WG AIO

Report from WG AIO

- WG coordinator/deputy
  - Ha Hagemann (Hereon)
  - Angelo Campanale (CMCC)

Meeting: Wednesday 23 Sep. 2026, 13:30 - 15:10

+ Reports on the regional coupled models of atmosphere-ocean, atmosphere-wave, atmosphere-land surface
+ Contribution simulations to EURO-CORDEX joint evaluation: hindcast simulations forced by ERA5 were transferred to JSC and published on ESGF; historical and scenario simulations will be transferred later.
+ CMOR tool for the ocean variables of the air-sea coupled models: discuss with the EURO-CORDEX team to find the suitable solution.

Highlights

Publications:

- Campanale, A., A. Bevrnja, M. Raffa, R. Potthast, P. Mercogliano, J.-P. Schulz, “Exploring the regional coupled capabilities of the ICON modelling framework: The case of medicane Ianos,” *Atmospheric Research*, Volume 338, 2026, 108975. https://doi.org/10.1016/j.atmosres.2026.108975
- Maurer, V., Düsterhöft-Wriggers, W., Beddig, R, Meyer, J., Hinrichs, C., Ho-Hagemann, H.T.M, Staneva, J., Ehlers, B.-M., and Janssen, F. (2026): Evaluation of coupled and uncoupled ocean-ice-atmosphere simulations using icon_2024.07 and NEMOv4.2.0 for the EURO-CORDEX domain. Geoscientific Model Development, 19, 543–578, https://doi.org/10.5194/gmd-19-543-2026
- Poll, S., Rigor, P., Brdar, S., Ho-Hagemann, H. T. M., Hartick, C., van Hulten, M., et al. (2025). The new TSMP2 coupled Earth system model. EGUsphere, 2025, 1–28. https://doi.org/10.5194/egusphere-2025-5468
- Teske, V., Timmermann, R., Nissen, C., Zentek, R., Semmler, T., Heinemann, G., 2025: Simulated density reorganization on the Weddell Sea continental shelf sensitive to atmospheric forcing. Ocean Sci., 21, 1205–1221.
- Zentek, R., Heinemann, G., 2023: REDOCCA Projekt - Uni Trier - Core Data. DOKU at DKRZ. https://hdl.handle.net/21.14106/cb44f718061ed8e9cdeb574d51113b64ec781564 (The data for full Antarctic, res. 15km, 2000-2014, 2036-2050, 2086-2100)

WG AIO

Person/institution in charge	Description of development	Version	Status
Ha Hagemann (Hereon)	Atmosphere-hydrology-ocean-sea ice-biogeochemical coupled model: (1) GCOAST-AHOIB1-1 & (2) GCOAST-AHOI2-0	(1) CCLM 6.0 + NEMO v3.6 + HD + ECOSMO (2) ICON-CLM + NEMO v3.6 + HD	(1) Model is working, simulations are available. (2) Model is working with ICON v2.6.6 and is upgraded to ICON v2024.07
Vera Maurer (DWD)	Atmosphere-hydrology-ocean-sea ice coupled model ROAM-NBS	ICON-CLM v2024.07 + NEMO v4.2 + HD	Model is working, simulations are available.
Sven Karsten (IOW)	Atmosphere-ocean-sea ice coupled model (1) IOW-ESM1 and (2) IOW-ESM2	(1) CCLM 5.0 + MOM6 + ERGOM (2) ICON-CLM v2024.07 + MOM6	(1) Model is working, simulations are on-going. (2) Model is technically working
Angelo Campanale (CMCC)	Atmosphere-ocean coupled model ICON-CLM & ICON-O-LAM	ICON-CLM + ICON-O-LAM	Model is working, two extreme cases were tested, on-going work for climate simulations
Stefan Poll (FZJ)	Atmosphere-land surface coupled model (1) TSMP1-140E and (2) TSMP2	(1) CCLM 5.0 + CLM 3.5 + ParFlow (2) ICON-CLM + eCLM + ParFlow	(1) Model is working, simulations are available. (2) Model is under evaluation
Danny Risto (GUF)	Atmosphere-wave coupled model	ICON-NWP-LAM + ICON-WAVES-LAM	Model is tested for 3 months, on-going work

WG CP

Report from WG CP

WG Coordinator/Deputy: Hendrik Feldmann, Marianna Adinolfi

6 Assembly contributions (4 talks and 2 posters) on various topics

Meeting:
Tuesday 13:30-15:30

- ➔ Remaining issues CMIP6 downscaling
- ➔ Overview of publication activities (Sven)
- ➔ Keeping the workspace at DKRZ for the ESGF published data
- ➔ Several groups setup ICON simulations outside Europe → Exchange of configurations in Gitlab
- ➔ Discussion in participating in CMIP7 (AFT) downscaling

