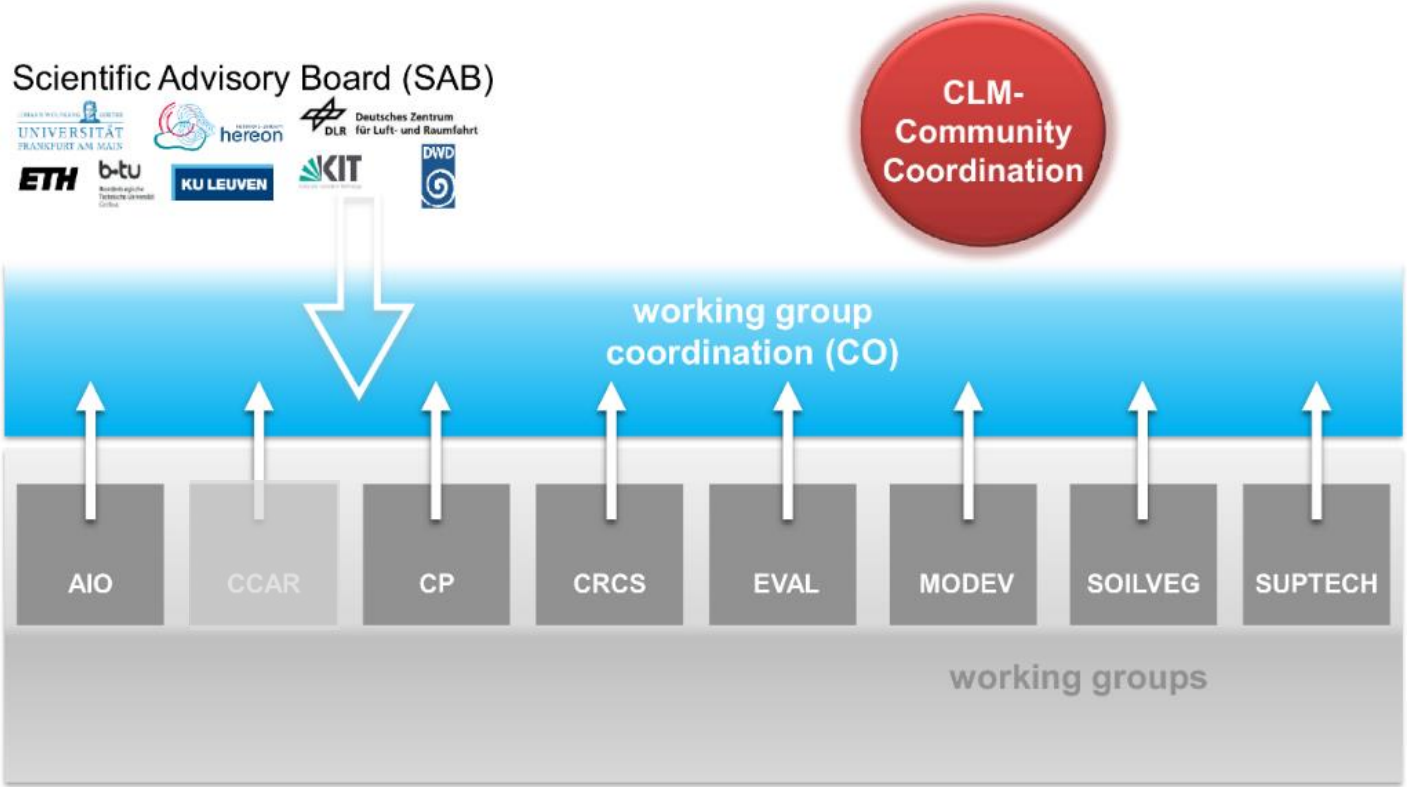
News CLM Community

COSMO General Meeting 2023
12 September 2023
Gdańsk, Poland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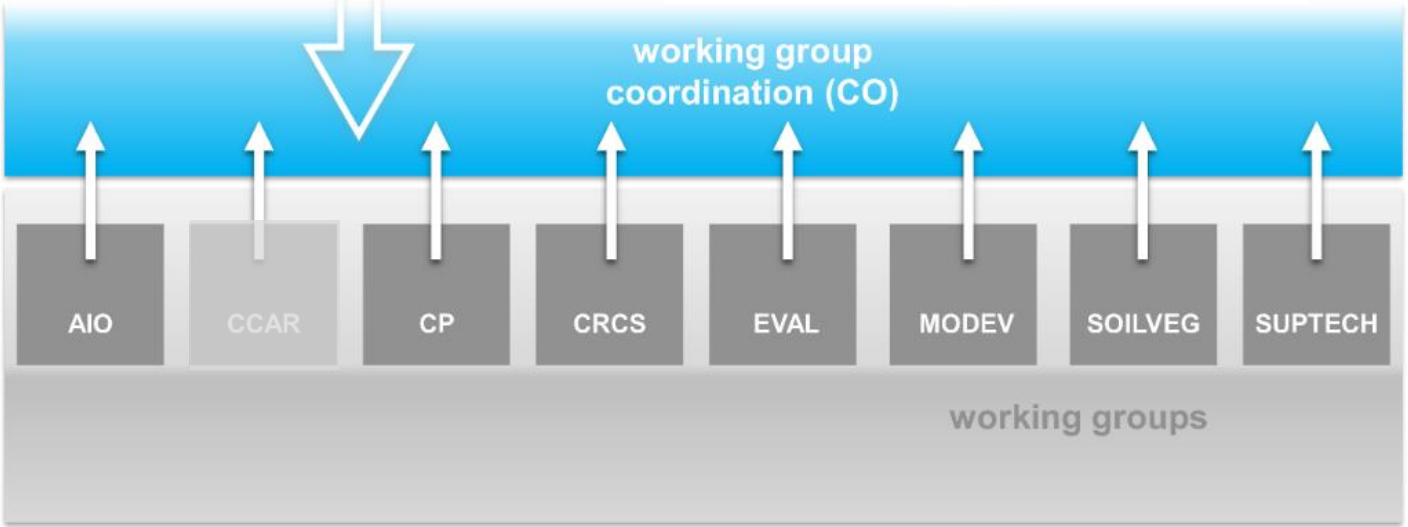
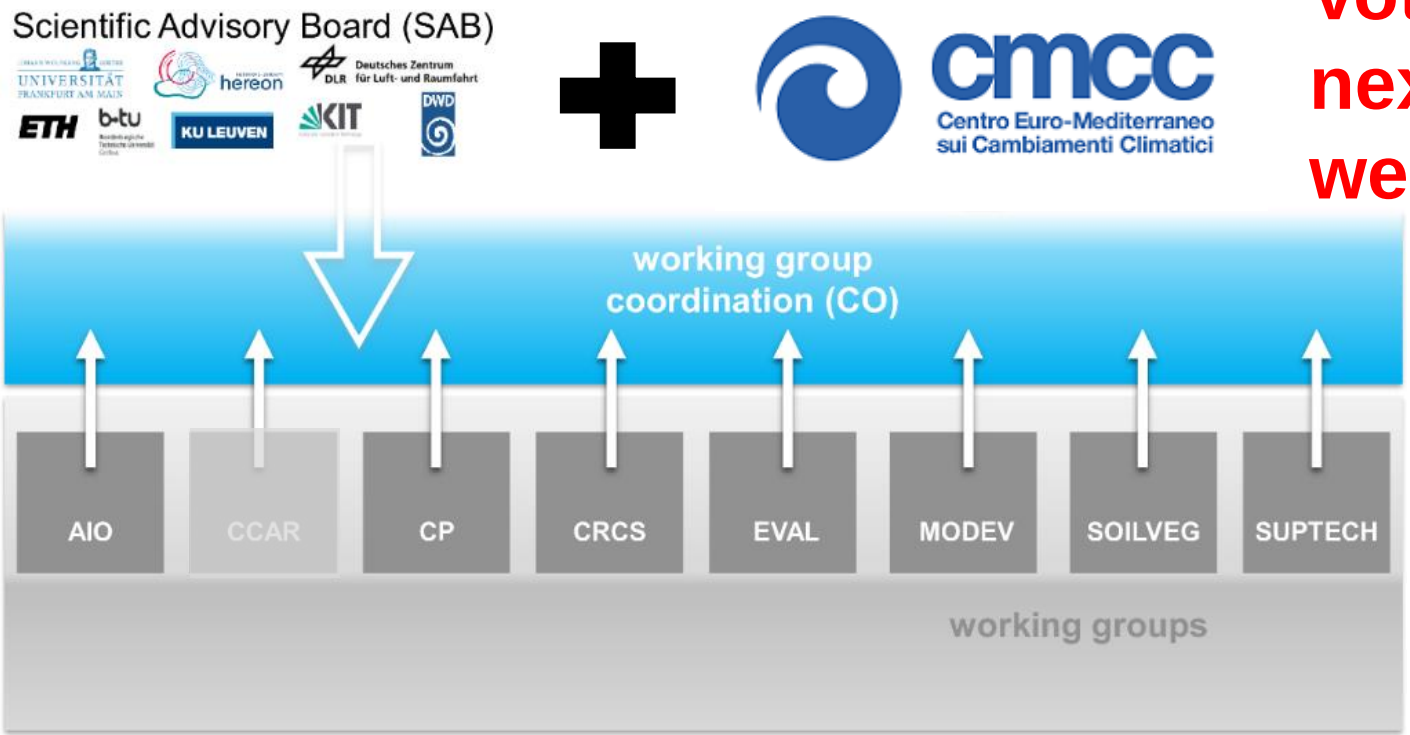
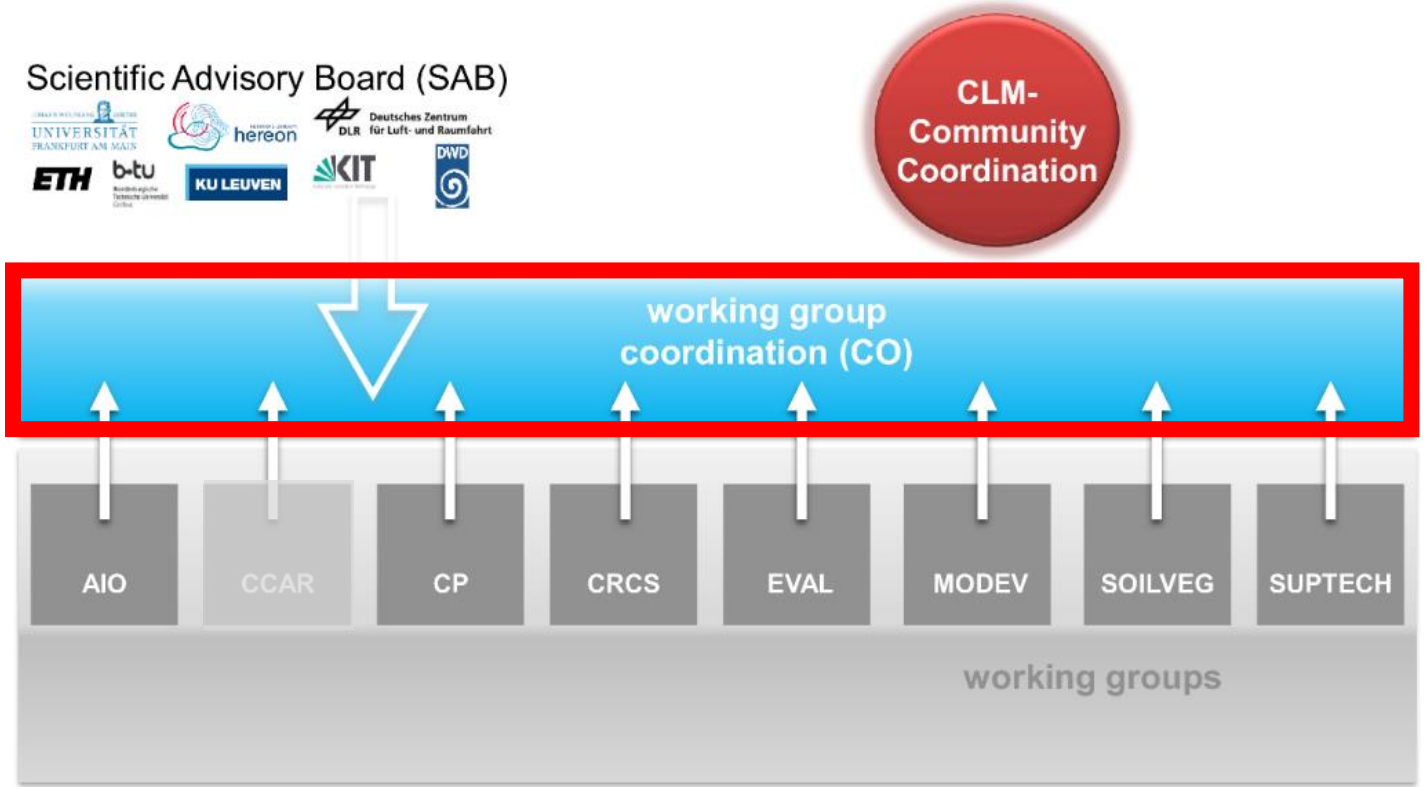
