

Supplement

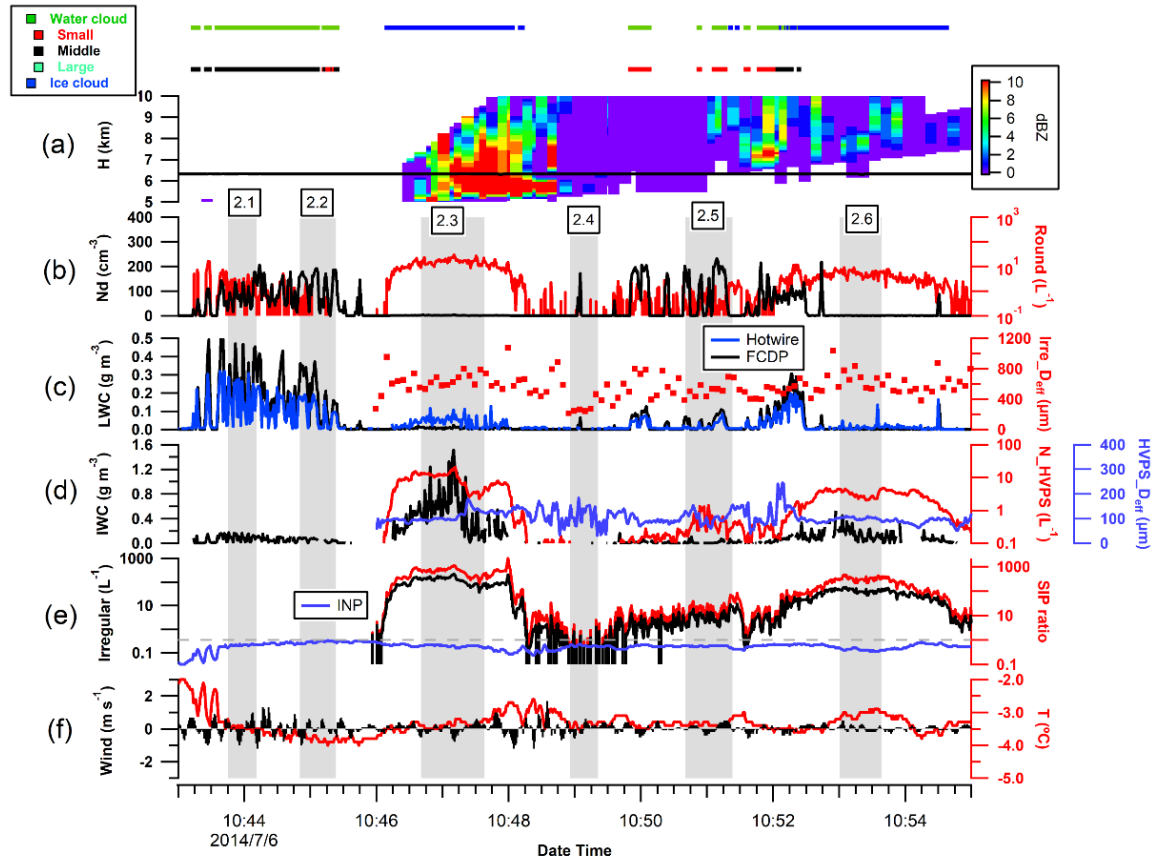


Figure S1: The same as Fig. 7, except in a different series of flight track (case 2).

