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# Numerical experiments of cloud seeding for mitigating localization of heavy rainfall: a case study of Mesoscale Convective System in Japan

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# Supplementary Materials

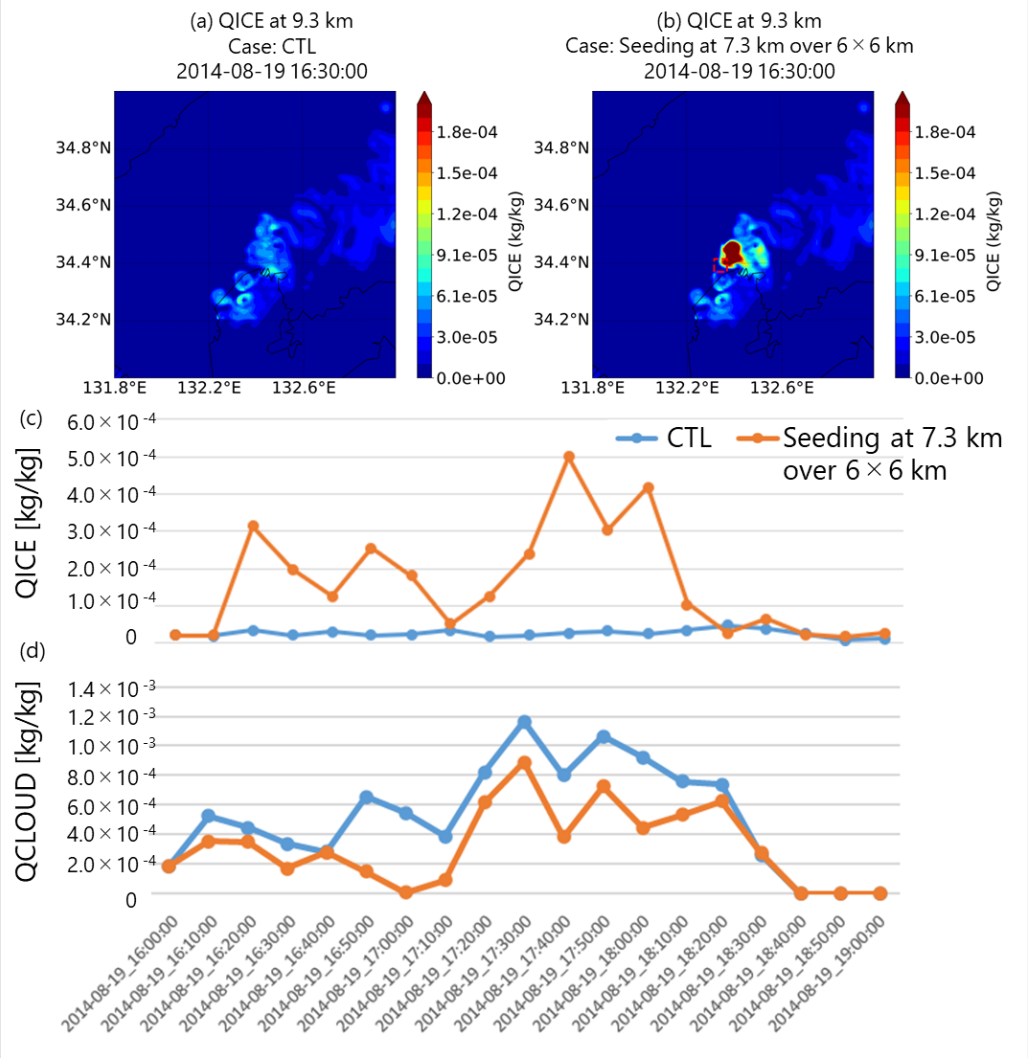


Figure S1 (a and b) Spatial distributions of ice mixing ratio (QICE) in the CTL run and seeding run at 16:30 UTC on August 19, 2014; (c and d) Time series of spatially-averaged ice mixing ratio (QICE) and cloud water mixing ratio (QCLOUD) in the CTL run and seeding run over the seeding location.