Sonia Seneviratne (ETH)
Stefan Hagemann (Hereon)





Vote next week!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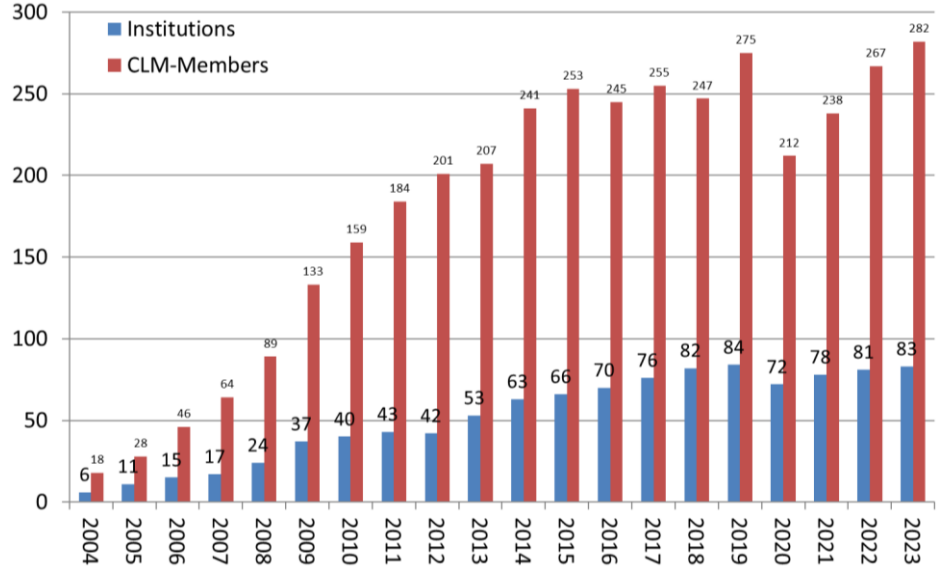
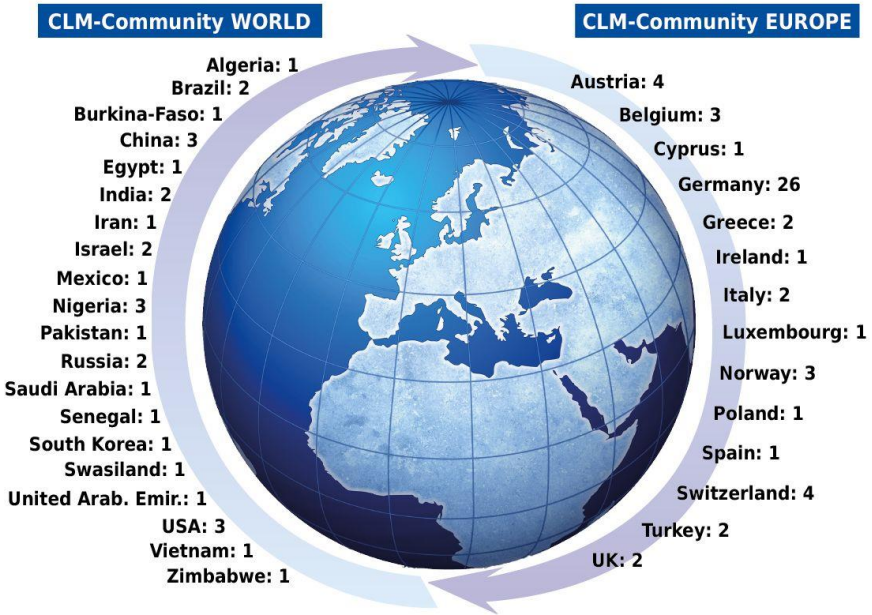
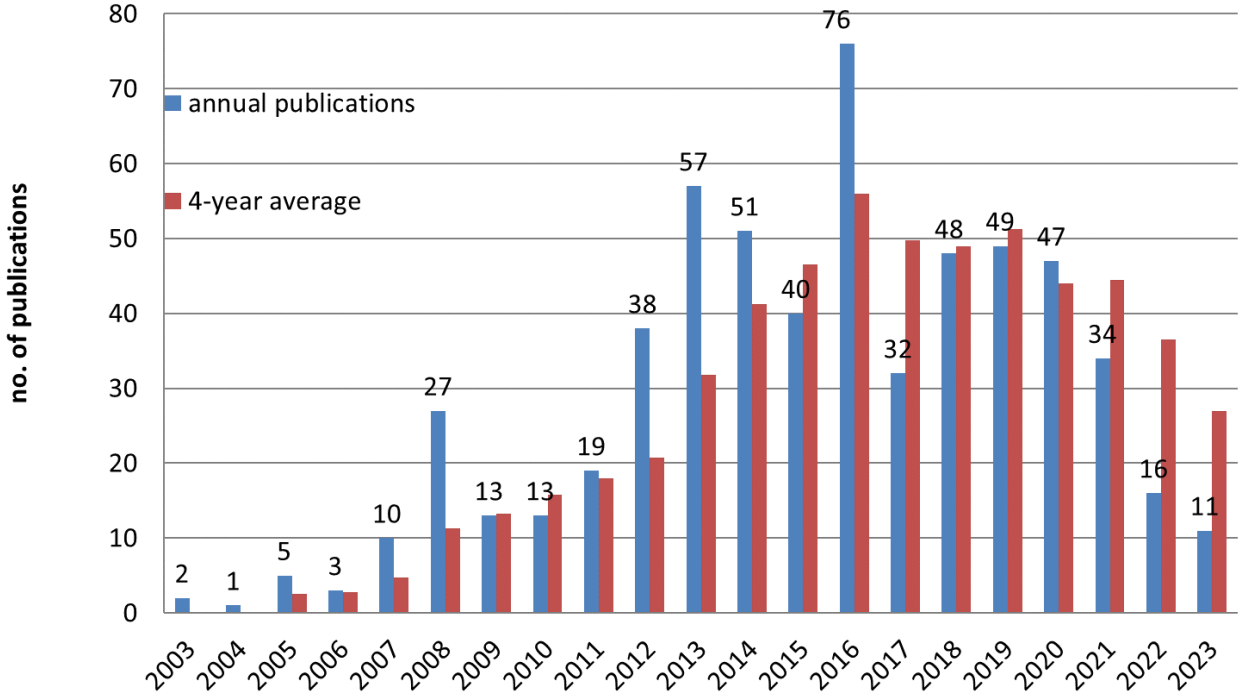
CLM Community members and institutions

