Geoscientific
Model Development
Discussions

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.

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The comments and suggestions from the referee #1 are greatly appreciated. All technical corrections have been made. The comment to provide some details on dust source function has been addressed, and the reference has been added for the CMAQ and NAM models. Please see detailed response below.

Specific Comments:

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

Response: Text has been changed as suggested.

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

Response: Changed as suggested.

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

Response: Text is changed from "DMS" to "dimethyl sulfide (DMS)".

* 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.

Response: The source map used in NGAC V1 is a static map derived from AVHRR. We revise the manuscript (see below) and remove the reference to Kim et al. 2013 to avoid the confusion.

The text "The dust source function regridded on the T126 GFS grid (shown in Fig. 2), representing the probability of dust uplifting, is determined from surface bareness and topographical depression features." is changed to "The dust source function, representing the probability of dust uplifting, is determined from surface bareness and topographical depression features. Surface bareness is identified from the 1âĂřx1âĂř vegetation data set derived from the advanced very high resolution radiometer (AVHRR) data (DeFries and Townshend, 1994). The static dust source function has been regridded on the GFS native T126 Gaussian grid for NGAC V1.0 (shown in Fig. 2). "

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

Response: Revised as suggested.

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

Response: Corrected as suggested.

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

Response: Corrected as suggested.

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

Response: Corrected.

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

Response: Spelling has been corrected.

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

Response: Byun and Schere (2006) is added for CMAQ. The NAM webpage is included for NAM.