

Study on mercury in PM₁₀ at an urban site in the central Indo-Gangetic Plain: Seasonal variability and influencing factors

Junming Guo^a, Kirpa Ram^{b, d}, Lekhendra Tripathee^{a, e*}, Shichang Kang^{a, c, f}, Jie Huang^{c, d}, Pengfei Chen^a, Prakriti Sharma Ghimire^{a, c}

^a *State Key Laboratory of Cryospheric Science, Northwest Institute of Eco-environment and Resources, Chinese Academy of Sciences (CAS), Lanzhou 730000, China*

^b *Institute of Environment and Sustainable Development, Banaras Hindu University, Varanasi*

^c *CAS Center for Excellence in Tibetan Plateau Earth Sciences, Beijing 100085, China*

^d *Key Laboratory of Tibetan Environment Changes and Land Surface Processes, Institute of Tibetan Plateau Research, Chinese Academy of Sciences, Beijing 100101, China*

^e *Himalayan Environment Research Institute, Kathmandu, Nepal*

^f *University of Chinese Academy of Sciences, Beijing 100049, China*

**Corresponding Author:*

Dr. Lekhendra Tripathee (lekhendra.t@gmail.com)

State Key Laboratory of Cryospheric Sciences, Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences, Lanzhou 730000, China

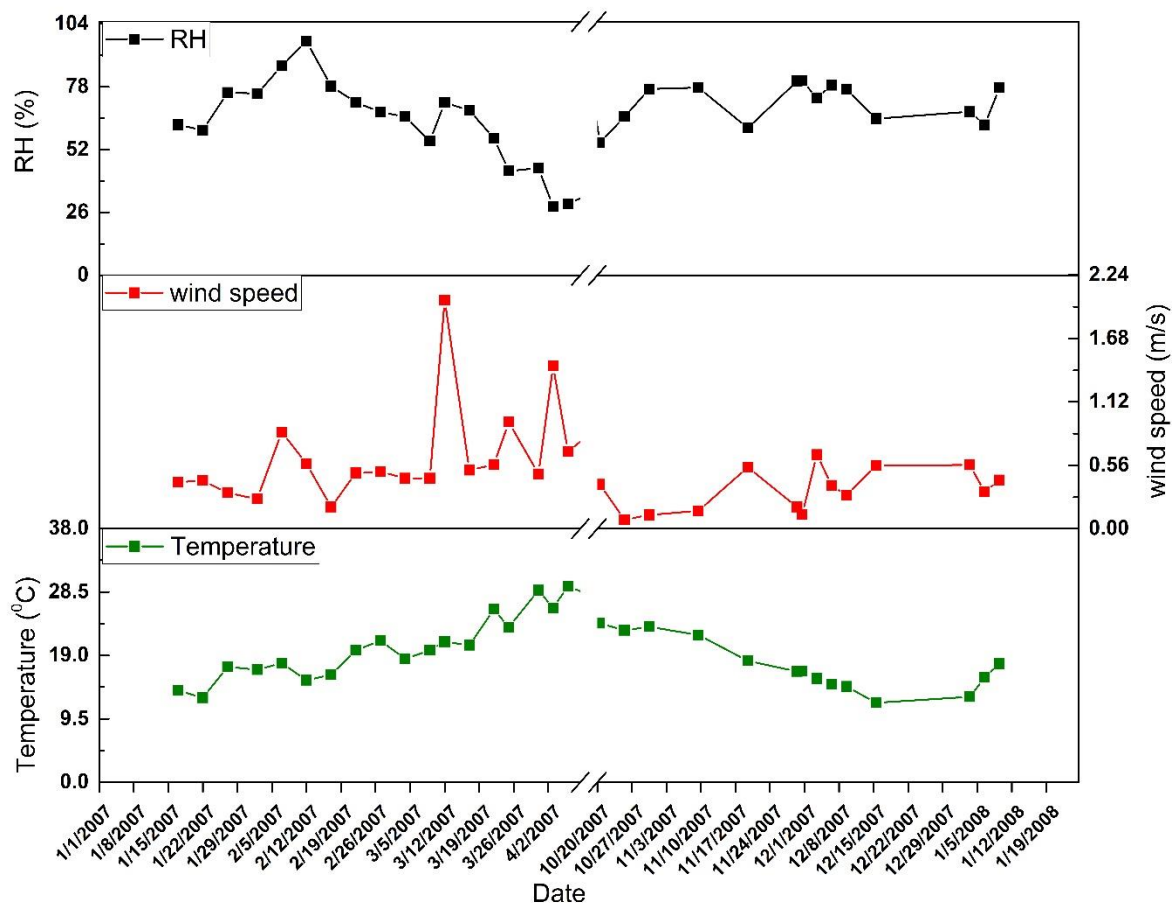


Fig. S1. Daily average meteorological information (RH, WS and Temperature) of sampling site during the sampling period