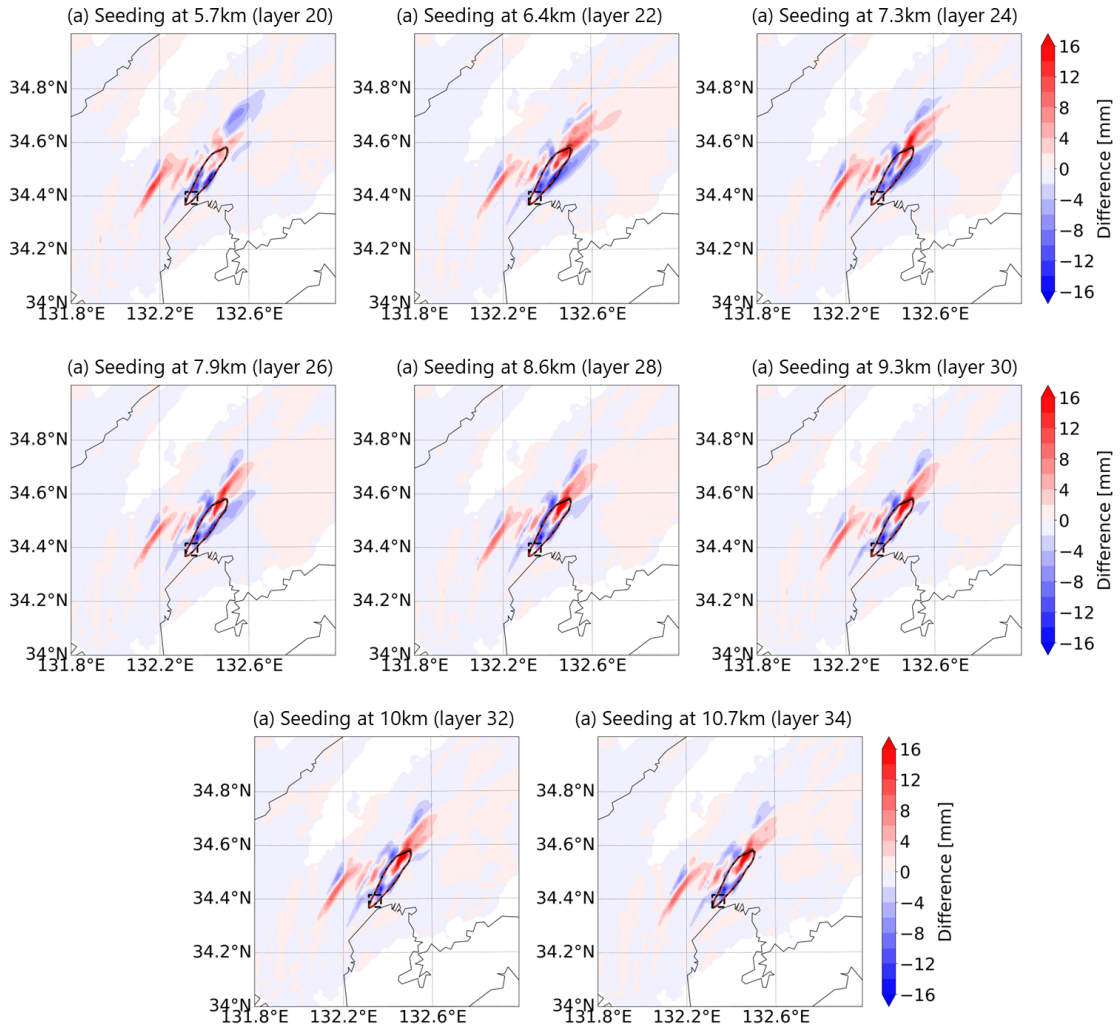


Figure S2 Differences in 3-hr accumulated rainfall between the seeding experiments (6 km × 6 km at each height) and the control (CTL) run from 16:00 to 19:00 UTC on August 19, 2014.

