Supplement to "On the capability of the Changing Atmosphere Infra-Red Tomography explorer (CAIRT) candidate mission to constrain O_3 and H_2O in the upper troposphere and lower stratosphere"

Quentin Errera[1], Marc Op de beeck[1], Stefan Bender[2], Johannes Flemming[3], Bernd Funke[2], Alex Hoffmann[4], Michael Höpfner[5], Nathaniel Livesey[6], Gabriele Poli[7], Didier Pieroux[1], Piera Raspollini[7], and Björn-Martin Sinnhuber[5]

[1]Royal Belgian Institute for Space Aeronomy (BIRA-IASB), Brussels, Belgium
[2]Instituto de Astrofísica de Andalucía (CSIC), Granada, Spain
[3]Research Department, European Centre for Medium-Range Weather Forecasts, Reading, UK
[4]European Space Research and Technology Centre, European Space Agency (ESA/ESTEC), Noordwijk, The Netherlands
[5]Institute of Meteorology and Climate Research - Atmospheric Trace Gases and Remote Sensing (IMKASF), Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany
[6]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California, USA
[7]Instituto di Fisica Applicata "N. Carrara" (IFAC) del Consiglio Nazionale delle Ricerche (CNR), Firenze, Italy

Correspondence: Quentin Errera (quentin.errera@aeronomie.be)

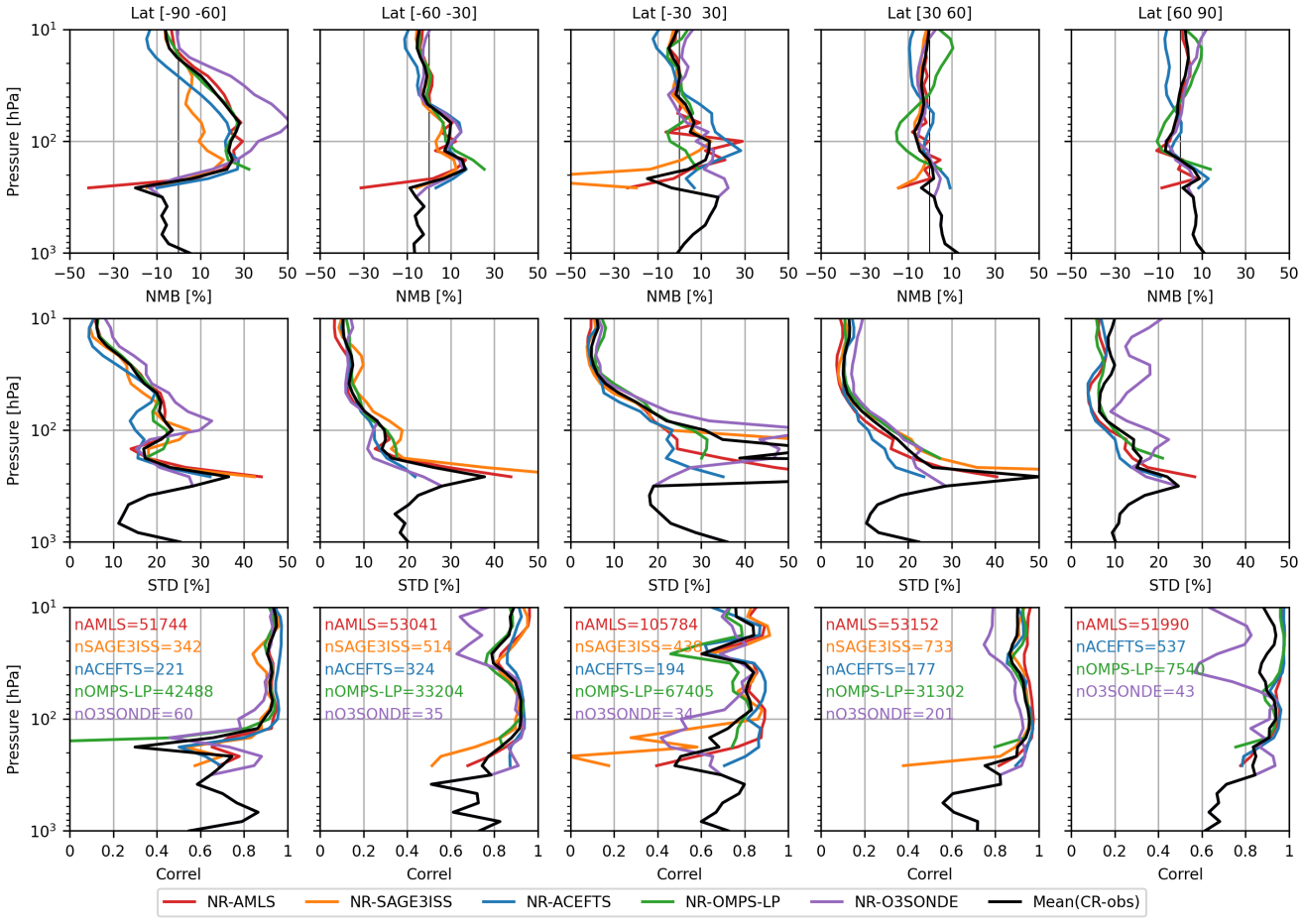

Figure S1. Comparison of ozone from the CAMS control simulation against profiles from limb instruments and ozonesonde (see legend for color code) during Oct. 2021-Dec. 2021 for five latitude bands (see title of each column). Statistical values shown are, from top to bottom: mean bias normalized by the mean of the CAMS profile (NMB), the associated standard deviation (NSD) and the correlation between CAMS and the observations (Corr). Also shown is the statistical comparison of the CAMS control simulation against the mean of all instruments (black line). The number of profiles used in each latitude band are given in the Correlation plots in row 3.