CORDEX CMIP6 Downscaling

- Almost completed (EUR-12 and MEU-3)
- Many ICON simulations and some CCLM simulations already in the ESGF Simulations from the CLM family seem to perform well in the overall ensemble
- Several people from the Community contribute to the EURO CORDEX publication activities
- Several other papers from community members on CMIP6 downscaling in different stages

Further highlights

- Several diverse applications already for CPM ensembles
- Several activities regarding simulations outside Europe
- Contribution to FPS UrbRCC
  - Paris (core city) – CMCC (ICON) and KIT (CCLM)
  - Johannesburg (ICON)

WG SUPTECH

Report from WG SUPTECH

- WG coordinator/deputy
  - Gabriella Ceci (CMCC)
  - Michael Jähn (C2SM)
  - Susanne Brienen (DWD)

- 3 oral presentations, 1 poster
- meeting: Tuesday 22 Sep, 13:30 - 15:30 CEST with 12 persons (10 on-site, 2 remote)

Highlights

- **Webpage**
  - updates needed (esp. CCLM --> ICLM)
  - move issues and content of the Wikis to gitlab
- **COPAT Framework**
  - gitlab repository in suptech area
  - publication of results: Zenodo (with DOI)
  - open details such as weights to be discussed in EVAL
- **SPICE**
  - preparation of v2.5, some new ideas (e.g. yaml namelists)
  - use gitlab issues for ideas and problems

Highlights

- **namelist tools**
  - collection of recommended versions in gitlab / SPICE
  - comparison of namelists through Klaus new tool
- **Zonda**: new option for predefined grids
- **cmip2caf converters**
  - issue with land-sea mask and too large diurnal temperature cycle needs to be solved
  - need for automatic check of input data

WG EVAL

Report from WG EVAL

- WG coordinator/deputy:
  - Beate Geyer (Hereon)
  - Evgenii Churiulin (KIT)

- meeting: Tuesday 22 Sep, 16:00 - 18:00 CEST with 10 persons (10 on-site)

Highlights

- **EvaSuite**
  - new version for more comfortable work with CLM Community tool, available via pip
  - can be used on HPC and personal computers
  - fully python
  - in 2-3 weeks will be public and contains PG KICS examples based on CECPI experiments

- **COPAT3**:
  - new configuration in 2-4 weeks, valid for ICON 2025.10. After that configuration will be shared with WG SUPTECH
  - Beate, Andreas and Sergei will work hard on preparation templates for future versions and further automatization of the working pipeline

- **GIT:**
  - Communication, issues and updates will be presented only on GIT

WG CRCS

Klaus Goergen (FZJ),
Andreas Will (BTU Cottbus-Senftenberg)

Report from WG Convection-Resolving Climate Sim. (CRCS)

- Coordination: Andreas Will (BTU Cottbus-Senftenberg) and Klaus Görgen (FZJ) confirmed
- Coordinated Evaluation of Convection Permitting Climate simulations with ICON-CLM
  - CECPI-Gernany ongoing: 2-moment MP scheme, individual parameters in cooperation with EVAL
  - configuration testing for different domains
- Model domains and projects (-> Topic Browser)
  - CECPI-Ger (reference)
    - UDAG finished (historical, SSP126, SSP245, SSP370, Boundary cond: ERA5, EC-EARTH, MPIESM, MIROC)
    - Data publication on ESGF started
    - Reduction of spread in UDAG ensemble
    - Improved extreme precipitation and diurnal cycle, urban effect, …
  - CORDEX-EU (PG KICS)
  - OTHERS: Alps, AIT, ETH, Italy (CMCC), Turkey (ITU Istanbul), Central Africa (KU Leuven, BTU, Nigeria), Southern Africa (KIT), Paris (CMCC, KIT), others

Report from WG Convection-Resolving Climate Sim. (CRCS)

- Topics
  - LiMMo Optimization in cooperation with EVAL
  - Renewable Energy
  - Urbanisation effects
  - Extreme events
- Support of technical developments by WGs EVAL, SUPTECH with “km-scale support”: COPAT3 pipeline, new EVA-Suite, new SPICE
- CORDEX
  - Contribution to CORDEX Task Force on CPRCM strategy report (https://zenodo.org/records/20282519) (based on this report, a paper by Sobolowski et al. for CORDEX 15th anniversary PLOS special issue under preparation)
  - WG CRCS members applied for newly to-be-established WCRP / CORDEX Task Team Convection-Permitting Regional Climate Modelling

