Anonymous Referee #2

Authors thank the reviewer for this interesting discussion on water vapour impacts on aerosol observations which is still a well-known concern. In the following, authors answer reviewers' comments and specify modifications realised in the manuscript.

I find the discussion on water vapour in Section 4.4 ambiguous. Do the authors vary water vapour amounts in their ADRE calculations? Section 4.6 suggest that they don't, and indeed I do not think that they should -- the water would probably be in the atmosphere anyway, as it is associated with the air mass, not the aerosols. (I doubt that fires would produce enough water to change atmospheric water vapour amounts significantly.) And what would be the reference ("no aerosols") value anyway?

I agree that the presence of water influences ADRE via hygroscopic growth -- but that is implicitly accounted for by the retrieved AOT and SSA.

Answer: Discussion on water vapour on section 4.4 allows to remind lecturers the importance of water vapour on radiative budget analyses. Whereas water vapour concentrations between 0.7 and 2.7 g cm^{-2} are observed locally from dropsondes during the campaign, this effect is secondary in the visible range. At this occasion, a constant value of 1.7 g m^{-2} is used, based on mean profiles obtained from dropsondes during the campaign. More realistic calculations of the ADRE are realised using a more realistic reference atmosphere. To consider water vapour variations during the campaign, a standard deviation of 1 g m^{-2} is included in the ADRE uncertainty calculation. This was mentioned in section 4.6 and in the Annexe B.

l.461: "The total amount of columnar water vapor was fixed to a value of 1.7 g.cm-2. We assume an error of ± 1 g.cm-2 in accordance with the PLASMA observations for this quantity."

l.880: "Additional errors terms were also added to account for the variability in the water vapor amount (standard deviation of 1 g cm-2) and for the cloud droplet effective radius (standard deviation of 2 microns)."

I am also unconvinced by the statement "These observations were obtained for an in-land location (Etosha Pan) and we assume that this area could be associated with dryer air masses than the ones sampled over the oceanic regions." -- The water vapour in the transported aerosol plumes comes from the land, so assuming land=dry ocean=moist does not seem correct in this case.

Answer: The origin of water vapour retrieved in our measurements is also discussed but needs more analyses on transportation and local emissions to be refined. This sentence brings hypothesis which can explain measurements without any certainty. A recent work brings new analyses on the water vapour concentration link to the biomass burning plume in this region (Pistone et al., 2021). Based on aircraft measurements and model simulations, authors demonstrate that the water vapour concentration which is linearly correlated with CO concentration, may not originate to BB emissions. This new result is added to the discussion.

Modification:

l.421: "Based on aircraft measurements and model simulations in the South-Eastern Atlantic region, a recent study demonstrates that the water vapour concentration which is linearly correlated with CO concentration, may not originate to BB emissions (Pistone et al., 2021). Hence, the meteorology seems to mainly drive the amount of water vapour in the atmosphere in this region."

Finally, Figure 12 needs a legend to explain the colours. Are they the same as in Figure 11b?

Answer: Figure 12 is based on the same representation than Figure 11b.

Modification:

The Figure 11b legend was added to Figure 12.