

## Response to Reviewer #2:

We would like to thank the reviewer for careful reading of this manuscript and for the thoughtful comments and constructive suggestions, which help to improve the quality of this manuscript. Our response follows (Review'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, S. Madronich, J.S. Gaffney, et al. This paper presents a very interesting overview and analysis of results of a really unique experimental study of effects of megacities on atmospheric composition on urban and regional scales. It analyses outcomes of the spring 2006 MILAGRO field campaign for the Mexico City Metropolitan Area. In this overview paper the authors give a detailed review of about 120 scientific papers describing different aspects and specific measurement studies within the MILAGRO campaign. The study aim of providing a road map for the scientific community interested in understanding the emissions from a megacity such as the Mexico City Metropolitan Area and their impacts on air quality and climate is well reached.*

*The manuscript is clearly presented and fluently written, however it is extremely long (165 pages) and gives problems for a reader to follow all the text. The context and motivation of the work are clear. The analysis of the data is comprehensive and sound, and the results are very interesting.*

*The manuscript should be accepted for publication in ACP.*

### **Reply:**

We appreciate the positive feedback from the reviewer.

We agree that the article is very long; however, as indicated in the Abstract, the objective of this overview article is to provide a roadmap for the scientific community interested in understanding the emissions from a megacity such as the MCMA and their impacts. We have reviewed over 120 papers and have subdivided the measurements and the results under different topics (meteorology, emissions, gases and PM, photochemistry, aerosol radiative properties, and transport). It is written such that each subsection can be considered a stand-alone document.

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 serves both of these needs. We are concerned that if we cut out the small overlaps in the introduction to each section as well as the technical material, 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.

### **Some Specific Comments:**

*1) Concerning the length of the paper: I agree that it needs to be long and it is not easy to shorten it significantly. However, several places with text overlaps could be removed, e.g. on pages 7829 and 7901.*

### **Reply:**

As noted in our response to the General Comments above, it is indeed not easy to shorten the article. However, as suggested by the reviewer, we have reviewed carefully the entire manuscript and have removed redundancies, as shown in the revised manuscript.

2) *The paper describes in details the MILAGRO measurements, Mexico City's atmospheric emissions of gases and fine particles, sources and concentrations of volatile organic compounds, urban and regional photochemistry, ambient particulate matter, aerosol radiative properties, urban plume characterization, and health studies. However, an important problem of impact of urban features, e.g. anthropogenic heat fluxes on the megacity climate and their interaction with the atmospheric pollution and chemical composition is almost not analysed. At least on page 7823 in line 21 additionally to 'removal processes' it would be important to add 'and interaction with clouds, atmospheric boundary layer, radiation, etc'.*

**Reply:**

We have added "interaction with clouds" on page 7823.

Regarding the reviewer's comment about the impact of urban features – we agree that this is an important topic; however, this topic has not been studied within MILAGRO, hence we have not reported anything on this topic. Hopefully future studies will address this.

3) *On page 7833 after the line 6 a blank line is necessary, in other case the following text is considered as a part of 3.4 (INTEX-B).*

**Reply:**

The blank line got lost during the Production. We will make sure to insert the blank line in the final manuscript.

4) *In 3.2-3.4 it is better to give the time of the experiments (year, etc.).*

**Reply:**

The four components of MILAGRO were conducted simultaneously during March 2006. We have revised line 2 on page 7830 to read as follows:

"The MILAGRO campaign was organized under the following four coordinated components that took place simultaneously during March 2006:"

5) *Minor misspellings exist and an additional editing is recommended.*

**Reply:**

We have reviewed carefully the entire manuscript and have copy-edited the text to correct typos and grammar.