Stockholm University

Board Meeting
Protocol
2019-02-15

Bolin Centre
for Climate Research

Time	9:00–12:00, 13 February 2019
Place	Tarfala room (T433), Geoscience Building, Stockholm University
Attending board members	*Cynthia de Wit, Chair* *Magnus Breitholtz, Dep. of Environmental Science and Analytical Chemistry, SU* *Sara Broomé, Student representative, Stockholm University* *Rodrigo Caballero, Dep. of Meteorology, Stockholm University* *Gia Destouni, Dep. of Physical Geography, Stockholm University* *Ove Eriksson, Dep. of Ecology, Environment and Plant Sciences, SU* *Bengt Karlsson, Dep. of Zoology, Stockholm University* *Erik Kjellström, Rossby Centre, Swedish Meteorological & Hydrological Institute* *Magnus Mörth, Dep. of Geological Sciences, Stockholm University*
Other participants	*Nina Kirchner, Co-Director of the Bolin Centre* *Alasdair Skelton, Co-Director of the Bolin Centre* *Annika Granebeck , Bolin Centre Coordinator & Communicator* *Karin Jonsell, Bolin Centre Coordinator & Communicator*
Absent	*Dan Henningson, KTH Royal Institute of Technology* *Johannes Morfeldt, Swedish Environmental Protection Agency*
Secretary	*Karin Jonsell*

§ 1	**Meeting opens** The Chair welcomed everyone and especially Sara Broomé, the new student representative in the Bolin Centre Board.
§ 2	**Appointment of protocol writer** Karin Jonsell was appointed as protocol writer.
§ 3	**Appointment of protocol checker** Ove Eriksson was appointed as attester.
§ 4	**Approval of the agenda** The agenda was approved with the addition of items 9 k and 10a, b.
§ 5	**Protocol from the previous meeting** The protocol from the previous meeting (Appendix 1) was approved.
§ 6	**Decision: The Bolin Centre Budget** The budget as given Appendix 2 was approved with the following notations: • The Board grants the Directorate permission to transfer funds between salary and drift costs for the CRS once its strategy is finalized. • The Heads of Department will check for outstanding CRS costs no later than 2019-03-31.

	• The CRS is required to establish a better routine to ensure that Departments receive CRS funds in a timely manner.
§ 7	**Discussion: The External Science Advisory Group (ESAG) report for 2018** The Board discussed the report the External Science Advisory Group (ESAG) has sent to the Bolin Centre, see Appendix 3. • The Board expressed their sincere thanks to the ESAG for providing such constructive feedback to the Bolin Centre • The Board asked the Directors to invite MERGE in Lund to a workshop • The Board also asked the Directors to begin work on revising the Centre's mission statement
§ 8	**Discussion: A ProMemoria of the past, current and future role of the External Science Advisory Group (ESAG)** The Directors presented the ProMemoria summarizing the history, role and tasks of the External Science Advisory Group (ESAG), see Appendix 4. The document has been sent to the ESAG members and a final version will be presented at the next Board meeting for approval.
§ 9	**Information** **a. Protocol for the Science Advisory Group (SAG) and the Climate Research School (CRS) meetings** The protocols from the SAG and CRS meetings, as seen in Appendix 5a, b, will from now on be added to the Board agenda as information to further the transparency of the Bolin Centre. **b. Protocol from Science Faculty Council** See Appendix 6 for the protocol from the Science Faculty Council with the election of Sara Broomé (ordinary member) and Heather Wood (secondary member) as student representatives on the Bolin Centre Board. **c. Thorsten Mauritsen has been selected as new Research Area 1 Co-leader** The Co-Directors announced the selection of Thorsten Mauritsen from the Dept. of Meteorology, Stockholm University, as new Co-leader for Research Area 1. **d. The Bolin Centre has sent an application to Vinnova** The Bolin Centre has sent an application to Vinnova together with Naturvårdsverket, SMHI, and 11 others (both organizations and businesses) to form a competence centre. The decision if the application has passed the first approval round is expected in April. **e. The Bolin Centre is currently contributing to a MISTRA application** The Bolin Centre is currently contributing to a MISTRA application in partnership with SRC, the Baltic Sea Centre and the Human Science Faculty. The SRC is leading this application. **f. The Directorate is planning a lunch-to-lunch retreat** The Directorate is planning a lunch-to-lunch retreat for the Science Advisory Group, 20-21 August 2019 and the Bolin Centre Board is most welcome to participate. **g. Update on the Geoscience and society (GSS) meeting** The Bolin Centre has nominated 2 panelists to the Geoscience and society (GSS) meeting co-hosted by the Bolin Centre 18–21 March. The conference will be entirely in the Geoscience building. See https://connect.agu.org/gss/homeo for more information.

	h. The Bolin Centre communication plan for 2019 The Coordinators and communicators presented their plan for 2019 as given in Appendix 7. **i. The Bolin Centre report will be made yearly** The Bolin Centre Report will be made yearly as part of the effort to record progress in the Bolin Centre, and it will follow the calendar year. **j. Recommendations for procurement of catering and restaurants** The Bolin Centre Board's recommendations for procurement of catering and restaurants, as seen in Appendix 8, has been sent to Stockholm University. Stockholm University's Environmental committee also supports this action and plan to discuss with the head of administration if there are funds to hire a consultant for helping the procurement unit with the procurement process for catering firms. The Bolin Board supported this. **k. Arctic Avenue** The application called Arctic Avenue has been approved by the Universities of Stockholm and Helsinki. The project involves a number of Bolin Centre member, runs 2019–2021, and is funded with 1 MSEK per year at Stockholm University, and 100 000 € per year at Helsinki University, respectively. There will be a kick-off 27–28 March in Helsinki. The application can be seen in Appendix 9.
§ 10	**Other business** **a. Alternative Board member for KTH Royal Institute of Technology** The Board asks the chair to contact the KTH Royal Institute of Technology for an alternative Board member to the Bolin Centre Board. **b. Bolin Centre by laws** The Vice Chancellor has approved the Bolin Centre's new by laws, see Appendix 10.
§ 11	**Next meetings** Dates for Board meetings during spring 2019: Tuesday 2019-04-02, 9–12 in the Tarfala Room (T433) at Stockholm University Friday 2019-05-17, 9–12 at KTH Royal Institute of Technology

Karin Jonsell Secretary	Ove Eriksson Attester	Cynthia de Wit Chair of the Board

Stockholm University

Board Meeting Protocol 2018-12-21

Bolin Centre for Climate Research

Time	9:00–12:00, 20 December 2018
Place	Tarfala room (T433), Geoscience Building, Stockholm University
Attending board members	*Cynthia de Wit, Chair* *Magnus Breitholtz, Dep. of Environmental Science and Analytical Chemistry, SU* *Rodrigo Caballero, Dep. of Meteorology, Stockholm University* *Gia Destouni, Dep. of Physical Geography, Stockholm University* *Ove Eriksson, Dep. of Ecology, Environment and Plant Sciences, SU* *Bengt Karlsson, Dep. of Zoology, Stockholm University* *Erik Kjellström, Rossby Centre, Swedish Meteorological & Hydrological Institute* *Johannes Morfeldt, Swedish Environmental Protection Agency* *Magnus Mörth, Dep. of Geological Sciences, Stockholm University*
Other participants	*Nina Kirchner, Co-Director of the Bolin Centre* *Alasdair Skelton, Co-Director of the Bolin Centre* *Annika Burström, Bolin Centre Coordinator & Communicator* *Karin Jonsell, Bolin Centre Coordinator & Communicator*
Absent	*Caroline Greiser, Student representative, Stockholm University* *Dan Henningson, KTH Royal Institute of Technology*
Secretary	*Karin Jonsell*

§ 1	**Meeting opens** The Chair welcomed everyone.
§ 2	**Appointment of protocol writer** Karin Jonsell was appointed as protocol writer.
§ 3	**Appointment of protocol checker** Magnus Breitholtz was appointed as attester.
§ 4	**Approval of the agenda** The agenda was approved with the addition of items 9 a-f.
§ 5	**Protocol from the previous meeting** The protocol from the previous meeting (Appendix 1) was approved.
§ 6	**Discussion: The Bolin Centre Budget** The Directors presented the preliminary budget for 2019, see Appendix 2 a, b. The Board approved the prinicples of the outlined budget. • The Board asks the Directors to summarise the principles behind the distribution of the Strategic funding (SFO-money) to the Departments for future use.

Stockholm University

§ 7	**Decision: Implementation plan for the Bert Bolin Climate Lectures** • The Board approved the updated implementation plan for the Bert Bolin Climate Lecture as seen in Appendix 3.
§ 8	**Information** a. IPCC invitation to name experts for reviewing future special reports, https://www.smhi.se/nyhetsarkiv/var-med-och-granska-ipcc-s-specialrapporter-1.141555. The Bolin Centre will work more proactively regarding these type of announcements in the future. b. In the framework of the strategic cooperation between SU and the University of Helsinki, Atte Korhola (UH) and Nina Kirchner (SU) have lead a joint proposal "Arctic Avenue" that was submitted to the Vice-Rectors of both universities on Dec 1st, 2018, and which involves a number of Bolin Centre members as partners. A decision regarding funding of this proposal is expected in January 2019. c. The Bolin Centre will co-host and nominate panel speakers and facilitators for the Geoscience and society meeting 18-21 March 2019 at Stockholm University organized by the American Geophysical Union (AGU). d. The Directorate is planning a lunch-to-lunch retreat for the Science Advisory Group.
§ 9	**Other business** a. The House of Science has contacted the Bolin Centre to ask for support in putting pressure on catering firms to offer more environmental and climate friendly food, see Appendix 4. The Board thinks such initiatives are highly commendable. The Board asks the Directorate and Johannes Morfeldt to write a letter to Stockholm University's procurement department expressing the Board's views on this. b. The Strategic Research Areas (Strategiska Forskningsområden, SFO), of which The Bolin Centre has SUklim-money, will be evaluated during 2021 and the Bolin Centre will start the preparations for this. c. The Dean has decided to name Professor Maureen E. Raymo of Lamont-Doherty Earth Observatory, Colombia University, as the Bert Bolin Climate Lecturer 2019. As Raymo couldn't come during the spring due to field work, the Lecture is scheduled in connection with the Bolin Days 2019 (2019-11-19, 14-15 in the Aula Magna). d. The Vice Chancellor has decided to appoint Cynthia de Wit Chair of the Bolin Centre Board for another period, i.e. 2019-01-01 to 2021-12-31. e. The Vice Chancellor has approved the Bolin Centre's new by laws, see Appendix 5. f. HC Hansson will step down as Chair for Climate Research School (CRS). The two Directors will jointly share the chairing responsibility for CRS from 2019-01-01.The Board would like to take the opportunity to thank HC Hansson for his invaluable contributions to the CRS. g. Björn Gunnarson will step down as Director of Studies for CRS from 2019-04-01. The task of communicating the CRS will be transferred to the Bolin Centre communicators and the Bolin Centre will employ a Director of studies (20 % time) for organising courses and summer schools. The Board would like to take the opportunity to thank Björn Gunnarson for his long-term and important contributions in running the CRS for the Bolin Centre.
§ 10	**Next meetings** Dates for Board meetings during spring 2019: Wednesday 2019-02-13, 9–12 in the Tarfala Room (T433) at Stockholm University Tuesday 2019-04-02, 9–12 in the Tarfala Room (T433) at Stockholm University Friday 2019-05-17, 9–12 at KTH Royal Institute of Technology

Stockholm University

Karin Jonsell Secretary	Magnus Breitholtz Attester	Cynthia de Wit Chair of the Board

Bolin Centre Budget 2019

OH på löner (enligt ON beslut)	***20%***	***LKP***	***50.352%***

	Ingående balans	Institution
Ingående balans (4333308)	*SEK 15,146,593*	IGV
I ingående balans ingår sparade EkoKlim medel från 2017 och 2018	SEK 14,166,400	IGV
Ingående balans	**SEK 980,193**	

	SFO medel	Tilldelning (%)	Inkomst 2019	Institution	
SFO-medel (SuKlim)	*SEK 19,862,000*	80%	*SEK 15,889,600*	IGV	*See note 1*
SFO-medel (EkoKlim) oförändrat till 2019.	*SEK 17,365,000*	100%	*SEK 17,365,000*	IGV	
Summa inkomster			***SEK 33,254,600***	IGV	

					Fördelning av kostnader				
	Månadslön (2019)	% anställning	Kostnad 2019	Institution	SuKlim	%	EkoKlim	%	
Director (A. Skelton, IGV)	SEK 65,600	50%	SEK 710,143	IGV	SEK 355,071	*50%*	SEK 355,071	*50%*	
IGV/Jonsell/Lön	SEK 42,300	100%	SEK 915,824	IGV	SEK 604,444	*66%*	SEK 311,380	*34%*	
IGV/Burström/Lön	SEK 37,800	100%	SEK 818,396	IGV	SEK 540,141	*66%*	SEK 278,255	*34%*	
IGV/Mohammad/Lön	SEK 41,000	50%	SEK 443,839	IGV	SEK 443,839	*100%*	SEK 0	*0%*	
Director (N. Kirchner, NG)	SEK 47,600	50%	SEK 515,286	NG	SEK 257,643	*50%*	SEK 257,643	*50%*	
Arvode N Kirchner (tills professorssbefordran)	SEK 6,000		SEK 129,904	NG	SEK 64,952	*50%*	SEK 64,952	*50%*	
XX/Studierektor/Lön	SEK 50,000	50%	SEK 541,267	NG	SEK 541,267	*100%*	SEK 0	*0%*	*See note 2*
NG/Moberg/Lön	SEK 49,800	20%	SEK 215,641	NG	SEK 215,641	*100%*	SEK 0	*0%*	
MISU/Lewinschal/Lön	SEK 36,600	30%	SEK 237,725	MISU	SEK 237,725	*100%*	SEK 0	*0%*	
IGV/Akter/Lön	SEK 38,000	10%	SEK 82,273	IGV	SEK 61,704	*75%*	SEK 20,568	*25%*	
Friköp (Kristoffer Hylander, DEEP)	SEK 57,200	30%	SEK 371,526	DEEP	SEK 0	*0%*	SEK 371,526	*100%*	
Friköp (Zahra Kalantari, NG)	SEK 40,500	30%	SEK 263,056	NG	SEK 0	*0%*	SEK 263,056	*100%*	
Friköp (Regina Lindborg, NG)	SEK 57,000	30%	SEK 370,227	NG	SEK 0	*0%*	SEK 370,227	*100%*	
Friköp (Sara Cousins, NG)	SEK 56,900	30%	SEK 369,577	NG	SEK 0	*0%*	SEK 369,577	*100%*	
Friköp (Johan Ehrlén, DEEP)	SEK 61,000	30%	SEK 396,208	DEEP	SEK 0	*0%*	SEK 396,208	*100%*	
Friköp (Karl Gotthard, ZI)	SEK 45,700	30%	SEK 296,831	ZI	SEK 0	*0%*	SEK 296,831	*100%*	
Lönekostnader			**SEK 6,677,722**		**SEK 3,322,428**		**SEK 3,355,294**		

