

Interactive comment on “Satellite measurement based estimates of decadal changes in European nitrogen oxides emissions” by I. B. Konovalov et al.

Anonymous Referee #2

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The paper presents an interesting derivation of NO_x emissions trends over Europe, Ukraine, Russia and part of the Middle East based on the GOME and SCIAMACHY NO₂ summer only tropospheric columns between 1996 and 2005. The authors use a Bayesian inversion technique to estimate an optimized linear trend for NO_x emissions in each 1x1 deg grid cell of the domain considered. The a priori information on the trend is minimal with a uniform probability within the range [-7%,+10%]. The CHIMERE model is used to compute the a priori NO_x tropospheric columns and to calculate the impact of various emission scenarios on simulated surface NO_x and ozone which are then compared with available observations. The authors use a Monte Carlo approach to calculate the emission response functions. The discussion of the limita-

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tions of the method and uncertainty on the results is quite thorough and is a key part of the manuscript.

Comments

The paper is very well written and I only have a few minor comments. I strongly recommend publication of the manuscript in ACP.

1. Between Equation 2 and Equation 3, the superscript n for the emissions disappears in several places. 2. The symbol N is used twice, first to represent the total number of grid cells in Equations 2 and 3 but is also used in Equation 5 to represent the number of years.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 2013, 2008.

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