

Supplementary Information

Chemical Analysis and Source Apportionment of Particulate-Bound Polycyclic Aromatic Hydrocarbons (PAHs) in Northeast India

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Table 1: PAHs Concentration of Northeast India Sites

S.No.	PAHs	Jorhat (Jan-March. 2020), n=42; ng/m3	Manipur, Urban site (winter)
1	Naphthalene	8.32±7.85	34.8±11.3
2	Acenaphthylene	0.9±1.27	15.7±24.7
3	Acenaphthene	4.69±6.22	13.7±4.9
4	Fluorene	4.95±5.86	25.4±10.6
5	Phenanthrene	3.49±2.65	49.2±12.3
6	Anthracene	0.57±0.64	28±75.9
7	Fluoranthene	1.62±1.56	23.1±58.5
8	Pyrene	2.06±1.74	20.1±19.2
9	Benzo (a) Anthracene	7.28±9.1	5.5±11.8
10	Chrysene	4.73±6.01	4.1±7.4
	Benzo (b,j)	42.84±42.64	
11	fluoranthene		1±2
12	Benzo (k) fluoranthene	8.52±8.73	1.7±5.5
13	Benzo (ea) pyrene	19.96±25.45	11.4±7.8
	Indeno(1,2,3-cd)	15.6±14.31	
14	pyrene		0.6±1.4
	Dibenzo (a,h)	16.3±36.49	
15	anthracene		0.9±1.2
16	Benzo (g,h,i) perylene	15.35±21.24	0.4±0.7
	ΣPAHs	157.17±127.72	235.6±255.2

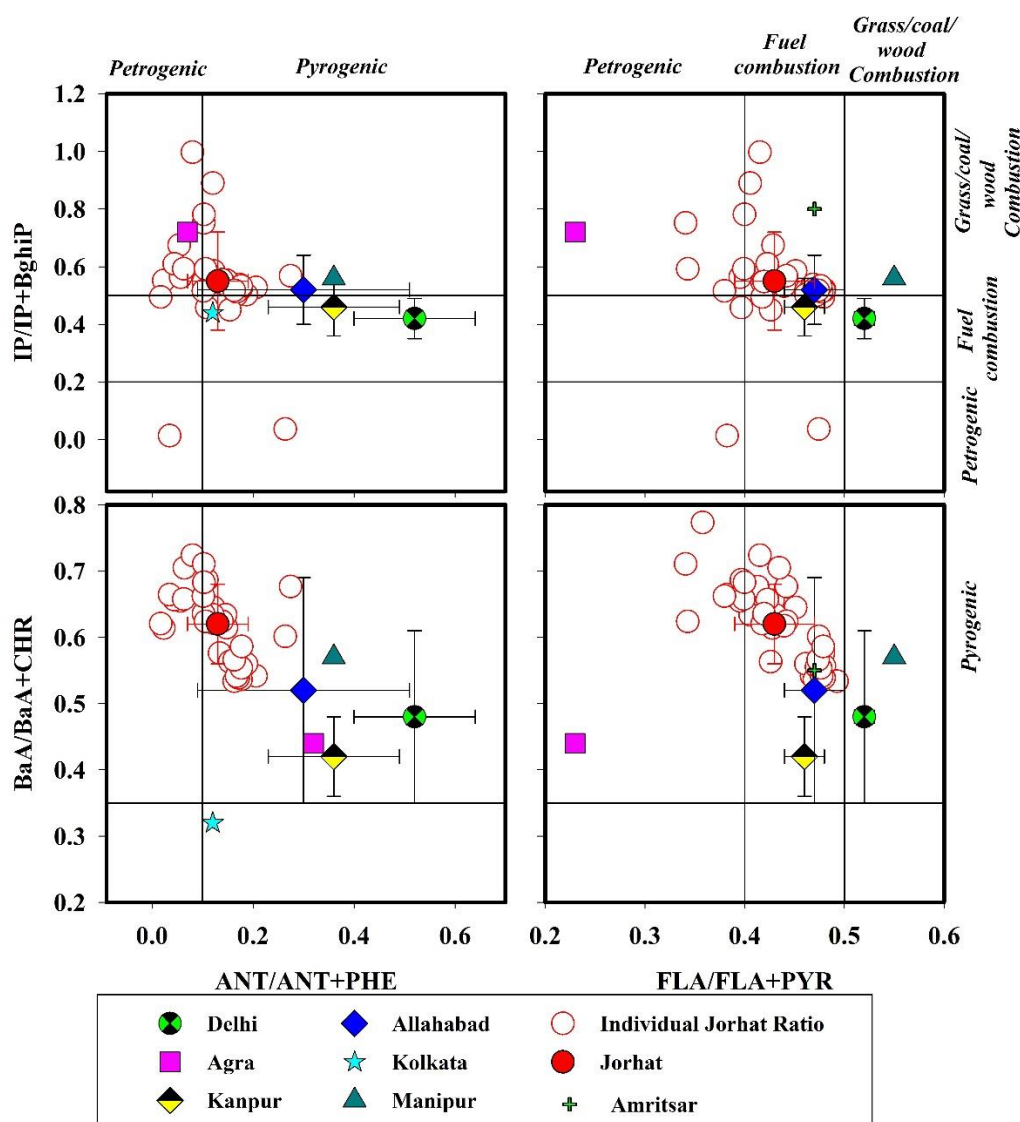


Figure 1: Cross-plots of isomeric ratios: (a) IP/(IP + BghiP) vs ANT/(ANT + PHE), (b) IP/(IP + BghiP) vs FLA/(FLA + PYR), (c) BaA/(BaA + CHR) vs ANT/(ANT + PHE), and (d) BaA/(BaA + CHR) vs FLA/(FLA + PYR) are shown here for aerosol samples at Jorhat in comparison.

Table 2: Diagnostic Ratio for Jorhat City

Characteristic Ratios	JORHAT	Sources*
ANT/(ANT+PHE)	0.13±0.06	Diesel (0.35) Gasoline (0.5) Coal Combustion (0.24) Crop residue burning (0.13)
FLA/ (FLA + PYR)	0.43±0.04	Coal, grass and wood burning (>0.5)
BaA/(BaA + CHR)	0.62±0.06	Vehicle emission (0.53)
IP/ (IP + BghiP)	0.55±0.17	Coal (0.56) Diesel (0.35–0.70) Gasoline (0.18)
BaP/BghiP	5.43±24.66	Non-traffic (<0.6) Traffic (> 0.6)
BaP/(BaP + CHR)	0.77±0.06	Diesel engine (0.73) Gasoline (0.49)
FLU/ (FLU + PYR)	0.61±0.24	Diesel (>0.5)
¹ CPAHs/ΣPAHs	0.74±0.22	Combustion (~ 1)
² LMW/HMW	0.44±0.98	Pyrolytic (< 1) Petrogenic (> 1)

*Source: Ravindra et al., 2008; Singh et al., 2015,

¹Sum of major non-alkylated compounds (FLU +PYR+ BaA + CHR+ BbjF + BkF + BaP + IP + BghiP)/total concentration of PAHs.

²Low molecular weight/High molecular weight PAHs (LMW/HMW)

For detailed information, please refer to the following article:
<https://link.springer.com/article/10.1007/s10874-023-09450-x>