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# Aircraft-borne aerosol chemical composition measurements in the southern West African troposphere with a focus on biomass burning and long-range transport.

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During the DACCIWA field campaign in June and July 2016, aircraft-borne in-situ atmospheric measurements were performed over southern West Africa (SWA). This presentation will focus on the chemical composition of submicronic aerosol particles measured with a Compact Time-of-Flight Aerosol Mass Spectrometer (C-ToF-AMS) instrument on board of the DLR Falcon aircraft during twelve research flights from Lomé, Togo, covering the altitude range from the boundary layer (BL) to the middle troposphere (12.5 km).

A preliminary analysis of the results shows typical total non-refractory aerosol mass loadings of 6.5 to 11 $\mu$g m$^{-3}$ (quartiles) in the BL. 20 to 40 % of the baseline aerosol mass in the BL appears to consist of sulphate, compared to only 5 to 25 % above 5 km, where organic matter clearly dominates.

During several flights, the DLR Falcon crossed a pronounced and seemingly widespread aerosol layer at 2—4.5 km altitude, partly in or slightly above the BL. The AMS data indicate that more than 60% of the non-refractory aerosol mass in the middle of this layer consisted of organic matter. These aerosol particles are attributed to biomass burning in Central Africa, which is in agreement with features in their mass spectra that indicate that the aerosol is aged by at least several days.

Above 5 km, about 1 $\mu$g m$^{-3}$ of aerosol material is present that consists largely of organic matter. This decreases to about half of that at 12.5 km. We will discuss the likely provenance of this material.