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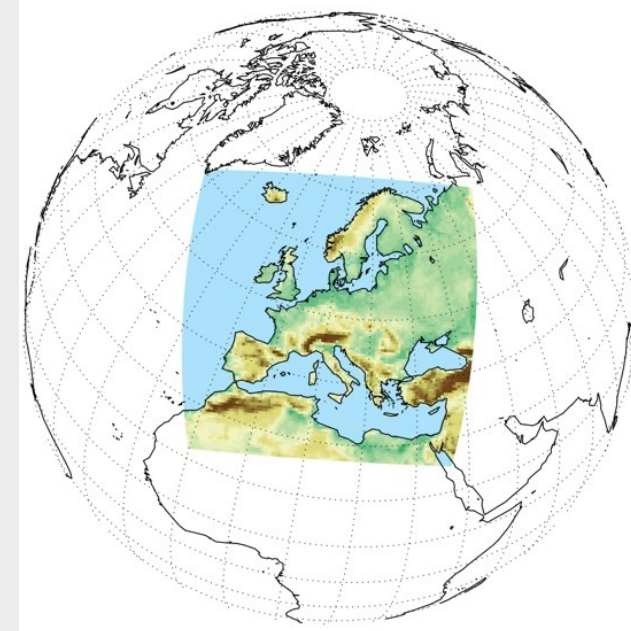
REMO simulations within the EURO-CORDEX effort

EURO-CORDEX within the CORDEX initiative

WCRP CORDEX

EURO-CORDEX is the European branch of the international CORDEX initiative, which is a program sponsored by the World Climate Research Program (WRCP) to organize an internationally coordinated framework to produce improved regional climate change projections for all land regions world-wide. The CORDEX-results will serve as input for climate change impact and adaptation studies within the timeline of the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) and beyond.

EURO-CORDEX will produce an ensemble of regional climate simulations for Europe, based on multiple dynamical and empirical-statistical regional climate downscaling (RCD) techniques forced by multiple global climate models (GCMs) from the Coupled Model Intercomparison Project Phase 5 (CMIP5).

EURO-CORDEX characteristics

• 26 participating regional modeling groups
• 10 Regional climate models (RCMs) (partly in different versions)
• Simulations:
 − Hindcast, ERA-Interim driven (15 simulations, 10 RCMs)
 − Control period (6 GCMs, 8 RCMs, 20 simulations)
 − RCPs: RCP2.6, RCP4.5, RCP8.5 (6 GCMs, 8 RCMs, 31 simulations)
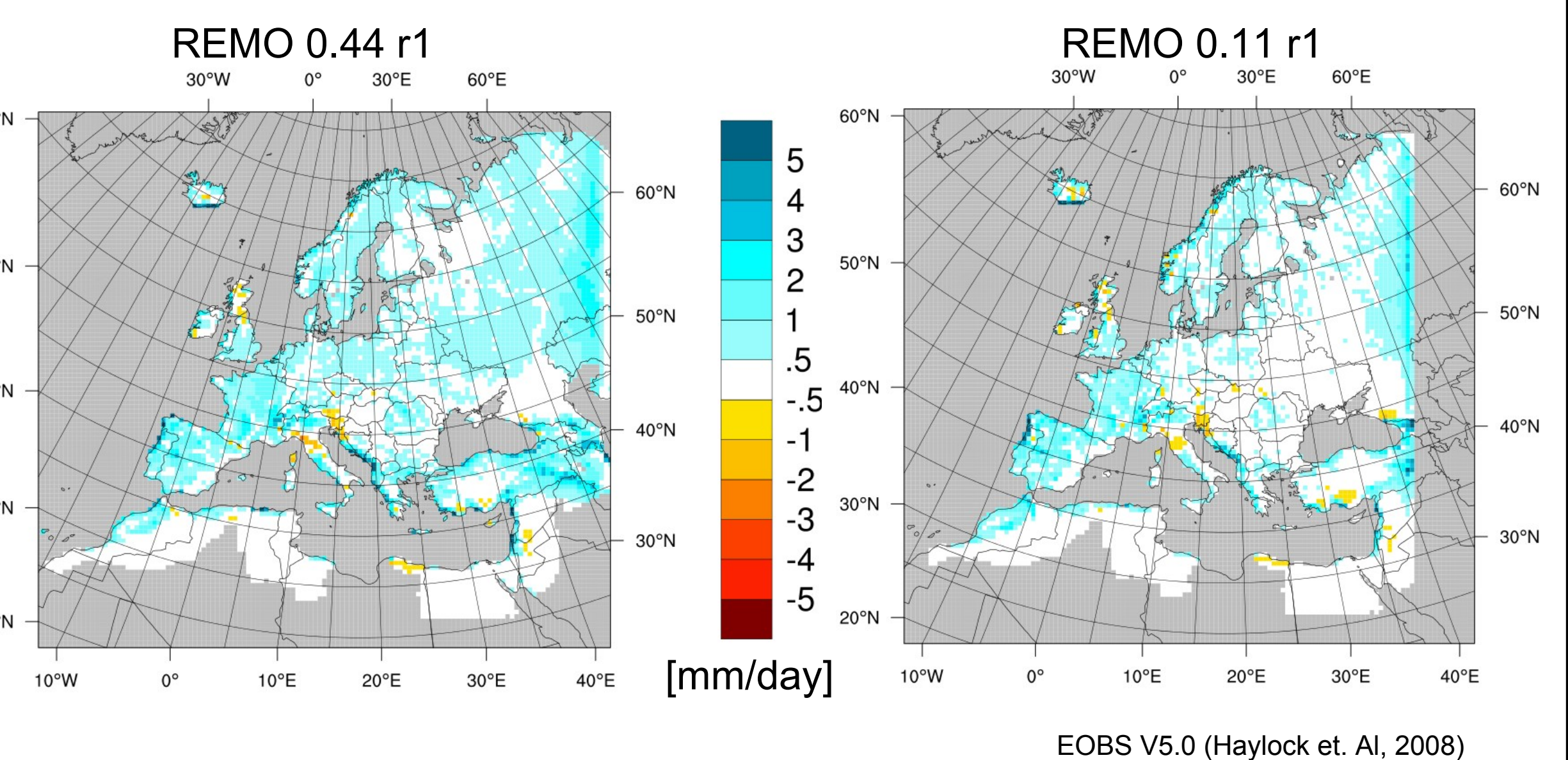• Voluntary effort, contributions are funded by the contributors

