

## ***Interactive comment on “Global and zonal tropospheric ozone variations from 2003–2011 as seen by SCIAMACHY” by F. Ebojie et al.***

**Anonymous Referee #2**

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Global and zonal tropospheric ozone variations from 2003–2011 as seen by SCIAMACHY F. Ebojie J. P. Burrows, C. Gebhardt, A. Ladstätter-Weißmayer, C. von Savigny, A. Rozanov, M. Weber, and H. Bovensmann

General comment:

The manuscript is very nice and should be published, after addressing some smaller points and a few technical remarks. The paper focuses on the statistical analysis of the SCIAMACHY tropospheric ozone columns retrieved by limb-nadir-matching. The data are reasonable and for most of the observed trends reasonable causes are given. However, are systematic effects (instrumental drifts) excluded? Was this tested in the validation activity in the previous paper (Ebojie et al. 2014)? Only the overall deviation

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is mentioned here. To really exclude and correct for instrumental effect is very hard if not impossible. At least a short comment could be included whether or not a drift was observed during the validation or comparison with other data.

Minor comments:

P24099 L25ff: The sentence beginning with “The small insignificant positive change...” is mathematically incorrect. Be  $\epsilon < 0$ , then  $(\epsilon + n \cdot 0)/(n+1) < 0$ , no matter how large  $n$  is. But of course it is clear what you mean: “The small positive trend results from many small positive and negative trends, most of them are statistical insignificant.”

In section 3.4.2 regional tropospheric  $O_3$  changes are discussed. For most regions a possible cause for the observed trend is given. For region A (Alaska) only the large variability and the large number of gaps are given as explanation. So to me it is not clear if the authors think this trend is a real atmospheric change or just a retrieval artefact.

Technical comments:

P24093 L6 Please add last access date to the cited webpage, double check the complete manuscript.

P24096 L7 “Similar wind patterns observed are observed...” delete the first observed

P24104 L3 “... over US as *observed* reported in...” replace by “... over *the* US as reported in...”

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