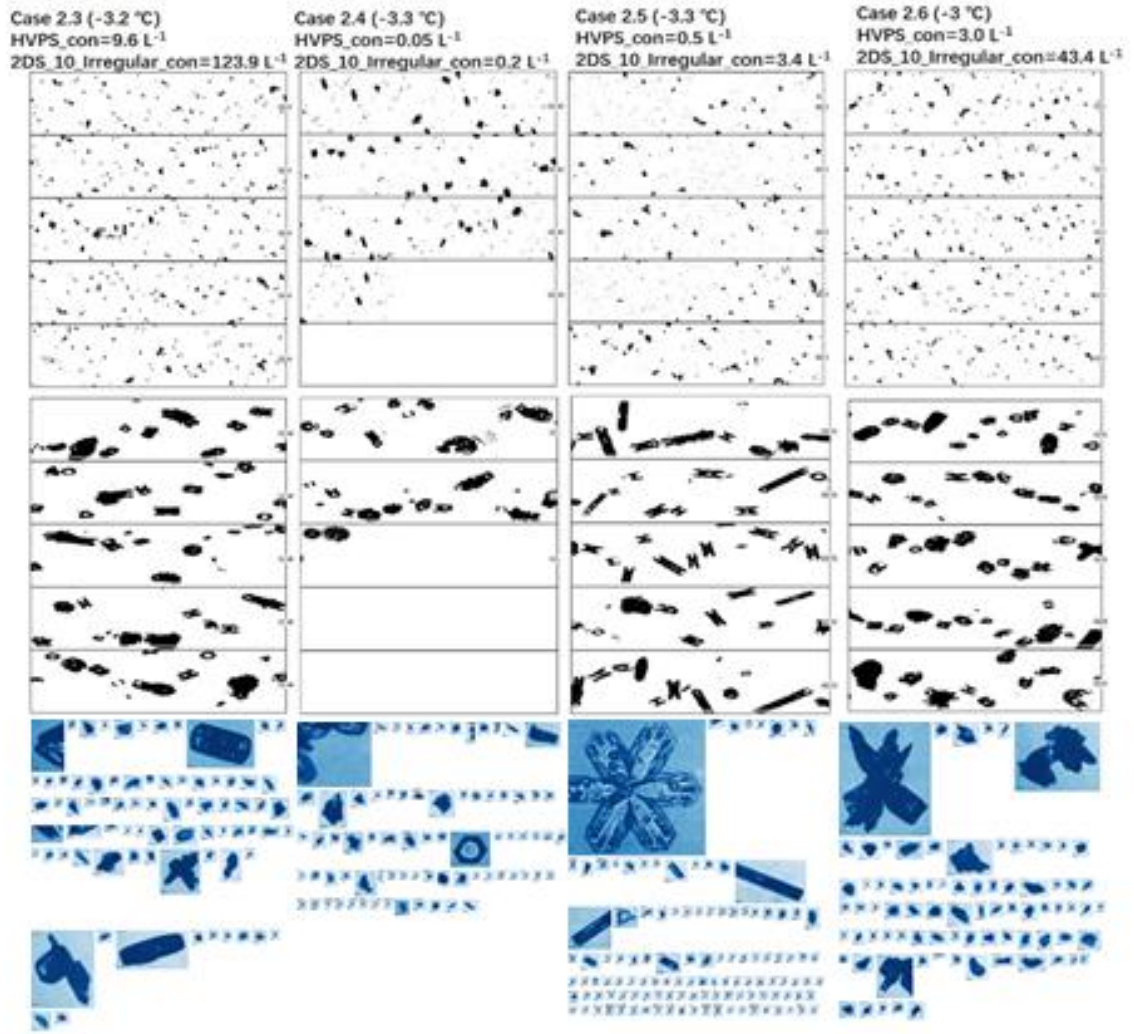


Figure S2: Example 2DS and CPI images at -3°C in case 2. The temperature and particle concentrations shown at the top of each image are average values.

