Reviewer: K. Peters (karsten.peters@mpimet.mpg.de)

Dear Authors,
I have briefly read over the submitted manuscript out of personal interest and found that the citation to
Peters, K., Quaas, J., and Bellouin, N.: Effects of absorbing aerosols in cloudy skies: a satellite study over the Atlantic Ocean, Atmos. Chem. Phys., 11, 1393–1404, doi:10.5194/acp-11-1393-2011, 2011.
shows up in the Reference section, but it does not appear anywhere in the main text of the manuscript and should thus be corrected.

Indeed, the above study focuses on topics thematised in the Introduction and the Method Sections of the submitted manuscript. In particular, Peters et al. (2011) calculated the direct radiative effect of aerosols above clouds by a combination of MODIS, AMSR-E, CERES and OMI measurements. Similar to the methodology applied in the submitted manuscript, the OMI AI was used to sample for absorbing aerosols in cloudy scenes.

Further, I suggest the authors be more cautious with using the term "trend" in their submission. A period spanning not even 8 consecutive years does not allow for a trend analysis in a climate context. As the authors also mention, the tendencies found in the data could simply be explained by measurement artifacts.

Response: We thank the reviewer for his comments. We have modified the text, particularly the conclusion of the paper, and added the above reference within the text. Therefore, we leave the citation on the reference page.

We do agree that eight years of CALIOP data is not sufficient volume of data for a trend analysis, thus, we have switched to the term “inter-annual variability” or “year to year variation” as opposed to trend.

Conclusions:

In the last paragraph, the authors speculate "whether or not ACA represents a fundamental climate phenomenon that requires specific monitoring long-term in a potentially changing climate" (technical: this sentence needs to be rewritten). I strongly endorse specific monitoring of ACA, as I explain in a short example below:

A non-negligible fraction of the fires occurring during the biomass burning season in southern Africa (about July-October) is considered to be of anthropogenic origin. These fires lead to long range transport of biomass burning aerosol over the stratocumulus cloud decks off the West-African coast and lead to substantial positive TOA radiative forcing, which is even non-negligible when averaged to a global scale (cf. Peters et al. (2011)). Under climate change, agricultural behavior, biodiversity and circulation patterns may change. This warrants specific monitoring of the ACA situation.

Thanks!
Kind regards, Karsten Peters

Response: This is a good suggestion. Peters et al. show that ACA does in fact represent a fundamental climate phenomenon, thus we have changed the sentence in the final paragraph, for which we include the citation for Peters et al. (2011).