Supporting information

Large increases in Ncn and Nccn together with a nucleation-mode-particle pool over the northwestern Pacific Ocean in the spring of 2014

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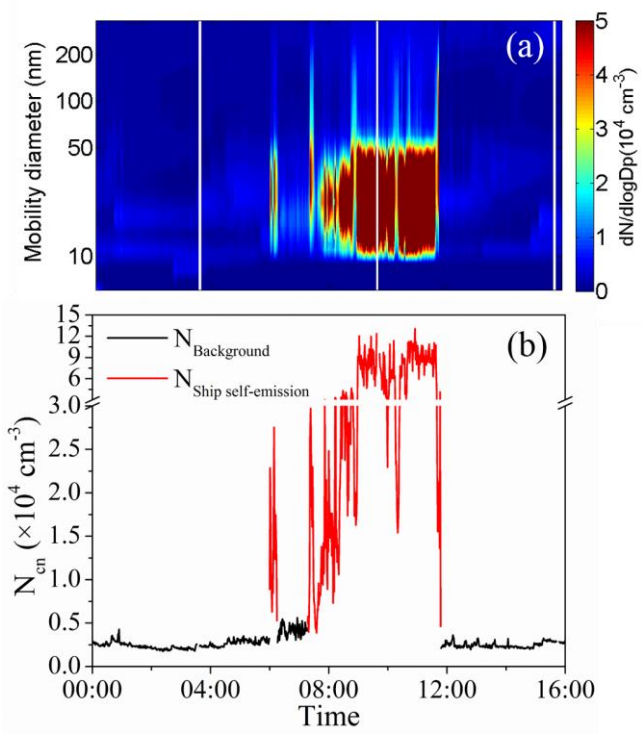

Figure S1 An example to screen out the signals from ship self-emissions (a: high particle number concentration signals in dark red suffer from the large interference of ship self-emissions; particle number size distributions show a constant dominant mode at 22±2 nm; b: red spikes are the signals mainly reflect the contribution from ship-emissions and the black baseline reflects the signals of marine background aerosols.

