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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Analysis of a summer smog episode in the Berlin-Brandenburg region with a nested atmosphere - chemistry model" *by* S. E. Bauer and B. Langmann

Anonymous Referee #2

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This paper analyses a pollution episode in the Berlin-Brandeburg region with a series of nested models. The boundary conditions and the emission input data are discussed in detail, systematically and clearly. Differences between observations and model results are explained mainly in terms of those two types of input data. Consistent explanations and analysis are given in these sections. On the other hand, the meteorological input data are only briefly mentioned and not discussed. As this omission prevents a full interpretation of the results and could lead to misleading conclusions (see specific section below), I would recommend the Authors to develop this section. As an example, from the discussion on biogenic emissions the Authors explain the underestimation of ozone concentration in rural areas by a corresponding underestimation of biogenic emissions. Other explaination for this underestimation could hold such as an

overestimation of the mixing height.

Below follow more specific and technical comments.

Specific comments:

P 790: L 22-23: Industrial development has led to enhanced releases of NOx and VOC but in the last decade, these emissions have been reduced at least in the Western countries.

P 791: L26: This first point should be extended to describe the "high quality" of the results.

P 793: L24: What type of measurement supports this very high level for the mixing height (3000 m) and how well is your meteorological model reproducing it? As mentioned above, this parameter is critical to correctly reproduce surface concentrations.

P 795: L 8: Are these emission fluxes constant in time or do these numbers represent peak values?

P797: L 20: While I find the analysis of the chemical regimes for the two areas (rural and city) instructive, I do not see the interest of the domain aggregated VOC and NOx emissions (figure 10). As comes out from your discussion, the city and rural areas have completely different behaviour and the interpretation of such a figure could be misleading (It also strongly depends of the extension of your modeling domain)

P 799: L 5: As mentioned above, other factors than biogenic emissions could explain an increase in the rural ozone concentrations.

P 799: L 23: It would be useful to explicitly know which of the chemical species you considered as long-living.

P 803: L 23: Based on your analysis, which recommendations would you give regarding emission control strategies?

ACPD

2, S253–S255, 2002

P 804: L15: Some information should be included on the location at which this composition of hydrocarbons was measured. I guess the results will be very much location dependent

Fig.2 : The maximum ozone concentration seems to be located in the city area where large NOx emissions occur. If this is true and if the wind is approximately constant during the day, then the ozone plume does not seem to originate from Berlin! As this is a quite compact plume, where does it originate from?

Interactive comment on Atmos. Chem. Phys. Discuss., 2, 789, 2002.