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Detailed investigation of tropospheric ozone concentrations in a major metropolitan Indian city

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Increased pollution in Bangalore, India, has resulted in higher levels of carbon and nitrogen oxides that subsequently lead to higher concentrations of ground level and tropospheric ozone. There is a significant dearth of objective physically measured data related to these ozone concentrations. This paper addresses the void by conducting a comprehensive investigation of the tropospheric ozone concentration vertical profile over Bangalore, one of the fastest growing cities in India. This data is not only a significant contribution to the scientific repository but it could also significantly impact public policy related to urban planning, public health and epidemiology. This investigation was prosecuted in close partnership with SSERD (Society for Space Education Research and Development) and IIA (Indian Institute of Astrophysics). A customized payload was designed for the detection, measurement and data acquisition of ozone in the surrounding atmosphere. The payload was integrated into a weather balloon system, which was successfully launched from the IIA launch pad in Hoskote, Bangalore. The data for the first 10 kms clearly demonstrates that the ground level ozone concentration in Bangalore is up to 65% higher than the acceptable standards stipulated by the Indian government and WHO. These results not only have profound implications for Bangalore and its future but are also relevant for other fast-growing global cities that are subject to rapid urbanization and industrialization. Public policy makers will have to look deeply into their toolbox to develop innovative policies for reducing pollution levels that are the leading drivers for increasing tropospheric ozone levels.

Biography

Aman Saxena is a Senior Research Associate at Creative Synergies Group, an Engineering consulting firm specializing in addressing engineering challenges of major Fortune 500 companies worldwide. His research interests are focused on environmental science and engineering. He has worked on various projects in the automotive domain and power plant and marine engineering. He has led multidisciplinary teams of engineers and scientists to specifically investigate the environmental impact of diesel engines, electric vehicles, maritime scrubbers and power plant emissions. He has actively collaborated with SSERD, IIA and ISRO to develop innovative methods for investigating tropospheric ozone levels in high growth metropolitan cities subject to rapid industrialization and urbanization. He works closely with public policy makers to impact innovative policies for reducing pollution levels that are the leading drivers for increasing tropospheric ozone levels.

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