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What caused large ozone variabilities in three megacity clusters in eastern China during 2015–2020?

Tingting Hu et al.

Correspondence to: Run Liu (liurun@jnu.edu.cn) and Shaw Chen Liu (shawliu@jnu.edu.cn)

Supplementary Figures

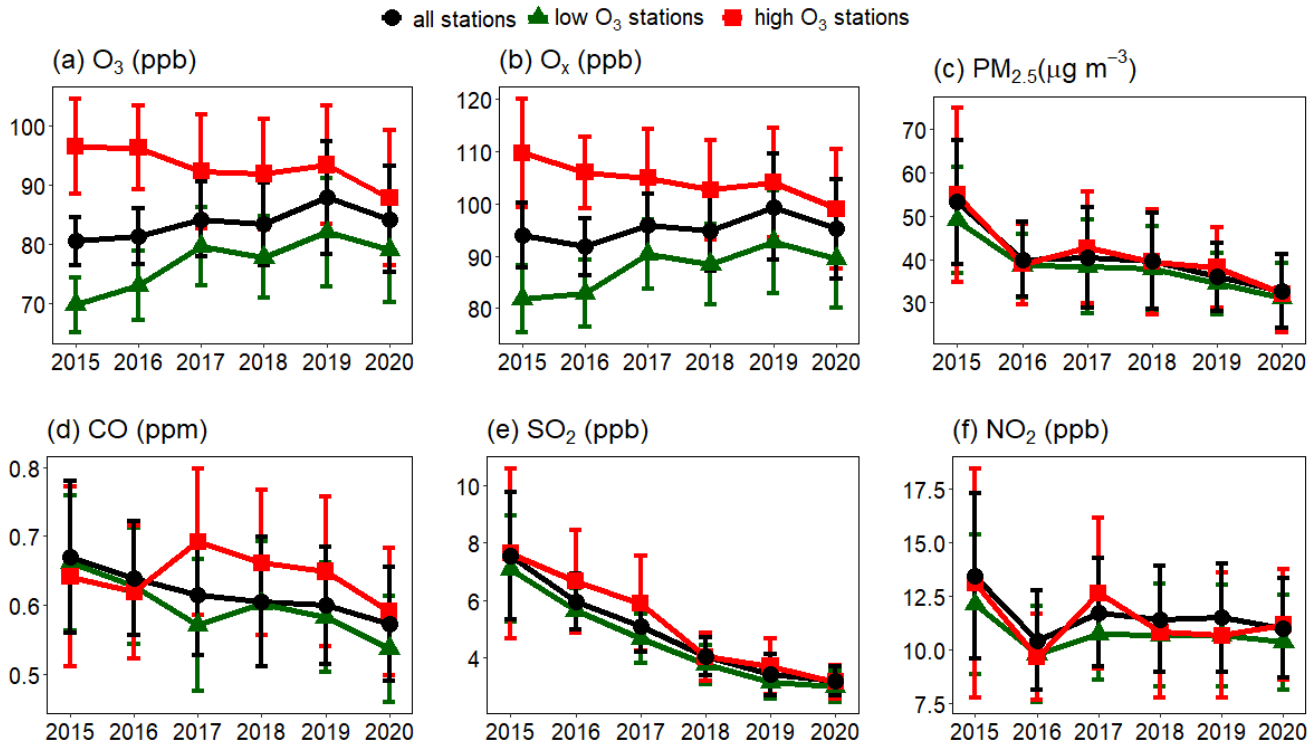

Figure S1. Annual mean concentrations of maximum daily 8-hour average O_3 in YRD during O_3-exceeding days for all stations (black), high O_3 stations (red) and low O_3 stations (green) (a), same as (a) except for Ox (b), $PM_{2.5}$ (c), CO (d), SO_2 (e), NO_2 (f). The criterion of low O_3 stations is 37days, and the number of low O_3 stations is 54.

