

Interactive comment on “Comparison of Chemical Lateral Boundary Conditions for Air Quality Predictions over the Contiguous United States during Intrusion Events” by Youhua Tang et al.

Anonymous Referee #2

Received and published: 26 August 2020

This manuscript describes air quality simulations with EPA's CMAQ model over the contiguous United States with a focus on the use of dynamic chemical lateral boundary conditions from a global model, Geos-chem and investigates the predictive skill for ozone and PM_{2.5} with an emphasis on dust events and fires. CMAQ model predictions for air quality are improved with use of dynamic chemical lateral boundary conditions. The authors identify an important and timely problem and investigate it well. I recommend the paper for publication after the following items are addressed.

There has been a lot of work on developing boundary conditions for CMAQ in particular and for aerosols in particular. That literature is not cited here and that sur-

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prises me. Can the authors put their work here in that context? Here is one example: <https://gmd.copernicus.org/articles/7/339/2014/>

This work may have implications for policy-relevant background and exceptional event determination. Can the authors provide any context for this?

When discussing figure 10 in the manuscript the authors point out that they were unable to capture fireworks however the observed [PM_{2.5}] peaks in figure 10 occur on July 5 not July 4. I understand the time is in UTC, but it looks to be a whole day apart and not just eight or nine hours.

Sonntag et al., 2014 is not the best reference for AERO6.ã

Please provide a link or reference for the wild fire emission method?

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2020-587>, 2020.

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