AQMEII4 Activity 2 Call Notes, 9/5/2023

Attendance: Olivia Clifton, Anam Khan, Laurens Ganzeveld, Paul Makar, Johannes Flemming, Limei Ran, Jon Pleim, Christian Hogrefe, Toyota Kenjiro, Colin Lee, Jesse Bash

Olivia reported that she worked through the page proofs for her Activity 1 introduction paper and that it would be published later in the week (update after the call: the paper has now been published and can be accessed at https://acp.copernicus.org/articles/23/9911/2023/)

Olivia then shared the following list of planned Activity 2 publications and asked whether there were any updates to the status indicated in blue. No updates were noted.

Activity 2 - Publications

Christian - submission deadline for SI extended by another year (July 31 2024)

- Clifton et al. – intro to Activity 2 and initial results focusing on multiyear seasonality [accepted to ACP special issue]
- Bash et al. – use of ozone flux measurements in AQMEII4 database for optimization of select STAGE resistances [in preparation; Jesse says draft to folks late fall/early winter]
- Makar et al. – use of cluster analysis for identifying met conditions leading to model biases [planning stages, Paul says he will start after acid dep paper]
- Lee, Makar et al. – physics-informed machine learning for refining parameter values [planning stages]
- Toyota, Makar et al. – improving the GEM-MACH dry dep scheme [planning stages]
- Khan, Clifton, et al. – investigate model differences in stomatal uptake using observational constraints on stomatal conductance from CO2 & H2O fluxes [planning stages]
- Ruiz, Clifton, Khan, et al. – interannual variability and trends in ground level ozone at Bugacpuszta [planning stages]

Anam then shared spreadsheets detailing the design of the proposed sensitivity simulations to further analyze effective stomatal conductances, stomatal conductance to ozone, and stomatal uptake of ozone simulated by the point models and comparing them to the observational datasets participating in AQMEII4. The sensitivity simulations involve setting different values for certain parameters and stress functions related to water stress. One table Anam showed listed the modified parameter values while another one showed the range of fixed values that would be used to substitute the results of certain functions. Anam noted that these simulations would be performed at each site. Anam also shared that the outputs requested from the models would include a few additional diagnostic variables that were not part of the output requested for the "base" simulations analyzed in Olivia's paper.

During the following discussion, Laurens raised the question whether the planned analysis may be able to separate the soil moisture limitation vs. vapor pressure deficit effects on stomatal conductance on different time scales. Paul asked Anam to please provide a brief bullet about the purpose of each proposed simulation. Olivia reminded the group about the document "AMKhan_AQMEII_sensitivity_sims.pdf" that provided a write-up of the purpose and design of the proposed simulations. The document has a creation date of July 30 and was sent to the group by Anam on July 30 in an email with the subject line "Re: Presenting results from AQMEII4 Activity 2 at the AGU fall meeting" and was resent to the group by Christian on August 14 in an email with the subject line "RE: August 1 AQMEII4 Point Intercomparison Call Notes".

Paul asked whether updated versions of the models analyzed in Olivia's paper could be used for the proposed sensitivity simulations. The sentiment was that it would be beyond the intent of Anam's planned paper to analyze a range of alternate configurations of a specific model and that it would be desirable to link the participating models back to what was analyzed in Olivia's paper, but that if one "final, updated" version of a given model was available in time for this activity, it might be possible to include it in the analysis along with the "base" model analyzed in Olivia's paper. The suggestion was to revisit this on a case-by-case basis as the simulations get underway and results are delivered to Anam.

In terms of proposed data structure, several modelers indicated that they would prefer one file per simulation since that would be easiest for building on the workflow established for the base case modeling. Anam said that she would take this into account when finalizing her request for modelers. Several modelers also asked Anam to please give guidance on file naming conventions in her request, and Anam responded that she would do so.

Wrapping up this portion of the call, Anam said she would take all of this feedback into consideration, iterate a few more times with Olivia, and then would send out a detailed request and proposed timeline to all modelers in the near future. Update after the call: Anam sent out an email with the detailed list of the proposed simulations, requested outputs, and data upload instructions to all point modelers on September 12. She asked for feedback by Monday September 18 on whether modelers would be interested in participating, and proposed a deadline of October 6 for submitting the results of the sensitivity simulations.

Given that the requested model output will include a few additional variables, the group discussed whether it would be useful to update the Fortran wrapper code that can be used as an example on how to read in the site-specific observation files, run the point model as a subroutine, and create a text file with all the requested output data. While not all groups use this wrapper, some do, and several call participants stated that it would be useful for the wrapper to be updated. Christian said that he would work on updating the wrapper with guidance from Anam and Olivia.

Olivia reminded the call participants that we plan to again use the EPA GoAnywhere site for data sharing and that the site requires users to log in at least once every 60 days to keep their account active. Participants were asked to try to log in to make sure they still have access. Update after the call: Christian reached out to the team managing the site with a list of users likely needing to access the site and asked the team to reactivate any account that may have become inactive. As a result, everyone's account should currently be active, but if there are any access issues, please reach out to Christian and please remember to log in to the site regularly to keep the account active.

Next call: Tuesday October 3, 10:00 EDST / 14:00 GMT / 15:00 BST / 16:00 CEST.