Supplementary Materials

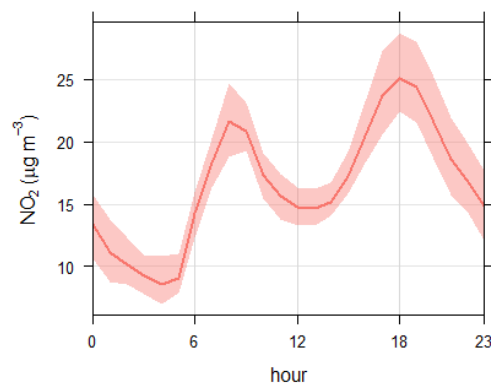## NO$_2$ diurnal variation: peaks in morning and evening traffic rush hour

Figure S1: Diurnal variation of NO$_2$ measure at BAQS from December 2023 to February 2024.

Figure S1 is showing the NO$_2$ peaks in a daily circle match the traffic rush hours (7-10 am; 4-8 pm), suggesting NO$_2$ is mainly from traffic emission.

Correlation analysis of the species measured at BAQS

The correlation plot displayed below aims to classify air pollutants and PM$_{2.5}$ compositions into groups by calculating Pearson correlation coefficients (r). These coefficients are commonly used to measure the strength and direction of linear relationships between two variables, providing insights into how different species are related to each other. And then by combining their time/spatial distributions, the species can be roughly divided into 4 groups, which can be attributed to 4 sources:

1. Traffic and dust: NO$_2$, Si, Fe, Mn, Ca, Ti, Ba, Zn, Pb,
2. Biomass burning: K, BC
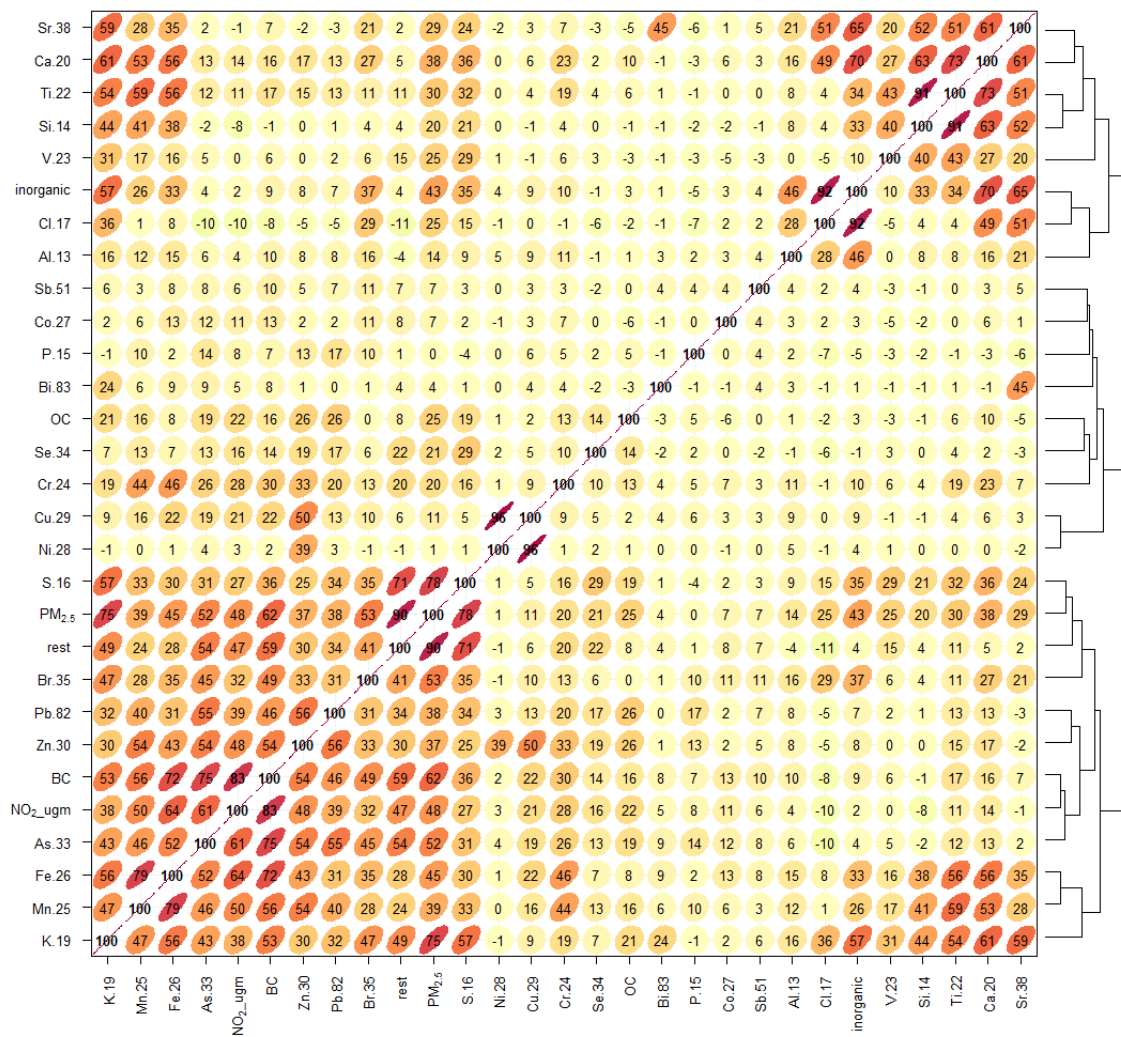3. Industrial: Zn, As, Pb, V, Br,
4. Sea salt: Cl

Figure S2: the correlation plot of the measured elements with NO_2, $PM_{2.5}$ at BAQS