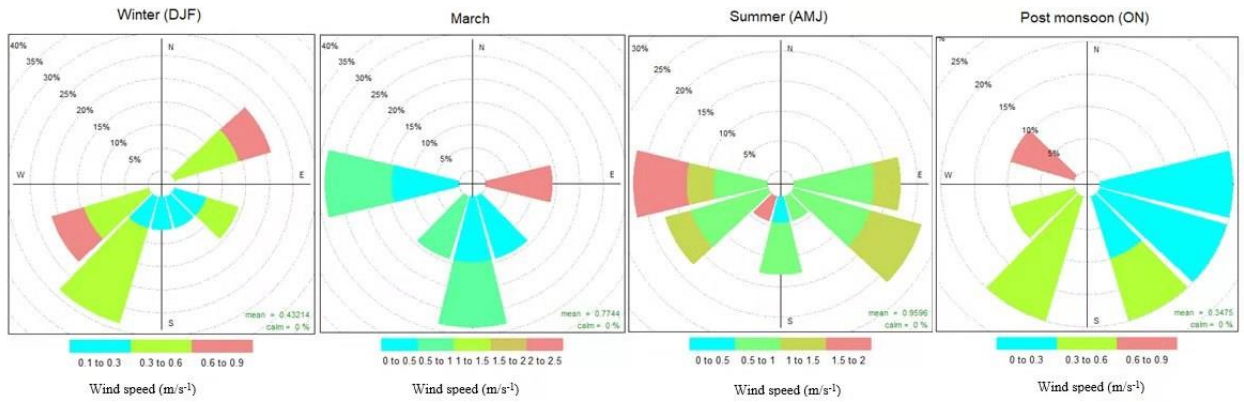


Fig. S2. The wind rose plots during four seasons at Kanpur

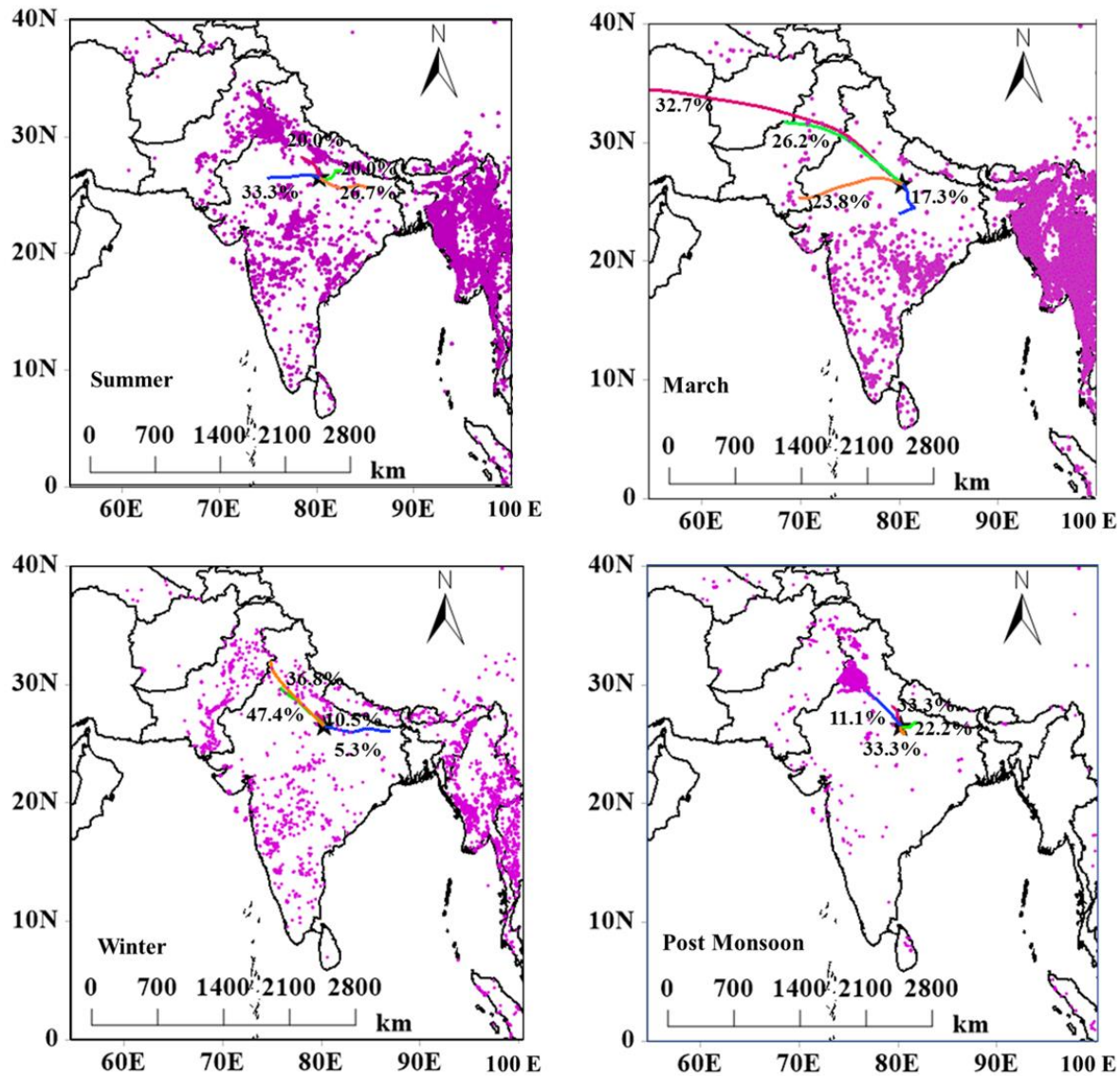


Figure S3. Clusters of five days air mass backward trajectories and the corresponding fire points for four seasons over the Kanpur during January 2007-January, 2008 : Summer; March, Winter, and Post-monsoon. Pink dots represent spatial distributions of fire spots observed by MODIS during the sampling period.

Table S1 Seasonal concentrations of HgP, Hg content and PM₁₀ mass in Kanpur

	HgP (pg m ⁻³)	PM ₁₀ /HgP (ng g ⁻¹)	PM ₁₀ mass (μg m ⁻³)
Winter	899.69±542.11	6301.64±7500.55	193.83±67.16
March	2443.27±1209.82	27022.58±11204.91	108.87±57.51
Summer	330.78±152.89	2328.67±922.61	143.94±39.85
Post-monsoon	469.70±155.79	2800.93±925.13	173.86±53.23
Annual	776.44±845.47	6554.88±9731.52	159.49±60.48

Table S2. Monthly variation of meteorological parameters (T, WS, WD and RH) during the study period

