Figure S1. Same as Fig.1, but with red flags representing 10 stations added since 2021.
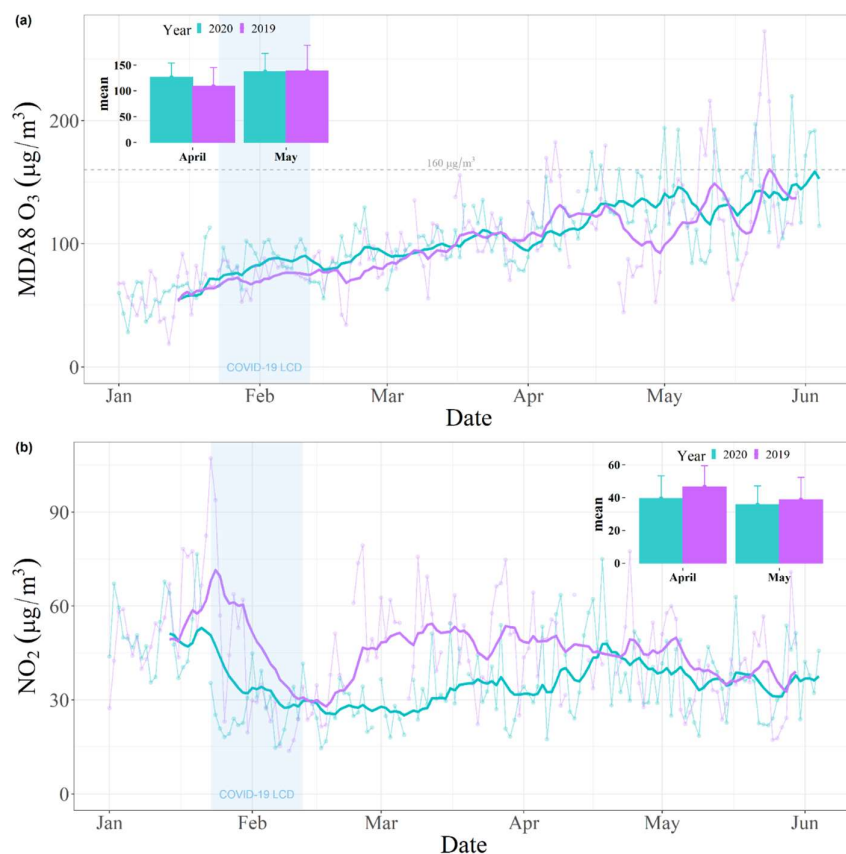
Figure S2. Temporal variations in surface-level maximum daily 8-h average (MDA8) O3 (a) and NO2 (b) concentrations during the first half year in 2019 (purple) and 2020 (blue). The concentrations are averages from 10 sites in Shanghai. The trend lines represent prior 2-week moving averages. The insert figures show the monthly average concentrations (bars and values indicated by numbers) and standard deviations (error bars). The blue background represents the 2020 LCD (COVID-19 LCD: 23 January to 12 Feb). The x-axis labels represent the first day of each month.
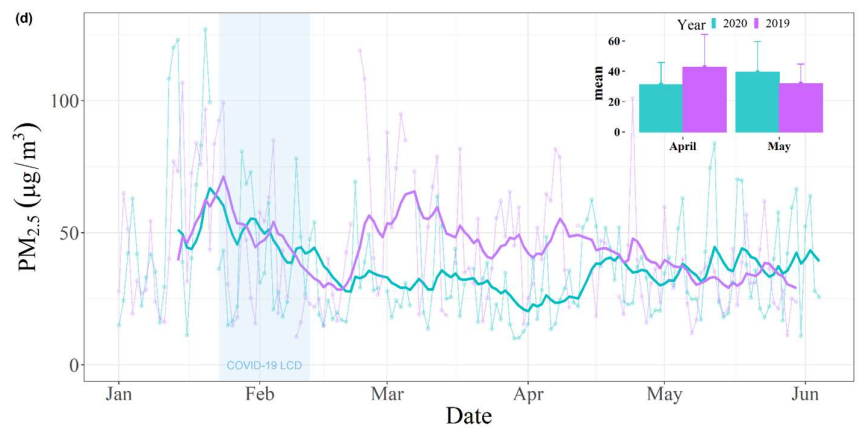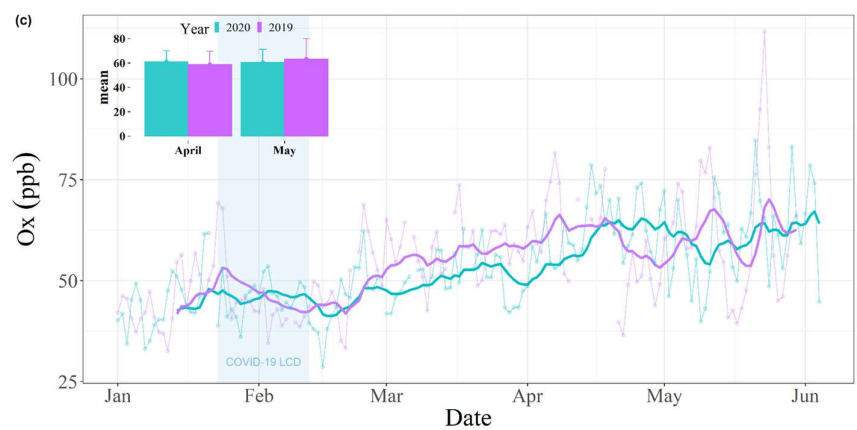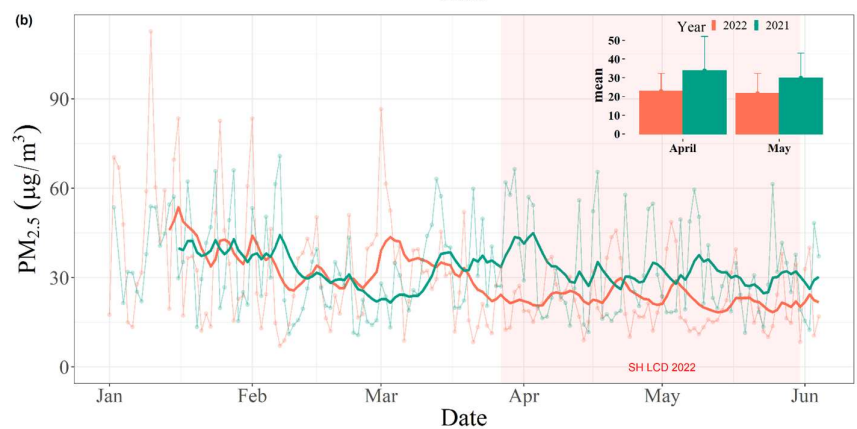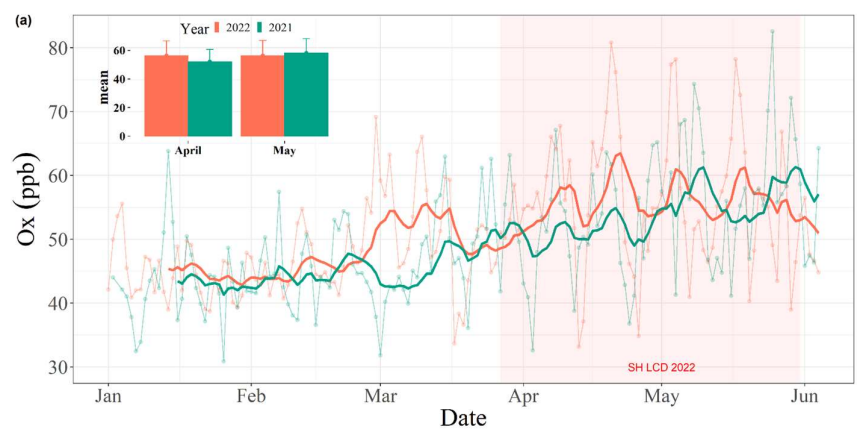
