

# Rossby Centre Newsletter

No 1 - 2007

April 2007

The Rossby Centre is the regional climate modelling research unit of the Swedish Meteorological and Hydrological Institute, SMHI. This Newsletter aims to provide useful information to stakeholders on climate change research and results of the Rossby Centre. The newsletter is published 2-4 times a year.

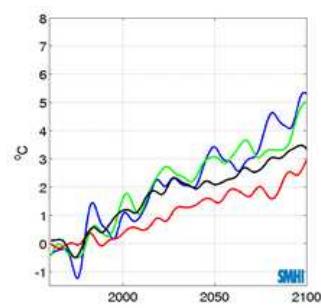
The following topics are covered in this Newsletter:

1. Swedish district analysis
2. Climate index maps available
3. Consequences of climate change for the energy sector
4. RCA users worldwide
5. Prudence – Climate Change special issue
6. DAMOCLES movie and exhibition
7. International Training course on Climate Change
8. IPCC – new Assessment Report 2007
9. Swedish seminar 24 April on IPCC WGII
10. New articles and reports from Rossby Centre

## 1. Swedish district analysis

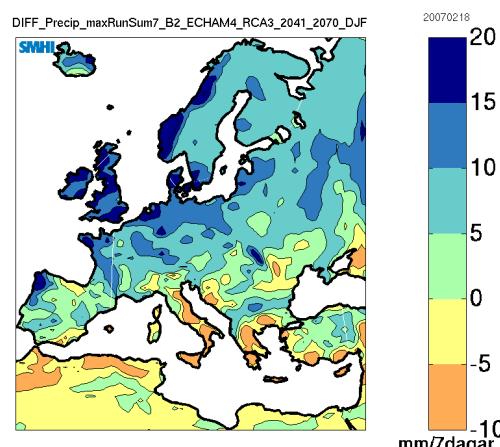
A new interactive web application has been launched. It presents a picture of what the possible future climate in Sweden may look like in terms of changes for different climate indices. Sweden is divided in 18 districts and the user can choose district and climate index of interest. The analysis is based on two climate scenarios covering the period 1961-2100 and the results are presented as tables or diagrams. Observations from two stations in each district for the period 1961-1990 are also available. The website is in Swedish.

[www.smhi.se/sgn0106/leveranser/sverigeanalysen](http://www.smhi.se/sgn0106/leveranser/sverigeanalysen)



An example of seasonal changes in temperature development from district 11.

## 2. Climate index maps available



An example of difference in maximum 7-day precipitation during winter (DJF) 2041-2070 compared to 1961-1990.

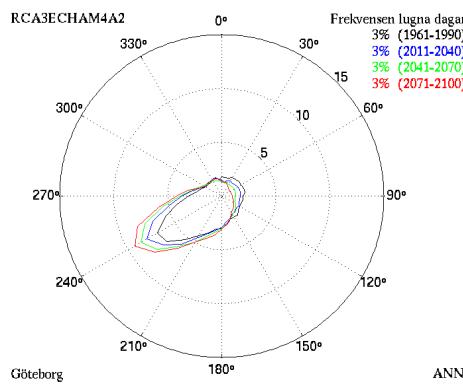
A large number of climate index maps have been produced as a support for the Committee of inquiry on Climate and Vulnerability. The material describes some projected changes in climate on the European and Scandinavian scale. The index calculations are based on simulations with the regional models RCA3 and RCAO driven by the global models ECHAM4/OPYC3 and HADAM3H with emissions scenarios SRES A2 and B2. The maps cover different 30-year periods from 1961 up to 2100.

The RCA3 has also been used to downscale the reanalysis ERA40 for the 1961-2005 period to provide climate index maps for recent climate.

The now updated maps are made available on the SMHI-web and the language is Swedish.

[www.smhi.se/sgn0106/leveranser/mallar.htm](http://www.smhi.se/sgn0106/leveranser/mallar.htm)

### 3. Consequences of climate change for the energy sector



Rossby Centre has supported the project "Possible consequences of climate change for the Swedish energy sector" sponsored by Elforsk. As climate basis for the project maps on selected climate indices was produced. A temperature study for three places in Sweden was made (see item 10.) A wind analysis for wind power was also presented. The climate maps are found at the web-address mentioned under item 2., together with percentiles of wind speed and wind direction diagrams. All in Swedish.

*An example of modelled annual frequencies of wind directions for the west coast of Sweden in thirty-year periods.*

### 4. RCA users worldwide

Rossby Centre Atmospheric model (RCA) is also used by other groups around the world. A

list of users from Argentina, Canada, Chile, Ireland and Spain is available:

[www.smhi.se/sgn0106/if/rc/rca\\_users.html](http://www.smhi.se/sgn0106/if/rc/rca_users.html)

### 5. Prudence – Climate Change special issue

PRUDENCE (Prediction of Regional scenarios and Uncertainties for Defining EuropeAN Climate change risks and Effects, see <http://prudence.dmi.dk>) was an EC 5th framework project in the program for energy, environment, and sustainable development that finished in 2004. The Rossby Centre took active part in PRUDENCE by contributing with four regional climate change simulations with

the coupled RCAO model system and subsequent work on interpreting the climate change scenarios. An elaborate investigation of the results of the PRUDENCE simulations has been undertaken and a large number of articles are now published in a special issue of Climatic Change. SMHI has written and contributed to seven articles that are all in press (see item 10.)