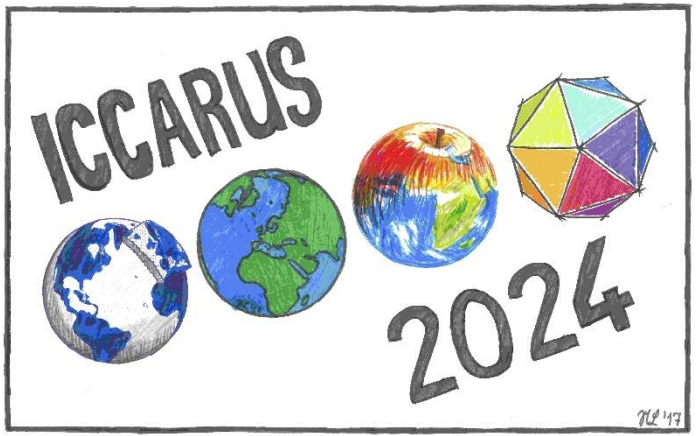




CLM Community development of publications



Meetings/Events 2024



ICCARUS:

04 - 07 March 2024 (hybrid meeting)

ICON training course:

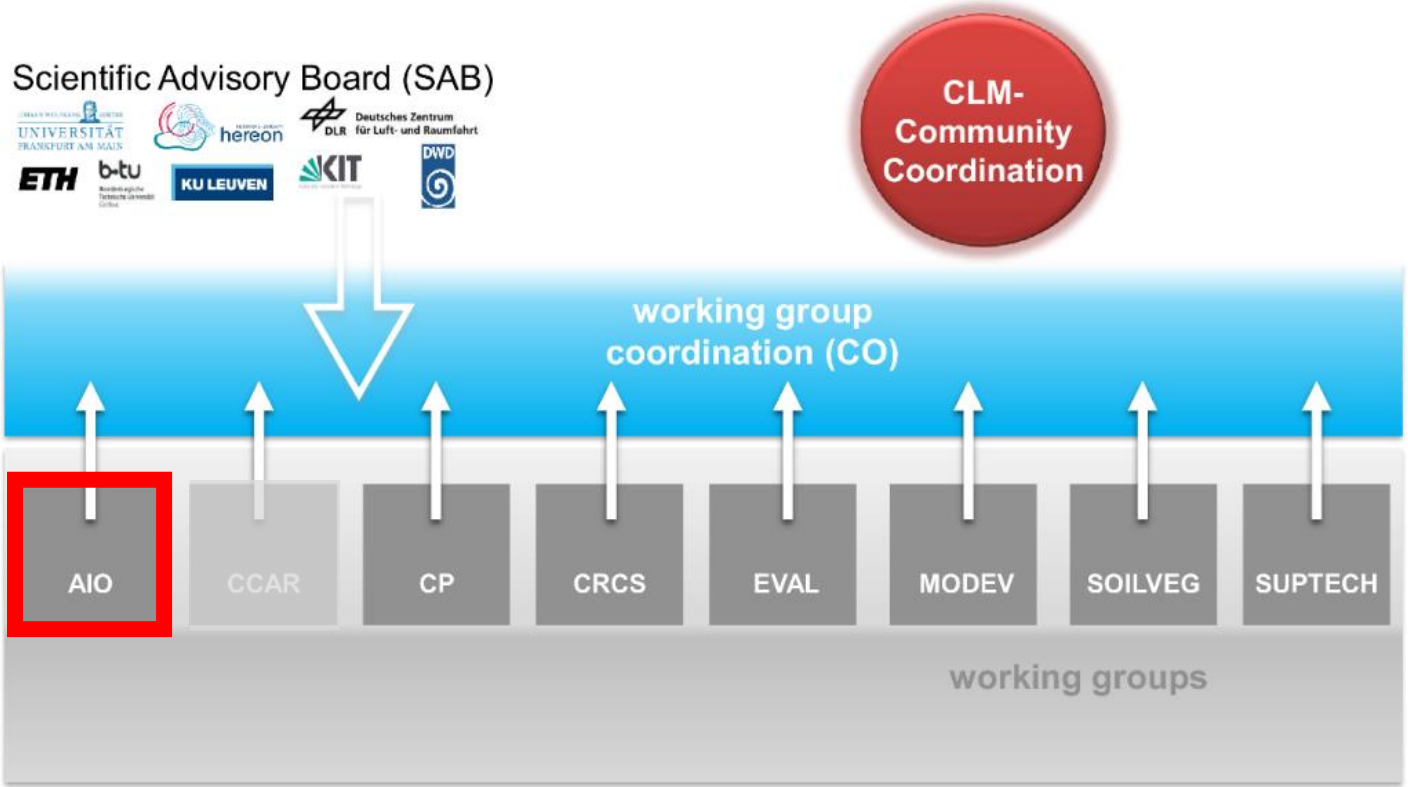
10 – 14 June 2024

CLM Community Assembly:

07 – 11 (?) October 2024 (Oberpfaffenhofen, Germany)