Figure S3. Temporal variations of surface-level Ox (a) and PM2.5 (b) during the pre-LCD period (1st Jan-27th Mar) and LCD period (28th Mar-31st May) in 2022 compared with the corresponding period of 2021. Plots (c-d) are the same as plots (a-b) but for 2019 and 2020. The concentrations in plots (a-b) are averaged values from 19 sites in Shanghai, and those in plots (c-d) are averaged values from 10 sites in Shanghai. The trend lines represent the prior two-week moving averages. The insert figures show the respective monthly averaged concentrations (bars and with values indicated by the numbers) and standard deviations (error bars). The red background represents the period of 2022 LCD in Shanghai (28th Mar to 31st May), and the blue background represents the period of 2020 LCD (23rd Jan to 12th Feb). The labels of x axis represent the first day of that month.
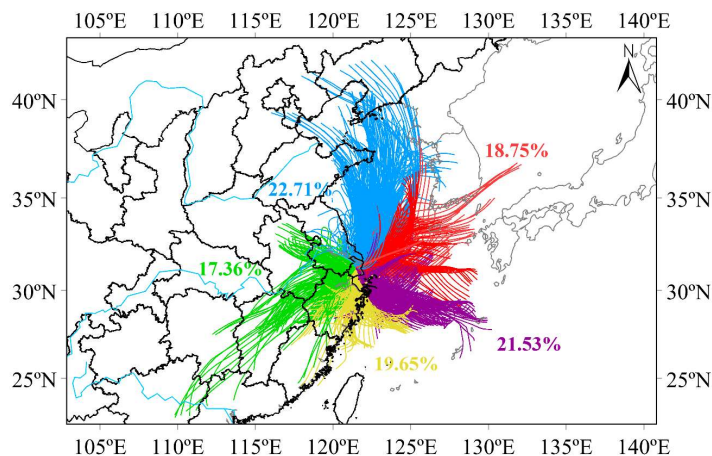
Figure S4. Twenty-four-hour back trajectories at one-hour intervals at 500 m height during the LCD period in Shanghai. The inserted percentage values represent the ratio of the trajectories of each classification to the whole trajectories.
