

## Synergy between multichannel Raman Lidar system and spaceborne remote sensing platforms applied to study aerosol optical properties at Metropolitan Area of São Paulo – Brazil

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**Abstract:** In the last decades, several remote sensing platforms, i.e., spaceborne, aircraft and ground-based measurement systems have been developed or improved to conduct studies of aerosol and cloud optical properties on local and global scales, as well as to provide the scientific basis for understanding the Earth's climate system. The combination measurements between spaceborne sensors and ground-based instruments can helps to provide a better understanding about the impact of aerosols on air quality and in the climate changes inside large cities. The Metropolitan Area of São Paulo (MASP), one of the largest megacities in the world, frequently suffers with problems related to the air quality. Concerned with the pollution scenario of MASP, several measurement campaigns were conducted since 2012, specially, during the South hemisphere winter, period when the low temperatures and the low level of precipitation contribute to the poor dispersion of aerosols. A multichannel Raman Lidar system and air quality monitoring stations from University of São Paulo and Environment Agency of São Paulo State (CETESB) were employed in order to monitor the increasing of aerosol load in the atmosphere. Satellite data from CALIPSO and AQUA were applied to draws the pollution scenario and the most frequent aerosol type at MASP. This study intend to present how the synergy between ground-based monitoring and satellite data can helps to improve the studies the effects of particulate matter concentration in the air quality of MASP and the influence of aerosol from biomass burning advected from large range distance of South American continent.

**Keywords:** Lidar; air quality; particulate matter, AOD, CALIPSO, MODIS

**VIII WLMLA Topic:** Synergy between lidar and others instruments