

Time	21 November 2014, 13–16
Place	T40, Geoscience building, Stockholm University
Attending board members	<p><i>Cynthia de Wit, Chair</i> <i>Max Holmström, Student representative</i> <i>Martin Jakobsson, Head, Dep. of Geological Sciences, Stockholm University</i> <i>Karin Holmgren, Head, Dep. of Physical Geography, Stockholm University</i> <i>Erik Kjellström, Head of Rosaby Centre, Swedish Meteorological and Hydrological Inst.</i> <i>Marianne Lilliesköld, Swedish Environmental Protection Agency</i> <i>Michael McLachlan, Head, Dep. of Applied Environmental Sciences, Stockholm Univ.</i> <i>Michael Tjernström, Head, Dep. of Meteorology, Stockholm University</i> <i>Johannes (Hans) Oerlemans, Chair, External Science Advisory Group</i></p>
Other participants	<p><i>Leonard Barrie, Director of Research, Bolin Centre for Climate Research</i> <i>Raymond T. Pierrehumbert, Member, External Science Advisory Group</i> <i>Karin Jonsell, Science Coordinator, Bolin Centre for Climate Research</i> <i>Alasdair Skelton, Director, Bolin Centre for Climate Research</i></p>
Absent	<i>Dan Henningson, Professor, Royal Institute of Technology</i>
Secretary	<i>Karin Jonsell</i>

§ 1	<p>Meeting opens</p> <p>The chair welcomed everyone.</p>
§ 2	<p>Appointment of attester</p> <p>Michael Tjernström was appointed as attester.</p>
§ 3	<p>Approval of the agenda</p> <p>The agenda for this meeting was approved, with the addition of 7 g and 8.</p>
§ 4	<p>Protocol from the previous meeting</p> <p>The protocol from the previous meeting was approved.</p>
§ 5	<p>The External Science Advisory Group's report to the Bolin Centre</p> <p>Hans Oerlemans and Ray Pierrehumbert related the thoughts and ideas concerning the Bolin Centre in the External Science Advisory Group (ESAG). A fruitful discussion with the board then followed with the following conclusions:</p> <ul style="list-style-type: none"> • The directorate is asked to organise a meeting for Bolin Centre remote sensing scientists. • The directorate is asked to investigate if an extension of the software engineering support is possible. • The Board agreed that a more structured approach to data base services in the Centre is needed that has stronger participation of the Departments and their data base personnel. As a start, the directorate is asked to prepare a one-page terms of reference for a possible database advisory group to be discussed at the next board meeting. • The question of common courses for PhD students in the Bolin Centre was raised again.

	<p>Planning for the common PhD programme in Climate Science between the four departments should be re-awakened but requires a first discussion between the head of the Department of Physical Geography and Quaternary Geology and the Bolin Centre director.</p> <p>The ESAG full report can be seen in Appendix 1.</p>
<p>§ 6</p>	<p>2015 action plan and budget outline</p> <p>The board discussed the preliminary budget, see Appendix 2. The Climate Research School is likely to have a lot of money left at the end of 2014, but future summer schools are planned. There will probably be a considerable amount of funds remaining in the Bolin Centre at the end of 2014. These funds need to be invested during 2015 and 2016.</p> <p>The coming major activities in the Bolin Centre were also discussed, see Appendix 2. The economy sets limits on the Bolin Centre attendance at big conferences. It is presently planned to have a booth either at the American Geophysical Fall Meeting in San Francisco in December 2015 or at the European Geophysical Union Spring Meeting in Vienna in April 2016.</p> <ul style="list-style-type: none"> • The board accepted the action plan presented. A final version and the final budget will be presented at the board meeting in March. • The directors will discuss the activity plan with the Scientific Advisory Group for their input shortly. • On an initiative from the Director, following up on a decision from the previous board meeting (§ 6 2014-10-03), the board asked the directorate to prepare a first draft of financing scenarios for the Centre for the next board meeting. The goal is an iterative process together with the prefects, such that a final document is ready for a decision regarding the future economic strategy at the last meeting of spring 2015. • The board asked the directors to check if post docs can be financed by Climate Research School funds. • The board asked the directors to check the time limit for usage of Climate Research School and Linneaus funds. •
<p>§ 7</p>	<p>Information</p> <p>a. Bolin Days 2014 The Bolin Days were yet again a very successful event. They were well attended (157 attendees) and the talks were of excellent quality. The social side is very important for developing the spirit of the centre. The board thanked Karin Jonsell for having made this so successful.</p> <p>b. American Geophysical Union Fall Meeting 2014, AGU 2014 32 scientists from the Bolin Centre are going to the AGU and another 36 are involved in presentations at the meeting. The Bolin Centre will have a booth there and expects it to be as successful as the one last year.</p> <p>c. Bert Bolin Climate Lecture 2015 The process of selecting a candidate for the Bert Bolin Climate Lecture has proceeded, and the Faculty Board will take a decision at their meeting in December, see Appendix 3.</p> <p>d. Bolin Centre Summer School 2015 The directors are organising a summer school Isotopes in Climate and the Earth System to be held 23-29 August 2015 on the Isle of Islay, Scotland. The plans are evolving and among other things has one of the External Science Advisory Group members, Ray Pierrehumbert engaged as a lecturer.</p>