ICON Training 2023

- First ICON-CLM Training (27-31 March)
- First joined ICON Training (Met services, NWP Academia and CLM Community)
- Big effort to prepare the course. Many thanks to P. Singh (GUF), B. Geyer, H. Hagemann (Hereon), R. Petrik (Hereon/Navy), M. Tölle (Uni Kassel), P. Ludwig (KIT), Susanne Brienen (DWD)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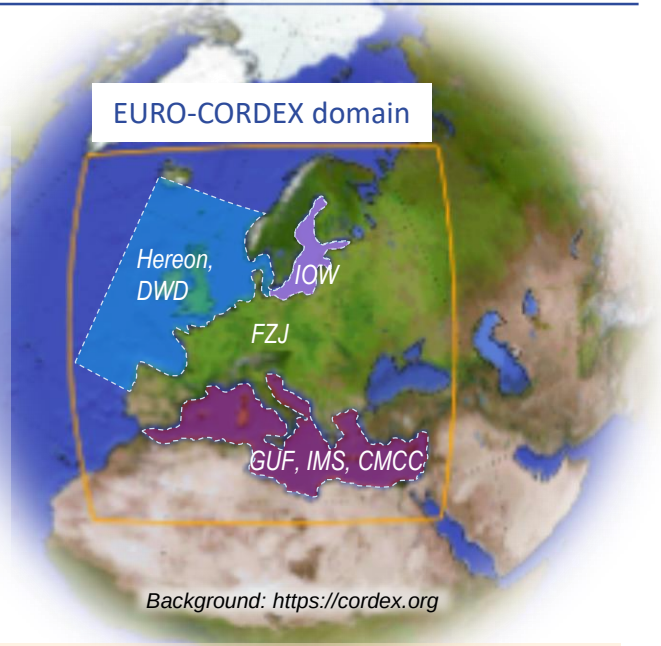
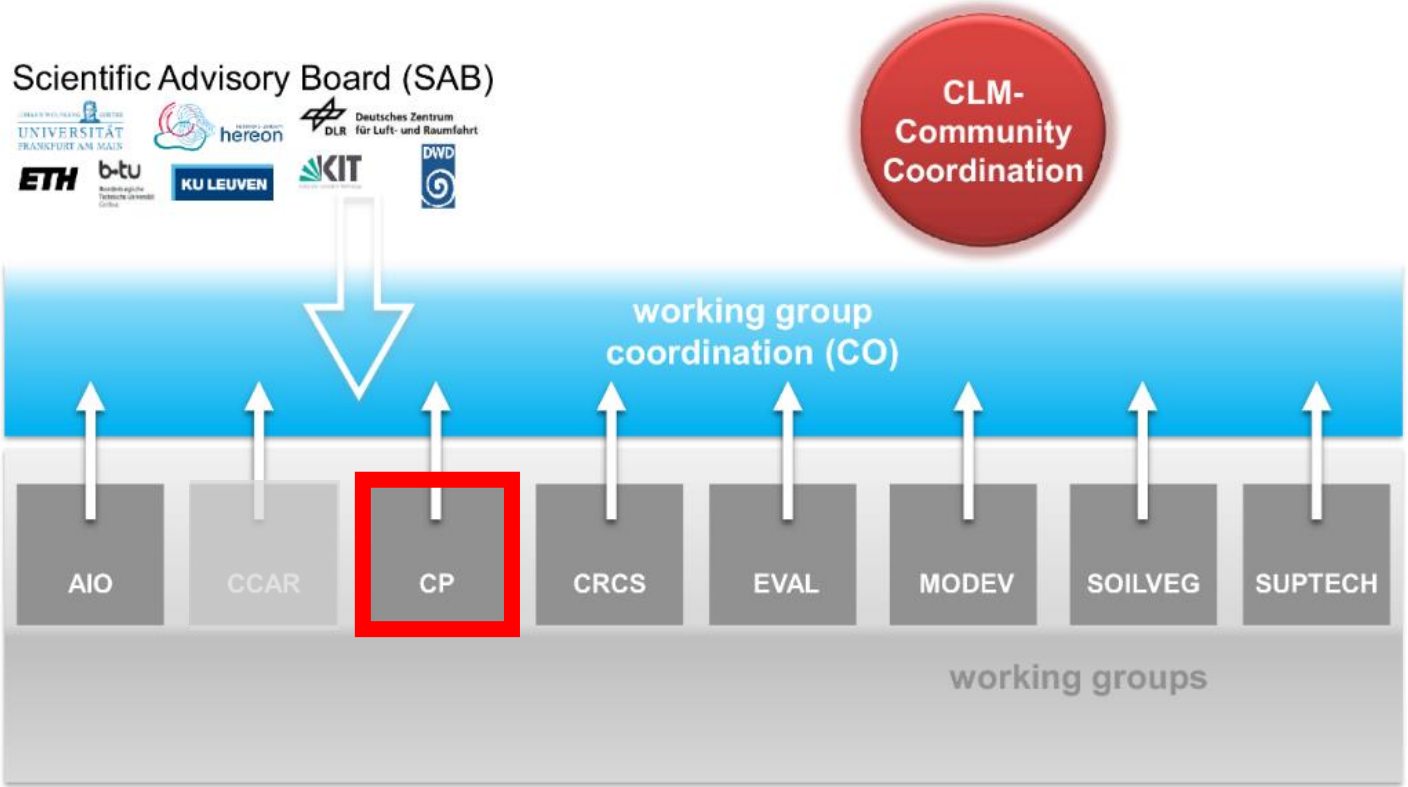
WG AIO

- Further develop the Regional Earth System Models (**RESMs**) of **COSMO-CLM** coupled to ocean models (**NEMO**, **MOM5**), hydrological discharge model (**HD**), wave model (**WAM**) via the OASIS3-MCT coupler for the EURO-CORDEX domain, with a focus on the North Sea and Baltic Sea regions (*Hereon, IOW*) and the Mediterranean Sea (*GUF*)
- Further develop the RESMs of **COSMO-CLM/ICON-CLM** coupled to the community land model (**eCLM**) and the groundwater model (**ParFlow**) via OASIS3-MCT (*FZJ*)
- Further development of the RESM including **ICON-CLM**, **NEMO** and **HD** coupled via OASIS3-MCT for the North Sea and Baltic Sea regions (*Hereon, DWD*)
- Set up a joint activity of **CMIP6** RESMs downscaling using the above mentioned RESMs for the EURO-CORDEX domain (*Hereon, DWD, IOW, GUF, FZJ*)
- New development of the regional coupled system model **ICON-CLM** + **NEMO_MED** for the Mediterranean Sea region (*IMS, CMCC*) with technical supports from *Hereon, DWD, GUF* (Germany) and *LMD, Meteo-France/CNRM* (France)



Publications:

- Grayek, S., Wiese A. , Ho-Hagemann, H. T. M., Staneva, J. (2023): Added Value of Including Waves into a Coupled Atmosphere-Ocean Model System within the North Sea Area, Frontiers in Marine Science https://doi.org/10.3389/fmars.2023.1104027
- Karsten, S., …, Ho-Hagemann, H. T. M., et al.. (2023): Exchange-grid coupling approach for the IOW Earth System Model (version 1.04.00) of the Baltic Sea region, Geosci. Model Dev. Discuss. [preprint], https://doi.org/10.5194/gmd-2023-166, in review.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WG CP

- The CLM Community will participate in the “Balanced Ensemble Matrix” Experiment from CORDEX CMIP6

CMIP6 - EURO-CORDEX "balanced" matrix

GCM / RCM	EC-Earth3-Veg (*) r1i1p1f1	MPI-ESM1-2-HR r1i1p1f1	CNRM-ESM2-1 r1i1p1f2	NorESM2-MM r1i1p1f1	MIROC6 r1i1p1f1	CMCC-CM2-SR5 (***) r1i1p1f1	CESM2 (****) r1i1p1f1	IPSL-CM6A-LR r1i1p1f1	UKESM1-0-LL (**) r1i1p1f1
WRF		X		X		X			
ALADIN6x			X	X		X			
ICON-CLM/ COSMO-CLM	(X)	X			X	X			
HCLIM43-ALADIN	(X)	X	X	(X)	X		X	X	
RegCM5	X	(X)	X	X					
REMO	X	X			X			X	
RACMO23E	X		X	X					X

