

## Observation and characterization of the transcontinental aerosol transportation from Africa to South America continent – Introducing a new Lidar system to LALINET

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**Abstract:** Saharan mineral dust can affect the environment and climatic processes from the Western Africa, Europe and the Eastern region of Americas due the large carrying processes of dust aerosol. This type of aerosol can interact with the incoming energy from the Sun and alter radiation budget of the Earth-atmosphere system. Dust particles can also change the cloud lifetime and albedo; they can induce precipitation and indirectly influence the convective clouds height. Several studies have been conducted to understanding the physical and optical properties of dust particles, using systems onboard satellites, airborne or ground-based instruments. However, most of the studies were focused on African, European or North America regions. In order to fill the “scientific knowledge gap” in the South America region it has been developed a new lidar system to study the transcontinental transportation of dust aerosols from Sahara region to South America. The project has as objectives monitoring the dust aerosols transportation seasonality, their vertical distributions in the atmosphere, their physical and optical properties and their influences on the radiative budget. For this task, a four-channel ground based lidar for aerosol profiling, including polarization, is being deployed at the city of Natal, in the North-Northeast region of Brazil. In this study, we present a review of the project current instrumental status, instrument technical specification, the potential results to be obtained and the entire performance test to be done in order to introduce the new lidar system into Latin American Network – LALINET according to procedures developed by Guerrero-Rascado et al 2014.

**Keywords:** lidar, dust aerosol, transportation, technical specifications, LALINET

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