Supplement of Atmos. Chem. Phys., 21, 7039–7052, 2021
https://doi.org/10.5194/acp-21-7039-2021-supplement

Atmospheric Chemistry and Physics
Open Access
EGU

Supplement of

Enhancement of nanoparticle formation and growth during the COVID-19 lockdown period in urban Beijing

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Supplementary Materials

1. The anomaly of mean sea level pressure

The anomaly of monthly mean sea level pressure in January and February between 2020 and 2016-2020 was analyzed based on the ECMWF reanalysis dataset (ERA5, https://cds.climate.copernicus.eu/), as given in Fig. S1.

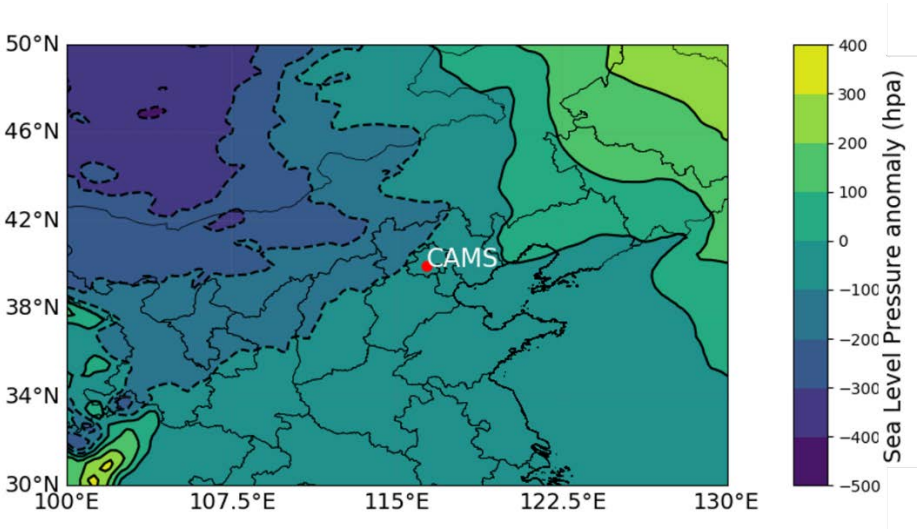

Fig. S1. The anomaly of monthly mean sea level pressure in January and February between 2020 and 2016-2020. The data are from the ERA5 ECMWF reanalysis dataset (https://cds.climate.copernicus.eu/).

2. Poisson statistics of NPF event occurrence

The Poisson statistics was conducted for NPF event occurrence probability for pre-LCD, LCD and post-LCD period, respectively, as given in Fig. S2. It showed almost the same NPF event occurrence probability during Pre_LCD and LCD period, higher than that in Post_LCD preiod.

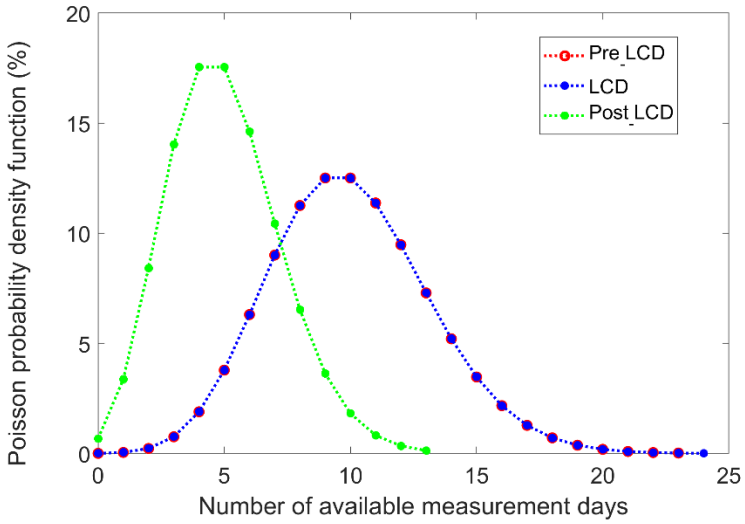

Fig. S2. Poisson distribution of NPF event occurrence frequency during Pre_LCD, LCD and Post_LCD, respectively.

