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Interactive comment on “Development and evaluation of the Screening Trajectory Ozone Prediction System (STOPS, version 1.0)” by B. H. Czader et al.

Anonymous Referee #1

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This publication is timely and well done. The STOPS system could be an important tool for scientists policy makers, and consultants alike. The tool uses a moving CMAQ simulation that dynamically interfaces with archived CMAQ simulations. The tool is well described and the basic performance is well described for the no emissions modification case. I would have liked to see an evaluation of the response to additional emissions, which will stress the boundary assumptions further. I look forward to more application papers (e.g., chemistry updates that would influence boundaries, other emission additions).

The model description section is clear and detailed. The author first introduces the two basic approaches which air pollution models are based on: Eulerian and La-

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grangian. The author then points out the limitations of modeling with either approach exclusively. The nested-moving approach in STOPS is described as a useful hybrid Eulerian–Lagrangian modeling approach. This paper provides sufficient description of the modifications to CMAQ. Finally, I would not call this Lagrangian. STOPS is actually a series of Eulerian models strung together at the computational time-step. It is more of a pseudo or quasi-Lagrangian approach.

The tables used in the paper are not clear and need improvement. In all tables, what are MAXD and MIND? In Table 2, there are three sets of results with identical “NAME” values. I assume this is related to the domain, but the table is unclear. In Table 4, the domain was starting in the industrial domain, but the nomenclature is identical to Table 3 that started in the urban (urb) domain. Why is that appropriate? Tables 5, 6 and 7 are referenced by number without the word “table”.

Minor comments: - Abstract, add units to the bias in the abstract.

- Page 7631, why not include a 1x1 simulation?

- Figure 1, Conceptual model should include multiple columns to be consistent with implementation?

- Make it clear that you are comparing instantaneous concentrations (not time interval averaged).

Overall, this is a good manuscript that needs minor improvements. More discussion of the differences, or potential for differences, between CMAQ and STOPS with emission modifications would improve the manuscript. Table clarifications are necessary before publication.

Interactive comment on Geosci. Model Dev. Discuss., 7, 7619, 2014.

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