News CLM-Community

Christian Steger

COSMO GM 2020
10 September 2020
Virtual meeting

Deutscher Wetterdienst
Wetter und Klima aus einer Hand

DWD

Outline:

1. CLM-Community issues

2. Status ICON-CLM

3. CORDEX activities
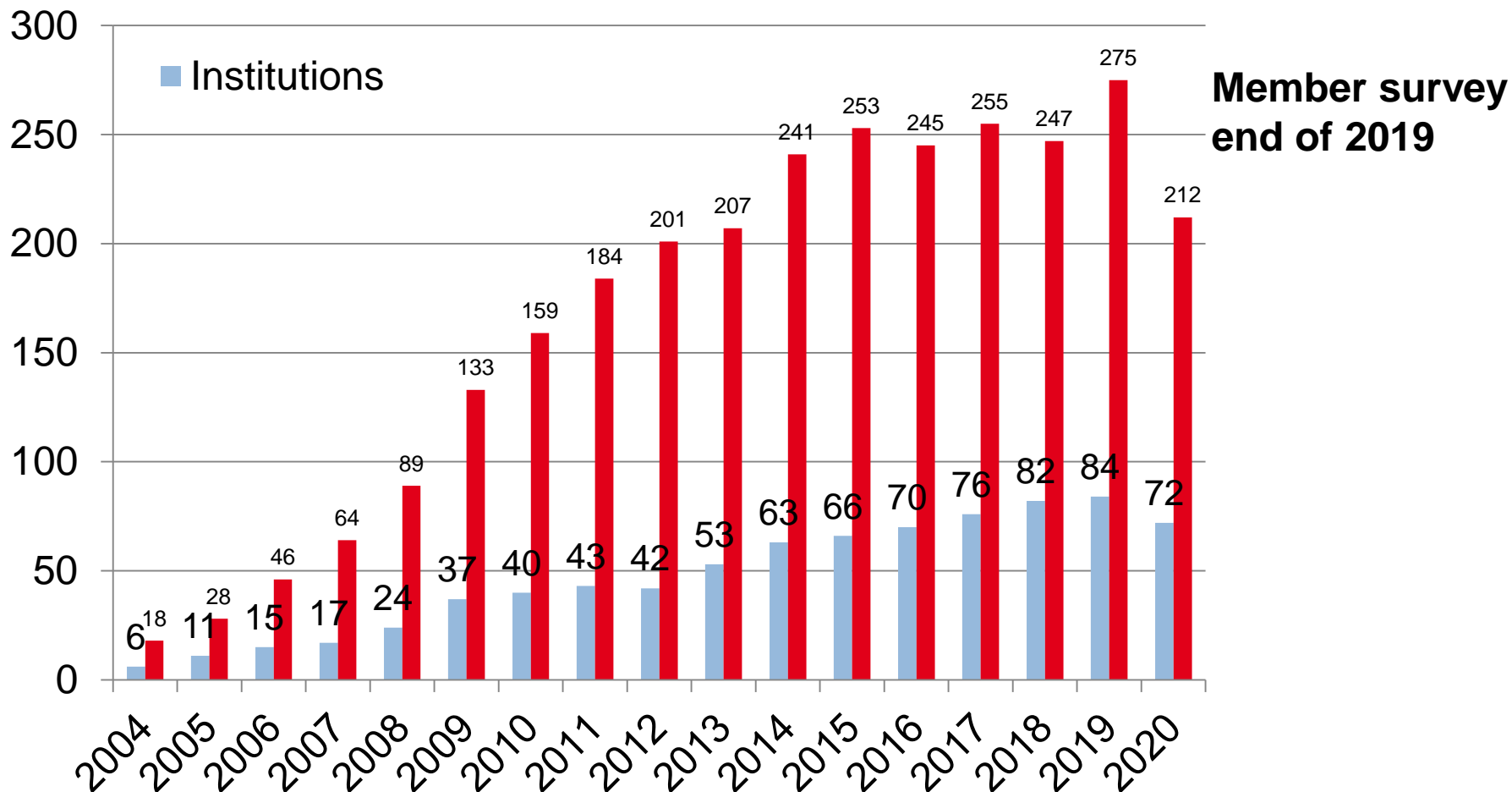
CLM-Community issues

CLM-Community Coordination

... has changed

- Barbara Früh stepped back as CLM-Community Coordinator in September **2019**

- Christian Steger (DWD) has been elected as new coordinator at the CLM-Community Assembly 2019 in Paestum

