



Supplement of

WRF-Chem simulations of snow nitrate and other physicochemical properties in northern China

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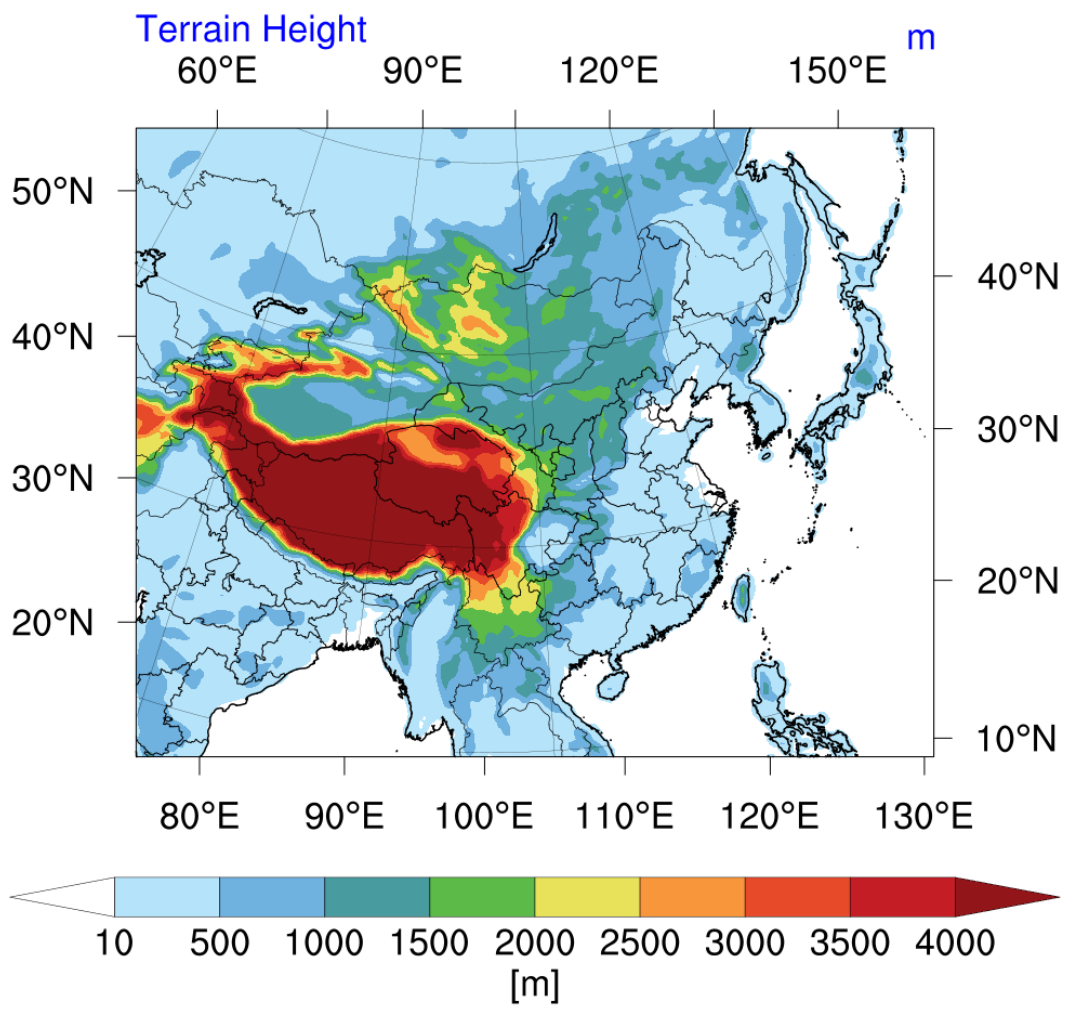


Figure S1. Simulation domain. The color shading represents the topography height (m)

