

The GoAmazon 2014/15 experiment looked at the interaction between natural biological emissions from the forest and urban emissions associated with Manaus. The NO<sub>x</sub> and SO<sub>x</sub> emissions from the city of Manaus interact with BVOCs, strongly affecting secondary organic aerosol (SOA) formation mechanisms. Atmospheric particulates are an important forcing agent for the Amazonian radiative energy budget. Formation of SOA in particular has a major impact on the region's climate because 70 to 80% of the Amazon mass of aerosol with diameter less than 1 μm (PM<sub>1</sub>) consists of SOA. In this study we focus on the aerosol optical properties. The understanding of how the optical properties of aerosols can vary when they are influenced by the urban emissions of the city of Manaus is key to the study of the impacts on the Amazonian ecosystem, including the radiation budget. In the present work we study some of the key optical properties of aerosols - the asymmetry parameter (*gaer*), single scattering albedo (SSA), optical thickness (AOD), backscatter coefficient (*bbp*) and extinction coefficient (*bext*) - over the Amazon rainforest. WRF-Chem simulations were performed for four days for two scenarios, one with anthropogenic and biogenic emissions and other with only biogenic emissions, in order to evaluate the variation of the aerosol optical properties by biogenic and anthropogenic interaction. We used MADE/SORGAM as a primary and secondary aerosol scheme, and the RADM2 mechanism to simulate gas phase chemistry. The WRF-Chem simulations were validated using the set of measurements at the various GoAmazon 2014/15 experimental sites (AERONET - Aerosol Robotic Network, a Multi Angle Absorption Photometer - MAAP and Ecotech Nephelometers). By comparing the simulations with and without anthropogenic emissions, we provide insight on the influence of the urban emissions on the variation of the optical properties of the Amazonian aerosols in the wet season. The WRF-Chem simulation with Manaus emissions turned on showed (*bext*) parameter values up to 100 times greater than the simulation without Manaus emissions, especially when the air pollution plume from Manaus arrived at the T3 site, downwind of Manaus.