	Utg. balans (2018)	Ing. balans	Nya medel (2019)	Institution					
IGV/Bolincentret/Skelton	SEK 100,405	SEK 300,000	SEK 199,595	IGV	SEK 199,595	*100%*	SEK 0	*0%*	
NG/Bolincentret/Kirchner	SEK 94,434	SEK 294,434	SEK 200,000	NG	SEK 200,000	*100%*	SEK 0	*0%*	
MISU/Bolincentret/RA1	SEK 171,680	SEK 571,680	SEK 400,000	MISU	SEK 300,000	*75%*	SEK 100,000	*25%*	
ACES/Bolincentret/RA2	SEK 51,696	SEK 451,696	SEK 400,000	ACES	SEK 300,000	*75%*	SEK 100,000	*25%*	
NG/Bolincentret/RA3	-SEK 68,838	SEK 331,162	SEK 400,000	NG	SEK 300,000	*75%*	SEK 100,000	*25%*	
IGV/Bolincentret/RA4	-SEK 82,421	SEK 317,579	SEK 400,000	IGV	SEK 300,000	*75%*	SEK 100,000	*25%*	
IGV/Bolincentret/RA5	-SEK 47,392	SEK 352,608	SEK 400,000	IGV	SEK 300,000	*75%*	SEK 100,000	*25%*	
IGV/Bolincentret/RA6	SEK 130,394	SEK 530,394	SEK 400,000	IGV	SEK 300,000	*75%*	SEK 100,000	*25%*	
NG/Bolincentret/RA7	SEK 116,403	SEK 516,403	SEK 400,000	NG	SEK 0	*0%*	SEK 400,000	*100%*	
DEEP/Bolincentret/RA8	SEK 235,004	SEK 600,000	SEK 364,996	DEEP	SEK 0	*0%*	SEK 364,996	*100%*	
IGV/Bolincentret/Kommunikation	-SEK 55,226	SEK 744,774	SEK 800,000	IGV	SEK 600,000	*75%*	SEK 200,000	*25%*	
NG/Bolincentret/CRS	SEK 701,294	SEK 1,201,294	SEK 500,000	NG	SEK 250,000	*50%*	SEK 250,000	*50%*	*See note 2*
NG/Bolincentret/Databas	SEK 50,000	SEK 150,000	SEK 100,000	NG	SEK 100,000	*100%*	SEK 0	*0%*	
MISU/Bolincentret/Klimatmodellering	SEK 19,236	SEK 99,236	SEK 80,000	MISU	SEK 80,000	*100%*	SEK 0	*0%*	
Lokalkostander (IGV)			SEK 116,000	IGV	SEK 76,560	*66%*	SEK 39,440	*34%*	*See note 3*
Lokalkostander (U och Y)			SEK 80,000	IGV	SEK 60,000	*75%*	SEK 20,000	*25%*	
SNIC			SEK 157,000		SEK 157,000	*100%*	SEK 0	*0%*	
Bolincentret/satsning			SEK 0	IGV	SEK 0	*50%*	SEK 0	*50%*	
Driftkostnader			**SEK 5,397,591**		**SEK 3,523,155**		**SEK 1,874,436**		

				Fördelning av centralkostnader			
Kvarstående SFO medel (SuKlim)		Tilldelning (%)	**SEK 9,044,017**				
IGV	***These % allocations***	16.7%	SEK 1,510,351 IGV	SuKlim	%	EkoKlim	%
NG	***become 25% for each***	16.7%	SEK 1,510,351 NG	SEK 6,845,583	68%	SEK 3,162,306	32%
MISU	***Department on***	33.3%	SEK 3,011,658 MISU				
ACES	***January 1, 2021***	33.3%	SEK 3,011,658 ACES				

Kvarstående SFO medel (EkoKlim)	**SEK 5,189,270**	IGV
Summa Ekoklim satsning 2017-2019	*SEK 15,745,545*	

Satsning från kapital	**SEK 0**
Summa kostnader	**SEK 26,308,600**
Utgående balans (2019)	**SEK 7,926,193**
I utgående balans ingår sparade EkoKlim medel för 2019	*SEK 6,946,000*
Utgående balans - sparade Ekoklim medel	**SEK 980,193**
Sparade EkoKlim medel från tidigare år	*SEK 14,166,400*
Summa sparade EkoKlim medel	*SEK 21,112,400*

Notes

1. We find out how much SFO funds we will receive in May. The numbers entered here are for 2018.

2. The Directorate request permission to redistribute funds from salary to drift for the CRS after its strategic plan is decided on (in May), based on which the tasks of the Director of Studies and therefore this person's %-employment can be decided on.

3. The Lokalkostnader are 77000 for IGV rooms (as before) plus costs for R107 which is the new Bolin Centre storage room. R107 costs 46 600 SEK/yr, and during 2019, it is used from march onward, implying a cost of 39 000 during 2019 . Total is therefore 77 000 + 39 000 = 116 000.

2018 Report of the Bolin Centre External Science Advisory Group
8 January 2019

K. E. Kohfeld (Chair), D. Chen, E. Jansen, R. T. Pierrehumbert, representing the External Science Advisory Group.

1. Overview

The External Science Advisory Group (ESAG) attended the 10th annual Bolin Days presentations on 21-22 November 2018. The ESAG met on 23 November to discuss findings and recommendations. Co-directors Nina Kirchner and Alistair Skelton were present ex-officio for a portion of these discussions. ESAG members Chen, Jansen, Kohfeld, and Pierrehumbert were present at the Bolin Days and ESAG meeting. Findings were conveyed verbally by ESAG members Kohfeld, Chen, and Pierrehumbert to the Bolin Centre Directorate. A summary of findings and recommendations is provided below.

2. Bolin Days Presentations – Summary and Recommendations

Bolin Days opened with presentations about the historical development of the Centre, introduced the importance of Bolin's work, and the initial aims of the centre. Of particular interest was the message conveyed by a quote from Bert Bolin to the Swedish Research Council in 1969, suggesting the need for a broader consideration of climate science within the Bolin Centre: **"***We scientists aren't here just to enjoy ourselves with what we think is fun. We can do that anyway, but we also have a responsibility to see what the societal implications are of our science.***"**

This year's Bolin Days presentations involved sessions of four, integrative research topics that included: Arctic climate, impacts of extreme weather events and climate change, climate and environment, and climate and biota. The ESAG noted that the change from research area to topic-based sessions resulted in an overall, more engaging presentation of research within the Bolin Centre. The caliber of talks was generally very high, and speakers attempted to speak to a broader audience than their own research areas. It also resulted in higher and more consistent attendance when compared with the 2017 and earlier Bolin Days.

The meeting also included a special session by members of the MERGE (Modelling the Regional and Global Earth System) Strategic Research Area from Lund University, University of Gothenburg, Rossby Centre/SMHI, Linnaeus University, Chalmers University of Technology and Royal Institute of Technology. This session described research and modeling development activities encompassing climate-biosphere interactions (S1), paleoclimate and land cover changes (S2), aerosol-cloud dynamics (S3), and statistics (S4). The ESAG noted potential opportunities for collaborative development between the Microclimate and Biodiversity research within the Bolin Centre and researchers using the Lund-Potsdam-Jena General Ecosystem Simulator (LPJ-GUESS) and the regional Earth System model coupling LPJ-GUESS with the Rossby Centre Atmosphere model (RCA-GUESS). Another joint interest and possible cooperation lies in applications of the Earth System model EC-Earth.

Bolin Days Recommendations

The ESAG unanimously appreciated the new topic-based approach but also noted that it resulted in the absence of some research areas traditionally associated with the Bolin Centre. This is to be expected to a certain extent, but the ESAG would encourage yearly topics be rotated to highlight different areas of Bolin research excellence. Some examples include research on large-scale climate system dynamics, Earth system models, climate prediction, and large scale atmospheric and oceanic circulation and their interactions.

2018 Report of the Bolin Centre External Science Advisory Group
8 January 2019

Second, while a move away from siloed presentations made the Bolin Days more engaging, the ESAG noted difficulty with gaining an overview of the performance of individual research areas (e.g., what resources go to these groups, and how are those resources utilized?), new developments within the Centre and the university (e.g., funding awards to 10 new integrative projects in late 2017), and potential challenges facing the young researchers. The ESAG suggests that next year's Bolin days include (a) brief one-page reports on the Research Areas highlighting their resources, activities, independent funding, and publications; (b) a session highlighting the development of collaboration with units outside of the Bolin Centre (e.g., Stockholm Resilience Centre, the Museum, Academic units of Economics, Political Science, Social Sciences, and History), as such a session may assist in identifying cross-cutting activities well-placed to exploit new funding activities (see below); (c) a meeting between the ESAG and Bolin Centre students to learn of any student concerns, challenges, and suggestions.

Finally, although ESAG recognized significant strides towards presenting talks that were understandable by a broader audience, some speakers still struggled with communicating disciplinary jargon and equations. The ESAG suggests interdisciplinary communication could be made more successful by placing a ban on all acronyms during presentations.

3. Challenges – Funding. The Bolin Centre is set to lose ½ of its funding in 3 years and faces uncertainty in terms of its future evaluation and sources of funding. Indeed, if new funding is not obtained, the ESAG sees challenges with the model of spreading reduced funding over all areas that the Centre is currently supporting. The original funding through the Swedish Research Council was for basic research, but future sources of funding may be routed through more applied funding mechanisms (e.g., VINNOVA) focused on innovation. The following questions remain open:

- *How and when will future evaluations of the Bolin Centre science occur, and what metrics will be used to determine success?*
- *How well-positioned is the Bolin Centre to capture applied science funding (and is this desirable)?*
- *How will future evaluation of Strategic Research Areas consider the co-existence of MERGE and the Bolin Centre (complementary, competitive, or interlinked and indispensible)?*

4. Challenges – Integration and Communication. Any multi-disciplinary institution will face challenges of integrating research units, and the Bolin Centre is no exception. Last year, the ESAG noted the challenge of integrated two separate institutions (Bolin and Ekoklim) into one centre with shared goals and mission. The ESAG noted stronger coherence demonstrated in the presentations, although one ESAG member noted that the integration of new units (i.e., Ekoklim) still requires much more work to benefit from potential synergies, and that the nature of this integration may become even more vital as the funding situation of the Centre changes. All ESAG members agreed that this is a work in progress and are looking forward to seeing the development of the 10 newly funded integrative projects initiated at the end of 2017.

5. Challenges – Modeling Development. ESAG noted that strong model development and coordination was a compelling strength of the MERGE SRA, one that could be more strongly developed within the Bolin Centre. MERGE appears to have been more successful at making model development a stronger component of the SRA, taking a program-wide view of how model components can be readily integrated. A joint Swedish framework in climate modeling appears desirable, building on the strong combined competence at the Bolin Centre, MERGE, and with SMHI as a joint partner for both.

2018 Report of the Bolin Centre External Science Advisory Group
8 January 2019

6. Recommendations. The ESAG suggested the following recommendations to further build the international profile, identify areas where innovation-focused funding could be explored, develop collaborations that will create added benefits between the Bolin Centre and other organizations, and shape the identity of the Bolin Centre and develop "climate awareness" within the new funding constraints and evolving societal demands on research in Climate Change.

- ***Increase international visibility and engagement of Bolin Centre members*.** The ESAG encouraged continued efforts by the Bolin Directorate to provide incentives for Bolin Centre members to engage in international activities such as multiple working groups and assessment reports of the Intergovernmental Panel on Climate Change (IPCC), the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES), and the **I**nternational Union for Conservation of Nature **(I**UCN) activities focused on climate change, as a means of raising the international visibility of Bolin Centre in engagement activities.
- ***Identify areas suited to position the Bolin Centre in exploiting funding opportunities in Innovation.*** Any movement toward innovation- and stakeholder-based funding requires engagement of scientists who have traditionally worked on fundamental, basic research questions. ESAG members noted that some of the existing research presented is already exploiting big data and cloud solutions. Furthermore, initiatives were noted that are increasing individual links between SMHI and Bolin Centre researchers. Efforts could be made to further identify and promote these types of efforts. The Bolin Climate Arena could be a platform for this (see below).
- ***Develop links with public sector and political leaders.*** Sweden's new Climate Act commits the country to reach net-zero greenhouse gas emissions by 2045, indicating a strong ambition to reach important international climate targets by Swedish politicians. The Bolin Centre may be well-positioned to investigate the natural biogeochemical processes that create opportunities and provide challenges for meeting this goal. The Bolin Centre could benefit from developing stronger connections within political arenas and engage with other disciplines on the climate, energy, policy nexus.
- ***Develop and seek seed funding for the Climate Arena.*** The Bolin Climate Arena has been designed to identify stakeholders interested in using climate knowledge for addressing climate research questions. Although still in its infancy, the Climate Arena workshop in May, 2018 identified 13 external partners. The ESAG encourage further development of this area of the Bolin Centre as a means of increasing collaborative projects between stakeholders and Bolin researchers, and to pursue seed funding (e.g., MISTRA, VINNOVA) to support these efforts.
- ***Develop/establish relationship with MERGE.*** As a strategic research area funded under the same funding initiative as the Bolin Center in 2018, MERGE faces the same uncertainties, and both MERGE and the Bolin Centre may face the question: "Why does Sweden have two separate SRAs focused on climate science?" The ESAG recognized the strategic benefit of inviting MERGE to the Bolin Days to assess overlaps and collaborative opportunities and encourages further exploration of possible joint opportunities and activities (eg. Collaborations between the downscaling efforts, terrestrial C-cycle, and biodiversity work at the Bolin Centre and LPJ-GUESS and WRF modeling work at MERGE). This could lead to a more successful argument that both centres are complementary and inherently necessary.
- ***Broader Mission development for the Bolin Centre.*** The Bolin Centre was built on a foundation of fundamental, basic research, introducing a structural model of "bottom-up" as opposed to "top-down" organization of research areas and individual projects. In the past few years, the Centre has become more interdisciplinary through the incorporation of new units, now faces potential changes to the funding model, and is entering a changing political climate in which climate-related research and engagement with the public is vital. The ESAG suggests that this is an important time for the

2018 Report of the Bolin Centre External Science Advisory Group
8 January 2019

Bolin Centre to revisit their mission to better encompass these changes, to steer a path for how units can be integrated successfully, to establish their research priorities, to develop a funding strategy, and to consider how best to reposition themselves in this evolving landscape.

7. **Final Remarks.** The Ceilidh remained excellent. The ESAG was pleased with the expansion to include Swedish repertoire and looks forward to the building complexity in the coming year.

Nina Kirchner, Alasdair Skelton and Cynthia de Wit

Bolin Centre for Climate Research External Science Advisory Group (ESAG): A short history, and thoughts on its current and future role

Motivation

Since its foundation in 2006, the Bolin Centre for Climate Research has not only grown steadily from its original constellation around research questions formulated in the Linnéaus Application. It has also, in 2016, merged with the EKOKLIM strategic research area, thus broadening the scope of the Bolin Centre. Also, in 2017, the Bolin Centre initiated collaborative projects with the Human Science Academic Area at Stockholm University. Given these dynamical changes and noting that the description of the role of the ESAG in the Bolin Centre By-Laws has remained unchanged since 2012, we consider it timely to re-visit the role and tasks of the ESAG, in order to ensure that it continues to fulfill its function as observing and advising body to the Bolin Centre, as well as to ensure that the Bolin Centre provides the best-possible conditions for the ESAG to carry out this very important task.

Here, a short history of the ESAG is given for the years 2006-2016, followed by a short summary of the activities of the present ESAG with mandate period 2017-2019. The document concludes with a draft of a "ESAG Pro Memoria" which can be developed into a self-consistent document for use by the ESAG, and which should be revised annually by the Bolin Centre Directorate in consultation with the ESAG and the Bolin Centre Board.

