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Enhancing particle number concentration modelling accuracy in China by incorporating various nucleation parameterization schemes into the CMAQ version 5.3.2 model

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Table S1. The range of values for each independent variable in the TIMN nucleation rate lookup table.

Variables	Range	Number of points	Values at each point
$[H_2SO_4]$ (cm^{-3})	5×10^5 - 5×10^9	32	$[H_2SO_4]$ (i) = $5\times10^5\times10^{(i-1)/10}$, i=1, 31; $[H_2SO_4]$ (32) = 5×10^9
T (K)	190 - 304	39	T (j) = 190 + 3×(j-1), j = 1, 39
RH (%)	0.5 - 99.5	26	RH (1) = 0.5, RH (k) = 4×(k-1), k = 2, 25; RH (26) = 99.5
S (μm^2cm^{-3})	20 - 200	2	S (1) = 20, S (2) = 200
$[NH_3]$ (cm^{-3})	10^5 - 10^{12}	33	$[NH_3]$ (1) = 10^5; $[NH_3]$ (m) = $10^8\times10^{(m-1)/10}$, m=2, 32; $[NH_3]$ (33) = 10^{12}
Q (ions cm^{-3} s^{-1})	2 - 100	8	Q (n) = $2\times1.5^{(n-1)}$, n = 1,7; Q (8) = 100

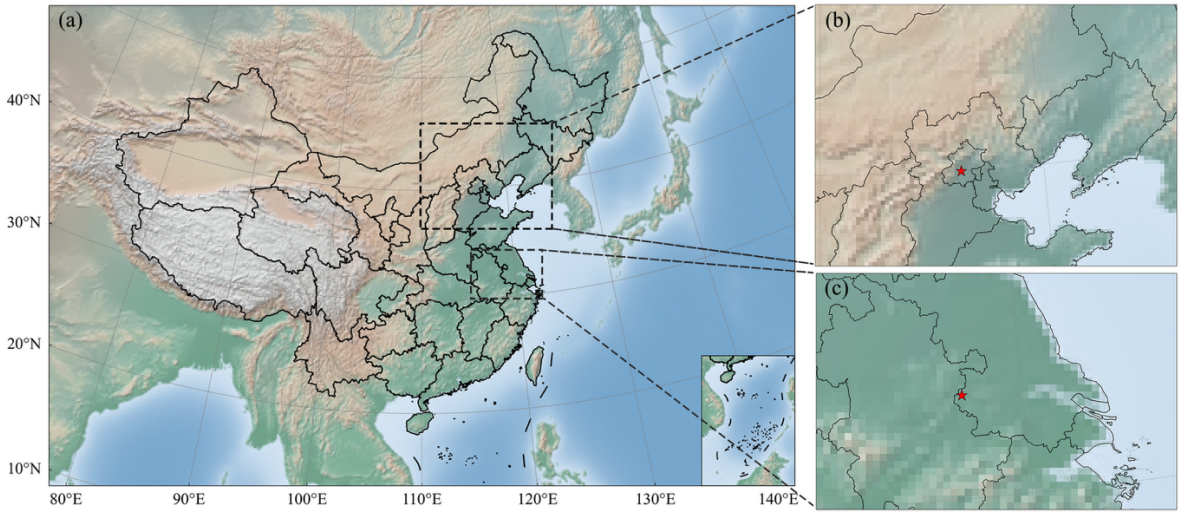

Figure S1. (a) WRF/CMAQ modeling domain. (b) Beijing observation station. (c) Nanjing observation station.

