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Bolin Centre for Climate Research

A collaboration between Stockholm University, KTH and SMHI

Week 21, 2021

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The Bolin Centre is a multi-disciplinary consortium of over 400 scientists in Sweden that conducts research and graduate education related to the Earth's climate.



New policy reports released to the meeting of the Foreign Ministers of the Arctic States



Several Bolin members have contributed to policy reports released in May to the meeting of the Foreign Ministers of the Arctic States.

Gustaf Hugelius is the lead author for a report that focuses on the global importance of Arctic wetlands. The report provides policy recommendations concerning how these regions ought to be managed in the future. Effective management of wetlands, including conservation and restoration efforts, holds enormous potential to contribute significantly to climate adaptation and mitigation, and conservation of biodiversity.

[Read more on Bolin Centre website »](#)

Annica Ekman, Srinath Krishnan and Hans Christen Hansson, together with international colleagues, have contributed to a Summary for Policy Makers published by The Arctic Council's working group Arctic Monitoring and Assessment Program. The report is titled "Impacts of Short-lived Climate Forcers on Arctic Climate, Air Quality, and Human Health".

[Read more on Bolin Centre website »](#)

Cynthia de Wit and colleagues have contributed to "POPs and Chemicals of Emerging Arctic Concern: Influence of Climate Change. Summary for Policy-makers", published by The Arctic Council's working group Arctic Monitoring and Assessment Program.

Bolin Centre scientist Abdelwaheb Hannachi has published a new book titled Patterns Identification and Data Mining in Weather and Climate

Complexity, nonlinearity and high-dimensionality constitute the main features of the weather and climate. Advances in computer power and observing systems have led to the generation and accumulation of large-scale weather and climate data, which beg for exploration and analysis.

The book presents, from different perspectives, most available, novel and



conventional, approaches used to analyse multivariate time series in atmospheric and oceanographic science to identify patterns of variability, teleconnections, and reduce dimensionality.

[Read the article on Bolin Centre's website »](#)



Infertility poses major threat to biodiversity during climate change, study warns

A new study by ecologists in international collaboration warns that heat-induced male infertility will see some species succumb to the effects of climate change earlier than thought.

Currently, scientists are trying to predict where species will be lost due to climate change so they can plan effective conservation strategies. However, research on temperature tolerance has generally focused on the temperatures that are lethal to organisms, rather than the temperatures at which organisms can no longer breed.

"Other organisms than fruit flies will likely suffer from reduced fertility in a warmer climate. Insects can't regulate body temperature, and for animals with small ranges, finding a place cool enough might not be possible," says Rhonda Snook, professor at the Department of Zoology, Stockholm University, co-author of the article.

[Read article on Stockholm University's website »](#)



Publications

Recent Bolin Centre publications

On bolin.su.se/publications you'll find a list of scientific journal publications by Bolin Centre scientists. Here are the most recent ones we have published on the website.

- Sun, L., Cai, Y., Chen, A., Zamora, D., Jaramillo, F., 2021. Water footprint and consumption of hydropower from basin-constrained water mass balance. *Advances in Water Resources* 103947. <https://doi.org/10.1016/j.advwatres.2021.103947>
- Jin H., Köppl C. J., Fischer B. M. C., Rojas-Conejo J., Johnson M., Morillas L., Lyon S., Durán-Quesada A. M., Suárez-Serrano A., Manzoni S., and M. Garcia (2021). Drone-based hyperspectral and thermal imagery for quantifying upland rice productivity and water use efficiency after biochar application. *Remote Sensing* 13, 1866. <https://doi.org/10.3390/rs13101866>
- Manzoni S., Chakrawal A., Spohn M., and B. Lindahl (2021). Modelling microbial adaptations to nutrient limitation during litter decomposition. *Frontiers in Forests and Global Change* 4, 686945. <https://www.frontiersin.org/articles/10.3389/ffgc.2021.686945/abstract>
- Minkina, T., Vasilyeva, G., Popileshko, Y., Bauer, T., Sushkova, S., Fedorenko, A., Antonenko, E., Pinskiy, D., Mazarji, M., Ferreira, C.S.S., 2021. Sorption of benzo[a]pyrene by Chernozem and carbonaceous sorbents: comparison of kinetics and interaction mechanisms. *Environmental Geochemistry and Health*. <https://doi.org/10.1007/s10653-021-00945-8>
- Kåresdotter, E., Destouni, G., Ghajarnia, N., Hugelius, G., Kalantari, Z. 2021. Mapping the vulnerability of Arctic wetlands to global warming. *Earth's Future*, 9, e2020EF001858. <https://doi.org/10.1029/2020EF001858>