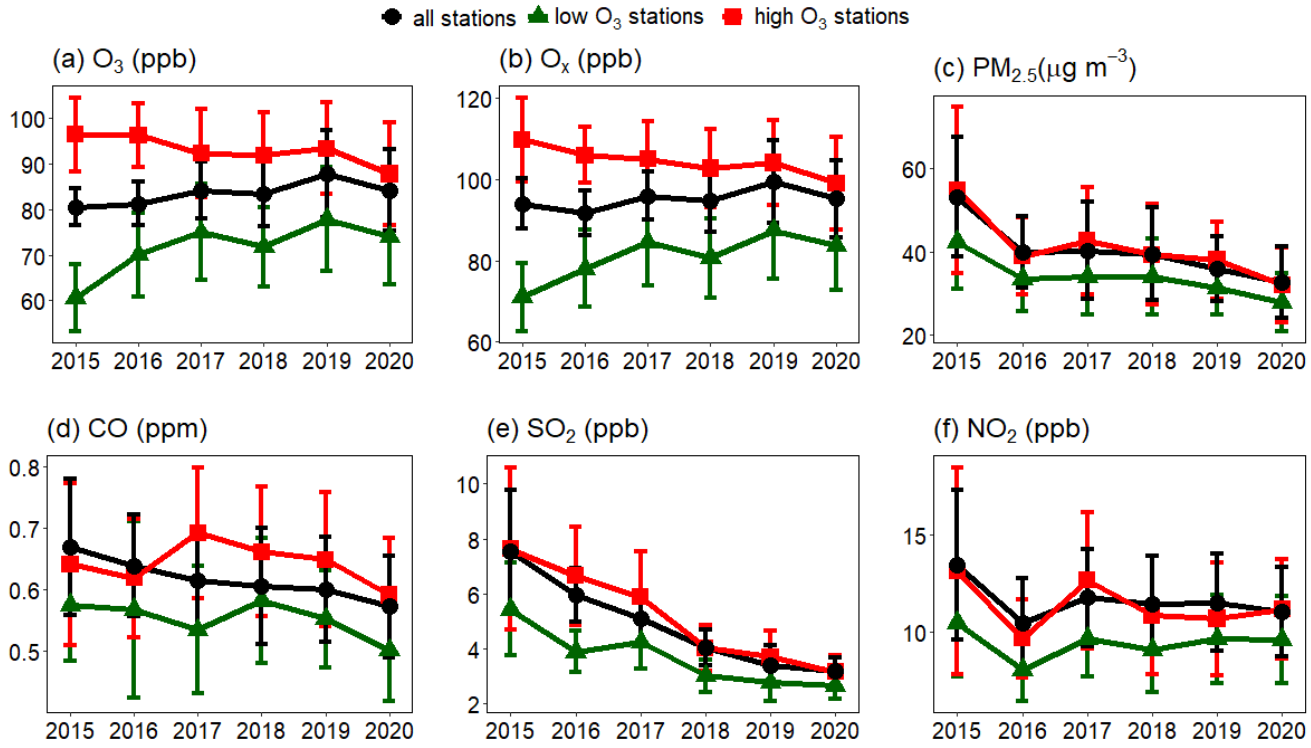

Figure S2. Annual mean concentrations of maximum daily 8-hour average O_3 in YRD during O_3-exceeding days for all stations (black), high O_3 stations (red) and low O_3 stations (green) (a), same as (a) except for Ox (b), $PM_{2.5}$ (c), CO (d), SO_2 (e), NO_2 (f). The criterion of low O_3 stations is 19 days, and the number of low O_3 stations is 15.

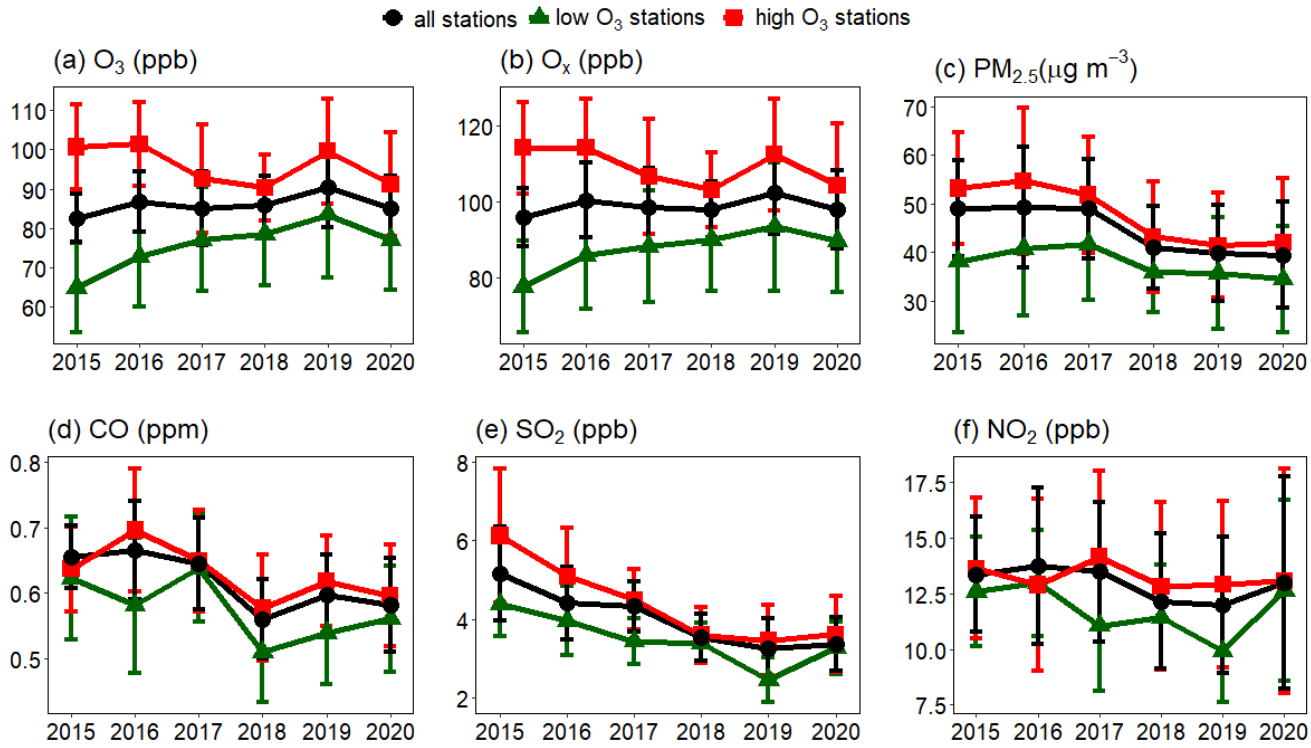

Figure S3. Annual mean concentrations of maximum daily 8-hour average O_3 in PRD during O_3-exceeding days for all stations (black), high O_3 stations (red) and low O_3 stations (green) (a), same as (a) except for Ox (b), $PM_{2.5}$ (c), CO (d), SO_2 (e), NO_2 (f).

