Supplementary Information

Significant Influence of UV-vis Irradiation on Cloud Activation Efficiencies of Ammonium Sulfate Aerosols under Simulated Chamber Conditions

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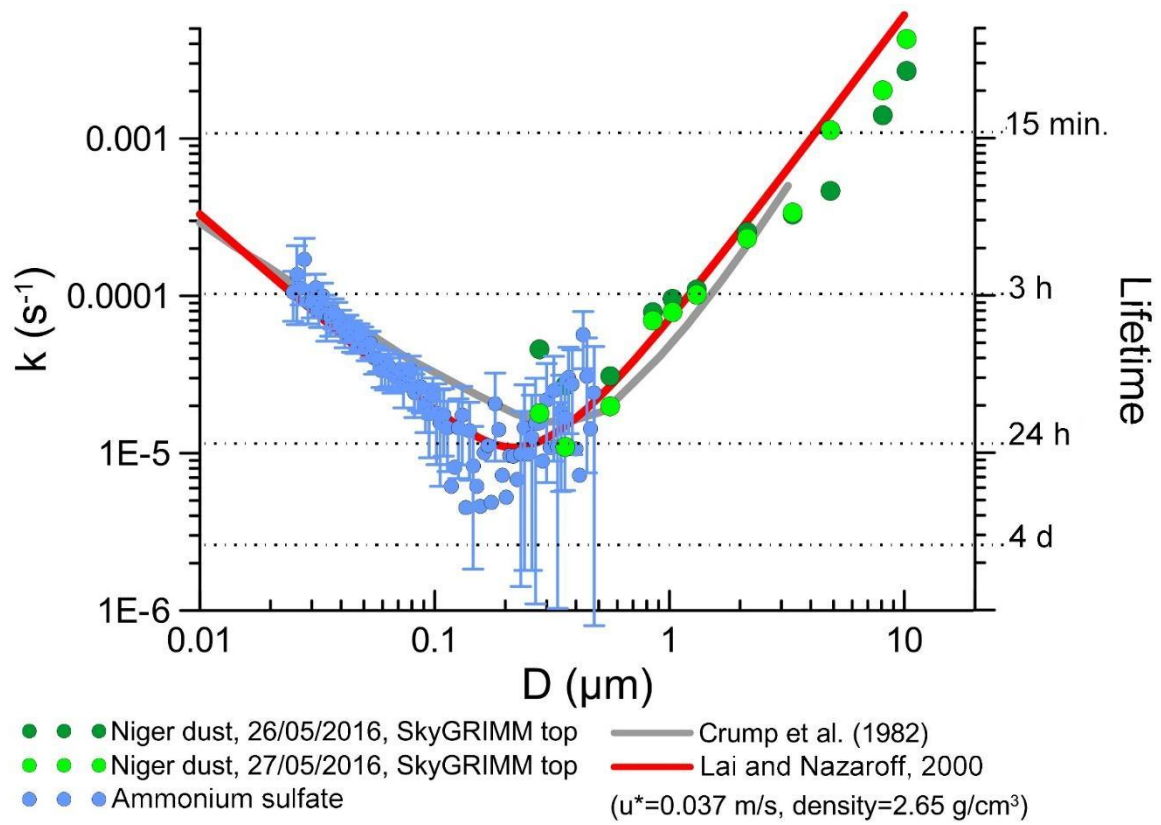
Figure S1: The lifetime of size-dependent aerosol particles in the CESAM chamber (Lamkaddam thesis 2017)
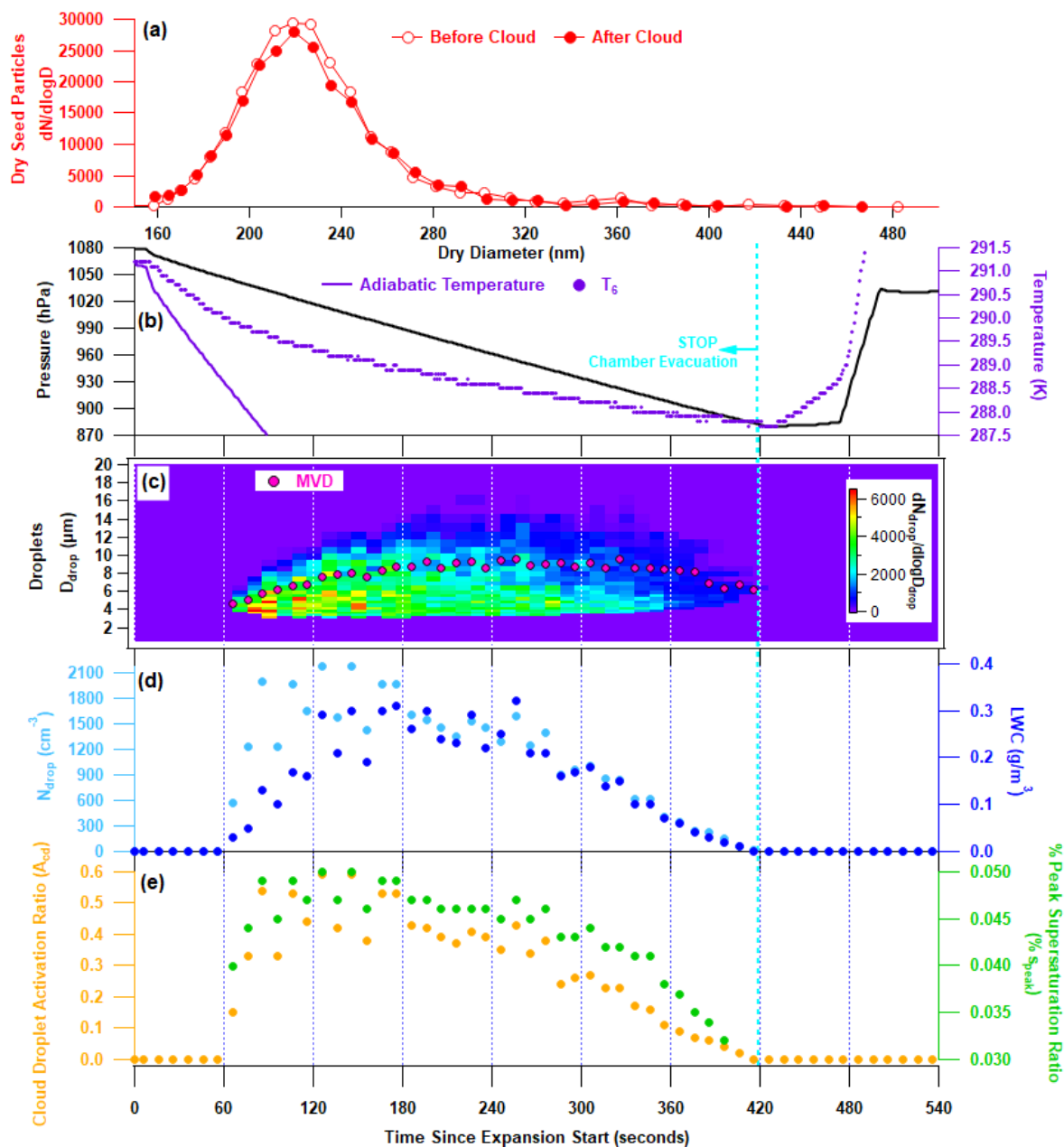
Figure S2: Dark cloud, N-IC-2 performed on 218.7 nm ammonium sulfate seed particles. Panel (a) shows the SMPS size distributions of seed particles obtained before and after the cloud run, followed by the time series of (b) time series of cloud droplets size distribution and volume mean diameter (MVD) measured by welas, (c) time series of cloud droplet concentration (N_{drop}) and LWC, and (d) time series of seed particle activation ratio (A_{cd}) and chamber peak supersaturation ratio (s_{peak}).

