: Gunhild Ninis Rosqvist
Research Engineer: Pia Eriksson
Superintendent: Torbjörn Karlin

TRS

Tarfala Research Station (TRS) is a well-known Arctic hub where international scientists and students meet to conduct fieldwork or take part in field-courses learning about the rapidly changing arctic alpine environment. The station is located at an elevation of 1130 m a.s.l. in the Kebnekaise Mountains, northern Sweden. TRS is managed by Stockholm University and is part of the Swedish Infrastructure for Ecosystem Science (SITES; www.fieldsites.se) which is supported by the Swedish Research Council. TRS is also a partner of the EU funded International Network for Terrestrial Research and Monitoring in the Arctic (INTERACT; <https://eu-interact.org/>).

Environmental monitoring at TRS includes measurements of: (i) surface mass balance on four glaciers, Mårmaglaciären, Rabots glaciär, Riukojietna and Storglaciären; (ii) meteorology based on six automatic weather stations, (iii) discharge and water chemistry of the Tarfala river, (iv) temperature and water chemistry of the Tarfala lake, (v) permafrost in soil and bedrock depth-profiles, and (vi) vegetation dynamics based on pollen sampling, phenology and NDVI measurements.

Storglaciären is one of the most well studied glaciers in the world. The measurements of surface mass balance started in 1946. Since then research projects have provided detailed information about e.g. short and long-term ice dynamics, glacial-hydrology and microbiology. Storglaciären is a reference glacier in the World Glacier Monitoring Service database (<https://wgms.ch/>). To qualify as a reference glacier, the mass balance data series must be longer than 30 years. Now Rabots glaciär, which is situated on the western side of the Kebnekaise massif, also qualifies as a reference glacier. Together with 40 other glaciers, the two glaciers in Tarfala's vicinity provide a unique record of the state of the world's glaciers and their response to climate change.

New for 2019 was an expansion of the vegetation monitoring in Laevasvaggi with a phenocam providing greenness data. New pressure instruments were installed at the Tarfala river discharge station.

With these we aim to capture the low base flow during winter and the rising water levels during the early phase of the snow-melt period.

The two summits of Kebnekaise are the highest peaks in Sweden. The south summit is ice covered and its elevation therefore reflects changes in the long-term warming and annual weather variation. TRS staff measures the altitude of the summit at the end of each summer melt season. The elevation was measured to be 2095.6 m the 3rd of September, which was 1.2 meter below the elevation of the rocky north summit (2096.8 m). This was the first time we confirmed with high precision instrument that the southern summit lost its position as the highest point in Sweden. This symbolic event was highlighted by world and national press.

TRS was opened for the winter/spring season between 14th March and 29th April and for the summer season between 23th of June and 21st of September. Weather during summer was variable, a major snow-storm hit Tarfala as late as at the end of June. A month later the highest ever temperature in Tarfala- 24 C was recorded!

TRS was visited by science projects with principal investigators from e.g. Jagiellonian University, Kraków, and University of York (INTERACT). Field-courses were held at TRS by e.g. Technische Universität in Berlin and by Stockholm University. The steering group of SITES, the leadership of the University of the Arctic and the leadership of the department visited TRS in September.

TRS had a reduced lodging capacity in 2019 because the old staff lodging house 'forskarhuset' was replaced by a new building. The new 'forskarhus' covers 110m² and contains seven bedrooms and an office. The station hosted c. 1300 guest nights in 2019. Gunhild Ninis Rosqvist is the director of TRS, Pia Eriksson research engineer and Torbjörn Karlin superintendent. TRS hired 12 field season personnel in 2019.

For more information please visit: www.natgeo.su.se/english/Tarfala-research-station

NEO

Tarfala Research Station. Photo: Gunhild Ninis Rosqvist



Navarino Environmental Observatory (NEO)

Director: Johan Kuylenstierna
Station Manager: Giorgos Maneas

Inspired by their common interest on climate change and the need for scientifically based mitigation and adaptation policies, the Bert Bolin Centre for Climate Research of Stockholm University, the Centre of Environmental Health and Biophysics of the Biomedical Research Foundation of the Academy of Athens and TEMES in 2009 established the Navarino Environmental Observatory (N.E.O.). NEO is dedicated to the study of climate change and its impacts on the natural environment and human activities in the Mediterranean region, with a focus on atmospheric composition, past climate variations, current conditions and future climate projections. So far, nine institutes and universities from Greece, Europe and the US have joined forces with NEO as Associated Members, while the network is constantly expanding to include local stakeholders and policy makers.

