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Local and synoptic meteorological influences on daily variability in summertime surface ozone in eastern China

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Table S1. Mean absolute error (MAE), root mean square error (RMSE), and correlation coefficient (*r*) of averaged ozone anomalies under each of the SWPs between observations and cross-validated predictions using MLR.

	P1: PSW	P2: PS	P3: PNECV	P4: PWC	P5: PSWPSH	P6: PTC
MAE ($\mu g\ m^{-3}$)	1.0	1.1	1.6	1.7	1.6	2.2
RMSE ($\mu g\ m^{-3}$)	1.4	1.4	2.0	2.2	2.1	2.8
r	0.97	0.75	0.81	0.93	0.78	0.94

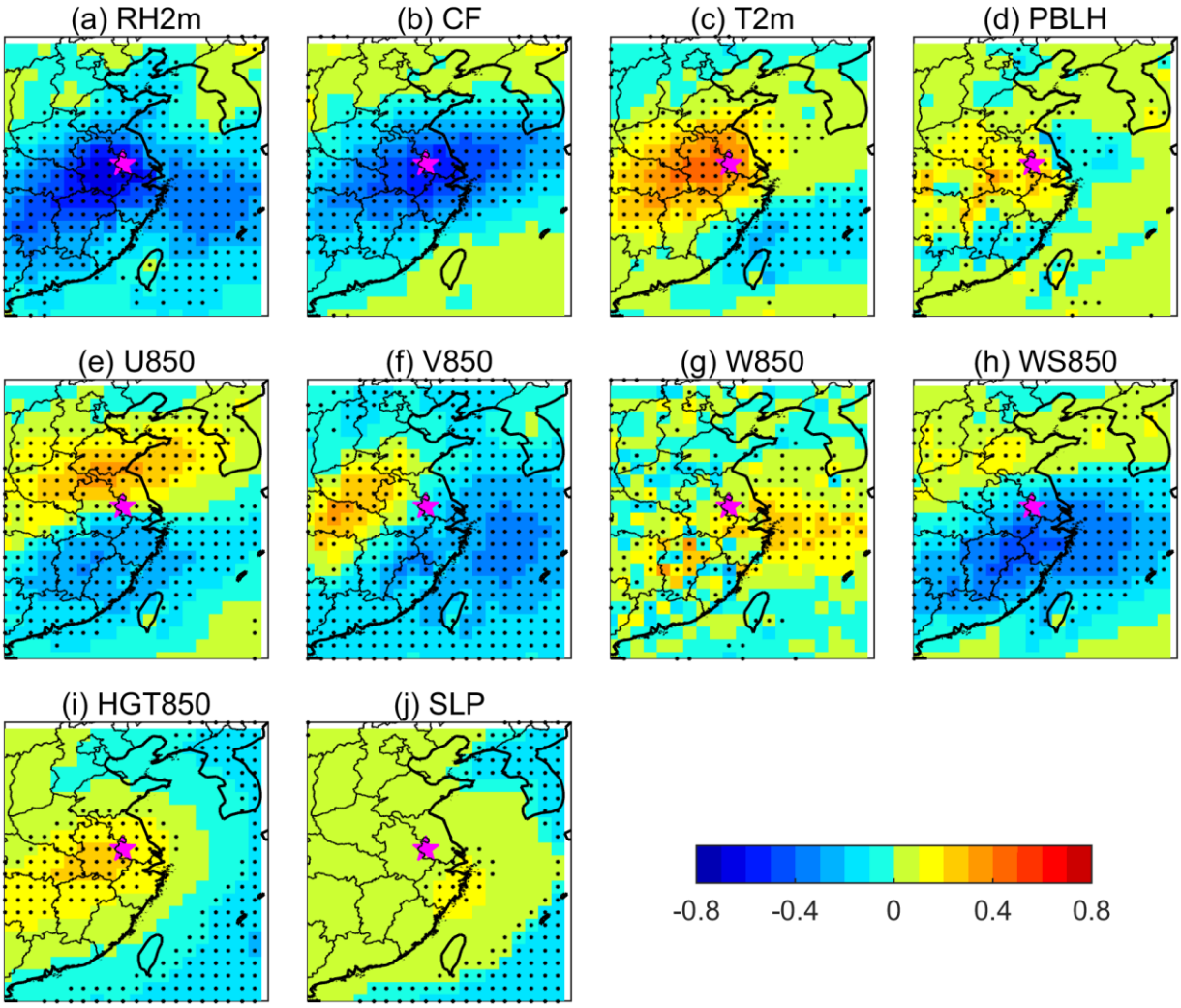

Figure S1. Correlation coefficients (*r*) between daily surface ozone in the grid of Nanjing (purple pentagram) and each of the meteorological variables in all the grids over eastern China in summer during 2013-2018. The black dot in a grid indicates that the *r* in that grid is significant ($p<0.05$). The abbreviations are for relative humidity at 2 m (RH2m), cloud fraction (CF), temperature at 2 m (T2m), planetary boundary layer height (PBLH), zonal wind at 850 hPa (U850), meridional wind at 850 hPa (V850), vertical wind at 850 hPa (W850), wind speed at 850 hPa (WS850), geopotential height at 850 hPa (HGT850), and sea level pressure (SLP).