X planned
X still to be placed

SSP126, SSP370

3 GCMs per RCM

4 RCMs per GCM

Project UDAG

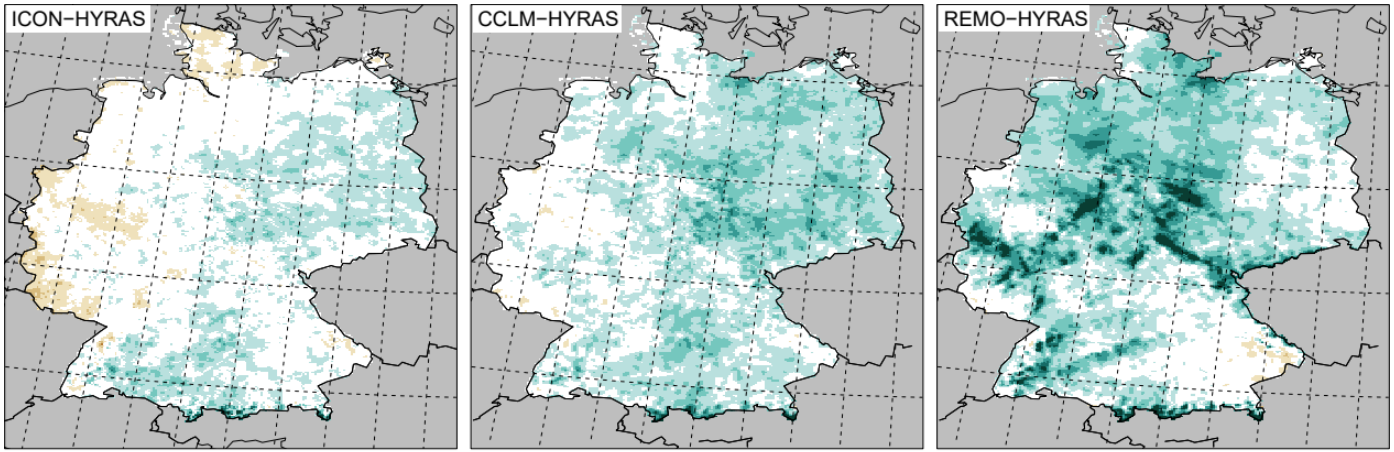
- UDAG – Updating the data basis for adaptation to climate change in Germany
- Funded by the German Ministry for Education and Research
- Start September 2023
- Participants: DWD, KIT, BTU, Hereon, DKRZ
- Test/Improve ICON-CLM configuration
- Produce simulations
- Postprocessing, standardization, publication and analysis of data

WG CP

- The CLM Community will participate in the “Balanced Ensemble Matrix” Experiment from CORDEX CMIP6
- The NUKLEUS project already generated downscaling simulations with CCLM6 and ICON-CLM from 3 CMIP6 GCMs (12.5km; historical and ssp370) as well further 3 km downscaling for Germany (historical and ssp370, 3 30-year time-slices)

Evaluation of the NUKLEUS climate simulation ensemble

- ERA5 driven hindcast runs (2005 – 2014): CPM simulations (3 km)
- Relative precipitation BIAS to HYRAS (DWD):



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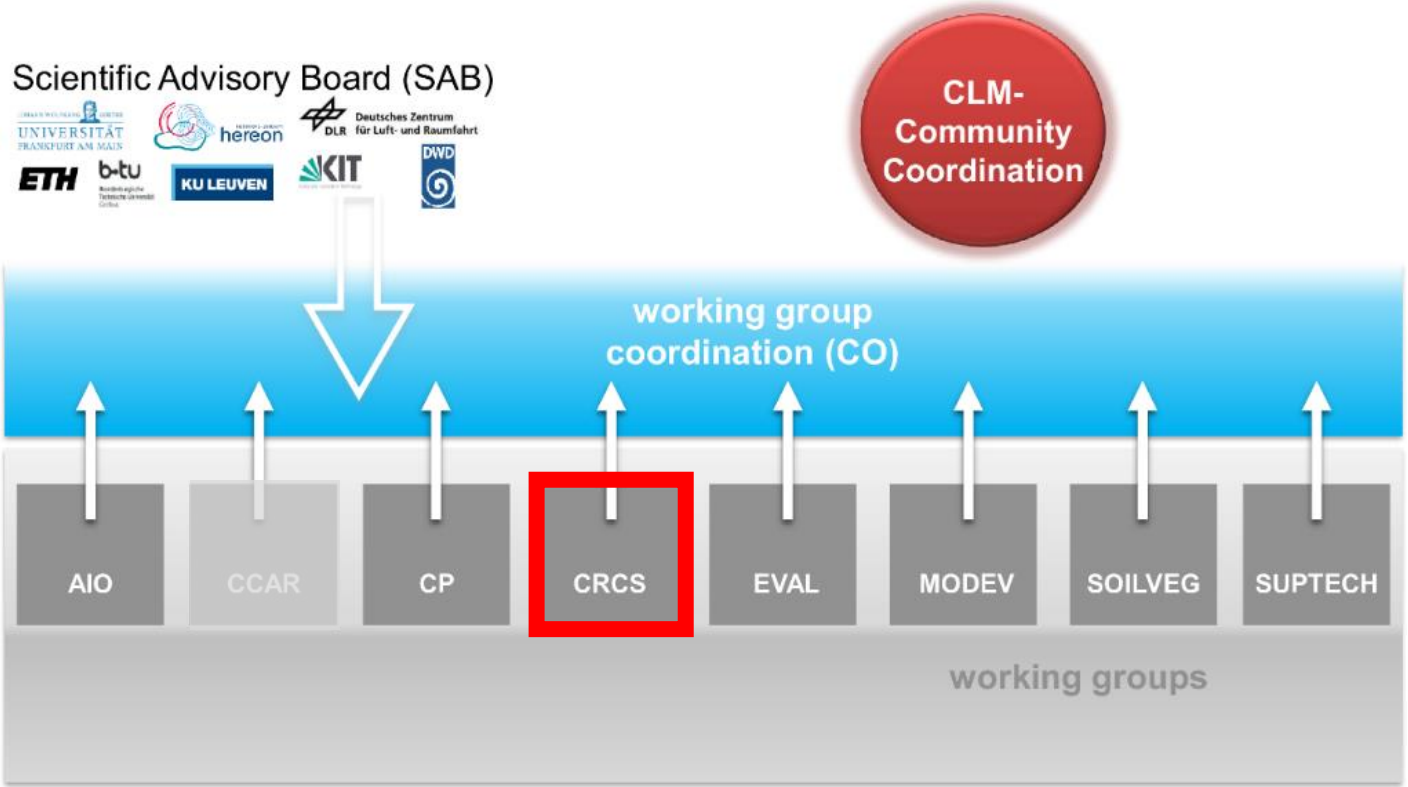
- CORDEX Flagship pilot study on convection now finished (several CLM contributions)
- Ongoing contributions in FPS on land use changes and urban effects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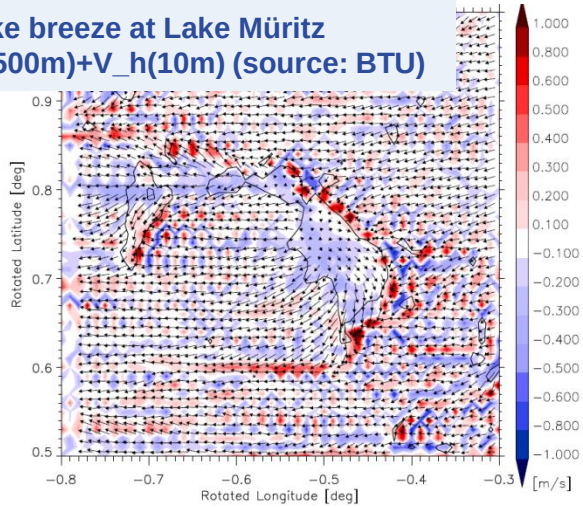
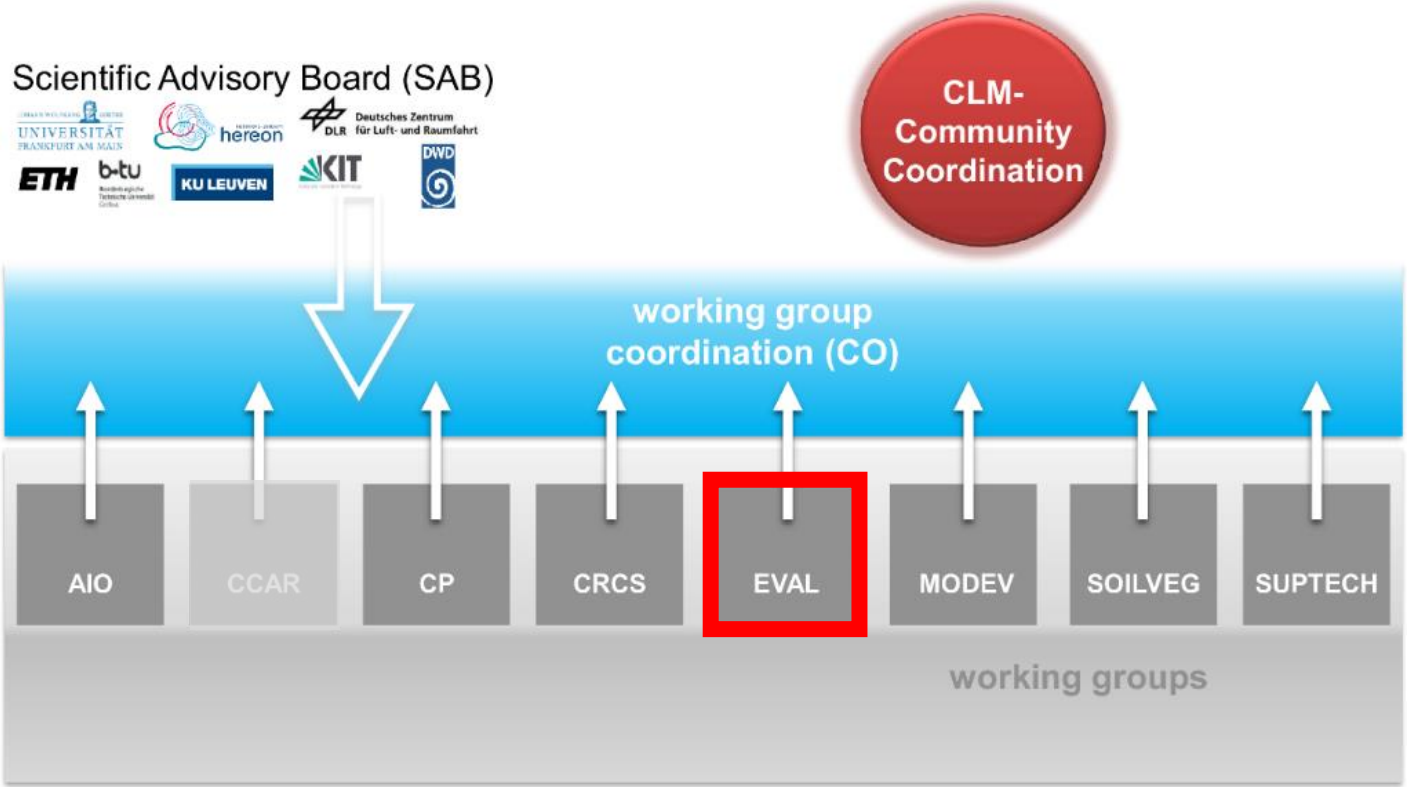
WG Convection Resolving Climate Simulations (CRCS)