CLM-Community members and institutions

Member survey end of 2019

New science plan / strategy

- Discussion with all SAB members in the last months about the role and future perspective of CLM-Community
- Discussion within the coordination group
- Final discussion about the role and perspective of the community and character of the document the SAB meeting at the Assembly (16. September)
- Work on science plan / strategy will continue afterwards
- Plan is to have the document ready for the Assembly in 2021

CLM-Community Assembly 2020

- 14 – 18 September 2020
- Virtual meeting (planned to meet in Berlin, maybe 2021)
- Program:
  - Five plenary sessions with talks (20 talks) on two days
  - Poster session (2 hours)
  - Working and project group meetings
  - Meeting of coordination group
  - Meeting of scientific advisory board
  - Community meeting

Status ICON-CLM

ICON license for CLM-Community members

- CLM-Community members will get individual license from MPI-M and access to the official ICON releases via MPI-M webpage

- starter package (and other community software) will be made available for community members via RedC (CLM-Community Redmine)

- Only community members with developer status will get access to the ICON Git repositories at DKRZ

ICON-CLM development partnership agreement

- License only regulates the use of ICON
- CLM-Community needs a development partnership agreement to be able to contribute to the ICON development (similar to COSMO)
- A draft has been produced (based on the COSMO document) and discussed with DWD (FE1)
- Plan:
  - Document should become part of the CLM-Community agreement -> members have to agree
  - Vote will be conducted in next community meeting (18 September)

ICON-CLM development

- First set of necessary adjustments for regional climate simulations is part of release 2.6.1
- Basic evaluation of this first version has been performed and a paper submitted to GMD

ICON in Climate Limited-area Mode (ICON Release Version 2.6.1): a new regional climate model

Trang Van Pham[1], Christian Steger[1], Burkhardt Rockel[2], Klaus Keuler[3], Ingo Kirchner[4], Mariano Mertens[5], Daniel Rieger[1], Günther Zängl[1], and Barbara Früh[1]

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- still many (technical) things to do until an official version can be released (incl. COPAT2 and comparison to COSMO) and climate projections can be performed
- Slow progress at the moment because only few resources are available

CORDEX activites

Climate Limited-area
Modelling Community

WCRP
CORDEX

DWD
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CORDEX - Coordinated Regional Climate Downscaling Experiment
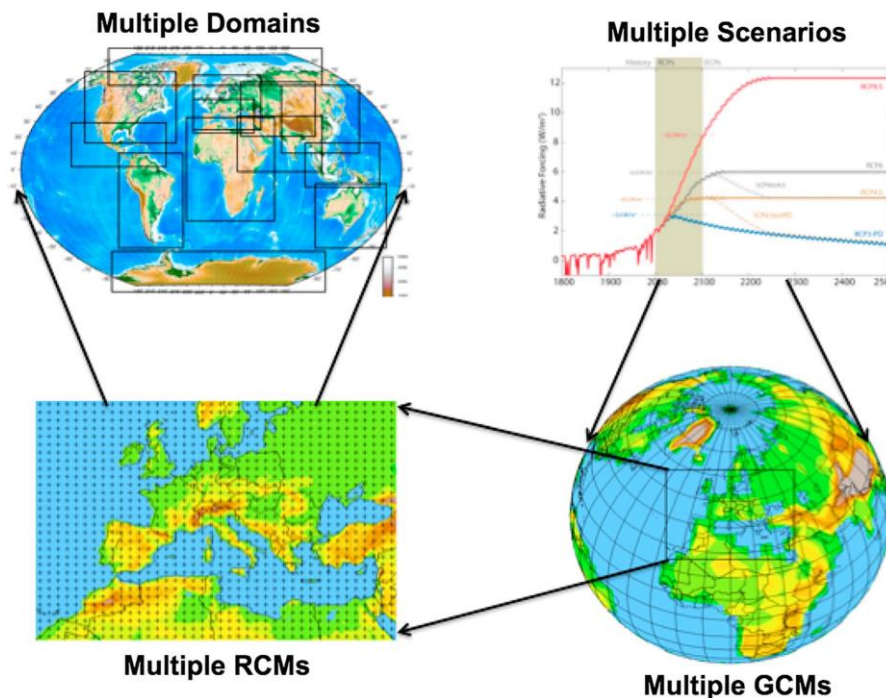
CORDEX (http://www.cordex.org) builds on a foundation of previous downscaling intercomparison projects to provide a **common framework for downscaling activities around the world**.

