Supplement of

Vertical characteristics of aerosol hygroscopicity and impacts on optical properties over the North China Plain during winter

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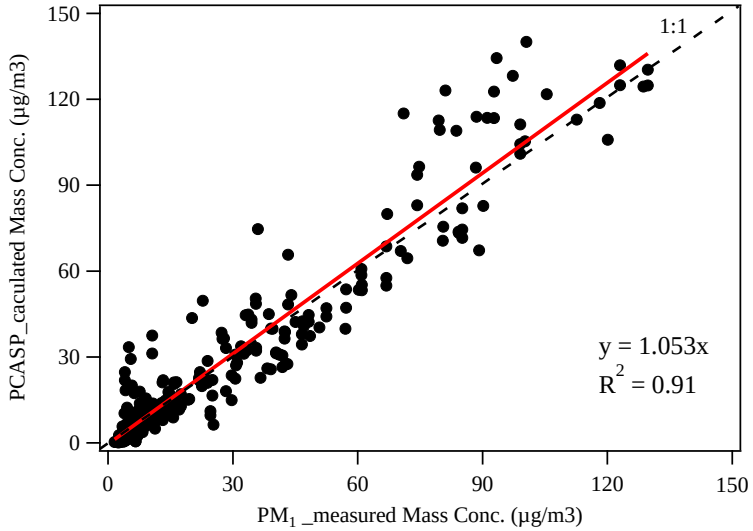

Figure S1. Comparison between PM1 derived from the PCASP size distribution and measurements in the cabin for all flights.

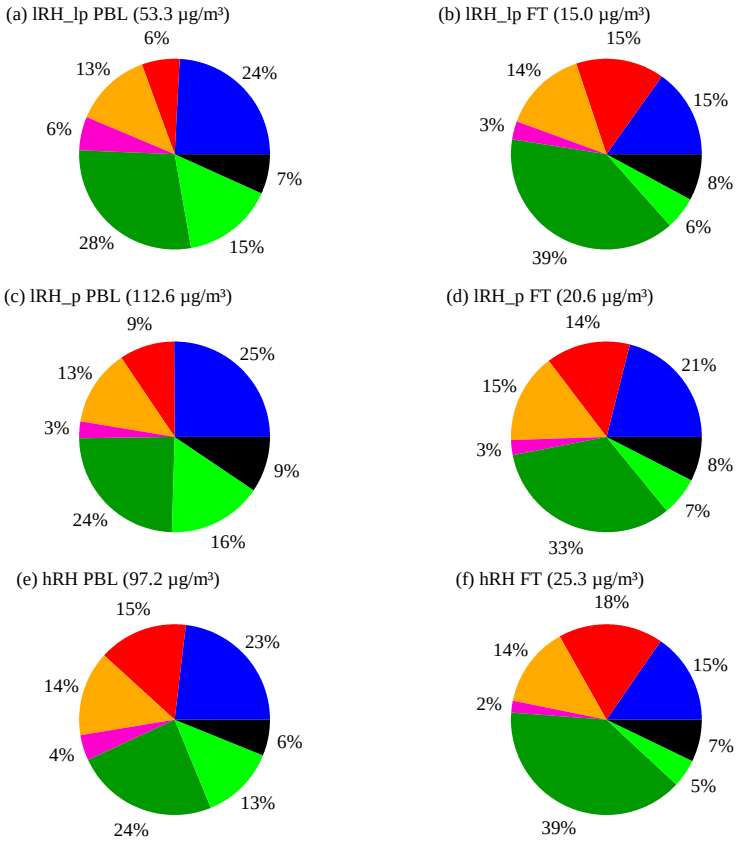

Figure S2. The aerosol chemical compositions in the PBL and FT under all conditions: (a-b) in the PBL and FT under lRH and less polluted conditions (lRH_lp), (c-d) in the PBL and FT under lRH and polluted conditions (lRH_p), and (e-f) in the PBL and FT under hRH conditions.

