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ALARO in climate simulations

Motivation

- Regional Climate models are approaching 10 km resolution.
- Need for even higher resolution towards "cloud resolving".
- HARMONIE is part of the SMHI modeling strategy.
- HARMONIE is a flexible tool.

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Initial work

- Monthly restarts
- Update Sea Surface Temperature (SST)
- SURFEX
- ERA Interim

New high-resolution climate model

Europe_6_25km
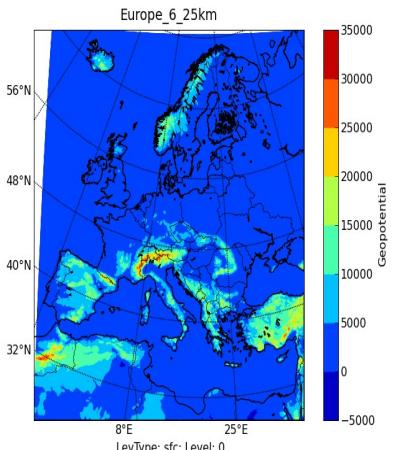
Resolution: 6,25 km
Time step: 5 min
Period: 1998-2007
Cycle: 36h1
Forcing: ERA Interim

Evaluation, validation
and soon 30-year
simulations.

Europe_15km
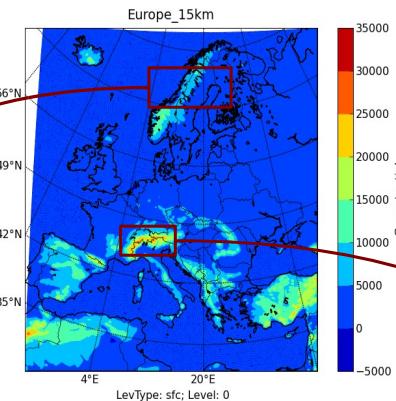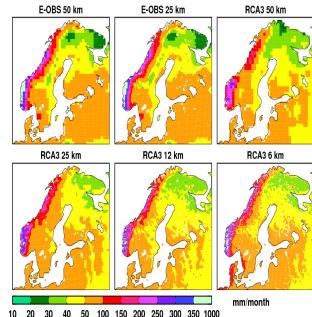
Resolution: 15 km
Time step: 6 min
Periond: 1998-2002
Forcing: ERA Interim

Northern Scandinavia   Alpine region
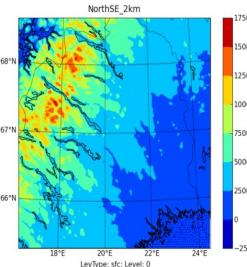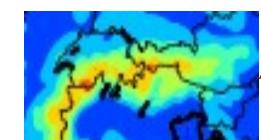
Resolution: 2km
Time step: 1min
Physics: AROME

