

## ***Interactive comment on “A modeling analysis of a heavy air pollution episode occurred in Beijing” by X. An et al.***

**X. An et al.**

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1. Q: Model description and validation The Models 3-/CMAQ has been used with RAMS, authors must present an evaluation of the meteorological performance of MM5 in the area. A statistical comparison related to the performance of MM5 in the description of the meteorological variables in the domain is necessary.

A: Yes, the opinion of referee is very useful for us. In the revised manuscript, we will add the validation of MM5 for this area. The following give some results on the comparison of meteorological variables between measured vs. modeled following the referee's comments.

Table 1 Statistical summaries of the meteorological comparisons of the model results with observations of average temperature, relative humidity, wind speed, direction and

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pressure, of six observations sites in Beijing

(Unit: T: C;, RH: %;, WIND SPEED: m/s, WIND DIRECTION: °, P: hPa)

Obs Sim MB NMB(%) NME(%) RMSE CE

T 15.66 15.55 -0.12 -0.75 21.39 3.83 0.73

RH 46 49 2.25 4.87 26.16 15.41 0.71

P 1005 1006 0.36 0.04 0.28 3.73 0.92

WIND SPEED 8.93 13.63 1.43 56.40 58.19 1.75 0.74

WIND DIRECTION 170 159 -10.84 -6.38 33.98 73.48 0.50

In Table 1, Obs and Sim are average mean of observation and simulation. MB, NMB and NME are respectively for the Mean Bias, the Normalized Mean Bias and the Normalized Mean Error. RMSE and CE are the Root Mean Square Error and the Correlation Coefficient of Obs with Sim. From the table, we see that MM5 model can well simulate the meteorological variables of temperature, relative humidity, pressure, and wind speed and direction.

2. Q: A map of the three domains can help to see the coverage of the modeling area. The parameter used by MM5 should be mentioned here at least for 3rd and 4rt domains. A: In the revised paper, we add the map to show the four domains and the parameter used by MM5 for 3rd and 4rt domains.

3. Technical corrections

Q: Abstract: Line 20 SOIL if it is not an acronym should not be in capitals.

A: Yes, we modified SOIL to Soil.

Q: Introduction: Page 8217 Line 17 May use a different word than “obviously”.

A: We accepted to replace “obviously” with “gradually”.

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Q: Model description and validation: Page 8220 line 7 Yamaji et al 2006 it is not present in the references.

A: The mistake is caused by the abbreviation of name in page 8220 line 7 is different with the name in page 8227 line 14. The mistake will be corrected in modified paper with the reference as following,

Yamaji, K., Ohara, T., Uno, I., et al.: Analysis of seasonal variation of ozone in the boundary layer in East Asia using the Community Multi-scale Air Quality model: What controls surface 15 ozone level over Japan? *Atmos. Environ.*, 40(10), 1856-1868, 2006.

Q: References: Review the order of the references. (Kazuyo)

A: Yes, the order of the references in page 8227 line 14 has been modified.

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Interactive comment on *Atmos. Chem. Phys. Discuss.*, 6, 8215, 2006.

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