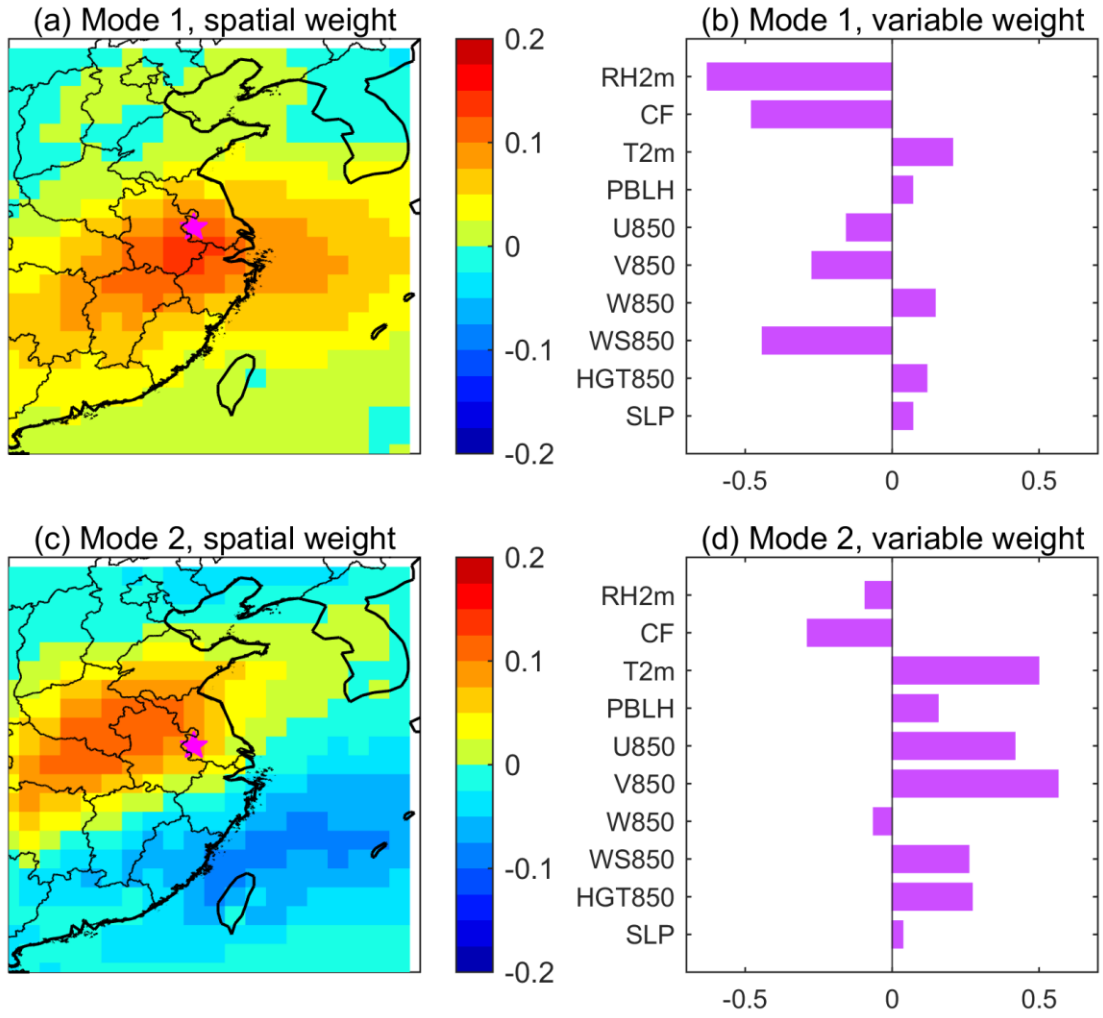

Figure S2. Spatial and variable weights of the first (a, b) and second (c, d) singular value decomposition (SVD) modes describing the spatial correlations of surface ozone in the grid of Nanjing (purple pentagram) and ten meteorological variables in all the grids over eastern China in summer during 2013-2018. The first and the second SVD modes, respectively, explain 58% and 22% of the total variance. The ten meteorological