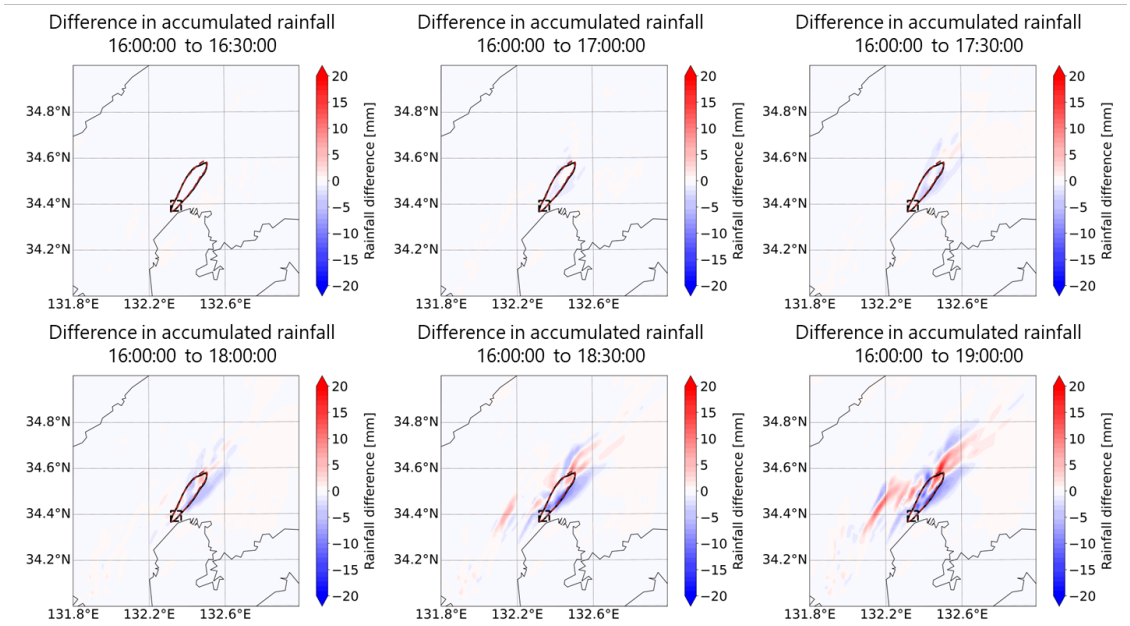


Figure S3 Differences in accumulated rainfall between the seeding experiments (6 km × 6 km at 7.2km height) and the control (CTL) run from 16:00 to 19:00 UTC on August 19, 2014.

