Participant Call May 6, 2021

Participants: Aura Lupascu, Stefano Galmarini, Christian Hogrefe, Jon Pleim, Richard Kranenburg, Jesse Bash, Saurabh Kumar, Ummugulsum Alyuz, Ralf Wolke, Paul Makar, Johannes Bieser, Roberto San Jose

- Technical notes
  - Activity 1 technical note submitted to ACP and assigned to a handling editor. Will add COSMO-MUSCAT scheme and table provided by Ralf Wolke to the appendix when possible.
  - Point intercomparison / Activity 2 technical note: Received comments from steering committee members and observationalists. Next steps are to make revisions based on comments and initiate EPA and PNNL internal review

- Grid intercomparison (Activity 1)
  - Clarification on grid definition for regridding to the AQMEII4 analysis grid - email sent April 27, included below for reference
  - Planned update to ens2nc so that the resulting netcdf files will have lat, lon, lat_bnds, and lon_bnds variables. Will notify participants when the updated code is available at https://github.com/AQMEII4/enform_aqmeii4
  - Data upload deadline and analysis plans (Stefano, Iannis). Iannis is familiarizing himself with the data, may have a follow-up meeting with Stefano on May 7.
  - Preparation of receptor processing tool:
    - Additional testing performed using receptor locations of all 2016 NA meteorological and hourly SO2 observation sites prepared by Roberto Bianconi
    - Will distribute perl code prior to next call and ask participants to run this code to extract model values at receptor locations.
  - Participant updates on postprocessing and data upload
    - Ummugulsum: WRF-CMAQ is running, WRF-Chem is currently being setup. Data from the first run will be available by the end of July - Roberto San Jose provided assistance on setting up WRF-Chem
    - Paul: re-generating gridded files due to regridding error. Also started comparing SO2 fields between GEM-MACH and CMAQ M3DRY for 2016 for a NADP meeting. Will share Teams invite for a dry run of the presentation.
    - Ralf: Fixed interpolation to grid. Reuploaded first dataset (Table A2: Concentrations + Emissions). The meteorology (Table A1) is in progress and will come next week. Other fields (diagnostic fields) by early to mid June
    - Aura: write programs to calculate deposition fluxes, recreate programs for calculating LU-specific fluxes for NA due to different LU setup. Emissions reporting: include fires, include lightning? Christian to follow up with Paul and Stefano.
    - Richard: will submit all data this month, will double check gridding
    - Johannes: May be too late to submit data. Had started NA CMAQ runs in November/December but didn't proceed far, now waiting for new staff to start. May still contribute to stand-alone (non-collective) analyses depending on progress, but no promises.
    - Roberto: Started to upload the files corresponding to the 0351-001, 0351-002 0351-005 cases (concentrations, deposition fluxes, meteorology) for EU 2010. Now

processing the grid-scale diagnostics (012 - 122). In the coming weeks, will upload remaining fields for net deposition fluxes.
    - Christian: worked on receptor matching tool testing, regridding clarification, and ens2nc.for update

- Point intercomparison (Activity 2)
    - Last call April 27, notes will be posted on the github site
    - Focus is on the technical note and on screening the observational data sets for outliers and other inconsistencies

- Upcoming meetings:
    - NADP May 11 meeting - overview of AQMEII4, Paul will give a presentation on Tuesday, May 11 after 3 pm.
        - Paul will give a 'dry run' on Friday, May 7 at 8:00 EDST (14:00 CEST), anyone interested can join using the following information:

Microsoft Teams meeting

Join on your computer or mobile app

Click here to join the meeting

Or call in (audio only)

+1 437-703-5266,,414439820# Canada, Toronto

Phone Conference ID: 414 439 820#

Find a local number | Reset PIN

    - MAC-MAQ September 15-17, UC Davis. Hybrid format. Call for abstracts now open: https://macmaq.aqrc.ucdavis.edu/

- Next call June 3, 9:00 EDST / 15:00 CEST

Reference: email sent to participants on April 27 regarding grid definition clarification:

From: Hogrefe, Christian
Sent: Tuesday, April 27, 2021 8:36 AM
Subject: Clarification on AQMEII4 Activity 1 Grid Definitions; Planned Updates to ens2nc.for

Dear AQMEII4 activity 1 participants,

We are reaching out to you today to provide clarification on the exact definition of the NA and EU common latitude and longitude grids on which you are reporting model outputs. Specifically, we want to clarify that the xmin and ymin values specified in the TSDs and .src files represent the lower left corner of the first grid cell, not its center. Making sure that we all follow this definition

not only avoids having some reported gridded fields being offset by half a grid cell (0.0625 degrees) with respect to others, but also that the code currently being developed to match receptor data to model values performs correctly.