### 6. DAMOCLES movie and exhibition

The EU project DAMOCLES has published a movie and a mobile exhibition on Arctic climate change. As a part of DAMOCLES' outreach activities, both are targeted at a general audience. The movie can be seen at: [http://polarfoundation.org/index.php?/damocles\\_exhibitions\\_introductory\\_film&s=no&puid=596&uid=551&lg=en](http://polarfoundation.org/index.php?/damocles_exhibitions_introductory_film&s=no&puid=596&uid=551&lg=en)

The mobile exhibition can be requested by museums and other interested bodies. A glimpse of the exhibition is given at:

[http://polarfoundation.org/index.php?s=5&rs=home&fnct=upcoming&uid=596&lg=en#related\\_8](http://polarfoundation.org/index.php?s=5&rs=home&fnct=upcoming&uid=596&lg=en#related_8)

DAMOCLES is an integrated research project focussing on processes behind the recent reduction of Arctic sea ice. DAMOCLES is coordinated by UPMC (Paris), Rossby Centre/SMHI and met.no (Oslo).



### 7. International training course on climate change

Sida, the Swedish International Development Cooperation Agency, offers advanced international training programmes of strategic importance. "The Climate Change – Mitigation

and Adaptation" is a recently started course, organized by SMHI, with 23 participants from 19 countries. The group spent four weeks in Sweden and is now preparing individual

projects at home. The course will finish with regional seminars. Rossby Centre participates

with lectures, exercises and guidance. For questions: [climate2007@smhi.se](mailto:climate2007@smhi.se)

## 8. IPCC –new Assessment Report

Intergovernmental Panel on Climate Change, IPCC, is finalizing its Fourth Assessment Report (AR4). The three Working Groups present and make available short summaries of their respective reports during spring. The first, The Physical Science Basis, was presented in February. The second report, launched in April, introduces up-dated knowledge on Climate Change Impacts,

Adaptation and Vulnerability. The Summaries for Policymakers (SPM) are available from the IPCC website: [www.ipcc.ch](http://www.ipcc.ch). The full reports will be made available in summer 2007.

A Swedish translation of SPM from Working Group I and further information on IPCC is available from [www.naturvardsverket.se](http://www.naturvardsverket.se).

## 9. Swedish seminar 24 April on IPCC WG II

A climate seminar based on the findings of IPCC Working group II will take place in Stockholm on 24 April. Presentations from climate scientists and other experts as well as discussions on adaptation in Sweden is on the

programme. The seminar is fully booked but information about the seminar is found at: <http://www.naturvardsverket.se/Nedre-menyn/Aktuellt/Kalendarium/Seminarium-om-FNs-andra-delrapport-om-klimatet/>

## 10. New articles from Rossby Centre

Christensen, J.H., Carter, T.R., Rummukainen M., and Amanatidis, G. 2007. Evaluating the performance and utility of climate models: the PRUDENCE project. *Climatic Change*, Vol 81. doi: 10.1007/s10584-006-9211-6.

Déqué, M., Rowell, D.P., Lüthi, D., Giorgi, F., Christensen, J.H., Rockel, B., Jacob, D., Kjellström, E., de Castro, M. and van den Hurk, B. 2007. An intercomparison of regional climate simulations for Europe: assessing uncertainties in model projections. *Climatic Change*, Vol. 81. doi: 10.1007/s10584-006-9228-x.

Graham, L.P., Hagemann, S., Jaun, S. and Beniston, M. 2007. On interpreting hydrological change from regional climate models. *Climatic Change*, Vol. 81. doi: 10.1007/s10584-006-9217-0.

Graham, L.P., Andréasson, J. and Carlsson, B. 2007. Assessing climate change impacts on hydrology from an ensemble of regional climate models, model scales and linking methods - a case study on the Lule River Basin. *Climatic Change*, Vol. 81. doi: 10.1007/s10584-006-9215-2.

Jacob, D., Bärring, L., Christensen, O.B., Christensen, J.H., de Castro, M., Déqué, M., Giorgi, F., Hagemann, S., Hirschi, M., Jones, R., Kjellström, E., Lenderink, G., Rockel, B., Sánchez, E., Schär, C., Seneviratne, S.I., Somot, S., van Ulden A. and van den Hurk, B. 2007. An intercomparison of regional climate models for Europe: Design of the experiments and model performance. *Climatic Change*, Vol. 81. doi: 10.1007/s10584-006-9213-4.

Kjellström, E., and Ruosteenoja, K. 2007. Present-day and future precipitation in the Baltic Sea region as simulated in a suite of regional climate models. *Climatic Change*, Vol. 81. doi: 10.1007/s10584-006-9219-y.

Kjellström, E., Bärring, L., Jacob, D., Jones, R., Lenderink, G and Schär, C. 2007. Modelling daily temperature extremes: Recent climate and future changes over Europe. *Climatic Change*, Vol. 81. doi: 10.1007/s10584-006-9220-5.

## 11. New report from Rossby Centre

Persson, G., Strandberg, G., Bärring, L., and Kjellström, E. 2007. Beräknade temperaturförhållanden för tre platser i Sverige – perioderna 1961-1990 och 2011-2040. *SMHI Meteorologi* Nr 124.

[http://www.smhi.se/sgn0106/if/biblioteket/rapporter\\_pdf/meteorologi\\_124.pdf](http://www.smhi.se/sgn0106/if/biblioteket/rapporter_pdf/meteorologi_124.pdf)



### General information

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 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 mainly in English and are found via [www.smhi.se](http://www.smhi.se) (Click on "Forskning"/"Research" at the top of the

page and thereafter at the Rossby Centre link in the left panel.)

The Rossby Centre newsletter is sent as an email blind copy to those who wish to receive a text version. The full version is reached via the Rossby Centre homepages under "Newsletter".

Comments and suggestions as to the scope, content and forms of the newsletter are welcome. Feedback can be provided via [rossby.data@smhi.se](mailto:rossby.data@smhi.se).