3. The PDF distribution of the gases

The probability density function (PDF) distributions were given for SO_2, NO_2 and O_3 during Pre_LCD, LCD and Post_LCD, respectively, as given in Fig. S3. It showed significant decreasing trend of NO_2, whereas increasing trend of O_3 as compared with Pre-LCD and LCD/Post-LCD. However, the variation of SO_2 among different periods was not clear, as the SO_2 concentration remained low due to the emission control these years.

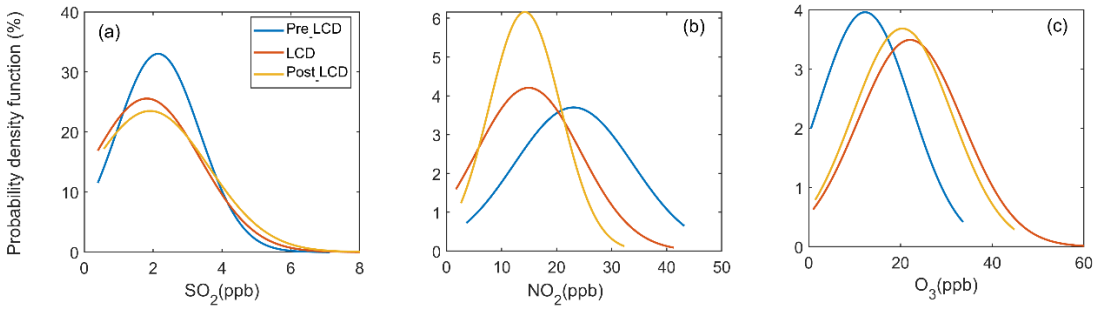

Fig. S3. The probability density function (PDF) of SO_2, NO_2 and O_3 concentration during pre_LCD, LCD and post_LCD, respectively.

4. The diurnal pattern of NO_2, SO_2, O_3 and solar radiation during pre-LCD and LCD period

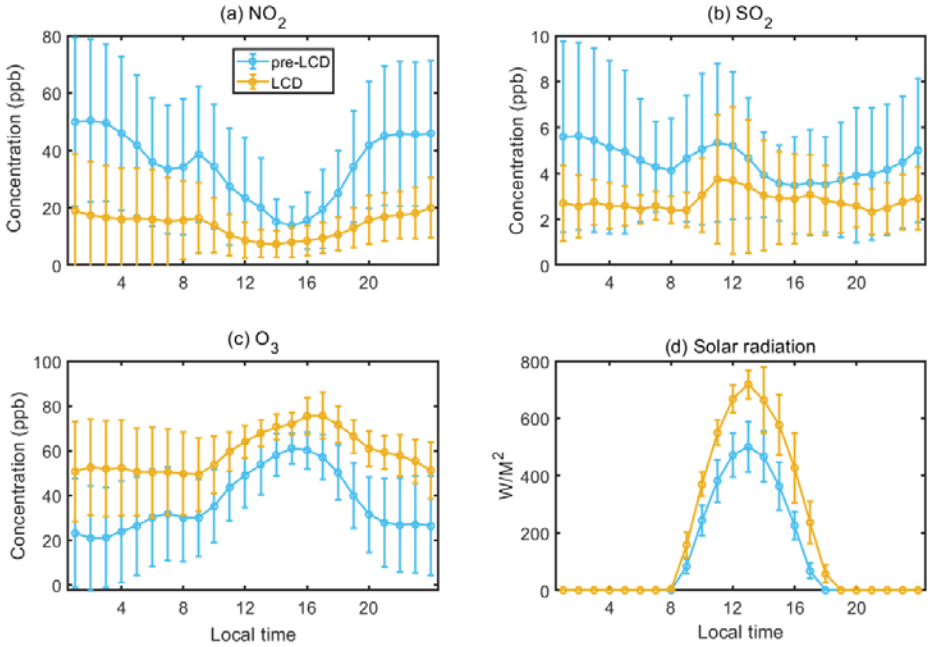

Fig. S4. The diurnal variation of NO_2 (a), SO_2 (b), O_3 (c) and global solar radiation (d) during pre-LCD and LCD period, respectively.