

Response to Reviewer #3:

We would like to thank the reviewer for careful and thorough reading of this manuscript and for the thoughtful comments and constructive suggestions, which help to improve the quality of this manuscript. Our response follows (the reviewer's comments are in *italics*).

General Comments. *The paper 'An overview of the MILAGRO 2006 campaign: Mexico City emissions and their transport and transformation' by L.T. Molina, et al. is an overview of findings from the MILAGRO field campaign. However, it is not just a 'paper about papers' but also provides some further analysis and attempts to extract the most important results.*

It is very well written and is well balanced between the different topics, such as experimental design, emissions, photochemistry, radiation, and transport. It definitely deserves to be published and is a valuable contribution to the ACP journal.

The only weakness of the paper is its length. It is true that some of the chapters can be regarded as stand-alone documents, and it is thus not necessary to read the whole paper. However, it is my belief that the main purpose of the paper (overview of the MILAGRO project, road map to its numerous publications, bringing across the main messages) could have been achieved on less pages, e.g. by omitting some details and rather refer the reader to one or more of the MILAGRO publications. It is difficult to point specifically to omissible sentences as they are rather spread throughout the paper, but I recommend making one more effort to shorten the paper at least somewhat, in order to make it more readily accessible.

Reply:

We appreciate the positive feedback from the reviewer.

With regards to the length of the article: as we noted in our response to Reviewers #1 and #2, it is not easy to shorten the article. We are trying to target both readers that are interested in the comprehensive study and readers that are only interested in subsections. The current form serve both of these needs and we are concerned that if we cut out the small overlaps in the introduction to each section as well as the technical material, then the subsections will not be readable to the reader who is only interested in one or a few sections. Therefore we would like to keep the manuscript largely in its current form. However, as suggested by the reviewer, we have reviewed carefully the entire manuscript and have removed redundancies, as shown in the revised manuscript.

One more general remark: *What about calling Section 12 'Summary and Conclusions' and Section 13 'Future work' in order to better reflect their content.*

Reply:

As suggested by the reviewer, we have changed the title of Section 12 to "Summary and Conclusions" and Section 13 to "Future Research."

Minor comments:

1) p.7823, lines 23-25: add already here how many partners, from which countries, duration and funding agencies

Reply:

As suggested by the reviewer, we have moved the information from last paragraph of page 7829 to page 7823.

2) p.7824, line 23: *facilitates* -> *facilitate*

Reply:

The correction has been made.

3) p.7826, line 14: *remove colon after 'showing that'*

Reply: The correction has been made.

4) p.7827, lines 17-25: *don't need to name here all conferences and media, can be shortened (while keeping the link to the website).*

Reply: We have shortened the paragraph, as suggested.

5) p.7827, line 26 and onwards: *this should be in the introduction.*

Reply: We have moved the paragraph to the Introduction.

6) p.7829, line 24 and onwards: *this is what I suggest to include in the introduction (see first minor comment above)*

Reply: We have moved the paragraph to the Introduction.

7) p.7833, line 12: *'and more' -> 'and a more'*

Reply: The correction has been made.

8) p.7848, line 25: *remove 'is'*

Reply: The correction has been made.

9) p.7850, line 13: *'constrains' -> 'constraints', line 19: comma around 'respectively'*

Reply: The correction has been made.

10) p.7853, lines 2 and 3: *write 'the UC Irvine group' and 'T0 and T1 sites'.*

Reply: The correction has been made.

11) p.7854, line 11: *'were' -> 'was'*

Reply: The correction has been made.

12) p.7864, line 1: *remove 'reflects the partitioning between OH and HO2, and'*

Reply:

The text has been revised as suggested:

“The HO₂/OH ratio can be used as a measure of the efficiency of radical propagation.”

13) p.7865, line 12: you mean 'early afternoon'? (as opposed to late afternoon which is VOC limited)

Reply:

The text has been revised as suggested:

"An analysis of ratio of radical loss from the formation of nitric acid and organic nitrates to the total radical production for MCMA 2003 also suggests that ozone production is VOC-limited in the early morning and late afternoon, but becomes NO_x-limited during the early afternoon [Mao et al., 2009]."

14) p.7870, line 18: 'composition' -> 'compositions', and: PM_{coarse} is shown, not PM_{2.5}

Reply:

The text is indeed incorrect. The subject figure shows PM_{2.5} and PM_{Coarse} and not PM_{2.5} and PM₁₀ as indicated in the text. The sentence has been corrected to read:

"The fractional compositions of PM_{2.5} and PM_{Coarse} are illustrated in Fig. 12.

15) p.7887, line 1: 'leads' -> 'lead'

Reply: The correction has been made.

16) p.7888, line 2: move 'were' to after 'aerosols'

Reply: The suggested correction has been made.

17) p.7890: The sentences in lines 12 and 18, referring to Hodzic et al., 2009, Mugica et al., 2009, and Christian et al., 2010, are very similar. Combine.

Reply:

As suggested by the reviewer, the second occurrence of these citations has been eliminated

18) p.7892, line 5: 'Previous work' refers to the past, and 'will' to the future. Rather write 'missed', or, e.g., 'the method used in previous work . . . did not detect'

Reply: The suggested correction has been made. The sentence now reads:

"Previous work using single wavelengths, particularly at wavelengths longer than 500 nm, did not detect these changes in absorption in the 300 to 500 nm range that are primarily due to oxidized organics (both aged primary and SOA coatings)."

19) p.7903, line 23: move comma after 'NO' to after the parenthesis.
Line 24: factor of 1.4 to 1.9?

Reply:

The suggested correction has been made. The sentence now reads:

"These include slight overpredictions of CO and NO (<30% and <20%, respectively), and a probable underprediction of VOCs by a factor of 1.4 to 1.9 in the inventory."

20) Fig.3: 'except MCM-2006'? So why is it included in the figure? Mention that the measurements were performed in the Mexico City basin, or refer to section 3.1 or Fig.4.

Reply:

The suggested correction has been made. The figure caption now reads:

"MILAGRO Campaign: Geographic Coverage. Measurements were performed in the MCMA (see Fig. 4). The size of the circle (MAX-Mex, MIRAGE-Mex and INTEX-B) indicates the geographic coverage of the aircraft deployed."

21) Fig.5: '9 March' -> '9 March 2006'

Reply: The suggested correction has been made.

22) Fig.6, NO_x, don't private cars include any Diesel vehicles?

Reply:

The private cars in Mexico are mostly gasoline-powered; there are very few diesel-powered private cars.

23) Fig.7: 'insert' -> 'inset'

Reply: The suggested correction has been made.

24) Fig.9: 'at T₀' -> 'at the supersites T₀'

Reply: The suggested correction has been made.

25) Fig.10: '19 March' -> '19 March 2006' In the text replace 'Fig.' with 'Figure'

Reply: The suggested correction has been made.

26) Fig. 11: I don't see the 'Modeling Domain'. Guess it's the whole figure, so the red box in the legend can be omitted. Furthermore, the figure has rather poor print quality.

Reply:

As suggested by the reviewer, we have revised Figure 11. We have also added a panel showing the percentage change in Ox formation rate as a function of the indicator, ratio of H₂O₂ production rate to HNO₃ production rate.

27) Fig.13: 'March 15' -> 'March 15, 2006'

Reply: The suggested correction has been made.