

An evaluation of satellite cloud retrievals in southern West Africa

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Southern West Africa (SWA; defined here as 8W-8E, 5-10N) suffers from scarce surface based cloud observations. As a result, understanding of clouds in SWA is limited and particularly reliant on satellite observations. Moreover, climatologies based on active measurements show that multi-layer cloud is common in SWA. Consequently, low clouds are often obscured by higher clouds in passive satellite measurements. The poor understanding of clouds in this region also affects climate simulations, which exhibit a wide range of cloud climatologies in SWA. An improved understanding of satellite cloud product errors and uncertainty in SWA is vital to ensure that the existing cloud products are used appropriately and to inform development of future satellite observations.

This contribution focuses on the evaluation of satellite cloud products in SWA using both surface and aircraft observations from the DACCIA (Dynamics-Aerosol-Chemistry-Cloud Interactions in West Africa) field campaign, which took place during June-July 2016. We focus on cloud products based upon measurements from the SEVIRI (Spinning Enhanced Visible InfraRed Imager) series of instruments, which, due to their geostationary orbit, have the advantage of providing high temporal resolution cloud observations of SWA. We use both detailed case studies and statistical analysis to provide a holistic view of the performance of the cloud products, which allows us to identify when, where, and for which types of cloud errors occur.