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Supplement of

3-D model simulations of dynamical and microphysical interactions in pyroconvective clouds under idealized conditions

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„3D model simulations of dynamical and microphysical interactions in pyro-convective clouds under idealized conditions“

In this supplement the vertical velocity and the volume mean radius are presented.

In the following, the y-z cross sections of the vertical velocity for all three cases are shown for 30, 60, 90 and 120 minutes, respectively.

N_{CN} = 200 cm^{-3}

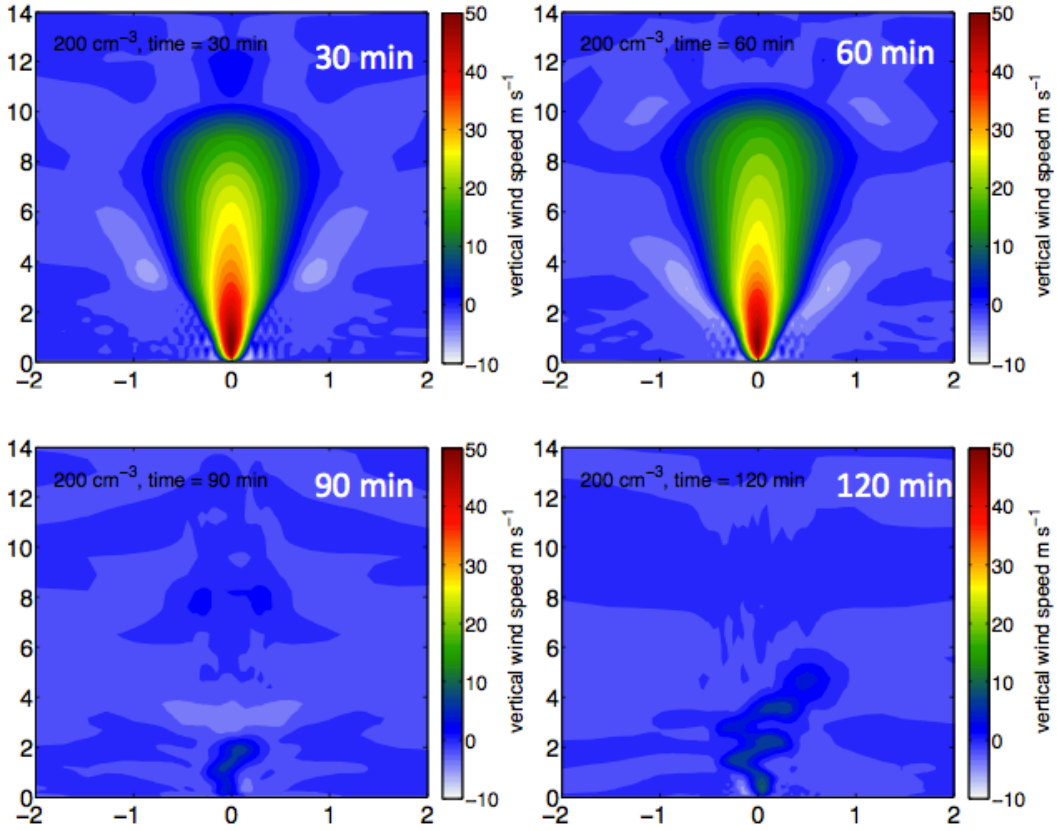

Figure 1: Y-Z cross section of the vertical velocity for the case with N_{CN} = 200 cm^{-3} after 30, 60, 90 and 120 minutes after simulation start.

