

## ***Interactive comment on “Mid-level clouds are frequent above the southeast Atlantic stratocumulus clouds” by Adeyemi A. Adebiyi et al.***

### **Anonymous Referee #2**

Received and published: 11 May 2020

The authors describe the occurrence, physical and optical properties, diurnal and seasonal variability, radiative impact on low-level clouds and the meteorology of mid-level clouds in the southeast Atlantic. For this purpose, they mostly used satellite observations and the in situ ORACLES 2016 campaign. The paper is clear and well written, and it makes good use of the observations. It is in particular of interest for the community that focuses on the southeast Atlantic region and it confirms the very few previous studies on the mid-level clouds. Therefore, I would recommend this paper for publication after a minor revision.

Minor comments:

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Line 12: “no study” I find this statement a bit strong. It might be true that there are no studies about mid-level clouds in the southeast Atlantic region but there are mid-level cloud studies in the tropics (that you cited) that have similar findings as yours.

Line 13 & 423: “attribution” I do not find this word correct in both these sentences. I would rather write “estimation”, “evaluation” or “calculation”.

Line 13: “of the cloud radiation budget, as well as . . . retrievals” I would write first the retrieval and then the cloud radiation budget because first, the cloud properties are observed/retrieved and then, their radiation budget is evaluated.

Line 29: “to reducing” seems weird. Wouldn’t be “to reduce” better?

Line 52-53: “Sub-tropical mid-level clouds have received little to no attention when. . .” To me, the subtropical region is the region between the tropics ( $23.5^{\circ}$ ) and the midlatitudes. In this definition, southeast Atlantic as you defined it ( $5^{\circ}\text{S}$ - $20^{\circ}\text{S}$ ) is not in the subtropics. However, you might have a different definition. If so, please clarify because it is not clear to me. In addition, Riihimaki’s paper focuses on Darwin ( $12^{\circ}\text{S}$ ) so it looks like it is the same latitude region as yours and Bourgeois’s paper (2016) focuses on the tropics ( $23.5^{\circ}\text{N}$ - $23.5^{\circ}\text{S}$ ) so your region is encompassed in it. Therefore, I would not write that mid-level clouds described in your study have received no attention in the past but I would definitely agree with little attention. Same remark for the conclusion.

Line 101-102: “Despite the focus. . .” I do not really understand what the authors mean here. Do they speculate that their study applies to a larger region than the region they focus on? If so, why?

Line 107 & 431: Please write the altitude in international units first. Feet should not be used in research.

Line 138: Typo, “the the”.

Line 165: CALIPO => CALIPSO.

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Line 174: infra-red => infrared.

Line 184: It looks to me that “Therefore” is misused here.

Line 217: “southeast Atlantic”.

Line 220: Write “5°S-20°S” for consistency.

Line 250: Typo, “Figure 5c & d”.

Line 322: Typo, “for for”.

Please, be consistent when you write longitudes, latitudes or temperatures. Use ° everywhere. Also, either you write e.g., 5km or 5 km. Several times, it is written “cloud” instead of “clouds”. References: Check them carefully. There are several mistakes. Non-exhaustive examples: - Adebisi A A A A - Hobbs - Kacarab - Klein - Palikonda

Caption 4: CALPSO => CALIPSO (x2).

Caption 6: Verb missing in the last sentence.

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