Activity 3 Participant Call November 17, 2020

Attendees: Jesse Bash, Chris Holmes, Alma Hodzic, Christian Hogrefe, Olivia Clifton, Johannes Flemming, Paul Makar

- Data
    - Updates
        - Olivia: no further discussion on Borden Forest data or any other dataset since the last call. Donna and Olivia were discussing whether the modelers might be interested in having a call with the observationalists, probably in early 2021
            - Chris: that would be a good idea
            - Olivia: concentrate on the sites which modelers have already started to use for their analysis
            - Jesse: agree that this would be a good idea. one piece of information that would be useful to obtain in such a call is the uncertainty associated with the ozone flux measurements
    - Issues
        - Johannes: encountered questions on some of the posted datasets (AUCH, ISPRA, RAMA, BORD) - also see notes and discussion below, following the table with status updates
            - Olivia: send questions on datasets to Donna and Olivia
            - Paul: create FAQ on decision points, best practices, recommended analyses for intercomparison
            - Olivia: people who already implemented filtering practices might want to share what they did so that this information could be included in such a FAQ document
            - Olivia: for the technical note, may show seasonal cycles for each site - when preparing these (Donna, Sam), will need to address this issue and document the approach
            - Chris: could also explore different statistics to be used in the analysis that handle outliers and potentially allow for error propagation
            - Johannes: still need to distinguish between errors (e.g. jumps) vs. uncertainties - circling back with observationalists may help in this process
        - Jesse:
            - Auchencorth Moss site - Olivia sent a dissertation (Mhairi Coyle's) with more information - there appear to be issues with LAI (it's one-sided rather than two-sided). One specific year looked off for LAI – this year was also strange for soil moisture and ozone fluxes
                - Jesse to follow up with Olivia and Donna in terms of the year (he didn't remember which year it was)
            - Ramat site has constant LAI - may represent their best guess if they did not have continuous LAI measurements
            - Would be nice to have exact estimates of uncertainty in ozone fluxes (Jesse is using 30% which is pretty standard for flux data) but if there are better estimates than they would be useful
- Activity 3 technical note for the AQMEII4 special issue in ACP:
    - Olivia: Chris and Olivia created outline, circulated to steering committee:

        - Motivate analysis
        - Summarize participating models
            - Summarize how the intercomparison is being structured - not actual results
        - Describe measurement datasets
            - Site by site description so that subsequent papers don't need to repeat this very detailed information
            - Approach to data filtering for intercomparison (treating errors vs. uncertainty)
            - Show average seasonal and diurnal cycles for illustration
        - Summarize what kind of questions this setup will allow the activity to address
    - Goal is to submit in January
        - Currently with steering committee
        - Next go to observationalists
- Model intercomparison paper
    - The group discussed that there is a need to find someone to lead a paper comparing all the models at the point scale and agreed to revisit this during future calls
- Modeling Updates

Name	Organization	Model	Status
Alma Hodzic	NCAR	Not participating in point intercomparison - using WRF/Chem for gridded modeling, interested in seeing how the WRF/Chem deposition module performs in the point intercomparison	Completed WRF/Chem regional-scale modeling
Jesse Bash	US EPA	CMAQ-STAGE	Ran box model for all sites with "fairly minimal" filtering - developed optimization scheme assuming a 30% uncertainty in the observations; developed updated model with results from optimization scheme, this updated model seems to capture observations better; grassland sites: soil sink was too fast, cuticular sink too slow; link vegetation type to cuticular sink
Paul Makar	ECCC	GEM-MACH - Robichaud	Nothing new to report on point intercomparison
Paul Makar	ECCC	GEM-MACH - Zhang	Nothing new to report on point intercomparison
Jon Pleim	US EPA	CMAQ-M3DRY	Not on call
Jon Pleim	US EPA	Photosynthesis model	Not on call

Roberto San Jose	Tech Univ of Madrid	WRF/Chem - Wesely (basically)	Not on call
Johannes Fleming	CAMS/ECMWF	IFS	Tested CIFS deposition box model, encountered questions about obs (see notes)

- Presentation of results:
    - Johannes
        - Showed histograms of observational data at Auchencorth Moss - showed outliers for a January period - units issues? Negative values are also present
        - Provide modelers with guidance on how to handle outliers / negative values - this is important when cross-comparing model results
            - Olivia: don't automatically exclude negative values (countergradient fluxes) - needs some judgment of what to include and exclude
            - Jesse: applied filter to Vd (Vd could not be greater than atmospheric or aerodynamic conductance)
            - Olivia: focus on comparing mean diurnal cycles, not half-hourly or hourly instantaneous values
                - Johannes - yes, but still want to stratify by wet vs. dry
                - Olivia: stratification / making composites is good, this is why sites with long-term records were chosen to allow such composites
            - Paul: create a FAQ document with guidance on these questions
        - Results at Ispra: observations of Vd often appear to be very high (~20 cm/s)
            - Olivia recalls some discussions on this earlier, will look into it again
            - Alma: are the same measurement techniques being used?
                - Olivia: no. Sites use either eddy covariance or gradient techniques, and the details of each of these can vary between sites as well. This makes comparisons between sites more challenging
        - Results at Ramat Hamadiv: observations also look odd for some time periods
        - Borden Forest: are the deposition flux values at 33m valid for a model evaluation at surface level?