Report from WG Convection-Resolving Climate Sim. (CRCS)

- Publications (in collaboration with EVAL)
  - Will et al. for JAMES on CECPI-Ger onfiguration development (in preparation)
  - Renewable energy: e.g., by KU Leuven: Borgers et al. (2025, https://doi.org/10.1088/1748-9326/add8a2, https://doi.org/10.1175/JAMC-D-24-0116.1; FZJ: Chen et al. (2025, https://doi.org/10.1016/j.energy.2025.139565)
  - Ramon et al. (2025, https://doi.org/10.1088/1748-9326/ae05b1)
  - OTHERS ON webpage (PLEASE INDICATE !!!)
- Close collaboration with
  - EVAL
  - SUPTECH
  - PHYSICS groups
  - Project Group Kilometer-scale ICON Continental Simulations (PG KICS)

PG KICS

Report from PG KICS 2025/26

- Km-scale ICON Continental Simulations
- Since kick-off, 2025-12: PG establishment and conceptualisation
- GitLab-based FAIR/FAIR4RS work organisation, information management, communication, etc.
- Monthly jour-fixe and intermediate meetings; presentations: CORDEX GA, ICCARUS, GA
- Two EUR-3 simulation experiments ongoing / under preparation:
  - “pg-kics_cycle-2026_initial-tests” (preparation of setup, 7 HPC systems, internal variability, sensitivity study runs, 50% finished, year 2002), 1SYPD on CSCS Alps by ETH; first optimizations: radiation scheme time stepping, I/O data volume, adjusted configuration for 2026.04, test of latest SPICE, model top expansion
  - “pg-kics_cycle-2026_baseline” (1st 10-year evaluation baseline to start autumn 2026)
- Since 2026-05, own CLMcom compute time project on JSC/JUPITER exascale HPC

GA'26 and forward: workings, sim. concepts, next activities

- Work in parallel on four highly interconnected, synergistic, equally important strands, each with flexible synchronized workplans, in line with / by CLMcom WGs, in sync with CORDEX TT CPRCM and others, structured through a system of annual cycles (dev-setup-test-sim-analysis)
- —>> 1. Generic LAM studies wrt km-scale continental runs on model evaluation, optimization, sensitivities (e.g., CI-CD/COPATx, LBC, GCM suitability, scales) (HPC: ECMWF, DKRZ, DWD)
- —>> 2. Longer multi-year/decadal evaluation / projections / sensitivity production-type runs (HPC: CSCS; CLMcom compute+data on JSC/JUPITER)
- —>> 3. Technical / HPC devs with the PG: (i) use existing optimization / tuning potentials; (ii) improved, km-enabled tools (EVA-SUITE, SPICE, etc.), coupled models; (iii) new tools, functions
- —>> 4. PG sims use: process / regions / impacts (e.g., urban, hydro, renewable, mnts, ocean)
- Most pressing technical tasks: VLs -> compile optimisation -> lossy compression
- Link to external communities: Mid 2027, EURO-CORDEX workshop on continental CPRCM

WG SOILVEG

Report from WG SOILVEG

- WG coordinator/deputy
  - Jan-Peter Schulz (DWD, CMCC)
  - Mario Raffa (CMCC)

Meeting: Thursday 24 Sep. 2026, 16:00 - 18:01, Presentations:

- **Jane Roque**, Stefan Siebert, Arianna Valmassoi
  Soil matters: Evaluating soil texture and irrigation impacts in Earth system simulations
- **Gennaro Sequino**, Alfredo Reder, Mario Raffa, Paola Mercogliano
  Assessing local hydraulic soil properties impact on Land Surface Models (LSMs) outputs
- **Inne Vanderkelen**, Fien Serras, Nicole van Lipzig, Marta Moreels
  Evaluation of HWSD soil type mapping in EXTPAR: Implications for COSMO-CLM and ICON

Report from WG SOILVEG

Discussion about a SOILVEG strategy
-> Set of coordinated experiments, using the COPAT3 setup, but with icon-2026.10 and for 10 years
-> Planned experiments:

- UDAG settings (TERRA, HWSDv2)

- TERRA + Van Genuchten / HiHydroSoil (Linda/Jürgen)

- JSBACH/QUINCY (using ICON-XPP settings), currently with VDIFF, with the perspective of using TURBTRAN/TURBDIFF in the future

- eCLM (setup of Stefan Poll, without ParFlow)

-> as it is expected that the well tuned UDAG configuration provides smallest T_2M biases, the focus of the evaluations will be the turbulent surface fluxes (e.g. against GLEAM)

and/or a comparison of all energy balance components and of runoff (from HD river routing)