S1. Data coverage illustrated for the period of measurements 5 Jul 2010 -- 30 May 2014. X-axis shows the time with the years separated by black dotted lines. The uppermost colorband denotes the changing seasons with colors: black, yellow and green presenting the periods of polar night, midnight sun and that in between, respectively. The blue colorbands show the data coverage for DMPS, DMPS cleaned data, APS, temperature and RH, and wind speed and direction. The overall data coverage from DMPS in our measurements was 74%, but additional 36% of those were lost in data cleaning. The data coverage for APS was 30%, and for meteorological (T, RH, winds and radiation) measurements 76%. . The periods when DMPS measurements extent to only 15 nm lower limit are additionally marked with red colorbands.

S2. Average number size distributions from DMPS and APS during the period of data intercomparison, plotted on a mobility diameter scale with the assumption of particle density of 1.5 g cm-3. The size range used for comparing data is illustrated with black dashed lines.

S3. Scatter of DMPS number concentration versus APS number concentration (size range 493--658 nm) for the period of overlapping measurements in year 2013. Color indicates the day of year (with one being equal to Jan 1). The grey line shows the linear fit with zero-intercept done for the data gives a slope of 1.79.

S4. Seasonal variability of different cluster types representing those presented in Figure 3 with corresponding color coding.

S5. Back trajectories for air masses classified according to particle number size distribution measurements. The trajectories were calculated using HYSPLIT 4 (Draxler et al. 1998) with an arrival height of 500 meters above ground level calculated 120 hours backwards in time. The trajectories were divided into eight groups: clusters 1-8 (corresponding to figures a)-h), correspondingly) based on DMPS and APS particle number size distributions (see the text for details). The colour coding of the figure represents the number of trajectories that have passed over a geodesic hexagon on the map. Each trajectory coordinate was associated with a specific hexagon according to the minimum distance of a trajectory coordinate to the centroid of the grid cell. Trajectories residing over a grid cell is calculated once in order to circumvent weighing due to residence time over grid cells. The colour coding of the figure is logarithmic with red depicting frequently passed grid cells while the cooler colours represents infrequent trajectory overpasses.

S6. Median number size distributions for different seasons, with whiskers presenting the quartiles of the data.