Since 2010, NEO researchers have produced more than 75 international publications (seven publications in international journals in 2019), while two PhD studies are currently in progress (with six already completed). Since September 2018, NEO atmospheric station at Methoni is part of the PANACEA project (PANhellenic infrastructure for Atmospheric Composition and climatE change), becoming a hub of edge atmospheric and climate research in the area.

The station continues to serve as an important base for various student field trips, covering a range of different disciplines. In 2019, we have welcomed more than 250 students, teachers and researchers during 11 educational visits from Greece, Sweden and Germany (one school, four bachelor courses, six master courses, one international summer school), 9 fieldwork visits, and 2 workshops. Christos Katrantsiotis defended his NEO related PhD thesis entitled “Holocene environmental changes and climate variability in the Eastern Mediterranean: Multiproxy sediment records from the Peloponnese peninsula, SW Greece”. Gialova wetland has been the focus of several monitoring activities this year as well. Monitoring of birds, basic water parameters, climatic factors and touristic pressure, generate data which are fundamental for the future management of the area. This year, the monitoring of water resources has been expanded to cover the catchments around the wetland. Two master students and three interns chose a subject in relation to the area this year.

A major event in spring 2019 was the conference on “Challenges and Opportunities related to a new Climate Economy: Driving innovation for Sustainable Development” that was organized at the Academy of Athens on 2 May as a collaboration between the NEO Partners and the Swedish Embassy in Greece.

More than 200 participants from academia, business, civil society and the public sector attended and event was honoured with the presence of The President of the Hellenic Republic Mr Prokopios Pavlopoulos and HRH Crown Princess Victoria of Sweden.

Under the umbrella of COASTAL project, local and scientific knowledge will be combined to identify problems and develop practical and robust business road maps and strategic policy guidelines, aimed at improving land-sea synergy. COASTAL is a unique collaboration of coastal and rural business entrepreneurs, administrations, stakeholders, and natural and social science experts. The project links NEO research for the South-Western Peloponnese (Messinia) coastal region to corresponding research for the Baltic Sea coast and other EU coastal areas (Romania, Spain, France and Belgium) within the project. In 2019, NEO in collaboration with HCMR (Hellenic Center of Marine Research) hosted the annual General Assembly of the project in May, and a stakeholder workshop in June. The workshop brought together representatives from key economic sectors of the region that, together with researchers, identified challenges and opportunities related to land-sea interaction, and integrated coastal zone management. Similar workshops have been organized in the 6 regions under COASTAL, and NEO thus become part of a broader European network of research collaboration.

Recent NEO research initiatives, covering topics such as the effect of agriculture on biodiversity and water resources and the co-management of ecosystem services in Natura 2000 areas, illustrate our ambition to widen the scope of NEO inter-disciplinary research towards strategies for sustainable development of social-ecological systems and multifunctional landscapes in Messinia. To that end, NEO is gradually becoming a hub for sustainability research, contributing to local community.

During 2019, three Steering Committee meetings were organized to further discuss the implementation of the new NEO Indicative Strategy. In addition, the NEO operations were strengthened with recruitment of a full time assistant, Mr. Christos Pantazis.

The current collaborative agreement between the Academy of Athens, TEMES SA and Stockholm University ends in March 2020. All three partners expressed their commitment to continue the collaboration in a new agreement covering the period 2020-2024. The partners committed to further increase their financial support (direct and/or in-kind), and also decided that the NEO collaboration should be open to new partners. This forms a strong basis to further develop NEO activities at a regional level in the coming years.

Looking forward to welcoming more visitors to NEO!
The NEO Management

For more information please visit: www.navarinoneo.se



Master students in field, Greece. Photo: Giorgos Maneas.



