

Review on “Physical and chemical properties of deposited airborne particulates over the Arabian Red Sea coastal plain” by Engelbrecht et al., 2017

The manuscript presents information on monthly resolved dust deposition rates as well as the mineralogical, chemical, and elemental composition of the deposited dust. The data are based on monthly accumulated samples over 13 months from six sites on the campus of King Abdullah University of Science and Technology (KAUST), located on the Saudi Arabian coastal plain near the Red Sea. These are new data from an understudied region, and the provided information is very valuable for other researchers. It will help with a better assessment of the effects of dust from this region on the environment and human health as well as for the evaluation and constraining of dust simulated with models. The manuscript is clearly written and well structured. It should be published after taking into consideration following few minor points.

1. **Page 4, lines 19–25:** Information should be provided where the climatological data were sourced.
2. **Page 5, line 7:** Add *Scanza et al.* (2015) as reference.
3. **Page 8, lines 13–24:** The authors should mention a possible bias in the results from applying the X-ray diffraction (XRD) technique. XRD is most effectively detecting crystalline material. This could lead to an overestimation of the abundance of those dust mineral types that tend to have a regular crystal structure, like tectosilicates, relative to other minerals such as phyllosilicates whose mass can have a significant and varying amorphous fraction (*Formenti et al.*, 2008; *Kandler et al.*, 2009).
4. **Page 8, line 25:** “Northwesterly Shamal winds prevailed during all twelve months of 2015 (Fig. 3)”

What about November? It looks like from Figure 3, as an exception, that northeasterly winds were more frequent in that month, although they didn’t quite reach the maximum strength of the northwesterly winds.

References

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- Kandler, K., L. Schütz, C. Deutscher, M. Ebert, H. Hofmann, S. Jäckel, R. Jaenicke, P. Knipertz, K. Lieke, A. Massling, A. Petzold, A. Schladitz, B. Weinzierl, A. Wiedensohler, S. Zorn, and S. Weinbruch (2009), Size distribution, mass concentration, chemical and mineralogical composition and derived optical parameters of the boundary layer aerosol at Tinfou, Morocco, during SAMUM 2006, *Tellus B*, *61*(1), 32–50, doi:10.1111/j.1600-0889.2008.00385.x.

Scanza, R. A., N. Mahowald, S. Ghan, C. S. Zender, J. F. Kok, X. Liu, Y. Zhang, and S. Albani (2015), Modeling dust as component minerals in the Community Atmosphere Model: development of framework and impact on radiative forcing, *Atmos. Chem. Phys.*, *15*, 537–561, doi:10.5194/acp-15-537-2015.