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Interactive comment on “Projections of mid-century summer air-quality for North America: effects of changes in climate and precursor emissions” by J. Kelly et al.

Anonymous Referee #1

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The manuscript presents a comprehensive analysis of decadal regional air quality simulations over North America under present and future climate and emissions scenarios. The design of the modeling simulations is sound, the analysis is structured clearly, and the manuscript is well-written. While the modeling approach is comparable to earlier studies by other groups, the present work stands out for several reasons. First, the simulations analyzed here were longer than those analyzed in most previous studies which should increase the robustness of the results. Second, the geographic area covered by the simulations is larger than in most previous regional-scale climate/air quality studies covering North America and includes a large portion of Canada. In addition, the authors analyze the results not only in terms of ozone and PM_{2.5} concentrations

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but also in terms of health and ecosystems impacts, and finally, this study is one of the first if not the first to utilize the RPC6 scenario for projecting ozone and PM_{2.5} precursor emissions for regional-scale air quality simulations. The authors are thorough in placing their work in the context of earlier studies.

I have two minor suggestions for the authors to consider when revising the paper:

1) While well-written and comprehensive, the 10 page introduction section feels too long. Shortening this section would improve the readability of the manuscript.

2) The authors should provide more justification for their choice to use the A2 scenario for greenhouse gas emission in the global and regional climate simulations but to use the RPC6 scenario rather than the A2 scenario for scaling the ozone and PM_{2.5} precursor emissions for the regional air quality simulations. In addition to providing this justification, it would also be useful to include a table comparing the greenhouse gas and precursor emissions between these two scenarios both globally and over North America

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 3875, 2012.

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