AQMEII4 Activity 2 Call Notes, 8/1/2023

Attendance: Jesse Bash, Jon Pleim, Laurens Ganzeveld, Paul Makar, Kenjiro Toyota, Olivia Clifton, Nichole Ruiz, Christian Hogrefe, Limei Ran

Olivia reported that the Activity 2 overview manuscript had been accepted for publication in the ACP special issue and has been transferred to typesetting. Olivia then shared the following list of planned Activity 2 submissions to the special issue and asked for status updates from call participants:

Activity 2 - Publications

- 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]
- Lee, Makar, et al. – use of cluster analysis for identifying met conditions leading to model biases [planning stages]
- 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]

Paul noted that he will likely lead the development of the third manuscript listed above, but not until after finishing work on the S and N critical loads manuscript for Activity 1, i.e. not before September. Jesse aims for a draft of the second manuscript listed above in late fall or early winter

Next, Olivia gave an update on her work with Nichole Ruiz on analyzing ozone flux measurements (August 2012 – January 2014) and corresponding point model results at the Bugacpuszta site, longer-term ozone concentration measurements and 2009 – 2010 grid model results at a nearby EMEP sites, and grid model results for ozone dry deposition diagnostics extracted for a larger subdomain focused on Hungary. The analysis of Bugacpuszta ozone deposition data focuses on contrasting 2012 (which was considered a drought year) with 2013. For August and September, ozone deposition velocities were similar between the two years. Calculations by Anam Khan suggest that for Penman-Monteith (PM), there is little difference between 2012 and 2013 in August stomatal conductance (gs), but the Medlyn model shows some gs differences between 2012 and 2013, suggesting that there could be offsetting non-gs effects (because total vd is similar between both years). These initial results point to the role of non-gs effects in causing interannual variability of ozone dry deposition velocities. To advance this analysis, Olivia and Anam recently obtained carbon and water flux data for all 20+ years of measurements at Bugacpuszta from the PIs which will help to better compare the PM vs. Medlyn gs estimates. As Olivia presented these initial results, call participants offered comments and feedback.

Finally, Olivia noted that while Anam could not participate in the call, prior to the call she sent an email with a status update and a list of potential sensitivity simulations (the email was sent by Anam on July 30 with the subject line “Re: Presenting results from AQMEII4 Activity 2 at the AGU fall meeting”), as a followup to what was discussed on the July call. Call participants were asked to provide feedback to Anam and Olivia prior to the next call. Follow-up discussion will occur during the next call.

Next call: Tuesday September 5, 10:00 EDST / 14:00 GMT / 15:00 BST / 16:00 CEST