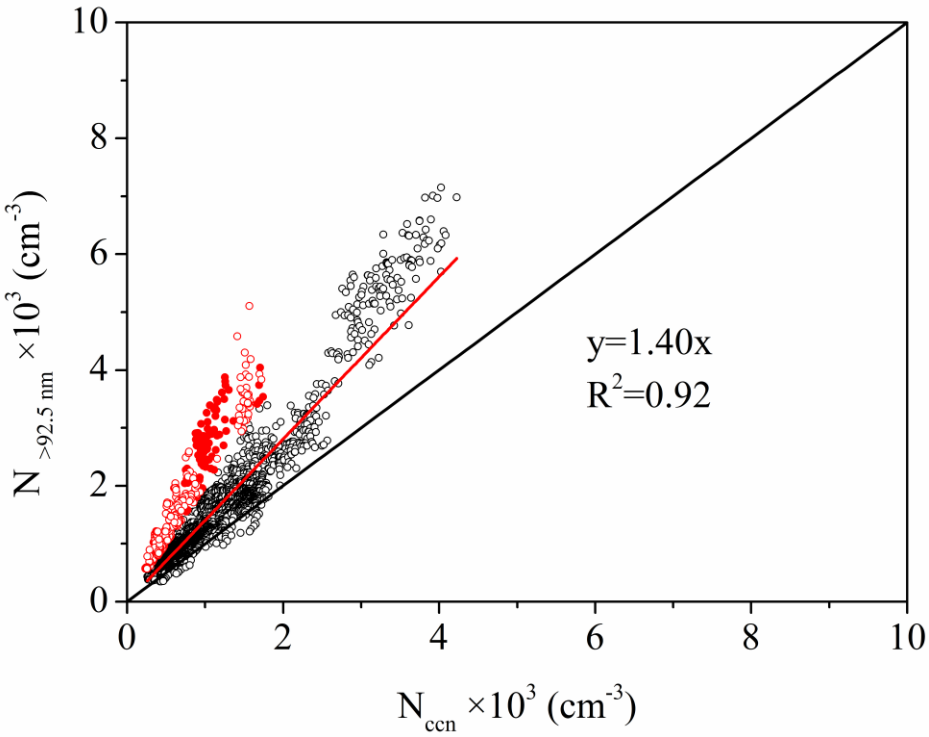

Figure S2 Scatterplots of N_{ccn} at SS of 0.2% versus $N_{>92.5\ nm}$. (Biomass burning aerosol and dust aerosol are shown in full red cycles with empty red cycles representing suspected either biomass burning or dust aerosol; the black line represents the 1:1 relationship, and the red line shows the best fit using the data shown as empty black cycles.)

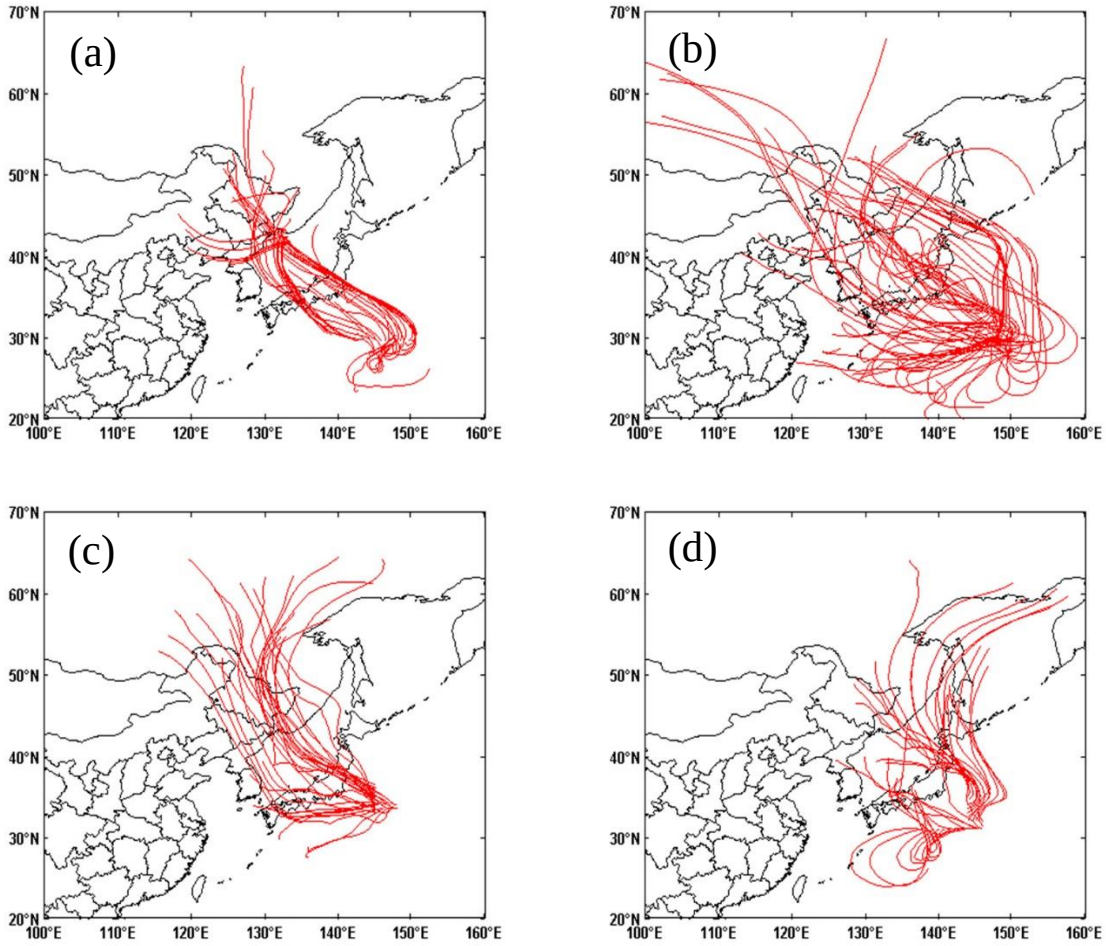

Figure S3 72-hour air mass backward trajectories over the NWPO at 1000 m for Period 1 (a), Period 2 (b), Period 3 (c), and Period 4 (d).

