We thank the reviewer for taking the time for assessing our manuscript and the constructive comments.

1. Line 6: Near-surface?

   We adopted your suggestion in the abstract.

2. Line 4: Is the vertical domain really 20,480 m? Seems like it's a bit over 3,500 m?

   Yes, the domain size is correct. This domain is due to restriction from the pressure solver. However, Lagrangian particles are only placed up to 3000 m during model initialization, while higher altitudes are not analyzed. We clarified that in our manuscript

3. Figure 2: What is the time of the snapshot?

   The snapshot is from minute 38 after activating the aerosol source. We added this information to the caption of the figure: "*The cross-sections show the plume dispersion in the cumulus cloud field 38 minutes after activating the aerosol sprayer.*"

4. Line 92: Relative CRE?

   Yes, we replaced "*cloud radiative effect*" by "*relative cloud radiative effect*".

5. Figure 3: How is cloud fraction defined here?

   Cloud fraction is defined as the fraction of the x-y plane with an optical thickness larger than 1. The definition of the cloud optical thickness is already given in the manuscript. To clarify this, we added: "We determine these quantities from cloudy columns with $\tau_c \geq 1$, with f_c being the fraction of cloudy columns of the entire domain."

6. Figure 3: Why is rCRE not shown? You spend a lot of time talking about how to calculate it and show all its components, but it's somehow missing itself…

   We discussed the rCRE to motivate our analysis of Ac, Nc, LWPc, and fc. Since the rCRE is merely the product of Ac and fc, which can easily be estimated by the stated s in Fig. 3, we decided to not overload Fig. 3 by adding values for rCRE.

7. Figure 3: Can ensemble spread be indicated?

   We have determined the spread as the standard deviation among the ensemble members and added the value in parentheses under the average value.

8. Line 127: 3h instead of g?

   Thank you for pointing out that typo.

9. Line 180: It seems odd to talk about the GBR campaign being "proposed" by the 2024 review… Is there a more classic citation possible here? E.g., the 2019 "Reef Restoration and Adaptation Program: Environmental Modelling of Large Scale Solar Radiation Management. A Report provided to the Australian Government by the Reef Restoration and Adaptation Program" document. McDonald et al. (2019) or Condie et al. (2021) could also be appropriate.

   McDonald, J., McGee, J., Brent, K., & Burns, W. (2019). Governing geoengineering research for the Great Barrier Reef. Climate Policy, 19(7), 801-811. https://doi.org/10.1080/14693062.2019.1592742

Condie, S. A., Anthony, K. R. N., Babcock, R. C., Baird, M. E., Beeden, R., Fletcher, C. S., Gorton, R., Harrison, D., Hobday, A. J., Plaganyi, E. E., & Westcott, D. A. (2021). Large-scale interventions may delay decline of the Great Barrier Reef. R Soc Open Sci, 8(4), 201296. https://doi.org/10.1098/rsos.201296

Thank you for pointing out these publications. We reference Condie et al. (2021) in the revised manuscript.

10. Lines 205-210: Changing to talking about some example W m-2 values could be helpful here. It's hard to get an intuitive feel for what is or isn't an important difference in rCRE.

    We added the following short calculation: "Multiplied with a typical value for the average clear-sky shortwave surface irradiance of about 250 W m^{-2} for the examined region of the globe (e.g., Gilgen et al., 1998), the (absolute) cloud radiative effect (CRE) increases from 0.5 W m^{-2} to 1.1 W m^{-2}. While this represents a doubling from the initial d(rCRE) for the surface sprayer, it is still small compared to the base rCRE = 0.2711 (CRE = 67.8 W m^{-2})."