

Regional Climate: COordinated Regional Downscaling EXperiment (CORDEX)

Michel Déqué, Météo-France
Filippo Giorgi, ICTP

CORDEX

- Modeling framework designed to:
 - Evaluate and improve RCD models and techniques
 - Provide a coordinated set of RCD-based projections/predictions for regions worldwide
 - Facilitate the involvement of the research community from developing countries

CORDEX Phase I experiment design

Model Evaluation
Framework

Climate Projection
Framework

AMIP
like

Multiple regions (Initial focus on Africa)
50 km grid spacing

CMIP
like

ERA-Interim LBC
1989-2007

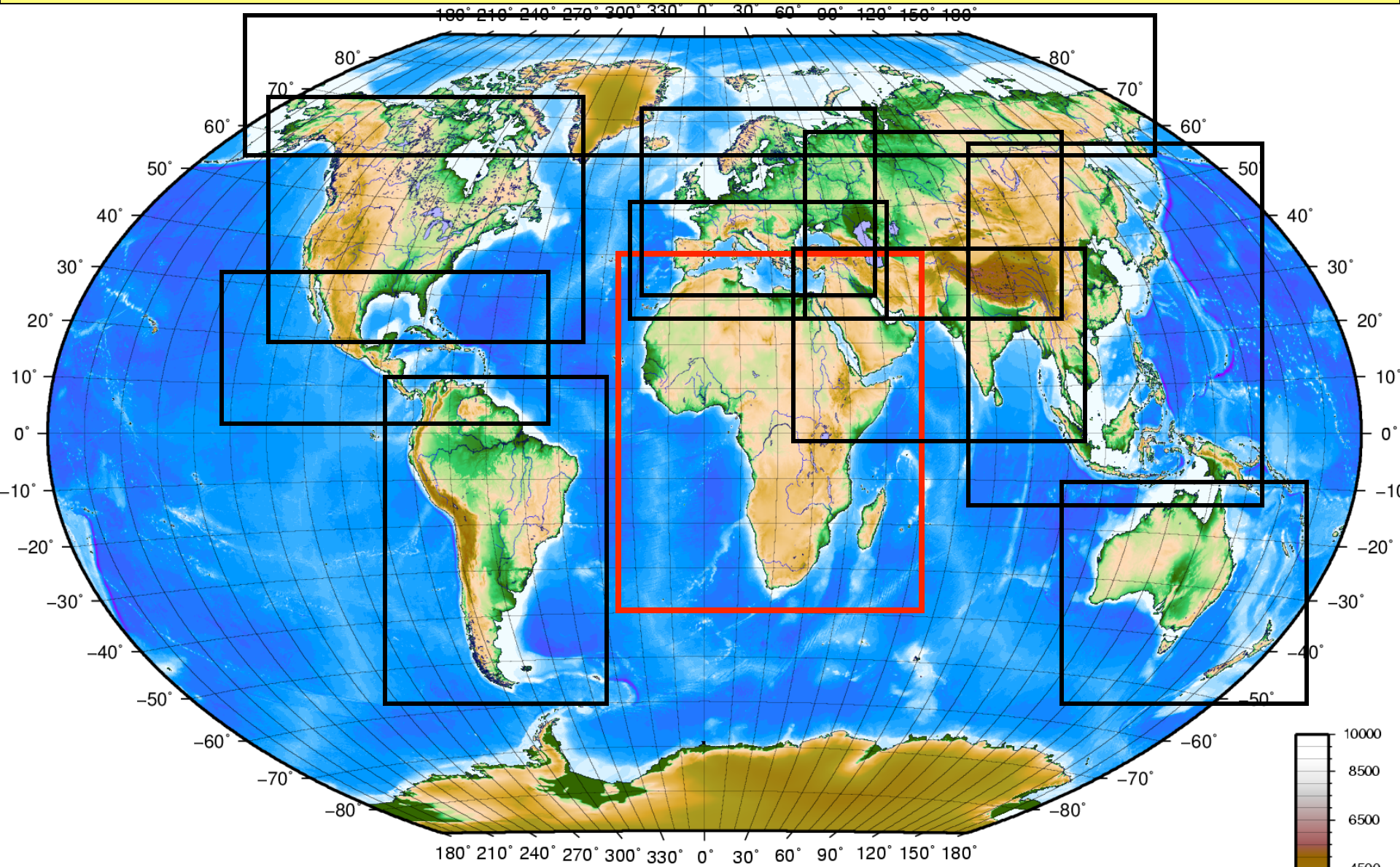
RCP4.5, RCP8.5
1951-2100 or 1980-2050

Decadal predictions
1980-2010, 1990-2000, 2005-2035

Regional Analysis
Regional Databanks

Multiple AOGCMs

CORDEX domains



CORDEX: Recent Progress

- Numerous CORDEX presentations at major meetings
 - EGU RCM session still largest in the CL area (87 abstracts)
 - Regional modeling session at AGU
- CORDEX meetings/workshops organized
 - Med-CORDEX: Toulouse, France, 28-30 March 2012
 - Euro-Cordex: Hamburg, Germany, November 2011
 - EA-Cordex: Jeju, Korea, 22-23 September 2011
 - SA-Cordex: Pune, India, 25-26 February 2012, 17-20 October 2012
- Many groups completing (ensembles of) simulations over various domains
- Papers appearing with explicit use of CORDEX framework (JC, CD, JGR, CR, CC etc.)

Regional activities

Africa - CORDEX

- Africa diagnostic team/metrics formed under the leadership of B. Hewitson (UCT)
 - Sponsorship by START, WCRP, SMHI, ICTP
 - Meeting in Cape Town, April 2010
 - Training workshop in Trieste, March 2011
 - Training workshop in Cape Town, November 2011
 - Paper writing workshop in Trieste, April 2012
(three papers produced)
- 10 groups completed the first ERA-Interim driven runs (J. Climate paper)
- 14 groups completing different scenario runs