First results

2 meter temperature seasons 1998-2002
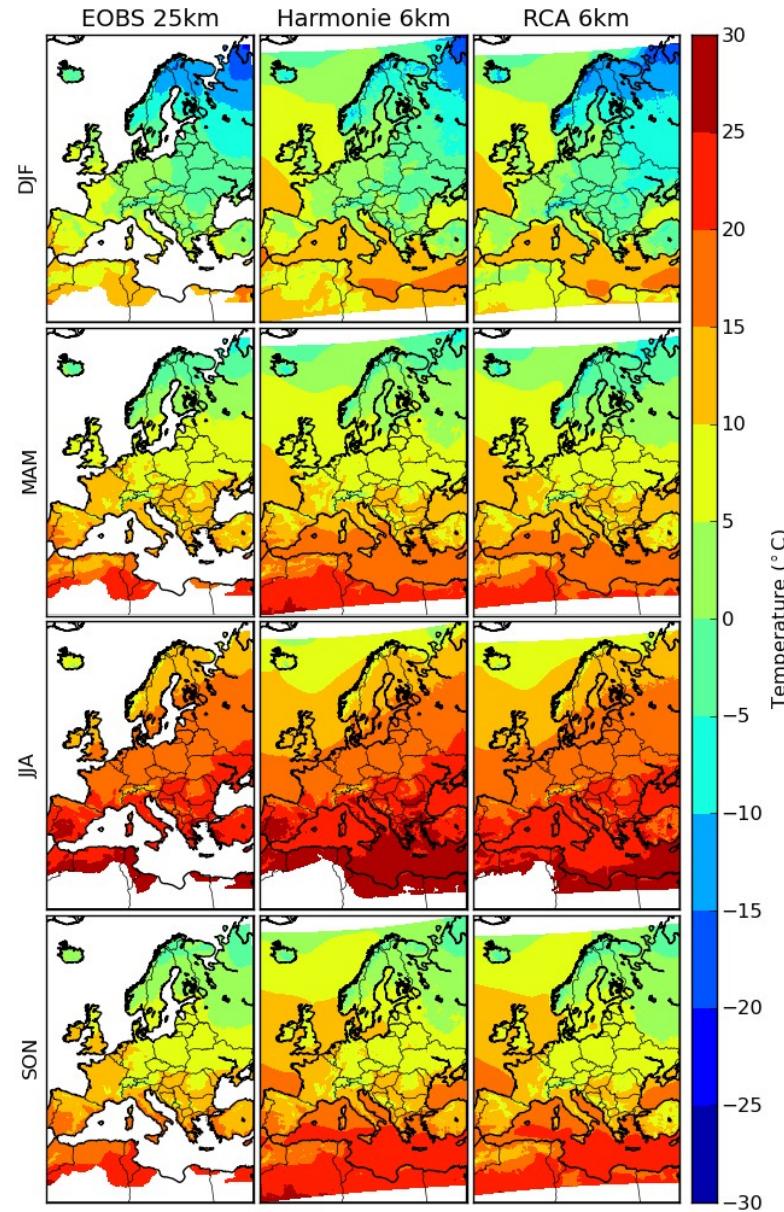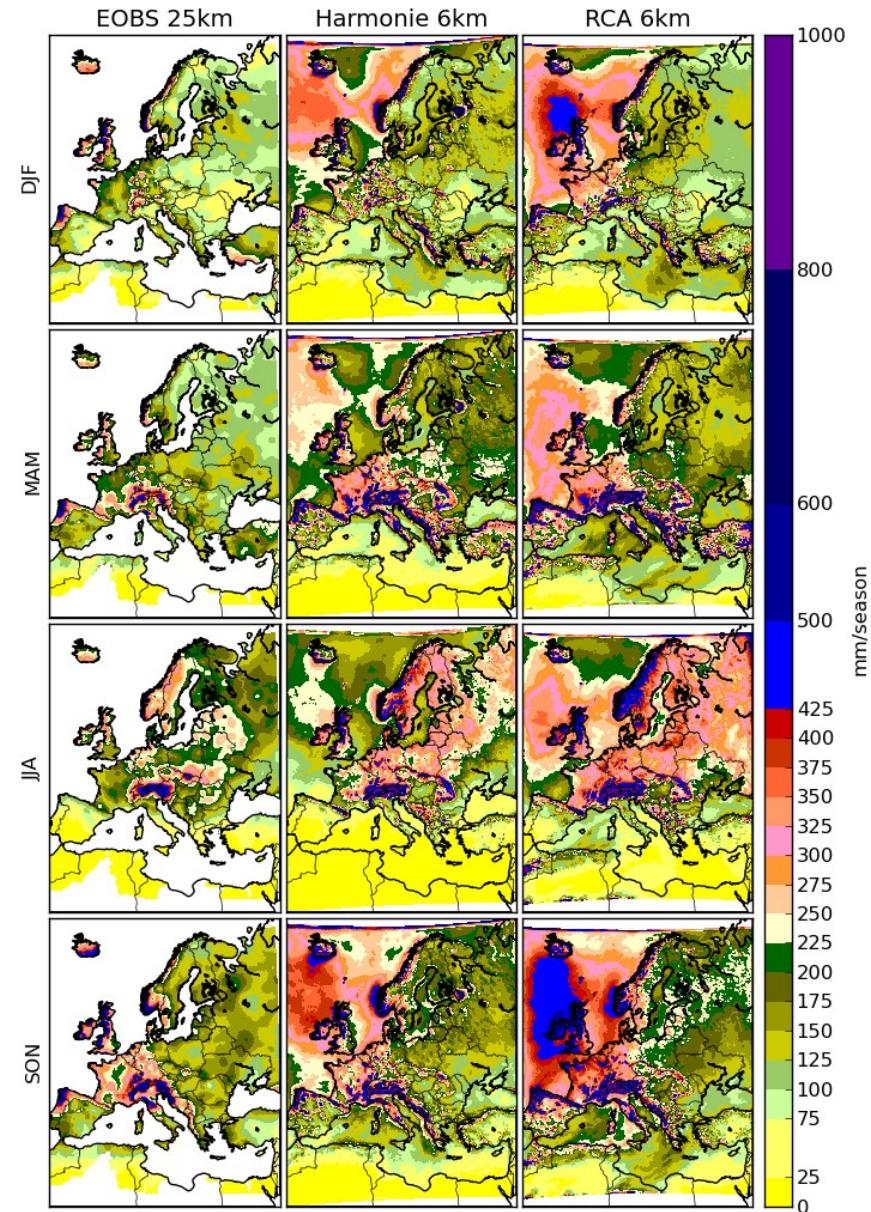
Precipitation seasons 1998-2002

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**2 meter temperature seasons 1998-2002**