History

The history of the ESAG is closely linked to the history of the Bolin Centre for Climate Research, which is described e.g. here: https://bolin.su.se/index.php/the-founding-and-early-years-of-the-bolin-centre.

After the Bolin Centre was founded in 2006, an External Advisory Board comprising of Profs. Lennart Bengtsson, Inez Fung, Phil Jones, Julian Dowdeswell, Johannes Oerlemans and David Sudgen supported the Bolin Centre's director, Prof. Johan Kleman. Prof. Oerlemans was regarded as the Chair of the External Advisory Board. However, detailed records of the External Science Advisory Board's activities were not kept at that time. In 2011, the "Rules for the Bolin Centre for Climate Research"[1] state that an international group, comprising five outstanding researchers in climate science, shall support the group leading the Bolin Centre (note: the Bolin Centre Board was not appointed officially until January 1, 2013).

Changes in the Bolin Centre leadership were made when the Centre's first director, Prof. Johan Kleman, stepped down as Director and was replaced by Prof. Alasdair Skelton from January 2013. Leadership was further strengthened by appointing Prof. Leonard Barrie as vice Director and Research Director from March 2013. Skelton and Barrie triggered a number of changes in the organization of the Bolin Centre, outlined in a proposal titled "Structure of the Bolin Centre for Climate Research at Stockholm University" dated 8 Dec 2012. Shortly thereafter, in the By-laws (approved 20 Dec 2012), the External Science Advisory Group's role is described as follows:

[1] The "Rules" (in Swedish: "föreskrifter") are the predecessors of the Bolin Centre By-laws. The first "Rules" were approved 22 Nov 2007 and revised 3 Oct 2011, and the first By-laws, building on the "Rules", were approved 20 Dec 2012, with revisions dated 16 Feb 2017, and 20 Dec 2018.

> *External Science Advisory Group: The Bolin Centre's Board shall appoint an external science advisory group comprised of leading national and international scientists within climate research. The composition of the group is proposed to the Bolin Centre Board by the Directors. The external science advisory group's main tasks are: (i) To inform the Bolin Centre of its strengths, weaknesses and possibilities for development as well as (ii) increase the Bolin Centre's contacts to international networks and research groups within the climate research area. The mandate period for members of the external science advisory group is three years. Members can serve more than one mandate period."*

In November 2013, Profs. Leonard Barrie, Alasdair Skelton and Cynthia de Wit, in their roles as Research Director of the Bolin Centre, Director of the Bolin Centre, and Chair of the Board of the Bolin Centre, respectively, proposed a document titled "Mandate, Membership and Modus Operandi of the External Science Advisory Group of the Bolin Centre for Climate Research". This document was approved, with slight modifications, by the Board of the Bolin Centre on 13 March 2014, and the ESAG had six confirmed members: Profs. Johannes Oerlemans (Chair, ex officio member of the Bolin Centre Board), Natalie M Mahowald, Eystein Jansen, Anders Lindroth, Raymond Pierrehumbert and Susan Lozier, serving on the ESAG until Dec 2016. Their tasks were (see Att. 1a (in Swedish only) and 1b, from the Board Protocol March 2014): to

(i) *review strategic plans and directions, and to inform the Bolin Centre of its strengths, weaknesses and possibilities for development,*
(ii) *increase the Bolin Centre's contacts to international networks and research groups within the climate research area.*

and which were suggested to be achieved through the following activities:

(a) *assisting the Directors and Board in ensuring that the added-value of Bolin Centre activities are strong and well communicated to stakeholders including University, government, sponsors and the public,*

(b) *promoting the quality and international visibility of science and graduate education in the Bolin Centre by providing constructive feedback to scientists and students on their research, and by being spokespeople for Bolin Centre science and graduate education internationally.*

It was suggested that each year, the ESAG would attend the Bolin Days, and report on tasks (i) and (ii) described above in two separate documents: (i) and (a) were to be addressed in a report directed to the Board, (ii) and (b) were addressed in a report directed to the Directors and the Bolin Centre science community. The first ESAG report was received in Nov 2014 (available from https://bolin.su.se/images/pdf_14/ESAG_report_9_December_2014.pdf) and presented at the Board meeting immediately after the Bolin Days.

The ESAGs report based on the year 2015 was compiled by Oerlemans in Nov 2015 (available from https://bolin.su.se/images/pdf_15/BolinCentre_ESAG-Report2015.pdf). In 2016, an oral report was given at the Board meeting (Nov 18, 2016, see Att. 2).

During 2016, the Bolin Centre merged with the strategic research area "EKOKLIM". As the mandate period of the ESAG was also coming to a close, a process was initiated that aimed to

appoint a new ESAG, giving those members that wanted to serve another mandate period the option to do so, and including new members with expertise to advise on the newly added research areas focusing on landscape processes and climate, and biodiversity and climate.

The present ESAGs first mandate period, 2017 - 2019

By early 2017, four new ESAG members had been recruited: Profs. Karen Kohfeld, Camille Parmesan, Deliang Chen and Andrea Rinaldo. Profs. Eystein Jansen, Anders Lindroth and Raymond Pierrehumbert stayed on the ESAG for a second mandate period (Att. 3).

All seven ESAG members joined the Bolin Days 2017, and presented their research in a special "ESAG session" (see Att. 4). The ESAG provided the Bolin Centre Board with a report, including a dissent expressed by Prof. Parmesan, in June 2018 (Att. 5).

In 2018, Profs. Chen, Jansen, Kohfeld and Pierrehumbert attended the Bolin Days, and the following Board meeting, where they provided an oral feedback. A written report was submitted in early January 2019.

Since late 2018, the ESAG receives the Board meeting minutes, to facilitate a more continuous observation of Bolin Centre activities and processes rather than attendance of the Bolin Days only.

Re - thinking the role of the ESAG in the future. A draft for an " ESAG Pro Memoria"

Below, we suggest a draft text that can be developed into a self-consistent document for use by the ESAG, and which shall be revised annually by the Bolin Centre Directors in consultation with the ESAG and the Bolin Centre Board. Text in red marks new additions, while text in black is carried over from the 2014 "Mandate, Membership and Modus operandi" document (see "History" above).

Purpose of the ESAG

The ESAG is an external body providing evaluation, guidance and advice to the Bolin Centre, to safeguard the continuous improvement of the Bolin Centre. The ESAG works independently of funding agencies' and/or governmental evaluations.

Composition and appointment of the ESAG

The ESAG shall comprise leading national and international scientists, active within climate research. The composition of the ESAG shall reflect the scientific scope of the Bolin Centre. The ESAG shall have X-XX members. Gender equality and diversity aspects are taken into account for the composition for the ESAG.

ESAG members are proposed by the Bolin Centre Directors after consultation with the SAG, and appointed by the Board of the Bolin Centre, for a mandate period of 3 years unless otherwise stated. A mandate period can be extended once, but need not cover the full additional three years. This is to avoid that an entire ESAG is replaced at once, and that continuity and long-term guidance is lost with the parting ESAG.

The chair person of the ESAG is appointed by the ESAG members, for the duration of one year at a time, at the meeting following immediately after the Bolin Days. This is to distribute the work burden amongst the ESAG members more evenly. The chair person is an ex officio member

of the Bolin Centre Board. All ESAG members are invited to participate in a dedicated Board meeting following immediately after the Bolin Days, to share impressions of the Bolin Centre and the Bolin Days and to provide a first oral feedback.

The central tasks of the ESAG
The main task of the ESAG is

- *to assess the performance of the Bolin Centre, how the Bolin Centre is communicated, and to give constructive feedback,*
- *to assess how the Bolin Centre compares to other centres,*
- *to give advice on the mid- to long term planning of the Bolin Centre, including future prospects, and possible developments and collaborations.*

Collectively, these tasks comprise cornerstones for an evaluation of the Bolin Centre which the ESAG is requested to provide annually in the form of a report, see below.

Frequency and duration of ESAG meetings
Each year, the ESAG is invited to participate in the Bolin Days, which are held for 2 consecutive days in the second half of November.

On the day following the Bolin Days, an ESAG meeting is scheduled during the morning. The current chair of the ESAG is responsible for preparing an agenda for the ESAG meeting, and to share it with the other ESAG members one week prior to the meeting. The Directors can be called by the ESAG chair to participate in selected agenda items of the ESAG meeting. No requests are made as to keep formal notes of the ESAG meeting, instead, a request is made for a more comprehensive report, see below.

In the afternoon of the day following the Bolin Days, a meeting of the ESAG with the Bolin Centre Board is scheduled. The agenda for this meeting will be prepared by the Bolin Centre Directorate with input from the ESAG chair, and is shared at latest one week prior to the meeting.

Other regular meetings are not scheduled. If deemed necessary, the ESAG as well as the Directorate, and the Board of the Bolin Centre, may request a meeting. Requests for a meeting shall be communicated between the Chair of the Board of the Bolin Centre, the Bolin Centre Directorate and the ESAG members, who then jointly decide on the planning of such a meeting.

Travels to ESAG meetings
ESAG members can either book travel and accommodation in connection with participation in the Bolin Days and the ensuing ESAG and Bolin Centre Board meeting through the Bolin Centre Coordinators & Communicators, or submit an expense claim if bookings are made otherwise. Reimbursement can only be made in accordance with Stockholm University's regulations.

Communication and sharing of information between the ESAG and the Bolin Centre

The Directorate of the Bolin Centre is responsible for the overall communication with the ESAG. Several communication threads are pursued:

- *In order to facilitate a continuous observation process, all minutes from the Bolin Centre Board meetings are written in English and sent to the ESAG immediately after the meeting ("next-day- minutes policy").*
- *Prior to the Bolin Days in November, the Directorate will send a status report (e.g. the Bolin Centre Annual report) documenting the annual progress of each Research Area to the ESAG. This status report describes the scientific research and projects completed in each RA since the previous Bolin Days, and should include a list of publications. The status report gives also a short account on the Directorate's activities since the previous Bolin Days. The status report will be sent to the ESAG in October.*
- *During the Bolin Days in November, the ESAG can interact in person with all Bolin Centre members, and time can be reserved for formal meetings of the ESAG with, for example, Bolin Centre PhD students and/or RA leaders.*
- *The ESAG shares its advice with the Bolin Centre Board and Directorate orally during the meeting after the Bolin Days, in the form of a written report, described below.*

In order to fulfill their mandate, members of the ESAG may obtain more information from the Bolin Centre Board or Directorate, and may – in agreement with them – visit the Bolin Centre at times other than the Bolin Days. Relevant additional information sent out at the beginning of each mandate period to the ESAG includes the Strategic Plan of the Bolin Centre and the Bolin Centre Communication Strategy. If updated revisions become available, these will be sent to the ESAG immediately.

The annual ESAG report

As a result of its evaluation (based on the status report, the Bolin Days, and discussion with discussions with the Bolin Centre Board, Directorate, RA-leaders, scientists and PhD students), the ESAG prepares a report addressing, but not limited to the questions and issues outlined in the ESAG tasks (see above). Also, the Bolin Centre Board and/or Directorate may ask the ESAG to comment on one or more specific questions should the need for it arise. The Directorate will send a template for the ESAG report to the ESAG along with the status report (in October), giving the ESAG sufficient time to prepare for answers, reflection and discussion at the Bolin Days (in November). The chair person is responsible for ensuring its timely and proper completion, and for sending it to the Directorate, who will share it first with the Bolin Centre Board, then with Research Area leaders, and finally make it publicly available on the Bolin Centre homepage. Therefore, sensitive recommendations or information should be discussed separately from the annual ESAG report, e.g. in a confidential letter to the Bolin Centre Board and /or Directorate.

Stockholm University

31 January, 2019

Protocol
for the Bolin Centre Science Advisory Group (SAG) meeting

Date: Wednesday 30 January, 2019
Time: 9:00–12:00
Place: Tarfala room (T433), Geoscience building

Directors:	Nina Kirchner (NK) Alasdair Skelton (AS)	RA 5:	~~Malin Kylander~~ ~~Frederik Schenk~~ Qiong Zhang
RA 1:	~~Agatha de Boer~~ Torben Königk ~~Thorsten Mauritsen~~	RA 6:	Helen Coxall ~~Margret Steinthorsdottir~~
RA 2:	Frida Bender ~~Matthew Salter~~	RA 7:	~~Kristoffer Hylander~~ Zahra Kalantari Regina Lindborg
RA 3:	~~Fernando Jaramillo~~ Anne Soerensen	RA 8:	~~Sara Cousins~~ ~~Johan Ehrlén~~ ~~Karl Gotthard~~
RA 4:	~~Christian Beer~~ Volker Brüchert ~~Gustaf Hugelius~~	Communication: Data coord: Mod. coord:	Annika Burström (AB) Karin Jonsell (KJ) ~~Anders Moberg~~ ~~Kristofer Döös~~

1. Meeting was opened	NK/AS	
2. Selection of attester for this meeting Helen Coxall was selected as attester for this meeting	NK/AS	
3. Approval of the agenda The agenda was approved with the addition of item 12 k.	NK/AS	
4. Protocol from previous SAG-meeting The protocol from the previous meeting was approved.	NK/AS	App. 1
5. Protocol from previous Board meeting The SAG had no comments about the protocol from the last board meeting.	NK/AS	App. 2
6. The Bolin Centre Budget The Bolin Centre budget was presented by Directors Nina Kirchner and Alasdair Skelton. The numbers for outgoing balance for 2018 are not yet confirmed by the respective economic instances at Stockholm University, but indicate that all Research Areas will get the full amount of funding (400 000 kr) for 2019. The outgoing balance for 2018 for the Climate Research School (CRS) seems to be rather high and will be thoroughly checked. The SAG discussed the suggestion to reduce the position of Director of Studies for the CRS from 50 % to 20 %. The	NK/AS	

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	SAG recommends the Bolin Centre Board to group the funds for salary and operating costs together for the CRS during 2019, while the Bolin Centre works on a strategy for the CRS.		
7.	**The ESAG Report** The SAG discussed the report the External Science Advisory Group (ESAG) has sent to the Bolin Centre, see Appendix 3. The SAG expressed their sincere thanks to the ESAG for providing constructive feedback. The SAG underlined that the recommendation from ESAG to engage more with IPCC is to an extent already filled, as Qiong Zhang, and Torben Königk are contributing with model results to the new IPCC report, and the new Research Area 1 Co-leader Thorsten Mauritsen is engaged as lead author for the IPCC report AR6 working group 1, kapitel 7. The Directors emphasized that the Bolin Centre will economically support IPCC engagement, and that they welcome applications for such support at any time. The SAG recommended that a group forms to investigate Bolin Centre connections to MERGE in Lund and possible extension of collaboration with them.	NK/AS	App. 3
8.	**The past, current and future role of the ESAG – a ProMemoria** The SAG discussed the outlines of the ProMemoria summarizing the history, role and tasks of the External Science Advisory Group (ESAG) and recommended that the document should be worked out in collaboration with ESAG. The SAG also argued that a template for the external report, to be provided to the ESAG, would be beneficial, with one section for specific questions about the Bolin Centre (formulated and agreed upon by the SAG), and one section for ESAG's own reflections.	NK/AS	App. 4
9.	**Annual Report** The SAG recommends the annual report to follow the calendar year. The Annual Report from the previous year will be available to the ESAG at the Bolin Days, supplemented with a short report written by the Directorate with updates for the current year.	KJ	
10.	**The Bolin Centre will host the Geoscience and society (GSS) meeting 2019** The Bolin Centre is co-hosting the American Geophysical Unions *Geoscience and society meeting (GSS)* at the Bolin Centre in March 18–21 2019, see https://connect.agu.org/gss/homeo for more information. The SAG is asked to nominate 3-4 panelists. Panelists will be there in their capacity as scientists willing to interact with society. The SAG is also asked to suggest note takers, e.g. PhD students or masters students.	AB	
11.	**Present and recent collaborations with KTH** The Bolin Centre would like to record present and recently closed (backdating 1 year) collaborations between Stockholm University and KTH Royal Institute of Technology. The SAG is asked for input to be sent to Nina Kirchner.	NK	
12.	**Information**		

