**Atmospheric
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Interactive
Comment

Interactive comment on "Methanol-CO correlations in Mexico City pollution outflow from aircraft and satellite during MILAGRO" *by* Y. Xiao et al.

Anonymous Referee #1

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The purpose of their manuscript is to show that the TES data ratio of methanol to CO can be used to distinguish various sources of methanol in Mexico City outflow. This is a well written and clear paper, though I feel that the conclusions are not well supported. I recommend that the authors redo their analysis with Version 5 of the TES methanol product when it becomes available. Therefore, I recommend that this manuscript be rejected.

My specific comments are below:

In the abstract, I feel that the following conclusions are not supported or well supported: 1) Last sentence of the first paragraph: Since the ratios are significantly different from

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the two aircraft because of possible calibration issues, I believe that speculating on the cause of higher ratios during MILAGRO is premature. 2) Second sentence in the second paragraph: I think the word, similar, is not the correct word. The TES ratios are lower than the ratios from either aircraft. 3) You did not demonstrate that TES can clearly distinguish differences in the ratio due to different source categories in CH3OH. 4) The fact that the MILAGRO data do not allow for a validation of the TES data does not support the conclusion in the last sentence of the second paragraph.

Section 2 & figures: a) You discuss errors in both the aircraft and satellite data. Please plot these uncertainties on your figures 4-7. Are the vertical lines in Figure 4, the range of data or uncertainties? b) Please state whether the correlations are statistically significant as I'm concerned that the number of points, particularly in figure 6, are too few. c) In Section 2.2 (line 28), I believe that the first sentence of the fourth paragraph is an exaggeration because of the word, extensively.

Section 3: a) I don't understand the last sentence of the second paragraph (line 17). What other major sources of methanol are there? Anthropogenic and biogenic really cover the vast majority, right? b) I don't understand why you continued your analysis knowing the issues that the TES CO product has with higher surface altitudes. The implication of figure 4c is a red flag for me and the discussion in the second paragraph of Section 3.2 is disturbing. Why not redo this analysis with Version 5? c) The second sentence of the second paragraph of Section 3.4 (line 21) contradicts your conclusion that the methanol to CO ratio is of any use to distinguish between sources of methanol.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 5705, 2012.

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