	<p>e. Bolin Centre webpage The Bolin Centre web page is being restructured and the updating will continue to the content after the holidays. The directorate is planning a new section for research highlights.</p> <p>f. Letter of support to Norwegian CRS from Bolin Centre A letter of support has been sent to Norwegian CRS from Bolin Centre, concerning the Changing Climate in the Coupled Earth System (CHESS) initiative.</p> <p>g. Climate Modelling Funding hearings The hearing for the Climate Modelling money is to be held the 3 December. The delegation includes the Dean, director Alasdair Skelton and climate modelling coordinator Gunilla Svensson.</p>
§ 8	<p>Any other business</p> <p>After preliminary discussions with Christoph Humborg at the Baltic Sea Centre and his presentation at the Bolin Days the Bolin Centre would like to collaborate in a proposal for atmospheric research at the Askö Laboratory.</p> <ul style="list-style-type: none"> The board agreed with the directors that this is an opportunity to pursue and that they should meet with the Baltic Sea Centre Group leaders and prepare a background document for the next board meeting. The directors were also asked to invite Christoph to make a short presentation to the board at the next meeting.
§ 9	<p>Next meeting</p> <p>Next meeting will be decided on via a doodle.</p>

Karin Jonsell,
Secretary

Michael Tjernström,
Attester

Cynthia de Wit,
Chair of the Board

Report of the External Scientific Advisory Group (ESAG) of the Bolin Centre for Climate Research

1. Meeting

On the 21st November 2014, the ESAG met for the first time in its present constellation and with its new mandate. Members present: Johannes Oerlemans (Utrecht University, *Chair*), Eystein Jansen (University of Bergen), Anders Lindroth (Lund University), Natalie M Mahowald (Cornell University), Raymond Pierrehumbert (University of Chicago).

Unfortunately, Susan Lozier (Duke University) was unable to attend.

2. Mandate

The ESAG focuses on the quality of the science performed by the Bolin Centre. More specifically, its role is

- (i) to advise the Bolin Centre on its strengths, weaknesses and opportunities;
- (ii) to connect the Bolin Centre internationally to organized networks of climate and future Earth research.

3. Presentation of the ESAG

On the 18th November, the ESAG presented itself to the BS Scientific community. The members gave a series of lectures in their own fields of speciality.

4. Information available

The Bolin Centre operates with a fairly open management structure. A great deal of information can be found on the web pages of the Bolin Centre, and this has provided the ESAG with useful information about the basic structure, the collaborating institutes within and outside Stockholm University, definition and leadership of the research areas, the research school, etc.

In addition to this, the ESAG was offered the opportunity to participate in the Bolin Days. On 19-20 November a series of presentations by research-area leaders, permanent staff, post-docs and PhD students gave an impressive overview of the research undertaken at the Bolin Centre. The lectures and the posters provided very valuable information to the ESAG.

The social event on Thursday evening was very much appreciated and gave another opportunity to mingle and have informal discussions with the scientific community of the Bolin Centre.

5. Strengths and weaknesses

The ESAG is impressed by the overall breadth and quality of the research performed by the Bolin Centre and its collaborators. The division of the research into six research areas has been done in a meaningful way, and provides a workable structure. Some projects clearly evolve *across* the borders of these areas, which is regarded as positive. The research areas provide structure, but do not seem to hinder research initiatives.

