

Interactive comment on “Online coupled meteorology and chemistry models: history, current status, and outlook” by Y. Zhang

Anonymous Referee #2

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This is a review article of coupled meteorological-air quality models. As far as I know, it is the first such review and an important study because it helps to disentangle the capabilities of several very complex models, giving users of such models and readers of papers based on such models more insight into their relative abilities. I strongly encourage its publication. Below are a few minor comments that the author should address.

P. 1838. Mickley et al. found... What processes were treated as online versus offline in this study?

P. 1838. “Constrains” should be “constraints”.

P. 1838. What do you mean by “variables are simulated together in one time step

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without a model-to-model interface?” Do you mean that the equations are all solved simultaneously with a nonlinear equation solver or that processes are operator split seamlessly between meteorological and air quality processes?

P. 1842. “... also simulated highly-simplified aerosol treatments and the direct radiation feedbacks...” (personal communication). Unless there is a traceable and publicly accessible description of treatment or result, such personal communications should not be included as a reference in a review article. Review articles are, by definition, reviews of the public (peer-reviewed and grey) literature, which is the standard method of communicating scientific results. This also applies to the statement on p. 1852, “The feedbacks between meteorology and chemistry via aerosol radiation...” (personal communication).

P. 1845. Please define “community” model. I assume this means model that has been released publicly. If so, it is not clear why it is relevant whether a model is a community versus a research-grade model. In either case, the definitions should be clear.

P. 1845. “...and will become more complete as more developers from community...” What happens in the future is not so relevant to the present paper and is speculative. The paper should focus on what has occurred to date, particularly since all models will change in the future.

P. 1865 ff. The case studies do not appear to add much to the paper. If they are important, the author should explain why they are important. My feeling is that they most people will skip over this information. To make the paper more concise and effective, I would suggest removing the case studies unless a good rationale is provided for keeping them.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 1833, 2008.

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