- Boulet, A.-K.; Rial-Rivas, M.E.; Ferreira, C.; Coelho, C.O.A.; Kalantari, Z.; Keizer, J.J.; Ferreira, A.J.D. 2021. Hydrological Processes in Eucalypt and Pine Forested Headwater Catchments within Mediterranean Region. *Water*, 13, 1418. <https://doi.org/10.3390/w13101418>
- Pan, H., Page, J., Cong, C., Barthel, S., Kalantari, Z., 2021. How ecosystems services drive urban growth: integrating nature-based solutions. *Anthropocene*, 100297. <https://doi.org/10.1016/j.ancene.2021.100297>
- Hooftman D, Kimberley A, Cousins SAO, Escribano-Avila G, Honnay O, Krickl P, Plue J, Poschlod P, Traveset A & Bullock JM 2021: Dispersal limitation, eutrophication and propagule pressure constrain the conservation value of Grassland Green Infrastructure. *Biological Conservation*. <https://doi.org/10.1016/j.biocon.2021.109152>
- Treat, C.C., Jones, M.C., Alder, J., Sannel, A.B.K., Camill, P., Frolking, S., 2021. Predicted vulnerability of carbon in permafrost peatlands with future climate change and permafrost thaw in Canada. *Journal of Geophysical Research – Biogeosciences*. [doi:10.1029/2020JG005872](https://doi.org/10.1029/2020JG005872)
- Abdel Hannachi, Patterns Identification and Data Mining in Weather and Climate. *Springer Atmospheric Sciences*. <https://doi.org/10.1007/978-3-030-67073-3>

Please send your newly published publication to bolin@su.se »



Horizon 2020 project to map role of polar sea ice and snow in global climate system

Researchers at the Department of Environmental Science and Department of Meteorology (MISU) at Stockholm University together with international colleagues have recently launched the new Horizon 2020 project CRiceS (Climate relevant interactions and feedbacks: the key role of sea ice and snow in the polar and global climate system). The CRiceS project aims to contribute knowledge for better understanding of the ocean-ice-snow-atmosphere system and deliver improved models to describe polar- and global climate.

[Read article on Dep't of Environmental Sciences website »](#)

Scientific tools could revert threatening genetic diversity crisis

A previously hidden biodiversity crisis is causing loss of resilience of ecosystems and loss of important opportunities for society. In a paper recently published in the journal *BioScience*, 28 scientists from 16 countries are documenting urgent problems with loss of genetic diversity and devise actions to solve the problem.

[Read article on Dep't of Zoology's website »](#)

Sharpen your communication skills in Researchers' Grand Prix!

In Researcher's Grand Prix, researchers are challenged to present their research in the most captivating, inspiring and educational way possible – in just four minutes! The audience and expert judges jointly decide on the winner. You can speak Swedish or English.

Researchers' Grand Prix Digital is a digital event open for researchers all over Sweden, between September 20-24. Accepted participants to the digital event receives coaching in presentation, recording a professional film and the possibility to qualify for the national final.

There are two alternatives to apply to the competition:

- Record a video presenting yourself, including: Who are you? What is your area of research? Why do you want to compete in Researcher's Grand Prix? Max 2 minutes.
- Record a first version of the 4 minutes presentation you want to compete with. It doesn't have to be perfect! You'll get coaching to make it better, if you are accepted to the competition.

You can speak Swedish or English. Apply before August 1! A decision on August 3 will tell you if your application to participate in the contest was successful.

Researchers' Grand Prix is arranged by Formas, Forte, The Swedish Research Council and Vinnova, and is coordinated by Vetenskap & Allmänhet.

[Read more and apply on Forskar Grand Prix's website »](#)

BOLIN CENTRE EVENTS



Bolin Centre Seminar Series | Research Area 4

Time & venue: June 9 at 10h00, Zoom

Title: Protection of Permafrost Soils from Thawing by Increasing Herbivore Density

Speaker: Prof. Christian Beer, Heisenberg-Professor for dynamics of soil processes, Institute of Soil Science, University of Hamburg

[Read more »](#)

OTHER EVENTS



Guest seminar, Svante Bodin, European Director of International Cryosphere Climate Initiative (ICCI)

Time & venue: June 1 at 11h15-12h15, Zoom

Title: Historical perspectives on IPCC and international climate politics

Speaker: Svante Bodin, European Director of International Cryosphere Climate Initiative (ICCI)

[Read more on Dep't of Meteorology's website »](#)



Titel: Jordens frybox tinar upp

Time & venue: June 8 at 10h00-11h00, webinar

Under 2021 publicerar Arktiska rådet flera vetenskapliga rapporter med den senaste kunskapen om hur klimatförändringarna påverkar Arktis, med återverkningar för det globala klimatet.

Bland talarna: HC Hansson, Institutionen för miljövetenskap, Stockholms universitet.

Annika Ekman, Meteorologiska institutionen, Stockholms universitet.

Cynthia de Wit, Institutionen för miljövetenskap på Stockholms universitet.

[Läs mer och anmälan »](#)

OFFICE STAFF - BOLIN CENTRE AT CAMPUS

Due to COVID-19, the Bolin Centre Office will be irregular staffed at the University. Like many of you, we work from home. Don't hesitate to get in touch with us via mobile or e-mail.

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- Laila: laila.islamovic@su.se (Communications & coordination during the spring)

The **Bolin Centre Weekly News** provides you with a selection of our current activities and latest news and is sent to all members of the Bolin Centre. If you have suggestions that you would like to include or **research that you would like to share** in coming Weekly News, please contact bolin@su.se.

Editor: Magnus Atterfors

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