



EGUsphere, editor comment EC1
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Comment on egusphere-2022-356

Jason Williams (Editor)

Editor comment on "Evaluation of the NAQFC driven by the NOAA Global Forecast System (version 16): comparison with the WRF-CMAQ during the summer 2019 FIREX-AQ campaign" by Youhua Tang et al., EGU sphere,
<https://doi.org/10.5194/egusphere-2022-356-EC1>, 2022

Dear Authours,

I would like to bring to your attention some additional remarks which have been provided by one of the referees, which are posted below:

"Technical comments that may affect the quantitative results: I want to point out that airnow surface observations they used to evaluate the models have a much shorter latency than the more widely used AQS data (cited in review #2 report). While airnow data may be more suitable for being assimilated to improve initial conditions of model forecasts (which is not relevant to this paper), they are not the best evaluation data for retrospective analysis like this. Airnow raw data are without any quality control, seemingly unreliable values are found sometimes, and unlike AQS, no measurement detection limits (depending on measurement approach) are provided. If airnow data will continue to be used, at least a rigorous approach to screen the data must be developed and validated, referring to additional information. Also, more details on how the observations are matched with the model results need to be provided. Specifically: often, multiple surface observations with huge variability fall within a given model grid cell, and were they averaged before being compared with the model results? In other words, how were horizontal representativeness error being handled? Over the complex terrain regions like the western US where some of their analysis is focused on, the model terrain is often unrealistic, while observations at mountain sites may reflect both boundary layer and free tropospheric air influences via downslope and upslope flows, did they always extract the model outputs from the "surface" level at the observation locations?

Other comments: There are so many ways to set up and run WRF, and thus WRF can be viewed as more than one single model. Except that GFS and WRF-ARW dynamic cores are different, WRF can be set up similar to and dependent upon GFS. Conclusions based on some comparisons of CMAQ driven by GFS and one set of WRF for a selected period are bit hard to digest (if they are seen not somewhat misleading), as it is unclear what exact strengths and weaknesses of the meteorological models are being assessed relevant to air quality modeling. The surface and above-surface analyses from this paper are kind of detached from each other, and it is unclear which one would be more relevant to/matter more to daily forecasts.

Please provide details in your response to the referees regarding these new issues raised

by one of the referees.

yours sincerely,

Jason Williams.