Stockholm University

a) Thorsten Mauritsen selected as new Research Area 1 Co-leader Nina Kirchner and Alasdair Skelton are happy to announce the selection of Thorsten Mauritsen from the Dept. of Meteorology, Stockholm University, as new Co-leader for Research Area 1.	NK/AS	
b) Bolin Centre by laws The Vice Chancellor has approved the Bolin Centre's new by laws.	NK/AS	App. 5
c) Bert Bolin Climate Lecturer 2019 The Dean has decided to name Professor Maureen E. Raymo of Lamont-Doherty Earth Observatory, Colombia University, as the Bert Bolin Climate Lecturer 2019. The Lecture is scheduled in connection with the Bolin Days 2019 (2019-11-19, 14–15 in the Aula Magna).	NK/AS	
d) The Vinnova call The Bolin Centre has sent an application to Vinnova together with Naturvårdsverket, SMHI, and 11 others (both organizations and businesses) to form a competence centre. The decision if the application has passed the first approval round is expected in April.	AS	
e) The MISTRA call The Bolin Centre is currently contributing to a MISTRA application in partnership with SRC, the Baltic Sea Centre and the Human Science Faculty. The SRC is leading this application.	AS	
f) Report from the Bolin Centre Climate Research School's meeting Please see Appendix 6 for the minutes from the latest CRS meeting. Viktoria Arwinge, Head of Administration at the Dept. of Geological Sciences, will develop a strategic plan to be presented to the Bolin Centre Board in May. The SAG is asked to spread the information that PhD students can apply for travel funds of 5000 SEK (contact Alasdair Skelton).	AS	App. 6
g) The SAG is invited to a retreat during autumn 2019 The Science Advisory Group has been invited to a retreat. The dates for the lunch-to-lunch meeting will be 20–21 August 2019. The SAG suggested that the Bolin Centre Board should be invited, and that a conference location should be chosen which allows for remote participation of the ESAG for parts of the meeting, should they wish so.	NK/AS	
h) Recommendations for procurement of catering and restaurant The Bolin Centre Board has issued a recommendation to Stockholm University and KTH Royal Institute of Technology regarding the procurement of catering and restaurants.	AS	App. 7
i) Upcoming SAG-fikas 2019-02-07 Thursday, 15:00–15:30 in the Navarino room (T223) 2019-03-07 Thursday, 15:00–15:30 in the Navarino room (T223) 2019-04-04 Thursday, 15:00–15:30 in the Navarino room (T223) 2019-05-02 Thursday, 15:00–15:30 in the Navarino room (T223)	KJ	

Stockholm University

j) Upcoming SAG-meetings 2019-03-06 Wednesday, 9–12 in the Tarfala room (T433) 2019-04-25 Thursday, 9–12 in the Tarfala room (T433)	NK/AS	
k) Outreach collaboration with music & visual artists Helen Coxall is engaged in a collaboration with music and visual artists from London. They will perform at the Geopub at 18:30 on 22 February. They would like to meet scientists to record sounds and climate scientists speaking about their science in their native language. Helen Coxall will send out a call for participants.	Helen Coxall	
13. Meeting closes	NK/AS	

Karin Jonsell
Secretary

Helen Coxall
Attester

Nina Kirchner & Alasdair Skelton
Directors

Stockholm University

29 January, 2019

Protocol
for the Bolin Centre Climate Research School (CRS) Advisory Board meeting

Date: Monday 28 January, 2019
Time: 10:00–12:00
Place: Tarfala room (T433), Geoscience building

Members
Alasdair Skelton, Co-Chair, Co-Director for the Bolin Centre
Clare Bradshaw, Dept. of Ecology, Environment and Plant Sciences (DEEP)
Ann-Kristin Eriksson-Wiklund, Dept. of Environmental Sci. and Anal. Chemistry (ACES)
Karl Gotthard, Dept. of Zoology
Otto Hermelin, Dept. of Geological Sciences (IGV)
Karin Jonsell, Bolin Centre Coordinator & Communicator
Somya Joshi, Dept. of Computer and Systems Sciences (DSV)
Garry Peterson, Stockholm Resilience Centre (SRC)
Helle Skånes, Dept. of Physical Geography (NG)

Absent
Abdul Hannachi, Dept. of Meteorology (MISU)
Nina Kirchner, Co-Chair, Co-Director for the Bolin Centre

Secretary
Karin Jonsell

1. Meeting was opened	AS	
2. Appointment of protocol writer Karin Jonsell was appointed as writer of minutes	AS	
3. Appointment of protocol checker Karl Gotthard was selected as attester for this meeting	AS	
4. Approval of the agenda The agenda was approved with addition of § 11a, b, c.	AS	
5. Strategic plan for the Climate Research School The CRS Advisory Board has been requested by the Bolin Centre Board to produce a first draft of a strategic plan for the Bolin Centre Climate Research School. The deadline for this is May 10. The CRS Advisory Board advise as follows: • The CRS strategic plan should clarify the future role of the CRS in the Bolin Centre as well as its role in Masters education. • The CRS strategic plan should be considered within the framework of the strategic plan for the Bolin Centre (which will be revised soon) and the strategic plan for the Bolin Centre communication, see Appendix 1a, b. The CRS Advisory Board agreed to employ Viktoria Arwinge (VA), Head of Administration at the Department of Geological Sciences to help the CRS Advisory Board with the strategic plan during the spring of 2019. Cost: 70 000 kr. The CRS Advisory Board requests that VA	AS	App. 1a, b

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prepares a draft version of this strategic plan for review by the CRS Advisory Board after interviewing: • CRS Advisory Board members • Björn Gunnarson • HC Hansson • PhD students and supervisors, selected via an open call • Heads of the Departments which participate in the Bolin Centre • A representative from the Enviromental Humanities Research School		
6. Budget for 2019 Alasdair Skelton presented a possible large positive balance carried on from last year and a budget outline for 2019. The CRS Advisory Board discussed the courses and especially if the CRS should pay salaries for teachers. Ann-Kristin Eriksson-Wiklund informed the Advisory Board that Departments get HÅP:s for PhD students reading Masters courses, even if these PhD students are from outside of the EU provided that the course is entered in the student's study plan. Clare Bradshaw informed the Advisory Board that it is no longer possible to pay external teachers an "arvode" making it very expensive to employ them because the Department is obliged to pay social security costs. The CRS Advisory Board ask Alasdair Skelton to investigate the positive balance from 2018, and especially if Departments have any pending claims. The CRS Advisory Board approved the following budget items: • *Historical perspectives*: 80 tSEK • *Scientific writing* specifically for Bolin Centre PhD students: 80 tSEK • *Proposal writing* with guest experts from e.g. the Swedish Research Council, Research Support Office at Stockholm University: 120 tSEK • A Bolin Centre Summer School: 200 tSEK • PhD support: 100 tSEK, with grants of up to 5000 SEK per person. • Other courses: 175 tSEK • Communication: 75 tSEK • Strategic plan: 70 tSEK	AS	
7. Recruitment of a Director of Studies Alasdair Skelton presented that for economic reasons, the position of Chair of the CRS Advisory Board will be taken on by the Co-Directors of the Bolin Centre Alasdair Skelton and Nina Kirchner. The position of Director of Studies, previously held by Björn Gunnarson, was previously a combined position with tasks including coordination of courses, teaching and communication. This was a 50 % position. The Bolin Centre Board has allocated funds equivalent to a 20 % Director of Studies to the CRS. The CRS Advisory Board is asked to send ideas concerning this position to Karin Jonsell so that the issue can be discussed further at the next CRS Advisory Board meeting.	AS	
8. Application for CRS support to Summer School on Ocean Waves & Abyssal Flow Jonas Nycander at the Department of Meteorology has applied for 45 000 SEK to fund a joint Summer School at Gullmarsfjorden in 2019, see Appendix 2. The CRS Advisory Board approved the application on the condition that the available spots for Bolin Centre PhD students will be advertised openly to the entire Bolin Centre.	AS	App. 2a,b

Stockholm University

9. Application for CRS support to PhD Student traveling to the General Assembly of the European Geosciences Union The PhD student Ines Bulatovic has made an application for funding to travel to the conference EGU in 2019, see Appendix 3. The CRS Advisory Board approve the application and grant Ines Bilatovic 5 000 SEK.	AS	App. 3a,b
10. Information No information this time.	AS	
11. Any other business a. *Visualize your science* The CRS is asked to consider funding the course *Visualize your science*, see https://visualizeyourscience.com/vys_spring. This is an external course and a tender process may be required. Karin Jonsell is asked to find out how the CRS should proceed to be able to fund this course. Alasdair Skelton is asked to contact CEUL to ask if such a course can be given by them. b. Masters program *Klimatvetenskap* The CRS discussed the new Masters program *Klimatvetenskap*. This program was inspired by the CRS and is now a cross-departmental program. The CRS agreed to fund a ½ day co-creation workshop for all instructors, presently involved in this program and a possible teacher from DEEP or the Department of Zoology, who could be involved if a biology course was included. The purpose of this workshop is to better link between the program courses. Somya Joshi is asked to lead this workshop. c. Application from Maaria Nordman, NG Maaria Nordman has previously sent an application for a course on R to the CRS. She is asked to resend her application to the CRS with a budget.	AS	
12. Next meeting(s) The next meetings will be decided using a doodle.	AS	

Karin Jonsell Secretary	Karl Gotthard Attester	Alasdair Skelton Chair of CRS

Stockholms universitets studentkår

Protocol – Science Faculty Council Annual Meeting

Monday 3rd of December 2018 at 16.30 in Kårsalen, Studenthuset

1. **Opening of the meeting**
   Jesper opened the meeting.

2. **Election of chairperson**
   Jesper Norell was elected.

3. **Election of secretary**
   Elis Wibacke was elected.

4. **Election of adjustor**
   Yuan Guo was elected.

5. **Approval of the agenda**
   The agenda was approved with the following change: a short break was added between *13. Reports from sections and councils* and *14. Elections*.

6. **Approval of last meeting's minutes**
   Both the protocol from NFR's last meeting on the 15th of October and the protocol from the meeting on the 28th of May were approved.

7. **General information about the election and procedures**
   Jesper informs about the organization of Stockholm University and the importance of student representation. All faculty representatives should report to the faculty council in written form whenever there are student relevant matters to report.

8. **Round of presentation**

   Jesper Norell, PhD student in Physics (chair of NFR)
   Yuan Guo, PhD student at MBW (vice chair of NFR)
   Pil Maria Saugmann, PhD student in Physics (chair of CDR)
   Malte Posselt, PhD student at ACES

Erik Lindsund, PhD student at MBW
Per Calissendorff, PhD student in Astronomy
Ami Golland, PhD student at SRC
Daniel Ahlsén, PhD student in Mathematics
Alexandros Karyolaimos, PhD student at DBB
Riccardo Diamanti, PhD student at DBB
Lisann Grünewald, student in Biology
Marcel Tarbier, PhD student at MBW
Abraham Kumsa Beyene, PhD student at MND
Irina Dumitru, PhD student in Physics
Elis Wibacke (Student Union)

9. Social event information

Drinks and food will be served at Stockholm Resilience Centre after the meeting.

10. Activity report from chair

Jesper reports about NFR's activity in 2018. This has been a stable year for NFR.

- At faculty level there has been some department re-organizations: Neurochemistry has been merged with DBB, and there are plans to move the field of Analytical Chemistry to MMK.
- A new system and format for program reports for quality insurance are in pilot stage. In the future, there will be a high demand for student representatives in the quality review groups, wherefore a "pool" of available students is likely to be implemented.
- NFR has this year created new email lists, requested compensation for Swedish courses for non-Swedish speaking PhD students, and increased its contact with other faculty councils as well as CDR.

11. Freeing past representatives of their duties

Past representatives were freed of their duties.

12. Bylaw (stadgar) update proposal

The bylaws regarding the roles of the chair, vice chair, cashier and secretary were updated according to Jesper's proposal, with some minor changes. It will be required of the chair to prepare a short activity report for the annual meeting. This

report will also be sent to the student and PhD student councils. See Appendix 1 for the old version of the bylaws, and Appendix 2 for the new version where all changes are highlighted in blue.

13. Reports from committees and councils

a) Student Union

- SUS has been approved as the official student union for all of Stockholm University except DSV for another three years.
- In December, SUS will start a campaign to raise awareness about how course literature can become more available.
- The Student Union parliament held its last session in 2018 on the 29th of November.

b) Central student and PhD councils

- The new *Centrala studeranderådet* (CSR) held its first meeting on the 7th of November. CSR is a forum for discussion open for *all* students and PhD students at Stockholm University, however the meetings are in Swedish and the theme of the first meeting – digital study environment – was mainly aimed at students. CSR demanded the right to anonymous written examinations, including take-home examinations ('hemtentamina'), as well as the possibility to safely store mobile phones and other equipment during examinations ('salstentamina').
- The Central PhD student council, CDR, has issued a statement regarding compensation about Swedish courses for non-Swedish speaking PhD students. This year, CDR has also increased its internal communication (with written reports), collaborated more with its equivalents at KTH and KI, and had regular meetings with the vice president of SUS. CDR's last meeting was visited by the president of SUS, Nils Bergmark, and together they discussed how the Student Union can be more inclusive towards PhD students (for example, there are currently no PhD students elected to the Student Union Parliament). This year, CDR has also organized career seminars and initiated an overview of PhD student representation. Any input regarding digitalization of the individual study plan *or* the 'ethical

aspects' of science should be sent to Pil.

c) Faculty

- The four quality review pilot groups ('granskningsgrupperna') will soon hand in their reports. On the upcoming ON meeting a new group consisting of the Dean, Vice Dean, chair of Grundutbildnings-beredningen and Forskarutbildningsberedningen will be elected that will evaluate the suggestions from the pilot studies and recommend what actions to take regarding the programmes that have now been evaluated. Jesper and Yuan will ask for a student representative at or working close to this work group.
- On the upcoming ON meeting, the faculty's budget for 2019 will be determined.

d) Sections and departments

- There seems to be a lack of proper course evaluations for PhD student courses at some departments. This is something NFR can look into next year. Every PhD student who feels wrongly treated during a course should contact the PhD student Ombudsman. If there are structural problems, contact the Director of studies.
- A question was raised about how the travel funds are assigned for each department. Some PhD students, especially at MND – which in many ways is different from other departments – have experienced a lack of funding for going to conferences. This problem will be brought up by the representatives to ON. However, it is important to note that the PhD students themselves can and should apply for grants and stipends.

14. Elections for 2019

Science Faculty Council (NFR)

Chair: Yuan Guo (MBW) was elected.

Vice Chair: Daniel Ahlsén (Mathematics) was elected.

Cashier: Vice Chair Daniel Ahlsén (Mathmatics) will be acting as cashier.

