Activity 2 Participant Call August 30, 2022

Participants: Olivia Clifton, Jesse Bash, Jon Pleim, Laurens Ganzeveld, Paul Makar, Christopher Holmes, Sam Bland, Shihan (Susie) Sun, Amos Tai, Christian Hogrefe

Olivia provided an update on the status and structure of the revised manuscript:

- Described content and purpose of tables
  - List of input variables (common names and units to be used in equations)
    - This is why sometimes Olivia is asking you about exact units used in your equation! Please answer her ☺
  - Forcing variables used by each model
  - Ra, Rb, L calculations performed by each model
  - Ozone specific parameter values used by each model

Olivia noted an issue of what to do when models use a zero threshold (e.g. to turn off stomatal conductance when solar radiation is zero) but the observations don't completely go to zero … a problem for GEOS Chem Wesely scheme

  - Chris to check into this for GEOS-Chem Wesely
    - Update: Yes this is happening. We will apply If SZA>95 then SolRad = 0 in the GEOS-Chem Wesely box models as a catch here.
  - Olivia asked Johannes and Vincent to do this for IFS GEOS-Chem Wesely

Olivia noted that the observation files were updated with a relaxed solar radiation / zenith angle check to reset negative values to either zero or missing – models using solar radiation (and/or PAR at Borden) need to be rerun – all files, metadata, qc plots, processing scripts updated 8/29/2022

PAR is always missing at Ramat Hanadiv. M3Dry makes some assumption about this so they can produce values. Jon will figure out what it is and let us know. TEMIR perhaps should make same assumption.

The group discussed how to estimate cloud fraction for the models using it in their algorithm. None of the observed files provide cloud fraction.

  - Chris: could use observed cloud fraction data from nearby airports to create a calibration curve, however, this is a research problem in and of itself. Cannot use the ratio between calculated clear-sky radiation and observed radiation because of varying aerosol loading
  - Paul: could use precip to switch between zero cloud fraction (no precip) and 100% cloudy (precip)
    - Cannot do this at Harvard because the observed precip is based on daily values, included as constant hourly values in the files
  - Alternative: always assume zero cloud fraction for all models
  - Decision: assume zero cloud fraction, document this in the manuscript, potentially perform sensitivity simulations later

The group discussed which temperature to use for the GEM-MACH Zhang scheme – interpolation to foliage level or Ta? Potential discrepancies between recommendations by the scheme's author and approaches reported in the literature.

- o Most schemes use Ta (at measurement height, generally above the canopy)
- o Decision: Also use Ta for GEM-MACH Zhang for now (document this in the manuscript), can perform sensitivity simulations later (e.g. estimate within-canopy / leaf temperature by interpolating between ground/soil temperature and top of canopy)

Next call: September 27, 10:00 EDST / 14:00 GMT / 15:00 BST / 16:00 CEST