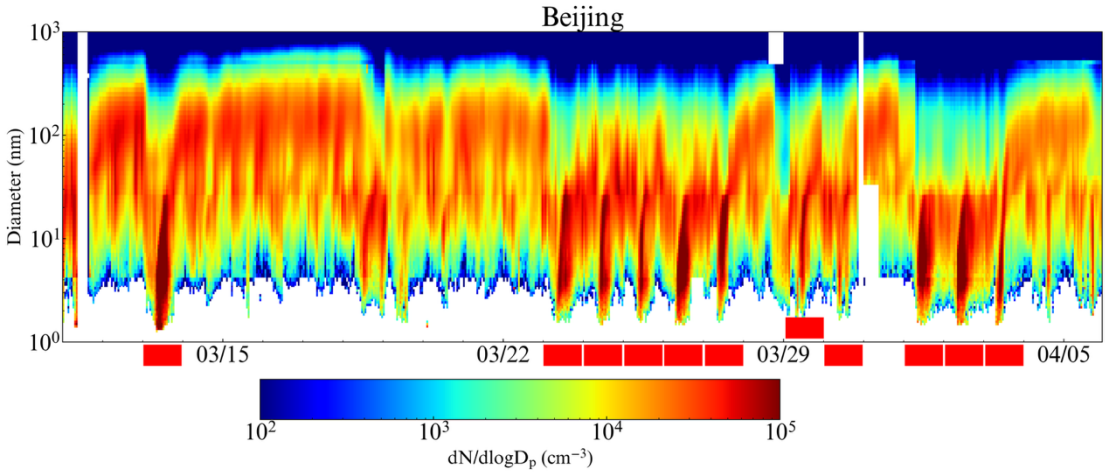

Figure S2. The observation of aerosol size distribution in 2016 in Beijing. Red rectangles are NPF days.

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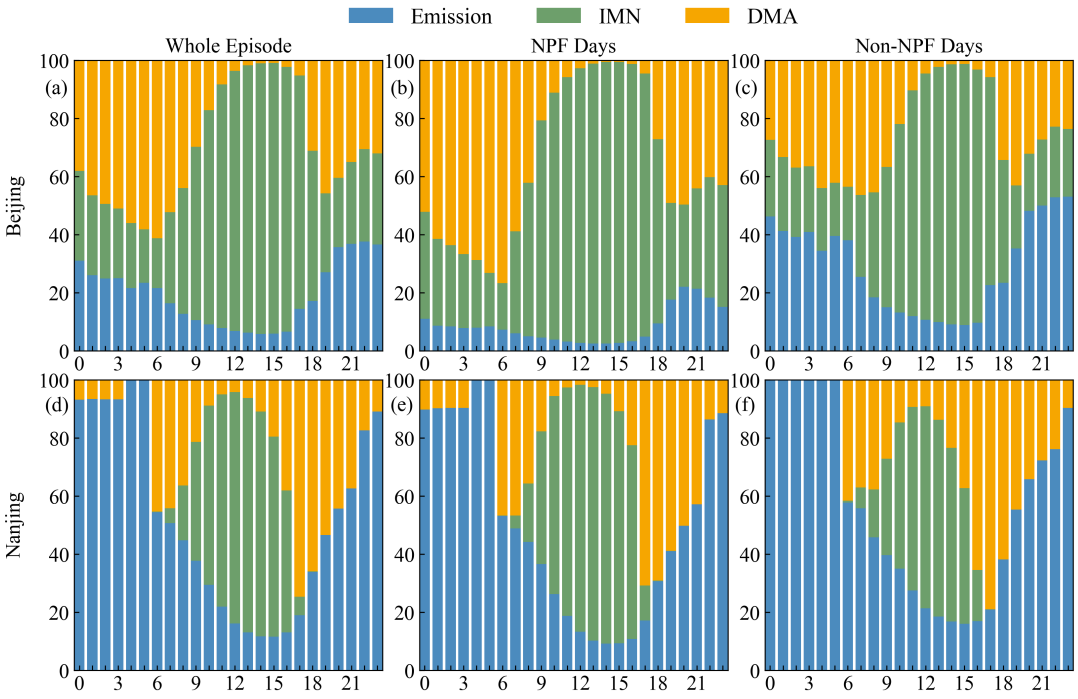

Figure S3. The average diel variation of the hourly contributions (%) in whole episode, NPF days and non-NPF days.