- CORDEX – CMIP5:
    - "normal" CORDEX runs for many regions in the world (50, 25 and 12,5 km)
    - CORDEX-CORE
    - CORDEX FPS (Flagship Pilot Studies)

- CORDEX – CMIP6: CORDEX is a CMIP6 diagnostic **model intercomparison project** (MIP) requesting specific CMIP6 output **for regional climate downscaling**.

CORDEX CORE

Goal : multiple GCMs downscaled by multiple RCMs over multiple domains for several scenarios.

Framework: 10 domains, 3 GCMs, RCMs at 0.22°, emission scenarios RCP2.6 and 8.5

Multiple Domains

Multiple Scenarios

Multiple RCMs

Multiple GCMs

Figure from Giorgi (2019)

Silje Lund Sørland, ETH

Status:

- **COSMO-CLM simulations have been completed**

- **Data standardized and published on ESGF nodes end of 2019**

- **publications in preparation**

- **Deadline for IPCC AR6 is end of 2020**

➢ **Unique data base for regional climate change assessment**

FPS LUCAS (Land Use & Climate Across Scales)

Objectives:

- new generation of RCMs, couple regional atmosphere interactively with further components of the regional earth system
- new era of coordinated RCM – LUC ensemble experiments on high spatial resolutions and consistently implement land use dynamics for the past and future.
- Investigate feedbacks of local scale land use dynamics on climate in spatially refined pilot regions (high resolution experiments below 5 km).
- Quantify direct biophysical impacts of LUC on European climate across spatial and temporal scales.

Status:

- First phase with ERA-Interim driven simulations (0.44°, EURO-CORDEX domain has been completed (3 papers published, more are in review or preparation)
- Phase 2: simulations with CMIP6 boundary conditions at 0.11° for Europe with realistic land use scenarios (historical, scenarios)
- Land use scenarios are in preparation
- Scenario, GCMs and variable list is in discussion
- Next meeting 17/18 September

Contact person: Marcus Breil, KIT

FPS CPS - Convective phenomena at high resolution over Europe and the Mediterranean

Lead: Erika Coppola (ICTP) und Stefan Sobolowski (Met.No)
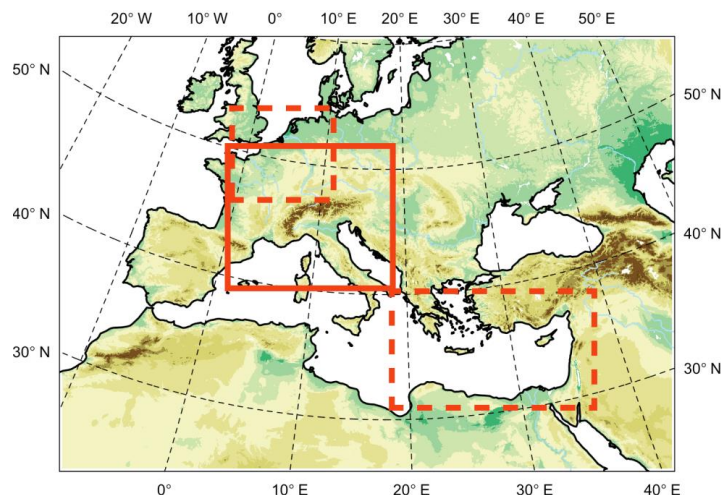
Mandatory domain:
Greater Alpine Region

