# Review of "Cloud adjustments from large-scale smoke-circulation interactions strongly modulate the southeast Atlantic stratocumulus-to-cumulus transition" by Diamond et al.

This work investigated the transition from stratocumulus to cumulus clouds in a Lagrangian way by a large eddy simulation model SAM with inputs from regional model WRF-CAM5. The authors leveraged the aircraft and ground-based observations in combination with model simulations to show that vertical displacement of the former continental boundary is responsible for the main variation in the free troposphere. This paper highlights the thermodynamic and dynamic feedback due to BB aerosol radiation effect as the most important factor in the transition from stratocumulus to cumulus clouds. This is an exceptionally thorough and convincing paper that is well written and presented. I only have a few minor comments that need to be addressed, thus recommending publication subject to minor revision.

**Minor**

1. Line 124-127. Can the author explain more why precipitation scavenges can result in a lower number of larger droplets?

2. Line 141-145. The authors suggest that BB aerosol in the African region is mainly due to anthropogenic agriculture burning. However, satellite images show that most of the burning is in the Savannah region (Figure 8 in Che et al., 2022, https://doi.org/10.5194/acp-2022-160). Is this consistent with the authors' claim?

3. Line 260-216. The authors used the high-resolution meteorological field from WRF-CAM to run HYSPLIT trajectories initialized from Ascension Island, but used the coarser GDAS data to run HYSPLIT trajectories at 2 km. Do different datasets have an impact on the results of backward trajectories? Why is a high-resolution weather field not chosen for 2km trajectories?

4. Line 636-638. The moist FT is considered to be due to ex-CBL. Is it possible that it is also due to BB aerosol heating of the FT, resulting in enhanced evaporation of the underlying cloud droplets?

5. Line 846-847. The TKE is similar for all cases, but why does Toff have a higher boundary layer height and Woff have a lower one than AllOn? Can the auther explain more?