Secretary: The Student Governance Officer (Elis Wibacke) was elected.

Stockholms universitets studentkår

Central PhD Student Council (CDR)
Pil Maria Saugmann (Physics) and Malte Posselt (ACES) were elected ordinary members.
Alexandros Karyolaimos (DBB) and Ami Golland (SRC) were elected secondary members.

Faculty level:

Områdesnämnden (ON)
Yuan Guo (MBW), Daniel Ahlsén (Mathematics), and Erik Lindsund (MBW), were elected ordinary members.
Riccardo Diamanti (DBB) was elected secondary member (together with the Student Governance Officer and the Head of Student Governance).

Områdesnämndens arbetsutskott (AU)
Yuan Guo (MBW) was elected ordinary member.
Daniel Ahlsén (Mathematics) was elected secondary member.

Grundutbildningsberedningen (GB)
Marciel Tarbier (MBW) was elected as PhD student representative.
Lisann Grünewald (Biology student) was elected as student representative.
There were no candidates for the other position as student representative.
(The Student Governance Officer automatically acts as secondary member.)

Grundutbildningsberedningens arbetsutskott (GB-AU)
Marcel Tarbier (MBW) was elected ordinary member.
(The Student Governance Officer automatically acts as secondary member.)

Befordringsnämnden
Hanna Wernerson (SRC student) was elected ordinary member.
Natalie Wilson (Physics) was elected secondary member.

Docentberedningen
Hanna Wernerson (SRC student) was elected ordinary member.
No candidates for secondary member.

Infogruppen
Irina Dumitru (Physics) was elected ordinary member.
No candidates for secondary member.

Samverkansberedningen
Riccardo Diamanti (DBB) was elected ordinary member.
Since this is a new position, the NFR will require a description of the duties of the representative from the chair of Samverkansberedningen.

Sektionsberedningar:

Kemiska sektionsberedningen
Riccardo Diamanti (DBB) was elected ordinary member.
No candidates for the other position as ordinary member.

Biologiska sektionsberedningen
Marcel Tarbier (MBW) was elected ordinary member.
No candidates for the other position as ordinary member.

Matematisk-fysiska sektionsberedningen
Anton Ljungdahl (Physics) was elected ordinary member.
No candidates for the other position as ordinary member.

Sektionen för geo- och miljövetenskaper
Anton Ribbenstedt (ACES) and Mafalda Castro (ACES) was elected ordinary members.

Forskarutbildningsberedningen:

Kemiska sektionen
Alexandros Karyolaimos (DBB) was elected ordinary member.
No candidates for secondary member.

Biologiska sektionen

No candidates.

Matematisk-fysiska sektionen
Hampus Engsner (Mathematics) was elected ordinary member.
Anton Ljungdahl (Physics) was elected secondary member.

Sektionen för geo- och miljövetenskaper
Liselott Källsten (ACES) was elected ordinary member.
Asa Moitei (ACES) was elected secondary member.

Lärarförslagsnämnder:

Kemiska sektionen
No candidates.

Biologiska sektionen
Marcel Tarbier (MBW) was elected ordinary member.
No candidates for the other position as ordinary member, nor secondary member.

Matematisk-fysiska sektionen
Kajsa-My Blomdahl (Physics) and Carolina Fransson (Mathematics) were elcted ordinary members.
No candidates for secondary member.

Sektionen för geo- och miljövetenskaper
Roxana Cremer (ACES) and Ines Rodriguez Leal (ACES) were elected ordinary members.
No candidates for secondary member.

Stipendieberedningarna:

Kemiska sektionen
No candidates.

Biologiska sektionen

Oskar Nyberg (DEEP) was elected ordinary member.
No candidates for secondary member.

Matematisk-fysiska sektionen
Irina Dumitru (Physics) was elected ordinary member.
Oliver Krüger (Mathematics) was elected secondary member.

Sektionen för geo- och miljövetenskaper
Eleftheria Theodoropolou (ACES) was elected ordinary member.
No candidates for secondary member.

Centres:

Stockholms Matematikcentrum (SMC)
Erik Lindell (Mathematics) was elected ordinary member.
Tobias Grøsfjeld (Mathematics) was (potentially) elected secondary member.

Bolin Centre for Climate Research
Sara Broomé (MISU) was elected ordinary member.
Heather Wood (NG) was elected secondary member.

Östersjöcentrum
Isak Holmerin (DEEP) was elected ordinary member.

Bergianska botaniska trädgården
Lisann Grünewald (Biology student) was elected ordinary member.
No candidates for the position as PhD student representative.

15. **Other questions**
    - It is difficult to find representatives with a high level of Swedish, when many students and PhD students at the faculty of Science do not speak Swedish. NFR decides to send representatives to the boards anyway.
    - Jesper was officially thanked for his service as chair over the years.

Stockholms universitets studentkår

16. Meeting closed

Jesper closed the meeting at 20:01.

_____

Jesper Norell
Chair

_____

Yuan Guo
Adjustor

_____

Elis Wibacke
Secretary

Kommunikationsplan för Bolincentret för klimatforskning 2019

Bolin Centre for Climate Research
www.bolin.su.se | bolin@su.se
A collaboration between Stockholm University, KTH and the Swedish Meteorological and Hydrological Institute

Stockholm University

1. Inledning

Det här är Bolincentrets kommunikationsplan för 2019. Planen innehåller de kommunikationsaktiviteter som ska prioriteras under året. Kommunikationsplanen tas årligen fram av sekretariatet för att sedan beslutas av föreståndarna för Bolincentret.

Bolincentret räknar med att två heltidsresurser vid sekretariatet kommer att arbeta med kommunikation under året. Aktiviteterna i planen är anpassade efter dessa resurser. Planen är ett levande dokument som kan komma att uppdateras vid ändrade förutsättningar.

2. Syfte

Syftet med kommunikationsplanen är att på ett transparent och tydligt sätt specificera de planerade kommunikationsaktiviteter som ska genomföras under året. Samtliga aktiviteter ska bidra till att de strategiska och kommunikativa målsättningarna som återfinns i Bolincentrets kommunikationsstrategi uppnås.

3. Aktiviteter under 2019

Nedan redovisas de aktiviteter som ska genomföras under året i någorlunda prioritetsordning.

3.1. Översiktlig kommunikationsplan för interna aktiviteter

Aktiviteter som återkommer varje år	Mål/Genomfört	Ansvar	Strategiska och kommunikativa mål
Arrangera Bolindagarna och besöket av External Science Advisory Group (ESAG)	HT	KJ + Förest., AB, SAG	Strategiska mål: 1, 2, 4, 5; interna mål: 1-3
Organisera styrelsemöten (7ggr/år), SAG-möten (6 ggr/år) och CRS-möten (6 ggr/år) samt föra protokoll för dessa. Ordna med SAG-fikor (9 ggr/år).	Hela året	KJ	Strategiska mål: 1, 4, 5; interna mål: 1-3
Arrangera Bolin Centre Seminar Series (jan, feb, mar, apr, maj, sept, okt, dec)	Minst 8 seminarier	AB	Strategiska mål: 2-5; interna mål: 1-3
Sammanställa årlig verksamhetsberättelse för Bolincentret	Tidig VT	KJ	Strategiska mål: 1-5; interna mål: 2-3
Nyhetsbrev och uppdateringar av hemsidans nyhetsavdelning	1 g/vecka	AB + webbansvarig	Strategiska mål: 2-5; interna mål: 1-3
Sammanställning av nya publikationer skrivna av medlemmar	2 ggr/år	AB, KJ + webbansvarig	Strategiska mål: 2-5; interna mål: 1-3
Underhålla hemsidan med målgruppsanpassad och enhetlig information	Genomgång 1 g/termin	AB, KJ + webbansvarig	Strategiska mål: 2-5; interna mål: 1-3
Framtagande av bokslut, budget och årsplan	December-januari	AB, KJ	Strategiska mål: 2-5; interna mål: 1-3
Hantering av medlemsärenden	Löpande	AB	Strategiska mål: 2-5; interna mål: 1-3
Arrangera tagning av pressbilder för nya ledare	1 g/år	KJ	Strategiska mål: 4-5; interna mål: 1,3

Årsspecifika aktiviteter	Mål/ Genomfört	Ansvar	Strategiska och kommunikativa mål
Föra över hemsidan till polopoly och i samband med detta utveckla innehållet med relevant, korrekt, tillgänglig, tydlig, målgruppsanpassad och enhetlig information	Under året	AB, KJ + webbansvarig	Strategiska mål: 1-5; interna mål: 1-3
Ta fram och genomföra en kommunikationsstrategi för klimatforskarskolan (CRS)	Hela året	KJ + Föreståndarna, AB	Strategiska mål: 1-5; interna mål: 1-3
Genomgång av Bolincentrets strategiska mål	Under året	Föreståndarna + AB, KJ	Strategiska mål: 1-5; interna mål: 1-3
Organisera SAG-retreat	Under året	KJ + Föreståndarna	Strategiska mål: 4-5; interna mål: 1-3
Hålla kontakt med MUSA-projektet Klimatarenan	Hela året	AB	Strategiska mål: 2-5; interna mål: 2-3
Utveckla ett hållbart system för hantering av medlemsärenden	Under året	AB + webbansvarig	Strategiska mål: 4-5; interna mål: 1-3
Genomföra en GDPR-rensning	Under året	AB + KJ	Strategiska mål: 2,4,5; interna mål: 1-2
CO2-säkra Bolincentrets catering och fikor och kommunicera detta	VT	AB + KJ	Strategiska mål: 4,5; interna mål: 3
Allmänt: Se till att BOX fungerar, ABs dator fungerar, organisera förråden	Under året	AB, KJ	Strategiska mål: 2,4,5; interna mål: 1-3

3.2 Översiktlig kommunikationsplan för externa aktiviteter

Aktiviteter som återkommer varje år	Mål/genomfört	Ansvar	Strategiska och kommunikativa mål
Utveckla och arrangera Klimatfestivalen	Maj	AB + KJ, Föreståndarna	Strategiska mål: 1-4; externa mål: 1-6
Arrangera Bert Bolin Climate Lecture samt Bert Bolin Climate Seminar	Vid Bolindagarna 2019	AB	Strategiska mål: 3, 5; externa mål: 1-4,5,6
Arrangera Bolin Centre Seminar Series (jan, feb, mar, apr, maj, sept, okt, dec)	Minst 8 seminarier	AB	Strategiska mål: 2-5; externa mål: 1-6
Underhålla hemsidan med målgruppsanpassad och enhetlig information	Genomgång 1 g/termin	AB, KJ + webbansvarig	Strategiska mål: 2-5; externa mål: 1-6
Uppdateringar av hemsidans nyhetsavdelning	Löpande	AB + webbansvarig	Strategiska mål: 2-5; externa mål: 1-6
Löpande respons på externa frågor om aktualiteter	Löpande	AB, KJ	Strategiska mål: 1-5; externa mål: 1-6
Omvärldsbevakning, t.ex. nyhetsmedia, SciFest i Uppsala, Vetenskapsfestivalen i Göteborg och Vetenskap och Allmänhets-möten	Löpande	AB, KJ	Strategiska mål: 4-5; externa mål: 1,3,5

Årsspecifika aktiviteter	Mål/ Genomfört	Ansvar	Strategiska och kommunikativa mål
Skapa kontakter, förbereda och skriva ansökningar till VINNOVA och MISTRA	januari-mars	AB, Föreståndarna	Strategiska mål: 1-5; externa mål: 1-6
Vara lokal värd för AGU/GPI Geoscience and Society Summit 18-21 mars	januari-mars	AB	Strategiska mål: 2-5; externa mål: 1-6
Behjälplig med aktiviteter inom ASIAQ	Hela året	AB	Strategiska mål: 2-5; externa mål: 1-6
Behjälplig med aktiviteter inom nya samarbetet med University of Helsinki	Hela året	AB	Strategiska mål: 1-5; externa mål: 1-6
Föra över hemsidan till polopoly och i samband med detta utveckla innehållet med relevant, korrekt, tillgänglig, tydlig, målgruppsanpassad och enhetlig information	Under året	AB, KJ + webbansvarig	Strategiska mål: 2-5; externa mål: 1-6
Ta fram och genomföra en kommunikationsstrategi för klimatforskarskolan (CRS)	Hela året	KJ + Föreståndarna, AB	Strategiska mål: 4,5; externa mål: 1,5, 4
Uppdatera listan med Bolincentrets klimatexperter	VT	AB	Strategiska mål: 4,5; externa mål: 1,2,6
Sammanställning av liknande centrumbildningar samt analys av hur Bolincentrets står sig i jämförelse	VT	AB, Föreståndarna + ESAG	Strategiska mål: 4,5; externa mål: 1,3
Utveckla strategier för närvaro i social medier och driva egna aktiva konton	HT	AB, KJ	Strategiska mål: 2-5; externa mål: 1-6
Skapa en plan för hur vi ska nå beslutsfattare (i mån av tid)	HT	AB, KJ + Föreståndarna	Strategiska mål: 2-5; externa mål: 1, 2, 3, 5, 6

Upphandling av catering och restauranger vid SU och KTH

I samråd med Naturvårdsverket, rekommenderar **Bolincentret för klimatforskning** att SU och KTH prioriterar klimat och miljö i upphandlingen av catering och restauranger.

Vi hänvisar upphandlingsenheten till **Naturvårdsverket** (http://www.naturvardsverket.se/Miljoarbete-i-samhallet/Miljoarbete-i-Sverige/Uppdelat-efter-omrade/Klimat/minska-min-klimatpaverkan/), **Livsmedelsverket** (https://www.livsmedelsverket.se/matvanor-halsa--miljo/miljo) och **Vetenskapliga Rådet för Hållbar Utveckling** (http://www.sou.gov.se/wp-content/uploads/2016/06/VRHU-rapport-en-mer-klimatvänlig-animaliekonsumtion.pdf).

Om "klimatpåverkan i genomsnitt för olika livsmedel" skriver **Naturvårdsverket**: "Att minska vår konsumtion av vissa livsmedel såsom rött kött (nöt och får) har stor betydelse för att få ner våra utsläpp. Idag orsakar endast konsumtionen av kött knappt ett ton utsläpp per person och år i genomsnitt i Sverige." Det är också viktigt att minska matsvinnet för att minska klimat- och miljöpåverkan från livsmedel.

Vetenskapliga Rådet för Hållbar Utvecklings rapport uppmanar regeringen att prioriterar en politik som minskar utsläppen av växthusgaser från produktionen av animalier i Sverige och som minskar konsumtionen av de animalieprodukter, producerade både i Sverige och i andra länder, som har mest negativ påverkan på klimatet, miljön och hälsan. Dit hör i högsta grad kött från idisslare och mejeriprodukter.

Mot denna bakgrund rekommenderar vi följande "ska"-krav ingår i upphandlingen:

- Menyer för catering och restauranger ska bidra till en minskning av utsläppen av växthusgaser genom ett lågt utbud av livsmedel med stor klimatpåverkan inklusive rött kött och mejeriprodukter.
- Catering och restauranger ska aktivt arbeta med att förebygga uppkomsten av matsvinn.