$N_{CN} = 1000\ cm^{-3}$

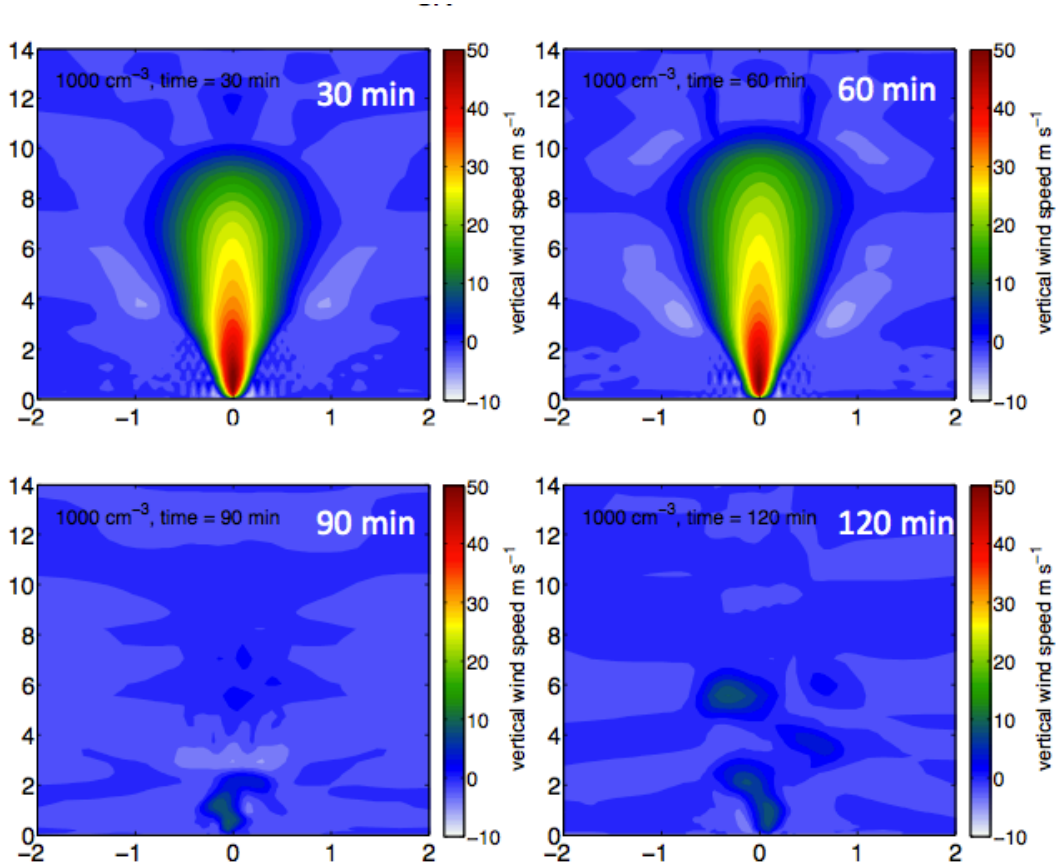

Figure 2: Y-Z cross section of the vertical velocity for the case with N_{CN} = 1000 cm^{-3} after 30, 60, 90 and 120 minutes after simulation start.

$N_{CN} = 20000\ cm^{-3}$

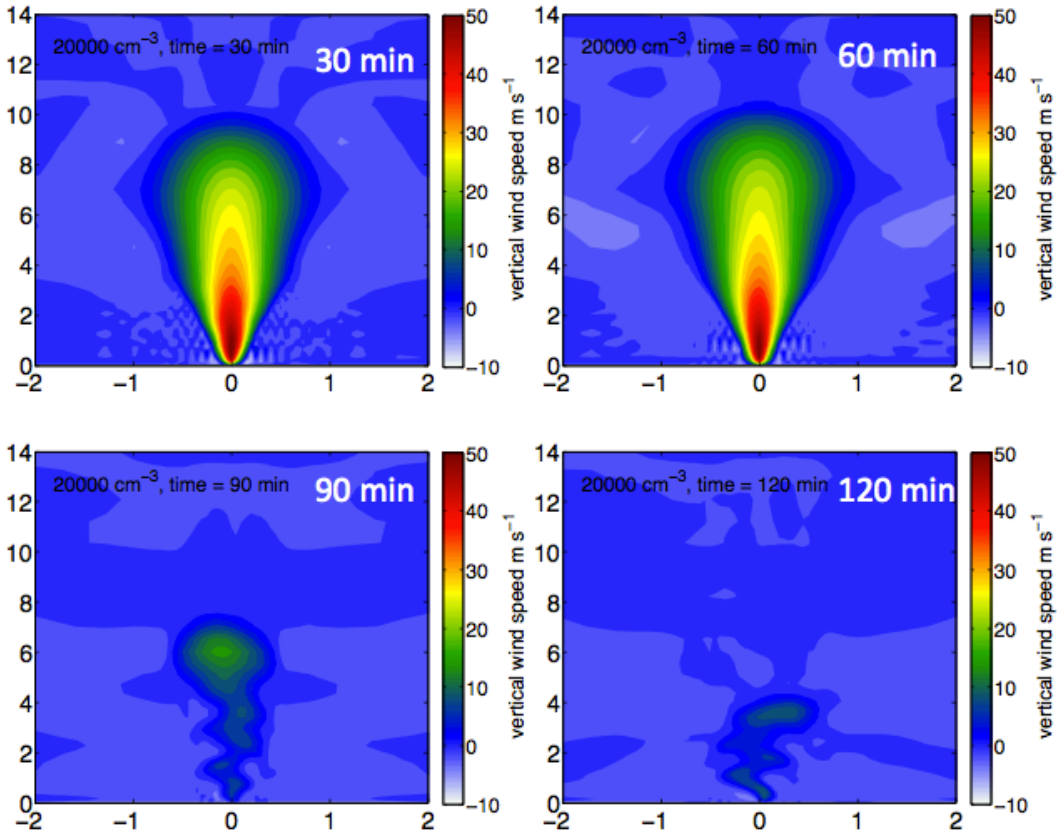

Figure 3: Y-Z cross section of the vertical velocity for the case with N_{CN} = 20000 cm^{-3} after 30, 60, 90 and 120 minutes after simulation start.

