IAF SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)
Tools and Technology in Support of Integrated Applications (1)

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FEDERATING SPACE, AIR, AND GROUND AIR QUALITY DATA TO IMPROVE OUTCOMES IN
MEGACITIES

Abstract

Air pollution is responsible for 4.5 million deaths each year and more than 100 million suffering life-altering disabilities from air pollution. With the percentage of the global population living in urban areas projected to increasing to 68

Predicting What We Breathe is a project centered in the City of Los Angeles that federates data from satellite, airborne, and ground sensors to create a complete picture of what is happening in an urban environment. The team then uses machine learning to create algorithms that link ground-based in-situ and space-based remote-sensing observations of major air quality components to (a) classify patterns in urban air quality, (b) enable the deduction and forecast of air pollution events related to PM2.5 and ozone from space-based observations, and ultimately (c) identify similarities in air quality regimes between megacities around the globe for improved air pollution mitigation strategies. A variety of satellite data sources are used, including MODIS. Measurements before and after interventions on the ground are of particular interest.

This project has great applicability to global urban environments, as well as those who manage satellite programs and their data products.