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Properties of aged smoke aerosols and boundary layer clouds over the South Atlantic during CLARIFY

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The South Atlantic is often covered by a large fraction of stratocumulus clouds which lie atop the marine boundary layer. During the dry season of June – September, biomass burning in central/southern Africa lofts smoke layers up to altitudes of several kilometres, which descend as they travel West over the south Atlantic, eventually mixing into the boundary layer and often entraining into the cloud deck. We present an overview of aerosol and cloud microphysical measurements taken during the CLARIFY campaign during August – September 2017 on the UK FAAM Bae-146 Airborne Research Aircraft. 28 research sorties were flown out of Ascension Island in the remote South Atlantic. Ascension is uniquely placed to receive a variety of pollution conditions; we will discuss case studies showing aged pollution in lofted layers before and after descent and mixing into the boundary layer, and contrast aerosol and cloud properties with cleaner cases. We will also discuss average and variation in properties such as organic/inorganic aerosol composition, size distribution, and black carbon mixing state in these heavily aged plumes.