Participant Call March 16, 2023

Participants: Rohit Mathur, Jesse Bash, Christian Hogrefe

Grid intercomparison (Activity 1)

- Model data updates:
  - All 10710 (UH CMAQ EU) fields uploaded, WFLUX fields updated to include gaseous species
  - 10700 and 10701 (EPA CMAQ NA) WFLUX fields updated to include gaseous species
  - 10707 (TNO LOTOS/EUROS EU) WFLUX fields updated to include gaseous species
  - 10708 (UPM WRF/Chem EU and NA) WFLUX do not include gaseous species, these were not even output by the model, so no updates will be made [this likely applies to the other WRF/Chem simulations 10702 and 10709 as well]
  - 10712: Holly update via email: Will provide an updated time frame for uploading data by the end of the week of March 11.
- Data processing updates:
  - Christian completed the model data extractions at monitoring locations for meteorology, concentrations, and wet deposition fluxes for all model fields that were added or updated since the last receptor extractions in 2022. These files were uploaded to the sftp server
- Data storage updates:
  - Updated files for 10700-10701, 10703-10705, and 10708 (created last fall) were transferred from the sftp server to the ENSEMBLE server (https://jeodpp.jrc.ec.europa.eu/ftp/jrc-opendata/ENSEMBLE/data/model-data/)
  - Files for 10707, 10710, and 10712 (initial tests only) as well as the latest set of receptor extractions are still on the sftp server until the next batch transfer will occur
- Analysis updates:
  - Iannis initiated his analysis with the latest receptor extractions. He has prepared an extended abstract for ITM that will be shared with co-authors shortly.
  - Christian has prepared updated model-to-obs and model-to-model screening plots and sent out an email to participants on March 7 describing these plots and asking for feedback. These plots are stored in the "results" folder on the sftp site, in a new subdirectory "20230306". See the March 7 email for further details. Comments on these plots are welcome and encouraged. The following follow-up items were identified:
    - 10707: the sum of the effective conductances often exceeds the deposition velocity
    - 10702: the DFLUX variables (effective fluxes) for 0241 (NA 2010) appear to have a unit issue that will have to be taken into account during analysis. No updates to the uploaded fields are expected.
  - Updates from Paul:
    - The critical load exceedance people have started using the first run through of the model output; I plan to do one last update of their input files on March 20th
    - Anticipated outline of manuscript:
      i. Comparison of model total S and total N deposition.

a. Summary table evaluation of the concentrations and wet fluxes for S and N species (summary from Iannis work, and reference to his paper).
b. Maps of total S and total N
c. Analysis of the reasons for the differences in total S and total N, using the AQMEII4 diagnostics.

ii. Comparison of critical load exceedance values for terrestrial and aquatic ecosystems for the different models and the ensemble
a. EU
b. NA
i. EPA CL's
ii. Canadian CL's
iii. Possibly some joint values

- Key question to be answered for (ii) is "What is the range of variability in model S and N deposition, and what are the implications of that range of variability towards the resulting policy advice?" From (i) we'll have "What are the causes of the observed variability in the model deposition totals?" and hopefully, "What can be done to both improve the model S and N deposition estimates and reduce the variability between the models?"

Point intercomparison (Activity 2)

- Activity 2 overview manuscript was submitted on March 13
- Activity 2 call held March 7. Call notes have been posted to the github site. The group discussed follow-on analyses now that the overview manuscript is submitted. Two of these follow-on analyses will be led by Colin Lee and Paul Makar who presented their proposed work during the call. Details of the proposed work can be found in the call notes
- Olivia continues to meet with Anam Khan on their planned analysis of stomatal uptake.
- Olivia will have an invited talk at the ACS spring meeting in two weeks in the symposium on chemistry on surfaces. She will probably include a couple of slides on Activity 2 from the AMS talk.

Special issue

- Galmarini et al. (2021) Activity 1 overview technical note - published
- Hogrefe et al. (2023) analysis of EPA CMAQ NA simulations - in open discussion since January, deadline extended until April
- Clifton et al. (2023) Activity 2 overview manuscript - submitted, waiting for editor assignment
- Additional planned / potential manuscripts:
    - Activity 1: Kioutsioukis et al. – multi-model evaluation and analysis of AQMEII4 grid models
    - Activity 1: Makar et al. – critical loads ensemble analysis
    - 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

Next call April 20