

## **4.129 The Aerosols, Radiation and Clouds in southern Africa (AEROCLO-sA) project: overview, research highlights and way forward.**

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Abstract:

The AEROCLO-sA project (Aerosol, Radiation and CLOUDs in southern Africa) investigates the role of aerosols on the regional climate of southern Africa, a unique environment where natural and anthropogenic aerosols encounter a semi-permanent and extended stratocumulus cloud deck.

The project aims to improve our understanding of aerosol-cloud-radiation interactions over coastal southern Africa in various landscapes and various meteorological conditions to investigate the dynamical, chemical and radiative processes involved in their life cycle. AEROCLO-sA is based on a field campaign conducted in August/September 2017 over Namibia. An aircraft equipped with active and passive remote sensors as well as aerosol in situ probes performed a total of 30 research flight hours over northern Namibia. The focus laid on terrigenous aerosol emission over land as well as biomass burning aerosol plumes which were advected from Angola, and their subsequent transport over the marine clouds over the Atlantic Ocean. Concomitantly, an instrumented mobile station was implemented over coastal Namibia in order to document the boundary layer aerosols at the ocean-atmosphere interface using a state-of-the-art suite of in situ aerosol probes as well as balloon-borne dynamics and thermodynamics observations of the lower troposphere. This article presents an overview of the AEROCLO-sA field campaign as well as first highlights from the airborne and surface-based observations.

We expect these observations to significantly contribute to the understanding of the fundamental processes of aerosol-cloud-radiation interactions in link with the atmospheric dynamics over the region and the improvement of their representation by climate models included into CORDEX exercises. They also will be instrumental in promoting regional capacity building and will support policies towards a more sustainable development for the region.