- **Aim:** Providing reliable information about climate and climate change on km-scale. Discussion of results, coordinated research, cooperation with natl. and intl. initiatives.
- **Coordinators** (designated)**:** Andreas Will (BTU Cottbus, Germany), Klaus Görgen (FZ Jülich, Germany)
- **Topics (selected):**
  - Applications of COSMO-CLM and ICON-CLM on convection permitting to resolving scales (e.g., in UDAG, CORDEX-FPSCONV)
  - Understanding of processes and mechanisms relevant for regional to local climate
  - Assessment of added value of higher grid resolution
  - Coordinated efforts, e.g., on model evaluation, configuration optimization, and identification of model deficiencies
  - Relevance (impacts, services hazards), e.g.: Water availability in regions, renewable energy potentials, and other key questions

Lake breeze at Lake Müritz
W(500m)+V_h(10m) (source: BTU)

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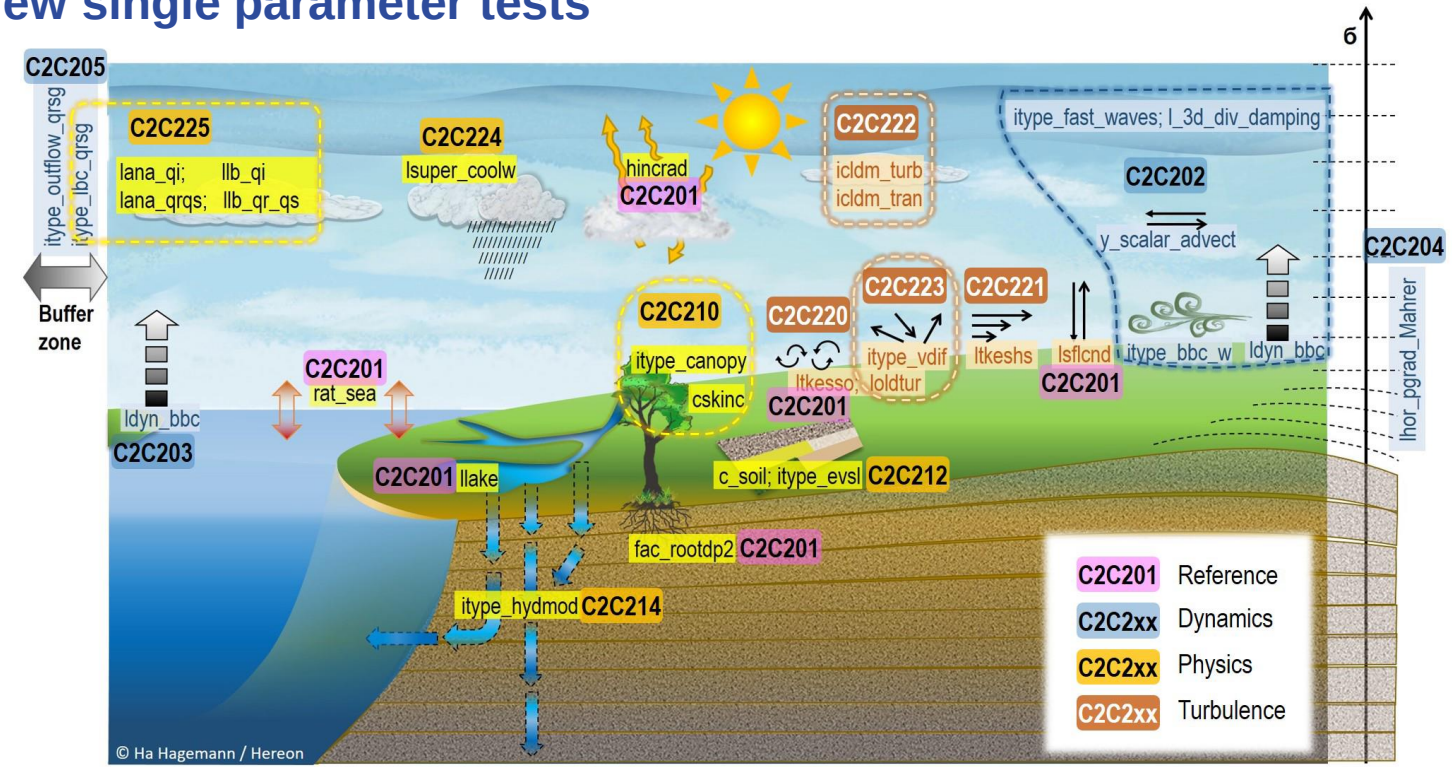
Activities of the EVAL WG

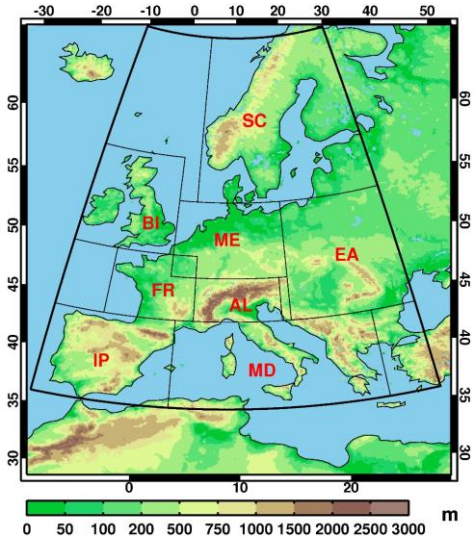
- Most of the Activities are related to COPAT2, and the calibration of COSMO-CLM 6.0 and ICON-CLM

