

Table S1. City-level Ratio of SO₂/NO₂ in Jiangsu province.

Season	Annual	Winter	Spring	Summer	Autumn
Nanjing	0.91	0.82	0.95	1.06	0.91
Wuxi	0.78	0.69	0.83	0.95	0.74
Xuzhou	1.03	0.92	1.19	1.15	1.02
Changzhou	0.80	0.71	0.84	0.90	0.80
Suzhou	0.78	0.68	0.83	0.96	0.78
Nantong	0.89	0.84	0.98	0.88	0.88
Lianyungang	1.04	0.94	1.22	0.94	1.02
Huaian	1.02	0.92	1.17	0.97	1.11
Yancheng	1.04	0.95	1.20	0.93	1.07
Yangzhou	0.97	0.91	1.03	0.89	0.98
Zhenjiang	0.87	0.76	0.89	1.10	0.84
Taizhou	0.95	0.88	1.02	0.97	0.95
Suqian	1.02	0.89	1.19	1.10	1.08
Jiangsu Province	0.97	0.90	1.07	0.97	0.93

Table S2. City-level correlation between NO2 and SO2 from 2005 to 2020.

	Overall	Winter	Spring	Summer	Autumn
Nanjing	0.69*	0.19	0.49*	-0.03	0.47
Wuxi	0.64*	0.50*	0.53*	0.16	0.62*
Xuzhou	0.70*	0.61*	0.52*	0.19	0.14
Changzhou	0.61*	0.17	0.22	-0.21	0.29
Suzhou	0.60*	0.42	0.65*	0.36	0.47
Nantong	0.60*	-0.02	0.67*	0.55*	0.13
Lianyungang	0.70*	0.43	0.31	0.10	-0.28
Huaian	0.75*	0.49*	0.38	-0.08	0.12
Yancheng	0.71*	0.36	0.54*	-0.04	-0.14
Yangzhou	0.65*	0.05	0.29	0.18	0.41
Zhenjiang	0.64*	0.33	0.53*	0.61*	0.48
Taizhou	0.64*	0.04	0.41	0.52*	0.18
Suqian	0.64*	0.39	0.41	-0.34	-0.30
Jiangsu Province	0.78*	0.36	0.61*	0.41	0.20

Table S3. City-level seasonal trends of NO₂ in Jiangsu province. The symbol asterisk (*) represents change at a 95% significant level.

Time Periods	Season	Nanjing	Wuxi	Xuzhou	Changzhou	Suzhou	Nantong	Lianyungang	Huaian	Yancheng	Yangzhou	Zhenjiang	Taizhou	Suqian	Jiangsu Province
2005-2020	Winter	-0.007	-0.013	-0.004	-0.005	-0.012	0.003	-0.0004	-0.01	-0.007	-0.008	-0.014	-0.007	-0.006	-0.005
	Spring	-0.007	-0.011	-0.004	-0.006	-0.012	-0.009	-0.003	-0.005	-0.005	-0.009	-0.009	-0.008	-0.004	-0.008*
	Summer	-0.003	-0.004	-0.002	-0.004	-0.005*	-0.006*	0.002	0.00003	0.001	-0.006*	-0.009*	-0.005*	0.001	-0.003*
	Autumn	-0.009*	-0.015*	-0.004	-0.012	-0.013*	-0.006	0.005	-0.001	0.001	-0.006*	-0.013*	-0.005	0.002	-0.004
2006-2010	Winter	0.033	0.016	0.038	0.025	0.013	0.057*	0.036	0.056	0.04	0.04	0.055	0.049	0.045	0.045
	Spring	0.039*	0.043*	0.026	0.068*	0.022	0.002	0.025	0.029	0.014	0.031	0.045*	0.027	0.029	0.023
	Summer	0.014*	0.017	0.008	0.022*	0.019	0.009	0.004	0.002	-0.003	0.001	0.018	-0.004	0.005	0.008
	Autumn	0.009	0.014	0.011	0.020	0.018	0.072	0.019	0.015	0.029	0.031	0.030	0.042	0.024	0.027
2011-2015	Winter	-0.039	-0.028	-0.056	-0.006	-0.029	0.017	-0.031	-0.025	-0.03	-0.006	0.031	0.005	-0.067	-0.039
	Spring	-0.065*	-0.054	-0.041	-0.057	-0.057*	-0.070	-0.047*	-0.054*	-0.055	-0.056	-0.065	-0.058	-0.049*	-0.051
	Summer	-0.014	-0.019	-0.006	-0.023	-0.001	-0.034	-0.0001	-0.007	-0.008	-0.023	-0.033	-0.019	-0.002	-0.01
	Autumn	-0.043*	-0.056*	-0.037	-0.066	-0.025*	-0.017	-0.034	-0.014	-0.001	-0.006	-0.048*	-0.013	-0.009	-0.022
2013-2017	Winter	-0.089*	-0.085	-0.092	-0.08	-0.055	-0.036	-0.038	-0.062*	-0.038*	-0.05	-0.094	-0.076	-0.084*	-0.062*
	Spring	-0.051	-0.029	-0.019	-0.048	-0.039	-0.009	-0.022	-0.008	-0.014	-0.021	-0.034	-0.032	-0.016	-0.027
	Summer	-0.004	-0.009	-0.002	-0.012	-0.001	0.014	0.003	0.003	0.007	0.004	-0.011	-0.003	0.002	0.00004
	Autumn	-0.017	-0.025	-0.055	-0.025	-0.024*	-0.012	-0.019	-0.026	-0.012	-0.007	-0.033	-0.013	-0.020	-0.026