Volume mean radius after 60 minutes after simulation start.

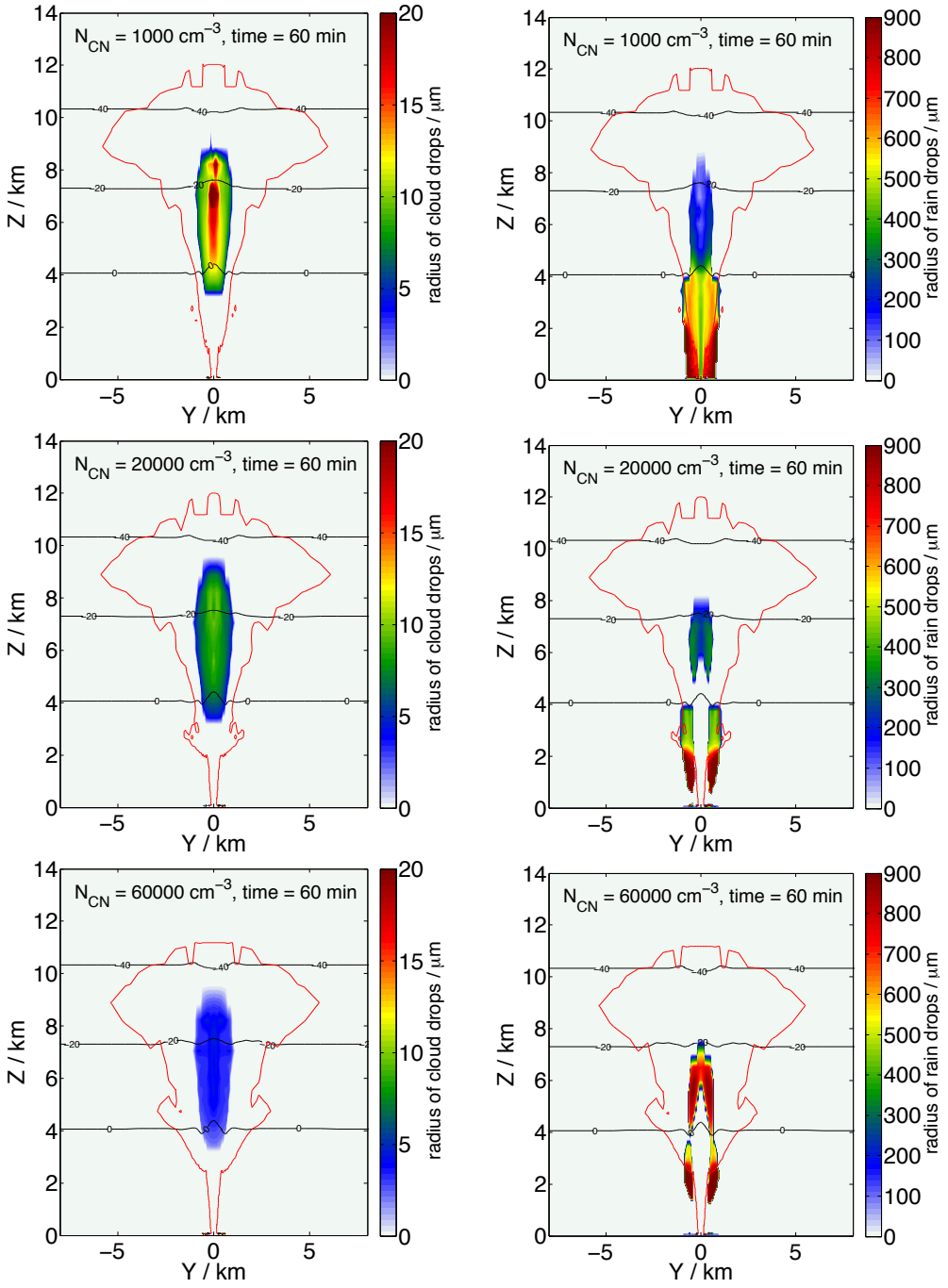

Figure 4: Y-Z cross section at x = 0km of the volume mean radius of (left column) cloud water in µm and (right column) rain water in µm for (top row) the clean case, (middle row) the intermediate case and (bottom row) the strongly polluted case. The black lines denote the 0◦C, 0−20◦C and −40◦C isothermes, respectively. The red line shows the 0.1µg kg^{-1} isoline of the interstitial aerosol.

