



Mixing of stratospheric and tropospheric air-masses detected with CRISTA-NF during AMMA

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CRISTA-NF (CRyogenic Infrared Spectrometers and Telescopes for the Atmosphere - New Frontiers) is an infrared limb sounding instrument installed onboard the high-flying research aircraft M55-Geophysica and took part in the AMMA-SCOUT measurement campaign in Summer 2006. During the test flight on 29th of July 2006, CRISTA-NF detected a sharp boundary between ozone rich air over northern Italy and ozone poor air over southern Italy and the Mediterranean Sea. The structure is also clearly visible in the HNO_3 distribution. The air mass boundary extends from about 10km altitude to the thermal tropopause at about 16km altitude with indication for mixing in the lower part of this altitude range. This is supported by enhanced values of PAN and water vapour found.

The observed structure is also visible in the CLaMS (Chemical Lagrangian Model of the Stratosphere) ozone distribution but hardly resolved in ECMWF forecast data. Backward trajectories show that the ozone rich air is originated westwards, between 40°N and 60°N while the ozone poor air is coming from the south-east, at about $0\text{--}20^\circ\text{N}$ and has a younger age of air. In the presentation details of the CRISTA-NF measurements and retrieval procedures as well as the origin of the trace gas structures will be discussed.