



The aim of this newsletter is to inform Bolin Centre researchers of recent-past and upcoming activities. The Bolin Centre for Climate Research is a multi-disciplinary consortium of more than 230 researchers led by Stockholm University that conducts fundamental research on the climate system. Founded in 2006, it involves collaboration between the Departments of Meteorology, Applied Environmental Science, Physical Geography and Quaternary Geology and Geological Science at Stockholm University together with FLOW at Royal Institute of Technology (KTH) and the Rossby Centre at the Swedish Meteorological and Hydrological Institute (SMHI). It also forges connections to other Swedish research institutions and to international research organizations.

According to the strategic plan of the Bolin Centre approved 19 May 2014, our mission is: *“To create and communicate fundamental knowledge about climate and the Earth system as part of an evolving global effort to understand and adapt to the Earth’s changing climate.”* A decision of the Board in the last section of the plan is noteworthy stating that: *“The Board, the Departments, SMHI and KTH are strongly committed to the continuation of the Bolin Centre and will continue to use the strategic (SFO) funds in the second 5-year period (to 2019) to finance the Centre in order to ensure its future.”*

Implementation of our research is through six multidisciplinary and cross departmental Research Areas (RA) with co-leaders:

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| 1. Oceans-atmosphere dynamics and climate | - A. de Boer, J. Nilsson, R. Caballero |
| 2. Clouds, aerosols, turbulence and climate | - A. Ekman, G. Svensson, I. Riipinen |
| 3. Hydrosphere, cryosphere and climate | - J. Jarsjö, M. Hansson, C-M. Mörth |
| 4. Biogeochemical cycles and climate | - C. Beer, V. Bruchert, Ö. Gustafsson |
| 5. Historical to millennial climate variability | - M. Kylander, Q. Zhang |
| 6. Orbital to tectonic climate variability | - H. Coxall, N. Kirchner |

Directors’ Message

From July to September 2014, much has happened in Bolin Centre science. The SWERUS-C3 Arctic expedition, co-sponsored by the Bolin Centre, successfully completed its mission of traversing the East Siberian shelf of the Arctic Ocean to Barrow Alaska and back. Congratulations to the leaders and all members of the multidisciplinary science team that met the challenge of a difficult three month study in a region of the Earth system that is warming more rapidly than any other. Swedish/Russian/USA science cooperation and the icebreaker Oden operated by the Swedish Polar Institute provided a unique opportunity to probe a part of the Arctic Ocean in detail as never before. For highlights of many other climate science activities in the Bolin Centre see our website.

It is important for our members to be aware of a major new international climate and Earth system science coordination effort called Future Earth (<http://www.futureearth.org>) whose development was initiated in 2012 at the UN Conference on Sustainable Development (Rio+20). Future Earth will merge three global environmental change programs after they close at the end of 2015, the International Geosphere Biosphere Programme, Diversitas (biodiversity) and the International Human Dimensions Project IHDP. On 8 July 2014, the Science and Technology Alliance for Global Sustainability representing eight international organizations announced the beginning of implementation with the selection of a new distributed-Secretariat that spans three continents and has five global hubs which will function as a single entity, and are located in Sweden (Stockholm), Canada (Montreal), France (Paris), Japan (Tokyo), and the United States (Colorado). To understand how this may be important to you as a climate or Earth system researcher read below and stay tuned to future Bolin Centre newsletters.

We are pleased to announce the fourth Bolin Centre summer school for PhD students and early stage researchers will focus on “Isotopes in Climate and the Earth System” It is held at Islay, west Scotland 23-29 August 2015. Please apply now <http://www.bolin.su.se/index.php/summer-schools/summer-school-2015>. For more details see Upcoming Events. Also, our climate research school has published calls for new courses and for applications for a 2016 summer school. We welcome your ideas.

Please reserve 18-20 November 2014 for the Science Forum and Bolin Days science event (see below for details). We note with thanks that despite heavy teaching loads many RA leaders showed initiative in organizing science events in summer and for the coming semester. For details, please read the rest of this newsletter.

Leonard Barrie
Director for Research

Alasdair Skelton
Director



Centre News

23-28 February 2014, nine Bolin Centre scientists participated in the Ocean Sciences Meeting (OSM) that was held in Hawaii Convention Center in Honolulu.