The Bolin Centre for Climate Research

Co-directors: Nina Kirchner and Alasdair Skelton

The Bolin Centre is a consortium of more than 350 scientists in Sweden who conduct research and graduate education related to the climate of the earth. The Bolin Centre is a collaboration between SU's departments ACES, DEEP, IGV, MISU, NG and Zoology, together with FLOW at the Royal Institute of Technology (KTH) and the Rossby Centre at the Swedish Meteorological and Hydrological Institute (SMHI).

The Bolin Centre focuses on extending and disseminating knowledge about the Earth's natural climate system, climate impacting processes, climate modelling, human impact on the climate and climate impacts on ecosystems, biodiversity and humanity as well as how society can minimise the negative impacts of climate change. It contributes to the knowledge base for climate mitigation and adaptation policies nationally and internationally.

2019 was an eventful year for climate science, because young protesters began to persistently demonstrate for the protection of the climate and other foundations of human well-being. In May, the Bolin Centre Board decided to endorse the protesters in manner identical to Hagdorn et al., (Science, April 2019, Vol 364 Issue 6), viz by stating that the young protesters concerns are justified. The Bolin Centre's Climate Arena kick-started, providing a platform where climate scientists meet representatives from the business and public sector and from civil society, in order to seek solutions for a sustainable future. Bringing climate science out of lecture halls and into open spaces, the Bolin Centre, in cooperation with the House of Science and the City of Stockholm, also launched a thematic hiking trail in central Stockholm, focusing on a climate 4 degrees warmer than today. Nevertheless, our most important contribution to a sustainable future and our strongest pathway towards supporting our next generation is to continue producing outstanding climate science, on which the decisions which guide our future must be based.

The centre is structured in eight multidisciplinary cross-departmental research areas:

- Oceans-atmosphere dynamics and climate
- Clouds, aerosols, turbulence and climate
- Hydrosphere, cryosphere and climate
- Biogeochemical cycles and climate
- Historical to millennial climate variability
- Deep time climate variability
- Landscape processes and climate
- Biodiversity and climate

For more information, see www.bolin.su.se



Field team (left to right: Sebastian Thuné, KTH, Annika Granebeck, IGV, Nina Kirchner, NG, Elias Strandell Erstorp, KTH) working at proglacial Lake Sulitelma, northern Sweden, August 2019.



Nina Kirchner, one of the co-Directors, opens the Bolin Days of 2019 followed by a serie of seminars.

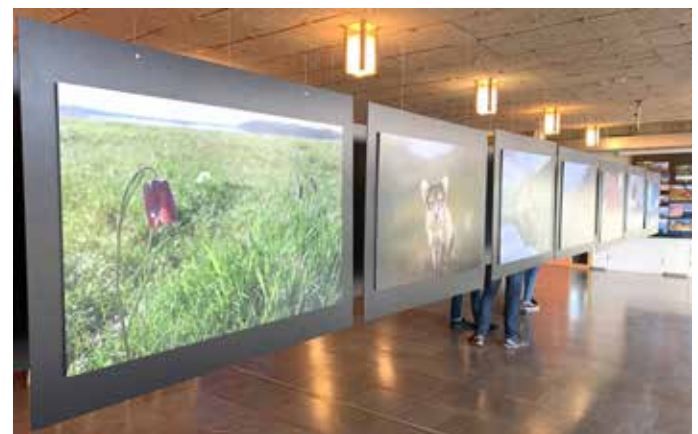


Photo Exhibition in the mingle space at the Bolin Days.

Infrastructure

Field stations:

Tarfala Research Station (TRS)
Navarino Environmental Observatory
(NEO)

Other facilities:

Stockholm Tree Ring Laboratory
Chemical laboratory
Microscope facilities
Optically Stimulated Luminescence
Laboratory (OSL)
Sediment laboratory
GIS and remote sensing cluster
Ice laboratory
Geomorphology laboratory



Measuring discharge in Tarfalajokk (using fluorescent tracer). Photo: Nimis Rosquist.



Field measurements by the Navarino Environmental Observatory.

Education

Director of Studies: Jerker Jarsjö

Vice Director of Studies: Björn Gunnarson

The Department's goal is to offer high quality education, reflecting its research profile, and meeting society's needs for theoretical and practical expertise and skills.