ERA-interim simulations

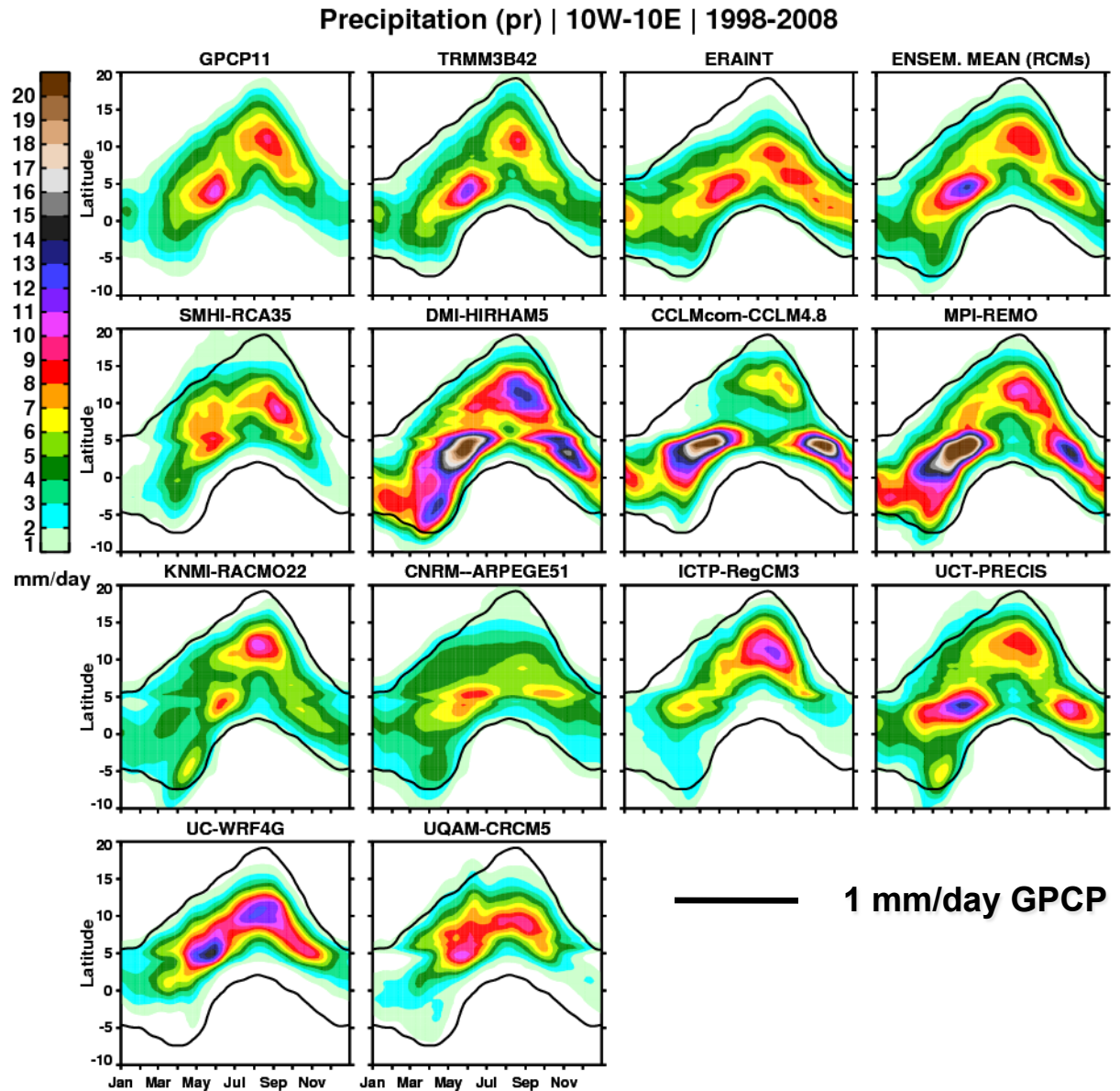
Nikulin et al., J. Clim, 2012

HIRHAM5	(DMI, Denmark)
CCLM48	(CCLMcom consortium)
REMO	(MPI, Germany)
RACMO22	(KNMI, Netherlands)
ARPEGE51	(CNRM, France)
RegCM3	(ICTP, Italy)
PRECIS	(University of Cape Town, South Africa)
WRF311	(University of Cantabria, Spain)
MM5	(University of Murcia, Spain)
CRCM5	(Université du Québec à Montréal, Canada)

Annual cycle (10W-10E)

