

## Review of 1<sup>st</sup> revision to WCD-2025-3552:

### Properties and Characteristics of Atmospheric Deserts over Europe - A First Statistical Analysis

#### Summary

I reviewed an earlier version of this manuscript. The authors have made comprehensive improvements that significantly improved the quality of their manuscript. Especially the enhancements to the cluster analysis have improved the robustness of their results, and their visualisation in new Figure 3 with the inclusion of seasonal statistics is a great addition to the work.

Improved language, clarifications, improved figures and the extended manuscript title successfully address all my previous major concerns. I only have a two minor comments to the revised version. I recommend the manuscript to be accepted for publication once these points are resolved:

- The extended discussion of impacts from AD events and agreement with other studies' results on Saharan warm-air intrusions and dust transport is very useful for understanding the wider relevance of the authors' research. However, if mentioning atmospheric rivers (AR) it should be noted that ARs also often coincide with Saharan dust transport to Europe (e.g., Francis et al. 2022). I think it would be valuable to explicitly state that this is not a contradiction to the author's results, due to the different definition of AR and AD (ARs can be ADs).

Francis, D., Fonseca, R., Nelli, N., Bozkurt, D., Picard, G., & Guan, B. (2022). Atmospheric rivers drive exceptional Saharan dust transport towards Europe. *Atmospheric Research*, 266, 105959.

- In your reply to my previous comment on Figure 4 you state that "Fig. 4f indeed shows 90th percentile values in the Mediterranean in SON are close to 7 days". However, this still does not agree with what I read from Figure 4:
  - Fig. 4f shows 90th percentile streak length for **JJA**, where the Mediterranean indeed shows streak length close to 7 days. I cannot see from this figure whether this corroborates your statement in line 277 of "more than nine days" since the colour scale is maxed out at 7+ days.
  - Fig. 4g shows 90th percentile streak length for **SON** around 3 days in the Mediterranean.Please clarify and refer to correct season or (sub)figure in your manuscript.