

Interactive comment on “Satellite NO₂ observations and model simulations of tropospheric columns over South-eastern Europe” by I. Zyrichidou et al.

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REPLY TO THE COMMENTS OF REFEREE #2

We would like to thank referee #2 for the comments and suggestions that contribute to the improvement of our manuscript. In the following, the referee's comments are shown first followed by the respective author's responses.

General comment about potential trends

As already mentioned in the introduction recent satellite studies based on combined gridded 1ox1o GOME-SCIAMACHY tropospheric NO₂ data for the period 1996-2006

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(van der A et al., 2008) show a negative trends of the order of 7% per year for whole Europe. When focusing however over certain cities and areas they show spatial differences of the trends (e.g. London versus Cologne) which in most cases become insignificant. There is no trend information available for the area under study based on satellite data. However there are various publications and reports that study long homogeneous time series of surface observations of pollutants in the area, which show a decreasing tendency in the late 90s and early 00s and a leveling to lower values during the last years. A detailed review of such studies is beyond the scope of this paper. An appropriate paragraph and selected references have been included when discussing figure 2.

Page 12179, Line 28: remove 'choose to' and 'so as'

We corrected the wording as suggested.

Page 12180, Lines 1 and 2: explain CTP 10 to 50: 'that corresponds to...'

We added in the text that CTP (Cross Track Position) 10 to 50 corresponds to the OMI pixels which are closest to the near-nadir viewing position. See also our response

Page 12179, Line1; page 12181, Line 8; page 12184, Line 16: The year of the references has to be in brackets.

We inserted the brackets as suggested.

Page 12183, Line 11: 'Maritsa (industrial), Finokalia (rural) and Istanbul (megacity)'.

We corrected the wording as suggested. However Figure 2 in the revised version will include more locations so this part of the discussion will be revised accordingly.

Page 12183, Line 25: remove parenthesis after and before commas.

We corrected the wording as suggested.

Page 12184, Line 14: What value is derived from SCIAMACHY observations?

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The mean value of tropospheric NO₂ derived from SCIAMACHY measurements over Istanbul is $6.9 \pm 2.0 \times 10^{15}$ molecules/cm².

Page 12187, Line 23: 0.3×10^{15} molecules/cm².

Corrected as requested.

Table 2: Constantinople should be corrected to Istanbul that is used everywhere else in the paper and is more commonly used or put both names, to avoid confusion. We agree with referee#2 on this comment and kept 'Istanbul' as name.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 12171, 2009.