Additional domains (optional)
Eastern Mediterranen
Lowlands Benelux/Fr

Ivonne Andres, ZAMG

Aim
- learn about / improve representation of convective precipitation in climate change simulations
- have a set of comparable simulations for added value analysis

Time ranges
- Evaluation run (ERAint): 1999-2014 (min 10 years)
- Historical run: 1996 - 2005
- Near future: 2041 – 2050
- Far future: 2090 – 2099
- Horizontal resolution: 3 km

Status:
- Simulations are ready
- Data not published because of ongoing discussion about format and standard

FPS ELVIC: Climate Extremes in the Lake Victoria Basin

Region
One of world's convectively most active region: very vulnerable to heavy precipitation, heat waves, severe droughts and wind storms

Project goals
- assess added value of convection-permitting simulations
- analysis climate extremes in the future
- provide information to impact community

Status
- Persent day simulations (12 km and 2.8 km) have been perfromed and analyzed and a paper prepared
- Next step: running scenario experiments with CMIP6 boundary conditins

https://ees.kuleuven.be/elvic/

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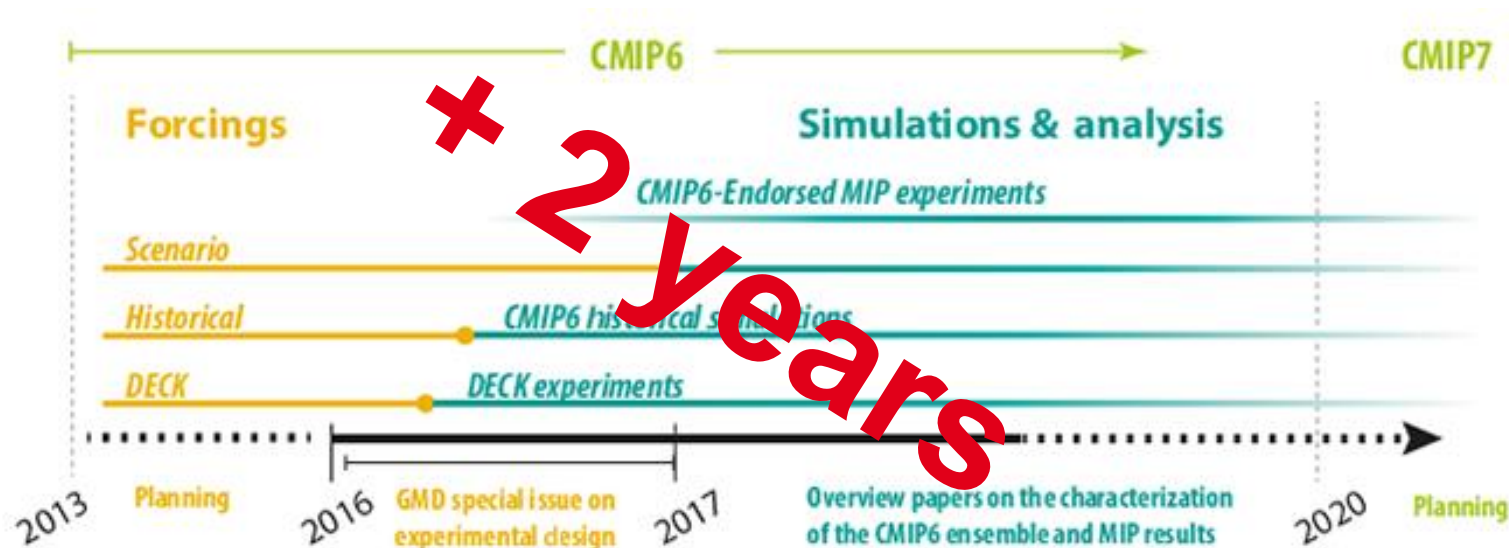Deutscher Wetterdienst
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CORDEX – CMIP6