variables are relative humidity at 2 m (RH2m), cloud fraction (CF), temperature at 2 m (T2m), planetary boundary layer height (PBLH), zonal wind at 850 hPa (U850), meridional wind at 850 hPa (V850), vertical wind at 850 hPa (W850), wind speed at 850 hPa (WS850), geopotential height at 850 hPa (HGT850), and sea level pressure (SLP).

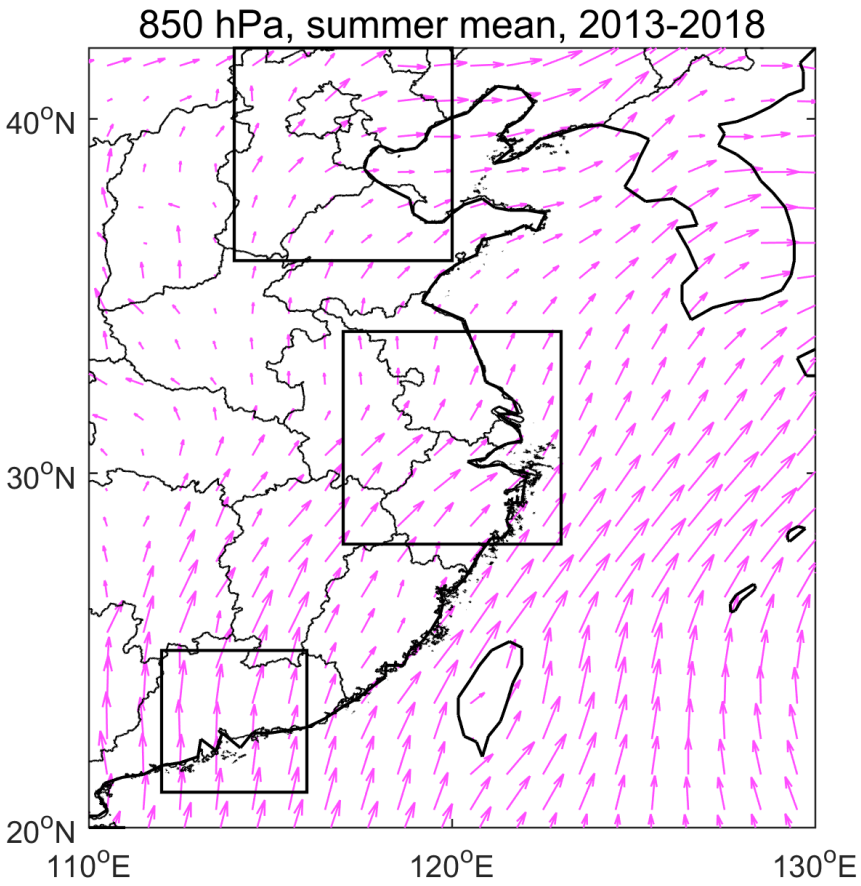

Figure S3. Summer mean wind field at 850 hPa in eastern China averaged over 2013-2018.

