

The manuscript titled "Atmospheric processing and aerosol aging responsible for observed increase in absorptivity of long-range transported smoke over the southeast Atlantic" provides an in-depth analysis of impacts of aerosol aging on the single scattering albedo (SSA) and Ångstrom exponent (AE) by using the observation network composed of AERONET (AErosol RObotic NETwork), 4STAR (Spectrometers for Sky-Scanning, Sun-Tracking Atmospheric Research), etc. through the long-range transported smoke over the southeast Atlantic.

The manuscript deals with important scientific themes, however, there are several points that should be addressed to improve its rigor and clarity:

1. In the lines 107 - 110, why single scattering albedo (SSA) increasing indicating their ability to absorb sunlight?
2. In the lines 144 and 530, unclear "OA" and "ASI". define them.
3. In the lines 159 - 169, the introduction of the structure of the paper is not needed.
4. In the Figure 2, We are more concerned about the flights used in the paper. Could they be marked out?
5. In Section 2 "Data and Methods", the introduction is overly lengthy. For example, lines 322 - 332 can be briefly introduced.
6. In the lines 398 - 399, "In Figure 3(b), the vertical distribution of aerosol extinction revealed maximum extinction below 1 km", 1km or 10km? The description doesn't match the figure. Does "aerosol extinction" refer to that of a certain layer or cumulative extinction?
7. In the lines 437 - 438, "We do this by integrating the available collocated AERONET, 4STAR and WRF-AAM output datasets from September 2016, August 2017, and October 2018." Does the data integrated by this method exclude the impact of annual variations on the data?
8. In the Figure 5, Whether the SSA of the two data points of 4STAR that are lower than 0.75 in 8 - 10 days are abnormal data or not, and whether the final results will be affected if they are removed.

9. In the Figure 7, Is it because the standard deviation (std) is too small that there are no error bars for the data points in the 2 - 4 days and 4 - 6 days, or is it that there is only one data point in each of these two time periods, making it impossible to calculate the error bars?

10. In the Figure 8 and Figure 9, It is recommended to keep the order of the labels on the x-axis consistent with that of Figure 7 to improve readability. Moreover, Figure 9 and Figure 8 can be combined into one figure.

11. In Section 3.3.3 Free Tropospheric Single Scattering Albedo, explain why the SSA in the free troposphere (FT) is lower than that in the total column (TC).

12. In the lines 551 and 553 - 554, "continually decreases from 0.87", "begins at 0.84 (0-2 days), increases to 0.857 (2-4 days), 0.862 (4-6 days), and peaks at 0.871 (6-8 days), before declining to 0.84 (8-10 days) and 0.845 (10-12 days)", increase from 8 - 10 days to 10 - 12 days is in contradiction with "continually decreases".