Participant Call July 8, 2021

Participants: Stefano Galmarini, Saurabh Kumar, Donna Schwede, Olivia Clifton, Ummugulsum Alyuz Ozdemir, Rohit Mathur, Jesse Bash, Aura Lupascu, Jon Pleim, Paul Makar, Roberto San Jose, Christian Hogrefe

- Technical notes
  - Activity 1 technical note accepted as discussion paper. Two reviewer comments posted to date, open discussion ends July 14. In revision, need to address reviewer comments and add COSMO-MUSCAT scheme and table and consider removing HZG/CMAQ and CIEMAT/CHIMERE from list of participating models
  - Point intercomparison / Activity 2 technical note: Submitted to ACP, rejected for posting as discussion paper. In discussions with special issue guest editors on how to proceed. One of the guest editors (Alex Guenther) is resigning from ACP editorial board, so he did not see the call for editors when TN2 was submitted. Waiting for response from Alex and Joshua.

- Grid intercomparison (Activity 1)

  - Receptor processing tool - Email sent by Stefano on June 3, 2021:
    - Code and observational data were posted in early June (see June call minutes) – no call participants besides EPA and ECCC have obtained the code yet
    - Recently added capability to compute averages over arbitrary time periods based on hourly model output data (e.g. weekly wet deposition totals matching NADP measurement time periods), new code is currently being tested by EPA and ECCC and will be shared with participants afterwards, likely via the Enviroware github site

  - Participant updates on postprocessing, data upload, and analysis
    - Summary of current upload status – see Table on Pages 3-4
    - Aura uploaded 132 - 462 for EU 2009 and 2010, working on -001, 002, -005, and 012 - 122
      - Aura also still has trouble with accessing ENSEMBLE, is prompted to change password, but change is never successful - Stefano will try to help
    - Ummugulsum / Saurabh (Hertfordshire): CMAQ processing is ongoing for the first 5 months, will finish that period ~next week, WRF-Chem expected to finish 2-3 weeks
    - Roberto: Submitted 001, 002, 005, and 012 – 122 for EU 2010, now working on 132 - 442, expects to finish in next few days, then move to other years (EU2009, NA2016).
    - For uploads, please maintain the directory structure of files created by enform_aq, this will facilitate the use of the receptor processing tool
      - e.g. 10709/0241/001/, 10709/0241/002/, etc.

- Point intercomparison (Activity 2)
  - Last call June 22, notes are posted on the github site
  - Discussed updates to wrapper, LAI (single-sided vs. two-sided), finalized data sets, and publication plans (Chris Holmes may lead the base comparison manuscript). Goal: have all

"base" model runs completed by September 1. Also planning to perform sensitivity simulations with perturbed inputs and data obtained from grid models
    - No update on driving box models with grid model data - Christian still to work with Roberto Bianconi, Stefano, and Paul to update the TSDs
    - Next call July 27.

- Upcoming meetings:
    - 24th Conference on Atmospheric Chemistry at the 102nd Annual Meeting of the American Meteorological Society, January 23-27, 2022, in Houston, TX, session on "Surface-Atmosphere Exchange Processes: Linking Earth and Sky" - abstract deadline August 3 at this link .
    - Session abstract: "The surface-atmosphere exchange of momentum, energy, moisture, trace gases and aerosols drive much of the dynamic behavior and composition of the atmosphere and thereby play a critical role in affecting weather, climate and air quality. The parameterizations used in current models to represent exchanges of pollutants between the earth's surface and the atmosphere were developed decades ago when model resolutions were much coarser and computational capacities were much less evolved. Highly simplified treatments of the vegetative canopy were developed (e.g., the big leaf approach) as a result of computational restraints and the highly heterogeneous land use across each coarse grid cell. The question now arises whether these simplified approaches continue to be adequate in light of vastly expanded computational capabilities and as model resolutions continue towards finer horizontal and vertical scales. Additionally, in most models the processes of emission and deposition are treated separately, even though observational evidence has accumulated that emission and deposition are often two sides of the same coin for many species, with upward (emission) or downward (deposition) fluxes depending on prevailing environmental and biological variables. Furthermore, in many models the exchange of trace chemical species and aerosols is not consistent with the physics used to represent the exchanges of momentum, energy and moisture. In this session, we hope to bring together modelers and measurement scientists to further a discussion on improving the understanding of the physical, chemical and biological processes that control surface-atmosphere exchanges and begin to reassess the parameterizations used in models to represent these important processes. We encourage presentations on relevant topics such as intensive or long-term flux measurements over heterogeneous and homogeneous land use types, (e.g., coastal, desert, tundra, snow or ice); exploration of biological processes in the soil or canopy affecting trace species exchanges; measurements or modeling of turbulent exchange processes between the canopy and atmosphere; modeling studies of gaseous or aerosol dry deposition; and measurements or models of bi-directional exchanges (e.g., ammonia or other biogenic species)."

- Next call September 9, 9:00 EDST / 15:00 CEST

	Continent / Year	001 (gases + aerosols)	002 (grid-scale wet and dry dep fluxes)	005 (meteorology)	012 – 122 (grid-scale dry dep diagnostics	132 -442 (LU-specific dry dep diagnostics)	452 (NH3 bi-directional)	462 (AQMEII4 LU fractions)	462 (native LU fractions)
10700 (EPA CMAQ M3DRY)	NA 2010	x	x	x	x	x	x	x	x
	NA 2016	x	x	x	x	x	x	x	x
10701 (EPA CMAQ STAGE)	NA 2010	x	x	x	x	x	x	x	x
	NA 2016	x	x	x	x	x	x	x	x
10702 (IASS WRF-Chem)	EU 2009					x			
	EU 2010					x			
	NA 2010								
	NA 2016								
10703 (ECCC GEM-MACH BASE)	NA 2010	x	x	x	x	x	x	x	x
	NA 2016	x	x	x	x	x	x	x	x
10704 (ECCC GEM-MACH ZHANG)	NA 2010	x	x	x	x	x	x	x	x
	NA 2016	x	x	x	x	x	x	x	x
10705 (ECCC GEM-MACH OPS)	NA 2010	x	x	x	x	x		x	x
	NA 2016	x	x	x	x	x		x	x
10706 (TROPOS COSMO-MUSCAT)	EU 2009	x	x						
	EU 2010	x	x						
10707 (TNO LOTOS-EUROS) *	EU 2009	x	x	x		x			
	EU 2010	x	x	x		x			
10708 (UPM WRF-Chem)	EU 2009								
	EU 2010	x	x	x	x				
	NA 2016								
10709 (UCAR WRF-Chem) **	NA 2010	x	x	x				x	x
	NA 2016	x	x	x				x	x
Hertfordshire CMAQ	EU 2009								
	EU2010								
Hertfordshire WRF-Chem	EU2009								
	EU2010								

Browse uploaded files at https://ensemble.jrc.ec.europa.eu/ensemble/pvt/aqmeii4/ - login required

* LOTOS-EUROS 10707 0341 files are labeled “2010”, 0351 files are labeled “2011”? For cases 132 – 442 (LU-specific dry deposition diagnostics), 212 – 242 and 392 – 442 are not currently on ENSEMBLE – LU types 5-6 (Deciduous needleleaf forest and Evergreen broadleaf forest) and 14-16 (wetlands, tundra, and snow/ice) not present in LOTOS-EUROS? For uploaded 132 – 442 cases, not all variables are reported

** files could not be processed with ens2nc because of non-standard missing value used in .ens files