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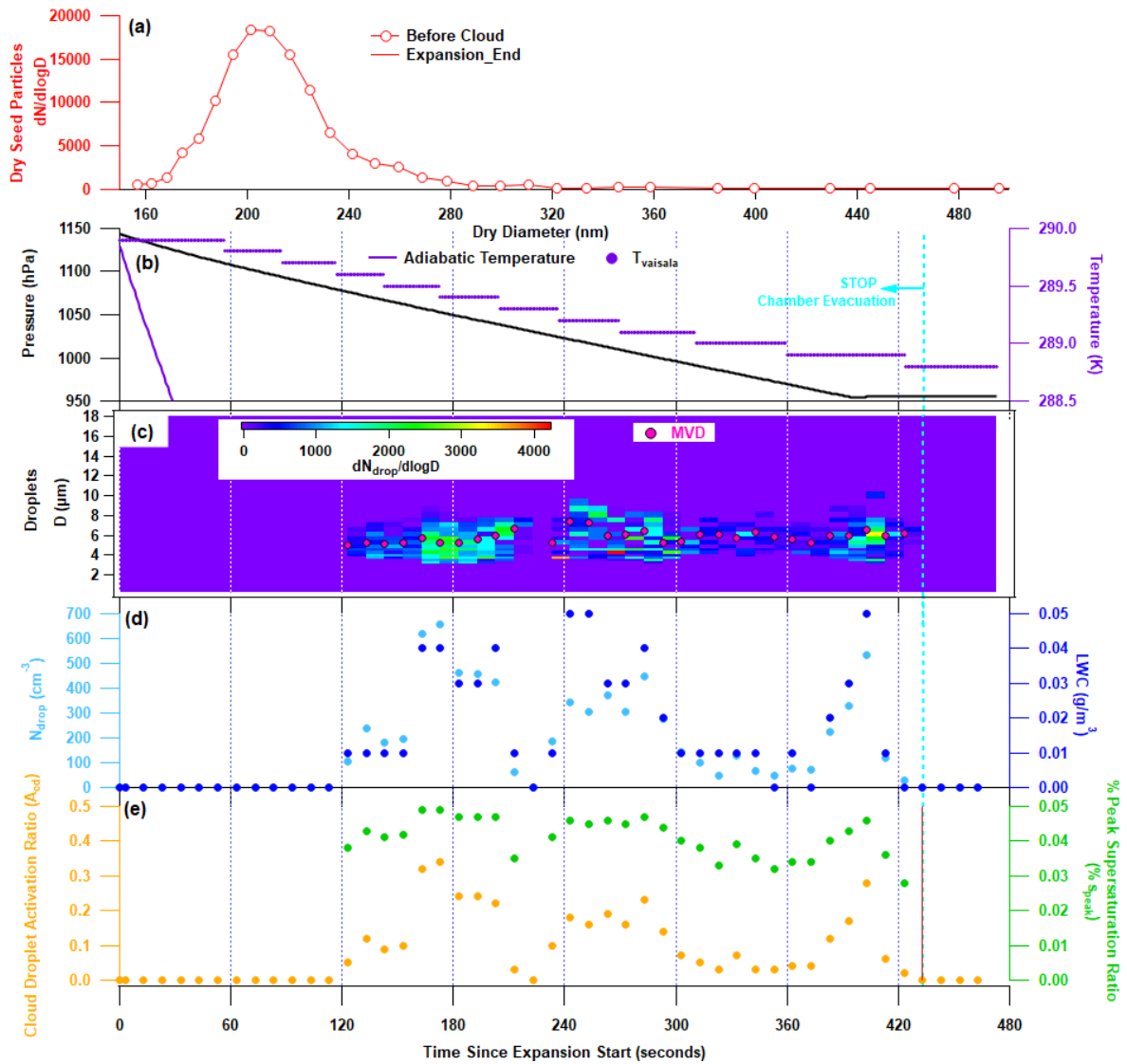


