Participant Call August 10, 2023

Participants: Christian Hogrefe, Richard Kranenburg, Philip Cheung, Jon Pleim, Jesse Bash, Paul Makar

Grid intercomparison (Activity 1)

- Model data updates:
  - 10707: prior to the last call, Richard uploaded new LU-specific dry deposition diagnostic files for EU2009. Updated grid-scale diagnostics and EU2010 files had not been provided yet. After the call, Christian downloaded, processed, and visualized the EU2009 LU-specific dry deposition diagnostic files and still saw some inconsistencies between the sum of the effective conductances and the deposition velocity. Richard will look into it. Richard also uploaded the EU2010 LU-specific diagnostics after the last call. Christian will download the data and convert them to netcdf for further analysis.
  - 10712: No updates since the last call, no data have been uploaded yet.
- Data storage updates:
  - No updates since the last call
- Data extraction and analysis updates:
  - Christian uploaded the following additional dataset at receptor locations:
    - Prepared observations and matched and extracted model results for daily aerosol NH4 concentrations measured at AQS sites (NA 2010 and 2016)
  - Paul, Stefano, and Christian had a separate call to discuss plans for analyzing the ozone dry deposition diagnostics (grid-scale and LU-specific) and LU information submitted by all groups and for preparing a manuscript based on this analysis. Christian will start this analysis and Paul, Stefano and Christian will have monthly calls to review progress and scope out a draft manuscript. They will report back to the larger group on a regular basis
  - Paul provided an update on the sulfur and nitrogen deposition paper he is writing. Paul and Philip are working on this analysis.
    - Ammonia analysis: a new CRiS satellite product was created by Mark Shephard, to better match what the satellite sees at overpass time for specific pixels and what the 2-week integrated AMoN samples are measuring when comparing model data to both data sets. This involves computing an average CRiS overpass time over multiple pixels to then extract the model values at the correct time.
    - The first part of paper will look at ensemble results for critical loads (aquatic systems)
    - The second part looks at why the models are different. Paul showed examples of SO2 evaluation. Models have a high bias over NA but generally not over EU (at least at EMEP sites). There was discussion on looking more at the role of point source plume rise and emission vertical allocation, and also the role of deposition. Christian to send email to WRF/Chem groups asking for details on their approach to point source vertical allocation, both over NA (where stack information was available) and EU (where point source / power sector emissions are provided as 2D files and groups need to implement their approach to vertical allocation). Richard noted that TNO had provided reference vertical allocation profiles (used in LOTOS-EUROS) to all groups via the AQMEII4 github site at https://github.com/AQMEII4/Activity-1-AQMEII-style-runs/blob/master/EU%20emissions%20temporal%20profiles.zip

Point intercomparison (Activity 2)

- Activity 2 call held August 1, the call notes are in preparation.

Special issue (not discussed during the call, included for reference)

- The submission deadline was extended to July 31, 2024
- List of published, submitted, and planned manuscripts:
  - 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 - accepted for publication (https://egusphere.copernicus.org/preprints/2023/egusphere-2023-465/)
  - Activity 1: Makar et al. – critical loads ensemble analysis - hopes to have draft this month
  - Activity 1: Makar et al. potential updates to GEM-MACH - how can results from Activity 2 be used to check/update the representation of dry deposition in regional modeling. Paul will lead this, but not until after finishing the critical loads analysis, i.e. not before September.
  - Activity 1: Kioutsioukis et al. – multi-model operational evaluation and analysis of AQMEII4 grid models
  - Activity 1: Hogrefe, Galmarini, Makar, Kioutsioukis et al. - multi-model analysis of ozone dry deposition diagnostics (grid-scale and LU-specific) and LU information - Christian will start this analysis and Paul, Stefano and Christian will have monthly calls to review progress and scope out a draft manuscript. Target: winter 2023/2024
  - 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: Bash et al. – use of AQMEII4 flux measurement for optimization of selected STAGE resistances. Jesse aims for draft in late fall, early winter

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