Objective: To characterize PM composition and infer sources at an air pollution hotspot in New Delhi

PM characteristics

12h concentrations higher than the NAAQS (60µg/m³) observed on several days in summer and all data in winter

Summer (mean ± sd) - 58.2 ± 35.0
Winter (mean ± sd) – 276.9 ± 99.9

Mass size distribution

PM- Trimodal with two peaks in accumulation mode (0.15 µm and 0.55 µm) and one peak in coarse mode (~3 µm)
3/4th of PM mass in fine range
For elements, unimodal [Al, Cu] bimodal [S] and multimodal [Sb] distributions observed

Key contributors

• Organic matter (OM) was the highest contributor in summer and winter
• Higher contribution from sulphate, crustal material in summer and nitrate in winter
• Traffic contributed 16% in winter and 23% in summer

Conclusions

• Concentrations in winter >> summer , especially for combustion-related species
• High contribution from biomass burning in winter, crustal dust in summer
• High enrichment for elements such as Pb, Zn, Cd, Ti, Sb, Cu

What’s next

• Receptor modelling using Indian and other source profiles
• Characterization of source emissions

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