Dear authors,

Unfortunately, after checking your manuscript, it has come to our attention that it does not comply with our "Code and Data Policy".

https://www.geoscientific-model-development.net/policies/code_and_data_policy.html

Your "Code and data availability" section reads:

JEDI code is available at https://github.com/JCSDA/fv3-bundle

GEFS-Aerosols code is available at https://github.com/SamuelTrahanNOAA/ufs-weather-model

NARA v1.0 data is available at https://esrl.noaa.gov/gsd/thredds/catalog/retro/global_aerosol_reanalysis/catalog.html

MERRA-2 data is available at https://disc.gsfc.nasa.gov/385

CAMSRA data is available at https://atmosphere.copernicus.eu/

OpenAQ data is available at https://openaq.org

IMPROVE data is available at http://vista.cira.colostate.edu/improve/

None of these repositories is accepted by our policy. What's more, GitHub is specifically mentioned as an unacceptable repository. GitHub is not a suitable repository for scientific publication. GitHub itself instructs authors to use other alternatives for long-term archival and publishing, such as Zenodo.

Therefore, please, publish your code and data in one of the appropriate repositories, and reply to this comment with the relevant information (link and DOI) as soon as possible, as it should be available for the Discussions stage. I should note that the license for the ufs-weather-model does not clarify what license applies to each part of the code in the GitHub repository. In this way, it is impossible to know what conditions apply to each part of the code. This problem should be addressed and solved.

About the data: MERRA2, NARA and CAMSRA data: It would be ideal if you could save the exact data that you have used in new files instead of simply pointing it out to generic download pages, where it can be hard to determine exactly the variable and data used in your work, precluding its replicability. Beyond the NOAA, NASA and

COPERNICUS servers, the openaq.org and Colorado State University repositories are not acceptable, and you must store the data in one of the acceptable repositories listed in our policy.

In this way, if you do not fix these issues, we will have to reject your manuscript for publication in our journal. I should note that, actually, your manuscript should not have been accepted in Discussions, given this lack of compliance with our policy. Therefore, the current situation with your manuscript is irregular.

Also, you remember including in a potentially reviewed version of your manuscript the modified 'Code and Data Availability' section, including the necessary DOIs.

Juan A. Añel
Geosci. Model Dev. Exec. Editor

**Response:**
**The Data and Code Availability section has been updated as below.**

The GEFS-Aerosols and JEDI code we used to conduct pNARA v1.0 are public available on Zenodo (10.5281/zenodo.8226055). Because the size of reanalysis datasets are too large, we deposited the sample data of pNARA v1.0, MERRA-2 and CAMSRA on Zenodo (10.5281/zenodo.8222945). For pNARA v1.0, readers can browse the catalog of available files and retrieve the data via wget or curl commands based on the formats of url links below,
AOD file:
https://esrl.noaa.gov/gsd/thredds/fileServer/retro/global_aerosol_reanalysis/YYYYMM/NARA-1.0_AOD_YYYYMMDDHH.nc4,
Aerosol mass mixing ratio on model levels file:
https://esrl.noaa.gov/gsd/thredds/fileServer/retro/global_aerosol_reanalysis/YYYYMM/NARA-1.0_aero_YYYYMMDDHH.nc4, where YYYY stands for the 4-digit year; MM stands for 2-digit month; DD stands for 2-digit day; HH stands for 2-digit hours. For instance, the fetching link of AOD reanalysis on 12Z Aug 15, 2016 will be https://esrl.noaa.gov/gsd/thredds/fileServer/retro/global_aerosol_reanalysis/201608/NARA-1.0_aero_2016081512.nc4.
For MERRA-2, we used AOD (M2I3NXGAS) and aerosol mass mixing ratio (M2I3NVAER) datasets. It can be received by searching the tag in the parentheses on NASA's Goddard Earth Sciences Data and Information Services Center (GES DISC) website (https://disc.gsfc.nasa.gov/). For CAMSRA, the data can be founded by 'EAC4' through Atmosphere Data Store website (https://ads.atmosphere.copernicus.eu/cdsapp#!/home). The CDS API is needed for users to fetch data (https://ads.atmosphere.copernicus.eu/api-how-to). The API request

can be generated by selecting desired parameters on the website (https://ads.atmosphere.copernicus.eu/cdsapp#!/dataset/cams-global-reanalysis-eac4?tab=form) and users can retrieve files through Python script. The measurements from MODIS NNR, AERONET, OpenAQ, and IMPROVE for 2016 are available on Zenodo (10.5281/zenodo.8226441).