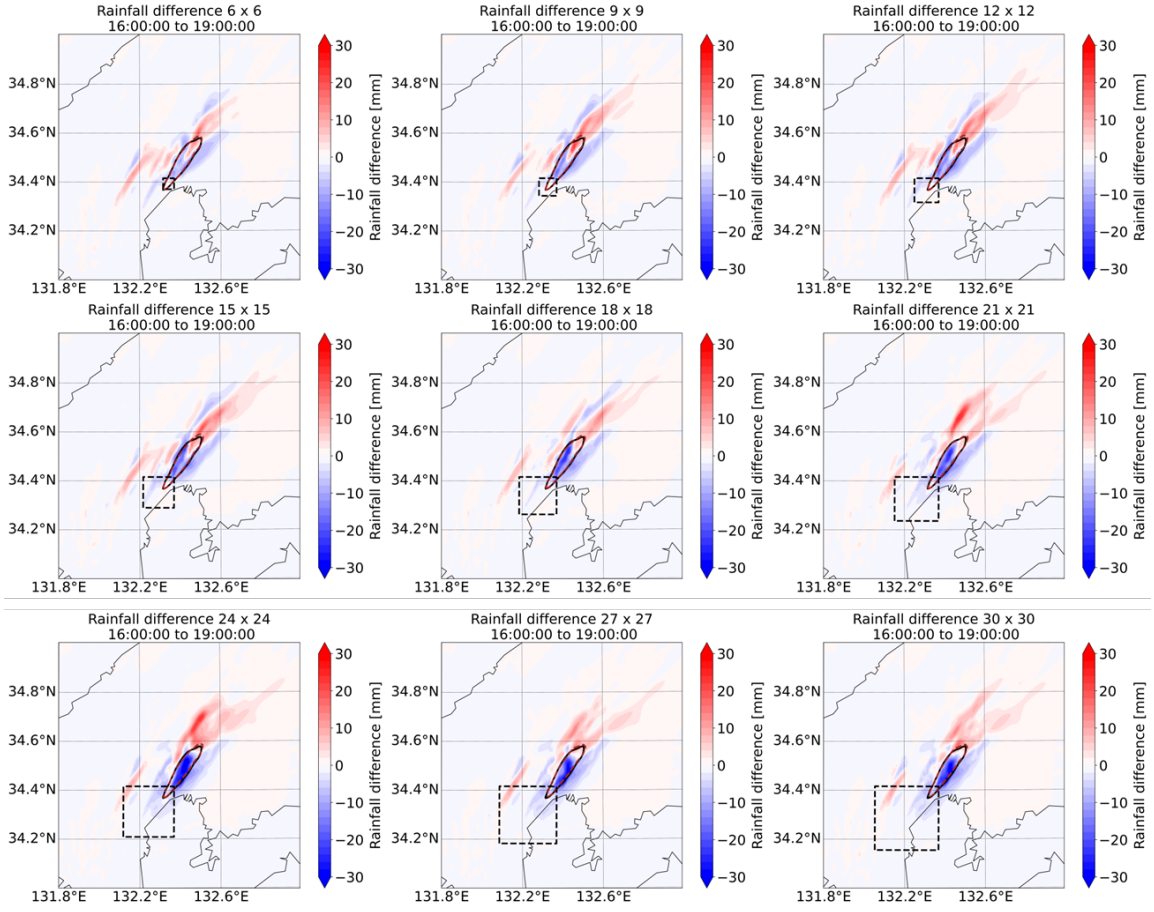

Figure S4. Differences in 3-hr accumulated rainfall between the seeding experiments (different spatial extent at 7.2km altitude) and the control (CTL) run from 16:00 to 19:00 UTC on August 19, 2014.

