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ACONVEX: A NEW SITE IN CENTRAL AMAZONIA DEDICATED TO LONG-TERM CLOUD PROPERTIES OBSERVATIONS – DESCRIPTION, FIRST RESULTS AND FUTURE PERSPECTIVES.

Interactions between aerosols, clouds and precipitation

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The Amazon basin, especially during the wet season, has been pointed out as one of the few places on Earth where the “natural atmosphere”, as it is expected to have been in pre-industrial era, can be observed. Atmospheric properties in an unpolluted Amazonia can be regarded as a baseline state for the tropical atmosphere. Deep convection and the resulting hydrological cycle are extremely active. Several scientific questions with respect to deep convection remain unclear. The diurnal cycle of convection is far from adequately represented in numerical models. Precipitation typically occurs in models in the first few hours in the morning, whereas observed rainfall takes place mostly in mid-to-late

afternoon. Convective parameterizations lack the ability to properly represent deep convective due to the coarse resolution of models compared to the scale of phenomena that drive local convection. An adequate comprehension of the shallow-to-deep convection transition is critical to improve convection representation in models. To reach this goal, long term measurements that characterize clouds and convection are fundamental. The implementation of an ACONVEX (Atmospheric CONVection EXperiment) site, situated 50 km upwind from the megacity of Manaus, aims to fill the existent gap in long term measurements. It is designed to make measurements for longer than 10 yrs, and to characterize cloud properties from a climatological perspective. The site began operation in August, 2011. The array of instruments comprises: 1) UV Lidar Raman, 2) CIMEL Sunphotometer, 3) MultiFilter shadow band Radiometer (MFR), 4) GNSS/GPS Receiver, 5) Vertical Pointing Radar, 6) Disdrometer, 7) Ceilometer, 8) surface meteorological station. Two sky imagers and a microwave radiometer will be installed soon. Parameters to be derived are: 1) Cloud Cover, 2) Cloud Top and Cloud Base Heights, 3) Liquid Water Content, 4) Integrated Precipitable Water, 5) PBL Height, 6) Rain Rate (vertical profile and at surface). In this presentation we will discuss the site in detail, as well as recent results and future perspectives.