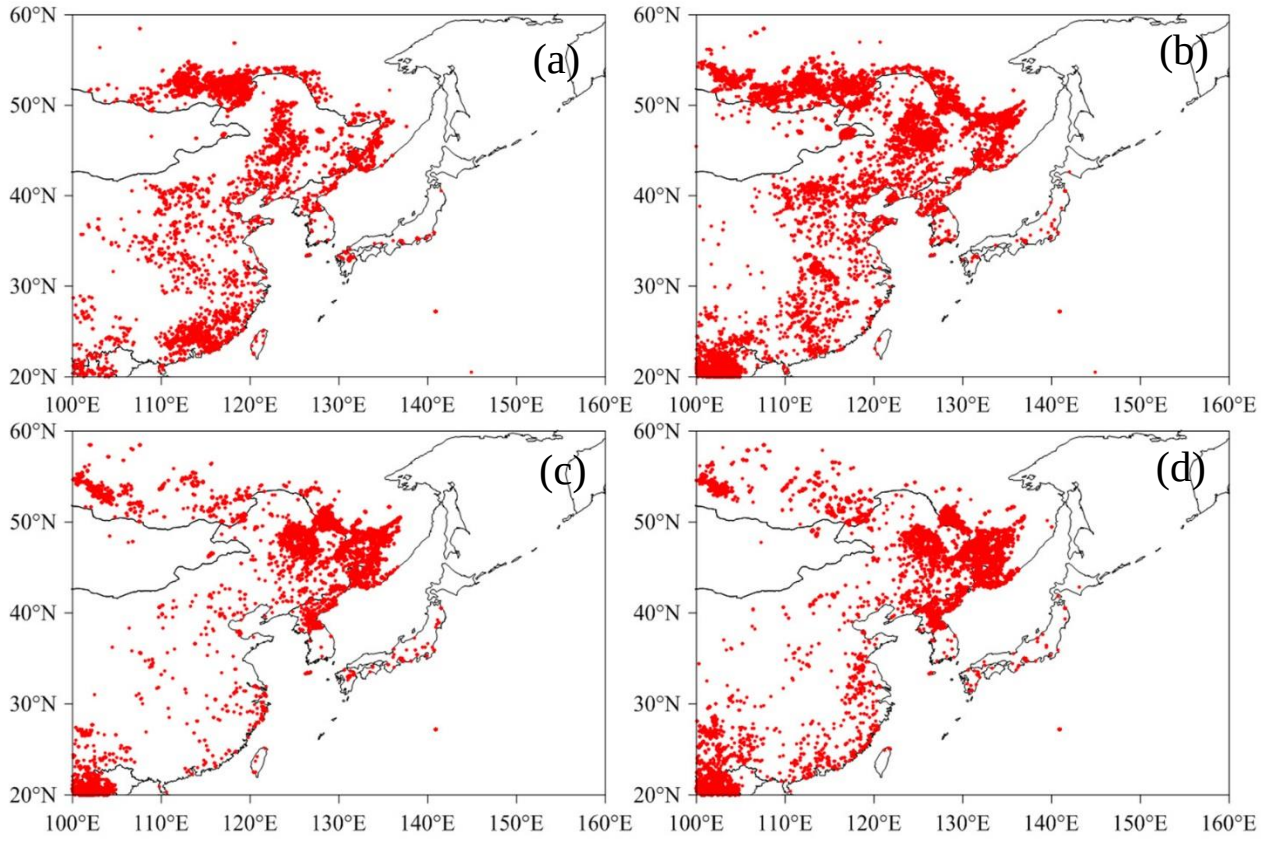

Figure S4 Fire spots from FIRMS in East China, Siberia, and Russian Far East for Period 1 (a), Period 2 (b), Period 3 (c), and Period 4 (d).