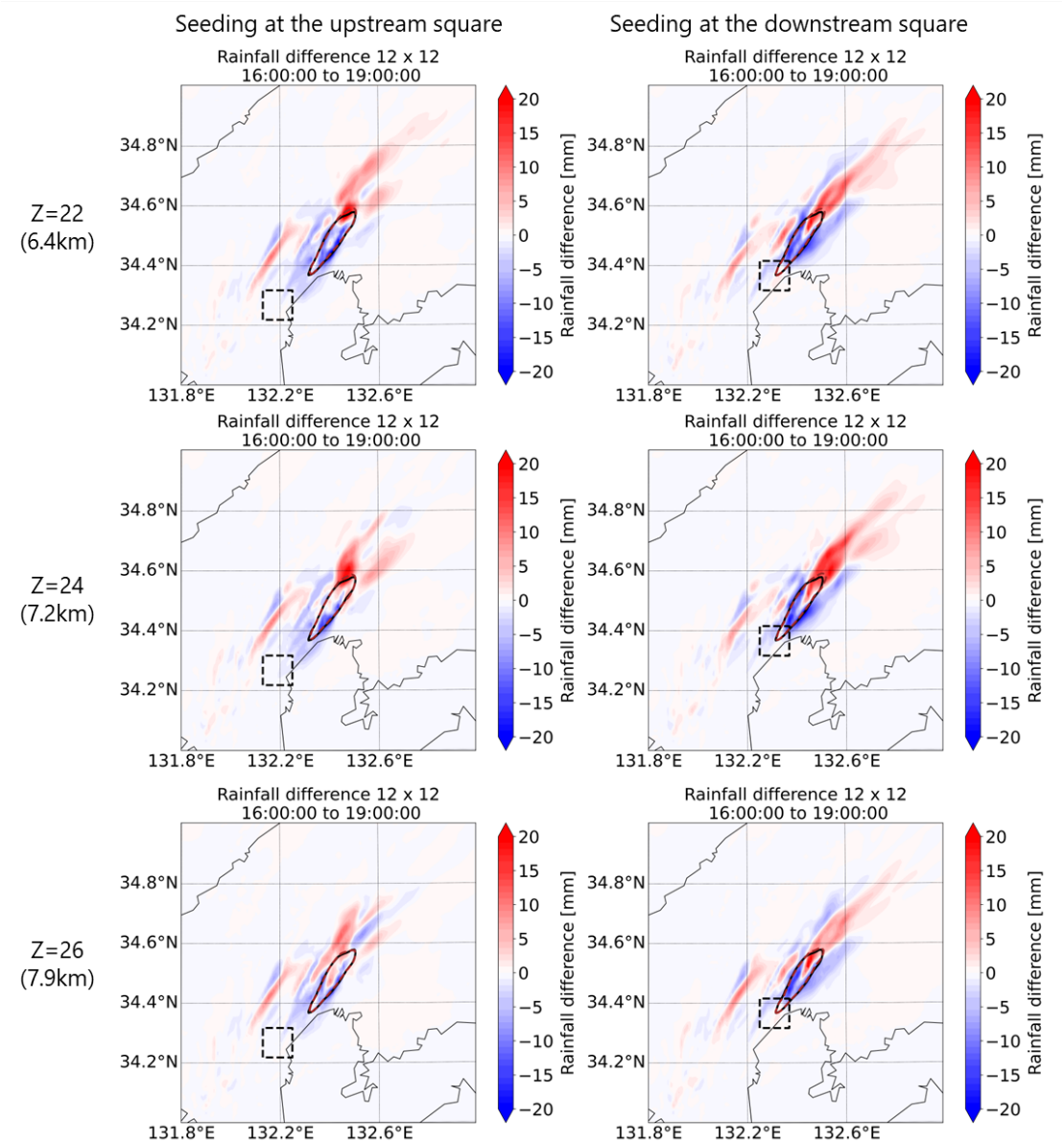


Figure S5. Differences in 3-hr accumulated rainfall between the seeding experiments (left column: upstream square; right column: downstream square with different heights shown in the left) and the control (CTL) run from 16:00 to 19:00 UTC on August 19, 2014.