Precipitation seasons 1998-2002

![SMHI]
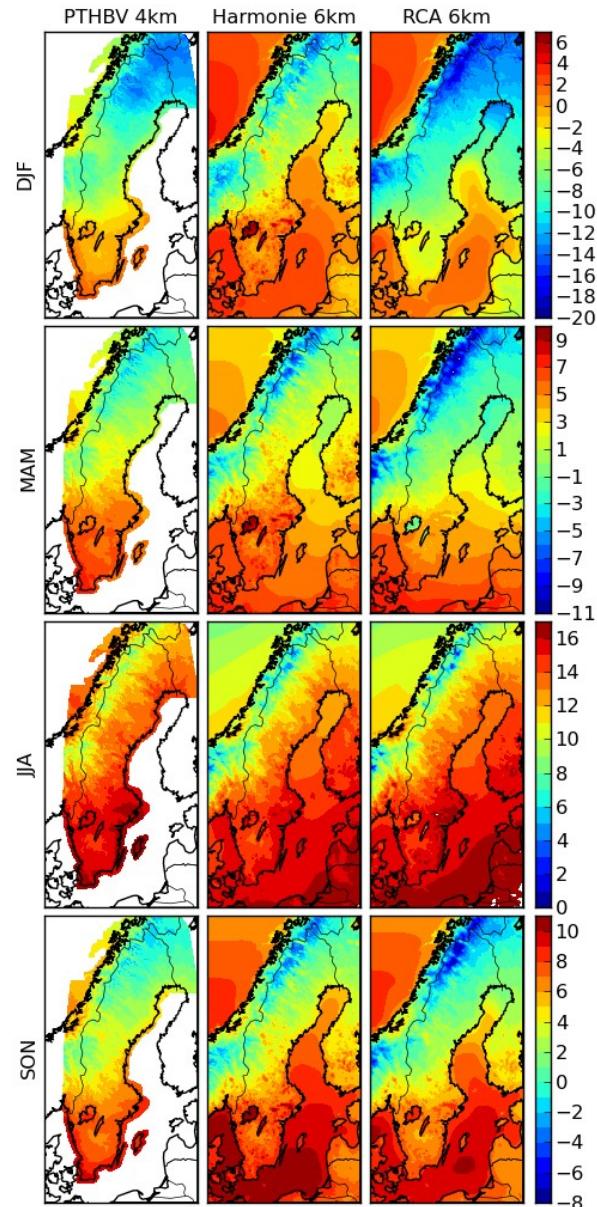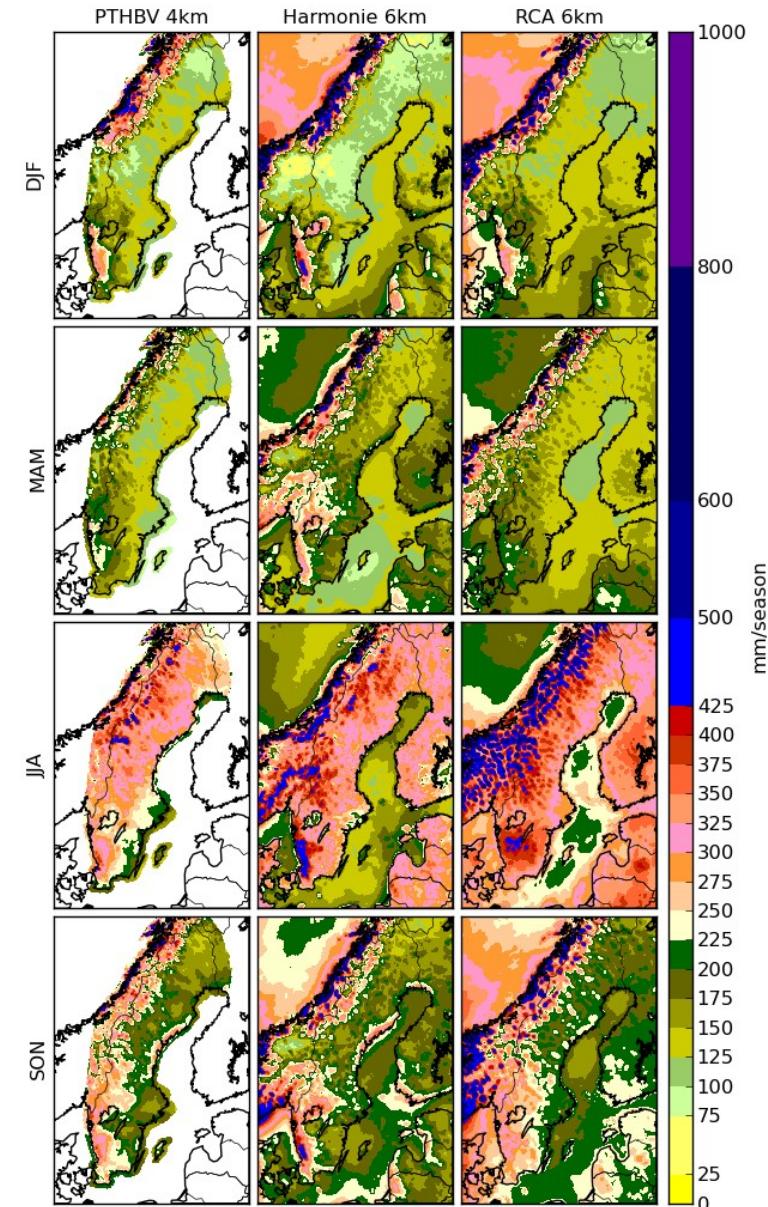
2 meter Temperature (1998-2002)