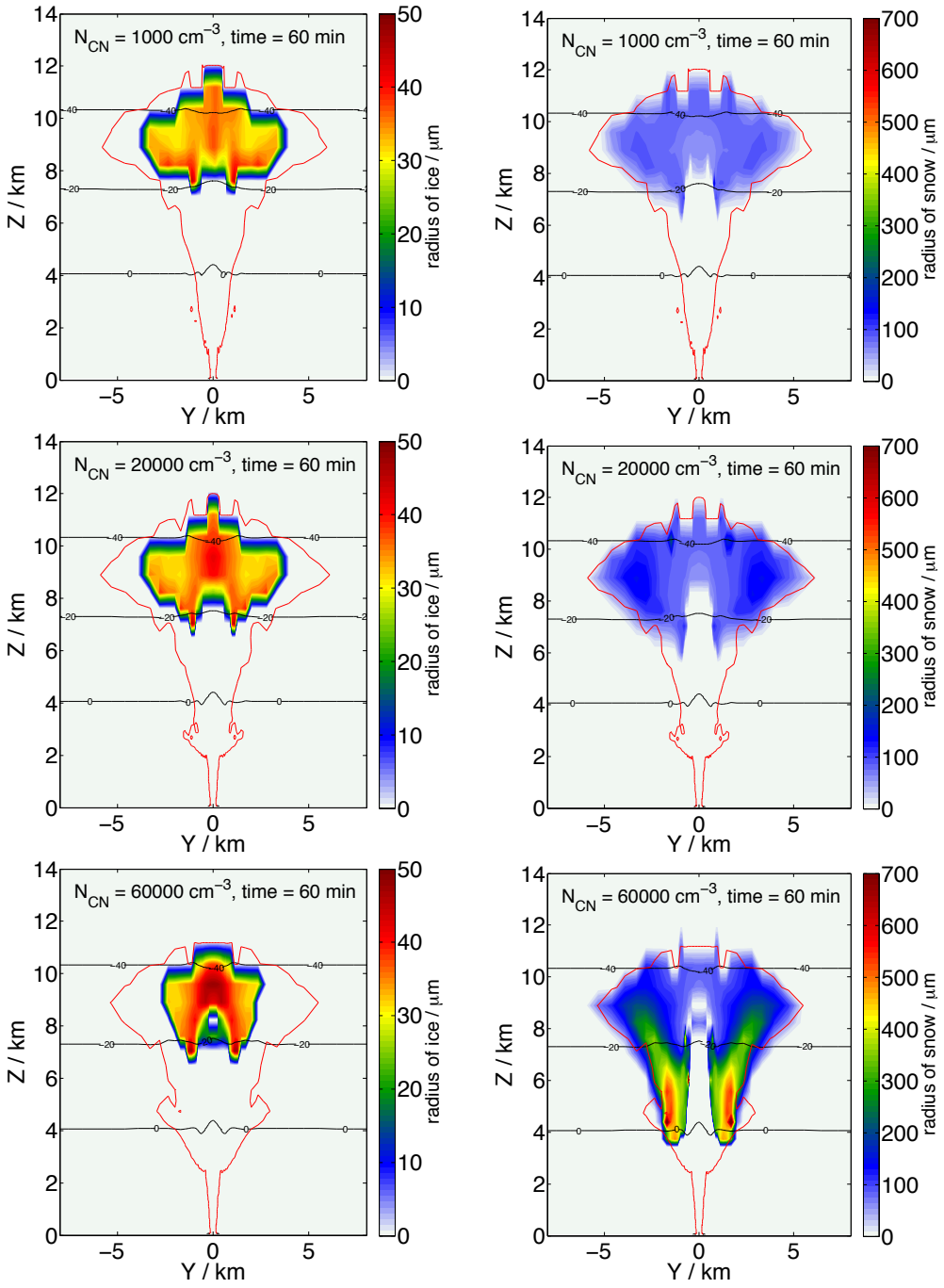

Figure 5: Y-Z cross section at x = 0km of the volume mean radius of (left column) ice crystals in µm and (right column) snow particles in µm for (top row) the clean case, (middle row) the intermediate case and (bottom row) the strongly polluted case. The black lines denote the 0◦C, 0−20◦C and −40◦C isothermes, respectively. The red line shows the 0.1µg kg^{-1} isoline of the interstitial aerosol.