The Department offers education at undergraduate (Bachelor's) level in Geography, Earth Sciences, Integrated Biology-Earth Science, and 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 about 1200 students attend our undergraduate and graduate courses.

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 Environmental Management and Physical Planning

Master's Programme in Geomatics with Remote Sensing and GIS

Master's Programme in Hydrology, Hydrogeology and Water Resources

Master's Programme in Landscape Ecology

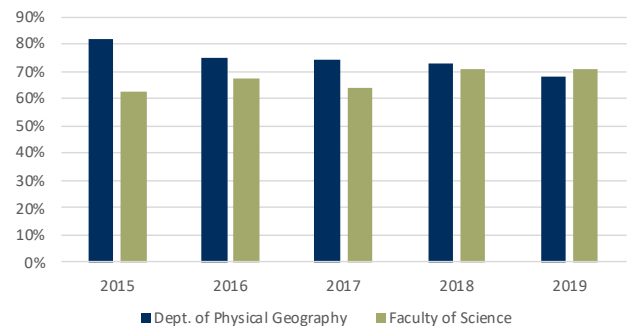
Master's Programme in Polar Landscapes and Quaternary Climate



Students (and teachers) in the master's programme Polar landscapes and quaternary climate coring peat bog sediments at Lundinsmossen in Södermanland, October 2019.

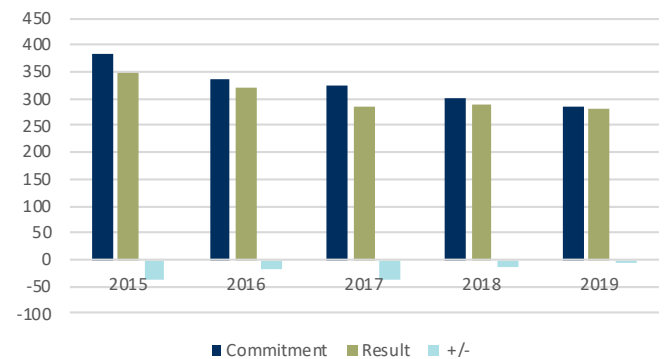
Photo: Britta Samel.

Student Completion Rate in % (Genomströmning)



Biogeo students studying geomorphology geology, land use and vegetation adaptation Cairngorms National Park, United Kingdom. Photo: Sara Cousins.

Annual Performance Equivalent/HÅP (Strategically planned decrease)



PhD Education

Subject Representative: Stefan Wastegård
Director of PhD Studies: Helle Skånes

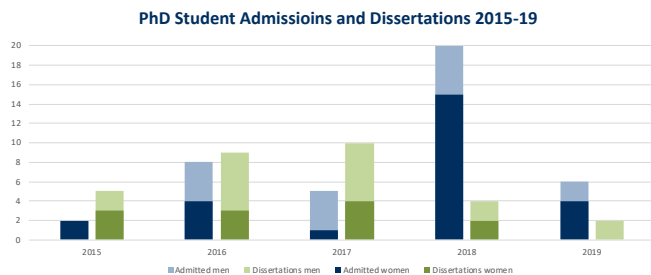
During the year we had two dissertations (see list), and seven halfway seminars. The halfway seminars were given by: Arjun Chakrawal, Simon Larsson, John Livsey, Giorgos Maneas, Deogratias Mulokozi, Marie Schellens, and Guillaume Vigouroux. Six new PhD students were admitted and the number of PhD students is now close to 50.

The remaining activities during 2019 were two supervisor meetings, one in the spring and one in the autumn. This year, the subject representative and director of PhD studies held individual meetings with the supervisors in the spring and a joint meeting in the autumn. This was well-received and we decided to continue the same way next year. The new PhD students were introduced to the department and research education by Helle Skånes and Susanna Blåndman. Individual study plans were created or updated and Individual Study Plan (ISP) talks were held. All the PhD students were offered development talks held by the research unit heads or others by delegation from the prefect.

The PhD Council organised a number of events for the PhD students over the course of the year, including workshops with invited speakers on the themes of scientific communication and presentation technique, as well as a number of social activities, after-works, and regular fika meetings. Due to the newly re-introduced Bolin Centre PhD Day occurring in the autumn, the Department PhD Day was cancelled. At the Bolin Centre PhD Day, three PhD students from the department were awarded prizes for their presentations: Daniela Guasconi for best presentation, Simon Larsson for second-best presentation, and Nina Roth for best poster.



