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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Spatiotemporal dynamics of fog and low clouds in the Namib unveiled with ground and space-based observations" *by* Hendrik Andersen et al.

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General comments: While fog and low cloud (FLC) form the lifeblood of desert flora and fauna in the Namib, their occurrence are considered to be hazardous to human activities such as aviation and shipping. It is thus important to understand where and when FLC occur. This paper examines the spatial and temporal incidence of FLC in the Namib, with special reference to the Central Namib. It also aims to help understand the processes driving the occurrence of FLC. Both ground based data and a variety of geostationary satellite based observations such as SEVIRI, CALIPSO, SCIAMACHY are used for this purpose. The use of these space-based observation adds a novel

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Discussion paper

aspect to research. The two guiding hypotheses were successfully addressed and found to be valid. The paper is well-written and a pleasure to read. It fulfils all the criteria required for publication in a high-impact journal.

Specific comments: Of special importance is the simple and clear explanation given for the anomaly between the ground- based and satellite based observations of the seasonal incidence of FLC in coastal regions. Unfortunately, this implies that satellite-based data cannot be used to examine the extent of fog over the coastal and adjacent maritime regions. The final recommendation by the authors i.e. that 'future research should focus on further characterization of the dynamical conditions and drivers that determine diurnal and seasonal variability and vertical structure of FLC is extremely important'. This should include the seasonal shift in location and intensity of the S. Atlantic and sub continental high pressure systems over southern Africa and their impact on the height of the inversion layer over the Namib. This together with the influence of the Namib-Benguela Upwelling System will provide a comprehensive picture and explanation of surface fog occurrence in the coastal regions.

Suggestions: Use colours for b in figure 4 rather than triangles. It will facilitate the interpretation of the results.

Please note: Research was conducted on fog in the Namib by Olivier J 1992: Some spatial and temporal aspects of fog in the Namib. SA Geograaf, 19(1/2) 106 - 126. If required, I can send a copy of the article to the authors.

Technical corrections: p2, 26: replace 'nearby' with 'near' p3, 9: is CALIPSO level '2 5 km' correct? p5, 27: word missing after 'over...,' p10, 22: ..In the central Namib, the diurnal cycle... are you referring to the whole central Namib or to the coastal region in the central Namib?

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-1268, 2018.