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Atmospheric Chemistry and Physics Discussions

Interactive comment on "US surface ozone trends and extremes from 1980–2014: Quantifying the roles of rising Asian emissions, domestic controls, wildfires, and climate" *by* Meiyun Lin et al.

Anonymous Referee #2

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This paper uses modeling in conjunction with observations to assess the causes of surface ozone trends in the United States, and applies some novel approaches to this important problem. The analysis is robust and the paper is generally well-written. I have listed some specific comments below to improve the clarity of some parts of the text.

Page 1 Line 32: Clarify that this is future springtime O3

Page 1 Lines 34-35: Do you mean that the onset of isoprene emissions is earlier in the Southeast than other regions, or that it became earlier over time?

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Discussion paper

Section 2.1: What time period is the model run for?

P6 Line 18: Why not adjust for sample autocorrelation?

P6 Line 35: Is it only 1990 that has anomalously low values at some sites, or several of the early years? See, for example, the discussion in Strode et al. [2015].

P7 Line 27: What is the justification for picking 700 hPa?

P7 Line 35: Is BASE the same as AM3_BASE? If so, please use one or the other consistently.

P11 Line 31: Since a number of studies have examined trends for slightly different time periods (for example, Cooper et al [2012]), it would be helpful to summarize here how your results for trends through 2014 compare with those trends, and what effect the inclusion of recent years has on the trends.

P13 Line 23: How does the GHCNDEX relate to the meteorology used to drive the model? Why not calculate the change in max temperature etc. using the same met fields that drive the model?

P20 Line 16: This is a significant bias, and should be discussed earlier in the paper.

Fig. 8 caption: What does “colorbar saturates at -0.8” mean?

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