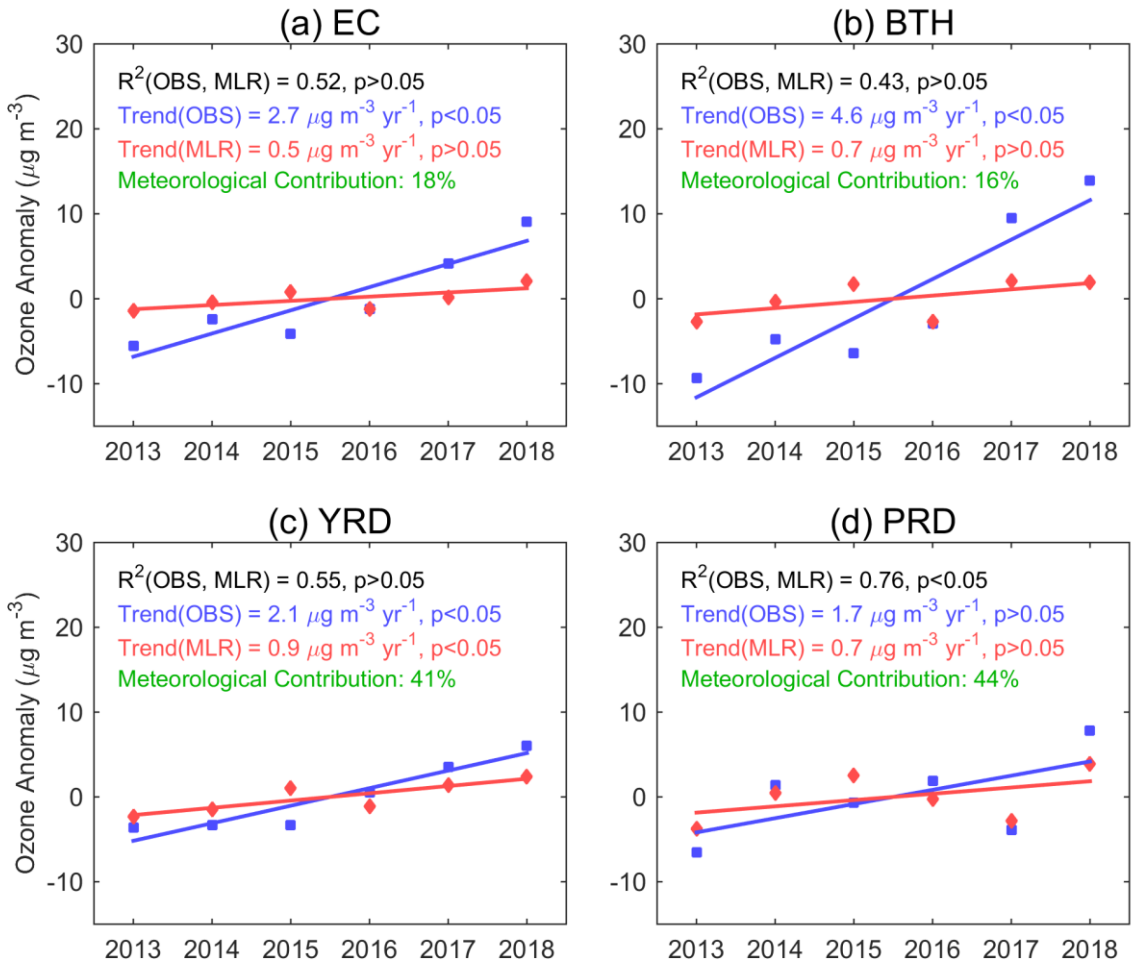

Figure S4. Trends in the regional means of surface ozone from observations (in blue) and cross-validated predictions using MLR (in red) over eastern China (a), BTH (b), YRD (c), and PRD (d) from 2013 to 2018. The coefficient of determination (R^2) between the observed and predicted ozone is shown in black. The contribution of meteorology described by the MLR to the observed ozone trend is shown in green.

