

Interactive comment on “The weekend effect within and downwind of Sacramento: Part 1. Observations of ozone, nitrogen oxides, and VOC reactivity” by J. G. Murphy et al.

J. G. Murphy et al.

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Response to Referee 2

We thank the referee for his/her kind words and constructive suggestions for improving the manuscript. Our author comments (AC) in response to the most significant referee's comments (RC) follow below.

Abstract RC: p. 11428, line 8: The reviewer asks for clarification on the NMHC and VOC reactivity data

AC: We have added text clarifying the issue. Measurements of non-methane hydrocarbons are available for the summers of 2001-2003 at three of these sites. This routine

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monitoring data is complemented by data sets of ozone and nitrogen oxide concentrations obtained in the summers of 2001 and 2003 at three sites in the region and comprehensive measurements of VOC reactivity at two sites in 2001.

RC: p. 11428, line 11: The referee asked for additional words in the text supporting the abstract.

AC: text quoting 10% for weekend/weekday changes in VOC reactivity has been added to line 15 p 11443

Introduction

RC: p. 11429, line 24: suggestion to specify which studies in the past have included detailed NO_x and VOC measurements

AC: We prefer not to provide a detailed review of the measurements described in prior manuscripts or collected in other field studies. The subject is too broad for us to do justice to without distracting from the main points of our manuscript.

Timing of peak ozone

RC: p. 11437, line 13: The reviewer asks for explanation of our choice of length scale of 15km in the text.

AC: We have added a sentence explaining that the distance of >15km is relevant because using the local wind speed, it corresponds to at least one hour of time, during which significant ozone production can occur.

The weekend effect in the Sacramento region

RC: p. 11438, line 20: The reviewer asks whether we examined other metrics for ozone concentration or statutory violations.

AC: We did also examine the one-hour average. It too shows strong day-of-week effects, however this standard is exceeded less frequently in the region and is therefore

of less policy relevance. We have not added any text as our point is not to produce a comprehensive analysis of ozone itself, but rather to illustrate the ozone issue and discuss its coupling to NO_x and VOC.

RC: p.11439, line 10: Insert the population of Stockton?

AC: Done

Day of week trends in O₃, NO_x and VOC

RC: p. 11440, line 12-14: The reviewer asks for details of the calculation of NO.

AC: see response to reviewer 1

RC: p 11443, line 23, The reviewer asks for the “similarity” to be quantified.

AC: similarity (within 30%) has been added to the text

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 11427, 2006.

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