Figure S1: Mass spectra profiles of OA factors for unconstrained two-factor situation.
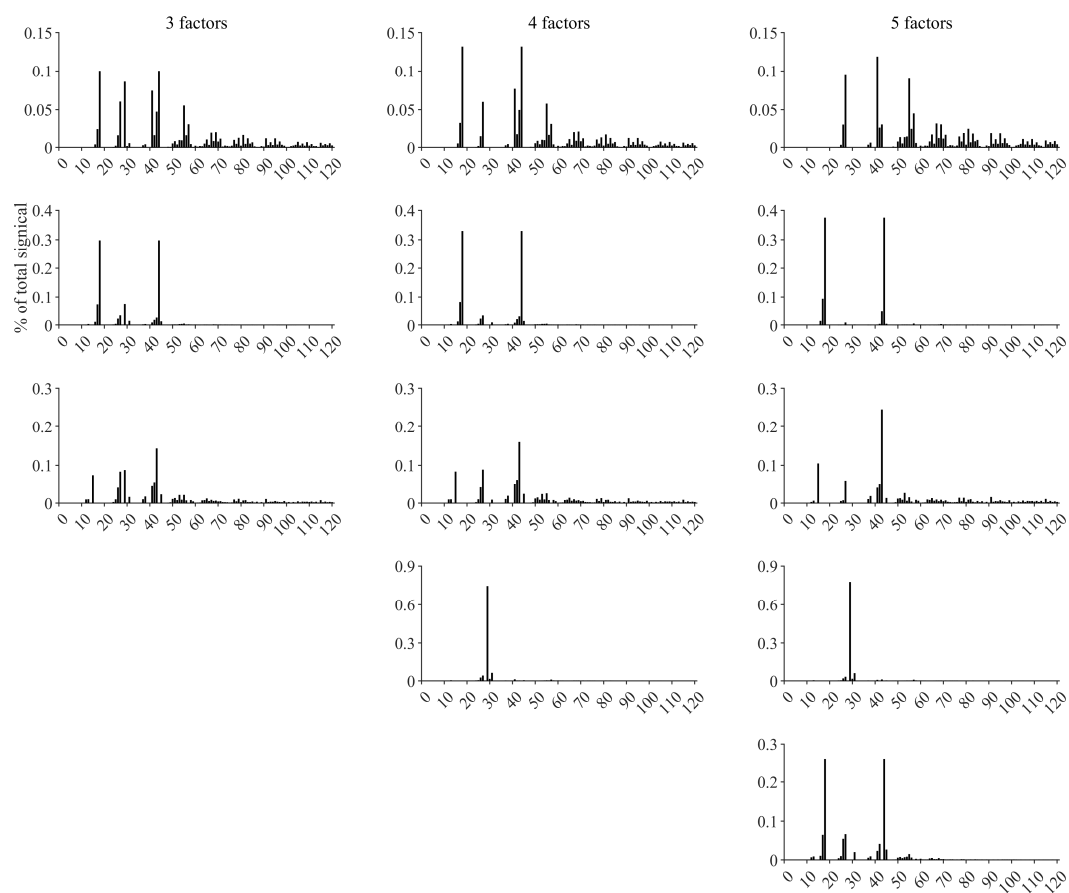
Figure S2: Mass spectra profiles of OA factors for unconstrained three-factor (left), four-factor (middle), and five-factor (right) situations.
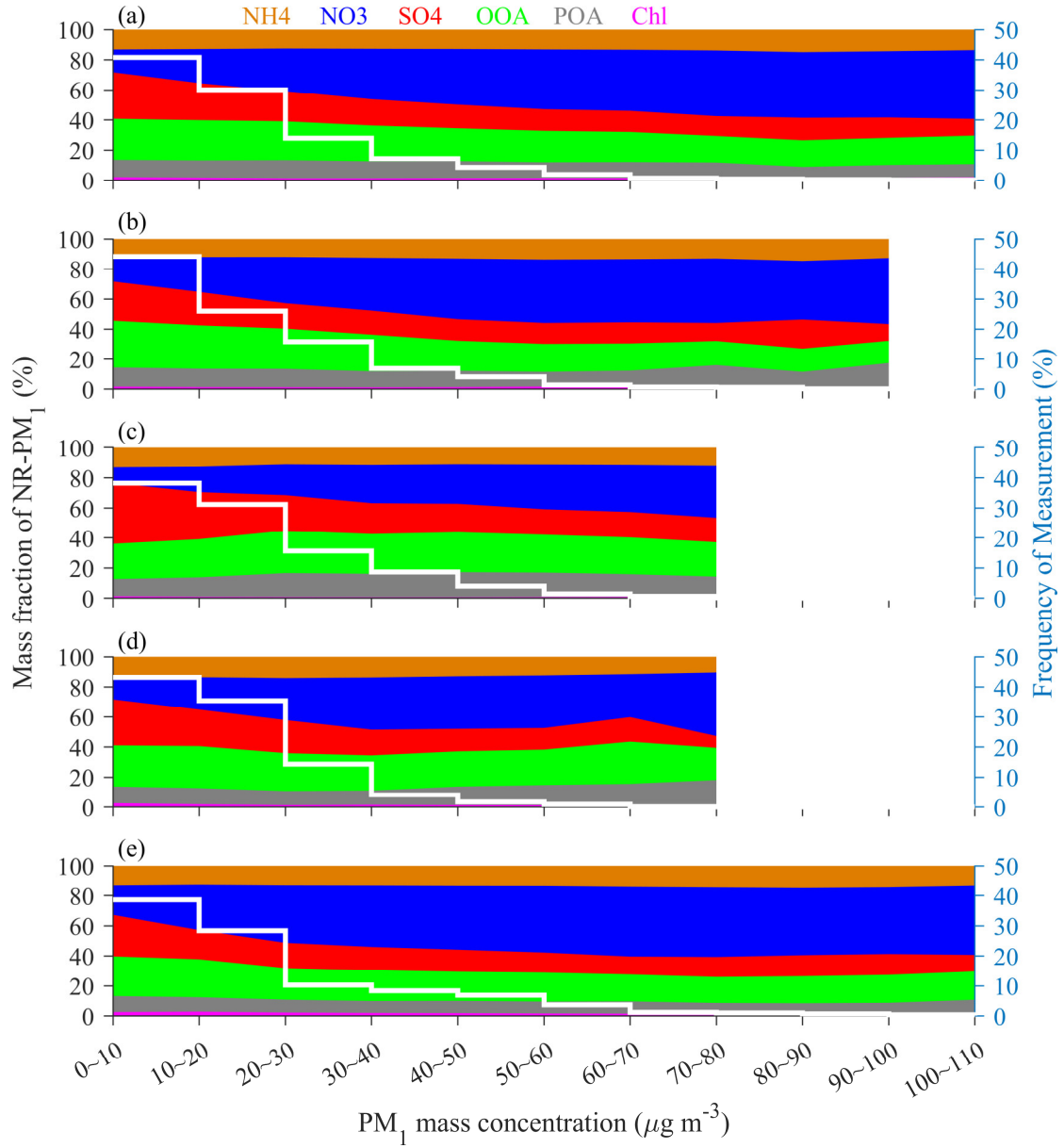
Figure S3: The mass fractions of PM_1 species as a function of PM_1 mass loadings (left), and frequency of measurement (right, with the white lines in the plots) during the entire period (a), spring (b), summer (c), autumn (d) and winter (e).
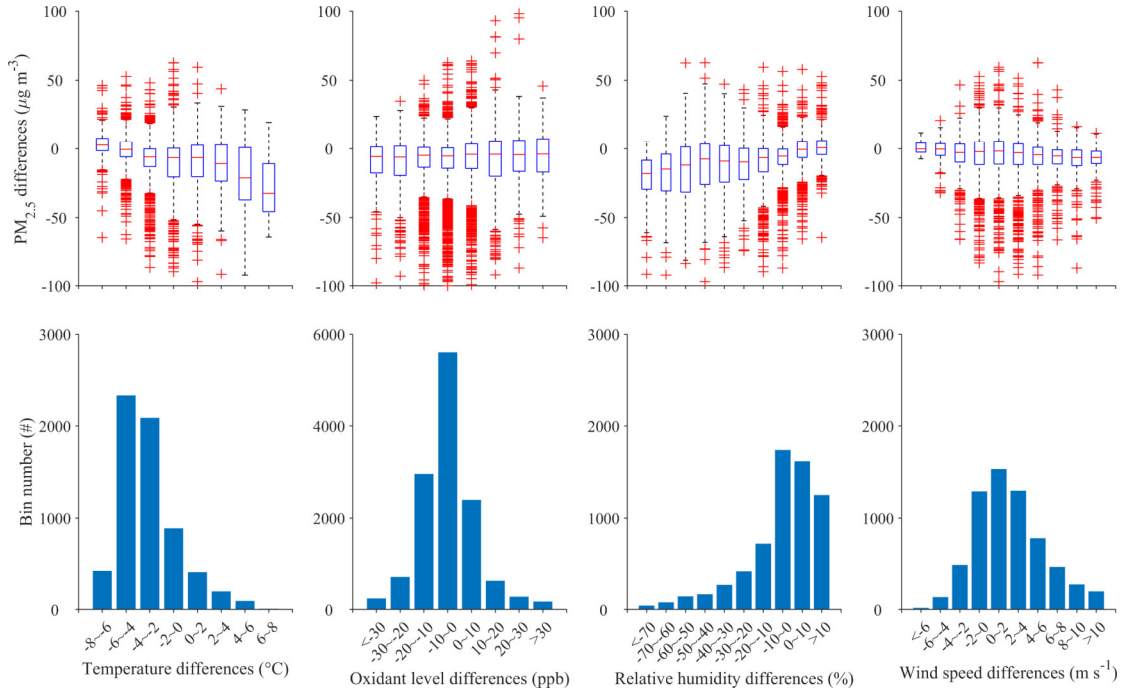
Figure S4: PM$_{2.5}$ differences (µg m^{-3}) bin-counted by temperature differences, oxidant level differences, relative humidity differences, and wind speed differences of SHT and SUR (upper panel). The lower panel shows the corresponding bin number (#). The oxidant level is defined as the sum of O$_3$ and NO$_2$, and based on data collected during 2017-2018. The wind speed data are from ERA5 (the fifth generation of ECMWF atmospheric reanalysis) data at nearest grid point (121.50°E, 31.25°N) of SHT. The boxes in the upper panel represent interquartile range of each bin, the red lines represent the median. The upper whiskers depict q3 + 1.5 × (q3 − q1), and the lower whiskers stand for q1 − 1.5 × (q3 − q1), where q1 and q3 are the 25th and 75th percentiles of the bin data. The data outside the range of whiskers are seen as outliers, and plotted using the '+' marker symbol.