

## ***Interactive comment on “Impact of climate change on photochemical air pollution in southern California” by D. E. Millstein and R. A. Harley***

### **Anonymous Referee #2**

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General Comment. This paper presents a valuable sensitivity analysis of the influence of potential changes in temperature, humidity, boundary conditions and anthropogenic emissions on ozone in Southern California, conducted using a high resolution chemistry and transport model. The paper provides new insights on the air quality response in a specific geographic location of high interest. Minor revisions are warranted to help clarify the limitations of the analysis.

Specific Comments.

p. 1565, lines 10 - 15. It would be helpful if some information could be provided on the performance of the meteorological model in the base case, given that the study focuses on ozone responses to perturbations in meteorological parameters.

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p. 1565, lines 25. Please specify up front the temporal resolution of the climate modeling results used as inputs to this study. This is an important consideration, as demonstrated later in the paper, and doesn't actually become clear until we get to the future temperature change section on p. 1571.

p. 1566, lines 4-5. Along the same lines as the previous comment, please indicate the averaging period associated with the quoted range of predicted temperature increases.

p. 1566, lines 5-25. It would be helpful if the process of making the perturbations could be explained more precisely in the methods section. For example, how exactly were adjustments from the climate model grid mapped onto the CMAQ grid?

p. 1566, lines 24 on. Again it's not clear exactly how the anthropogenic emissions were changed. Were all activity factors scaled with population growth except for freight transport? It would be helpful to include a summary table of domain-wide emission totals for the perturbed emissions cases as well as the base case.

p. 1568, lines 20 - 25. Please consider adding an explanation of the response of peak ozone to altered humidity and why it first increases and then goes negative as you move from Anaheim to Palm Springs.

p. 1573, lines 12 - 21. Please discuss how the study results are limited by the omission of other prospective changes in meteorology that may accompany the temperature and humidity changes – e.g., in wind patterns, mixing, and cloud cover. How might the results from this study be altered if these factors were also considered in a more completely integrated analysis?

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Interactive comment on Atmos. Chem. Phys. Discuss., 9, 1561, 2009.

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