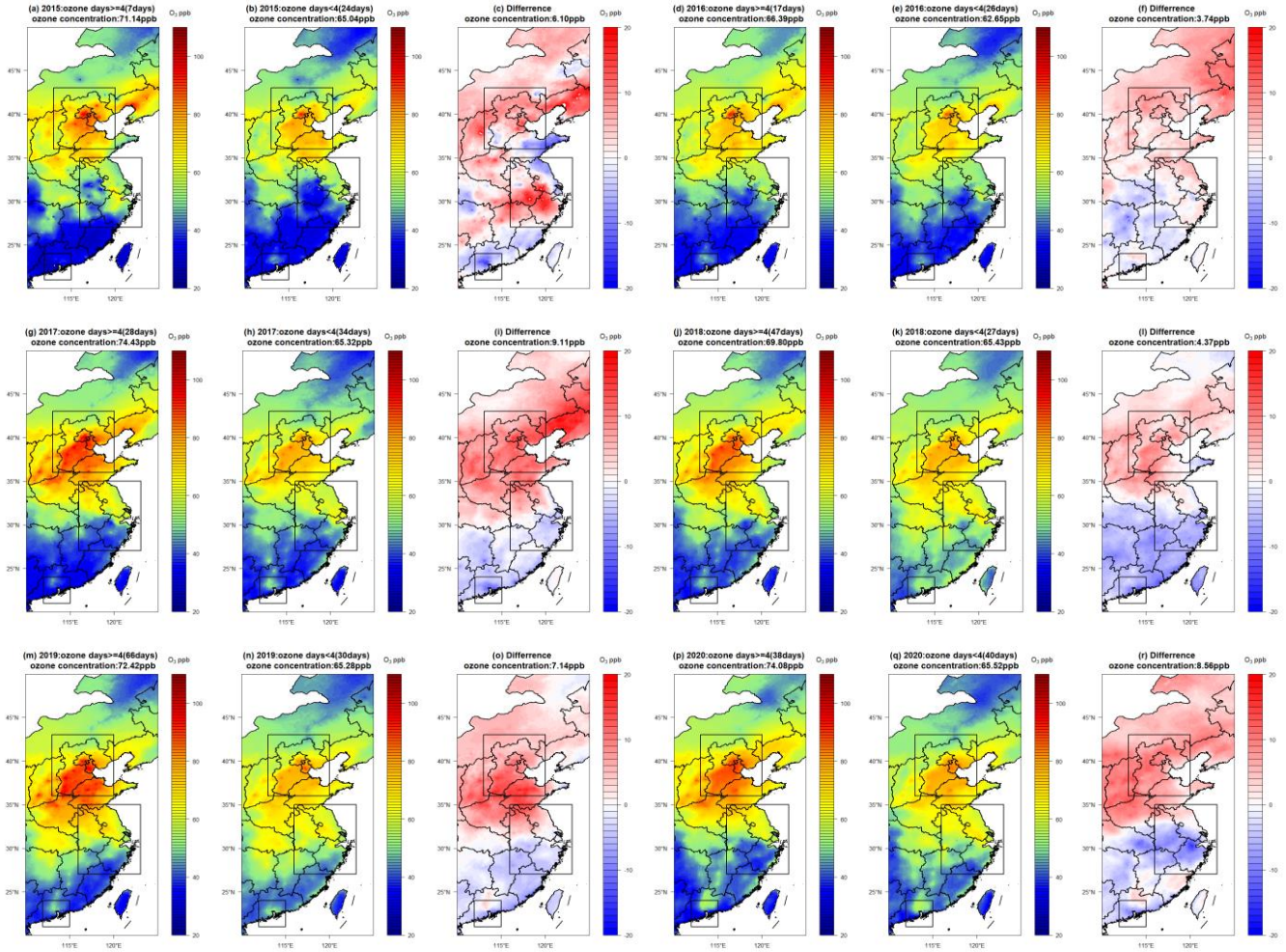

Figure S4. Spatial distribution of daily mean MDA8 O_3 (in ppb per day) of O_3-exceeding days in BTH for O_3 episodes with four or more consecutive O_3-exceeding days, O_3 episodes with less than four consecutive O_3-exceeding days and their difference in 2015–2020.