<http://www.misu.su.se/about-us/news/ocean-science-meeting-2014-in-honolulu-hawaii-1.169294>

11-12 June 2014, Research Area 1 organized a workshop on "Southern Ocean Physics And Biogeochemistry With Application To The Last Glacial Cycle". It was a huge success judging by the feedback received. There were 17 Speakers of which 11 were international. The number of attendees was about 32. Very constructive discussions took place. http://www.bolin.su.se/images/workshops/program_ra6-southernocean_2014.pdf

Some international experts that visited this past summer of 2014:

- Trevor McDougall from University of New South Wales.
- Tom Rossby from University of Rhode Island.
- Gurvan Madec from LOCEAN in Paris
- Akua Asa-Awuku, University of California UC Riverside, USA

On 13 July 2014, a new working group on "Millennium Scale Climate Model Studies" led by Qiong Zhang of the Bolin Centre was established by the EC-Earth Climate Model Steering Group. The millennium scale version of EC-Earth will complement standard resolution climate scenarios. The goal is to increase the attraction of EC-Earth by:

- developing and maintaining a T159-ORCA1-LIM3 version following the v3 code development for the purpose of long climate simulations,
- carrying out tuning of the final CMIP-6 code v3.x for the low resolution version,
- coordinating low resolution activities within EC-Earth and
- outlining CMIP-6 activities on paleomodelling

On 17 September 2014, a Bolin Centre meeting organized by Gunilla Svensson, Rodrigo Caballero and Hamish Struthers (NSC) was held to inform about the newly installed SNIC system for data storage and analysis at NSC. This new system that is integrated in the Triolith environment replaces Vagn. It will be the main resource for climate modeling data analysis for the coming years. More information about the new system is found at www.nsc.liu.se. The system is partly a result of a Sweden Science Council-infrastructure application coordinated by the Bolin Centre in collaboration with SMHI and KTH. The new SNIC/KTH CRAY supercomputer at PDC, which is planned to be in production 1 January 2015, is also partly in place because of the successful application. These two systems will be of great importance for the sixth round of the Climate Model Inter-comparison Project (CMIP6) of World Climate Research Program.

24 September 2014 The "Bolin Centre COMSOL Multiphysics Workshop" was held on the premises of ITM, Stockholm University. <http://www.eventbrite.com/e/bbcc-comsol-multiphysics-workshop-tickets-12702939835>

Bolin Centre scientists are involved in three new networks financed by NordForsk:

- "eScience Tools for Investigating Climate Change at High Northern Latitudes" (eSTICC, esticc.nilu.no/) and is coordinated by Andreas Stohl, NILU, Norway with Ilona Riipinen and Peter Tunved in leading roles.
- "Nordic Infrastructure on Earth System Modelling (NordicESM)" coordinated by Jón Egill Kristjánsson, Oslo University, Norway with Gunilla Svensson as co-deputy.
- "Research Infrastructure Network for Nordic Atmospheric and Earth System Science" with HC Hansson as Bolin Centre representative. The first meeting is Helsinki at FMI in Dec 2014



Cooperation with the Norwegian Research School in Climate Dynamics (ResClim)

- Last week of August 2014, The Bolin Centre's Climate Research School, and ResClim held a conference for PhD students in Bergen. There were around 30 participants from Stockholm and Norway, and Steve Barker from Cardiff University will be attending as an invited speaker.
- 16 - 31 of August 2014, Arctic Station, Disko Island, West Greenland, Josefin Ahlkrona, PhD Student attended the course "The Dynamics of the Greenland Ice Sheet" organized by RESCLIM as part of an Advanced Climate Dynamics Course (<http://www.uib.no/en/rs/acdc>).

More on Future Earth: It focuses on promotion of research on three themes: Dynamic Planet, Global Sustainable Development and Transformations towards Sustainability. It will also be a platform for international engagement to ensure that knowledge is generated in partnership with society and users of science. The Swedish hub will be set up by the Swedish Academy of Science as an independent entity, affiliated with Stockholm university and other Swedish research. In the next months, the exact nature of this hub in Stockholm will be defined both in the international context and how it connects nationally. What is important to know is that major core projects of the International Geosphere Biosphere Programme will transition to Future Earth responsibility in 2015. See the website for details. <http://www.futureearth.org>.

Upcoming Science Events/Activities

In autumn 2014, three paleoclimate events are taking place

- 10 October 2014, 1 pm, DeGeersalen, Geohuset PhD defense Akkaneewut Chabangborn, Asian monsoon over mainland Southeast Asia during the past 25 000 years, Faculty opponent: Professor Karen Kohfeld, Simon Fraser University, Vancouver
- 17 October 2014, 1 pm, DeGeersalen, Geohuset, PhD defense Sakonvan Chawchai Paleoenvironmental and paleoclimatic changes in northeast Thailand during the Holocene Faculty opponent: Professor Rich Bindler, Umeå University
- 25 November 2014 2 pm Geohuset, Brögger lecture by Professor Pascale Braconnot, Laboratoire des Sciences du Climat et de l'Environnement, Université de Versailles. Pascale is widely known for her paleo climate modelling work. She also was one of the lead authors for Chapter 9 in Climate Change 2013: The Physical Science Basis.

