

# April 2012

# rossby centre news

SMHI

A NEWSLETTER FROM THE ROSSBY CENTRE

## Increasing reliability of Earth System Models

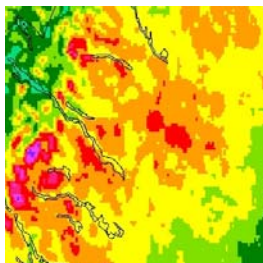
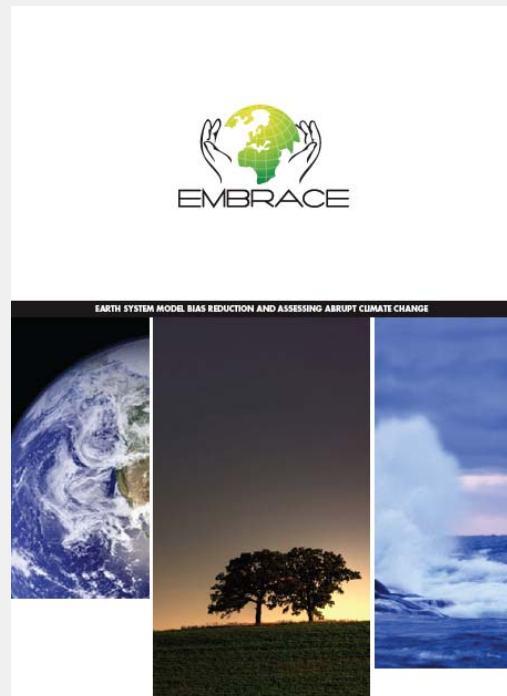
Welcome to this edition of the Rossby Centre Newsletter, detailing some of the recent research activities the Centre is pursuing.

One important development is that the Rossby Centre coordinates a new European Union 7th Framework Research Project, EMBRACE: Earth System Bias Reduction and Assessing Abrupt Climate Change. As the title indicates, the primary aim of EMBRACE is to reduce a number of systematic biases in present-day European Earth System Models through targeted model improvements, thereby increasing the reliability of future climate change projections made with such models.

One particular application of the improved models is to investigate the risk for abrupt changes in key components of the global climate system, with a particular emphasis on the stability of the North Atlantic Ocean circulation and the Amazon rainforest under a changing climate. EMBRACE started in November 2011 and will run for a period of 4 years.

*Colin Jones*  
Head of the Rossby Centre

[Read more about EMBRACE](#)



## Development of a high resolution regional climate model

At the Rossby Centre, we are working towards the development of a new Regional Climate Model (RCM), based on the non-hydrostatic NWP model HARMONIE. HARMONIE is specifically developed to allow integrations at convective-resolving resolutions (e.g. ~1- 3km per grid box).

[Read more about the development of high resolution climate models](#)



### Changes in historic climate due to changes in land-use

What was the vegetation like 200 years ago? Did humans effect the climate before emitting CO2 by changing the vegetation? Rossby Centre is involved in a project dealing with reconstructions of past vegetation and the coupling between vegetation and climate in historic times.

[Read more about vegetation and climate in historic times](#)

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### Evaluation of RCA3 regarding the European temperature climate during the last Millenium

An evaluation of the regional climate model RCA3, based on comparisons of model results with proxy data and observational data, showed poor agreement between these data series. This is probably a consequence of deficiencies and error margins in the proxy reconstructions, which is why more high quality proxy data needs to be developed. Model errors, uncorrelated internal variability and simplified treatment of forcing conditions also contribute to the discrepancies.

[Read more about the evaluation of RCA3 regarding the last Millenium](#)

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### First results from new SMHI atmosphere-ocean-ice model RCA4\_NEMO

A new North Sea and Baltic sea coupled RCA4\_NEMO model system has been successfully developed in the past few months. This new coupled model has been evaluated with various observation datasets. The preliminary results show that this coupled system is stable and the results is reasonable good.

[Read more about the new North Sea/ Baltc Sea coupled RCA4\\_NEMO model](#)

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### Ensemble climate scenarios in a biodiversity study

Within the framework of the Mistra-SWECIA research programme Rossby Centre scientists have been collaborating with scientists studying how biodiversity may be impacted as an effect of climate change. In a new study/paper an ensemble of regional climate scenario data was used as input to a population dynamics model.

[Read more about climate scenarios in population dynamics modelling](#)

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### **Michael Kolax**

Michael joined the Rossby Center in late 2010 to work with data management. Previously he was technical system manager for the hydrological production system at SMHI and system manager for SMHI's atmospheric dispersion modeling within the Swedish Emergency preparedness for radio-nuclear emergencies.

[Visit Michael's web page](#)



### **Petter Lind**

Petter joined the Rossby Centre in September 2011 to work on high resolution climate modeling, focusing on simulations of moist processes (primarily precipitation) in the atmosphere. Previously, he worked as a forecaster at the SMHI weather forecast service.



### **Peter Berg**

Peter joined the Rossby Centre in January 2012 to work on regional modeling of the Arctic. Previously he has worked as a researcher at the Karlsruhe Institute of Technology in Germany and at DMI in Denmark.

[Visit Peter's web page](#)



### **Irena Ivanova**

Irena Ivanova joined the Rossby Center in January 2012 to work on the global modeling of aerosol-cloud interactions. Previously, she has worked as a research scientist at Environment Canada where she has been investigating the improved use of aerosol data in numerical weather prediction.

[Visit Irena's web page](#)



### **Martin Evaldsson**

Martin joined Rossby center in January 2012 to work with support and technical development of EC-Earth. Previously he worked at SMHI as a system developer of operational oceanographic models.

[Visit Martin's web page](#)



## Philippe Lucas-Picher

Philippe joined the Rossby Centre in January 2012 to work on the validation of regional climate model simulations over the Arctic. Previously, he worked as a visiting scientist at Meteo-France on high resolution regional climate modeling over North America.

[Visit Philippe's web page](#)



### ABOUT THE ROSSBY CENTRE

The Rossby Centre pursues research on climate processes and the behaviour of the climate system. The principal tools are the global and regional climate models developed within the research unit.

[Rossby Centre at www.smhi.se](http://www.smhi.se)

### CONTACT AND DATA REQUEST

[Climate scenario data](#) from the Rossby Centre is available via a web application or as netCDF-files for download. The Rossby Centre can be reached via [rossby.data@smhi.se](mailto:rossby.data@smhi.se), where requests for data and other material can be made.