HARM - CRU

HARM :2m - CRJ31 t2m

RCA - CRU

RCAS t2mspan_i - CRJ31 t2m
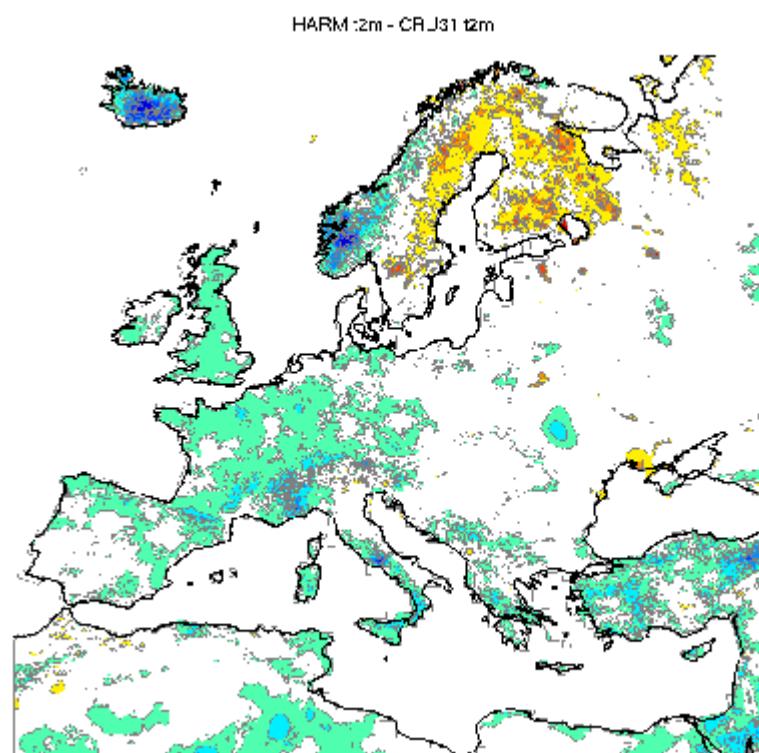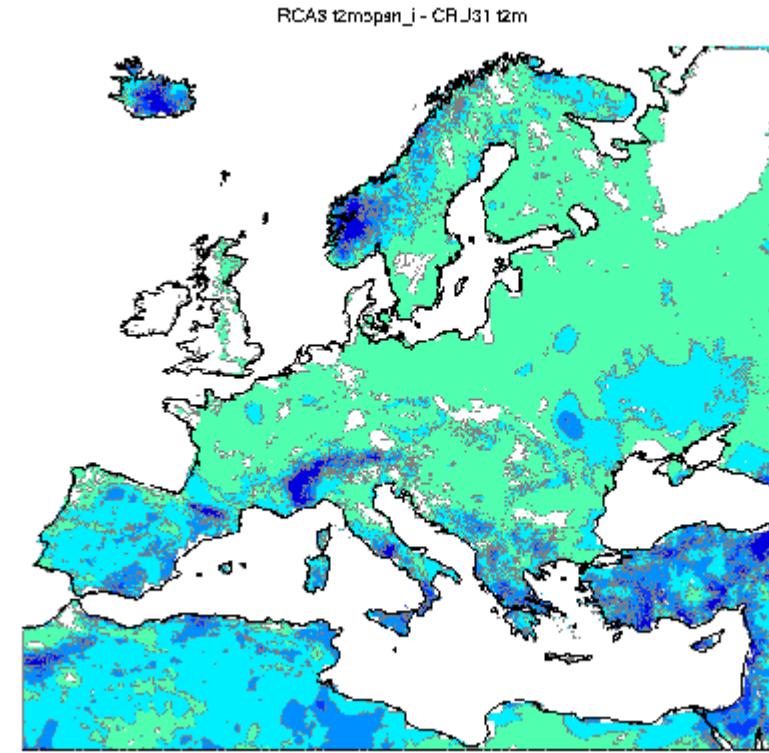
Averaging period: Jan to Dec
Units in degrees Celsius

Precipitation (1998-2002)


HARM - GPCP
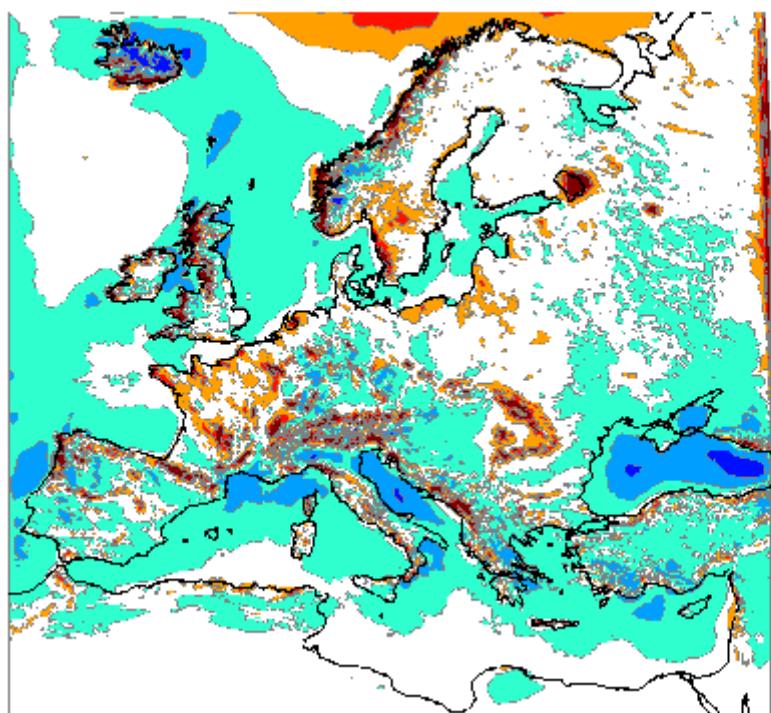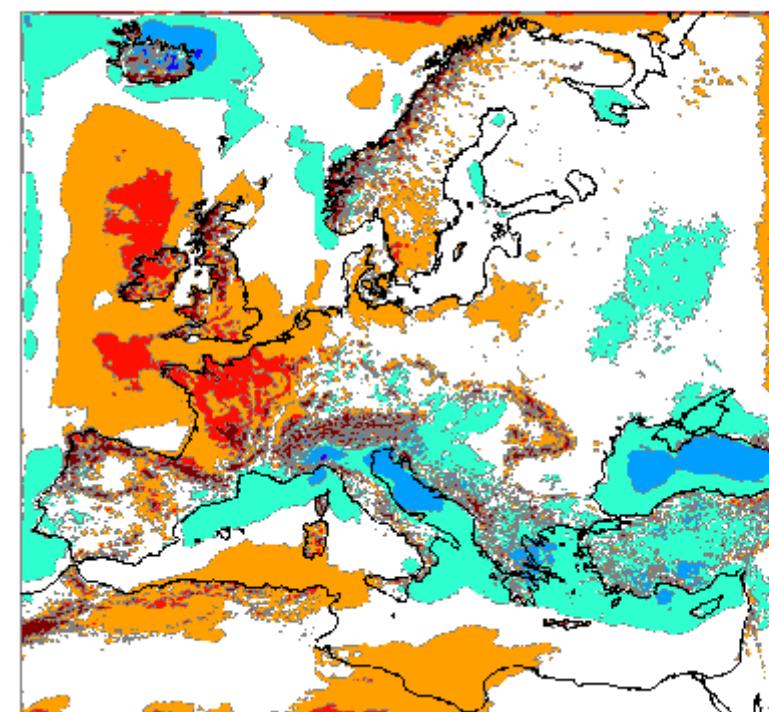
RCA - GPCP