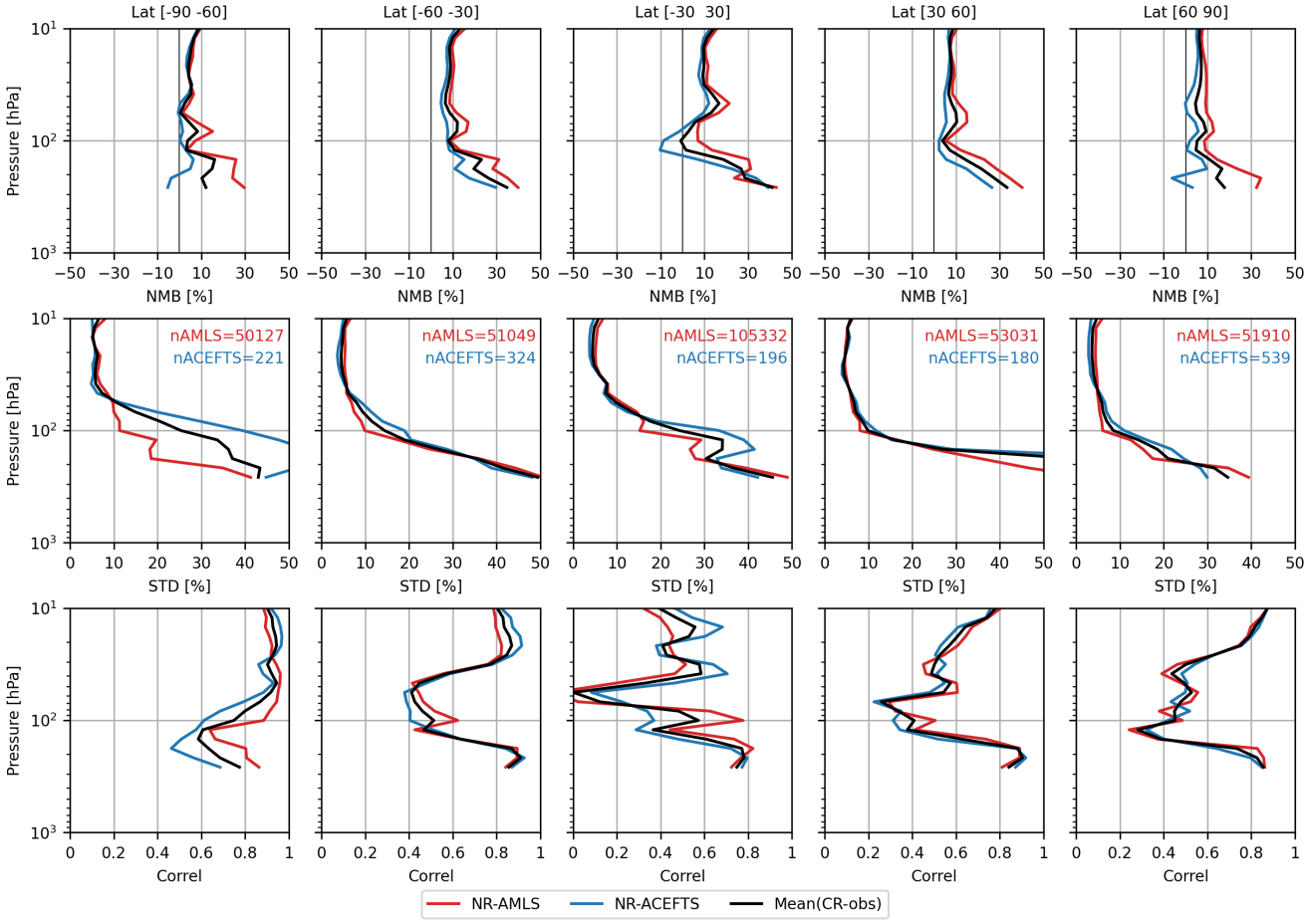

Figure S2. As Fig. **??** but for water vapour.

Table S1. Metop-SG and CAIRT orbit specifications.

Specifications	Metop-SG	CAIRT
Mean Local Solar Time at ANX[1]	21:30	21:30
Longitude at ANX[1] [deg.]	0	1.956721
Repeat cylce [days]	29	29
Cycle length [orbits]	412	412
Inclination [deg.]	98.677	98.677

[1] Ascending Node Crossing (the point on an orbit where the spacecraft crosses the Earth's equator from South to North).