PhD Student Admissions and Dissertations 2015-19



Doctoral Theses 2019

Lucas Dawson, *Unravelling Sustainability – The complex dynamics of emergent environmental governance and management systems at multiple scales*

Christos Katrantsiotis, *Holocene environmental changes and climate variability in the Eastern Mediterranean – Multiproxy sediment records from the Peloponnese peninsula, SW Greece*



Doctoral Theses of the Year



Collaboration

International Exchange (Education)

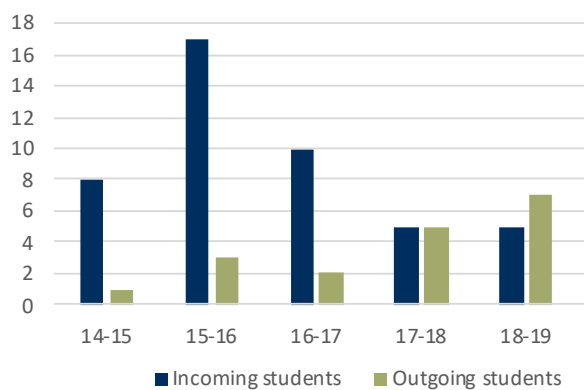
Partner Universities

- Aachen, Germany
- Bern, Switzerland
- Brussels, Belgium
- Copenhagen, Denmark
- Freiburg, Germany
- Gent, Belgium
- Grenoble, France
- Innsbruck, Austria
- Kiel, Germany
- Leuven, Belgium
- Liège, Belgium
- NTU, Singapore
- Ostrava, Czech Republic
- Turku, Finland



Singapore. Photo: Maria Damberg.

Erasmus Exchange Students 2015-19



The number of students in the graph are exchange students from our own exchange agreements. We also receive incoming exchange students from neighbour departments and central agreements of Stockholm University.

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 reserach and education.



We had an alumni event October 24 with the title: "Kunskap i geo- och miljövetenskaper bygger sambället", see photo. Together with DEEP we arranged an alumni career event for PhD students May 16 about climate, environment, media and teaching.



We invited some of our alumni to the Carrier Day arranged by the Faculty of Science on February 13, see photo to the left.

Alumni intervjuvs:

Sofia Kjellman (photo in the middle) was interviewed in a short film about her master and todays work at UiT Norges arktiske universitet. In another film Matilda Cresso (photo to the right) let us know about her master including a minor fied study in Colombia. Now she is an alumni as hydrologist at SMHI.

Some Awards and Prizes

Gia Destouni was the Boussinesq Lecturer 2019 of the Dutch-Belgian Boussinesq Center for Hydrology, under the auspices of the Royal Netherlands Academy of Arts and Sciences.

Photo: Miriam Coenders.





Daniella Guasconi (photo to the left) won 1st prize for the best presentation and Simon Larsson came 2nd on the Bolin Center's PhD Day.

Johan Kleman has been awarded with the Stockholm University Gold Medal in the 8th size (photo to the right).

Nina Roth won the poster competition for PhD students at the Bolin Days in November.

Stefano Manzoni is also this year listed as a highly cited researcher, cross field category.

Outreach

We interact with the public and schools at annual events like: Forskardagarna, Researchers' Night, the Geology Day, the Bolin Centre Climate Festival and the World Water Day.

We are also active in many panel discussions and seminars outside the academy.

Our researchers are often invited as experts in discussions of sustainability issues and other topics.



Martina Hättestrand shows school children how to reconstruct climate with pollen at the Bolin Centre Climate Festival in May.

Johan Kuylenstierna presents the new Climate Report of the Climate Policy Council. Johan has also been involved in some programmes and films about climate on the Swedish television.



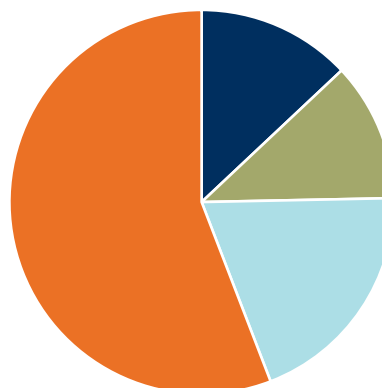
The southern summit lost its position as the highest point in Sweden. This symbolic event was highlighted by world and national press. Photo to the right: Tomas Hallstan.