www.euro-cordex.net

EURO-CORDEX model domain

Orography of model domain (within the frame of CORDEX)

The orography of the REMO model domains downscaled within the frame of COordinated Regional climate Downscaling Experiment (CORDEX). The CORDEX-Europe (red border) region is downscaled at 0.44°x0.44° resolution in a first nesting step and as EURO-CORDEX domain at 0.11°x0.11° in a second nesting step.

Within the EURO-CORDEX effort a common domain is used for downscaling of reanalysis data and general circulation model data at 0.11°x0.11° resolution by different European research institutions.

Evaluation of the control period

Temperature differences in comparison with EOBS V5.0 (1950-2005)

REMO 0.44 r1   REMO 0.11 r1

[K]
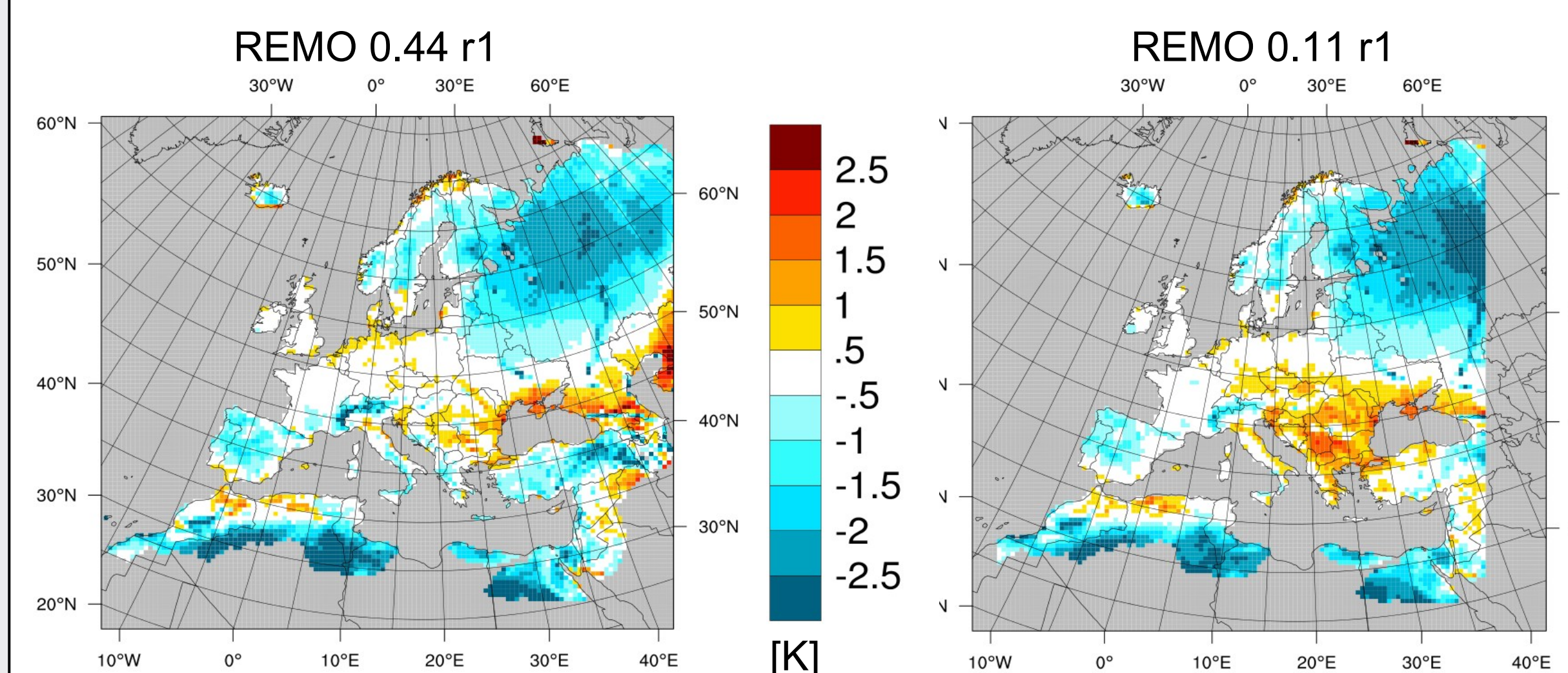
Precipitation differences in comparison to EOBS V5.0 (1950-2005)

REMO 0.44 r1   REMO 0.11 r1
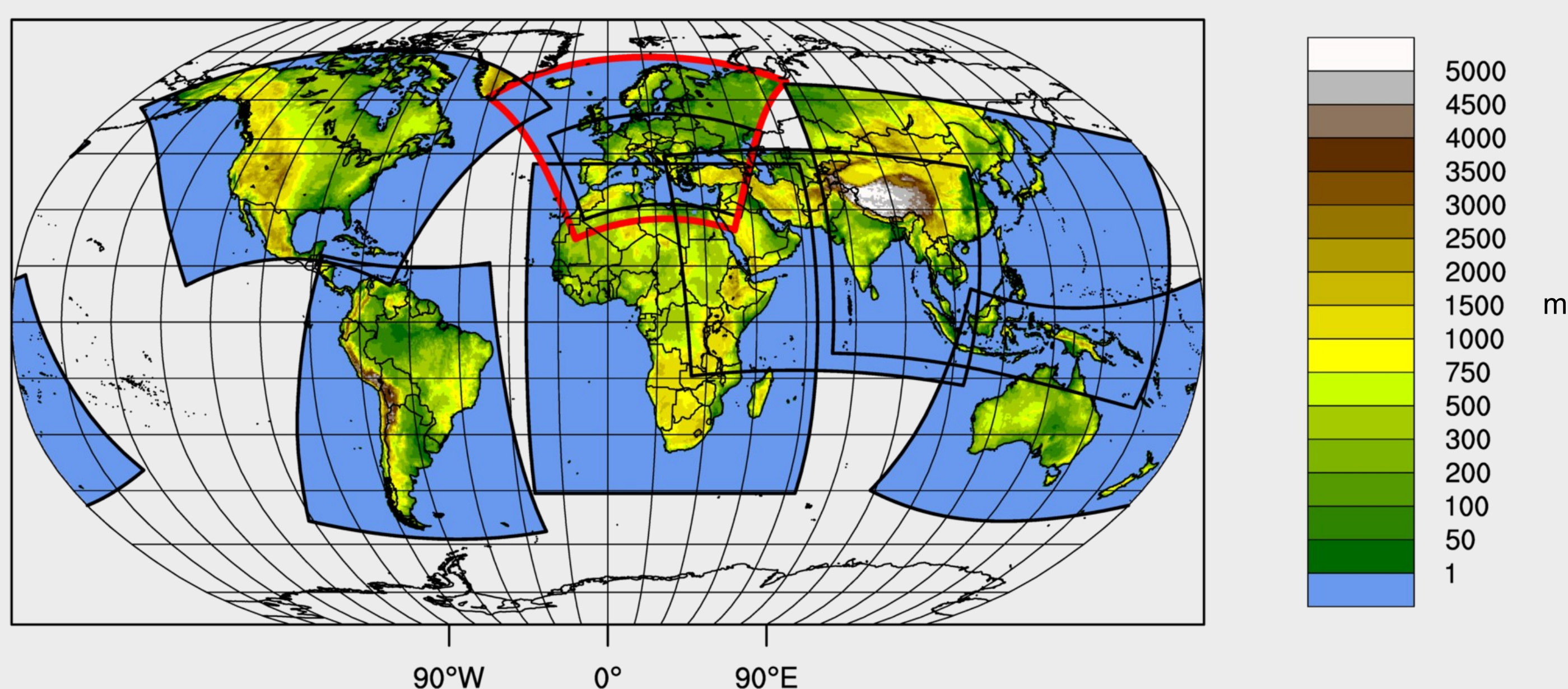
[mm/day]