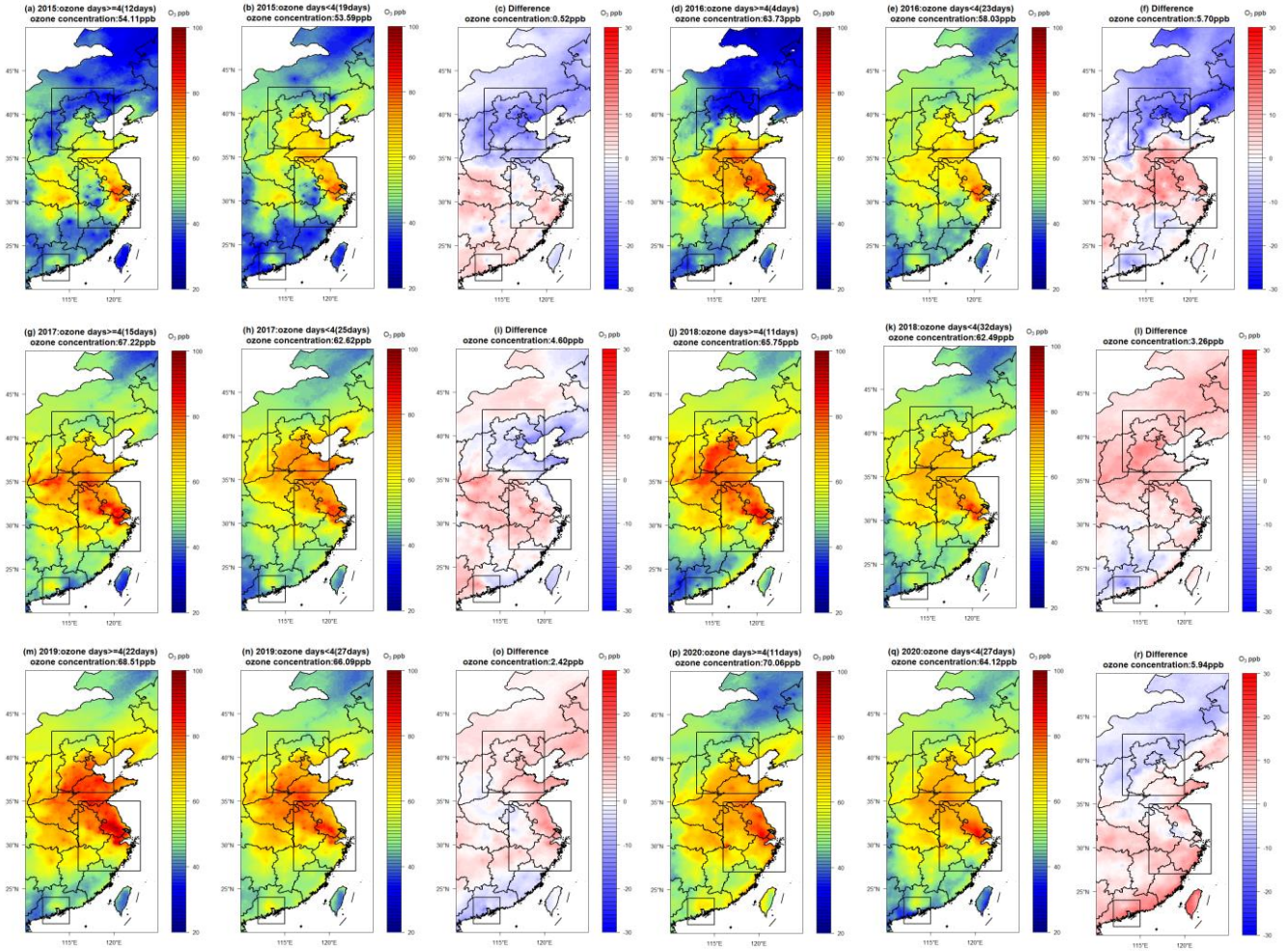

Figure S5. Spatial distribution of daily mean MDA8 O_3 (in ppb per day) of O_3-exceeding days in YRD for O_3 episodes with four or more consecutive O_3-exceeding days, O_3 episodes with less than four consecutive O_3-exceeding days and their difference in 2015–2020.

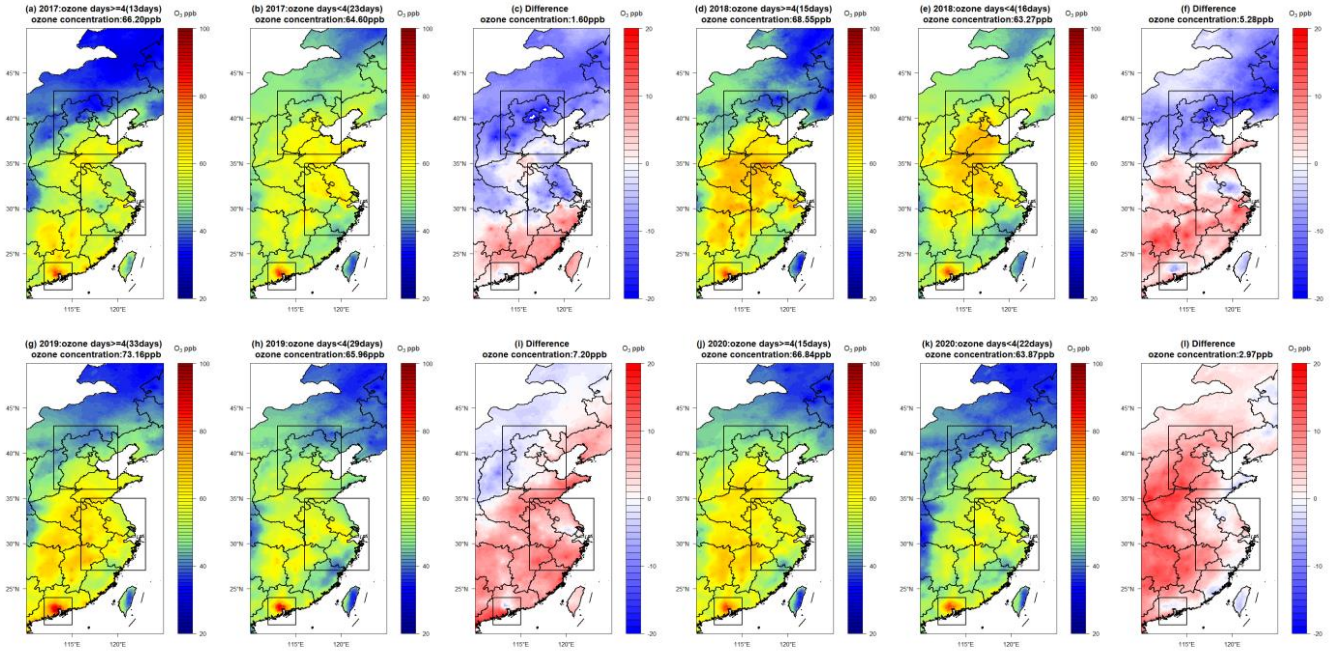

Figure S6. Spatial distribution of daily mean MDA8 O_3 (in ppb per day) of O_3-exceeding days in PRD for O_3 episodes with four or more consecutive O_3-exceeding days, O_3 episodes with less than four consecutive O_3-exceeding days and their difference in 2017–2020.