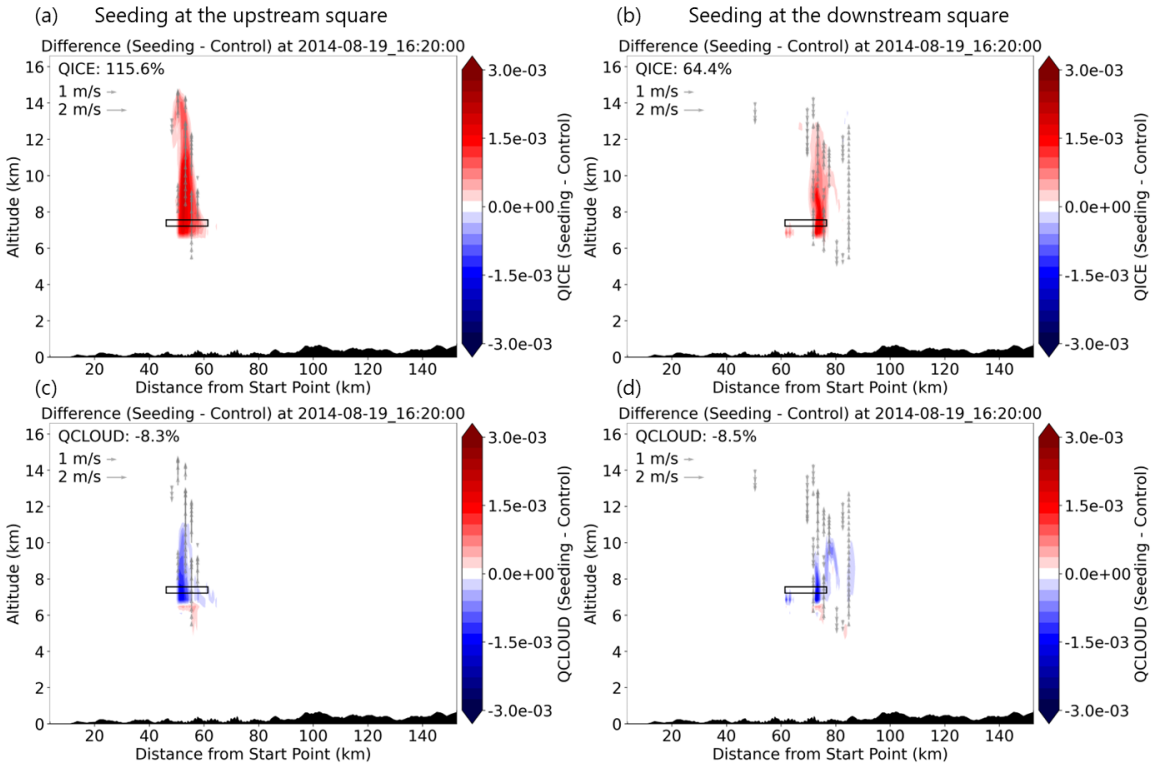


Figure S6. Differences in (a and b) ice water mixing ratio and (c and d) cloud water mixing ratio between the seeding experiments (left column: upstream square; right column: downstream square at 7.2 km height) and the control (CTL) run from 16:00 to 19:00 UTC on August 19, 2014. The percentage change shown in each panel represents the cross-sectional average change in hydrometeors in the displayed extent.

