We thank the reviewer for taking their time to give detailed and helpful feedback on our manuscript. Please find our answers on the specific points below, with changes in the manuscript in green:

1. The grid spacing of 40m x 40m x 20m is likely too coarse for the MCB analysis. Dhandapani et al., cited in the manuscript, looked at sensitivity to grid spacing for MCB of stratocumulus clouds and concluded a horizontal grid spacing of 20m or lower is needed. The authors should include an analysis or justification for the grid spacing used here and the expected differences in simulations using finer grid spacing.

This is an important comment, which we addressed more carefully in the revised manuscript as follows: "The applied grid spacing (40 m × 40 m × 20 m) reflects a compromise between resolving boundary-layer turbulence and maintaining a sufficiently large domain to follow the aerosol plume downwind and to run the required ensemble for three sprayer altitudes. Recent LES work by Dhandapani et al. (2025) on MCB plume transport in marine stratocumulus demonstrated that plume statistics and radiative proxies are sensitive to the horizontal grid spacing. Previous LES studies on cumulus cloud size distributions suggest that even moderately coarse grid spacings (up to 100 m) represent the largest clouds well (e.g., Neggers et al. 2003). Since the largest clouds exhibit the strongest radiative forcing, we believe the results for different sprayer heights are qualitatively robust, though minor changes may occur for finer grid spacings."

2. "This indicates that the increase in the average LWPc in sprayed clouds is not due to the spraying creating deeper clouds but due to the sprayed aerosol interacting preferentially with deeper clouds." The sprayed aerosol could also be interacting preferentially with brighter clouds and clouds with higher liquid water. To that end, the authors should include simulations with passive tracers released, to further separate correlation and causation. Since the passive tracers do not affect subcloud boundary layer or cloud properties, three different passive tracers could be released at the three different altitudes in the same simulation for efficiency.

This is an interesting idea. However, it is not necessary to conduct extra simulations to address this. As shown in (3), high LWP_c clouds are brighter clouds because A_c is proportional to $LWP_c^{5/6}$, and the LWP_c is approximately proportional to the squared cloud depth. Thus, the observed effect is just caused by geometry: clouds grow from their base, which is approximately the same for all clouds analyzed here. If aerosol is released at higher levels, it will only interact with clouds that extend to higher levels, and therefore exhibit a larger cloud depth, and hence a higher LWP_c and A_c. To assess whether the spraying results in different cloud behavior, we evaluated the ensemble spread of A_c, LWP_c, N_c, and f_c in the revised Fig. 3. Changes in cloud behavior should be visible in LWP_c. However, the domain-mean LWP_c (gray lines in Fig. 3) changes only by 2.94 g m^{-2} when the sprayer height is changed, which is significantly less than the ensemble spread (8.20 to 8.06 g m^{-2}). Accordingly, the cloud behavior is not significantly affected by the spraying. At least for the first 50 minutes after the sprayer was activated, which is the focus of this study. We outline this further in the manuscript: "This is to be expected because adjustments to changes in the entrainment rate [and hence the LWP_c] in response to an increase in aerosol tend to require much more time to be effective (e.g., Glassmeier et al., 2021; Chen et al., 2024)."

3. The authors should discuss the radiation scheme used in the simulations, and possible consequences of the increased droplet concentration such as increased entrainment in cloud tops, decreased rain rate, changes in cloud longevity, etc.

Regarding the radiation scheme: The BOMEX case used to run the simulation does not consider radiation explicitly but via a prescribed cooling rate, mimicking the effect of the emission of longwave radiation (Siebesma et al. 2003). We added: "The BOMEX case also specifies various large-scale forcings, which, among other things, represent radiative cooling. Accordingly, our simulations do not apply a radiative transfer code."

We clarified the revised manuscript to clarify the minute changes in entrainment: "In Figs. 2a, c, and e one sees that the height of the sprayer and thus the sprayed aerosol do not substantially affect the overall morphology of the cumulus cloud field. This is to be expected because adjustments to changes in the entrainment rate in response to an increase in aerosol tend to require much more time to be effective (e.g., Glassmeier et al., 2021; Chen et al., 2024)."

Changes in rain rate are not expected, and therefore not considered: "To maintain the identity of sprayed CCN, collectional growth was disabled, and is also not expected due to the relatively high droplet concentrations."

Ultimately, changes in cloud lifetime tend to manifest in changes in cloud fraction, which we extensively investigated in Fig.3, which shows that there are no distinct changes in the cloud fraction for the entire cloud field (from 0.501 to 0.485 with an ensemble spread of 0.01 to 0.013). As stated above, this is most likely due to the relatively short simulation time, and we might see an effect in longer simulations.

Specific comments:

1. Repetition 'of the of the' in fig. 2 caption
   Thank you for pointing out the type. Fixed in manuscript.

2. Line 39: 'In Figs. 2a, c, and f' should be changed to 'In Figs. 2a, c, and e'
   Thank you for pointing out the type. Fixed in manuscript.