

# Rosby Centre Newsletter

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The Rosby Centre Newsletter aims to provide useful information to stakeholders on climate change research and policies on the work and results of the Rosby Centre. This newsletter is published 2-6 times a year.

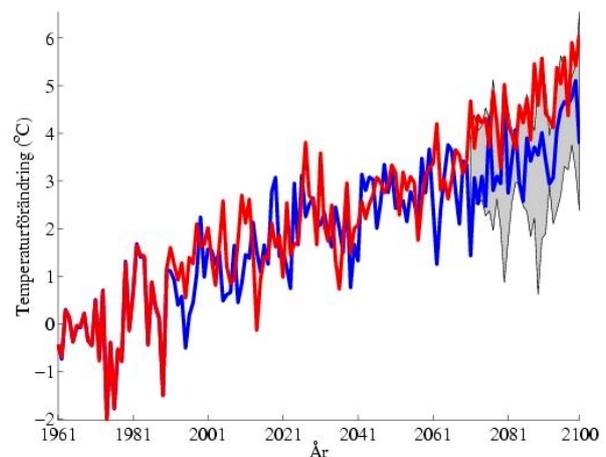
The following topics are covered in this Newsletter:

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## 1. Two regional climate simulations for 1961- 2100 are now available

In 2004, the Rosby Centre prepared its first so-called transient regional climate scenario using the Rosby Centre regional climate model, RCA3, large-scale boundary conditions from a global model ECHAM4/OPYC3 simulation at DKRZ, the Deutsches Klimarechenzentrum GmbH, and the Max-Planck Institute for Meteorology in Hamburg and the B2 forcing scenario from IPCC. This scenario cover 140 years from 1961 to 2100. Now a second such a long regional scenario has been calculated, this time conforming to the A2 forcing scenario from IPCC. According to a preliminary analysis, the differences between mean temperature and precipitation changes in the A2 and B2 experiments are small in the first half of the century even in the Nordic region. These small differences are in principle consistent with the rather small differences in the global net climate forcing between the two forcing scenarios until the middle of the century. (Even though carbon dioxide emissions evolve rather different in B2 and A2 already early on, this is largely compensated for by differences in aerosol forcing changes, leading to only small differences in the net global forcing change until about 2050 in B2

and A2.) Differences between B2 and A2 thereafter grow during the second half of the century. Data from these simulations are available by request (contact us at [Rosby.Data@smhi.se](mailto:Rosby.Data@smhi.se)). Climate scenario graphics (in Swedish) of the first transient simulation (B2) can be found via <http://www.smhi.se/sgn0106/if/rc/clmscen05.htm>



## 2. Première for global climate modelling at the Rosby Centre

Global climate modelling has been started at the Rosby Centre by importing the community climate system model CCSM-3.0 from the National Center for Atmospheric Research (NCAR) in the U.S. (see <http://www.cesm.ucar.edu/>). CCSM3 combines state-of-the-art atmosphere, ocean, land surface, and sea-ice simulation modules, linked together with a coupler. The model is currently being

tested on the Monolith-cluster at NSC. At the Rosby Centre, CCSM3 is used for a project funded by Naturvårdsverket for regional climate projections under a greenhouse gas stabilization scenario. Such a regional climate simulation for a stabilisation scenario complements other regional climate simulations run at the Rosby Centre corresponding to alternative unmitigated emissions.

### 3. Final reporting of two European climate modelling projects PRUDENCE and PRISM

Among the European research projects running under the EU Fifth Framework Programme for Research, Technological Development and Demonstration activities 1998-2002, were Prediction of Regional scenarios and Uncertainties for Defining European Climate change risks and Effects (PRUDENCE, see <http://prudence.dmi.dk/> ) and PRogramme for Integrated Earth System Modelling (PRISM, see <http://www.prism.enes.org/> ). Both of these projects that tackled different aspects of climate modelling were finished in late 2004. PRISM promoted joint standards and common interfaces for advanced climate modelling on both global

and regional scale. Rosaby Centre contributed especially with improvements to the coupling between global and regional models that is a necessary requirement for regional climate scenarios. PRUDENCE managed coordinated European high-resolution climate change simulations involving high-resolution Atmospheric General Circulation Models, two emission scenarios and ten regional Climate Models (RCMs), as well as some impact studies. The climate simulations are freely available to the general research community from PRUDENCE homepage. A special issue of Climatic Change will be published in 2006 on PRUDENCE results.

