



Supplement of

Impacts of South Asian aerosol inflow over Mount Qomolangma on downstream cloud–precipitation processes through a long-range ice-crystal “seeding” effect

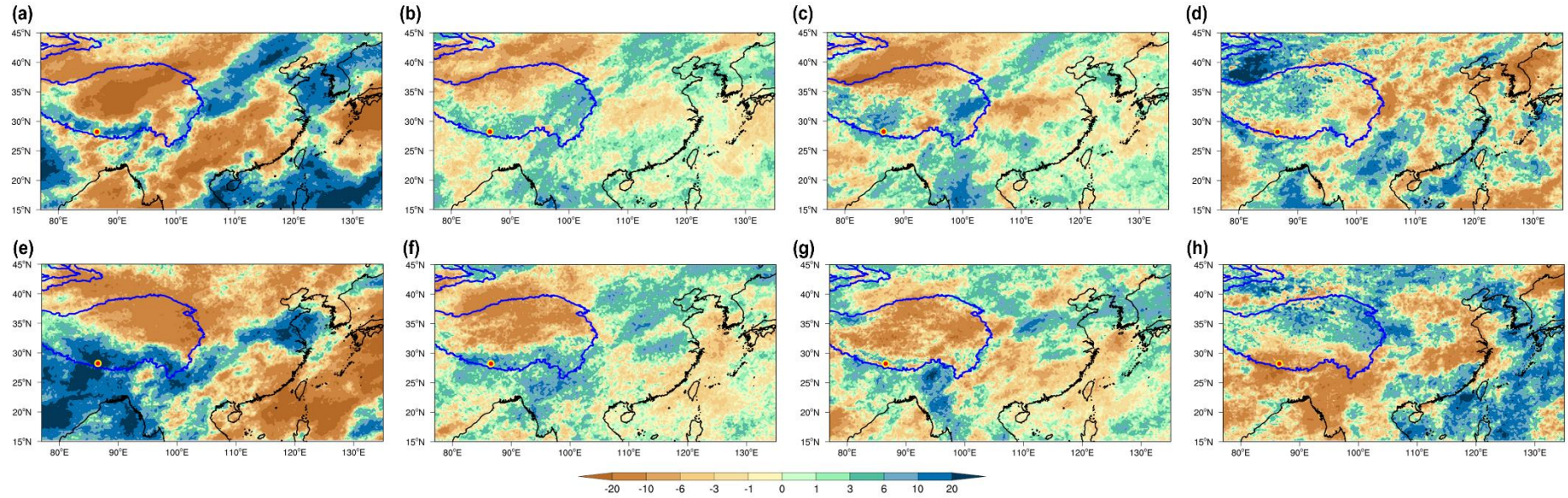
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Figure S1. National-scale cloud-phase anomalies associated with aerosol loading: (a–d) Spatial distributions of national-scale cloud-phase anomalies under high- versus low-aerosol-loading conditions during July 2018 — (a) ice phase, (b) mixed phase, (c) supercooled liquid phase, (d) liquid phase; (e–h) Same as (a–d), but for July 2019.