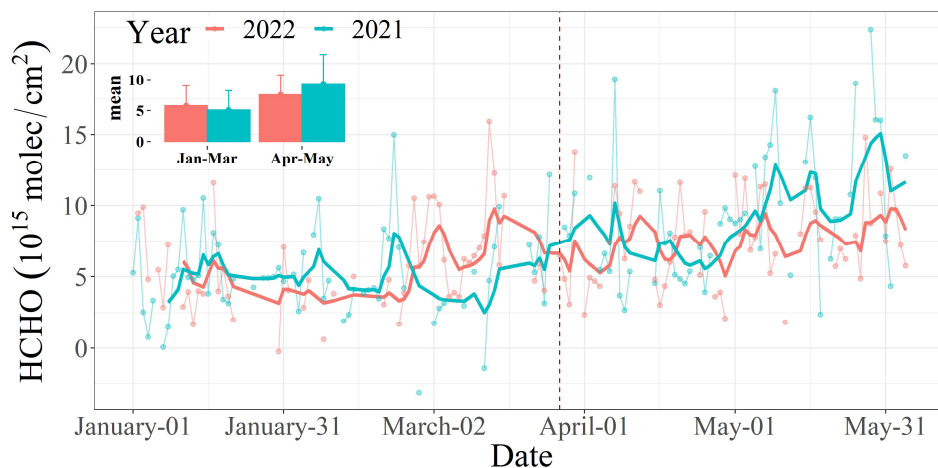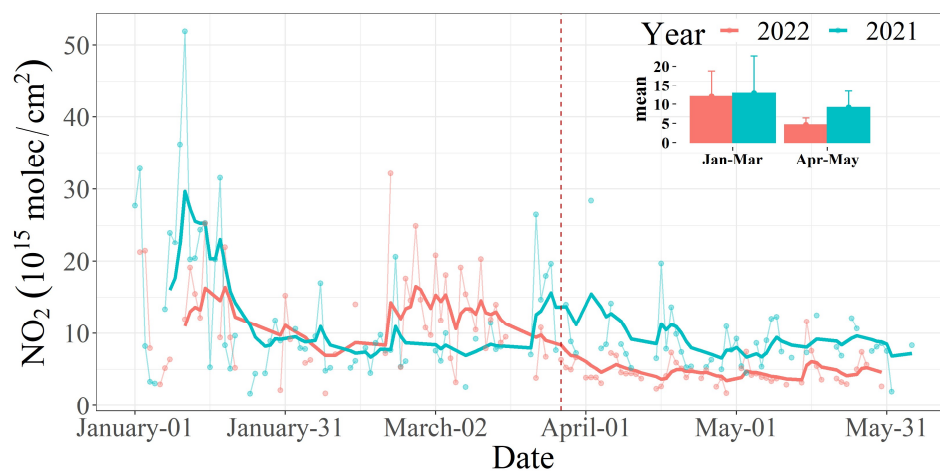
Figure S5. Temporal variations of the city-average HCHO (a) and NO_2 (b) columns from 1 January to 31 May of 2021 and 2022. The red dashed vertical line represents the lockdown date (27th Mar). The trend lines represent the prior two-week moving averages.
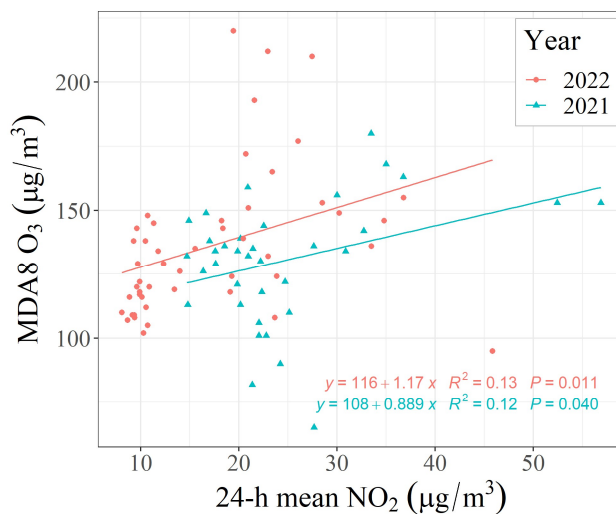
Figure S6. Scatter plots of the surface maximum daily 8-h average (MDA8) O_3 concentrations versus surface daily NO_2 concentrations and their linear regressions (straight lines) during the 2022 lockdown (red) and the same period in 2021 (blue) for type D site.