

Interactive comment on “A transboundary transport episode of nitrogen dioxide as observed from GOME and its impact in the Alpine region” by D. Schaub et al.

Anonymous Referee #2

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The authors present a case study of transport of NO_x pollution from (mainly) Germany towards the Alps, observed from GOME for cloudy conditions, and use an interesting, innovative method to derive origin and fate of the observed pollution. However, the focus of the study is set only to this particular event, and it is unclear what the impact of this study might be. I therefore encourage the authors to see their study in a larger context. In detail:

- The authors deliberately developed a new method, but they don't give any outlook, how far this method is planned to be (and can be) applied for other cases, for instance for other cloud conditions or other regions.
- The authors cite Wenig et al. and Stohl et al., where intercontinental transport of

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NO_x has been reported. Thus it is not at all surprising that pollution from Germany is transported towards the alps for corresponding meteorological conditions. It is stated that “50-90% of the measured NO₂ in the Alpine sites can be attributed to transboundary transport” for this special event, but the reader is left alone with the question, how relevant such transport events are generally for pollution levels in the Alps.

Specific comments: - I think it would be helpful to mention the date of the specific event already in the introduction (e.g. in the 2nd paragraph on page 5106), and to add that this very day was cloudy, as this is important for the understanding of your method (i.e. the need to define an effective cloud top height in 3.2.2.).

- A further question raised at looking at the trajectory calculations: You trace the emissions about 100 hours back, and trajectories reside near the ground about 20-60 hours, or 1-2.5 days. So why don't you also show GOME data of the days before (and also after) the event for a further consistency check of your modeled pathways of NO₂ pollution?

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 5103, 2004.

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