Med vänliga hälsningar,

Nina Kirchner
Föreståndare, Bolincentret

Alasdair Skelton
Vice-föreståndare, Bolincentret

Arctic Avenue – Proposal for the Cooperation between the University of Helsinki (UH) and Stockholm University (SU) in Arctic Research 2019-2021

Partners in Helsinki
Ecosystems and Environment Research Programme, Faculty of Biological and Environmental Sciences
Department of Geosciences and Geography, Faculty of Science
Department of Physics, Faculty of Science
Institute for Atmospheric and Earth System Research (INAR)
Helsinki Institute of Sustainability Science (HELSUS)

Partners in Stockholm
Department of Environmental Science and Analytical Chemistry (ACES)
Department of Geological Sciences (IGV)
Department of Physical Geography (NG)
Department of Ecology, Environment and Plant Sciences (DEEP)
Department of Meteorology (MISU)
Bolin Centre for Climate Research

1. Background

Environmental change is one of the most important challenges we face today. The Arctic region is currently undergoing unprecedented warming, alterations in precipitation patterns, changes in cryosphere and shifts in surface vegetation. In the future, the Arctic will experience the most severe and rapid warming worldwide, with a computed annual average temperature increase of 4-8 degrees Celsius and significant precipitation increases in scenario simulations for the end of the 21st century (see also Barcikowska et al., 2018). This will have consequences for humans and the natural environment locally, but also has widespread implications globally. The large-scale changes that take place in the arctic climate system exert a strong influence throughout the global climate system. For example, the recent major changes in the Arctic may have contributed to the extreme weather events in many parts of the World. Such changes in weather patterns will have far-reaching implications; for example, they may threaten global food production.

The melting Arctic introduces a number of local and global concerns. How will warmer Arctic temperatures affect global carbon cycling, ecosystem functioning and biodiversity, Arctic sea-ice extent and change global weather patterns, for instance? Among the multitude of drivers, what are the key climatic and anthropogenic drivers that will force ecosystems into new structural and functional states? How quickly can Arctic systems respond to rapid climate change, and are changes fundamentally permanent? How resilient are different ecosystems to change? The most tangible aspect of Arctic climate change is the risk of passing tipping points, at which a tiny perturbation can shift the system abruptly from one state to another. Such regime shifts may lead to large, persistent changes in the structure and function of social-ecological systems that have substantial impacts on the benefits that people receive from nature. The likelihood of such regime shifts also increases when humans reduce resilience of the environment by unsustainable land use, over-utilization of natural resources, removing response diversity or introducing alien species.

Scientific research and collaboration among Arctic nations are on the rise, but the ongoing, drastic environmental change means this research will take on an even deeper importance, as policymakers discuss environmental resilience, mitigation and adaptation measures. To promote significant and timely progress in understanding Arctic ecological dynamics and rapid transformations, we describe here an integrated, **radically new research** outline that brings together the premier Arctic research groups from the universities of Helsinki and Stockholm to address the challenges related with the rapidly changing Arctic environment.

UH and SU both rank among the best 15 institutions in the World in Arctic research as measured by the number and impact of papers published in the period 2010-15 (UArctic Science & Research Task Force, Asknes et al. 2016). However, despite the very good performance and long tradition, Arctic research in both universities is still fragmented and weakly integrated, facing difficulties in organizing programs endowed with the essential resources. The aim of the initiative proposed in this application is to bring together the premier UH and SU scientists from different backgrounds and scientific orientations and develop an ***Arctic Avenue*** that aims at outstanding research in the field of Arctic environmental science. All research groups involved in this initiative have long experience in the examination of diverse Arctic systems, involving a range of themes from ecology and ecosystem research to atmospheric sciences and Arctic social-ecological transformations.

1.1 Strengths at both universities

Strengths of the Arctic research at the **UH** include excellent ecological understanding of the Arctic environments, long-term biotic and abiotic datasets, strong atmosphere-biosphere interactions, methodological toolkits (e.g. remote sensing, spatiotemporal ecosystem models and environmental reconstruction), strong spatial and temporal perspectives of the changing Arctic, Arctic biodiversity and its drivers, landscape-level carbon cycling, climate feedbacks, palaeoclimate and expertise in Arctic palaeoceanography and sea-ice dynamics. UH has two northern field stations (Kilpisjärvi, Värriö), and UH has strong tradition of interdisciplinary Arctic research especially between geosciences, biological and atmospheric sciences. UH scientists participate actively in various international Arctic networks and Arctic Council research programmes (e.g. AMAP, CAFF) and are closely linked to the University of Arctic and its activities. Artic research is one of the focus areas of the recently established Helsinki Institute of Sustainability Science (HELSUS) https://www.helsinki.fi/en/helsinki-institute-of-sustainability-science. Two recent Arctic tenure track professors are funded by HELSUS in the fields of (i) Modelling long-term ecological & social system dynamics in the Arctic and (ii) Indigenous sustainabilities. Moreover, Pan-Eurasian Experiment (PEEX) program, coordinated by UH, provides a large scale research collaboration network in the Arctic-boreal context.

Strengths of the Arctic research at the **SU** include excellent infrastructures, strong atmospheric sciences and geoscience (particularly in biogeochemical cycles, marine environments, palaeoclimate modelling), tradition in experimental science, many positions dedicated for Arctic research, and easy access to excellent Arctic environments with glaciers, permafrost, mountains and cryogenic processes. A particular strength is the Bolin Centre for climate research (https://bolin.su.se/), Sweden's largest platform for climate science with more than 350 members at the participating institutions SU, Royal Institute of Technology KTH, and the Swedish Meteorological and Hydrological Institute SMHI, as well as its partner, the Swedish Museum of Natural History, NRM. The Bolin Centre focuses on extending and disseminating knowledge about the Earth's natural climate system, climate variations, climate impacting processes, climate

modelling, human impact on the climate and climate impacts on ecosystems, biodiversity and human conditions as well as how society can minimize negative impacts. All five SU departments/institutions participating in *Arctic Avenue* are represented in the Bolin Centre for Climate Research, and contribute with expertise from Bolin Centre Research Areas ranging from "Ocean-atmosphere dynamics and climate", "Clouds, Aerosols, turbulence and climate", "Hydrosphere, Cryosphere and Climate", "Biogeochemical cycles and climate", "Historical to millennial climate variability", "Landscape processes and climate", to "Biodiversity and climate" and even "Deep time climate variability" – and where the latter may provide analogues for present future climate dynamics. Tarfala Research Station in the Kebnekaise mountains, Lapland, is strategically positioned for Arctic research and offers an excellent platform for multidisciplinary Arctic research and education. SU has moreover infrastructure at Zeppelin Station, Ny Ålesund, western Svalbard, with a long tradition on atmospheric observations.

1.2 Complementarity gained through cooperation

All groups involved in the collaboration have long experience in the examination of diverse Arctic systems. Our expertise and background are highly complementary and ranges from plot-scale understanding of ecosystem dynamics through landscape scale modelling and integration to Earth System Model (ESM) development and projections. Further complementarities arise by combining ecological and geoscientific approaches, landscape-scale research and atmosphere-biosphere interactions, and combining biogeochemical and upscaling modelling approaches to deepen the understanding of the main drivers and changes of Arctic ecosystems. Importantly, thanks to prior collaboration on the individual researcher's level, we have experience of collaboration and access to extensive ecological, palaeoecological and atmospheric data series, while new high-quality data will be gathered and analyzed in new fashion in this collaboration. Moreover, in the area of Arctic atmospheric science, we have a long record of cooperation regarding comprehensive observations and scientific synthesis related to climate change and environmental impacts of anthropogenic activities particularly in Arctic areas. UH and SU are partners in projects, which both receive funding from e.g. the EU, and in projects, which contribute to various European research infrastructures. On a Nordic scale, and with a focus on atmospheric sciences, HU and SU are already contributing partners in the Nordic eScience Globalization Initiative (NeGI).

Based on the positive experiences and the documented impact exemplified by UH's and SU's collaboration regarding atmospheric sciences, we will now strive to broaden the collaboration significantly. In broadening, we acknowledge that strengths in specific topical focus areas (see Section 2 below) may not be evenly distributed between UH and SU. Our awareness of this imbalance holds a true added value of the here proposed collaboration, because it offers a participatory learning experience for the partner with less topical experience, and a participatory teaching experience for the partner with more topical experience. In that sense, the collaboration also targets competence development of peers, and associated strengthening of not only a particular collaborator, but also the collaborators' research environment at his/her department/institute, and with ramification beyond.

To the best of our knowledge, *Arctic Avenue* is the first effort in the history of Nordic universities when know-hows regarding different aspects of Arctic environmental change are formally and systematically united together, including landscape elements, time scales and methodological approaches. This will break down institutional, scientific and technical barriers that have hitherto impeded integrated solutions, and will allow a more comprehensive understanding of the factors

and processes involved in a changing Arctic. Such expected growth in knowledge would not be possible, would the groups at both universities work independently without a formal and structured collaboration. With the outstanding Arctic research at both universities and formation of the new *Arctic Avenue*, we have the potential to make a significant contribution to the international knowledge in the field.

2. Elaboration of the main idea of cooperation

We aim to establish, via diverse arrays of different activities, new research projects and additional external funding, a strong and continuing Arctic research platform, *Arctic Avenue*, which will serve as an attractive hub and umbrella for top Arctic research in different disciplines in the Nordic and more international context.

The *Arctic Avenue* collaboration between UH and SU focuses in the initiation phase primarily on a wide range of natural/environmental sciences, while it will be later advanced to cover human and social sciences. The inclusion of the human and social sciences into Arctic Avenues is postponed because we aim to incorporate "lessons learnt" from an ongoing integration project at SU, started in February 2018, where the Bolin Centre has met the Human Science Academic Area and initiated joint pilot projects funded currently with a sum total of 800.000 SEK provided by the Bolin Centre and the Human Science Academic Area at SU. At the same time when opening *Arctic Avenue* up for the human and social sciences, widening the scope even more to include e.g. the Stockholm Resilience Centre could add a further dimension to our suggested collaboration. At UH the collaboration between natural and human sciences with regard to Arctic research has started to emerge in a more concrete form only after the establishment of HELSUS in 2018 and is not mature enough in order to be included in the commencement phase of the proposed UH-SU collaboration.

Artic Avenue's objective is to take collaboration in research (existing to some extent at individual researchers' level) to a new level, including also (and for the first time) education, and to achieve this through joint study settings, harmonized data sampling, field experiments, and the development of modes and possibilities of mutual participation in educational field courses.

On a joint workshop held at SU on Nov 5, 2018, attended by 16 researchers from SU (8) and UH (8), the following topics were identified as being of particular importance in the coming years. These focus areas set the stage for *Arctic Avenue*, and can even widen it if synergies between the focus areas, which are by no means mutually exclusive, are exploited (see, for example, Focus Areas 5 and 6)

Focus area 1. Long-term carbon dynamics in arctic-alpine permafrost regions

The permafrost region of the northern Hemisphere stores very large amounts of soil organic carbon (C). This C pool is highly sensitive to global warming, which is expected to be especially pronounced in northern high-latitude regions of the Earth. Thawing permafrost could result in significant releases of greenhouse gases to the atmosphere exacerbating global warming (Bröder et al., 2018, Faucherre et al., 2018, Fuchs et al., 2018, Lindgren et al., 2018). This so-called permafrost C feedback is identified in the most recent IPCC report (2018) as a key uncertainty for a proper assessment of mitigation scenarios to keep global warming below (1.5) 2 °C.

We propose to carry out a 3-year project to characterize and quantify the C stock dynamics in the northern Fennoscandian permafrost region. This would include an assessment of phytomass, leaf area index and soil C stock, which are among the key parameters when C cycling is studied and modelled. Additionally, the project includes mapping of the periglacial landforms and processes that affect C storage and cycling. This study will complement existing field surveys in Sweden and Finland, and target key geographic regions (e.g. Kilpisjärvi and Teno areas), and use our field stations as the central research loci. The work will focus on emerging approaches to quantify C stocks from landform mapping and modelling. The new approaches will complement more established methods for C stock quantification. Additional field surveys will be conducted by a joint team comprising two researchers and two MSc students from both partner universities. Results from these field surveys will be up-scaled to the entire northern Fennoscandian region using land cover and landform classification schemes.

UH: Miska Luoto, Tarmo Virtanen
SU: Peter Kuhry, Gustaf Hugelius, Britta Sannel

Focus area 2. Biomass and Leaf area index mapping in different pan-Arctic landscapes

In addition to Fennoscandia, UH and SU have both done phytomass and to a smaller extent also leaf area index mapping in many locations in different part of the Arctic, but all this data is not published and synthesis work of this is needed. These are key variables to explain carbon exchange in Arctic landscapes, and these variables vary in Arctic landscapes in very fragmented manner. Thus, very high-resolution satellite image data are needed to map them in a realistic accuracy, and there exist several techniques to generalise them for larger regions. We are planning to make a synthesis paper to answer the following questions: (i) How these parameters differ in different Arctic landscapes, (ii) Which climatic and geomorphological issues explain these differences, and (iii) Which upscaling techniques are best when these field measurements are generalised for landscape level using satellite and aerial image data?

UH: Tarmo Virtanen, Aleksi Räsänen
SU: Gustaf Hugelius

Focus area 3. Climate impacts on peatlands and lakes

Lakes and peatlands are major features of the boreal to Arctic landscapes, and span a diverse range of environmental conditions. These ecosystems support enormous biodiversity and provide key provisioning and cultural ecosystem services. They are also significant carbon reservoirs: for instance, lakes contain up to 4x more sedimented carbon than World's oceans and their GHG emissions are equal to those from oceans, while peatlands are currently storing more carbon than all of the world's vegetation.

Climate change is among the greatest threats to lakes and peatlands; even seemingly small changes in temperature profoundly affect key physical and biological processes through nonlinear dynamics. According to our recent study (Gallego-Sala et al. 2018), rising temperatures will lengthen the growing season in northern latitudes. As a consequence, plants growing in northern peatlands will absorb more carbon from the atmosphere through photosynthesis. However, in this study the classification of different types of peatlands was fairly simple, and the study didn't

account for possible future changes in peatland types or areas covered by bogs. In addition, predicting how humidity conditions will change is much more difficult than estimating future temperatures, while the nutrient regimes might also change, which affects peatland productivity and carbon storage. Similar uncertainties are associated with lakes also. The persistent drought of summer 2018 in combination with record breaking hot temperatures of >30°C in parts of Arctic Fennoscandia is a good example of extreme events which may have significant impacts on peatlands and lakes and may turn carbon sinks into carbon sources with ongoing and future warming.

Within this collaboration we will investigate the vulnerability of Arctic lakes and peatlands to climate warming (e.g. Kjellmann et al., 2018) and assess the impacts of global warming on their ecosystem dynamics and carbon balance. We will conduct research on Fennoscandian peatlands focusing especially on vegetation changes, peatland expansion and radiative forcing in the course of peatland development and succession. Concerning lakes, we will concentrate on lake braunification, catchment-lake relationships and quantification of past and present contributions of terrestrial and in-lake C inputs in aquatic sedimentation. We are particularly interested about the quality of C in terms of source, degradation state, the labile C pool and age in modern and past aquatic environments, and assessing aquatic C burial rates in relation to climatic variations (T, P) during the past 2000 years. The collaboration and data sets of SU and UH will make this innovative assessment possible.

In addition, a cooperation will be established on numerical lake modelling (SU, participants F. Schenk and N. Kirchner) of (sub-)arctic lakes under past, present and future climate conditions which need to be validated with lake observation data covering a wide latitudinal temperature gradient like Finland (UH, J. Weckström). As part of the cooperation, 1-2 master thesis projects shall be started in 2019.

