Supporting Information of

Polycyclic aromatic hydrocarbons (PAHs) in aerosols over the central Himalayas along two south-north transects

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Text SI-1 Sample extraction and analysis

A quarter of each filter was cut into pieces, placed into a glass tube, and immersed in 20 mL of dichloromethane (DCM) and *n*-hexane (1:1). The extraction was performed by sonication twice for 30 min at 27 ℃. Every single sample was spiked with deuterated PAHs (naphthalene-d8, acenaphthene-d10, phenanthrene-d10, chrysene-d12, and perylene-d12) as recovery surrogates. The extracts were evaporated to about 0.5 mL with a rotary evaporator, and transferred to a multilayer column filled with 2 g of activated silica gel, 4 g of neutral alumina, and 1 cm of anhydrous Na_2SO_4 (pre-soaked in *n*-hexane). Then the column was eluted by a mixture of 10 mL of *n*-hexane and 20 mL of DCM/*n*-hexane (1:1). The eluent solvent was blown down to a final volume of 1 mL under a gentle stream of nitrogen. Finally, the solution was transferred to a 1.5-mL vial and stored at -20 ℃ for rejection.

High-purity helium was used as a carrier gas at a constant flow rate of 1.0 mL/min. The mass spectrometer was operated in 70-Ev electron impact mode. The oven temperature was held stable at 100 ℃ for 2 min, then was increased to the final temperature of 260 ℃ at different rates; to 170 ℃ at 25 ℃/min, to 225 ℃ at 8 ℃/min, to 235 ℃ at 0.7 ℃/min, to 260 ℃ at 25 ℃/min, and held at a final temperature of 260 ℃ for 2 min. The temperature of the injector was 250 ℃ and that of the transfer line was 280 ℃.

Text SI-2 Quality control

Laboratory blanks for air samples were included at a rate of one for every five samples and were treated in exactly the same manner as the samples. The field blanks for the air samples were extracted and analyzed in the same way as the samples. Method detection limits (MDLs) were derived as 3 times the standard deviation of the mean blank concentrations. Except for Nap, most of the PAHs were not detected in the laboratory and field blanks, indicating contamination of most PAHs was negligible during transport, storage, and analysis. Therefore, we decided to not analyze the Nap component from the field samples. The concentration of the lowest calibration standard was taken as the detection limit (0.13 ng/sample for air samples).

Table SI-1

PAH	Lumbini	Pokhara	Jomsom	Zhongba	Dhunche	Nyalam
Ace	0.47	2.07	3.70	3.81	2.65	3.24
Acel	0.57	2.02	4.41	4.54	2.60	3.81
Flu	1.46	4.33	7.92	7.90	5.04	6.26
Phe	2.56	5.54	7.35	5.90	5.54	5.58
Ant	0.84	3.35	6.42	6.44	4.35	6.26
3-ring	5.90	17.3	29.8	28.6	20.2	25.2
Fla	3.80	7.71	7.54	10.1	7.89	9.06
Pyr	3.88	7.77	8.30	9.32	8.28	9.77
BaA	3.72	5.50	5.47	6.42	5.99	5.98
4-ring	16.4	29.3	30.3	36.2	30.9	35.4
Chr	5.03	8.36	8.95	10.3	8.72	10.5
Bbf	11.5	10.9	8.06	9.80	9.58	11.4
Bkf	12.0	11.8	6.11	6.99	10.5	3.50
Bap	12.9	8.72	7.03	7.28	7.80	7.29
DahA	2.26	3.41	5.02	2.26	4.22	3.75
5-ring	38.6	34.9	26.2	26.3	32.1	25.9
IndP	22.5	9.72	6.21	3.35	8.77	5.91
BghiP	16.6	8.79	7.53	5.54	8.10	7.66
6-ring	39.1	18.5	13.7	8.88	16.9	13.6