Averaging period: Jan to Dec
Units in mm/month

Climate regions
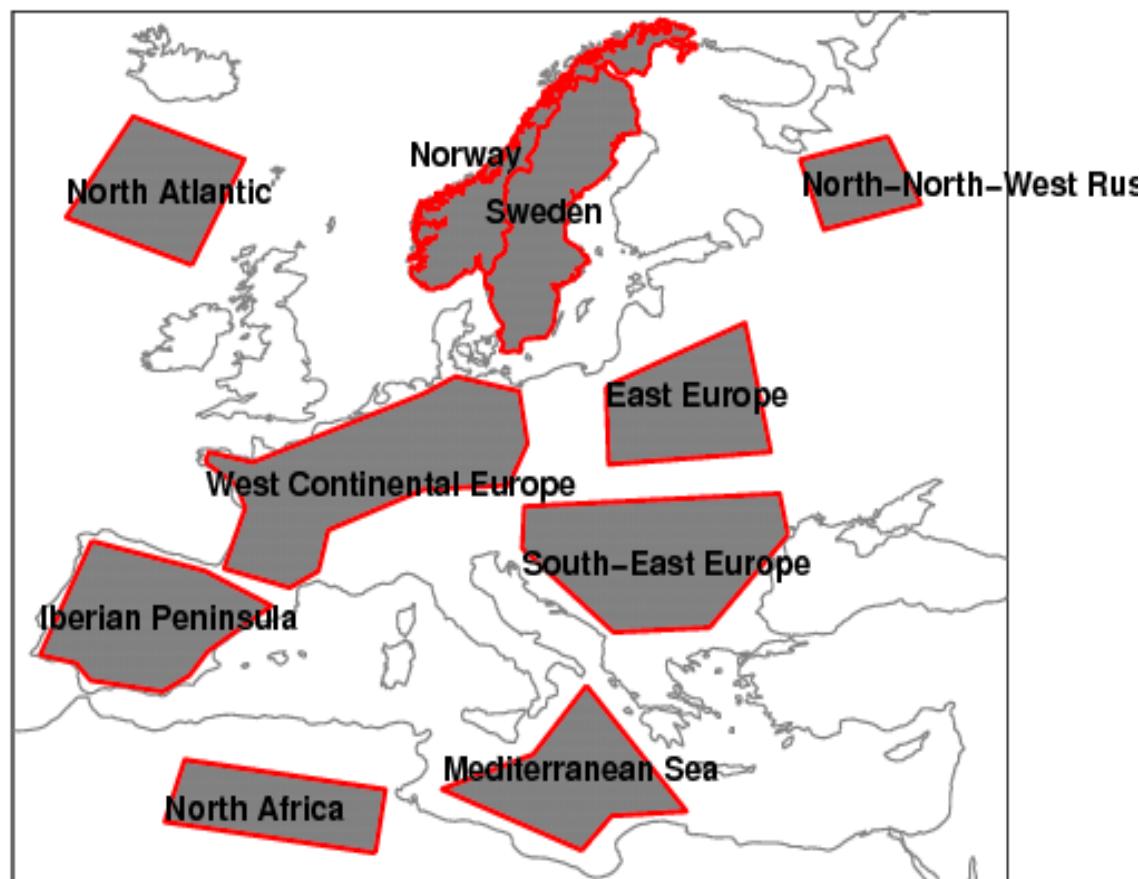
Temperature for Sweden