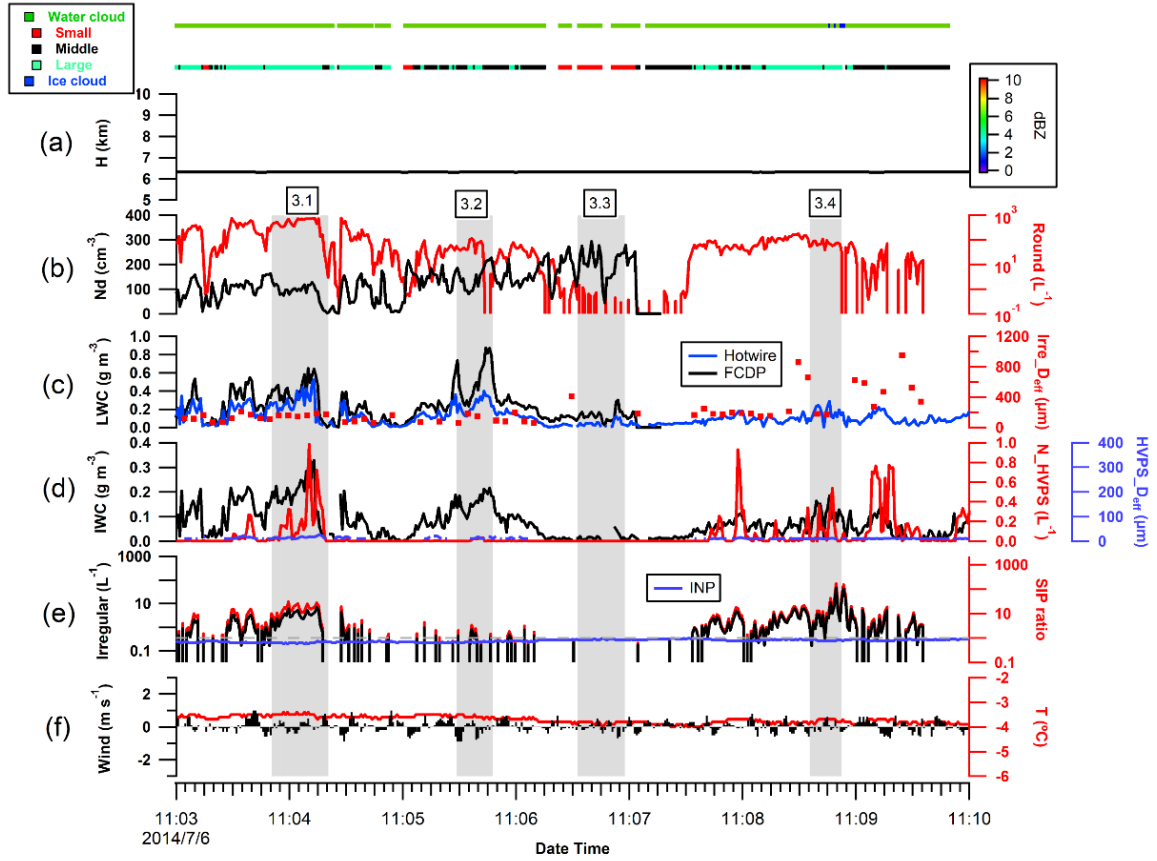


Figure S3: The same as Fig. 7, except in another series of flight track marked by 3.1 to 3.4, where the temperature is about -4°C (case 3).

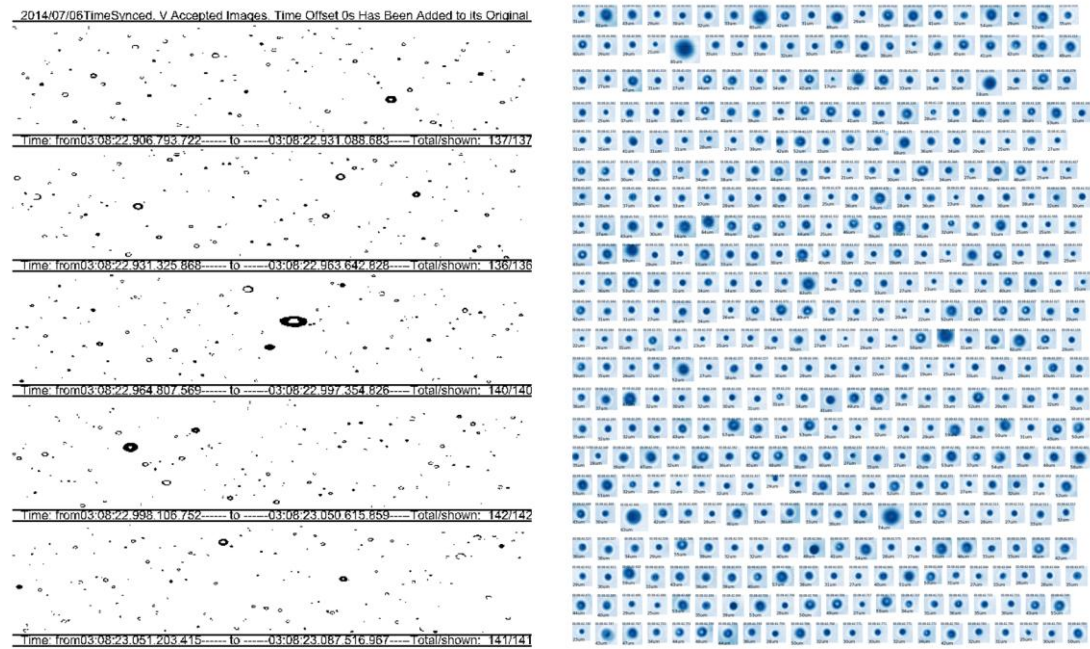


Figure S4: Example 2DS and CPI images at -4°C in case 3.