All RCMs produce a version of the WAM onset with different degree of distortion

Ensemble mean corrects individual biases



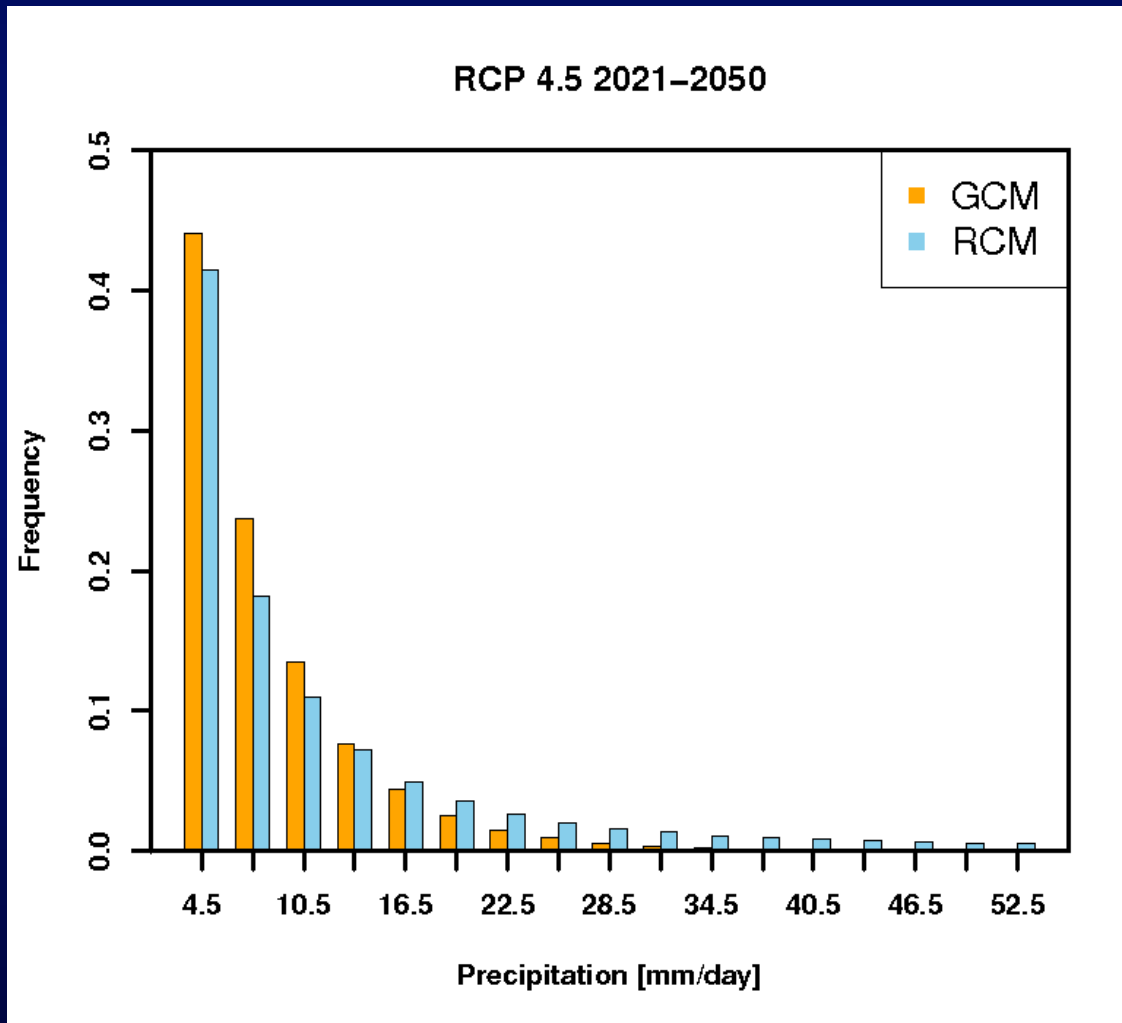
Regional activities

Euro-CORDEX

- Coordinator: A. Gobiet (U. Graz)
- <http://www.euro-cordex.net>
- 22 modeling groups participating
- Meetings in January 2013 (Hamburg) and April 2013 (Vienna)