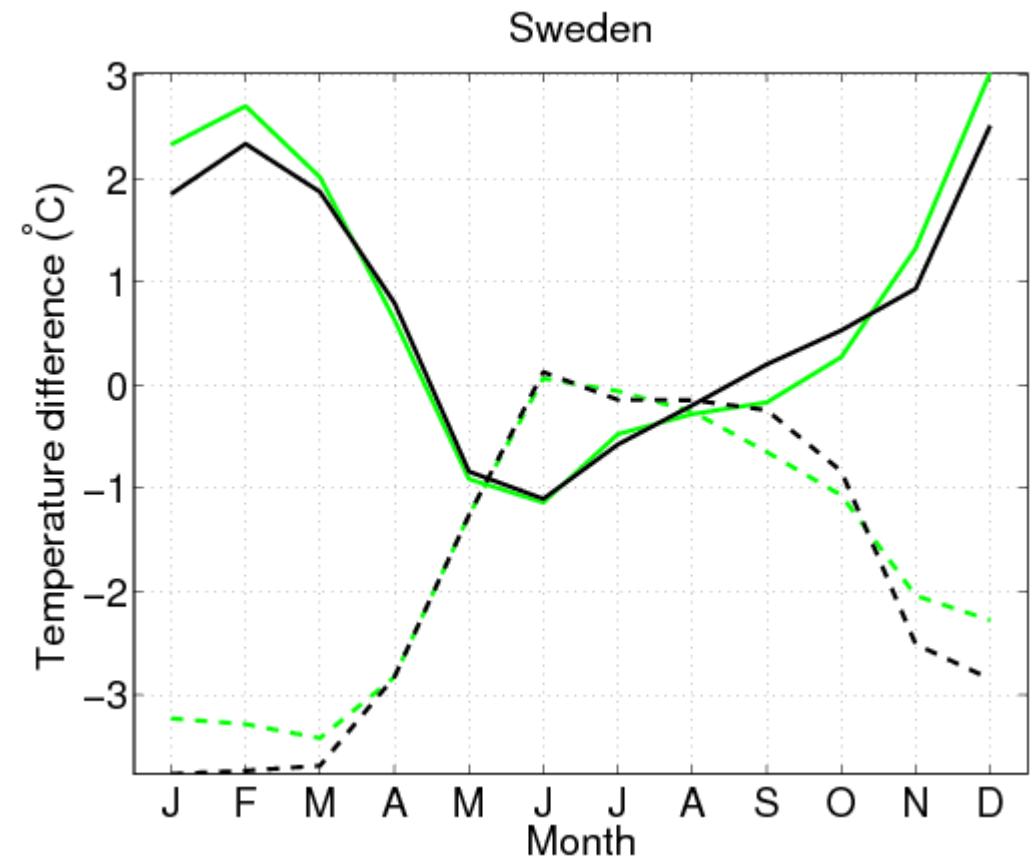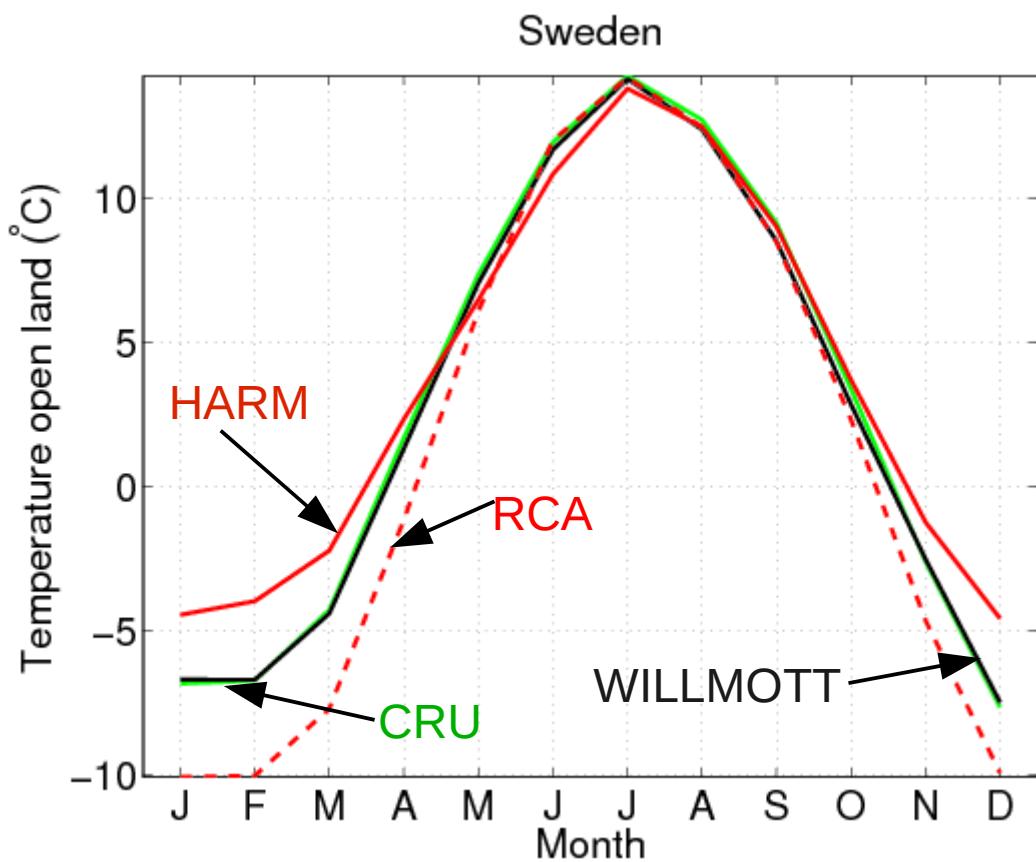
HARMONIE – CRU, RCA – CRU
HARMONIE – WILLMOTT, RCA - WILLMOTT

