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Global Fine Particulate Matter: Sources, Concentrations, Trends, and Health

Atmospheric aerosols have major roles in global public health and radiative forcing of climate. Fine particulate matter (PM_{2.5}) is the leading environmental risk factor for global burden of disease. However, ground-level monitoring remains sparse in many regions of the world. Satellite remote sensing offers a global data source to address this issue. Global numerical modeling plays a critical role in relating these observations to ground-level concentrations. The resultant satellite-based estimates of PM_{2.5} indicate dramatic variation around the world, with implications for global public health. A new ground-based aerosol network offers valuable measurements to evaluate and improve satellite-based PM_{2.5} estimates. This talk will highlight recent advances in combining satellite remote sensing, global modeling, and ground-based measurements of atmospheric aerosols to improve understanding of global population exposure for health assessments.