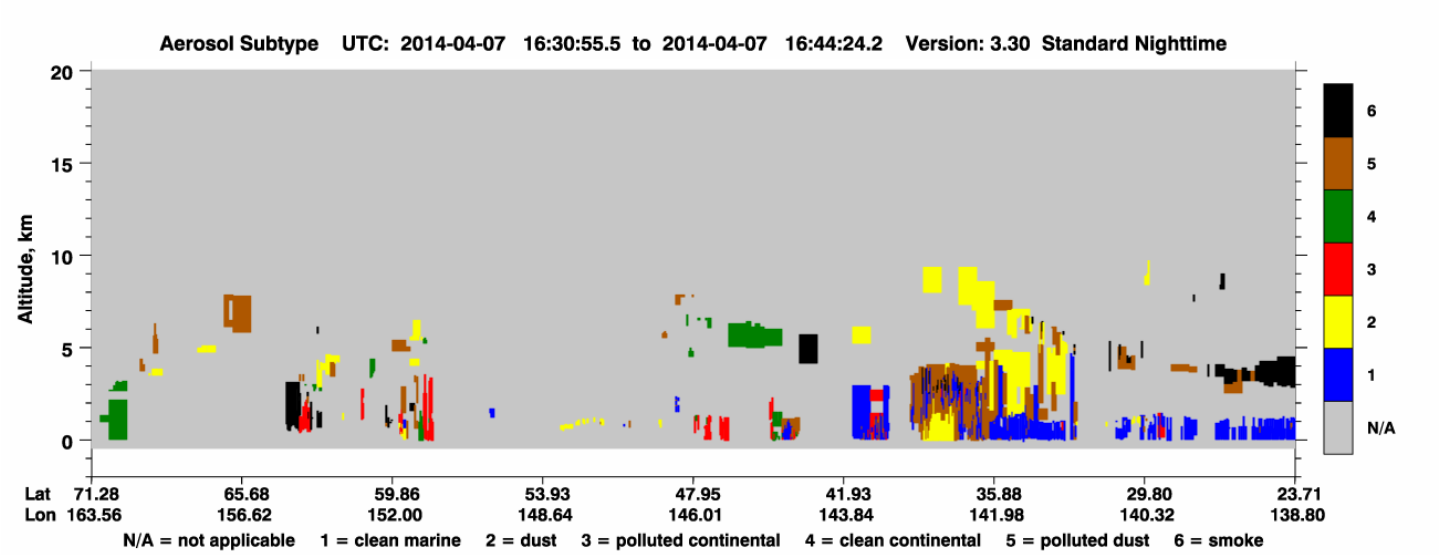

Figure S5 Vertical profiles of the aerosol subtypes captured by CALIPSO during dust event.

Table S1 Concentrations of CN and CCN and AR during DOY 77-80 and DOY 109-112, 2014.

Sampling periods	DOY 77-80	DOY 109-112	DOY 77-80 and DOY 109-112
CN($\times 10^3$)[a]	1.9-19.2, 5.2 ±2.4[b]	2.4-13.4, 7.2 ±3.1	1.9-19.2, 5.8 ±2.8
CCN($\times 10^3$), SS =0.2%	0.23-4.2, 1.5 ±1.0	0.64-4.0, 2.1 ±0.99	0.23-4.2, 1.7 ±1.0
CCN($\times 10^3$), SS =0.4%	0.34-7.5, 2.7 ±1.9	1.1-7.5, 4.2 ±2.0	0.34-7.5, 3.3 ±2.0
AR, 0.2%SS	0.07-0.53, 0.29 ±0.11	0.21-0.53, 0.32 ±0.06	0.07-0.53, 0.30 ±0.09
AR, 0.4%SS	0.11-0.92, 0.50 ±0.19	0.29-0.88, 0.61 ±0.13	0.11-0.92, 0.53 ±0.18

[a] Unit the $\times 10^3 cm^{-3}$

[b] Range and mean ± standard deviation