

Interactive comment on “The implementation of NEMS GFS Aerosol Component (NGAC) Version 1.0 for global dust forecasting at NOAA/NCEP” by C.-H. Lu et al.

Anonymous Referee #1

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This is a review of the manuscript "The implementation of NEMS GFS Aerosol Component (NGAC) Version 1.0 for global dust forecasting at NOAA/NCEP" authored by Lu et al. This manuscript describes, at generally a high level, the implementation of a global dust model into NCEP's forecasting capabilities. Forecasting dust on a global scale is important since dust can impact sensible weather through changes in radiation, can act as condensation nuclei, and can impact climate as well. Therefore, it is important to be able to include dust in weather prediction models, particularly on the global scale since many of the largest sources of dust are in Europe, Africa and Asia, and the dust from these sources can travel around the globe and therefore have impacts well beyond their regions of origin.

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General Comments:

Overall this manuscript is well written. And while it does not provide an extremely detailed description of the dust model itself, it does well describing at a high level how the global dust model was implemented at NCEP and provides numerous references to more detailed model descriptions. In addition, several examples of the the global dust forecast evaluated against observed data are provided. My recommendation is that the manuscript be accepted after several minor technical corrections and the addition of details here and there that I think would be helpful the readers.

Specific Comments:

Page 2, Line 17: Change "In additional to modulate" to "In addition to modulating".

Page 2, Line 23: Change "Large amount" to "Large amounts".

Page 7, Line 21: If DMS has not been previously defined, please define it here.

Page 8, Line 18: What sources of data are used to determine the surface bareness and topographical features? Later on in the paragraph it is stated that a satellite observed surface vegetation cover has been developed? Was this used to determine surface bareness? Even though reference is provided, I think it would be useful to the reader to provide some details about these satellite data.

Page 10, Line 20. Suggest changing "lower spatial resolution" to "coarser spatial resolution".

Page 12, Line 13. Change "one and a half day" to "one and a half days".

Page 13, Line 21: Change "captures" to "capture".

Page 14, Line 26: Change "also contributes the" to "also contributes to the".

Page 15, Line 7: Correct the spelling of independent.

Page 15, Line 14: Add references for the CMAQ and NAM models.

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