



## **Quantifying Cloud Aerosol Interactions in Southern West Africa**

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At the peak of the summer monsoon the area of heaviest rains lies to the north of southern West Africa. During this period, a stratus deck tends to form overnight in response to night time cooling and moisture fluxes from the south. With the onset of day-time solar heating this is transformed to stratocumulus and cumulus, sometimes forming deeper precipitating clouds. The DACCIWA project is investigating the meteorology and chemistry of this region including modelling and field studies.

Here we present results using a new bulk multi-moment cloud-aerosol interaction scheme, known as CASIM, implemented within the Met Office Unified Model. This model allows prescribed aerosol fields to be used and we utilise this feature to investigate the sensitivity of properties of the stratocumulus to aerosol concentration. We are simulating a 3 day case study using convective permitting resolutions over a regional scale. For our case study we find that changing the aerosol concentration causes changes in the low cloud fraction and therefore affects top of atmosphere outgoing radiation. The relationship is nonlinear, however the largest aerosol concentrations provide the largest cloud cover. We discuss mechanisms for these changes and implications for modelling of the regional climate.