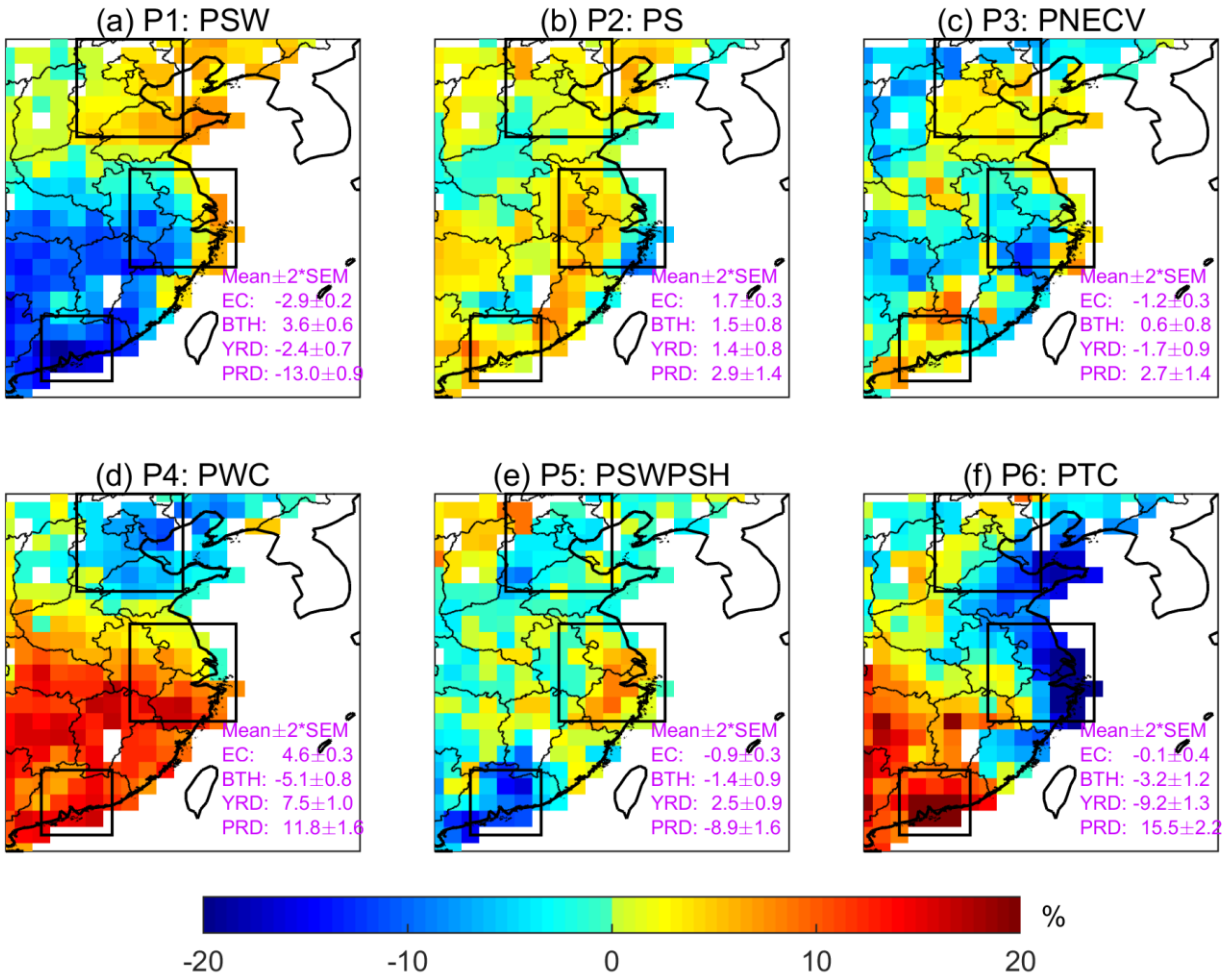

Figure S5. The mean relative anomalies (in %) of observed daily surface ozone under each of the SWPs during 2013-2018. The regional mean anomalies (±two times of the standard error of the mean) are shown in the bottom right corner of each panel. The boxed areas indicate BTH, YRD, and PRD, respectively, in the north, center, and south of the study domain.