

A COMPREHENSIVE INVESTIGATION OF THE VERTICAL TROPOSPHERIC OZONE CONCENTRATION PROFILE OVER BANGALORE, INDIA

Aman Saxena¹ and Rahul Tarak²

Creative Synergies Group
India

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, India: 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 km 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. Future investigations will focus on more in-depth analysis by launching 1U CubeSAT in partnership with ISRO (Indian space Research Organization).

aman.saxena@global-csg.com