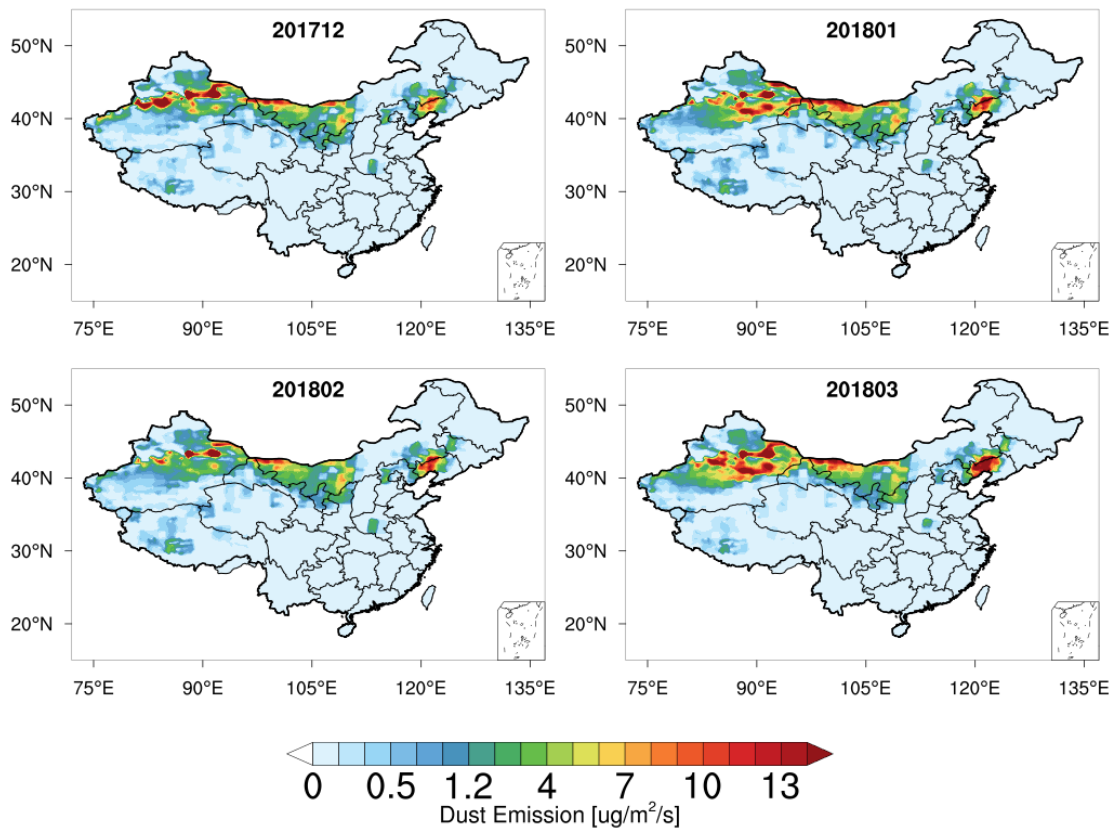


Figure S2. Spatial distribution of dust emissions ($\mu\text{g}/\text{m}^2/\text{s}$) across China from December 2017 to March 2018.

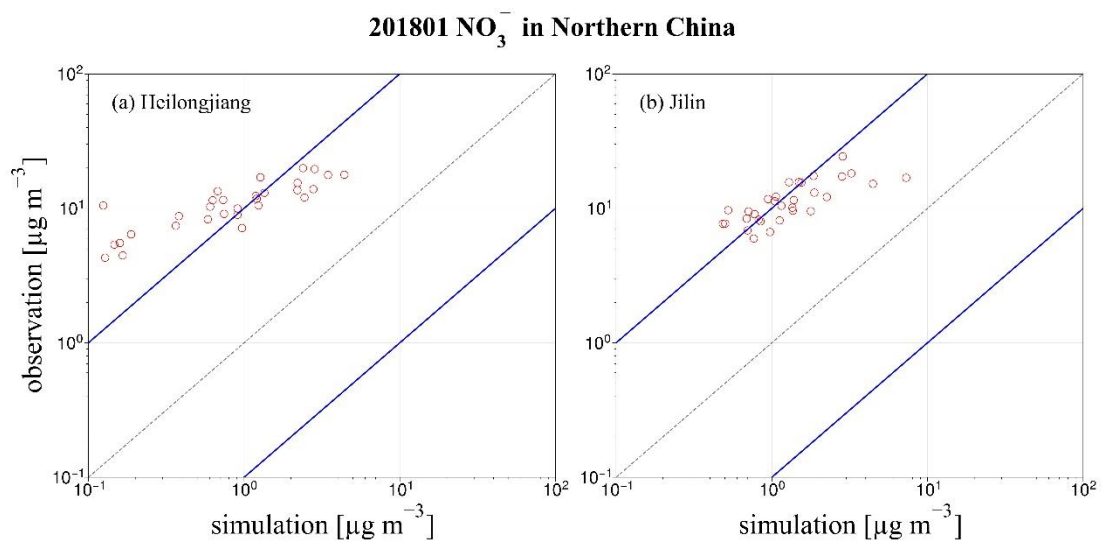


Figure S3. Observed atmospheric nitrate concentrations in (a) Heilongjiang and (b) Jilin versus the corresponding WRF-Chem simulations for January 2018 in Northern China.