Precipitation for Sweden
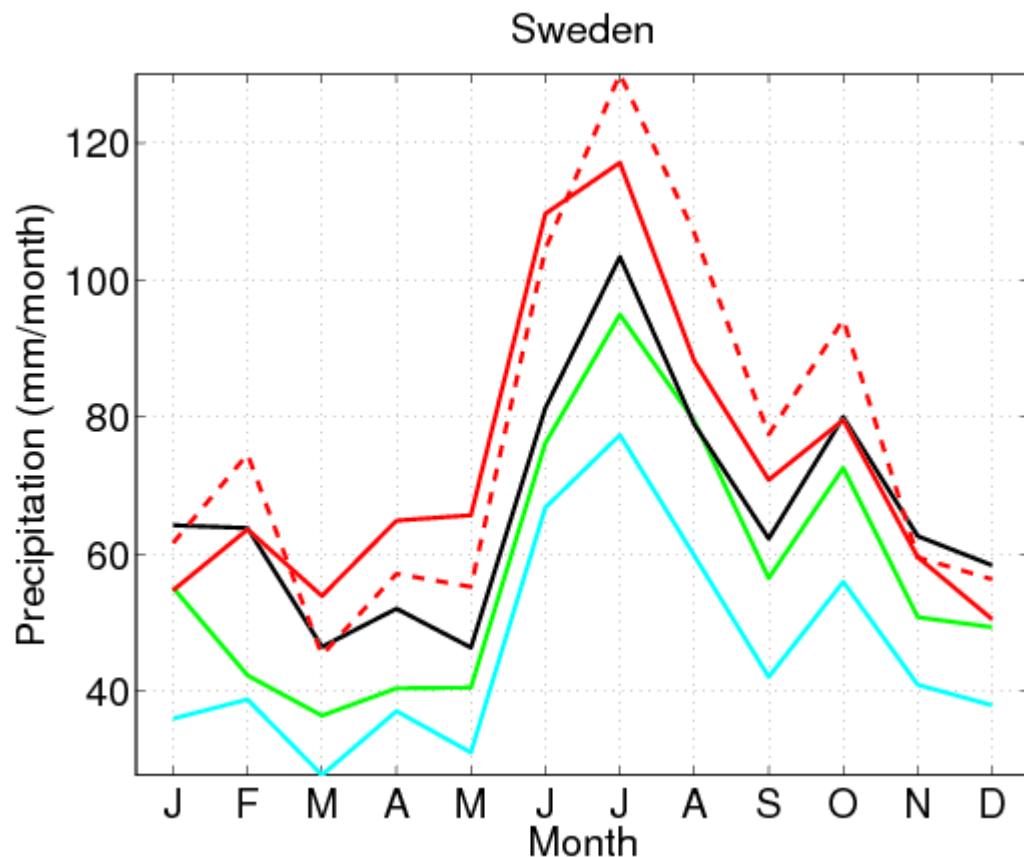
GPCP WILLMOTT CRU

HARMONIE RCA
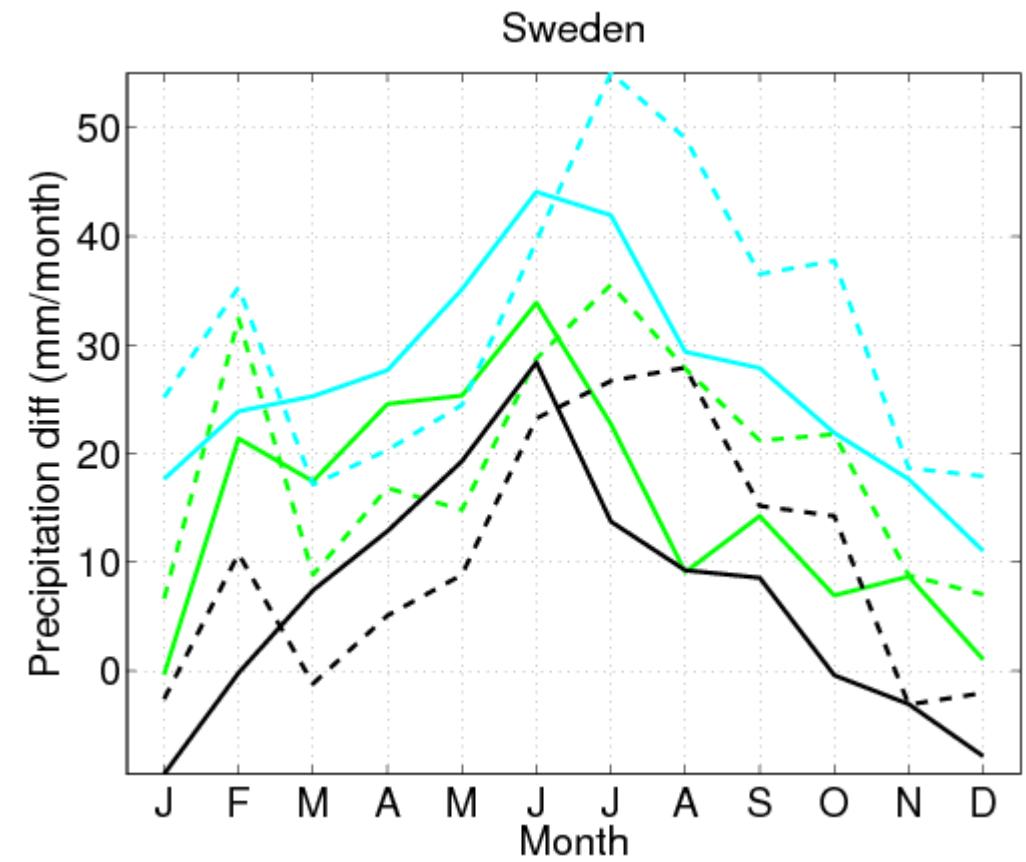
HARMONIE – CRU, RCA – CRU
HARMONIE – GPCP, RCA – GPCP
HARMONIE – WILLMOTT, RCA - WILLMOTT

