

Review on the "The impact of dust storms on the Arabian Peninsula and the Red Sea" by Prakash, et al.

This study presents a case study of dust event that occurred during 18-29 March 2012 over Arabian Peninsular using WRF-chem model with the GOCART aerosol option. Their model simulation successfully captures the strong dust event over the Arabian peninsular during the period also captured by the Satellite and AERONET remote sensing observations. They also estimated the radiative effect of dust event at surface is -10W/m^2 . In general the study may contribute to better understand the role of the dust storm over the region, but the paper still needs some major issues to be considered for publication.

The validation of the dust AOD is shown in Figure 8 and 9. How about emission, deposition, mass concentration? Are MODIS and AERONE the only available observations for the time and region? Evaluation of simulated dust would be the most challenging part of modeling study, however authors should put more effort on validation and they need to add more discussion about the uncertainty of the model results.

They compare WRF meteorological field with ERA-I reanalysis. It seems model generally capture the reanalysis, but I noticed that the WRF strongly overestimates the surface pressure on May 19 (Fig. 2e-f). The discrepancy is important since the difference shall influence the dust emission, deposition, and loading in Figure 3, 5, and 9. It should be improved and discussed in the manuscript.

The text is lengthy and it needs to be greatly improved. First, the 6-page long introduction provides wide review of dust modeling, but many of them are not necessary for this study, rather they may distract the focus of this paper. These redundant texts appear in many other places especially in results sections. Although improving manuscript is the authors' responsibility, I will give some example as follow:

1. P19198, L15-22: The case in this sentence is for the Asian dust. What's the purpose of comparison with yours?
2. P19199, L15-P19200, L4: This is not result. Suggesting remove it.
3. P19201, L8-P19201, L11: This sentence is not relevant.
4. P19201, L13-P19202, L5: This sentence is not result. It could be removed.
5. P19202, L15-P19202, L19: Same. Not relevant for result section.
6. Same for Section 3.4: The entire section can be greatly improved by removing text that discusses previous studies.

Minor Comments on reference:

Yong-Seung and Ma-Beong (1996) should be Chung and Yoon (1996)?