20–22 October 2014, RA5 is hosting a "Workshop On Stable Water Isotopes And Climate", Geoscience building, Stockholm University. It will bring together scientists from different communities to understand the processes behind stable isotope signals in paleoclimate archives, modern satellite measurements and atmospheric modelling. The aim is also to exchange information, establish collaboration, and address questions such as (1) How comparable or how different are $d_{18}O$ and dD records from various types of carriers (ice, lipids, forms, trees, speleothems) as well as from satellite measurements and modelling? (2) What is the best way to compare and use the various water isotope proxies and records? (3) What regions and time frames deserve special attention? (4) What are the main factors that play a role in tropical and extratropical (higher latitude) water isotope dynamics? There will be invited talks in the morning on 20-21 October and informal discussions the rest of the time. See the Bolin website for details. The workshop seminars and discussions are open to anyone. Contact Qiong Zhang, Rienk Smittenberg or Francesco Pausata.

5–6 November 2014, A workshop on "High-Latitude Volcanic Eruptions And Climate: Filling The Gaps" in Arrhenius building, MISU, C609 Stockholm University is organized by Francesco S.R. Pausata: (francesco.pausata@misu.su.se) <http://www.bolin.su.se/index.php/upcoming-workshops/274-workshop-high-latitude-volcanic-eruptions-and-climate-filling-the-gaps-5-6-november-2014>



Bolin Centre Newsletter

18 November 2014 The External Advisory Science Advisory Group of the Bolin Centre will each present a science lecture in a Science Forum. We highly recommend you set time aside to greet these prominent scientists who will join us as colleagues during the Bolin Days to follow:

- 13.15–13.40 Abrupt changes in the ocean and the Greenland Ice Sheet Changes driven by past and future changes in sea ice cover and ocean stratification. The approach of the ERC Synergy Grant project Ice2Ice.
Professor Eystein Jansen, Bjerknes Centre for Climate Research, University of Bergen, Norway
- 13.40–14.05 Exchange of heat and mass between high latitude ecosystems and the atmosphere.
Professor Anders Lindroth, Centre for Studies of Carbon Cycle and Climate Interactions (LUCCI), Lund University, Sweden
- 14.05–14.30 Identifying the sources of anthropogenic climate change using global models
Associate Professor Natalie M Mahowald, Dept. Earth and Atmospheric Sciences, Cornell University, USA
- 14.50–15.15 The growing peril of climate engineering
Professor Raymond Pierrehumbert, Meteorology and Geosciences, University of Chicago, USA & King Carl XVI Gustaf's Professorship in Environmental Science 2014/2015 Stockholm University
- 15.15–15.40 Hot Spots in Glacier Research
Professor Johannes Oerlemans, Institute for Marine and Atmospheric Research Utrecht (IMAU), Utrecht University, Netherlands

Details: <http://www.bolin.su.se/index.php/bolin-science-forum/265-the-external-science-advisory-group>

19-20 November 2014 The Bolin Days (Bolin Dagarna) annual science event of the Bolin Centre takes place. If you have not registered the deadline is 16 November (<http://www.bolin.su.se/index.php/news/257-bolin-days-2014>). We hope everyone will consider a presentation or poster as a way of communicating your evolving research to all at the centre. This is a chance to freely exchange ideas in a warm atmosphere.

27 November 2014 A Science Policy Forum will be held on “A Smart Carbon Tax for a Stable Climate” 13:00–14:30, Ahlmannsalen, Geoscience Building, Stockholm University co-sponsored by the Bolin Centre and the IIES Institute for International Economic Studies. We encourage all scientists to step out of the box and listen to a discussion of potential ways that we as a society might effectively reduce (mitigate) carbon dioxide emissions to the atmosphere. See the website for details.

On 2-4 December 2014, RA 5 is organizing a “Workshop on Southern African Paleoclimate” at the Geoscience building, Stockholm University. There are an increasing number of researchers at the Bolin Centre working on African paleo-environmental change both in terms of modelling and reconstruction. There are invited experts and key collaborators joining us to strengthen our research in this area within the Bolin Centre and to build our research network. The workshop will involve not only formal presentations but also time for discussion, networking and development of plans to strengthen collaboration. If anyone is interested in joining you are most welcome! Contact Malin Kylander (IGV), Hanna Sundqvist (INK) and Eiln Norström (INK).

Early in 2015 an RA2 workshop on “Large-Eddy Simulation Modelling And Its Application To The Atmosphere” is planned during the beginning of 2015. Please send an email to Annica Ekman (annica@misu.su.se) or Gunilla Svensson (gunilla@misu.su.se) if you are interested in participating.

In August 2015 in Grindewald, Switzerland, an international workshop on “Storm Tracks And Jet Streams” will take place. RA1 is collaborating in the organization. It will feature the prominent invited speakers: (Ed Gerber, Kevin Grise, Dennis Hartmann, Isaac Held, Brian Hoskins, Yohai Kaspi, Sukyoung Lee, Lorenzo Polvani, Adam Scaife, Tapio Schneider, Len Shaffrey. It covers the state of the art in both the theory and modelling of mid-latitude storm tracks. Abstract submission will be open until May 2015; places are limited. We encourage Bolin Centre scientists to apply, especially PhD students and postdocs. Contact Rodrigo Caballero who is on the scientific organising committee. Further information is here:

<http://www.sparc-climate.org/meetings/sparc-grindelwaldworkshop-aug2015>