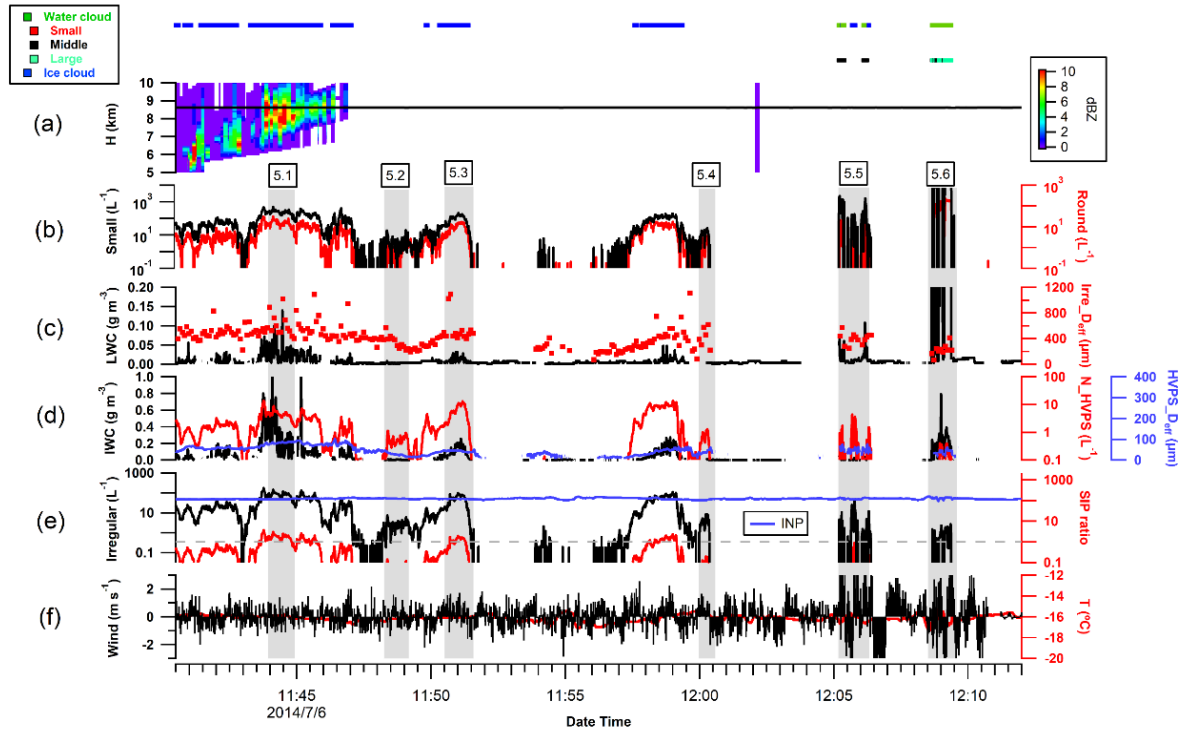


Figure S5: The same as Fig. 11, except in another series of flight track marked by 5.1 to 5.6, where the temperature is about -16°C (case 5).