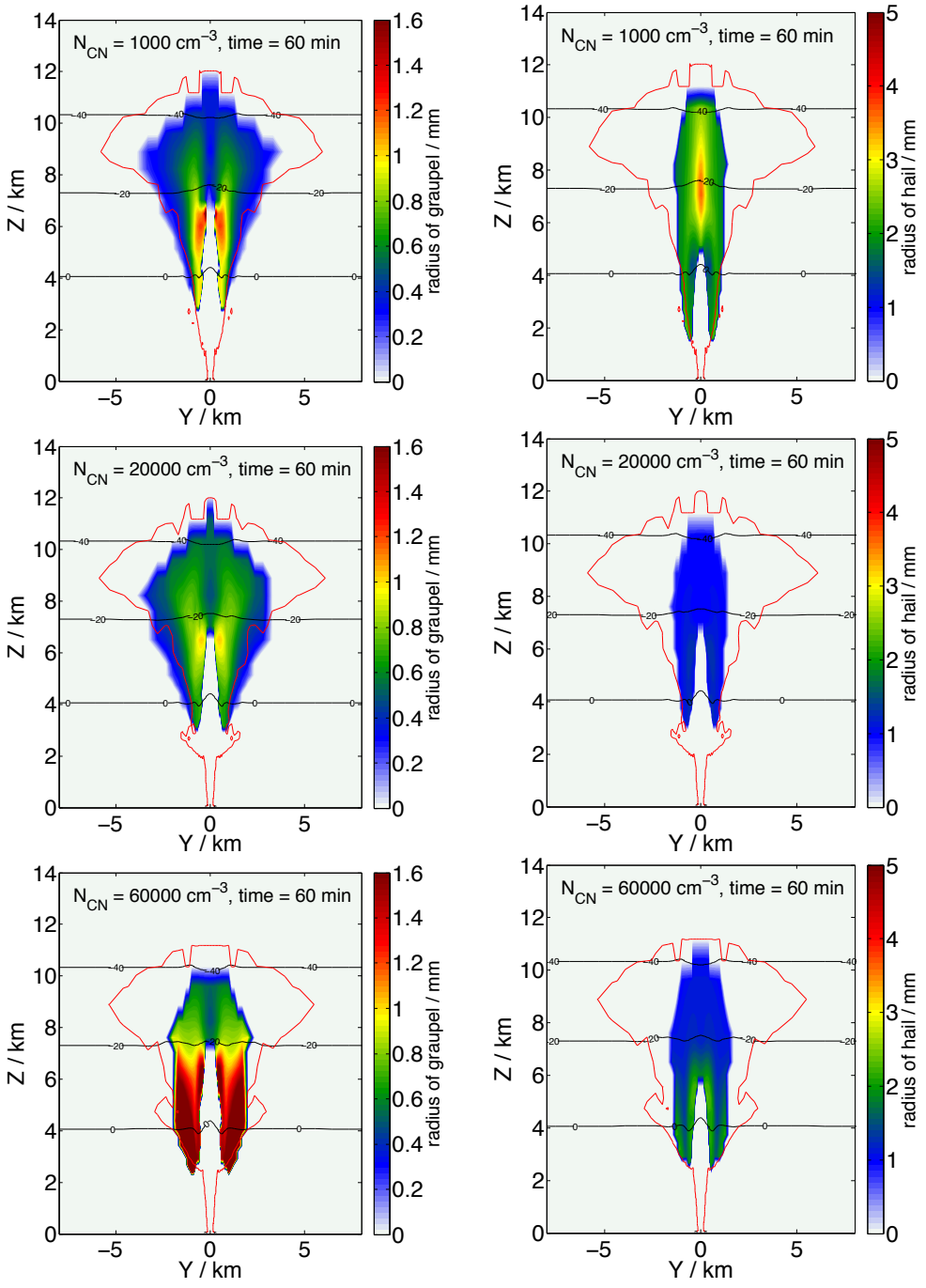

Figure 6: Y-Z cross section at x = 0km of the volume mean radius of (left column) graupel in µm and (right column) hail in µm for (top row) the clean case, (middle row) the intermediate case and (bottom row) the strongly polluted case. The black lines denote the 0◦C, 0−20◦C and −40◦C isothermes, respectively. The red line shows the 0.1µg kg^{-1} isoline of the interstitial aerosol.