Figure S3: Dark cloud, N-IC-3 performed on 201.7 nm ammonium sulfate seed particles. Panel (a) shows the SMPS size distributions of seed particles obtained before and after the cloud run, followed by the time series of (b) time series of cloud droplets size distribution and volume mean diameter (MVD) measured by welas, (c) time series of cloud droplet concentration (N_{drop}) and LWC, and (d) time series of seed particle activation ratio (A_{cd}) and chamber peak supersaturation ratio (s_{peak}).

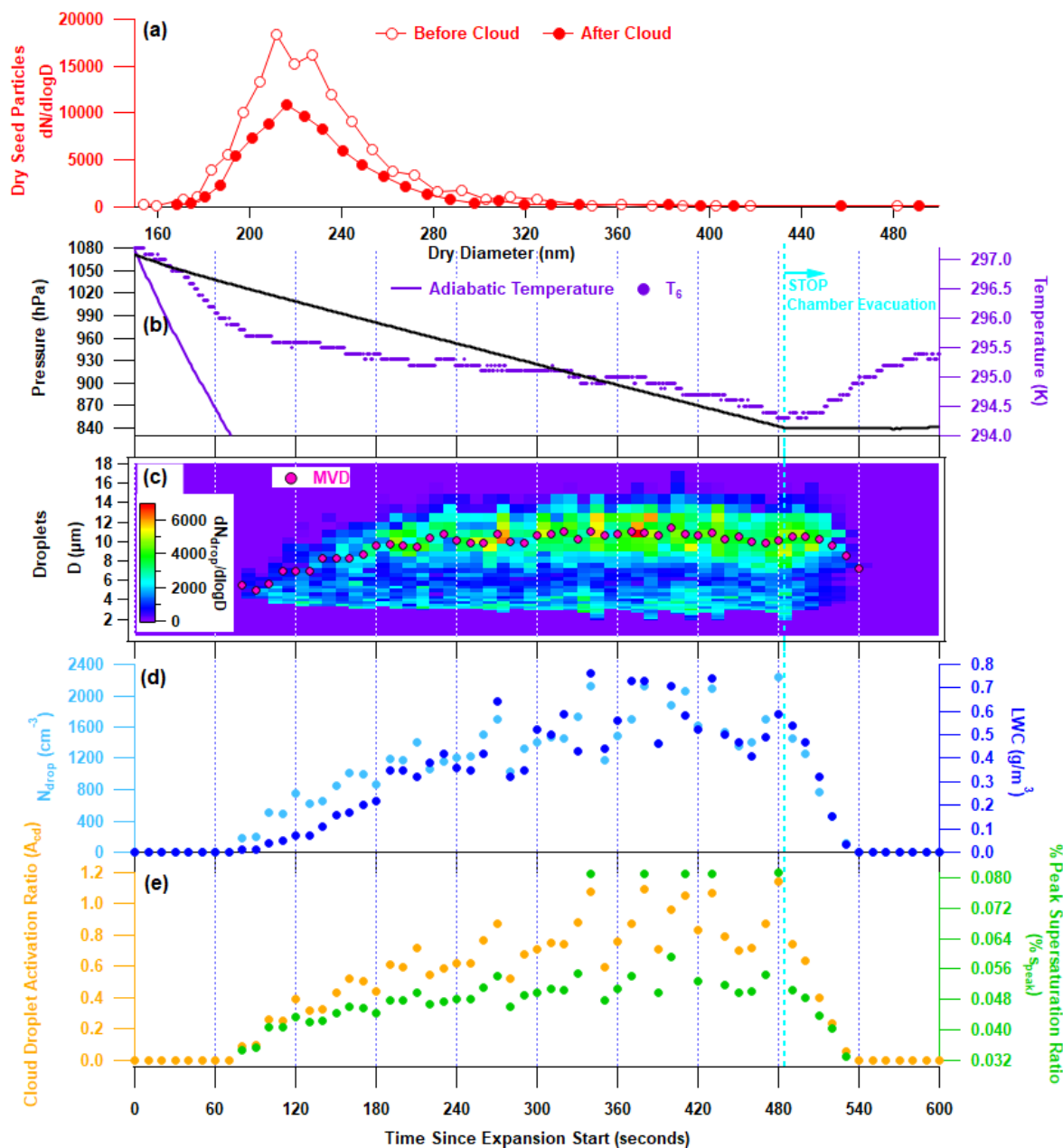
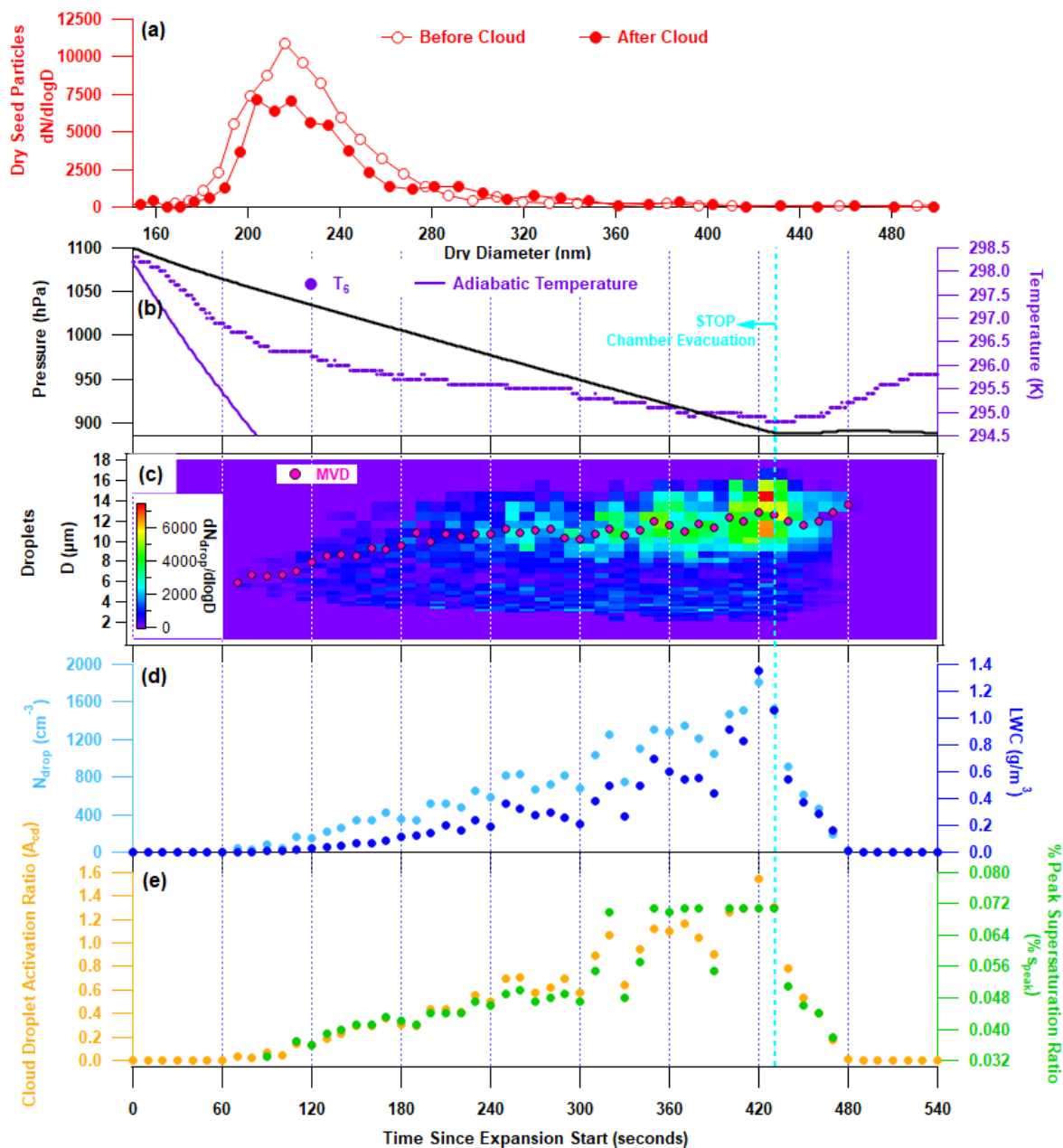



Figure S4: Light cloud, IC-2 performed on 211.7 nm ammonium sulfate seed particles. Panel (a) shows the SMPS size distributions of seed particles obtained before and after the cloud run, followed by the time series of (b) time series of cloud droplets size distribution and volume mean diameter (MVD) measured by welas, (c) time series of cloud droplet concentration (N_{drop}) and LWC, and (d) time series of seed particle activation ratio (A_{cd}) and chamber peak supersaturation ratio (s_{peak}).

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116 **Figure S5: Light cloud, IC-3 performed on 216 nm ammonium sulfate seed particles. Panel (a) shows the SMPS size**
117 **distributions of seed particles obtained before and after the cloud run, followed by the time series of (b) time series of**
118 **cloud droplets size distribution and volume mean diameter (MVD) measured by welas, (c) time series of cloud droplet**
119 **concentration (N$_{drop}$) and LWC, and (d) time series of seed particle activation ratio (A$_{cd}$) and chamber peak**
120 **supersaturation ratio (s$_{peak}$).**
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123 **References**

124 Lamkaddam, H.: Study in a simulated atmosphere of the formation of Secondary Organic Aerosol resulting from the
125 photooxidation of n-dodecane: impact of environmental parameters, Université Paris-Est (2017).

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