Overview single parameter tests

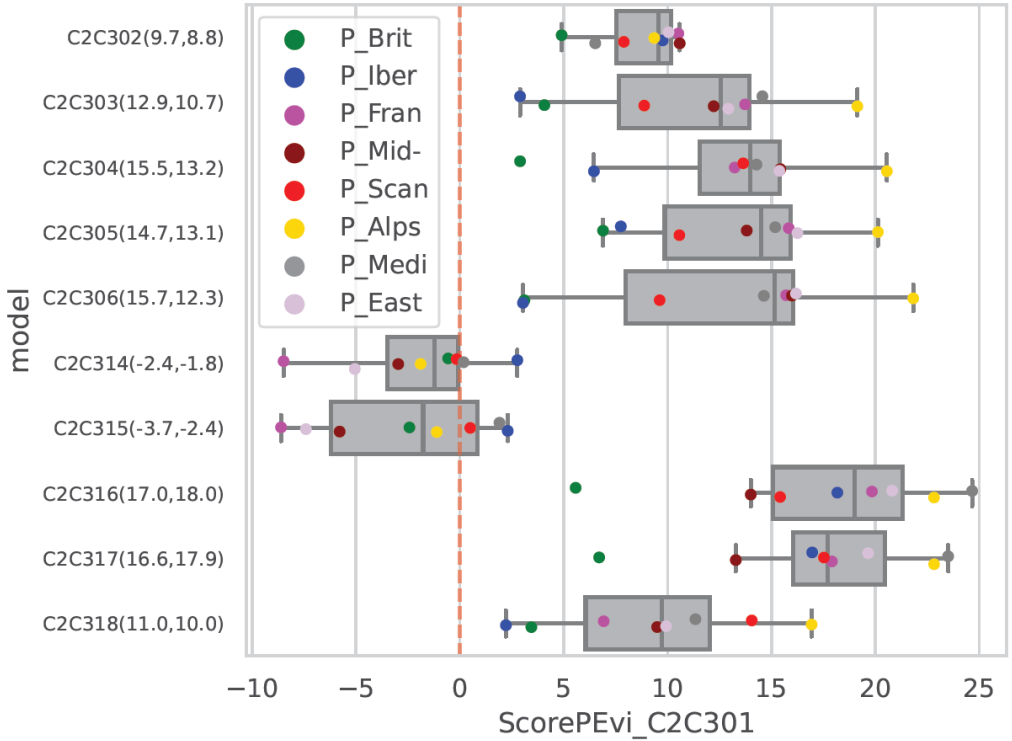


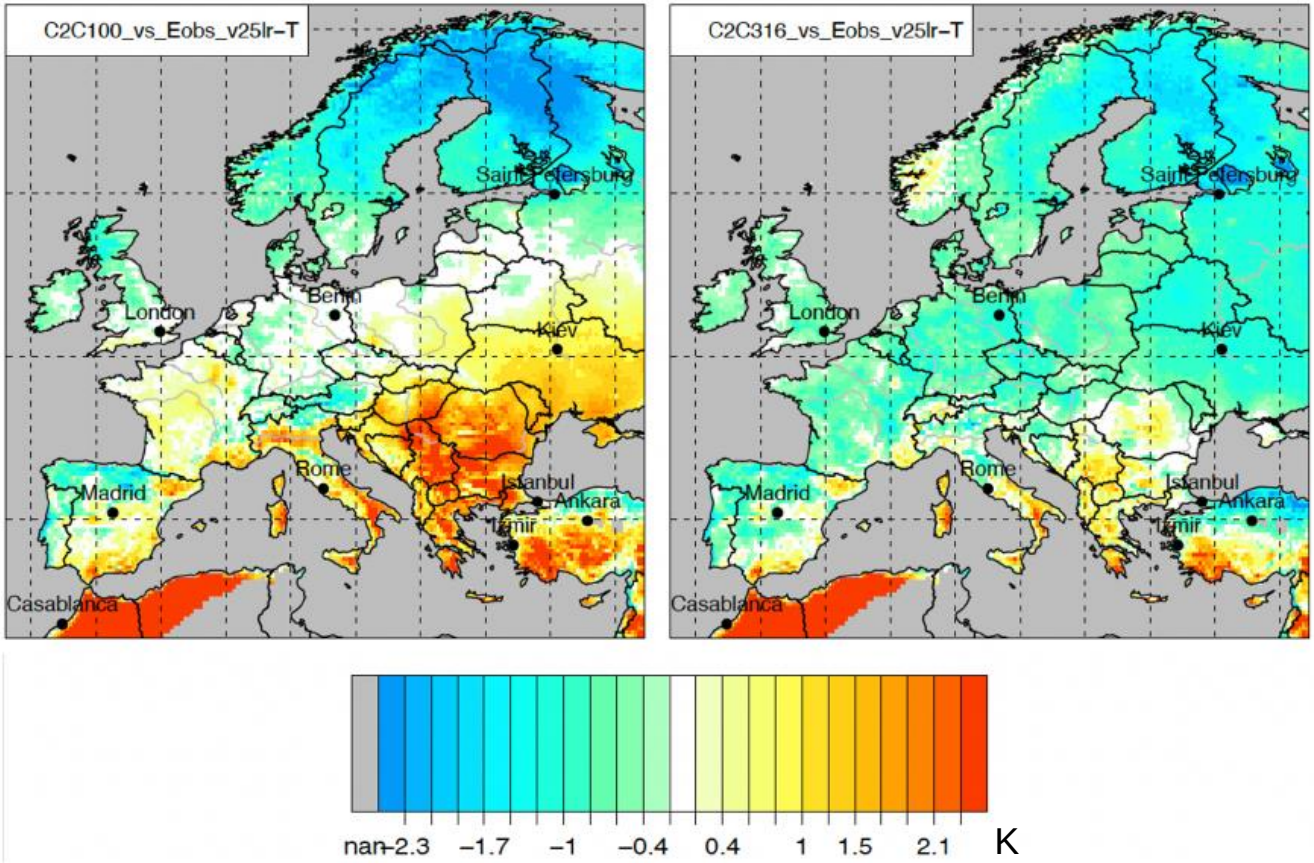
Results combined parameter tests

Prudence Regions



ScoPi all variables except precipitation





Mean 2 m temperature bias summer vs. E-Obs for 1980 - 2010

Left: C2C100, recommended version from 2018

Right: C2C316

Activities of the EVAL WG

- ➔ Most of the Activities are inherent to COPAT2, and the calibration of COSMO-CLM 6.0 and ICON-CLM
- Reports on calibration activities to be published in COSMO Technical report series and peer-review journal

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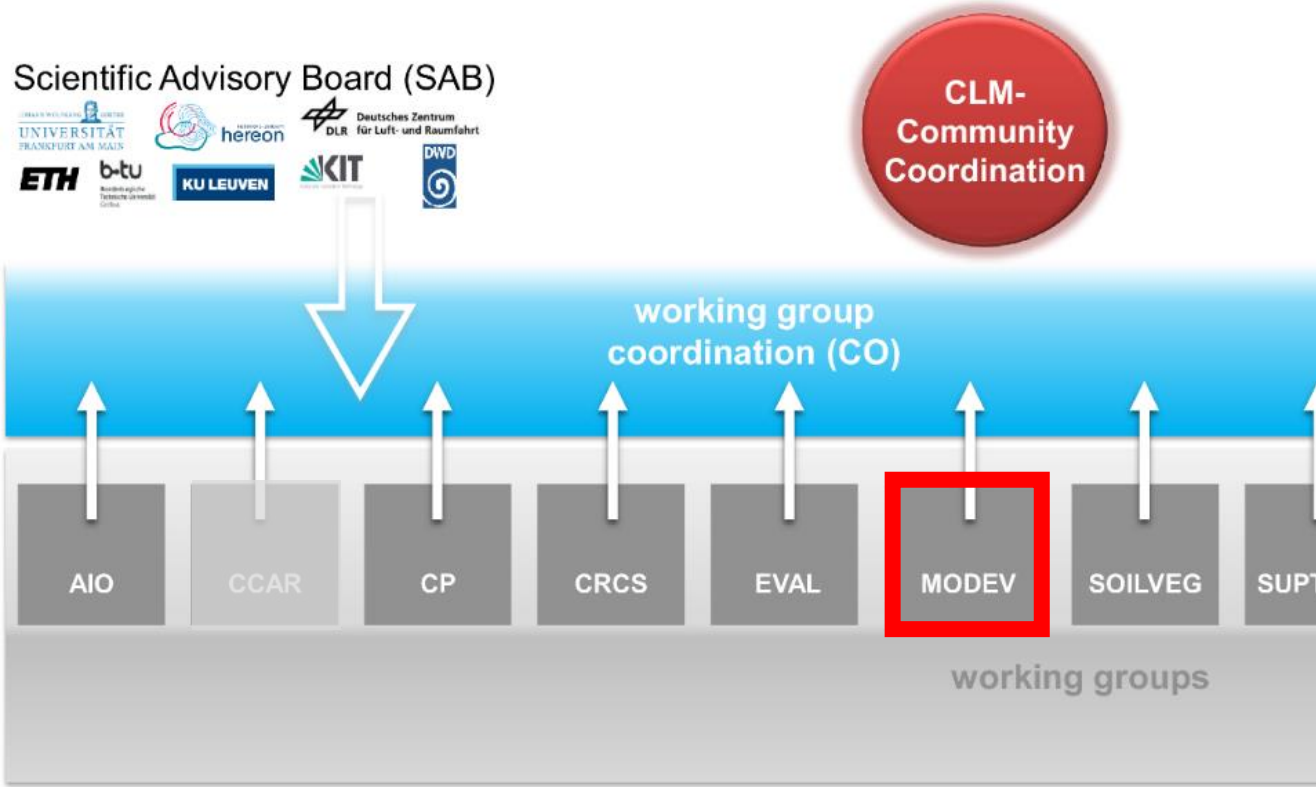
➔ Most of the Activities are inherent to COPAT2, and the calibration of COSMO-CLM 6.0 and ICON-CLM

