

***Interactive comment on* “Separation of emitted and photochemical formaldehyde in Mexico City using a statistical analysis and a new pair of gas-phase tracers” by A. R. García et al.**

Anonymous Referee #1

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This manuscript presents some of the results from an extensive field campaign in Mexico City where they measured, using both fixed and mobile monitors, a large number of compounds, and then uses ratios of formaldehyde to glyoxal and formaldehyde to CO to assess the fraction of HCHO that is photochemically produced vs. that directly emitted. In the past, other researchers have used the ratio HCHO to CO to determine the fraction that was directly emitted. The extension here is to use glyoxal, which is purely produced by similar photochemistry that leads to atmospheric HCHO formation on approximately the same time scale (with similar loss rates), and from similar sources. Not surprisingly, glyoxal appears to be a better tracer to distinguish what fraction of HCHO

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is from photochemistry. They also use the technique to look at the impact of a major holiday period. Overall, the paper achieves its aim in terms of showing the technique works. On the other hand, it does not provide an extensive discussion or analysis of the real power of this technique, that is, so what. I can foresee a variety of applications, and the paper would be significantly strengthened by taking it a couple of extra steps. (e.g., do photochemical model give similar results to theirs? Does the emission inventory give similar ball park answers for the amount of primary emissions?) They also make some statements at the end, e.g., that the feedback between primary and secondary HCHO should be important, but that is not shown. Again, they need to take the work a step or two further. Also, given that glyoxal is seldom measured, the portability of the technique is limited.

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 11583, 2005.

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