

Activity 2 Participant Call June 4, 2024

Participants: Colin Lee, Olivia Clifton, Anam Khan, Toyota Kenjiro, Annika Vogel, Jon Pleim, Christian Hogrefe

Olivia shared that she will be leaving NASA GISS for a new position in industry as of June 8. She will continue to collaborate with Anam and Annika on their publications and participate in calls as time permits. Her current Columbia email address will stay active. Olivia also plans to keep working on a manuscript analyzing Bugacpuszta ozone concentration and flux data, using AQMEII4 point model simulations and as well as AQMEII4 and non-AQMEII4 grid model simulations.

Given Olivia's transition to her new position, the monthly dedicated Activity 2 calls will be discontinued. Going forward, all Activity 2 coordination will be handled during the regular overall AQMEII4 calls that cover updates from both Activity 1 and Activity 2. These calls are currently scheduled for the second Thursday of each month at 9:00 EDST / 13:00 GMT / 14:00 BST / 15:00 CEST but may be changed to bimonthly. The next call is scheduled for Thursday June 13, 2024. Christian will add all Activity 2 participants who are not already involved in Activity 1 / Activity 2 coordination to the invitation list for these calls.

Anam recently defended her Ph.D. (congratulations!) and sent a draft manuscript to Olivia. After Olivia provides feedback to Anam, the goal is to revise the manuscript and then circulate a revised draft to co-authors in July.

Olivia and Christian informed the group that the deadline for submitting manuscripts to the AQMEII4 ACP special issue has been extended to July 31, 2025.

Kenjiro reported that he recently worked on non-AQMEII projects but hopes to resume dry deposition work by the end of summer. He asked how to handle potential questions on the various AQMEII4 observational datasets that may come up in his analysis. Olivia asked to continue routing such questions for individual site PIs through her and Christian and also noted that the Activity 2 overview paper may contain the answers to some questions.

Colin also worked on other projects recently and hopes to resume his work on applying a physics-informed machine learning approach to the AQMEII4 datasets soon. He has all the data and scripts he needs for performing this analysis. Once results are ready to be presented and/or published, he plans to contact contributing modeling groups and observationalists through Olivia and Christian to offer co-authorship.

Anam uploaded new files with her stomatal conductance estimates to the GoAnywhere site. Jesse, Annika, and Colin may use these estimates in their work, with Anam being offered co-

authorship. Anam can also share data processing scripts if needed. Her flux datasets include some additional variables (e.g. CO₂ fluxes at additional sites) beyond the original datasets used by the point modelers that she obtained by directly reaching out to the observationalists.

Annika shared that she is transitioning from her current position at Environment and Climate Change Canada to a new position in Germany in October. She plans to continue working on the AQMEII4 application of her method as time permits. She will probably submit a manuscript on the methodology first before submitting the manuscript describing the application of the methodology to the AQMEII4 datasets.

Annika gave an update on her work to formalize the method for making assumptions about the error correlations that are required by her approach. In addition to the assumption that observational errors are uncorrelated to errors in the point models, she provided results from two potential methods for developing the additional required assumption. The first approach (“minimum zero”) assumes that error correlations between models are non-negative to identify a pair of models with “uncorrelated” errors. The second approach (“obs=true”) assumes that there is no error associated with observations. Annika then showed an application of these two potential approaches to the Easter Bush and Hyytiälä AQMEII4 datasets. In the ensuing discussion, Olivia noted that the “obs=true” assumption is problematic, at least at the Easter Bush site with its more uncertain measurement methodology. Olivia then asked if instead of making an assumption about which model pairs have uncorrelated errors, one could alternatively make an assumption about which model pairs have the most correlated errors. If so, the Ball-Berry/Medlyn pairs for TEMIR Wesely or TEMIR Zhang might be good candidates. Annika responded that she would have to think about this but that it might be possible. Furthermore, she hypothesized that it might be possible to set the maximum error correlation between models as “1” and then scale things off of that assumption.