### 4. Final results on Baltic sea level change and coastal impacts from the SEAREG project

Increased sea level as well as changing river runoff can affect the risk of flooding events and erosion. SEAREG has been an INTERREG-funded project on "Sea level change affecting the spatial development in the Baltic Sea region". It has studied the risk of flooding in the late 21<sup>st</sup> century. Rosaby Centre has contributed with regional scenarios for sea levels in the Baltic Sea region and wave modelling. River runoff and lake water levels have also been studied for, Lake Mälaren that has been one of the case study areas. Other case study areas within the project

are Helsinki city and the region of East Uusimaa (Finland), Pärnu (Estonia), Gdansk (Poland) and Usedom (Germany). SEAREG started in 2002 and ends in March 2005. During the project, results have continuously been presented and discussed with stakeholders such as local planning authorities. On behalf of the Swedish part of SEAREG, a seminar will take place at SMHI (Hörsalen) on Tuesday, March 22, at 10.00-12.15. To attend, please contact Markus Meier ([markus.meier@smhi.se](mailto:markus.meier@smhi.se) , tel: 011-495 8612).

### 5. Looking into adaptation to climate change in Sweden

SMHI has, at the request of the Swedish Environmental Protection Agency (Naturvårdsverket), prepared a report on adaptation to climate change in Sweden. The report presents results of an inquiry made in late 2004 to a number of local and national authorities, enterprises, and research funding agencies. It also includes a brief discussion on the kinds of effects climate change might cause in Sweden on various sectors. According to the results, the topic of adaptation to climate change is seen as relevant by an overwhelming majority of actors. However, only few in-depth analyses of vulnerability and adaptation needs as well as actual adaptation measures that deal with climate change could be identified. The stakeholders identify that more knowledge about climate

change itself, detailed and local climate scenarios and consequence studies on local scale are needed for promoting efforts on adaptation. Costs and directives that do not yet clearly cover responding to climate change are seen as obstacles. The report (SMHI RMK 106, in Swedish) can be downloaded from the Rosaby Centre homepage, under News, or ordered from [anneli.arkler@smhi.se](mailto:anneli.arkler@smhi.se)



### 6. Subscriptions and cancellations of subscriptions

This issue of the Rosaby Centre electronic newsletter is sent as a blind copy to provide email address privacy. Should you not wish to receive further copies of this newsletter, please send an e-mail to [Rosby.Data@smhi.se](mailto:Rosby.Data@smhi.se)

Comments and suggestions as to the scope, content and forms of the Rosaby Centre electronic newsletter are welcome. Feedback can be provided via the email address mentioned above.

## 7. Basics of the Rossby Centre

The Rossby Centre is the regional climate modelling research unit of the Swedish Meteorological and Hydrological Institute, SMHI. The Centre was built up within SWECLIM, the Swedish Regional Climate Modelling Programme, 1996-2003. The Rossby Centre works on regional climate model development and evaluation as well as model applications on process studies, climate system studies, climate change research and impact studies. The Rossby Centre regional climate models include the atmospheric model RCA, the oceanographic model RCO model as well as their coupled set-up, the RCO system. The HBV hydrological model of SMHI is also used. In 2003-2005, the Rossby Centre is funded

also by SMHI, Naturvårdsverket (the Swedish EPA), Statens energimyndighet (the Swedish Energy Agency) and Mistra (the Foundation for Strategic Environmental Research). The Rossby Centre is also involved in a number of EU-funded and other projects on climate modelling and other aspects of climate and climate change research.

Rossby Centre homepages are in English and can be found via [www.smhi.se](http://www.smhi.se) (click on "Forskning" [on the Swedish version] and "Research" [on the English version] at the top of the page, after which the link to Rossby Centre appears on the list to the left of the page that opens.)

