

Supplementary Materials: Simulation and Estimation of the Inter-Source Category and/or Inter-Pollutant Emission Offset Ratios for a Heavy Industry City

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Table S1. Selection of CMAQ and WRF configuration options for this study.

Science Options	Configuration
CMAQ	
Horizontal advection	Yamo
Vertical advection	WRF omega calculation with the PPM
Gas-phase chemistry	CB05
Numerical solver for chemical kinetics	Euler backward iterative solver
Horizontal diffusion	Multiscale
Vertical diffusion	ACM2
Aerosol module	AERO6
Cloud module	ACM cloud
Deposition velocity module	M3DRY
Initial condition	Default profiles in the CMAQ package
Boundary condition	Default profiles in the CMAQ package
WRF	
Microphysics	WSM 5-Class
Cumulus scheme	Kain-Fritsch (new Eta)
Planetary boundary layer	YSU
Radiation	CAM
Land surface model	NOAH Land-Surface Model
4D data assimilation	Grid nudging
Initialization	NCEP FNL (Final) Operational Global Analysis and Forecast Data
Boundary condition	NCEP FNL (Final) Operational Global Analysis and Forecast Data

Table S2. Quantified error analysis results of the simulated and observed PM_{2.5} daily average concentrations at air quality stations in KPAB.

	Sim ($\mu\text{g}/\text{m}^3$)	Obs ($\mu\text{g}/\text{m}^3$)	MFB (%)	MFE (%)	RMSE ($\mu\text{g}/\text{m}^3$)	IOA	Correlation
January	53.8	52.4	-8.2	33.1	17.0	0.73	0.71
April	37.9	40.3	-18.0	40.8	15.9	0.67	0.56
July	20.2	18.8	-16.6	52.3	10.7	0.68	0.56
October	50.5	43.0	1.1	36.9	17.7	0.64	0.54
Ave	40.6	38.6	-10.4	40.8	15.3	0.68	0.59