Particular strong points of the science of the Bolin Centre are:

- a) Observational studies and modelling often go hand in hand. This lifts process studies to a higher level and should be fostered.
- b) The international orientation is outstanding. There is collaboration with many foreign institutions, which increases the quality of research, the visibility of the Centre in the 'scientific landscape', and the possibilities to find partners for future fund raising. The international orientation is also reflected in the many nationalities of the employees; they seem to come from all corners of the world.
- c) The ESAG is very positive about the *Arctic dimension* of the research programme. The Centre is a major global actor in terms of executing Arctic science. Some fascinating science is going on, and it offers great possibilities to increase awareness among the public and sponsors.
- d) The Bolin Centre is highly active in the organization of many workshops and summer courses.
- e) The character of research projects is diverse; it ranges from fundamental process studies to applied research directly linked to practical questions.
- f) There are many outreach activities with which the Bolin Centre has put itself (and the science questions concerning climate change and sustainable Earth issues) on the map. This includes educational activities for young people as well as presentations at professional events (like the AGU Assembly).

Points that need attention / action:

- a) The Bolin Centre collects unique datasets, some of which are very large. The capacity to organize an efficient and user-friendly databank is too limited. Archiving of the data cannot be left over to international databanks only. The ESAG proposes that action is taken to increase the capacity.
- b) The use of large numerical models, notably Earth-system models, in the Bolin Centre has increased strongly over the past few years. The ESAG has the impression that the support from software engineers and scientific programmers is not always adequate in the sense that the capacity is too limited. The ESAG suggests that this capacity is enlarged.
- c) The Centre applies a relatively wide range of complex Earth System Models. The choice may appear ad hoc, and due to the large recourses required, it would be wise to revisit the selection of models and define a model strategy for the centre.

Points that need consideration:

- a) Ultimately the results of process studies need to find their way into Earth system models. This always is a difficult step with which research centres around the world struggle. The ESAG suggests that the Bolin Centre develops a strategy to contribute. The Bolin Centre and its collaborating institutions could make a difference here, because all the ingredients are present.

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- b) The ESAG has noted that the use of remote sensing data (from satellites), and research on remote sensing techniques was not very well represented during the Bolin Days. Perhaps this is coincidence; perhaps remote sensing is a weaker component of the research programme. The ESAG suggests that the role of remote sensing in the research programmes as well as in the educational programmes is evaluated, and, when needed, strengthened.
- c) The research school does not seem to have a well-defined curriculum. The PhD students take courses as needed. This could be master courses or specialized summer courses, depending on the background and needs of individual students. Nevertheless, a compulsory course (not necessarily long) for all PhD students enrolling into the research school would have some advantages. Network building and ideas for multi-disciplinary work could naturally evolve. The ESAG suggest that this is considered.

6. Wish list for the next ESAG meeting

The idea of having the annual ESAG meeting together with the Bolin Days was a very good one. For the next meeting basically the same format would be appreciated. However, it does not appear useful to have the presentation of the ESAG members once more (perhaps again in 2016). Although the organization of the Bolin Days is not an ESAG matter, we want to suggest that the introductions to the research areas can be very short, or left out altogether. Making a programme that is less structured may help to prevent people popping in and out all the time. One might also consider to have less talks and take a full afternoon for poster viewing (in a larger facility), eventually preceded by 1-minute introductions.

For its next meeting, the ESAG would like to have:

- i. A list and short description of top-10 events of the past year. This could be successful expeditions, a media-event, but also scientific publications that are expected to have a large impact.
- ii. A list of international grants (e.g. ERC) and honours / awards obtained by members of the Bolin Centre.
- iii. Access (link) to recently completed PhD theses.
- iv. A separate meeting with PhD students and young researchers to gain more insight into their working conditions and the general ambience within which they work.