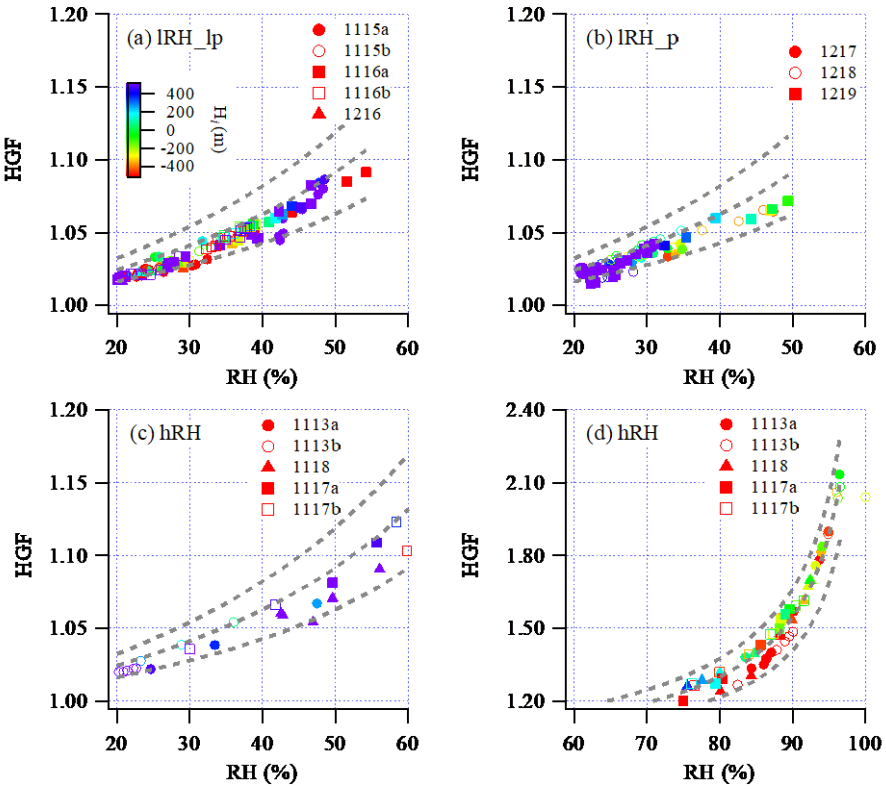

Figure S3. Correlations between hygroscopic growth factor (HGF) and RH, (a) under lRH_lp condition, (b) under lRH_p condition, (c) under hRH condition, RH<60%, and (d) under hRH condition, RH>60%. The reference grey dash lines denote the calculated HGFs by assuming constant κ of 0.2, 0.3, 0.4, respectively.

