

Interactive comment on “PM measurement campaign HOVERT in the Greater Berlin area: model evaluation with chemically specified particulate matter observations for a one year period” by M. Beekmann et al.

Anonymous Referee #1

Received and published: 15 August 2006

1. General

The authors evaluated the air quality model REM-CALGRID using experimental data of the HOVERT field campaign, which took place in the Berlin Brandenburg area. They investigated in detail the temporal and spatial patterns of inorganic aerosols, elemental and organic carbon. The paper gives a comprehensive picture of the uncertainties of modeled and measured concentrations of those species.

2. Evaluation

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1) Does the paper address relevant scientific questions within the scope of ACP?

Yes

2) Does the paper present novel concepts, ideas, tools, or data?

Comprehensive experimental data of inorganic and organic aerosols over all seasons are usually not available for evaluation air quality models. This campaign provided a unique opportunity to test the aerosol modules in the REM-CALGRID model.

3) Are substantial conclusions reached?

Yes

4) Are the scientific methods and assumptions valid and clearly outlined?

Yes

5) Are the results sufficient to support the interpretations and conclusions?

Yes

6) Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)?

n.a.

7) Do the authors give proper credit to related work and clearly indicate their own new/original contribution?

Yes

8) Does the title clearly reflect the contents of the paper?

yes

9) Does the abstract provide a concise and complete summary?

yes

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10) Is the overall presentation well structured and clear?

yes

11) Is the language fluent and precise?

yes

12) Are mathematical formulae, symbols, abbreviations, and units correctly defined and used?

yes

13) Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated?

yes, see below

14) Are the number and quality of references appropriate?

The number is at the upper limit. Reduce it, if possible

15) Is the amount and quality of supplementary material appropriate?

n.a.

3. Details

p7286

l13

... elemental and organic carbon (EC and OC) ...

l24ff

... processes in the atmosphere: the secondary inorganic aerosols (SIA) sulphate, nitrate and ammonium are related to emission and transformation of the gaseous species SO₂, NO_x and NH₃.

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p7294

l3,l6

rem: what does the error plusminus 2 of 0.48 micro m mean?

p7295

l2

... leaf temperature ...

l14ff

... Two traffic sites (MP174, BS) were chosen ... background site (MP42) ...

l17 ... urbanized area (MP27, MP77), four (?) rural sites ...

rem: describe the sites more consistently.

p7296

l7

... (elemental carbon) ...

l23

... do not much affect secondary inorganic aerosols (SIA), which ...

p7297

l10

... and -25%, respectively). This ...

l25

... occurring, as expected, at the traffic ...

p7298

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I12ff

... Nansensstrasse (example). For PM10, clear seasonal cycle appears neither in observations nor in simulations. Only in June and July the concentrations are somewhat lower.

I14

... underestimation evident in the annual ...

I16

... than in summer and this seasonal variation is well captured by the model.

I19

... is less evident in ...

I24

... is observed or simulated.

I25

... In both, observations and simulations, ...

I28

... variation is evident in observations, ...

p7299

I1

... also reproduced by the model.

I25

... to transport from the east ...

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p7300

I21

... see Fig. 4). ...

p7303

I6ff

Rem.: It is obvious that the slope of the regression line of a scatter plot is strongly correlated with the ratio of the x and y averages. What is the benefit of the comparison of the bold figures in Table 3?

I28

Table for rural sites not given.

p7305

I2

Organic compound consists of a primary ...

p7315

Table 3

column 6 and 7 are confusing. Which of the quantities ECsim,nom., ECobs are actually given in the table? Is the ratio given (missing slash)? What is "Slope"? Make the table consistent with the text on p7303.

p7317

Fig.1.

"Figure 1" (or "Tab." instead of "Table"9

... agricultural and barren land (yellow). See Tab. 2 for acronyms.

S2448

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p7318

Fig. 2.

top panel: x-title is incomplete.

where are the panels for EC and OC?

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 7285, 2006.

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6, S2443–S2449, 2006

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