

Aerosols and climate models discussed in the Bert Bolin lecture

Air pollution prevents solar radiation from reaching the ground and helps to slow the warming effects of carbon dioxide and other greenhouse gases. At the same time, however, there are compelling health reasons for reducing air pollution emissions. This year's Bert Bolin lecture highlighted the fact that researchers are still uncertain about the extent to which a reduction of this kind could speed up climate change.

Venkatachalam Ramaswamy is one of the world's leading experts on the radiation balance in the atmosphere and on climate models. On 29 May, he gave this year's Bert Bolin lecture and discussed the need to improve our assessments of how aerosol particles affect the climate. Ramaswamy is the Director of the Geophysical Fluid Dynamics Laboratory (GFDL) of the National Oceanic and Atmospheric Administration (NOAA) in the USA. He is also a researcher at Princeton University, and has led the work on chapters dealing with radiation processes in many of the reports issued by the United Nations Intergovernmental Panel on Climate Change (IPCC).

Ramaswamy's research looks at how greenhouse gases and aerosol particles affect the flows of radiation in the atmosphere, in turn impacting on the earth's climate.

"There's a great deal of uncertainty about aerosols, which makes our future climate scenarios less accurate. Aerosols have both a cooling and a warming effect, and also influence the clouds, which affect the climate. As a result, their net contribution is more complex than that of greenhouse gases."

Slowing down global warming

Aerosols are estimated to screen out almost half the warming effect of green-

house gases. However, Ramaswamy explained that there are large gaps in our knowledge and highlighted the differences between satellite observations and current climate models. One of these gaps regards the interaction between particles and moisture in the air. Steam makes sulphur particles expand and screen out twice as much solar radiation as dry particles, which also increases their cooling effect.

However, there is strong pressure to reduce air pollutant emissions because of its effects on both the environment and human health. In Sweden alone, air pollution causes thousands of premature deaths each year.

"But how will the already serious problem of global warming be affected when the aerosol particles' cooling effect is eliminated? The answer is that we don't really know. GFDL scenarios indicate that almost half of the global warming up to 2090 is caused by an estimated reduction in aerosol particles."

Ramaswamy's research group is currently developing a new climate

model, which will focus more closely on aerosols and clouds, in preparation for the next IPCC report in 2014. The aim is to provide a better foundation for political decisions on combating climate change.

Bert Bolin – a pioneer in climate research
Ramaswamy also spoke about Bert Bolin's role as a leading figure in international climate research and, in particular, as chair of the IPCC during its first ten years.

"As well as seeking to influence decision-makers, Bert always emphasised the importance of lending scientific weight to the work we do, which is something that still characterises the IPCC's activities. I was delighted and highly honoured when Henning Rodhe sent me an e-mail telling me that I'd been chosen as this year's lecturer."

The Bert Bolin Lecture on Climate Research is given every year in May, and was instituted by the Faculty of Science in honour of Professor Bert Bolin, a member of the Department of Meteorology for many years. He was a pioneer in climate research and a driving force behind the awarding of the Nobel Peace Prize to the IPCC in 2007.

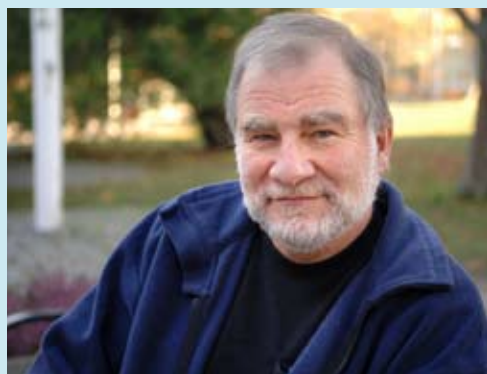
"It's extremely valuable for the Faculty's climate researchers to meet one of the world's leading researchers who also plays a central role in the IPCC. The emphasis on the importance of aerosol particles in this year's lecture is well in line with the Bert Bolin Centre's priorities for Climate Research at the Faculty," says Henning Rodhe.



Venkatachalam Ramaswamy during BBCC lecture

Text: Andreas Nilsson, Photo: Orasis foto

The Dean's corner



Summer will soon be here, and I hope it will bring plenty of opportunity for rest and perhaps there for research, writing that paper you never got around to. However, summer is also a time for holidays and relaxation. We have had a rather hectic spring, with applications for grants in the strategic research areas in addition to the normal grant applications. The new full cost accounting system has also involved a lot of time-consuming work for heads of department and finance managers. In addition, the development of a new teacher training programme and preparation for abolition of compulsory student union membership next summer have meant extra work for the University and the Faculty.

The research council recently presented its recommendations to the government regarding which applications should be awarded grants in the strategic research areas. Three applications from the Faculty were awarded grants: Effects on natural resources, ecosystem services and biodiversity, Marine environment and Climate models. We were also participating in three other applications that received funding. This is very gratifying, and I would like to extend a very warm thank you to everyone who was responsible for these applications, and also to those for the applications that were not selected. One of the successful applications is in the area of molecular biosciences. This will help lay the foundations for the Science for Life Laboratory in the Norra Station area, which will be a joint research centre for Stockholm University, the Karolinska Institute and the Stockholm Institute of Technology (KTH). However, more resources are needed in order for the vision of an internationally prominent research centre to become reality.

I wish you all a really good summer and look forward to welcoming you back in the autumn, which will bring a number of new and exciting challenges.



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Investing in young promising scientific researchers

The Faculty of Science at Stockholm University has awarded six young scientists at the Faculty a yearly grant of SEK 1.5 million per year for five years. They were chosen for their potential to become nationally leading and internationally prominent in their fields of research over the coming years.

The applicants were selected on the basis of the following criteria: they must have the potential to play a leading role within five years; they must not already be in receipt of significant funding for their research; they must hold a research position for the period covered by the funding; and they must have completed their doctorate within the last ten years.

"The aim of this grant program is to ensure that internationally successful research continues within the Faculty at a time when many of the current leading scientists are retiring. It was very satisfying to see so many applicants of such high calibre, which, of course, made the selection process very difficult," says Stefan Nordlund, dean of the Faculty of Science at Stockholm University.

The successful applicants were selected by a panel consisting of scientists from Umeå University, Uppsala University, Lund University, the Stockholm Institute of Technology (KTH), Helsinki University, the four section deans and the dean of the Faculty of Science.

The following researchers were selected:

Christophe Clément, Department of Physics
Mattias Edén, Department of Physical, Inorganic and Structural Chemistry
Martin Jakobsson, Department of Geology and Geochemistry
Niklas Janz, Department of Zoology
Pia Ädelroth, Department of Biochemistry and Biophysics
Göran Östlin, Department of Astronomy

James Armitage awarded this year's Sigrid Arrhenius scholarship

The board of the Faculty of Science at Stockholm University has chosen the recipient of the 2009 scholarship from the Sigrid Arrhenius fund. The scholarship rewards outstanding research work leading to a doctorate. The recipient of the scholarship is awarded SEK 65,000.

The winner of this year's scholarship is James Armitage, 34, from the Department of Applied Environmental Science. He completed his doctorate on 27 March 2009 with a thesis entitled "Modelling the Global Fate and Transport of Perfluoroalkylated Substances".

Contacting the Faculty Office during the summer

The Faculty Office will be staffed throughout the summer. Contact details for the office can be found at www.science.su.se

Have a good summer!

