

Interactive comment on “Comparison of long term series of total ozone and NO₂ column measurements in the southern tropics by SAOZ/NDACC UV-Vis spectrometers and satellites” by M. Pastel et al.

Anonymous Referee #2

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Review of the paper by Pastel et al.

The authors compare in their paper long-term time series of total ozone and NO₂ from two stations in the southern tropics, one in SE Brazil and one in SW Indian Ocean. The comparison is mostly based on SAOZ measurements and the authors also use satellite data as additional evidence. The authors suggest from their analysis that the two stations, although both in the southern tropics, show different seasonal characteristics and levels both in ozone and NO₂ columns. The authors do not present a new algo-

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gorithm or a new technique. Actually they analyze existing data sets and thus eventually their paper would be more suitable for ACP rather than AMT. The time series shown are of great interest since there are very few long-term data sets over the region both for total ozone and NO₂ and limited knowledge on their longitudinal variability. Therefore despite the journal submitted the results shown are important and worth publication. I have however a major concern about how the satellite data are used in the paper. My comments are mentioned below:

General comment:

As the authors mention in the introduction the SAOZ data have been extensively used in various validation studies of satellite products, which means that the ground-based data have been used as the ground-truth reference. The authors however mention in the introduction, and later analyze in their paper, that the reliability of the SAOZ data has been checked by satellite data. And since not a single sensor covers the whole period of the SAOZ records, they use for this purpose merged data sets. This is certainly a contradiction. I would suggest that the authors should reconsider the use of satellite data in their manuscript. The main result of the paper is the difference in seasonality and levels between the two stations. The satellite data have already been validated with the ground-based data and should be used to examine whether they also show these longitudinal differences, and not used to check the reliability of the SAOZ data. Otherwise as a validation study the paper is confusing and incomplete. In addition there are many already published validation studies (most of them cited by the authors) for the satellite data used.

Specific comments:

Page 4855 Section 2.3. Why the authors don't use GOME5.0 version which is the latest official and fully validated version from ESA? In addition it is not clear about NO₂ what is finally what they use later in their analysis.

Page 4860 Line 25-30: “the way longitudinal variations are treated in the retrievals”.

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What do the authors exactly mean with that and how do they justify this. As it is written is confusing and rather speculative.

There is limited information in the paper how the merging of the satellite data have been performed (both for NO₂ and ozone)

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 4851, 2013.