EOBS V5.0 (Haylock et. Al, 2008)

• Higher temperature values in REMO 0.11° vs. REMO 0.44° mainly during summer months in Southern Europe; possibly due to changes in the local energy cycle.

• Improved precipitation in REMO 0.11° vs. REMO 0.44° during summer (compared to EOBS); possibly due to an improvement in the local water cycle and better representation of convective processes.

EURO-CORDEX simulations using REMO

• REMO forced with ERA-Interim (1989-2009)

• REMO forced with MPI-ESM_LR (r1,r2):
 − Historical (1950-2005)
 − RCP2.6 (2006-2100)
 − RCP4.5 (2006-2100)
 − RCP8.5 (2006-2100)
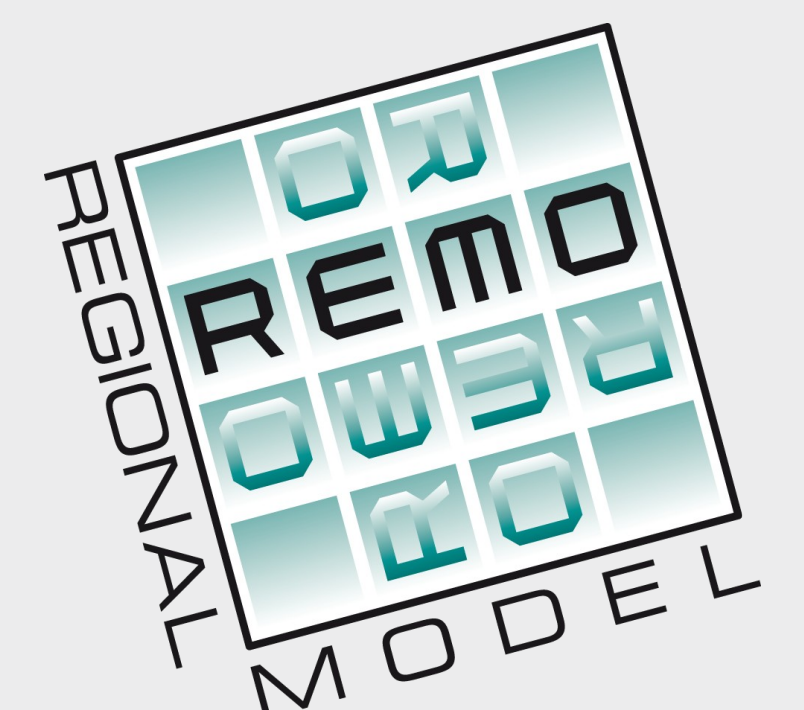
• A double nesting strategy is used: 0.11°x0.11° runs are nested into 0.44°x0.44° runs performed over the same time periods using boundary conditions of the same forcing dataset.

• Simulations are conducted under konsortial and CSC share.