UH: Atte Korhola, Minna Väliranta, Sari Juutinen, Jan Weckström, Matthew Amesbury,
SU: Malin Kylander, Britta Sannel, Peter Kuhry, Fredrik Schenk, Nina Kirchner

Focus area 4. The role of geomorphology shaping biodiversity patterns in Arctic systems

Earth surface processes (ESPs) are frequent, and often intense, phenomena in the Arctic region. These processes reflect the spatial heterogeneity of multiple environmental conditions, including climate, ground thermal and hydrological conditions, and which differ considerably from e.g. managed boreal landscapes (Greiser et al., 2018). The ESPs that most strongly impact plant growth and community structure in Arctic environments can be divided into four main categories: (i) water-related processes (fluvial erosion and sedimentation); (ii) frost-related processes (cryoturbation and solifluction); (iii) snow-related processes; and (iv) weathering-related processes. EPSs may significantly alter soil stability, and local nutrient and moisture conditions, thereby creating a wide range of ecological regimes. This produces high habitat heterogeneity with potentially cascading effects on species assemblages and ecosystem functioning. As many ESPs have a significant climate response, they are expected to change rapidly due to climate change. A better understanding of the impacts of different ESPs is important because these alterations may have profound consequences on future Arctic biodiversity.

This sub-project will be based on already existing field surveys in northern Norway and Finland, complemented by additional fieldwork in northern Sweden (Abisko area) and Finland (Kilpisjärvi area). Complementary field investigations will be made by a joint team of two researchers and two MSc students from UH and SU. The results will be up-scaled to the northern Fennoscandian region using species distribution modelling framework based on GIS and remote sensing data.

UH: Miska Luoto, Tarmo Virtanen
SU: Kristoffer Hylander, Johan Ehrlén

Focus area 5. Arctic climate, aerosols (incl. black carbon) and clouds

Aerosol formation processes, their impact on clouds and Arctic climate remain an important uncertainty in global climate predictions. Within this collaboration proposal, a campaign hosted by SU will take place in Ny-Ålesund (Svalbard) from spring 2019 to fall 2020 that will include contributions from UH in understanding the new particle formation processes in this Arctic site, while SU will contribute in detailed measurements of aerosol-cloud chemistry and microphysics. Joint field work, joint data analysis in forms of workshops and seminars are planned. The data will be later used in joint model activities.

Furthermore, UH and SU have collaborated closely within the Nordic eScience Globalization Initiative (NeGI), through the Nordic Centre of Excellence eSTICC (eScience Tools for Investigating Climate Change at High Northern Latitudes) and advanced courses focusing on training graduate students in eScience in the Arctic context. The grant periods for these activities are just about to end and new platforms are needed to continue these highly successful collaborations.

Coordinated by Norwegian partners, UH-INAR is developing state-of-the-art Earth System Models together with collaborators from Stockholm University (Kirkevåg et al., 2018). The distributed Nordic development of the Norwegian Earth System Model (NorESM) has provided e.g. quantification of Earth System feedbacks in high latitudes (Boy et al., 2018) and long-term variability in global biogenic VOC emissions (Acosta Navarro et al., 2014). NorESM collaboration with SU includes the Department of Meteorology (Annica Ekman) and Department of Environmental Science and Analytical Chemistry (Ilona Riipinen).

UH INAR and SU will develop next-generation Earth System models in terms of aerosols and aerosol-climate interactions, specifically in terms of aerosol descriptions in models and aerosol-cloud effects in Arctic environments. In collaboration with Qiong Zhang (SU), UH-INAR will strengthen the role of aerosol research in paleoclimate applications, which allows quantification of aerosol-climate feedbacks and perturbations over a wide range of timescales. Initially, the collaboration will focus on mid-Holocene (see also Focus area 6). Further collaboration between UH and SU includes the analysis ice core and lake sediment records from Svalbard and Eurasian Arctic for black carbon (BC) in order to shed light on the past spatial and temporal variation in BC deposition in the Arctic and its climate effect in the past. These data will help in the evaluation and modeling of the future climate impact of BC pollution in the Arctic.

UH: Jaana Bäck, Tuukka Petäjä, Hanna Lappalainen, Risto Makkonen, Meri Ruppel, Markku Kulmala
SU: Paul Zieger, Qiong Zhang, Annike Ekman, Johan Ström, Örjan Gustafsson

Focus area 6 Past climatic variability, instability and rapid climate shifts

Both UH and SU have long histories and active ongoing investigations in palaeoclimatology, the study of Earth's past climate change over long, historical and geological time scales. Palaeoclimatology has a crucial role in the assessment of the modern anthropogenic climate change. First, palaeoclimatology describes the long-term, background variability of climate, including the natural trends, cyclic patterns, and causes of climate change. Second, past climate changes hold important clues to the consequences of future climate change. For example, the likely future response of sea level, glaciers, and vegetation can be constrained, not the least with help of numerical modelling, with reference to the corresponding changes during past instances of climate change (Masson-Delmotte et al. 2013).

Both universities produce a variety of palaeoclimate data – datasets describing past climate conditions, derived from natural archives such as glaciers, sediments, stalagmites, tree rings, peatlands and biogeochemical environmental or climate proxies. A particular strength of UH is the statistical approaches used to derive numerical palaeoclimate estimates from these natural archives, for example using multi-proxy, multi-resolution, non-linear models (Korhola – Hanhijärvi et al. 2013, PAGES 2k Consortium, 2013) and state-of-the-art machine-learning algorithms for climate reconstruction (participants J.S. Salonen, M. Luoto) (e.g., Salonen et al. 2012, 2016, 2018). In addition, UH hosts leading expertise in analysis of fossil palaeoclimate archives (participants A. Korhola, J.S. Salonen, M. Väliranta, J. Weckström) (e.g., Korhola et al. 2000, Väliranta et al. 2015).

The crucial contribution of SU is leading expertise in palaeoclimate modelling – numerical simulations of past climate stages (participants and co-leaders of Bolin Centre Research Area on Historical to millennial climate variability F. Schenk and Q. Zhang (e.g. Schenk et al., 2018, Lu et al., 2018). These modelling runs and further comparisons with the palaeoclimate data play a key role in hypothesis testing in palaeoclimatology, e.g. in exploring the causes and mechanisms of past climate changes, rapid climate shifts and climate instability during rapid warming periods (Schenk et al. 2018) or vegetation-climate feedbacks and teleconnections like the Green Sahara and Arctic sea-ice during the Holocene Thermal Optimum (HTM, ~6000 years ago, Q. Zhang, Lu et al. 2018).

The future plans of UH and SU include numerous collaborative studies on climate change during different periods of the Late Quaternary (ca. past 200,000 years) of Europe, North America and the North Atlantic Ocean, including a synthesis of palaeoclimate data and modelling for this region. Key objectives of these studies include societally critical changes in oceanic circulation and drought regimes, and the sensitivity of these mechanisms to past climate changes.

Furthermore, recently initiated palaeoclimate projects (970 k€ total UH funding) in INAR are built on collaboration with Dr. Qiong Zhang, co-leader of Bolin centre research area on historical to millennial climate variability. The UH collaboration with SU as well as Lund University on paleo-research establishes the role of INAR in climate-vegetation-aerosol interactions in Nordic millennial scale studies, as well as strengthening the position of INAR in European EC-Earth consortium. (see also Focus Area 5)

Another collaboration will be established on comparing climate instabilities during warmer than today's conditions (Eemian, ~129-116,000 years ago, participant S. Salonen et al. from UH, Salonen

et al. 2018) with several abrupt climate shifts during the rapid warming before the onset of our current warm period (Deglaciation, ~17,000 – 9,000 years ago, participant F. Schenk, SU, Schenk et al. 2018). Here, multi-proxy climate reconstruction (participants M. Väliranta, F. Schenk and S. Salonen) of these periods will be compared with new high resolution global climate simulations (F. Schenk) to investigate whether rapid climate shifts linked to disturbances of the North Atlantic Ocean circulation are typical features of warmer (Eemian) or rapidly warming climates (Deglaciation). Model simulation of future global warming and currently record breaking cold ocean temperatures in the region of the weakening subpolar Gyre south of Greenland indicate that such a climate instability observed in the past may re-occur with ongoing warming with potentially severe consequences for the European climate (i.e. heatwaves and drought as e.g. 2018, 2015 and 2003).

A third cooperation is envisaged to study in more detail the extreme seasonal changes which are linked the abrupt climate and vegetation shifts in the past (Eemian, Deglaciation). Here, climate proxies show partly inconsistent or opposed temperature and aridity changes. Simulations with a numerical lake model will be set up to investigate a potential divergence of lake temperature proxies and the real summer air temperature. Finland holds a large set of lake observation data covering a gradient from subarctic lakes in the north and warmer lakes in the south which are important to validate lake model simulations under different conditions as an analogue of past climates (participants F. Schenk and N. Kirchner, both SU and J. Weckström, UH).

UH: Sakari J. Salonen, Miska Luoto, Atte Korhola, Minna Väliranta, Jan Weckström, Jussi Eronen, Tomi P. Luoto
SU: Frederik Schenk, Barbara Wohlfarth, Qiong Zhang, Malin Kylander, Nina Kirchner

Focus area 7 Arctic sea-ice, glaciers and climate change

Both universities are highly active in Arctic marine research, covering areas such as sea ice and marine-terminating glacier dynamics, sea level change, oceanography and palaeoceanography, gas hydrates, marine ecosystem responses to changing climate. Participating scientists have expertise, among other, in micropaleontology (foraminifera, dinoflagellate cysts, diatoms), sediment biogeochemistry (basic chemistry, stable, isotopes, biomarkers), bathymetric mapping, climate modelling, glacial geomorphology and geophysics (Seidenstein et al., 2018).

The envisaged strengthening of research collaboration between Arctic marine researchers at SU and UH would start by a joint research proposal, which would be written during thematic workshops. The proposal would be planned around the ODEN cruise to the Ryder Glacier Fjord in the nearly uncharted territory of northern Greenland next August. During the cruise a variety of samples and data will be collected: oceanographic data, water chemistry, plankton and surface sediment microfossil & biogeochemical samples (in a transect moving away from the dynamic ice tongue that extends through the fjord for ground-truthing palaeoceanographic work), and both short and long sediment cores. The main focus of the proposal would be on glacier dynamics and sea ice variability in the study area over glacial-interglacial cycles.

UH: Maija Heikkilä, Kaarina Weckström, Tiia Luostarinen
SU: Helen Coxall, Martin Jakobsson, Johan Nilssen, Christian Stranne, Sarah Greenwood, Matt O'Regan, Nina Kirchner

3. Major goals for the cooperation

Through the *Arctic Avenue*, we want to increase the international scientific impact of both institutions in Arctic research. The major goal is the realization of potentials to maximum extent regarding research & training. Our vision is become together the World best unit conducting arctic research in the fields of ecosystem science and climate change. To achieve this, we aim to:

- Establish long-lasting and permanent collaborational relationships, i.e. *Arctic Avenue*, between UH and SU that aim for long-lasting external funding and international excellency.
- Launch specific collaborative research projects on the focus areas listed above. *Arctic Avenue* aims to bring these themes to practice by creating an interdisciplinary platform for the already existing expertise at both universities.
- Organize a wide array of field campaigns, workshops, data-sharing events and joint meetings that aim for new data generation and synthesis, high-impact publications, research proposals and projects
- Educate a new cohort of talented and committed arctic researchers with a plethora of research skills and expertises.

4. Methodology and forms of cooperation

The *Arctic Avenue* is intended for measures that strengthen both existing and new initiatives aiming to reach the top international level of research within Arctic science. To achieve the aspired level of reaching the top in Arctic research, we focus on the following measures:

- Well-targeted joint research projects covering seven topical focus areas (see above)
- Short-duration visiting scientist programme with clearly measurable outcomes (joint publications, writing international collaborative high-level funding applications)
- Joint supervision of PhD student and early career researchers
- Possible joint positions, visiting professorships, postdoc and PhD student exchange
- Regular *Arctic Avenue* meetings, field campaigns, workshops, paper writing sessions, project & funding planning sessions.
- Yearly mini-symposiums attracting also collaborators outside the partnership
- Part-time coordinator to ensure efficient coordination and management of the multiple activities
- Participation in global experimental networks and international Arctic research programmes and initiatives
- Development of our northern research stations for these to become international platforms for high-impact Arctic research

The four Arctic field stations, Kilpisjärvi, Värriö (UH) and Tarfala and Ny Ålesund (SU), will all play a substantial part as excellent research loci for the current initiative, which further strengthens the strategic goals of both universities to significantly increase the use of their field stations in research. The specific research projects, various working meetings and yearly conferences are predominantly to be organised in and around the field stations.

A specific **management structure** has been defined for the collaboration to ensure the effective management of all aspects of the project, including distribution of resources. The overall collaboration is coordinated by professor **Atte Korhola** (UH) and assoc. prof. **Nina Kirchner** (SU), whose responsibilities include following the network progress, overseeing the budget, organising, chairing and documenting of the Steering Committee (SC) meetings, organising the network-wide meetings, reporting, and liaising with their universities. The coordinators AK and NK are supported by the SC that will oversee all the details of the project, and will be responsible for overseeing financial aspects, visits, researchers exchange, thematic workshops and other *Arctic Avenue* activities, and ensuring communication and information flow across the network. The steering committee will consist of professor **Miska Luoto**, research coordinator **Hanna Lappalainen** and researcher **Kaarina Weckström** from UH and assoc. prof. **Gustav Hugelius**, researcher **Fredrik Schenk**, and research coordinator **Annika Burström** from SU. Arctic Avenue will appoint a part-time project coordinator (PC), who will support the leadership in the daily business, organisation of various activities and events, and maintain the webpage. The PC also assists in financial and administrative management.

5. Expected outcomes

The small-scale research projects, detailed field studies and measurements (incl. cruise), data compilations, dynamic modelling and model simulations, novel data science methodologies along with synthesis workshops and other proposed Arctic Avenue activities will help in explaining some of the currently large uncertainties Arctic climate feedbacks, determining drivers of Arctic environmental changes (incl. biodiversity) as well as contribute meaningfully to an acute need in climate model–data inter-comparisons (for climate sensitivity and change). Accurately reconstructing the past climate is extremely important in this context as it presents a frame of reference to which the current state and further predictions can be compared. Furthermore, understanding the various temporal and spatial patterns of the climate will increase our general understanding of the climatic and environmental processes, allowing us to produce better models and more accurate predictions. Results from the new study areas, data compilations and modelling and upscaling activities, as well as a 'first-ever' synthesis map and review of data of carbon balance for northern Fennoscandia will be published in high-impact peer-reviewed journals. Moreover, this collaboration will enable the training of a cohort of young researchers at a high scientific level to enable them to tackle the complex socio-ecological problems our modern society faces.

The collaboration between UH and SU in Artic research and in educating future Arctic researchers will ultimately rise the status of both universities in the quality of arctic research to a completely new level, while together the established *Arctic Avenue* will be the top platform in the World in the research of Arctic environmental change. We expect our northern field stations to become a solid and steady component of *Arctic Avenue* and its possible future continuations, supporting and facilitating the production of high-impact Arctic research within this collaboration. We expect *Arctic Avenue* to also attract, from outside the partnership, internationally recognized colleagues from the natural sciences, with either expert or generalist competence, on topics related to the rapidly changing Arctic. We further expect that towards the end of the initial collaboration period (2021), we will be able to outline pathways concerning the integration of the social and human sciences into a continuation of the *Arctic Avenue* collaboration. Experiences gained until 2021, through efforts at both UH and SU (described in introduction to Sect 2) and through the SU-led

Arctic Science Integration Quest (ASIAQ) project financed partly by the Swedish Foundation for International Cooperation in Research and Higher Education during 2018-2020, will play a crucial role in outlining these aforementioned pathways.

