

## ***Interactive comment on “Problems regarding the tropospheric O<sub>3</sub> residual method and its interpretation in Fishman et al. (2003)” by A. T. J. de Laat and I. Aben***

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Comment by W. Grant.

We agree with that our statement that the tropospheric O<sub>3</sub> columns are generally low throughout the troposphere is not fully correct: there is indeed more TOC variability (related to long range transport).

A quick survey of available O<sub>3</sub> sondes for Samoa (period 1996-2000) shows the standard deviation of tropospheric O<sub>3</sub> columns is approximately 7 DU (note: there is a considerable seasonally cycle).

However, the same survey also reveals that the standard deviation of the (stratospheric) layer between the tropopause and 30 km altitude is more than 8 DU, and thus

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that a considerable amount of variability in the total O<sub>3</sub> column at Samoa is caused by stratospheric O<sub>3</sub> variations. Note that in our article we refer to findings by Ziemke et al. [1998], who find a stratospheric O<sub>3</sub> column variability based upon MLS measurements from about 10 DU. And thus it should be shown that 5-day stratospheric O<sub>3</sub> column variability is small and that the stratospheric O<sub>3</sub> column can be considered constant over a 5-day period.

We will address this issue in the revision of the manuscript (if publications is allowed).

(note: the overall standard deviation of the O<sub>3</sub> column between 0-30 km is 12.5 DU compared to 10.8 for the TOMS total O<sub>3</sub> column measurements 1996-present).

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