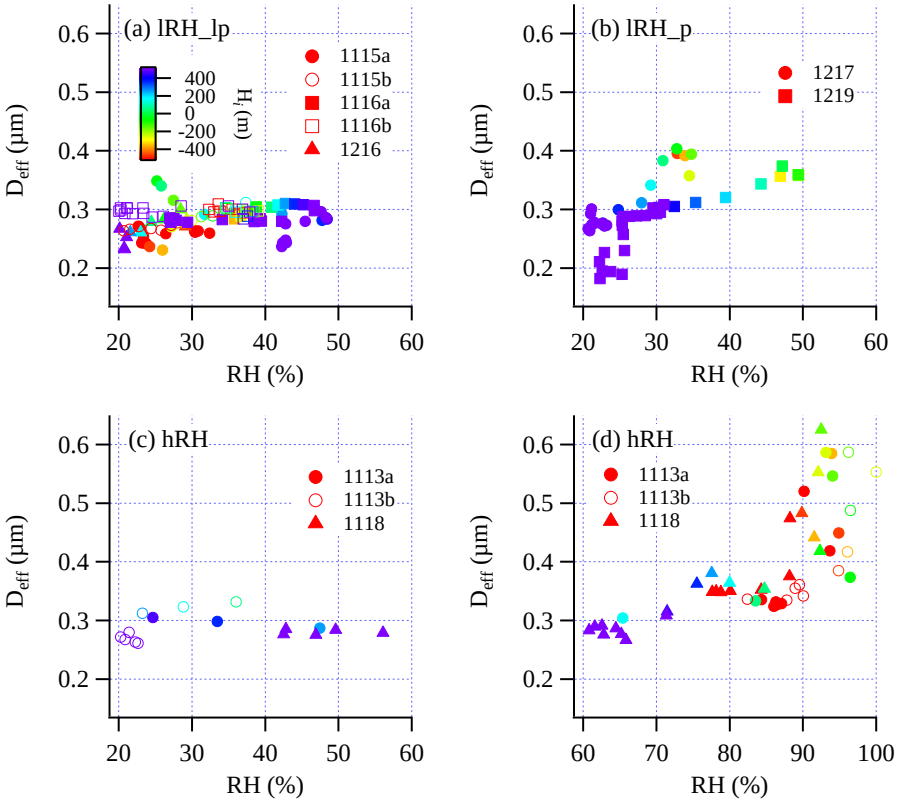

Figure S4. Correlations between D_{eff} and RH for all flights, (a) under lRH_lp condition, (b) under lRH_p condition, (c) under hRH condition, RH<60%, and (d) under hRH condition, RH>60%.

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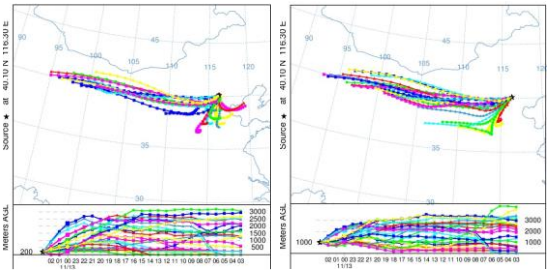

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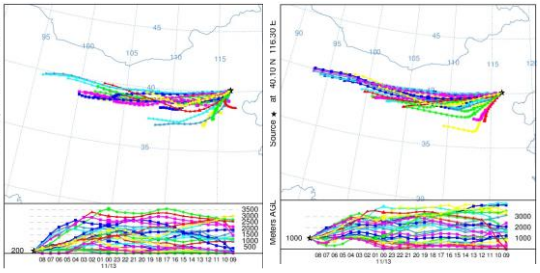

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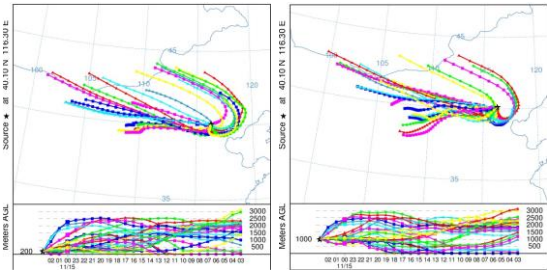

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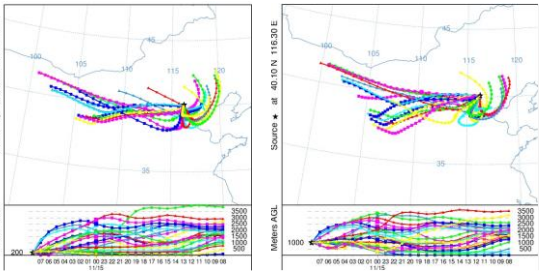

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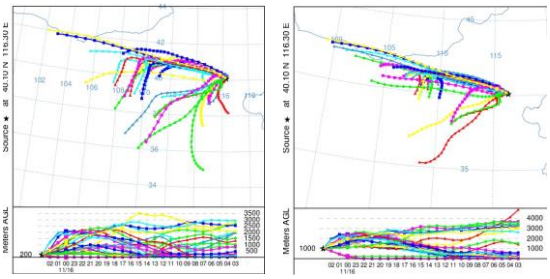

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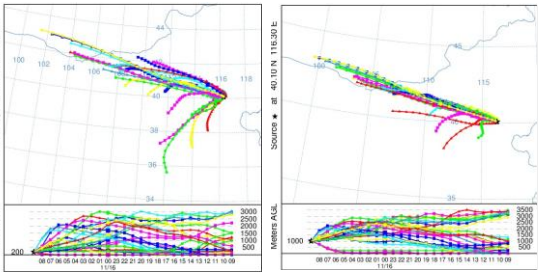

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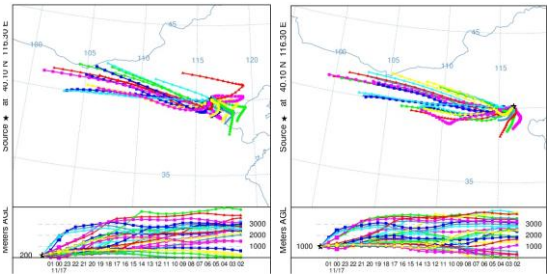