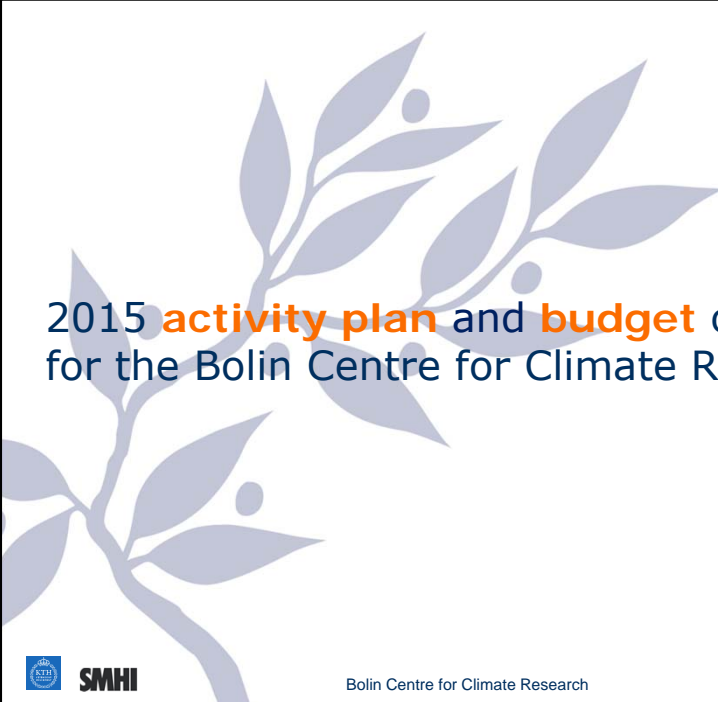
Bolincentret (Linnaeus)	Utgående balans (2013)	Inkomst (2014)	Ingående balans (2014)	Utgifter (t o m 31/10)	Utgående balans (31/10, 2014)
Inkomst					
Ingående balans		SEK 8,085,147			
Inkomst (Linnaeus bidrag)		SEK 12,000,000			
Balans, 130101		SEK 20,085,147			
Överföringar från Bolincentret (Linnaeus) 1333323		Överföringar från 1333323 (2014)			
Christophe Sturm, inkl. 35% OH	SEK 161,169	SEK 453,903	SEK 615,072	SEK 615,072	SEK 0
Rezwan Mohammad (50%), inkl. 35% OH	-SEK 7,212	SEK 409,309	SEK 402,098	SEK 402,098	SEK 0
Karin Jonsell 2013-05-27, inkl. 61% OH	-SEK 16,835	SEK 350,109	SEK 333,275	SEK 333,275	SEK 0
Kristofer Döös, inkl. 35% OH	SEK 15,022	SEK 1,012,583	SEK 1,027,605	SEK 1,027,605	SEK 0
Laurent Brodeau (70%), inkl. 35% OH	SEK 393,184	SEK 309,943	SEK 703,127	SEK 703,127	SEK 0
Nina Kirchner, inkl. 35% OH	SEK 791,358	SEK 63,773	SEK 855,132	SEK 855,132	SEK 0
Håkan Grudd (50%), inkl. 35% OH	SEK 123,551	SEK 280,917	SEK 404,468	SEK 404,468	SEK 0
Director, inkl. 35% OH	SEK 241,259	SEK 405,000	SEK 646,259	SEK 606,570	SEK 39,689
Research director, inkl. 35% OH	SEK 268,755	SEK 405,000	SEK 673,755	SEK 308,365	SEK 365,390
Research Area 1, inkl. 35% OH	SEK 697,303	SEK 405,000	SEK 1,102,303	SEK 491,274	SEK 611,029
Research Area 2, inkl. 35% OH	SEK 317,870	SEK 405,000	SEK 722,870	SEK 263,135	SEK 459,735
Research Area 3 / Jarsjö, inkl. 35% OH	SEK 165,088	SEK 405,000	SEK 615,974	SEK 516,550	SEK 99,424
Research Area 3 / Ring, inkl. 35% OH	SEK 45,886	SEK 0	SEK 0		SEK 0
Research Area 4, inkl. 35% OH	SEK 185,745	SEK 405,000	SEK 590,745	SEK 104,110	SEK 486,635
Research Area 5, inkl. 35% OH, OH felräknad	SEK 277,447	SEK 405,000	SEK 682,447	SEK 654,824	SEK 27,623
Research Area 6, inkl. 35% OH	SEK 963,474	SEK 405,000	SEK 1,368,474	SEK 447,080	SEK 921,394
Kommunikation, inkl. 35% OH OH ej räknad ännu i	-SEK 74,191	SEK 681,691	SEK 607,500	SEK 1,161,131	-SEK 553,631
Utbildning, inkl. 35% OH	SEK 0	SEK 0	SEK 0	SEK 0	SEK 0
Databas, inkl. 35% OH	SEK 89,160	-SEK 20,821	SEK 68,339	SEK 68,339	SEK 0
Klimatforskerskolan, inkl. 35% OH	SEK 3,447,113	SEK 2,000,000	SEK 5,447,113	SEK 1,625,188	SEK 3,821,925
Pengar som ska investeras					SEK 6,279,214
Summa	SEK 8,085,147	SEK 8,781,408			
Kvarstående medel		SEK 11,303,739			