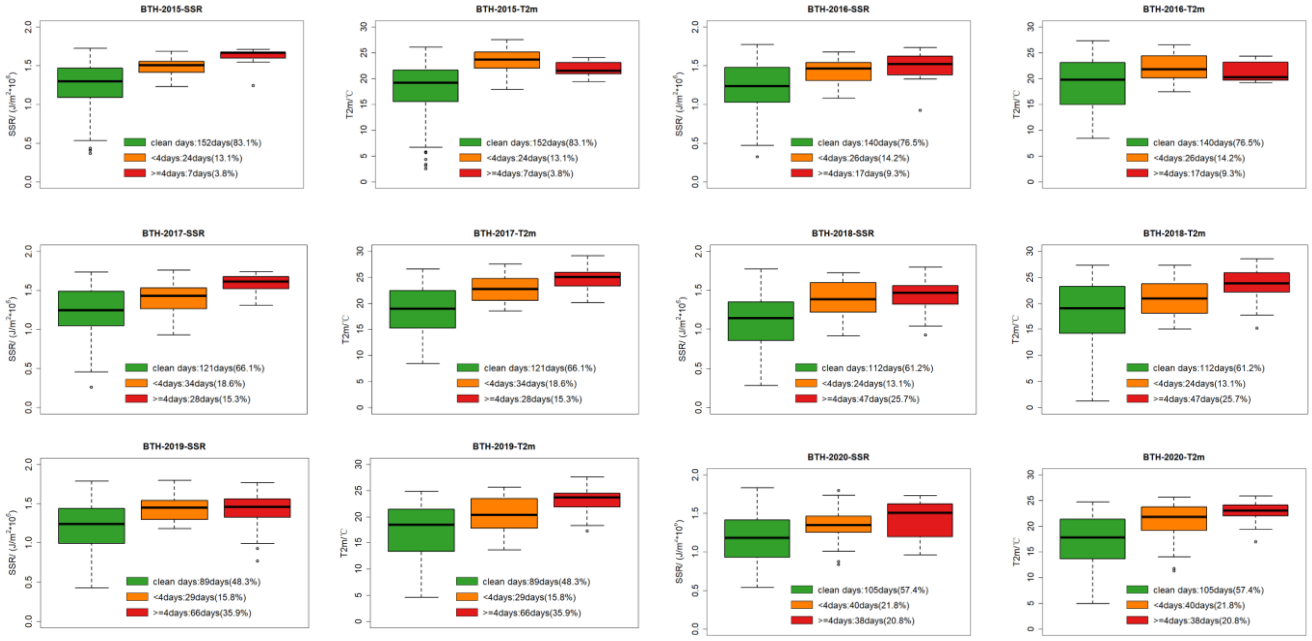

Figure S7. Solar radiation (SSR) and temperature (T2m) at the surface in BTH in April–September 2015–2020 for O_3 episodes with four or more consecutive O_3-exceeding days, clean days (non-O_3-exceeding days) and O_3 episodes with less than four consecutive O_3-exceeding days.

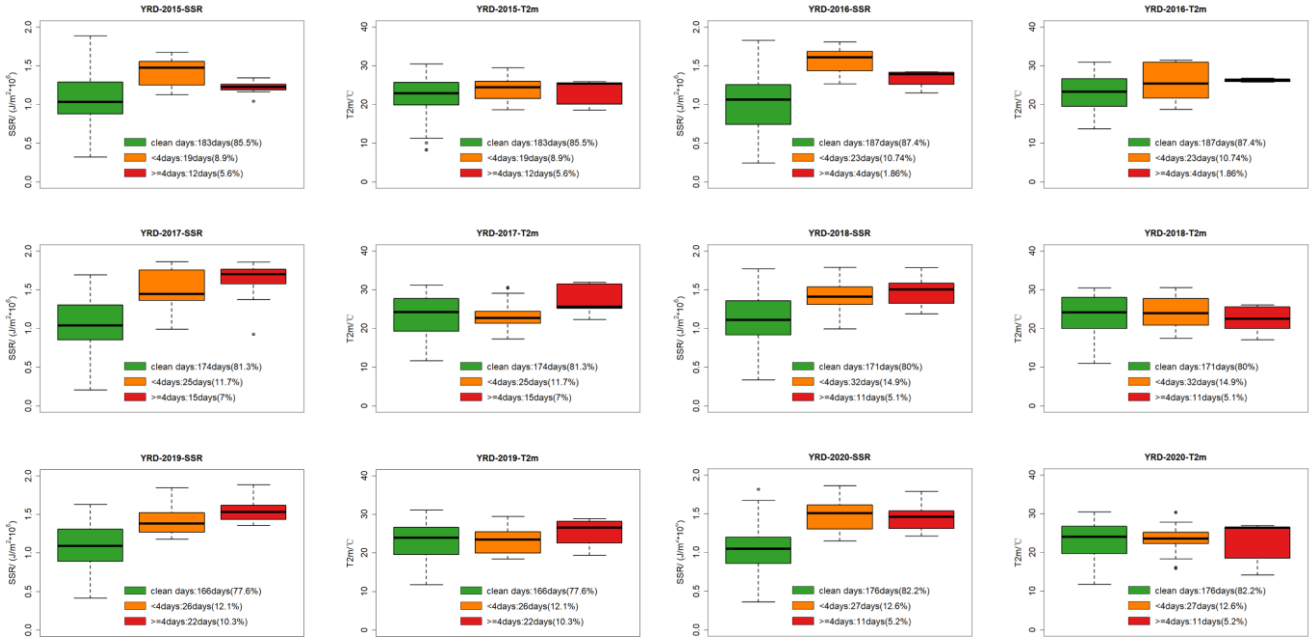

Figure S8. Solar radiation (SSR) and temperature (T2m) at the surface in YRD in April–October 2015–2020 for O_3 episodes with four or more consecutive O_3-exceeding days, clean days (non-O_3-exceeding days) and O_3 episodes with less than four consecutive O_3-exceeding days.