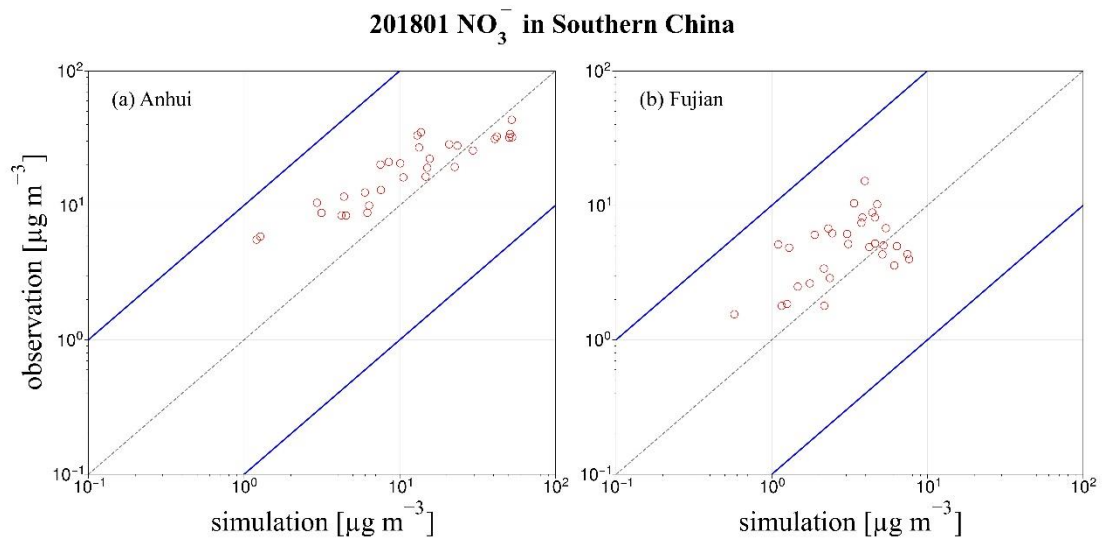


Figure S4. Observed atmospheric nitrate concentrations in (a) Anhui and (b) Fujian versus the corresponding WRF-Chem simulations for January 2018 in Southern China.

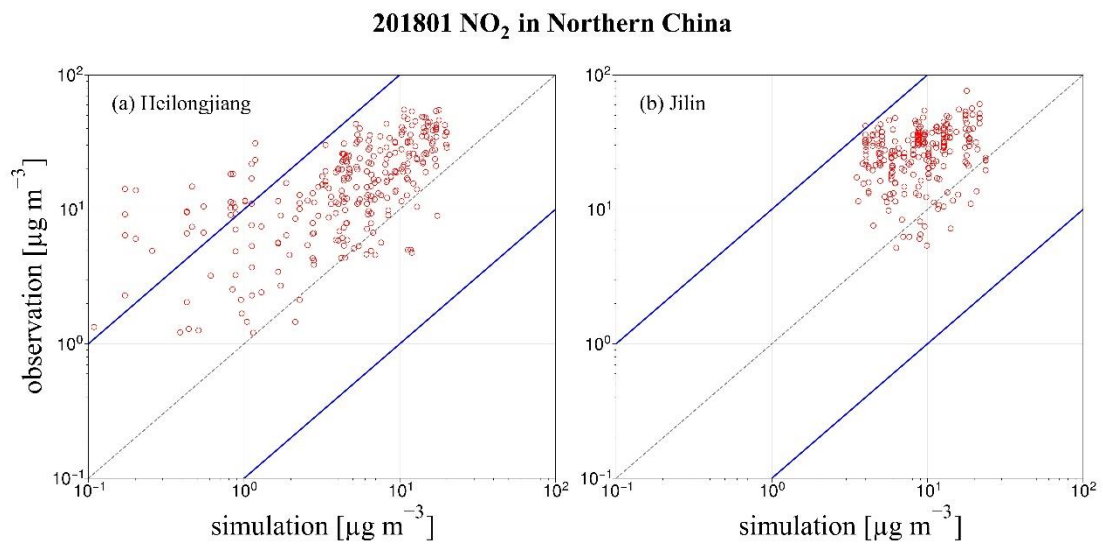


Figure S5. Observed atmospheric NO₂ concentrations in (a) Heilongjiang and (b) Jilin versus the corresponding WRF-Chem simulations for January 2018 in Northern China.

Table S1. Geographical location and stratified snow depth information (observed and simulated) for the eight sites in Figure 10.

Site	Date	Latitude	Longitude	Observed Depth (cm)	Simulated Depth (cm)
site1	2018-03-10	51.1303	121.2694	0-5	0-3
				5-10	3-7
				10-15	7-18
site2	2018-03-05	42.4668	127.8730	0-10	0-3
				10-25	3-7
site3	2018-03-10	51.4380	121.5345	0-5	0-3
				5-10	3-7
				10-13	7-18
site4	2017-12-28	42.4668	127.8730	0-5	0-3
				5-10	3-7
				10-15	7-18
site5	2018-03-07	46.6736	120.0428	0-5	0-3
				5-10	3-7
				10-15	7-18
site6	2018-03-10	51.6836	121.8797	0-5	0-3
				5-10	3-7
				10-15	7-18
site7	2018-03-13	46.5359	129.5007	0-5	0-3
				5-10	3-7
				10-12	7-18
site8	2018-03-08	47.5509	119.3758	0-5	0-3
				5-10	3-7
				10-15	7-18
				15-20	18-20