"Nach dem Spiel ist vor dem Spiel."
(„After the game is prior to the game.")
Sepp Herberger

CORDEX – CMIP6

- Global climate simulations for CMIP6 have mainly been produced in 2019 and published on the ESGF nodes

- Protocol for CORDEX simulations is currently in preparation

- (small) ensemble of convection resolving simulations in ~ 5 years

- Group for GCM selection for EURO CORDEX has been established

- Call for suggestions for new flagship pilot studies by CORDEX SAT

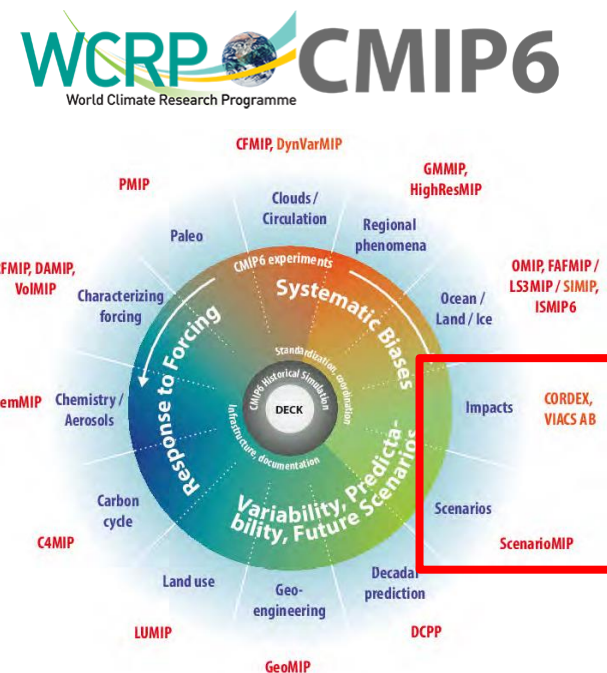- Discussion about contribution from CLM-Community in WG Climate Projections next week

Fig. from Eyring et al. (2016): Overview of the CMIP6 experiment design and organization. GMD, 9, 1937-1958