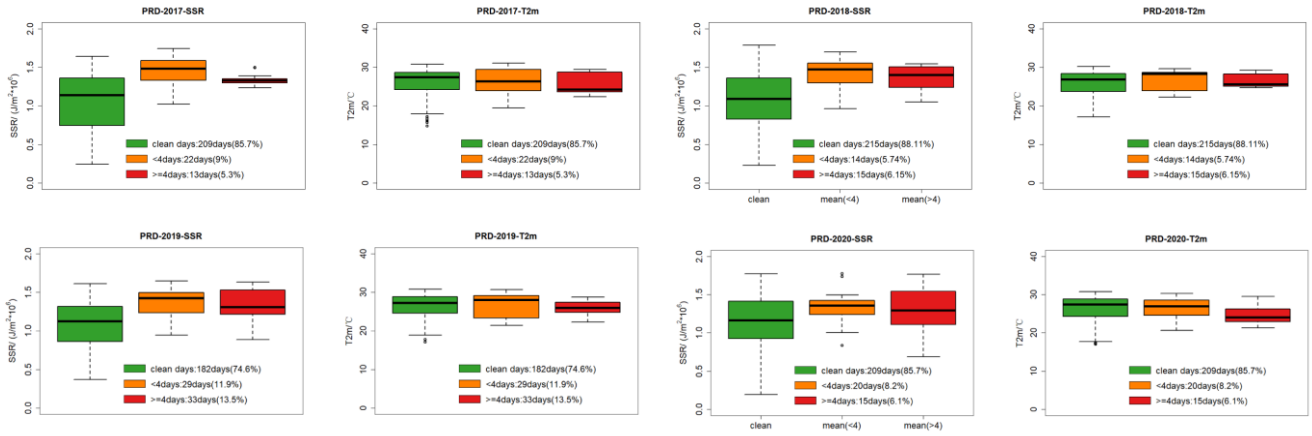

Figure S9. Solar radiation (SSR) and temperature (T2m) at the surface in PRD in April–November 2017–2020 for O_3 episodes with four or more consecutive O_3-exceeding days, clean days (non-O_3-exceeding days) and O_3 episodes with less than four consecutive O_3-exceeding days.

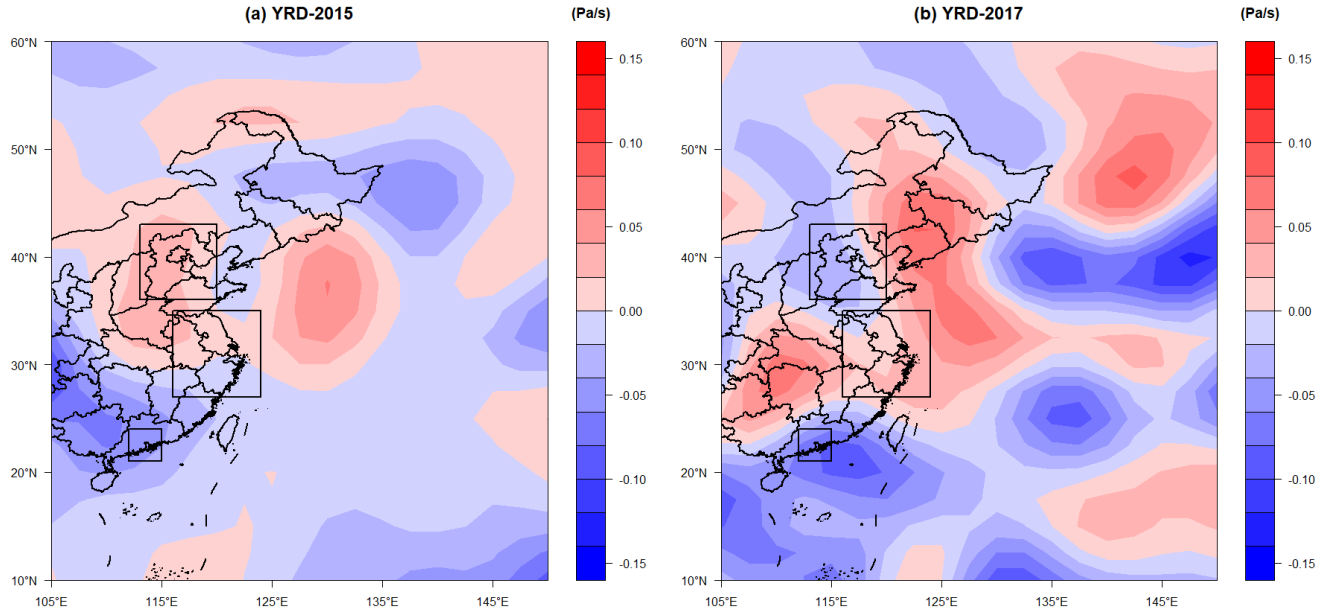

Figure S10. Mean vertical velocity at 850hPa during O_3-exceeding days in YRD in 2015 (a) and during episodes with four or more consecutive O_3-exceeding days in 2017 (b).