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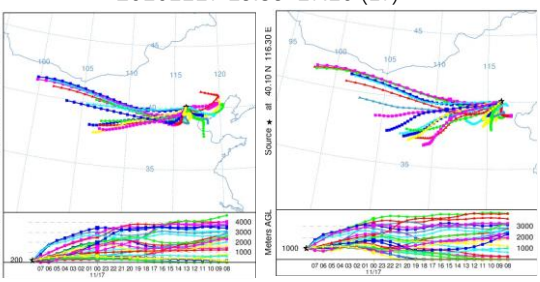

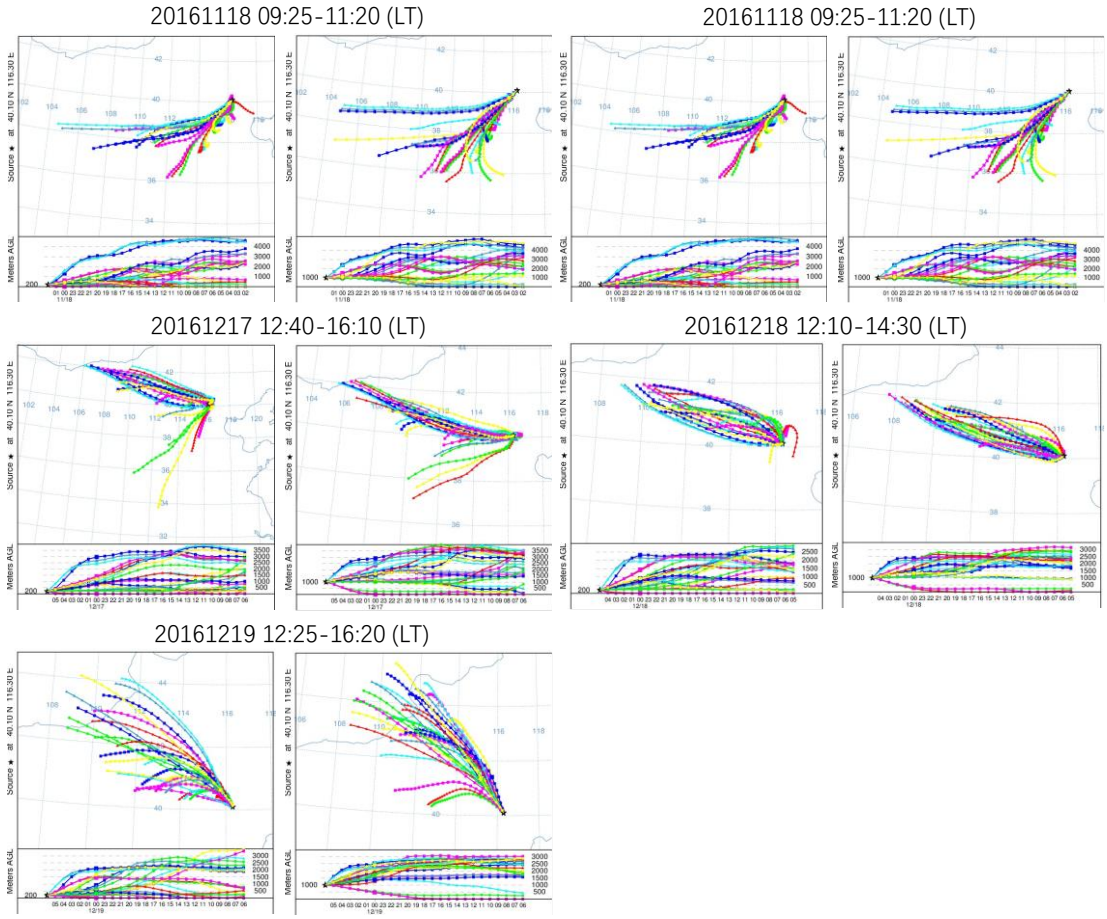

Figure S5. HYSPLIT ensemble backward trajectories during the experiment. The endpoint heights of back trajectories are set to 200 m a.s.l (left panels) and 1000 m a.s.l. (right panels). LT=local Time.