# Participant Call May 5

Participants: Christian Hogrefe, Roberto San Jose, Jesse Bash, Kester Momoh, Holly Nowell, Ummugulsum Alyuz Özdemir, Jon Pleim, Paul Makar

Grid intercomparison (Activity 1)

- New model joining: Holly Nowell (Florida State University) will perform GEOS-Chem regional runs for North America. Modified GEOS-Chem code to output deposition diagnostics. Working on preparing inputs (boundary conditions, emissions), hopes to finish that effort in the next week or so and then start the model runs.

- Participant updates on reruns, postprocessing, data upload, and analysis

    - Richard (update by email): will investigate reasons for LOTOS-EUROS outliers for some diagnostic variables next week

    - Paul: finished 10703 (Base) and 10705 (Ops) reruns. Found bugs in 10704 (Zhang) code used for initial reruns and re-running those with fixed code now. Zhang bug also affects Base NH3 results, *may* rerun Base to fix NH3. It takes ~10 days to redo reach run. End of June - model libraries used for this project will be updated and current ones will no longer be available, so no further reruns will be possible

        - Christian downloaded 10703 and 10705. Ens2nc conversion for 10703 and 10705 (almost) complete. Receptor extractions done for 10703 and 10705/0241. Will do 10705/0251 receptor extractions once ens2nc conversion is complete

    - Roberto: Still plan to recalculate several resistance values that were affected by unit bug, will upload corrected files in a few weeks. Have started NA2010 runs and finished ~3 months, balancing this effort with computational resource and time needs for a different project. In these NA2010 runs, fixed recently discovered plume rise issues that were affecting previously-conducted WRF/Chem runs over NA (10708 for 2016, and 10702 and 10709 for both 2010 and 2016):

        - All WRF/Chem groups used a script developed by Christoph Knote for AQMEII2 to estimate plume rise from the CMAQ-ready point source files distributed to modeling groups, utilizing stack variables from those files

        - When this script was recently shared with Holly Nowell to guide vertical allocation of the CMAQ-ready point source files for GEOS-Chem, several issues were discovered: 1) the plume rise equations did not properly implement the Carson and Moses (1969) approach referenced in the script, 2) plume rise for fires was treated the same as plume rise for anthropogenic sources rather than making use of the burn area information available in the files, and 3) the stack flow information in the input files and used by the script was incorrect, using the stack flow of the last source in the file for all sources.

    - The errors for issue #1 happen to mostly cancel out each other. Issue #2 affects 10708 for NA2016 and 10702 (Aura) for NA2010 and NA2016, but not 10709 (Alma/Younghee) because they updated the script to treat wildfire plume rise differently. Issue #3 affects all previous WRF/Chem simulations, the effect is random. For his current NA2010 WRF/Chem runs, Roberto is using stack exit velocity and diameter to recompute flow.
    - The CMAQ and GEM-MACH runs were not affected by any of these issues. CMAQ uses stack exit velocity and diameter to compute stack flow rather than using the (erroneous) stack flow information from the files. Paul's group performed their own SMOKE processing (using the same SMOKE inputs as those used to create the CMAQ-ready files distributed to all groups) rather than using the CMAQ-ready files.

  - Christian: Discovered bug in CMAQ STAGE code affecting the assignment of surface roughness to different land use categories. Rerunning CMAQ STAGE for 2010 and 2016, will probably take 1.5 - 2 months to finish reruns and upload new post-processed gridded files and receptor extractions.

  - Ummugulsum, Kester: Also using the CMAQ STAGE code for which the bug was discovered. Will discuss internally on how to proceed given other ongoing projects and then let us know. Have set up post-processing workflow based on current runs.

- Analysis by Iannis. Created new set of analyses and plots. Regular calls between Stefano and Iannis.

Point intercomparison (Activity 2)

- Participant call held April 26
- Donna is working on harmonizing the final input datasets.
- Olivia and Donna interacted with modelers to update documentation in the draft manuscript and request additional clarification on inputs used by each scheme.
- Roberto provided requested clarifications on min/max Monin-Obukhov Length (-10000 / 10000) and roughness length calculations to Donna and Olivia.
- Donna hopes to circulate the final input datasets soon.

Special issue

In June, Stefano and Christian will reach out to Copernicus and Joshua to ask for an extension of the special issue by either a year (August 2023) or until the end of 2023.

HTAP workshop

Olivia will present an AQMEII4 overview on May 19

Next call

June 2, 9:00 EDST / 15:00 CEST