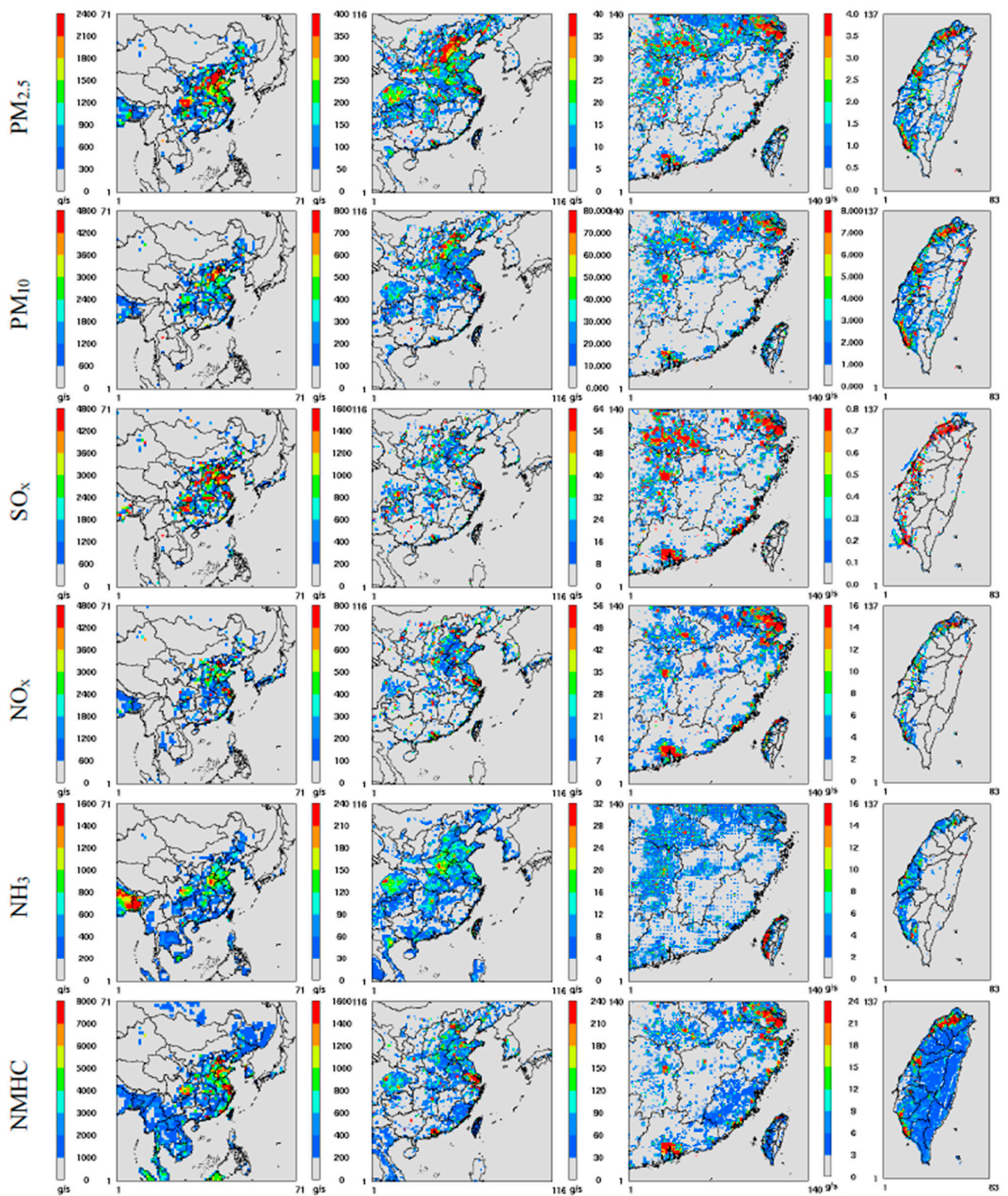


Figure S1. Spatial distribution of various pollutant emissions in D1-D4 for the base case in the year of 2013.

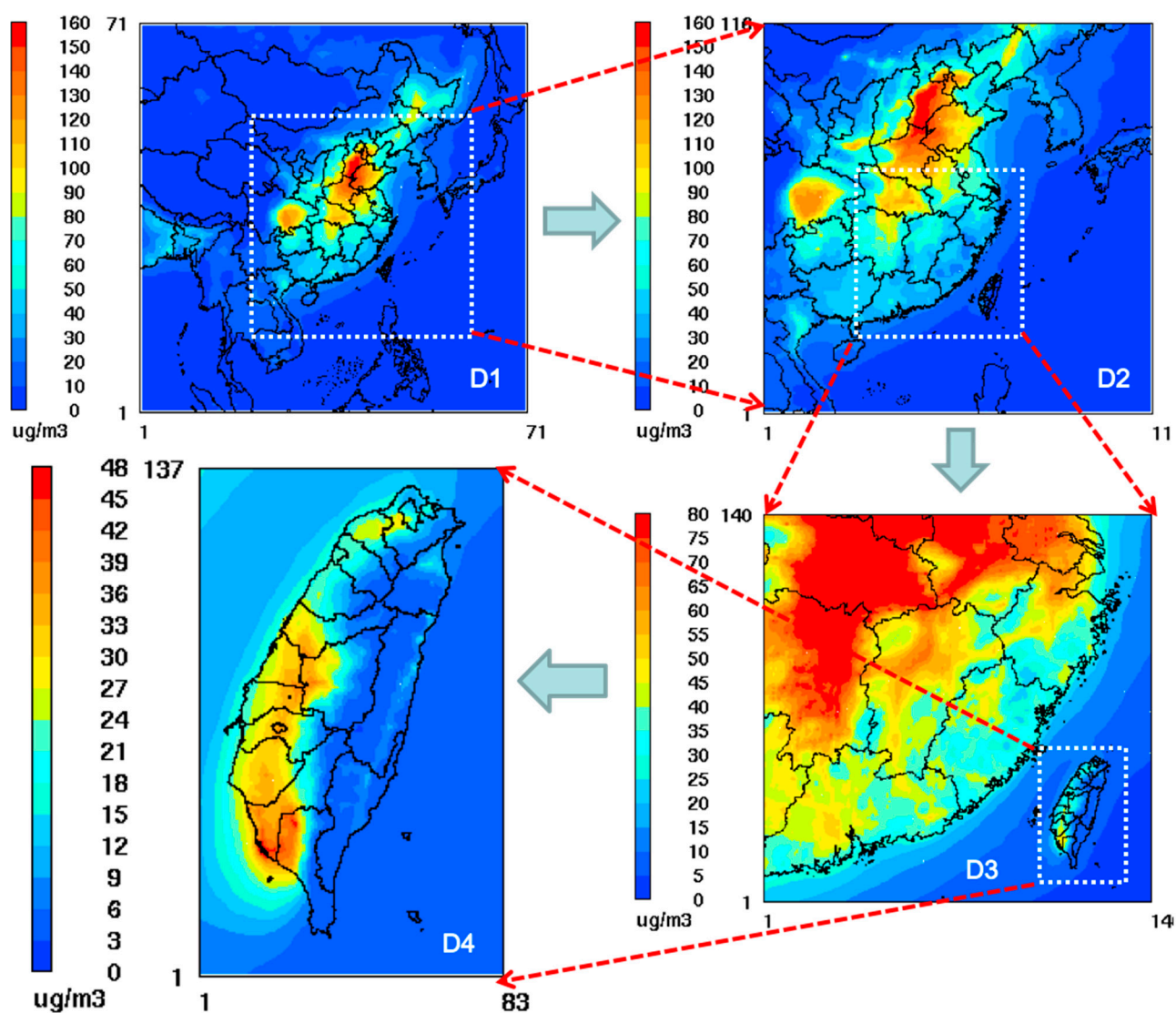


Figure S2. Spatial distribution of the annual average concentration ($\mu\text{g}/\text{m}^3$, average of January, April, July, and October) of $\text{PM}_{2.5}$ in D1-D4 for the base case in the year of 2013.