Through our active seeking for additional research funding from various national, Nordic and European sources as well as fund-raising activities we envisage having a long-lasting and brilliant future for the *Arctic Avenue*.

5.1 Budget

A recent meeting at the Swedish Research Council was dedicated to gather input from a large number of so-called Linneaus-centres (the Bolin Centre for Climate Research being one of them) regarding the funding they had received after the Swedish government had decided to provide substantial so-called "Linneaus-support" during the years 2006-2016. A feedback shared unanimously by all centres represented at the meeting was that **flexible money** is of utmost importance when new collaborations are in their start-up phase. In *Arctic Avenue*, flexible money is needed to support unforeseen emerging projects with high potential within the Focus Areas, or across one or several ones when synergies can be exploited, and to be able to adjust for different dynamical progress within and across the Focus Areas.

Therefore, we suggest to allocate 1/3 of the total funding for activities that are common to all members of *Arctic Avenue,* namely annual joint workshops and a part time coordinator and communicator. 2/3 of the requested funding are allocated for activities that we expect to be relevant for all Focus Areas, yet with Focus Area specific variability, justifying the suggested flexibility of this part of the budget.

If deviations from the budgets posted listed under "Flexible money" are small, the SC (see section 4) will adjust the budget accordingly. In a situation where the SC is approached by Arctic Avenue collaborators to consider a medium to large deviation from individual budget posts, these collaborators should submit a short proposal to the SC, which will then decide on it.

Arctic Avenue 2019-2021	**UH 2019**	**UH 2020**	**UH 2021**	**SU 2019**	**SU 2010**	**SU 2021**	**total in 1000€**
Central costs							
Annual Arctic Avenue workshop	15000		7500		150000	75000	45
Salary for Communicator/coordinator (to be placed at one university, but costs are split between UH and SU)	25000	25000	25000	250000	250000	250000	150
Costs to be distributed across the Focus Areas as needed ("Flexible money")							
Publication costs	3000	4000	5000	30000	40000	50000	24
Travel costs associated with exchange visits (planning phase, coordination phase,writing phase)	10000	10000	10000	100000	100000	100000	60
Travel costs associated with field work (planning phase, coordination phase, travelling phase)	15000	15000	15000	150000	150000	150000	90
Part time salaries for assistans (students, buy-out of Pos-Docs etc)	15000	15000	15000	150000	150000	150000	90
Travel support to present results at international conferences, to increase visibility of the partnership	10000	10000	10000	100000	100000	100000	60
Consumables, including Laboratory analyses, imagery, etc	13500	13500	13500	135000	135000	135000	81
Total per year (in 1000€)	106.5	92.5	101	91.5	107.5	101	
Total per University (in 1000€)	300			300			

As we put emphasis on high-quality research, international collaboration and careful planning of projects and funding, we are convinced that the continuation of the activities after termination of the initial funding is guaranteed. However, the initial funding is crucial to boost the science and in particular start the effective integration within Arctic research between SU and UH.

5.2. Timeline

A schematic timetable is presented in the graph below for the funding period 2019-2021. The collaboration will continue after that using additional funding sources and resources.

	2019				2020				2021			
Type of activity	jf	mam	jja	sond	jf	mam	jja	sond	jf	mam	jja	sond
Kick-off meeting												
Annual meetings												
Field work activities												
Thematic meetings & workshops												
Data compilations & Synthesis												
Joint supervision												
Proposal writing sessions												
Publication writing												

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Arctic Avenue – Proposal for the Cooperation between the University of Helsinki (UH) and Stockholm University (SU) in Arctic Research 2019-2021

Partners in Helsinki
Ecosystems and Environment Research Programme, Faculty of Biological and Environmental Sciences
Department of Geosciences and Geography, Faculty of Science
Department of Physics, Faculty of Science
Institute for Atmospheric and Earth System Research (INAR)
Helsinki Institute of Sustainability Science (HELSUS)

Partners in Stockholm
Department of Environmental Science and Analytical Chemistry (ACES)
Department of Geological Sciences (IGV)
Department of Physical Geography (NG)
Department of Ecology, Environment and Plant Sciences (DEEP)
Department of Meteorology (MISU)
Bolin Centre for Climate Research

This document contains a clarification of the budget only, and differs from the original version in that currency units (€ for UH, SEK for SU) have been added for clarity, these had disappeared from the table during final formatting.

5.1 Budget

A recent meeting at the Swedish Research Council was dedicated to gather input from a large number of so-called Linneaus-centres (the Bolin Centre for Climate Research being one of them) regarding the funding they had received after the Swedish government had decided to provide substantial so-called "Linneaus-support" during the years 2006-2016. A feedback shared unanimously by all centres represented at the meeting was that **flexible money** is of utmost importance when new collaborations are in their start-up phase. In *Arctic Avenue*, flexible money is needed to support unforeseen emerging projects with high potential within the Focus Areas, or across one or several ones when synergies can be exploited, and to be able to adjust for different dynamical progress within and across the Focus Areas.

Therefore, we suggest to allocate 1/3 of the total funding for activities that are common to all members of *Arctic Avenue,* namely annual joint workshops and a part time coordinator and communicator. 2/3 of the requested funding are allocated for activities that we expect to be relevant for all Focus Areas, yet with Focus Area specific variability, justifying the suggested flexibility of this part of the budget.

If deviations from the budgets posted listed under "Flexible money" are small, the SC (see section 4) will adjust the budget accordingly. In a situation where the SC is approached by Arctic Avenue collaborators to consider a medium to large deviation from individual budget posts, these collaborators should submit a short proposal to the SC, which will then decide on it.

Arctic Avenue 2019-2021 **currency conversion:** **10 SEK = 1€**	**UH 2019 (€)**	**UH 2020 (€)**	**UH 2021 (€)**	**SU 2019 (SEK)**	**SU 2010 (SEK)**	**SU 2021 (SEK)**	**total in 1000€**
Central costs							
Annual Arctic Avenue workshop	15000		7500		150000	75000	45
Salary for Communicator/coordinator (to be placed at one university, but costs are split between UH and SU)	25000	25000	25000	250000	250000	250000	150
Costs to be distributed across the Focus Areas as needed ("Flexible money")							
Publication costs	3000	4000	5000	30000	40000	50000	24
Travel costs associated with exchange visits (planning phase, coordination phase,writing phase)	10000	10000	10000	100000	100000	100000	60
Travel costs associated with field work (planning phase, coordination phase, travelling phase)	15000	15000	15000	150000	150000	150000	90
Part time salaries for assistans (students, buy-out of Pos-Docs etc)	15000	15000	15000	150000	150000	150000	90
Travel support to present results at international conferences, to increase visibility of the partnership	10000	10000	10000	100000	100000	100000	60
Consumables, including Laboratory analyses, imagery, etc	13500	13500	13500	135000	135000	135000	81
Total per year (in 1000€)	106.5	92.5	101	91.5	107.5	101	
Total per University (in 1000€)	300			300			

Stadgar för Bolincentret för klimatforskning
Bolin Centre for Climate Research

fastställda av rektor 2007-11-22 att gälla tills vidare, reviderade 2012-12-20; 2017-02-16, 2018-12-20.

1. Bakgrund
Vetenskapsråden VR och FORMAS tilldelade Stockholms universitet bidrag (Linnéstöd) för projektet ”Climate evolution, variability and sensitivity” mellan den 1:a juli 2006 och den 30:e juni 2016. Projektet organiserades i form av ett centrum, Bolincentret för klimatforskning, i samverkan mellan forskare vid Institutionen för geologiska vetenskaper (IGV), dåvarande Institutionen för naturgeografi och kvartärgeologi (nu Institutionen för naturgeografi (NG)), Meteorologiska institutionen (MISU) och dåvarande Institutionen för tillämpad miljövetenskap (nu Institutionen för miljövetenskap och analytisk kemi (ACES)).

Med start den 1:a januari 2010 tilldelades Stockholms universitet en så kallad Strategisk satsning, även kallat Strategiskt forskningsområde, för klimatmodellering (akronym SuKlim). Till och med 31:a december 2016 hade de fyra institutionerna samt KTH och SMHI ingående i Bolincentret haft medel från denna satsning för att stärka klimatmodelleringen inom Bolincentrets verksamhet. Dessa medel kvarstår och fakulteten har beslutat att de ska fortsättningsvis tillfalla forskningsmiljön för klimatforskning.

Stockholms universitet tilldelades ytterligare en Strategisk satsning 1:a januari 2010 inom området ”A multiscale, cross-disciplinary approach to the study of climate change on natural resources, ecosystem services and biodiversity” (akronym EkoKlim). I projektet deltog forskare från Zoologiska institutionen, dåvarande institutionerna för botanik och systemekologi (nu sammanslagna till Institutionen för ekologi, miljö och botanik (DEEP)), NG samt Stockholms Resilienscentrum (SRC). Utvärdering av de strategiska satsningarna efter de första fem åren ledde till att fem bidragsgivande myndigheter under ledning av Vetenskapsrådet rekommenderade en avveckling av medel till Stockholms universitet motsvarande EkoKlims andel. I Budgetpropositionen 2016 står det att Stockholms universitets strategiska medel tilldelas utan förändring t o m 2019 och sedan avvecklas medel motsvarande EkoKlims andel fr o m 2020. För att bedriva forskning på bästa sätt under tiden fram till 2020, beslutade Områdesnämnden för naturvetenskap den 1:a juni 2016 om en sammanslagning mellan Bolincentret och Ekoklim för att skapa en bredare klimatforskningsinriktning inom Bolincentret. Sedan 1:a juli 2016 har Bolincentret och Ekoklim alltså arbetat som ett sammanslaget centrum under namnet Bolincentret.

2. Syfte och mål
Verksamhetens syfte är att öka och sprida kunskaperna om jordens naturliga klimatsystem, klimatets variationer, klimatpåverkande processer, klimatmodellering, människans påverkan på klimatsystemet, samt klimatförändringars effekter på ekosystem, biodiversitet och människors livsvillkor, inklusive frågor om hur samhället kan minimera negativa effekter. I Bolincentret ingår också en forskarskola och en databas.

3. Huvudman
Bolincentret är placerat under Institutionen för geologiska vetenskaper vid Naturvetenskapliga fakulteten inom det naturvetenskapliga området.

4. Organisation
Bolincentret leds av en styrelse, en föreståndare och en biträdande föreståndare. En av föreståndarna kan utses till vetenskaplig direktör. Styrelsen består av en ordförande och 10 övriga ledamöter, vilka utses för en period om tre år av rektor vid Stockholms universitet på förslag av vicerektor efter yttrande av områdesnämnden för naturvetenskap. Ledamot från SMHI och KTH utses efter samråd med respektive organisation. Ledamot kan omförordnas.

Föreståndaren och den biträdande föreståndaren ska vara vetenskapligt kompetenta och utses för en period om tre år av rektor på förslag av vicerektor efter yttrande av områdesnämnden för naturvetenskap och Bolincentrets styrelse. Föreståndaren och biträdande föreståndaren kan omförordnas.

Bolincentret ska ha ett internt vetenskapligt råd, vars huvuduppgift är att ge råd i frågor rörande forskningen inom centrumet, inkluderande råd om anställningar. Ordförande för rådet är föreståndaren och ställföreträdande ordförande är den biträdande föreståndaren. I rådet ingår dessutom två till tre ledare för varje forskningsområde. Forskningsområdena och ledarna beslutas, respektive utses, av föreståndaren och den biträdande föreståndaren.

Bolincentrets styrelse ska utse ett externt vetenskapligt råd bestående av ledande nationella och internationella forskare som täcker Bolincentrets forskningsområden. Rådets sammansättning föreslås till styrelsen av Bolincentrets föreståndare och biträdande föreståndare. Rådets huvuduppgifter är: (i) att upplysa Bolincentret om dess styrkor, svagheter och möjligheter för utveckling samt (ii) att öka Bolincentrets kontakter till internationella nätverk och forskargrupper inom klimatforskningsområdet.

5. Styrelsens sammansättning
Styrelsen ska till majoriteten bestå av vetenskapligt kompetenta ledamöter och vara sammansatt enligt följande:

en ordförande,
prefekterna vid MISU, ACES, NG, DEEP, Zoologiska institution och IGV med deras respektive ställföreträdare som suppleanter,
en representant vardera från SMHI och KTH med var sin suppleant,
en extern representant med suppleant,
samt en studentrepresentant med suppleant.

Studentrepresentant med suppleant utses i enlighet med Studentkårsförordningen (2009:769).

6. Styrelsens arbetsformer
Styrelsen sammanträder på kallelse av ordföranden, minst 4 gånger årligen. Styrelsen är beslutför då ordförande samt minst hälften av övriga ledamöter är närvarande, under förutsättning att majoriteten av de närvarande ledamöterna är vetenskapligt kompetenta. Den mening om vilken flertalet ledamöter förenar sig gäller som styrelsens beslut. Vid lika röstetal gäller den mening som ordföranden företräder. Föreståndaren och den biträdande föreståndaren har närvaro- och yttranderätt vid styrelsens sammanträden. Styrelsen får vid behov särskilt kalla personer med närvaro- och yttranderätt.

7. Styrelsens arbetsuppgifter
Styrelsen ska

1. stödja och främja verksamheten vid centrumet samt fastlägga riktlinjer för hur arbetet ska organiseras,
2. besluta i frågor om budget och verksamhetsplanering,
3. årligen rapportera om centrumets verksamhet till Områdesnämnden för naturvetenskap
4. följa upp centrumets verksamhet

8. Föreståndarens arbetsuppgifter
1. tillse att styrelsens beslut verkställs,
2. ansvara för den ekonomiska förvaltningen och
3. leda centrumet operativt

I övrigt gäller överordnade organs delegationsbeslut.

9. Finansiering och resurshantering
Centrumet finansieras genom strategiska satsningar som tilldelades Stockholms universitet med start den 1 januari 2010 för de strategiska forskningsområdena (SFO) med akronym ”SuKlim” och ”EkoKlim”.

I övrigt gäller överordnade organs budgetbeslut.

Centrumet ska utgöra en egen redovisningsenhet inom Institutionen för geologiska vetenskaper. Attest- och utanordningsregler samt övriga ekonomiska föreskrifter vid Stockholms universitet ska tillämpas vid centrumet.

10. Utbildning/undervisning
Lärare är anställda vid de deltagande institutionerna och de deltagande institutionerna ansvarar för den utbildning som bedrivs inom ramen för centrumets verksamhet. Doktorander kan inte antas vid centrumet.

11. Utvärdering och omprövning
Centrumets verksamhet ska systematiskt utvärderas samt omprövas av Områdesnämnden för naturvetenskap minst vart sjätte år. Områdesnämnden beslutar om formerna för utvärderingen.

12. Avveckling
Om centrum inte längre fyller sitt syfte ska det avvecklas. Rektor beslutar om avveckling efter begäran av Områdesnämnden för naturvetenskap.

13. Ändring av stadgar

Beslut om ändring av stadgarna fattas av rektor efter hörande av Områdesnämnden för naturvetenskap. Ändring av stadgarna kan föreslås av styrelsen för Bolincentret eller Områdesnämnden för naturvetenskap.