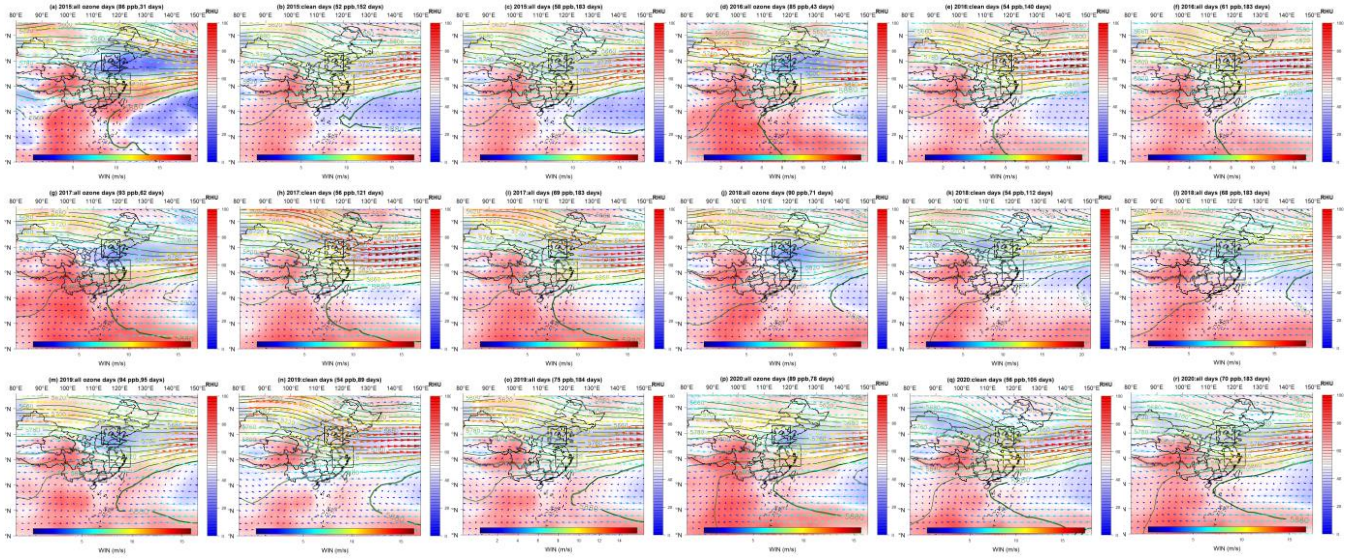

Figure S11. Composite 500 hPa geopotential height contours, humidity and winds in BTH in April–September for O_3-exceeding days, clean days and all days in 2015–2020.

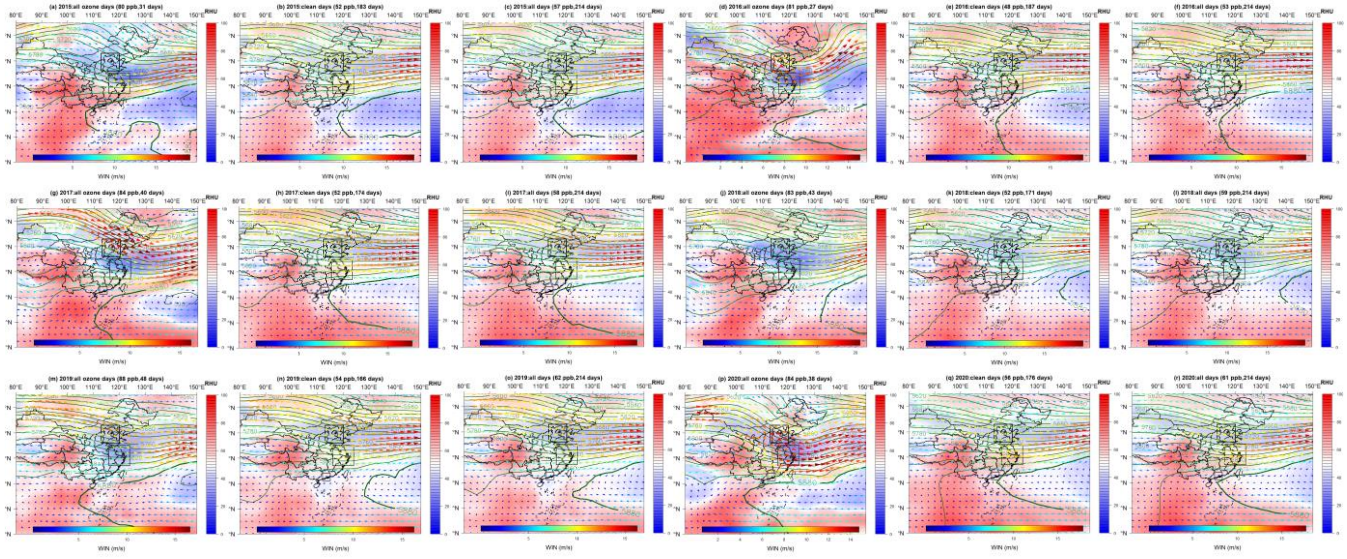

Figure S12. Composite 500 hPa geopotential height contours, humidity and winds in YRD in April–October for O_3-exceeding days, clean days and all days in 2015–2020.