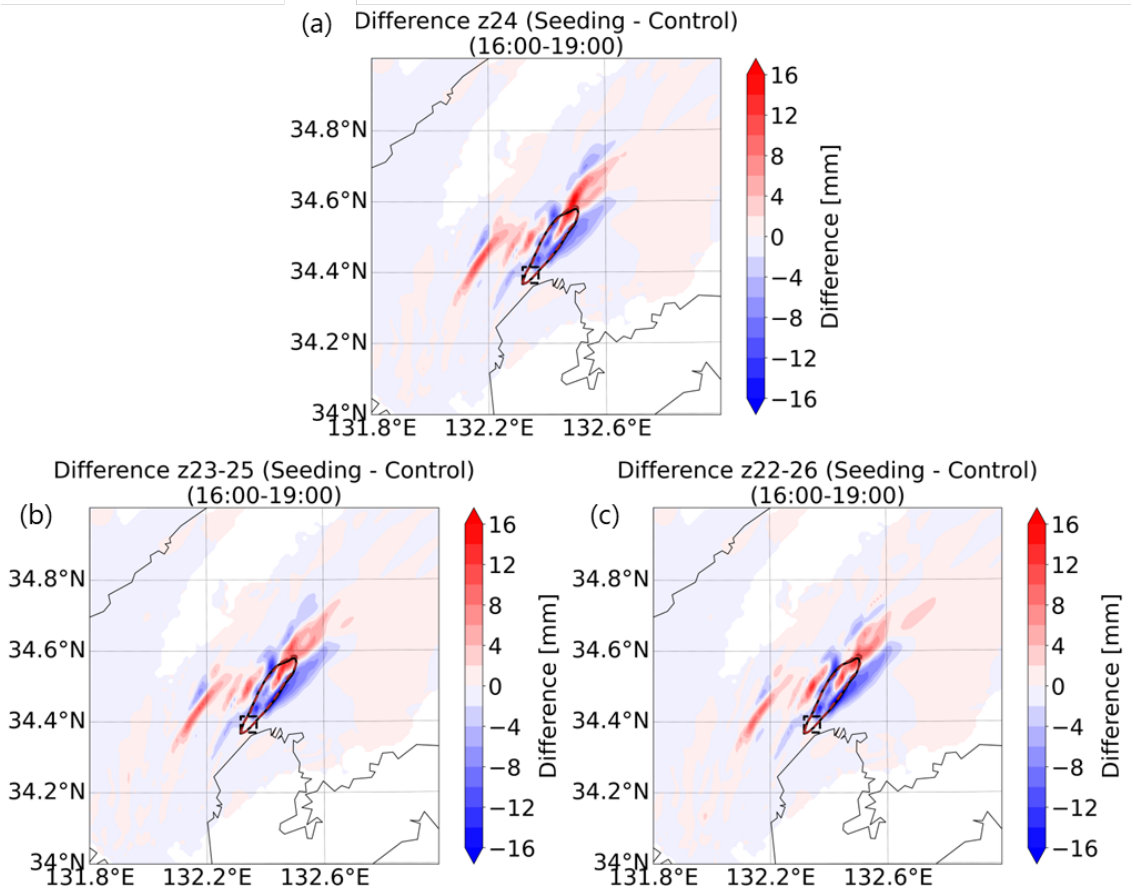


Figure S7. Differences in 3-hr accumulated rainfall between the seeding experiments (a: one layer, b: 3 layers, and c: 5 layers) and the control (CTL) run from 16:00 to 19:00 UTC on August 19, 2014.

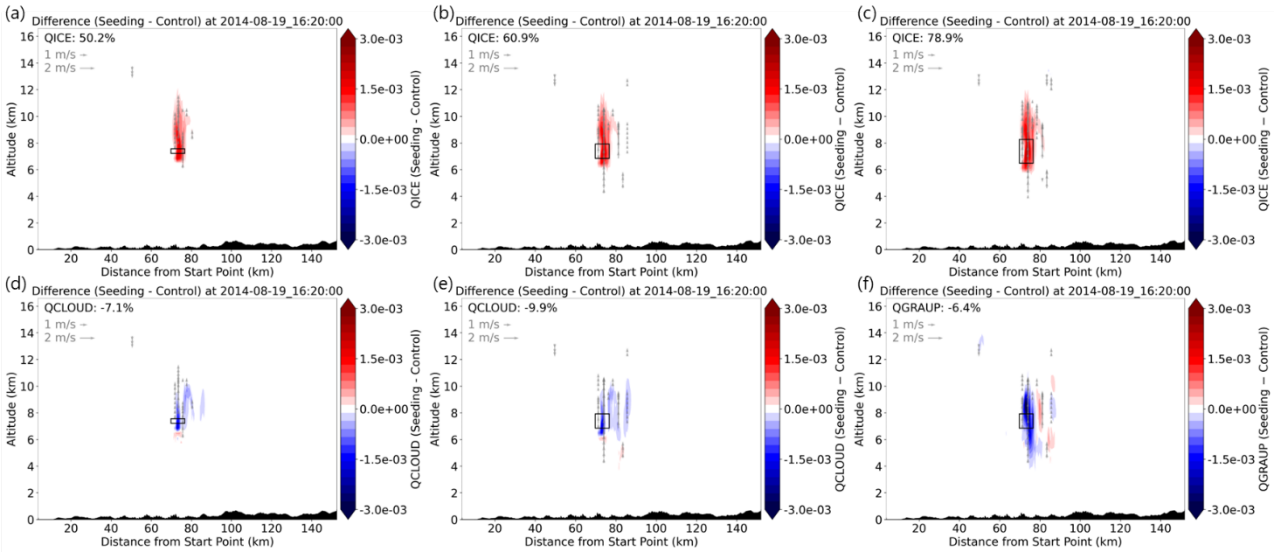

Figure S8. Differences in (a-c) ice water mixing ratio and (d-f) cloud water mixing ratio between the seeding experiments (left column: one layer; middle column: 3 layers; right column: 5 layers) and the control (CTL) run from 16:00 to 19:00 UTC on August 19, 2014. The percentage change shown in each panel represents the cross-sectional average change in hydrometeors in the displayed extent.