We have updated the OAD with this clarification:

https://github.com/AQMEII4/Activity-1-AQMEII-style-runs/blob/master/OverarchingDocuments/Activity1.md

The image at the end of the email shows the changes from the previous version of the OAD. The key differences are that the new version provides a more explicit discussion of the grid and that the ranges shown for the NA and EU grids have been updated to reflect the full range from the lower left corner of the first grid (x=y=1) to the *upper right* corner of the last grid (x=nx, y=ny) while the previous range reflected the range from the lower left corner of the first grid (x=y=1) to the *lower left* corner of the last grid (x=nx, y=ny).

Note that in the NCO/CDO regridding example provided on our github page

https://github.com/AQMEII4/Activity-1-AQMEII-style-runs/blob/master/OverarchingDocuments/RegriddingExamples/README.md

the lat/lon grid definition provided in that folder for the NA domain

https://github.com/AQMEII4/Activity-1-AQMEII-style-runs/blob/master/OverarchingDocuments/RegriddingExamples/grid_file_aqmeii4_latlon_565_281_lonlat.txt

already followed the interpretation above (i.e. the interpretation that the that the xmin and ymin values provided in the TSDs and .src files represent the lower left corner of the first grid cell, not its center). Assuming the same interpretation was used when adapting this example to the EU domain, no further action should be needed if your regridding was based off of this NCO/CDO example. If you used other regridding tools and approaches, please verify that you followed the interpretation of xmin and ymin discussed above.

Finally, we wanted to give you a heads up that we are currently revising the ens2nc.for code that you can use to decode gridded .ens files uploaded by other groups to the ENSEMBLE server and then downloaded to your machine. The purpose of the update is to make the georeferencing in the .nc files generated by the code more self-contained. It will not affect the actual gridded variable values stored in the file, so any .nc files you may already have generated for your internal work and testing (the .nc files are not part of what needs to be uploaded to the JRC sftp server) are still o.k. in terms of their content. Additional details on the update will be provided at our May 6 monthly call.

For your reference, here is an image of the OAD changes on the Activity 1 github site:

NA:

> The origin (lower left corner) of the NA domain is at xmin=130°W and ymin=23.5°N. The domain consists of nx=565 grid points in the West-East direction and ny=281 grid points in the South-North direction. Because the domain origin represents the lower left corner of the first grid cell, the center of that first grid cell (nx=1, ny=1) is at 129.9375°W and 23.5625°N, and its upper right corner is at 129.875°W and 23.625°N. The model values to be reported for the first grid cell (nx=1, ny=1) therefore represent the range 130°W <-> 129.875°W, 23.5°N <-> 23.625°N.

> Correspondingly, the total horizontal extent of the common NA domain, from the lower left corner of the first grid cell (nx=1, ny=1) to the upper right corner of the last grid cell (nx=565, ny=281), is defined as follows:

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130°W <-> 59.375°W, 23.5°N <-> 58.625°N,
130°W <-> 59.5°W, 23.5°N <-> 58.5°N,

2010 and 2016
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> The years to be modeled are 2010 and 2016.

EU:

> The origin (lower left corner) of the EU domain is at xmin=30°W and ymin=25°N. The domain consists of nx=721 grid points in the West-East direction and ny=361 grid points in the South-North direction. Because the domain origin represents the lower left corner of the first grid cell, the center of that first grid cell (nx=1, ny=1) is at 29.9375°W and 25.0625°N, and its upper right corner is at 29.875°W and 25.125°N. The model values to be reported for the first grid cell (nx=1, ny=1) therefore represent the range 30°W <-> 29.875°W, 25°N <-> 25.125°N.

> Correspondingly, the total horizontal extent of the common EU domain, from the lower left corner of the first grid cell (nx=1, ny=1) to the upper right corner of the last grid cell (nx=721, ny=361), is defined as follows:

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30 W <-> 60.125°E, 25°N <-> 70.125°N
30 W <-> 60°E, 25°N <-> 70°N

2009 and 2010
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> The years to be modeled are 2009 and 2010.

Please let us know if you have any follow-up questions or concerns,

Best regards,

Christian and Stefano