

Activity 2 Participant Call September 27, 2022

Participants: Olivia Clifton, Jesse Bash, Jon Pleim, Christopher Holmes, Sam Bland, Shihan (Susie) Sun, Christian Hogrefe, Roberto San Jose, Limei Ran

The call focused on Olivia providing an update on the status of the revised manuscript:

- All modelers have provided data except DO3SE
- Olivia is analyzing the data, identified a few follow-up items for a few groups, and contacted these groups directly
- Olivia noted that she is rethinking an earlier decision to combine the soil and lower canopy pathways for this manuscript. She is now leaning towards keeping them separate because the lower canopy pathway effective conductance represents a substantial portion of the deposition velocity for some of the models that do include it (e.g. GEOS-Chem Wesely). M3Dry and STAGE don't have an explicit lower canopy resistance term, but instead distinguish between vegetated and non-vegetated soil. For the grid intercomparison, the vegetated soil effective conductance was reported as the lower canopy pathway (because it also includes in-canopy convective resistance) while the non-vegetated soil pathway was reported as the soil pathway for both M3Dry and STAGE. For the point intercomparison, both vegetated and non-vegetated effective conductances will be combined into the soil effective conductance for M3Dry and STAGE (this has already been done by Jesse for STAGE).
- Olivia noted that the equations and results currently submitted by ECCC for the Zhang scheme have a bug that originated from an error in a textbook when the scheme was developed and implemented (specifically the rb dependence on ozone diffusivity is wrong in Seinfeld and Pandis). The current implementation in GEM-MACH includes this bug, and the currently submitted point model results did not fix it to maintain consistency. The group discussed whether or not this should be fixed for the point intercomparison and decided that this ultimately is up to the ECCC group to decide and that the decision should be documented in the manuscript (either to note that a known bug is present in the results, or that the implementation used for the point intercomparison deviates from the implementation used in the grid intercomparison). Olivia will follow up with Paul to reach a decision.
- Olivia presented new plots in which she calculated stomatal O₃ dose (akin to the "PODy" metrics, but without any threshold) using observed diel O₃ cycles and modeled O₃ stomatal conductances. Call participants supported the inclusion of these plots in the manuscript and discussed several potential revisions to the organization of these plots, for example by using a common y-axis or apply normalization by mean ozone concentrations. No decision was made.
- Olivia also presented a new set of plots meant to compare interannual variability in V_d between observations and model results. Call participants discussed several potential revisions to the organization of these plots, for example by using medians instead of means when constructing representative values for each season and year, or using a color palette based on the observed progression from lowest to higher year. No decision was made.

Next call: October 25, 10:00 EDST / 14:00 GMT / 15:00 BST / 16:00 CEST