

EGU21-8938

<https://doi.org/10.5194/egusphere-egu21-8938>

EGU General Assembly 2021

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Analysis of Surface Air Pollutant Measurements from 2015-2019 in India

Disha Sharma and Denise Mauzerall

Princeton University, School of Public and International Affairs, Centre for Policy Research on Energy and Environment ,
United States of America (dishas@princeton.edu)

Launched among growing concerns about air pollution in India, the National Clean Air Program (NCAP) 2019 aims to reduce PM_{2.5} concentrations by 20-30% by 2024, relative to 2017. This analysis is an overview of air pollution levels in India in the five years prior to implementation of the NCAP program and provides a baseline to evaluate its future success. We analyze ground observations from 2015 – 2019, of five criteria pollutants – PM₁₀, PM_{2.5}, SO₂, NO₂ and O₃. We use data retrieved from the continuous and manual monitors across India to calculate annual average concentrations, seasonal cycles and monthly variability of these five pollutants in northern and southern India (divided at 23.5°N). We find that northern India has (7%-129%) higher average concentrations of all pollutants compared with southern India, except for SO₂ where the concentrations are similar. Particulate pollution dominates the pollution mix with virtually all sites in the northern region failing to meet the annual average PM₁₀ and PM_{2.5} national ambient air quality standards (NAAQS) (of 60 µg/m³ and 40 µg/m³, respectively) while some sites in southern India meet the standard. Although inter-annual variability exists, no significant trend of these pollutant concentrations was observed over the five-year period. We also conduct case studies in five cities included in the US State Department Air-Now PM_{2.5} network - Delhi, Kolkata, Mumbai, Hyderabad and Chennai and include continuous monitoring data. We find the annual average PM₁₀ and PM_{2.5} NAAQS concentrations to be frequently exceeded in these cities with highest concentrations found in Delhi, followed by Kolkata. SO₂ concentrations, however, generally meet the NAAQS standard in all the five cities. NO₂ NAAQS are exceeded in Delhi, Kolkata and Hyderabad in winter whereas O₃ only occasionally exceeds NAAQS in Delhi. Our work creates a framework that can be used in future research to evaluate the success of the NCAP air pollution mitigation program.