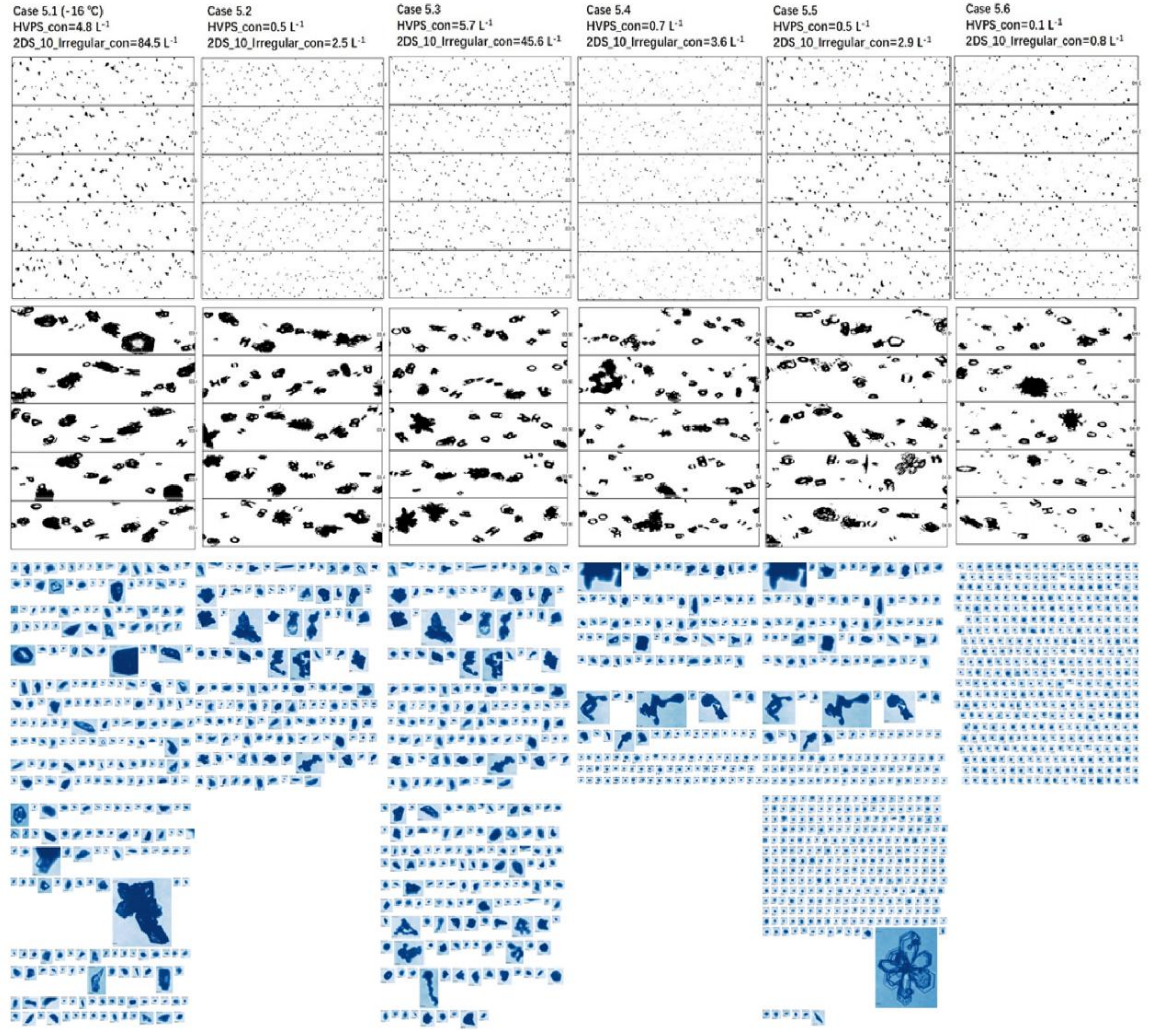


Figure S6: Example 2DS and CPI images at -16°C in case 5. The temperature and particle concentrations shown at the top of each image are average values.