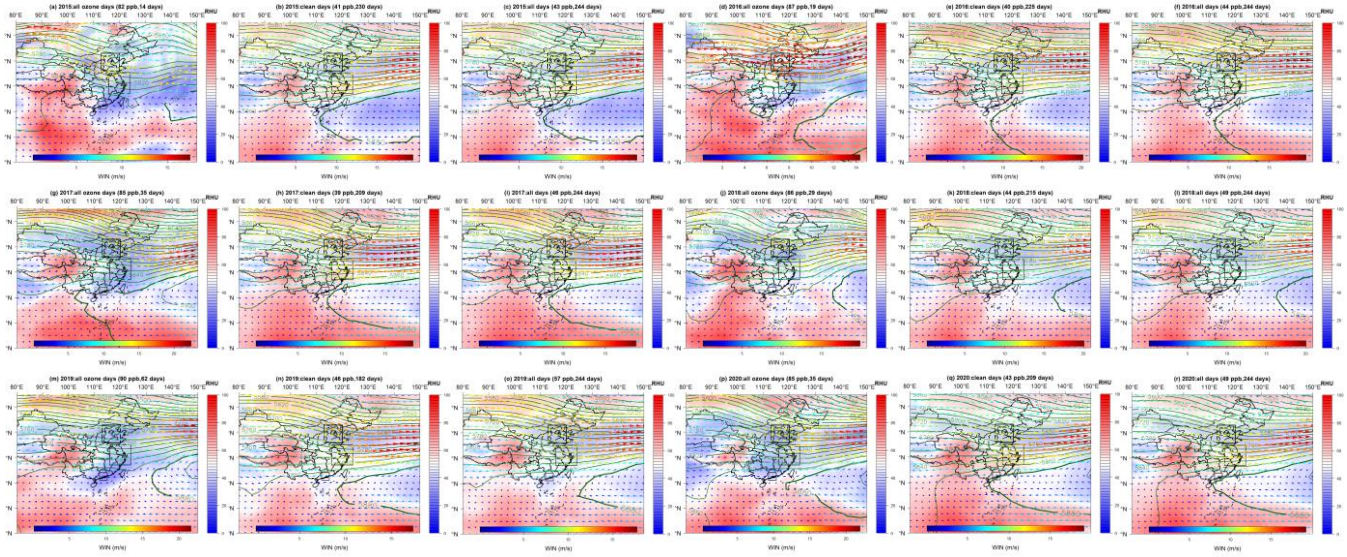

Figure S13. Composite 500 hPa geopotential height contours, humidity and winds in PRD in April–November for O_3-exceeding days, clean days and all days in 2015–2020.

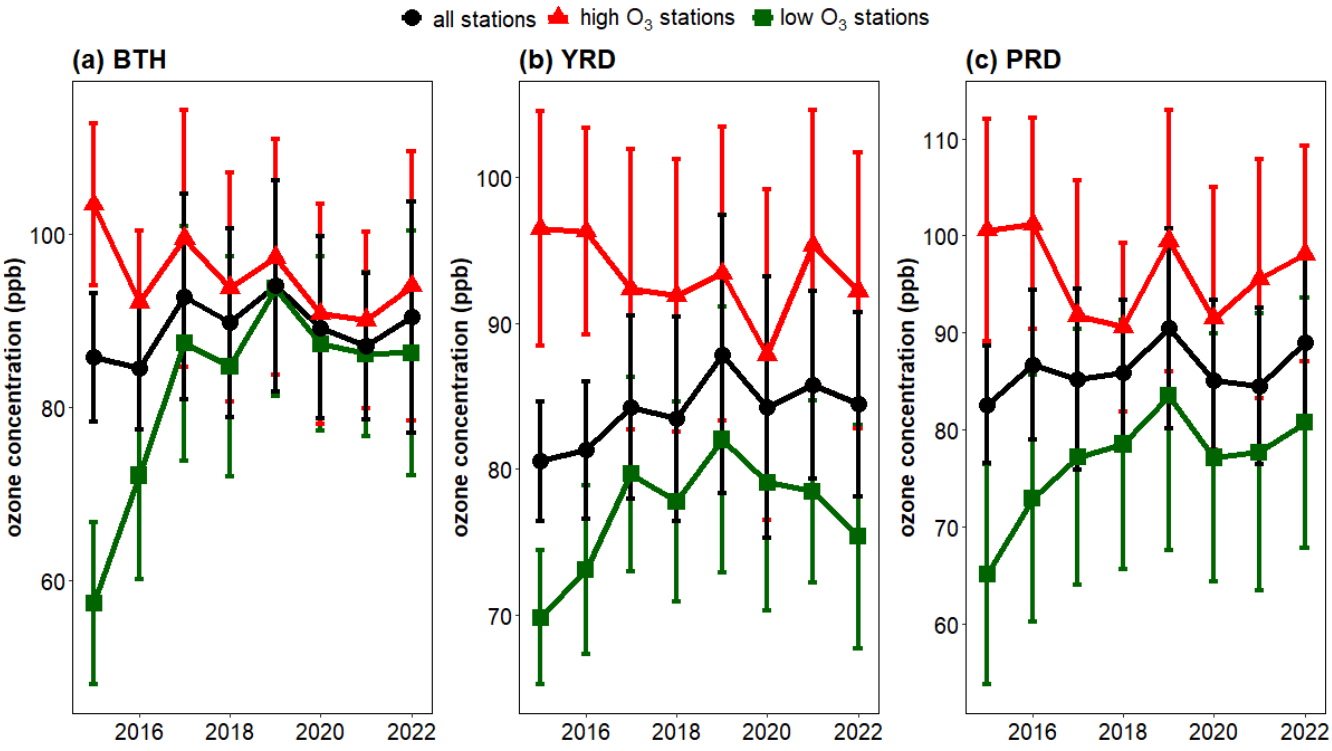

Figure S14. Annual mean concentrations of maximum daily 8-hour average O_3 during O_3-exceeding days for all stations (black), high O_3 stations (red) and low O_3 stations (green) in BTH in 2015–2022 (a), YRD (b) and PRD (c).