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Supporting Information for

**Influence of surface aerosol injection on stratocumulus-to-cumulus transition:  
Cloud-surface coupling and background aerosol concentrations**

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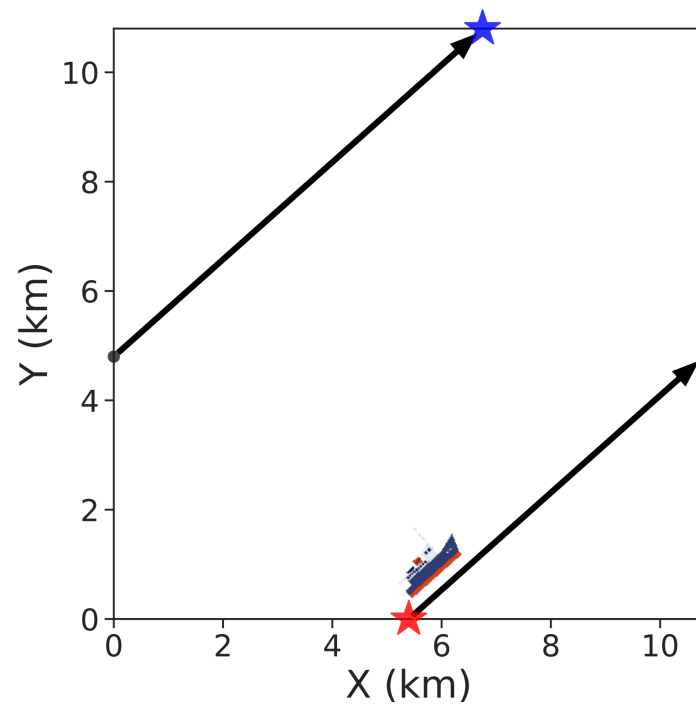
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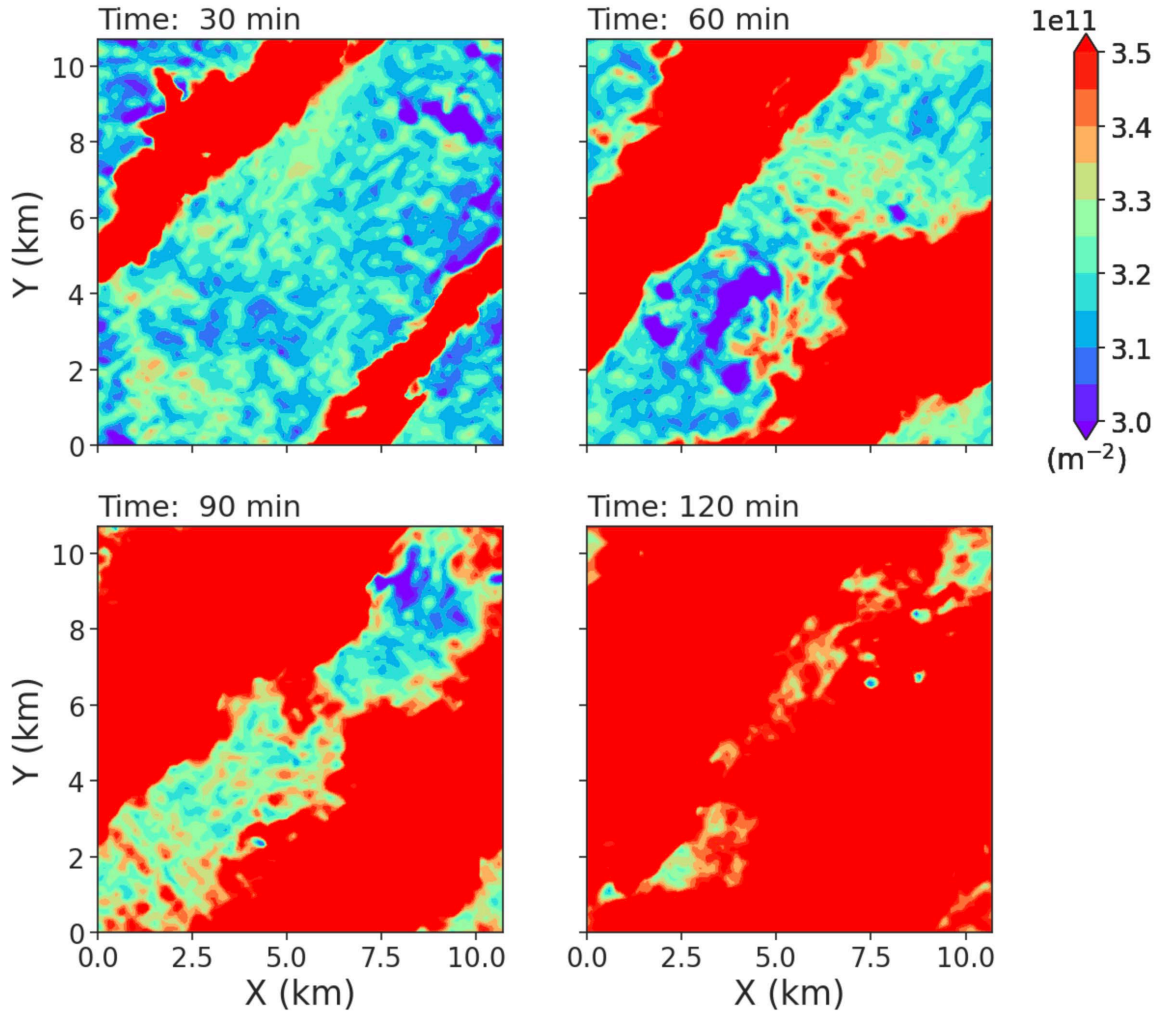
**Contents of this file**

Figures S1 to S6

**Figures:**



**Figure S1.** Diagram showing the route of the aerosol sprayer (or ship) in the horizontal domain. It moves once from the bottom of the domain (red star) to the top of the domain (blue star) along the arrows.



**Figure S2.** Horizontal map of column (vertically integrated) dry aerosol number concentration ( $N_{Ad}$ ) at the 30th, 60th, 90th, and 120th minutes after aerosol injection from the experiment INJ18.

**Figure S3.** Same as Figure 2, but for cloud droplet number concentration ( $N_c$ ) averaged in the cloud.

**Figure S4.** Same as Figure 8, but for the actual LWP tendency.

**Figure S5.** Same as Figure 10, but for the actual LWP tendency.

**Figure S6.** Same as Figure 12, but for the residual ( $\zeta$ ) of dCRE decomposition terms.