New scenarios in CMIP6

Shared socioeconomic pathways

- **SSP-based scenarios as update for RCPs 2.6, 4.5, 6.0 and 8.0**

- **Additional scenarios SSP1-1.9 (1.5°C target), SSP4-3.4, SSP4-6.0, SSP5-3.4**

Ens: initial condition ensemble
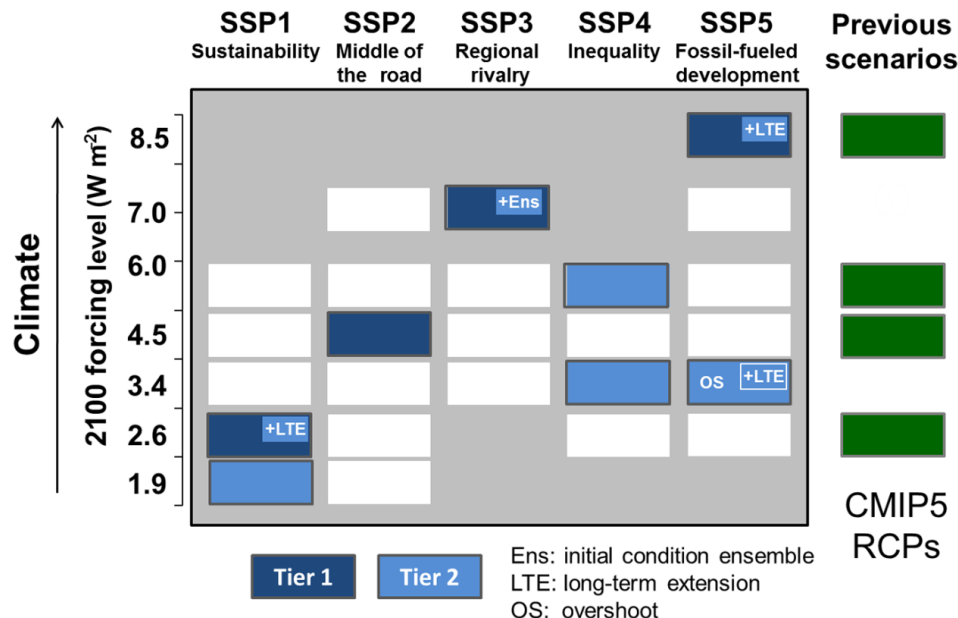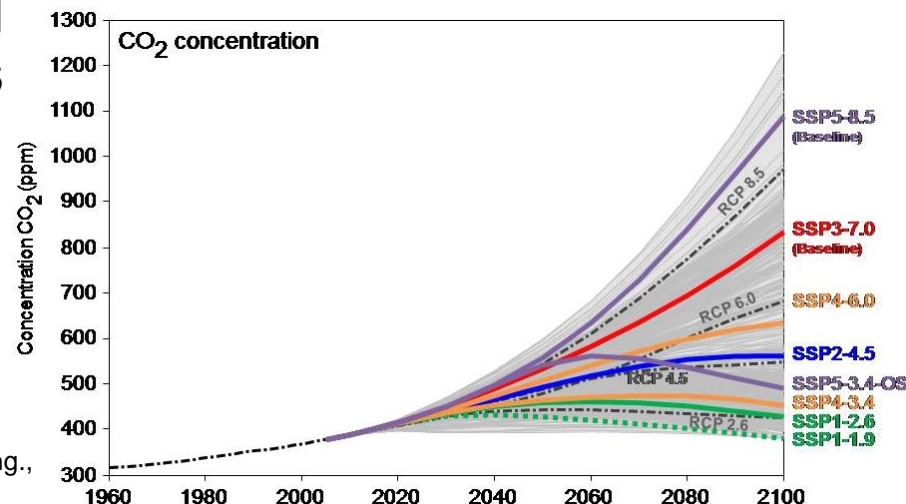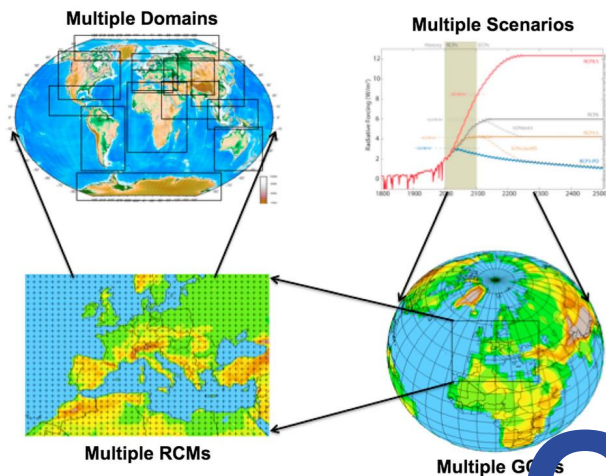LTE: long-term extension
OS: overshoot

Fig. from Eyring et al. (2016): Overview of the CMIP6 experiment design and organization. GMD, 9, 1937-1958

Fig. from Riahi et al. (2016): The shared Socioeconomic Pathways and their energy, land use, and greenhouse gas emissions implications: An overview. Global. Environ. Chang., doi:10.1016/j.gloenvcha.2016.05.009

Questions?