Months (2007-2008)	Temperature (°C)	Wind Speed (m/s)	Wind Direction (°)	Relative Humidity (%)
Jan	14.56±1.98	0.38±0.05	176.32±72.33	65.99±6.88
Feb	17.85±2.06	0.48±0.22	138.56±62.65	79.33±9.83
Mar	22.53±3.40	0.77±0.53	186.99±60.04	57.86±10.40
Apr	30.23±2.00	0.77±0.29	199.10±63.72	34.75±7.92
May	31.51±2.19	1.04±0.30	160.13±71.12	43.08±11.46
Jun	33.89±3.21	1.16±0.40	186.77±65.16	45.33±22.75
Oct	24.53±1.48	0.37±0.24	179.57±63.71	64.55±12.40
Nov	18.95±2.29	0.30±0.17	149.01±66.09	72.99±8.61
Dec	14.61±1.57	0.40±0.19	200.37±51.31	74.87±5.52
Jan	15.42±2.02	0.44±0.10	244.00±18.17	69.15±6.36

Table S3 Summary of total power generation capacity (GW), annual coal consumption (in million tons) in different states in IGP (Kanpur lines in Uttar Pradesh)

State	Power (GW)	Coal
Delhi	0.8	4
Panjab	4.7	20
Haryana	6.0	25
Uttar Pradesh	15.3	65
Bihar	6.2	25

Adopted from (Guttikunda and Jawahar, 2018)