The mixing and precipitation scavenging effects are difficult to be quantified in observations. The authors showed a promising way by analyzing the observations of water isotope ratios and humidity together. The authors successfully show the difference between the mixing and scavenging processes with the new campaign data in the southeast Atlantic and their humidity-isotope pairs analyses. I believe the method is novel to the field of the interaction between clouds and aerosols.

I don't have major scientific comments for the manuscript, though I think the manuscript should be proofread again. Since the topic of this manuscript is the biomass burning aerosols, I think the manuscript should highlight them more in the text. There are a lot of texts in the manuscript describing the convection processes. The authors can link them to the concentration of BBA.

Minor comments:

Line 16: remove "to"?
Line 17: remove "of "
Line 28: What does IOP mean?
Line 41: after again?
Lines 52-53: "A component of both ….". The sentence reads weird. Why is the component of BC lifetimes the aerosol-cloud interaction?
Line 70: Double "."
Line 71: Double ","
Line 78: double "topped"
Figure 1: It would be nice to put two subplots in one row.
Line 96: Missing period after Redemann et al., (2021).
Line 98: What does LCLT mean?
Line 101: deck due to -> deck is due to
Line 101: "where it": what does where refer to? Subsidence or cloud deck? What does "it" refer to?
Line 107: missing spaces in "100m" and "7km"
Figure 2: Please add (a)(b)(c) for each subplot. Please choose a different color scheme for the left panel. It's not easy to tell three different tracks.
Line 146: "Using vertical profiles of T… was chosen": Please check the grammar here.
Line 147: "it would also…": What does it refer to?
Line 175: qdD is very important for this paper. Could you elaborate why qdD is useful than theta_e and what does it mean? Is it q times dD or something else?
Figure 3: What do two profiles in the middle of Figure 3(a) represent? What does the multi-color mean? Should it be accompanied with a color bar?
Figure 209: Where are the "grey" curves? In Figure 3?
Figure 228: What is the spatial resolution of this COBE dataset? What does COBE mean? References?
Line 257: "low-BBA are": double "are" in this sentence.
Figure 6: What is the difference between the dashed and solid line boxed regions? Also, no colors are filled in the color bar.

Line 303: What's the resolution of this MODIS data? Please briefly introduce this dataset, including its duration.
Line 304: Which boxed region?
Line 311: Table 3.2 or Table 2?
Line 317: 2022-> 2021
Line 323: figures -> Figures
Table 2: The row of "ocean evaporation source", the column of "calculation": equations 6-> Equation 6. "Horita and Wesolowski, 1994": Is it the correct citation style?
A weird "345" appears in the last row and last column.
Line 361: blue shaded region: light blue?
Line 363: Table 3.2 -> Table 2
Line 384: What does rBC mean?
Line 415: Two "is" in one sentence.
Line 431: Please reduce the dot size to increase the visibility, or change this figure to a heatmap.
Line 456: figures -> Figures
Line 501: add "the" between "advance" and "theory".
Line 534: close 0-> close to 0?
Line 541: efficiency less than unity -> efficiency is less than unity
Line 575: "However": Two however in one paragraph.
Line 584: I don't get what "either" means here.