Participant Call January 11, 2024

Participants: Stefano Galmarini, Annika Vogel, Paul Makar, Colleen Baublitz, Christian Hogrefe, Jesse Bash, Olivia Clifton

Grid intercomparison (Activity 1)

- Model data updates:
  - 10707: Richard sent an email that he will work on remaining model issues with the dry deposition diagnostics and land use categories starting next week.
  - 10708: Roberto has recalculated effective conductances and fluxes using an approach proposed by Paul to overcome inconsistencies between the code in WRF/Chem and the post-processing code relating to limit values. The recalculation has been completed for all cases for the grid scale values for all pollutants except SO2 and NH3. Christian identified a likely unit issue with the effective fluxes for O3. Roberto will look into this and continue working on the remaining pollutants as well as the LU-specific fields.
  - 10709: Waiting for feedback on previously flagged issues: error in model post-processing or model output, array overflows in some output fields for effective fluxes and effective conductances. In addition, the effective conductances (at least for O3) do not add up to Vd, and the post-processing of 10709 may also have been affected by the limit value issue encountered for 10708 and recently fixed by Roberto.
- Data storage updates:
  - No updates since the last call
- Analysis updates:
  - Paul circulated a draft manuscript on the critical loads ensemble analysis to co-authors and is asking for comments back by the end of January. He is specially asking all modeling leads to carefully check the description of their modeling setup as well as the interpretation of their results relating to underlying process representations.
  - Christian continued the analysis of the ozone dry deposition diagnostics (grid-scale and LU-specific) and LU information submitted by all groups. Paul and Stefano are providing feedback during monthly calls. Call participants discussed how to frame the analysis of land use differences with respect to recommendations for future work. Christian plans to show an outline and set of figures during the February call.
  - Iannis and Stefano are iterating on a set of figures to include in the manuscript and will focus on a single year for each domain.

Point intercomparison (Activity 2)

- An Activity 2 call was held on January 2. The main portion of the call was spent on Anam Khan going over her AGU presentation and showing some additional results from recently uploaded model runs.
- Annika plans to present initial results of her statistical error estimate work at the next Activity 2 call. Annika and Olivia had a call in December to design the initial analysis methodology.

Presentations and interactions with other communities

Olivia, Stefano, and Christian will have a call with the HTAP organizers on January 12 to discuss how experiences from AQMEII4 (and TOAR) can inform the upcoming HTAP3 OPNS simulations (link to HTAP white paper)

Check-in on AQMEII4 special issue (submission deadline July 31, 2024)

- Galmarini et al. (2021) Activity 1 overview technical note - published (https://acp.copernicus.org/articles/21/15663/2021/)
- Hogrefe et al. (2023) analysis of EPA CMAQ NA simulations - published (https://acp.copernicus.org/articles/23/8119/2023/)
- Clifton et al. (2023) Activity 2 overview manuscript - published (https://acp.copernicus.org/articles/23/9911/2023/)
- Additional planned and potential manuscripts:
    - Activity 1: Makar et al. – critical loads ensemble analysis - draft circulated to co-authors
    - Activity 1: Toyota et al. updates to GEM-MACH - how can results from Activity 2 be used to check/update the representation of dry deposition in regional modeling. Final decision on whether or not a manuscript will be developed to be made by spring 2024.
    - Activity 1: Kioutsioukis et al. – multi-model operational evaluation and analysis of AQMEII4 grid models – Stefano and Iannis iterating on figures
    - Activity 1: Hogrefe, Galmarini, Makar, Kioutsioukis et al. - multi-model analysis of ozone dry deposition diagnostics (grid-scale and LU-specific) and LU information – work is ongoing, target for draft manuscript: spring 2024
    - Activity 1: Lee, Soares, Makar, et al. – use of hierarchical cluster analysis for grid model intercomparison
    - Activity 2: Khan, Clifton, et al. – observational constraints on stomatal conductance and point model sensitivity simulations
    - Activity 2: Lee, Makar, et al. – use of meteorological cluster analysis for point model evaluation
    - Activity 2: Lee, Makar et al. – physics-informed machine learning for potentially refining point model parameter values
    - Activity 2: Vogel et al. - statistical error estimation analysis
    - Activity 2: Bash et al. – use of AQMEII4 flux measurement for optimization of selected STAGE resistances. Writing planned for spring 2024.

Next call February 8, 2024