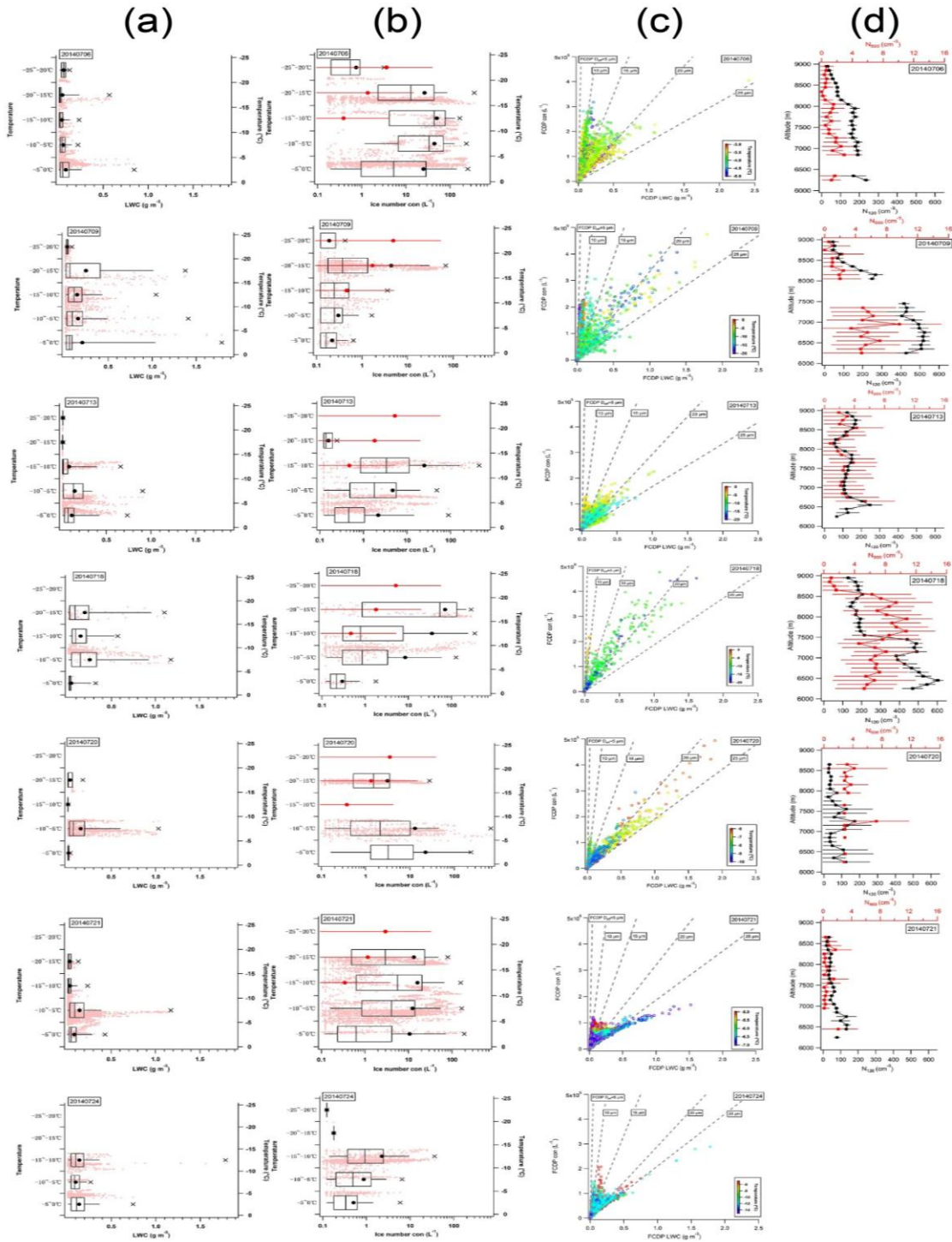


Figure S7. Overview of aerosol and cloud microphysical properties across seven flights conducted from 06 to 24 July 2014. Each row corresponds to a specific flight date (from top to bottom: 06, 09, 13, 18, 20, 21, and 24 July). Column (a) shows box-and-whisker plots of LWC in different temperatures, stratified into five temperature bins: -25 to -20°C , -20 to -15°C , -15 to -10°C , -10 to -5°C , and -5 to 0°C . Pink scatters represent individual observational data points, the black dot represents the mean, and the black cross marks the maximum value. Column (b) is the same as (a) but for ice number concentration. Column (c) presents

cloud droplet number concentration versus LWC obtained from FCDP, coloured by temperatures. The dashed lines in column (c) indicate constant effective diameters (5, 10, 15, 20, and 25 μm) obtained by fitting the cloud droplet number concentration and LWC correlation. Column (d) represents the average profile of aerosol number concentration with size above 120 nm (black scatters, N_{120} , cm^{-3}) and with size above 500 nm (red scatters, N_{500} , cm^{-3}).