

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

Anonymous Referee #2

Received and published: 14 July 2009

This is a very well written paper focused on the NO₂ levels over South-Eastern Europe. It makes combined use of several satellite based sensors and different retrieval algorithms, to provide a concise and robust picture of the spatial and temporal variability of the tropospheric column of NO₂ over the studied area. It also compares the retrievals with chemistry transport mesoscale simulations.

No statistically significant interannual trends are found from this analysis. However it would be interesting that the authors comment on how large trends could be hidden under the data variability and uncertainty shown by their study. This is my main suggestion for improvement of the paper, i.e. adding a discussion on the strength of potential

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trends (expected to vary spatially) that could exist but cannot be clearly observed / identified due to the uncertainties associated with the multi -sensor observations and the retrieval algorithms.

As an overall evaluation, I consider this paper worth for publication in Atmospheric Chemistry and Physics after a few additional minor corrections that are outlined herebelow.

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

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

Page 12179, line 1; page 12181, line 8 ; page 12184, line 16: The year of the references has to be in brackets.

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

Page 12183, line 25 remove parenthesis after and before commas.

Page 12184: line 14, what value is derived from SCIAMACHY observations?

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

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.

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