Comments on the economy report of the Bolin Centre (operational funds) as of 31/10-2014


Our present economic status can be read from the final column headed "utgående balans". The following comments refer to this column:

- For staff employed on Linnaeus grant funds, we have assumed that all funds will be used by the end of the year. If this is not the case (e.g. because of sick leave / parental leave), a small amount of funds may remain in these accounts.
- Between the Directors, we have ca. 400,000 SEK remaining. However, we have costs in excess of 270,000 SEK that will be charged to these accounts before the end of 2014.
- Research area spending has increased considerably and remaining funds are largely inherited from the former core themes. A large part of these remaining funds have been allocated to postdoc salary costs. This is a positive development requiring research areas to pool together their funds thus building bridges between them.
- Communication has been grossly underbudgeted resulting in a negative balance exceeding 550,000 SEK. This needs to be discussed at the Board meeting and will form a key part of our presentation about activities for 2015. We are working hard and investing heavily in communication and profiling of the Bolin Centre. The Directorate is firmly of the opinion that continuing this investment is vital for the future of the Centre. This means an increased communication budget for 2015.
- The education and communication budgets were merged last year. This is why this figure is set to zero.
- The database is set to zero, but this is an artefact of funds having been transferred from IGV to INK. The actual balance is likely to be considerably higher.
- There is a large surplus remaining in the Climate Research School. We are not allowed to shift funds from this activity to other parts of the Bolin Centre. There will, however, be summer schools in 2015 and 2016, which promise to use these funds.
- There is likely to be a considerable amount of funds remaining at the end of 2014. These funds need to be invested during 2015 and 2016.


Alasdair Skelton
(also on behalf of Len Barrie)



2015 **activity plan** and **budget** outline
for the Bolin Centre for Climate Research

 **SMHI**

Bolin Centre for Climate Research


Stockholm
University

Activity plan and budget outline 2015

Ongoing activities

- Research areas (2430 tkr)
- Directorate (810 tkr)
- Communication/outreach (607,5 ⇒ 880 tkr *)
- Climate modelling coordination (*to be discussed on Nov 24*)
- Database coordination (100 tkr)
- Climate science course (*to be sent to GB*)
- Climate research school (2000 tkr)
 - WWRP/WCRP/Bolin Centre School on Polar Prediction and Predictability, Apr 2016
 - Open call for new PhD courses
 - Open call for 2016 summer school

* See next slide for motivation

Bolin Centre for Climate Research
A collaboration between Stockholm University, KTH and the Swedish Meteorological and Hydrological Institute



Activity plan and budget outline 2015

Scheduled activities

- AGU – December 15-19, 2014
 - Bolin Days for Schools – May 4-8, 2015 (13 tkr)
 - Bert Bolin Climate lecture – May 27-28, 2015*
 - Graduate Summer School: Isotopes – Aug 23-29, 2015 (655 tkr)
 - Bolin Research Projects for High Schools (270 tkr)
 - Bolin Days – November 18-19, 2015 (187 tkr)
 - AGU 2015 or EGU 2016 (410 tkr)
- ⇒ Increased communication/outreach budget (880 tkr)

* Preliminary dates

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Activity plan and budget outline 2015

Scheduled meetings

- Bolin Centre Board – 2 or 3 meetings each term
- Science Advisory Group – 2 or 3 meetings each term
- Climate Research School (CRS) Advisory Group – 2 or 3 meetings each term *
- Science forums and similar events

* CRS in focus during 2015.

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Activity plan and budget outline 2015

Directorate activities

Planning for our future

- Strategic funds will continue throughout 2015.
 - Linnaeus funding ends on June 30, 2016.
 - Future of strategic funds will be decided during 2015.
- ⇒ Building scenarios for 2016 onwards

Key questions

- Directorate after 2016
- Research areas
- Research school, Database, Climate modelling coordination
- Distribution of strategic funds

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Activity plan and budget outline 2015

One-off investments

- It is likely that we will have a surplus of Linnaeus funds which should be used during 2015 and 2016 (or returned to the research council ☠)
- The availability of surplus funds will be confirmed after MERCUR closes at the end of February 2015
- The Directorate recommends using these funds as follows:
 - to recruit 2 year **Bolin Fellows**. These should be first time postdoctoral positions filling a gap in Sweden from finishing a PhD to becoming competitive for (e.g.) VR postdoctoral funding.
 - to support proposal development for research calls expected in 2015.

