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A comparison study of regional atmospheric simulations with an elastic backscattering Lidar and sunphotometry in an urban area

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Abstract. We describe a comparison study of Aerosol Optical Thickness (AOT) from numerical simulations using a regional atmospheric model with an elastic backscattering lidar operating at 532 nm and a sunphotometer belonging to the AERONET network at São Paulo (23° S 46° W) city, Brazil, a very populated urban area. The atmospheric model includes an aerosol emission, transport and deposition module coupled to a radiative transfer parameterization, which takes the interaction between aerosol particles and short and long wave radiation into account. A period of one week was taken as case study during the dry season (late August) when intense biomass burning activities occur at remote areas in South America, and meteorological conditions disfavor the pollution dispersion in the city of São Paulo. The situation presented here showed how smoke from biomass burning in remote areas is transported to the south-east part of Brazil and affects the optical atmospheric conditions in São Paulo. The numerical simulations are corroborated by in situ measurements of AOT obtained by lidar and sun photometry.

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