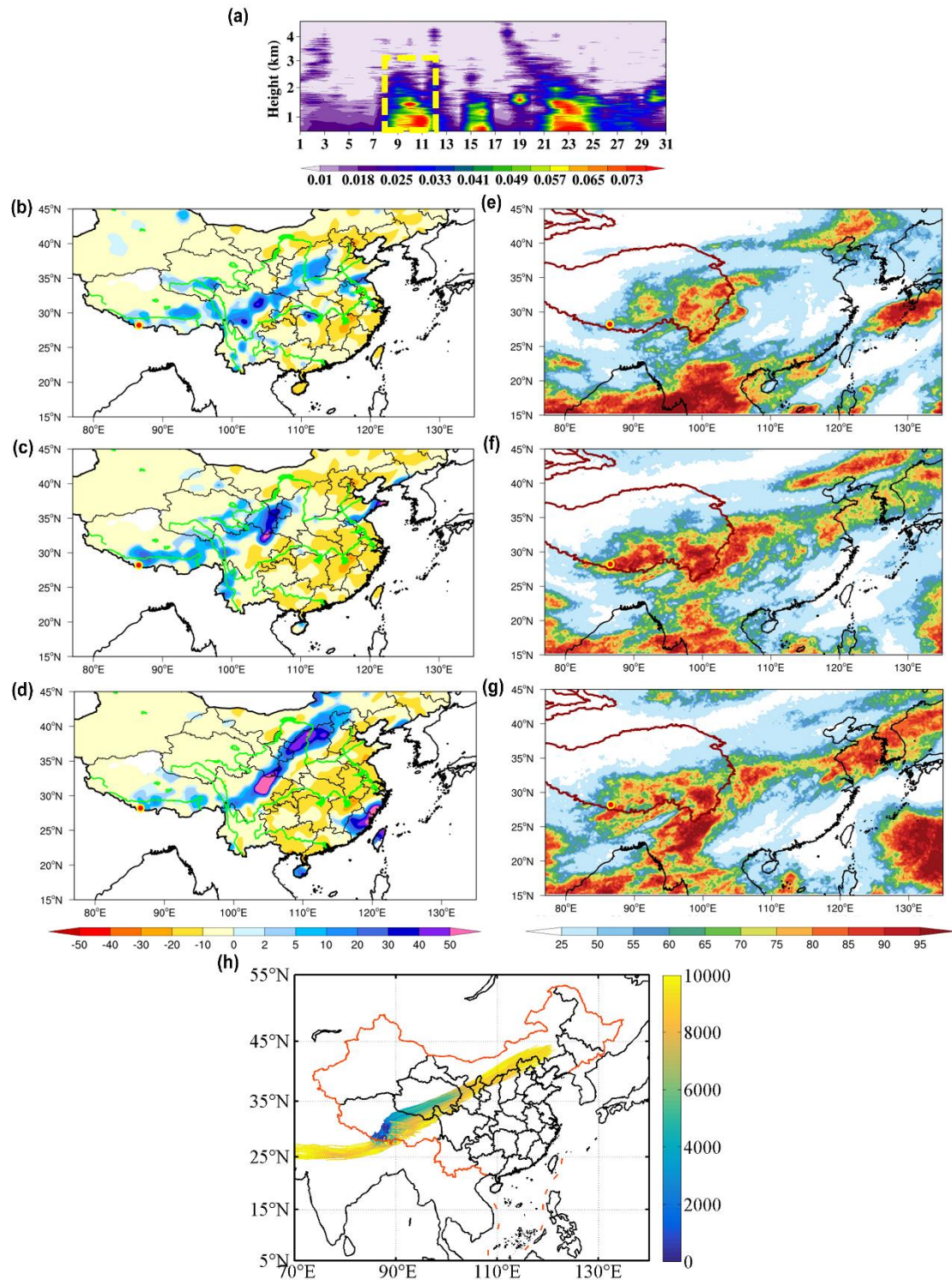


Figure S2. (a) Daily variation in the aerosol extinction coefficient (AEC) over the MQ region in 2018. The yellow box highlights the selected high-aerosol pollution episode (9–11 July 2018). (b–d) Spatial distribution of precipitation on the day of the pollution episode and during the following two days. (e–g) Accumulated distributions of ice-phase clouds during the preceding 48 h for each day of the episode: (e) Day 1, (f) Day

2, and (g) Day 3. (h) FLEXPART-simulated forward trajectories for the selected pollution episode (in unit of m with color lines).

Table S1. High-concentration aerosol processes with the daily averages of $\text{AEC} \geq 0.025 \text{ km}^{-1}$ on the MQ in July 2018 and July 2019, and the remaining periods are identified as low-concentration aerosol processes, which are not listed in this Table (Xu et al., 2025).

Process	Starting Date	Ending Date
Process 1	9 Jul, 2018	12 Jul, 2018
Process 2	15 Jul, 2018	16 Jul, 2018
Process 3	21 Jul, 2018	25 Jul, 2018
Process 4	8 Jul, 2019	9 Jul, 2019
Process 5	12 Jul, 2019	13 Jul, 2019
Process 6	23 Jul, 2019	26 Jul, 2019
Process 7	28 Jul, 2019	30 Jul, 2019