- Simulations completed or planned at 50 km and 12 km horizontal grid spacing
 - Publication accepted on Era interim runs
 - Publication submitted on high resolution scenario runs
- Data stored at DKRZ, SMHI, BADC, DMI

Pdf of daily precipitation in Germany

6 GCM (CMIP5) vs 8 RCMs (Eurocordex)

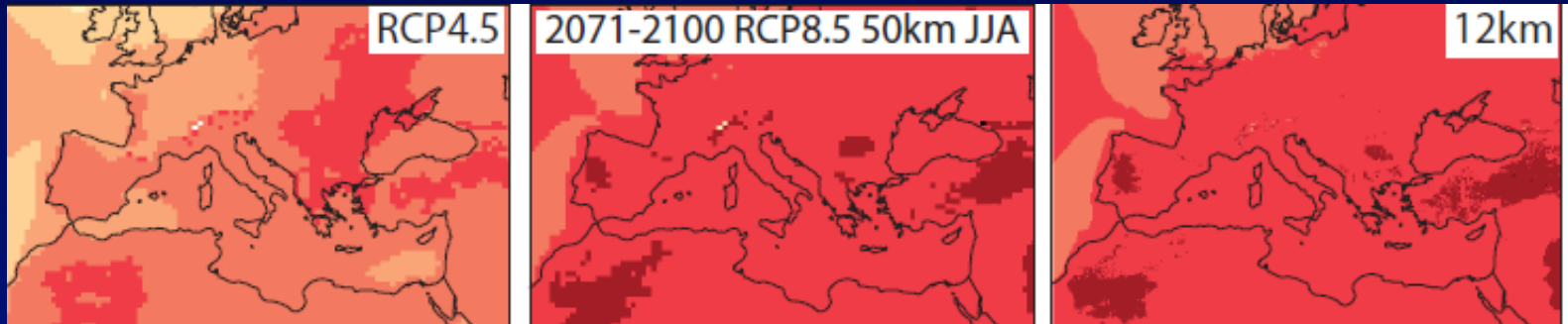
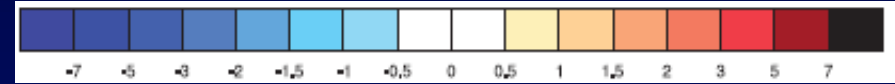


