

Interactive comment on “The effects of a solar eclipse on photo-oxidants in different areas of China” by J.-B. Wu et al.

Anonymous Referee #3

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Main comments:

1. This work used wrf-chem to evaluate the effect of the 22 July 2009 on the surface photo-oxidants. The authors need to show how good are the wrf-chem results in simulating O₃, NO, NO₂, CO, etc. These comparisons are non-trivial, and they are very important to demonstrate how reliable is the model used in this study.
2. Given there are plenty of ambient monitoring stations in China, it should be straightforward in comparing and validating the model chemical and meteorological results with the ambient air measurements.
3. The photolysis rate calculations are not only used to calculate photolysis during the solar eclipse (see page 2478, lines 4-5 from the top), they are heavily used in the

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day-time chemistry calculations. Actually, due to this day-time fast photolysis rates, the photochemical reactions become very stiff than the night-time chemical calculations.

4. The selections of stations for comparisons made in Figures 2, 3, and 4 seem quite random. Solar radiations were compared in Hedo and Fukue; 2-m temperatures were compared in Beijing, Shenyang, Chongqing, Wuhan, Guangzhou, and Shenzhen; and O₃ and NO₂ were compared in Hefei and Tongcheng. Any reasons why these were selected?
5. The differences shown in Figure 5 are hard to evaluate given no detailed information on the method used in producing these results.
6. I failed to find Figure 4 referred to in the text.

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