Table S4. City-level trends of SO₂ in Jiangsu province. The symbol asterisk (*) represents change at a 95% significant level.

Time Periods	Season	Nanjing	Wuxi	Xuzhou	Changzhou	Suzhou	Nantong	Lianyungang	Huaian	Yancheng	Yangzhou	Zhenjiang	Taizhou	Suqian	Jiangsu Province
2005-2020	Winter	-0.025*	-0.027*	-0.033*	-0.029*	-0.025*	-0.016	-0.029*	-0.018*	-0.017*	-0.022*	-0.023*	-0.018	-0.021*	-0.026*
	Spring	-0.018*	-0.030*	-0.030*	-0.018*	-0.033*	-0.030*	-0.032*	-0.019*	-0.021*	-0.021*	-0.029*	-0.026*	-0.021*	-0.029*
	Summer	-0.010	-0.014*	-0.010	-0.005	-0.019*	-0.012*	-0.008*	-0.004	-0.005	-0.006	-0.013*	-0.015*	-0.006	-0.008*
	Autumn	-0.029*	-0.035*	-0.036*	-0.034*	-0.031*	-0.013	-0.024*	-0.017*	-0.016*	-0.020*	-0.032*	-0.024*	-0.022*	-0.023*
2006-2010	Winter	-0.105	-0.033	-0.048	-0.086	-0.063	-0.054	-0.082	0.011	0.002	-0.063	-0.063	-0.056	-0.045	-0.016
	Spring	-0.049	-0.018	-0.100	-0.065	-0.052	0.016	-0.087	-0.035	-0.044	-0.095	-0.052	-0.059	-0.028	-0.058
	Summer	-0.044	-0.008	0.019	-0.0001	0.032	-0.006	-0.005	-0.001	-0.026	-0.050	0.063	-0.031	-0.004	0.001
	Autumn	-0.099	-0.053	-0.176	-0.084	-0.098	-0.036	-0.138	-0.077	-0.062	-0.084	-0.049	-0.082	-0.139	-0.061
2011-2015	Winter	0.021	-0.025	-0.1	0.027	-0.0004	-0.025	-0.056	-0.012	-0.033	-0.012	-0.04	-0.051	-0.06	-0.056
	Spring	-0.096	-0.066	-0.080	-0.060	-0.070	-0.054	-0.084*	-0.048	-0.050	-0.049*	-0.051	-0.003	-0.048	-0.039
	Summer	0.039	-0.074	-0.039	0.019	-0.065	-0.017	-0.053	0.015	-0.034	0.005	-0.005	-0.067	0.024	-0.041
	Autumn	0.019	-0.049	-0.038	0.011	-0.077	0.016	-0.082	-0.010	-0.043	0.014	0.069	0.004	0.018	-0.038
2013-2017	Winter	-0.016	-0.02	-0.156*	-0.036	-0.033	-0.043	-0.082	-0.019	-0.007	-0.011	0.02	0.015	-0.059	-0.049*
	Spring	-0.022	-0.103	-0.072	-0.065	-0.035	-0.066	-0.051	-0.097	-0.041	-0.002	-0.044	-0.045	-0.041	-0.049
	Summer	-0.050	-0.027	-0.006	0.003	-0.050	-0.017	-0.017	-0.005	0.014	0.016	-0.029	0.003	-0.009	-0.016
	Autumn	-0.004	-0.051	-0.052	-0.051	-0.017	-0.021	-0.001	-0.051	-0.025	-0.077	-0.088	-0.082	-0.056	-0.036