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7 November 2014

Information Document for the Bert Bolin Centre Board meeting 21 November 2014

To: Bolin Centre Board Members

After a comprehensive call for nominations and objective screening of the candidates by the Directorate, we would like to update you on the status of the selection.

Please find attached the analysis and recommendation made by the Directors and approved by the Dean of the Faculty according to objective criteria and process agreed upon with the Dean of the Faculty of Science and the Bolin Centre Board in August 2013. The selection at this point is a prioritized short list of four candidates with number 1 being top. We will proceed to confirm with the top candidate keeping the remaining three as back up. A final decision by the Science Faculty Board is scheduled for their last meeting of the year.

7 November 2014

Analysis of Nominations for the Bert Bolin Climate Lecturer for 2015

Leonard Barrie and Alasdair Skelton
Directors of the Bolin Centre

In the selection process for Bert Bolin Climate lecturer 2015, this analysis constitutes the step after nominations (see Annex 1) in the Plan for the Annual Bert Bolin Climate Lecture that was adopted by the Faculty of Science in August 2013.

We would like to point out that in taking this decision using an objective screening, we took into account that the past seven lectures have the following characteristics:

- a) Three out of seven were women.
- b) Four out of seven were related to the atmospheric research areas of the Bolin Centre while two dealt with the biogeochemical cycling research area and one with the recent to millennium scale climate variability research area.
- c) Six speakers were from the United States of America and one from the United Kingdom

Ten candidates were nominated. They are listed in Annex 2. After an objective screening of the candidates according to the criteria outline in Annex 1, we recommend the following shortlist of four candidates in order of priority.

1. Professor Dorte Dahl Jensen, Niels Bohr Institute, Denmark Reconstruction of climate records from ice cores and borehole data. Ice flow models to date ice cores. Continuum mechanical properties of anisotropic ice. Ice in the solar system. The history and evolution of the Greenland Ice Sheet.
2. Professor Richard Alley, Pennsylvania State University, USA, Earth's cryosphere and global climate change.
3. Professor Ulrike Lohmann, Swiss Federal Institute of Technology, Zurich, Aerosols and Climate.
4. Professor Paul Mayewski, University of Maine, USA.

These candidates are high quality, good communicators and well connected to climate research that covers the cryosphere and climate as well as our climate variability research areas. Professors Jensen and Alley are equal in ranking and above Professor Lohmann. We place Professor Lohmann third above equally ranked Professor Mayewski because she was third last year and was nominated by four Bolin Centre Members. The main reason that she ranks behind Professors Jensen and Alley is that four of the seven last lectures have been related to the atmospheric research areas in which she is expert.

The only candidate with whom the Directors have worked with is Professor Lohmann who, before going to ETH Zurich, was at Dalhousie University in Canada and worked on a project led by Professor Barrie in the 1990s.

7 November 2014

ANNEX 1

*From the “Plan for the Annual Bert Bolin Lecture “

Selection of the Annual Bert Bolin Climate Lecturer

Choosing the lecturer involves two important steps conducted by the Director(s), of the Bolin Centre for Climate Research, namely, a request for nominations according to the protocol (Annex 1.2) and a selection of a prioritized short list of two to three candidates based on the criteria listed below utilizing nomination letters and curriculum vitae of the candidates. A prioritized short list is desirable rather than just one candidate because it allows flexibility if cancellations occur. Finally, the Dean of the Faculty of Science approves the prioritized short list.

Criteria for Selection of Lecturer

Essential

- a. The quality and recognition of a candidate’s research related to climate and Earth system science
- b. The ability to communicate to a broad science, policy and public audience of all ages

Desirable

- c. Over the years achieve a balance in the topics covered so that the major research areas in the Bolin Centre for Climate Research are involved (see Annex 2)
- d. Gender balance
- e. Candidate’s willingness to engage in other outreach activities during the visit
- f. Candidate who has had personal experience with Bert Bolin’s scientific or organizational legacy.

All is conducted according to the milestones, schedule and responsibilities outlined below.

