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Submicron aerosol composition measurements over the Mid Atlantic using an Aerodyne Aerosol Mass Spectrometer on the UK Facility for Airborne Atmospheric Measurements (FAAM) during the ITOP (Intercontinental Transport of Ozone and Precursors) experiment.

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An Aerodyne Aerosol Mass Spectrometer (AMS) was deployed on the new UK Facility or Airborne Atmospheric Measurements (FAAM) during the Intercontinental Transport of Ozone and Precursors (ITOP) experiment, the European component of the International Consortium for Atmospheric Research on Transport and Transformation (ICARTT). The AMS measures the mass of speciated, non-refractory chemical components in submicron aerosol online with a high time resolution. Size resolved information is also available where concentrations are significant. ITOP focussed on the long-range transport of pollutants from the North American continent over the Atlantic Ocean. The UK aircraft was based in the Azores and sampled mid Atlantic free tropospheric air. This was the first deployment of the new FAAM aircraft in which intercomparisons with other aircraft were available to validate data. The aircraft sampled various air-masses during the campaign, including what appears to be anthropogenic pollution from the Idaho Valley, biogenic aerosol resulting from Alaskan fires, and an African outflow. Distinct differences were found in the mass spectra of the different air masses. In particular, the Idaho valley air-mass had highly elevated levels of sulphate aerosol which was above typical ambient UK mass loadings, whereas the

Alaskan fire plume were dominated by a purely organic aerosol. The mass spectra of the particles in the fire plumes is dissimilar to those measured in a wide range of background locations in the northern hemisphere, and is better represented by more freshly emitted urban organics with less oxygenation than the organic component of Idaho valley plume.

Attempted lagrangian sampling was also attempted in collaboration with the NASA DC8, NOAA P3 and DLR Falcon platforms