Regional activities

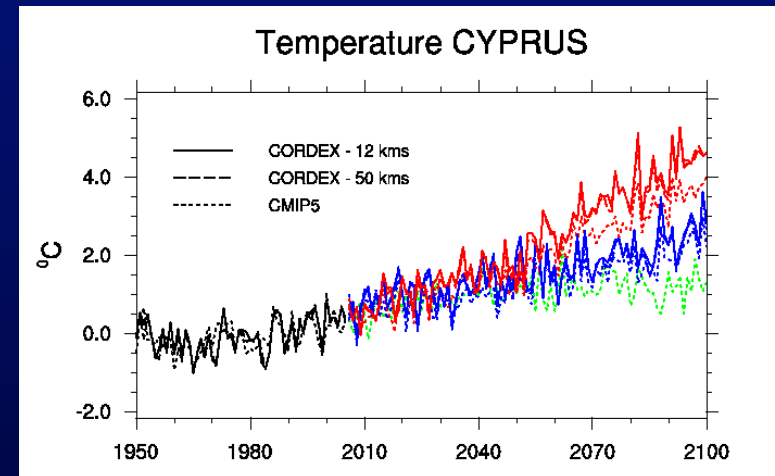
MED-CORDEX

- Coordinator: S. Somot (MeteoFrance), P. Ruti (ENEA)
- 11 modeling groups participating
- Meeting in March 2012 (Toulouse)
- Meeting in May 2012 (Split)
- Coupled A-O and A-only models
- Simulations under way or planned at 50 km, 25-30 km (coupled) and 12 km horizontal grid spacing
- Connections with HYMEX and MEDCLIVAR
- Data stored at ENEA

JJA temperature increase (ALADIN : CNRM-CM5)



Island temperature :
GCM vs RCM
RCP8.5 RCP4.5 RCP2.6



Regional activities

CORDEX – East Asia

- Coordinator: W.T. Kwon (KMA)
- 9 modeling groups participating
- Meeting in September 2011 (Jeju)
- Simulations under way or planned at 50 km and 12 km horizontal (for some sub-regions) grid spacing
- Data stored at KMA

Regional activities

CORDEX – South Asia

- Coordinator: K. Krishnan (IITN)
- 10 modeling groups participating
- Planning meeting in February 2012 (Pune) and training meeting in October 2012 (Pune)
- Simulations under way or planned at 50 km horizontal grid spacing
- Data stored at IITN

Regional activities

South America

- Coordinator: S. Solman (CIMA)
- Several modeling groups participating

North America

- Activities ongoing, mostly related to NARCCAP, but no formal CORDEX coordination

Central America - Australia

- Activities ongoing but no formal CORDEX coordination

Arctic

- Intercomparison project ongoing

Regional activities

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Change in the data management of CORDEX

- CORDEX data will be saved and distributed through the Earth System Grid (ESG) as for CMIP5
- The system will include a file/format compliancy checker prior to the data upload
- CORDEX nodes planned at BADC, DKRZ, DMI, SMHI, ENEA (MedCORDEX), UCT, IITN, KMA
- Current testing of the system by SMHI

New WCRP Working Group on Regional Climate (WGRC)

Replaces the Task Force on Regional Climate
Downscaling (TFRCDD)

- C. Goodess and B. Hewitson co-chairs (+13 members)
- First session 6-7 April 2013, Vienna
- Page <http://www.wcrp-climate.org/index.php/regional-climate>

CORDEX 2013 conference

- Venue and time: Brussels, 4-7 November 2013
- Two segments
 - Day 1: High level IPCC segment
 - Day 2-4: Scientific conference
- Expected attendance of about 250-300 participants
- Plenary + Poster sessions+ side focused meetings
- Co-sponsorship by the EU Com. and other agencies
- More than 450 abstracts received