

Intercomparison of the Lidar systems operated during GoAmazon 2014/15 experiment

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Abstract: The main goal of the GoAmazon 2014/15 experiment is to measure and understand the factors affecting aerosol particles over a tropical rain forest, especially the effects of anthropogenic pollution plume from Manaus as a perturbation to natural state of the pristine forest surrounding the city. A combination of in-situ and remote sensing measurements, both ground and air-borne based, is being used for this purpose. During the second intensive operating period (IOP2), from 15-Aug to 15-Oct-2014 three lidar systems operated simultaneously in different experimental sites. The first is the UV Raman lidar from IF-USP, which is running operationally since 2011 at site T0e (2.89°S 59.97°W) 30 km upwind of Manaus. The second is the IR Micropulse Lidar (MPL) of the ARM mobile facility installed at site T3 (3.21°S; 60.59°W) 80 km downwind of Manaus and measuring polarized elastically backscattered light since 1-Jan-2014. The third was the mobile visible Raman lidar system from IPEN operated during IOP2 at site T2 (3.13°S, 60.13°W), just across the Negro river 5 km downwind of Manaus. The mobile lidar system was brought to operate side by side with the other two lidar systems for two days in each site. This allowed for an intercomparison between the instruments measuring the same atmospheric profile and for accessing the differences in the measurements of these systems. In this paper, we show the results from this intercomparison for the range-corrected raw signals, backscattering coefficient profiles and cloud properties, taking into account the different laser wavelengths, and instrumental characteristics.

Keywords: Cirrus; Lidar Ratio; Optical Depth.

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