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Measurements of C1–C6 Alkyl Nitrates during ITOP 2004

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Various C1 – C6 alkyl nitrates were measured during the ITOP (**I**ntercontinental **T**ransport of **O**zone and **P**recursors) aircraft experiment in the summer of 2004. This North Atlantic study, which falls within the framework of the ICARTT international programme, focused on the chemical transformation of uplifted polluted air masses during intercontinental transport. Data on alkyl nitrates, measured alongside ozone, peroxy radicals, a suite of volatile organic compounds (VOC), halocarbons, CO, nitrogen species, aerosols, etc., contribute to the understanding of photochemical processes taking place in polluted air masses during transport over the North Atlantic.

Air samples for the analysis of alkyl nitrates, halocarbons and hydrocarbons were collected in silco-treated, stainless steel canisters onboard the UK FAAM[1] BAe 146 aircraft, operating out of the Azores (38N, 28W). During thirteen flights, approximately 280 samples were analysed for alkyl nitrates and halocarbons by gas chromatography/mass spectrometry (GC/MS). Prior to the chromatographic separation of nitrates and halocarbons, the analytes were pre-concentrated on a peltier-cooled adsorbent trap. A highly specific, sensitive detection of the components was carried out using a mass spectrometric detector in negative ion chemical ionization (NICI) mode. The system is able to quantify nitrates in the low and sub-pptv range.

This presentation of data on nitrates focuses on concentration profiles of alkyl nitrates in different air masses, affected by biomass burning and by anthropogenic emissions

[1]Facility for Airborne Atmospheric Measurements

and possibly by oceanic emissions. They will be presented in relation to CO, O3, PAN, and (parent) hydrocarbons. The contribution of measured alkyl nitrates to NO_y will also be assessed.