



Measurements of NO and NO_y During ITOP 2004

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In the summer 2004 ITOP aircraft campaign (Intercontinental Transport of Ozone and Precursors) based in the Azores measurements of NO and total reactive nitrogen (NO_y = NO + NO₂ + HONO + HNO₃ + HO₂NO₂ + NO₃ + N₂O₅ + CH₃C(O)O₂NO₂ (PAN) + other organic nitrates + aerosol nitrate) were made over nine flights on board the FAAM BAe-146. NO was measured using the chemiluminescence reaction with ozone, NO_y species were reduced to NO by CO-catalyzed reduction (0.3 % v/v) in gold tubes maintained at 300 °C.

During the campaign the levels of NO were generally quite low (<50 pptv) although levels as high as 1 ppbv were observed in polluted plumes. In the NO_y measurements increases in NO_y were often tracked by increases in PAN and at high PAN levels (>100 ppt) the correlation between PAN and NO_y was reasonable.

The NO data will be used to calculate ozone production efficiencies in different air masses characteristic of the remote marine boundary layer, anthropogenic pollution events, polluted plumes produced by passing ships and pollution due to biomass burning. The partitioning of NO_y will be estimated by comparing the measured total NO_y to the observed PAN and NO concentrations.