Table 1 Candidate selection

Milestone	Date (Deadline)	Person(s) Responsible
Issue call for nominations to Bolin Centre researchers, advisory bodies and to the Stockholm Resilience Centre	1 July, re-issue 1 Sept. (15 October)	Directorate Bolin Centre
Finalize prioritized short list and submit to Faculty	1 November	Director(s) Bolin Centre
Approval of prioritized short list	15 November	Dean of the Faculty of Science
Finalize the selection of a candidate using the short list.	1 December	Director for Research, Bolin Centre
Appointment of a selected candidate	December Meeting	Board of the Faculty of Science
Notify the candidate officially	Immediately after the appointment is approved.	Dean of the Faculty of Science

7 November 2014

ANNEX 2

Summary of Nominations for the 2014 Annual Bolin Climate Lecturer

Professor	Dorthe	Dahl Jensen	Niels Bohr Institute, Denmark	Reconstruction of climate records from ice cores and borehole data. Ice flow models to date ice cores. Continuum mechanical properties of anisotropic ice. Ice in the solar system. The history and evolution of the Greenland Ice Sheet.
Professor	Richard	Alley	Pennsylvania State University, USA	Earth's cryosphere and global climate change
Professor	Paul Andrew	Mayewski	University of Maine, USA	Explorer, Glaciologist, Climate Scientist
Professor	Ulrike	Lohmann	Institute for Atmospheric and Climate Science, ETH-Zurich, Switzerland	The role of aerosol particles and clouds in the climate system
Professor	Ulrike	Lohmann	Institute for Atmospheric and Climate Science, ETH-Zurich, Switzerland	The role of aerosol particles and clouds in the climate system
Professor	Ulrike	Lohmann	Institute for Atmospheric and Climate Science, ETH-Zurich, Switzerland	The role of aerosol particles and clouds in the climate system
Professor	Ulrike	Lohmann	Institute for Atmospheric and Climate Science, ETH-Zurich, Switzerland	The role of aerosol particles and clouds in the climate system
Research scientist	Sandrine	Bony	Laboratoire de Météorologie Dynamique (LMD), France	Understanding the role of clouds in climate and in climate change through modeling, observational and theoretical approaches
Senior Scientist / professor	Robert C.	Harriss	Senior Scientist at the Environmental Defense Fund, Boulder, USA	Broad interests in climate and environmental science. Has engaged the in community and society in order to translate science into social understanding and, ultimately, action
Professor	Kirsten	Hastrup	University of Copenhagen, Denmark	Anthropology
Professor	Terry	Callaghan	University of Sheffield, U.K.	Arctic Ecology and climate-related research
Professor	Kim	Holmén	Norwegian Polar Institute	Atmospheres, Arctic and climate change
Professor	Julie	Cruikshank	University of British Columbia, Canada	Anthropology

Dr. Thomas Spengler
Geophysical Institute, University of Bergen
Allegaten 70, PO Box 7800, N-5020 Bergen
Norway
13 October 2014

Subject: Support for the Norwegian Research School Initiative on “Changing Climates in the coupled Earth System (CHESS)”

Dear Dr. Spengler

On behalf of the Bolin Centre for Climate Research, I am pleased to send this letter supporting the Norwegian Research School Initiative on “Changing Climates in the coupled Earth System (CHESS)”.

I understand that the main objective of the proposed research school is to establish an internationally recognised research-training environment for PhD candidates in the realm of changing climates in the coupled Earth System. This coincides well with the goals of the Climate Research School of the Bolin Centre which coordinates and sponsors courses and summer schools for research students in climate and Earth System science.

Founded in 2006, the Bolin Centre for Climate Research (<http://www.bolin.su.se/>) is a multi-disciplinary consortium of approximately two hundred and thirty researchers that conduct fundamental research on the climate and Earth system. This research strengthens the knowledge-base for climate mitigation and adaptation policies nationally and internationally. The Centre involves researchers from four Departments in the Faculty of Science, Stockholm University as well as from the Swedish Meteorological and Hydrological Institute (SMHI) and the Royal Technical University (KTH). It also forges connections to other Swedish research institutions and to international research organizations.

The Climate Research School of the Bolin Centre in Sweden and the proposed Norwegian school would most certainly work well together in future. There has already been considerable interaction between these two groups with scientific conferences organized by doctoral students called “PhD conferences”. For instance the Bolin Centre students helped organize the conference on 29-30 September 2014 in Bergen at Fjordslottet. We provided 100 000 SEK to cover travel and board not only for our students but also for the guest speaker. 13 of the more than 30 abstracts were from Bolin Centre students. Björn Gunnarsson, Director for Studies of our Climate Research School considered it a shining example of successful and hopefully future cooperation.



Professor Leonard Barrie
Director for Research