Heather Wood in Naturmorgon (Swedish radio) about Batmapper. Photo: Sara Cousins.

Our Department in the Media

Advances in research are not just for us but for the public, too. Through the media, we can contribute to the dissemination of knowledge and debate. With communication we can increase understanding and interest and broaden the views for the future. Almost every week our researchers and teachers appear in the media. The diagram below shows the distribution of appearances in different kinds of media in 2019.



■ Digital Media ■ Radio ■ Television ■ Printed Media

PhD students

PhD Students with Department Employment

Aminjafari, Saeid
Axelsson, Josefine
Bennich, Therese
Berntell, Ellen
Borja, Sonia
Cantoni, Jacopo
Chakrawal, Arjun
Dawson, Lucas
Fischer, Sandra
Goldenberg, Romain
Guasconi, Daniela
Hamm, Alexandra
Holmes, Felicity
Hovemyr, Mikael
Högberg, Charlotta
Jonsson, Elisie
Kapás, Rozalia
Katransiotis, Christos
Larsson, Simon
Lindgren, Amelie
Livsey, John
Ma, Yan
Mas E Braga, Martim
Newall, Jennifer
Page, Jessica
Prakash, Abhay
Rautenberg, Max
Rocha, Eva
Roth, Nina
Schellens, Marie
Stoessel, Marianne
Stoltz, Jonathan
Vigouroux, Guillaume
Wagner, Julia
Watts, Hannah
Wood, Heather
Åhlen, Imenne
Österlin, Carl

Other PhD and Licentiate Students

Aggemyr, Elsa
Alavaisha, Edmond
Ermold, Matti
Fröjd, Christina
Gisladottir, Johanna
Hichens-Bergström, Marit
Joandi, Linnéa
Ketzer, Daniel
Krusic, Paul
Maneas, Giorgos
Mbanguka, René
Mulokozi, Deogratias
Nedelciu, Eduard
Nyangoko, Baraka
Oostdijk, Maartje
Senkondo, William
Sigfridsson, Sabine

Administrative Staff

Blåndman, Susanna
Damberg, Maria
Hansson, Erik
Holmlund, Moa
Hörnby, Kerstin
Jacobson, Rolf
Jacobsson, Runa
Karpegård, Madeleine
Nielsen, Caroline
Paldanius, Marcus
Persson, Karin
Schaffer, Christina
Stenberg de Serves Malin
Stolarska, Monika
Stuesson, Elisabeth
Trygger Bergman, Sophie
Åkerblom, Lena

Technical Staff

Brotén, Bengt
Burger, Mikael
Eriksson, Pia
Hättstrand, Martina
Karlin, Torbjörn

Li, Qiang
Maneas, Giorgos

MohammadHossein,
MohammadNia
Moshir Panahi, Davood
Prieto, Carmen
Skantz, Johan
Spångberg, Martin
Wennbom, Marika
Zhang, Jenson

Professors Emeriti

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

Human Resources Officer
Study and Career Counsellor
Educational Administrator
Educational Administrator
Educational Administrator
Web Editor
Financial Officer
Financial Controller
Head of Administration
Financial Officer
Administrator
Educational Administrator
Communicator
Financial Officer
Educational Administrator
Educational Administrator
Educational Administrator

Technician
Systems Engineer
Research Engineer
Laboratory Officer
Superintendent Tarfala Research
Station
Research Engineer
Superintendent Navarino Environmen-
tal Observatory
Research Assistant

Research Assistant
Research Engineer
Facilities Technician
Systems Engineer
Research Engineer
Research Engineer



Contact

Visiting address: The Geoscience building (Geovetenskapens hus), Svante Arrhenius väg 8, Stockholm - Frescati

Postal Address: Stockholm University, Department of Physical Geography, SE-106 91 Stockholm



Stockholm University in Frescati. Photo: UltraCam Eagle, LMV.

Department of Physical Geography

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**Stockholm
University**