Physics in RCA3
(Kjellström et al. 2005)
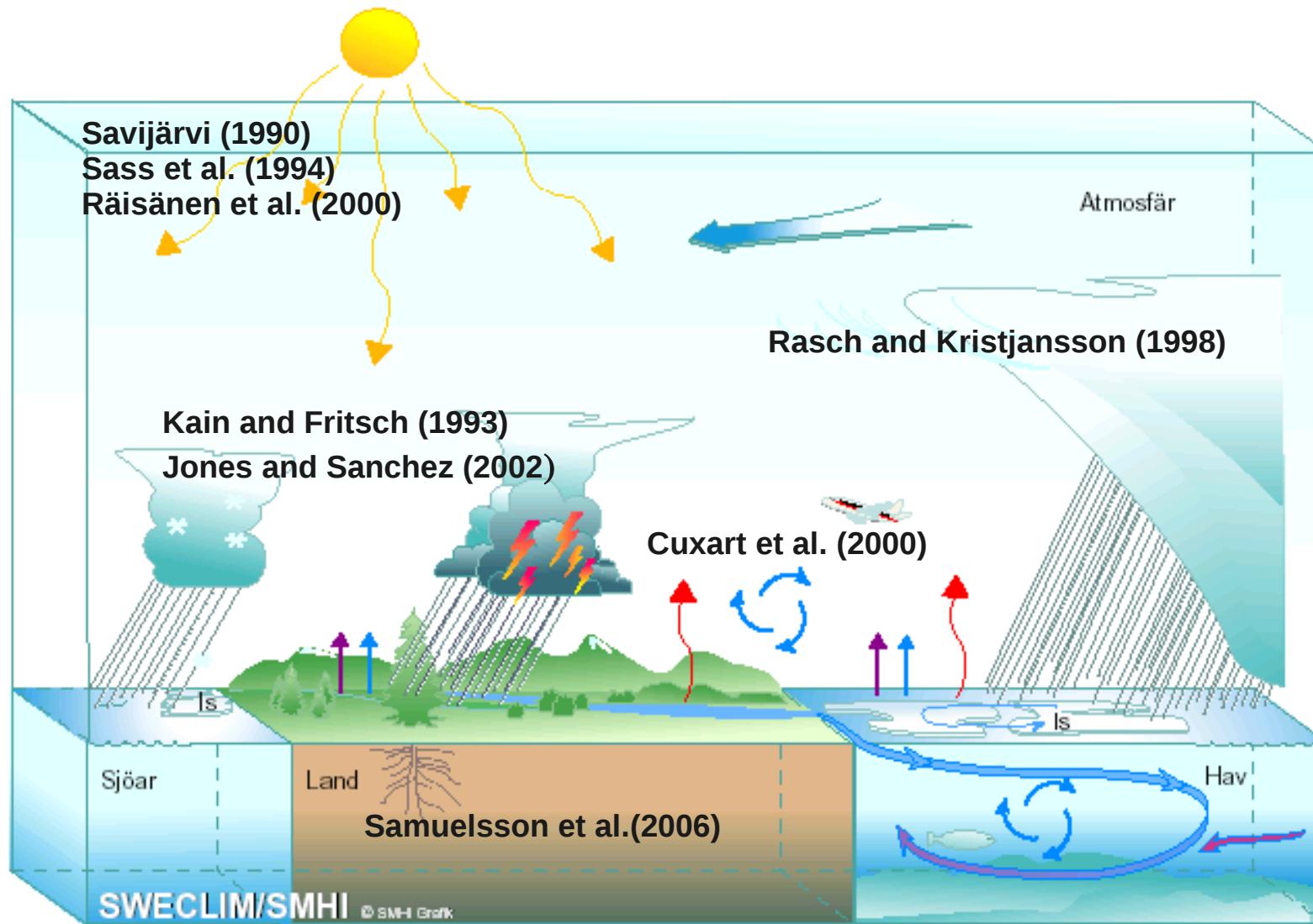
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Future plans

- Climate settings
- Longer integrations
- Scenarios
- EC-Earth as driving model
- Downscale ALARO with AROME
- Ocean model NEMO

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Thanks!

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Namelist settings

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