- Reports drafting on calibration activities to be published in CLM Technical report series and peer-review journal
- ICON-CLM
  - Reference simulation with preliminary setup completed; base line for further tests
  - List for single parameter tests has been created: https://www.clm-community.eu/wiki/eval/copat2/phase1i/
  - Same procedure as for COSMO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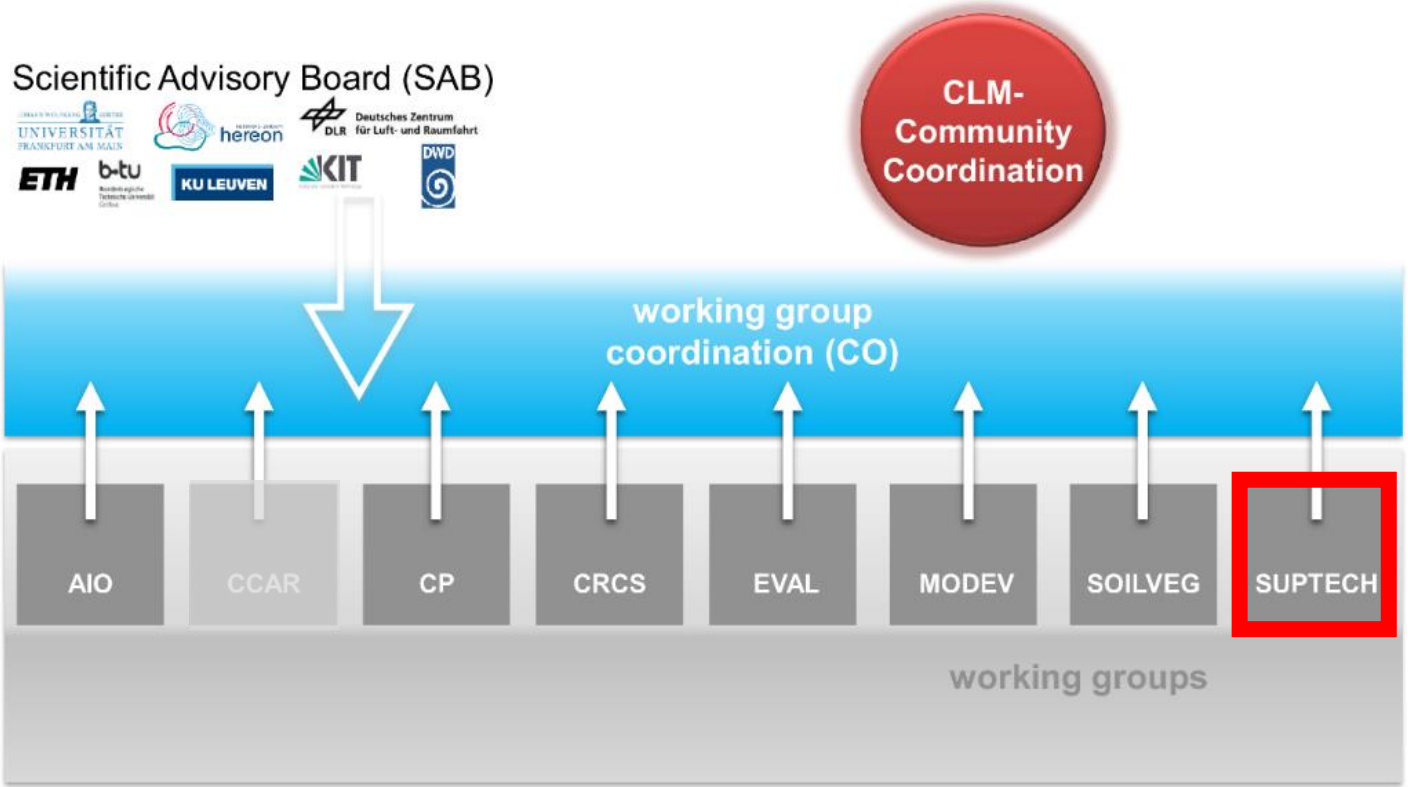
WG MODEV

- ICON-CLM has been available as a new community model for some time
  → **PG-ICON** was closed at the assembly in 2022

- **WG MODEV** has been installed instead to coordinate more continuous model improvements
  - addresses technical challenges related to icon-clm model development
  - closed group for all community members working on the model code
  - kick-off in February 2023, meeting every 2 months
  - currently 14 members of BTU, DLR, DWD, FU Berlin, FZJ, Hereon, IMS and KIT
  - co-coordination by Patrick Ludwig, Mariano Mertens, Vera Maurer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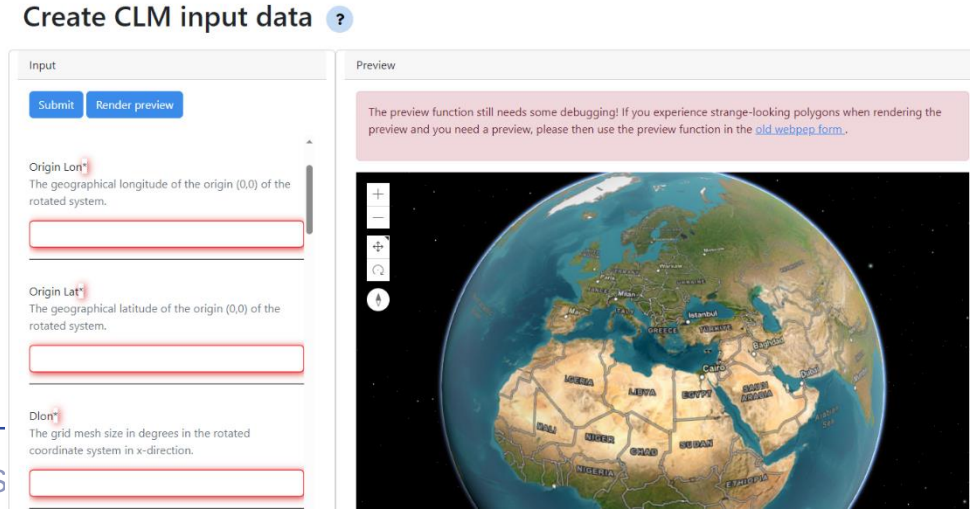
CLM Community Portal and WebPEP @ DKRZ

- Community Portal centralises former Webpage, RedC and administration tool. Thanks to Philipp Sommer and Beate Geyer (Hereon)!
- A lot of additional functionality:
  - Membership, topic and working group management
  - Event organization
  - Ticket System
  - Chat program
- WebPEP @ DKRZ
  - New frontend
  - EXTPAR backend moved to DKRZ
  - Discussion about unification with ICON Webservice started



Questions?