This study demonstrates successfully that the dispersed elements of the seeding flares can be detected in concentrations well above the background in seeded clouds, and be compared to comparable (with respect to D* and AF) not seeded clouds. It also shows changes in the cloud and drizzle drop size distributions (DSD) which agree with the expected effects of hygroscopic flares. Therefore, this study should be published despite remaining major uncertainties in this study.
The major uncertainty is the dynamic evolution of the clouds between seeding and sampling. However, constraining the comparisons to comparable D* and AF is sufficient for relating the consistent differences in the DSD to the seeding effects. Since the flares produce large concentrations of very small aerosols and low concentrations of giant CCN, the expected effect of secondary activation along with added drizzle appears to be realized.

Reply: We thank the reviewer for the encouraging comments on the manuscript.

One minor correction is to the claim that secondary drop activation can increase AF. This is true only if the secondary drop activation decreases the in-cloud supersaturation by the amount of the added AF. It is unlikely that in clouds with drop concentration exceeding 80 cm^{-3} and modest updraft the supersaturation would be greater than about 1% or 2% at most, which is much less than the observed fractional difference in AF between the seeded and not seeded clouds. Controlling carefully for the AF between segments of seeded and not seeded clouds can address the concern of a bias between the seeded and control clouds.

Reply: We thank the reviewer for the discussion on adiabatic fraction. The adiabatic fraction (AF) was calculated from the formula: $AF=LWC/LWC_{ad}$, where LWC is the measured liquid water content in a horizontal cloud pass. LWC_{ad} is the theoretically calculated adiabatic liquid water content using a parcel model. LWC_{ad} is constant at a given altitude. We stated in the manuscript that activation of new particles can change the AF values. This can be proved from the following calculations:

Let us assume that initially total droplet concentration of the non-seeded cloud was $N_{tNSCl}=10\ cm^{-3}$, and the corresponding $LWC_{NSCl}= 1\ g\ m^{-3}$. Since the seeding flares consist of small particles (Prabhakaran et al., 2023; Konwar et al. 2023), they may activate at a higher supersaturation in the cloud. The monsoon clouds typically have strong updrafts (exceeding 10 ms^{-1}) resulting in high quasi-state supersaturation (up to 5%-8%) that may activate small size aerosol particles in the convective clouds (Prabha, et al., 2011). When collision-coalescence process is active droplet concentration decreases which result in the increase in supersaturation values, and small particles can be activated. The same phenomenon was noted in a parcel model for seeded clouds when flare size distribution was used for simulation (e.g., Konwar et al., 2023). After seeding let us assume that secondary nucleation took place which can increase total droplet concentrations, assuming $N_{tSCl}=20\ cm^{-3}$ which will also increase LWC (let us assume that the increment is by an amount 0.50 $g\ m^{-3}$) in the seeded cloud. Therefore LWC of the seeded cloud is: $LWC_{SCl}= LWC_{NSCl}+ 0.5\ g\ m^{-3}=1.5\ g\ m^{-3}$.

Since LWC_{ad} remains constant at a given altitude, let us assume it as 2 $g\ m^{-3}$ for the present case.

Therefore the adiabatic fractions for no-seeded and seeded clouds are: AF_{NSCl}= 1/2=0.5 and AF_{SCl}= 1.5/2=0.75, which indicates that AF_{SCl}> AF_{NSCl} . The activation of new particles can impact the in-cloud supersaturation, but is not likely to associate with the AF under discussion.

For more clarity on the aspect of nucleation of the small size particles, a few sentences have been added to the revised manuscript, : 'Since the cloud seeding flare produces high concentrations of small-sized particles, they can be activated into cloud droplets in strong updraft regimes with high supersaturation (Konwar et al., 2023; Prabhakaran et al., 2023). In a parcel model simulation, small aerosols released from flares are found to be activated due to an increase in supersaturation when the collision-coalescence process is active (Konwar et al., 2023). For details on the nucleation process within the zone of intense collision, where rapid decrease in drop concentration leads to an increase in supersaturation, readers are referred to Pinsky and Khain (2002).)'. Please see Page 7-8, L 160-167 of the revised manuscript.

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