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Interactive comment on "Factors influencing the large-scale distribution of Hg° in the Mexico City area and over the North Pacific" *by* R. Talbot et al.

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This paper presents some valuable new data on the distribution of mercury in the troposphere above the North Pacific and Mexico City.

My minor comment addresses only one point: the relationship between gas phase elemental Hg and sulphur dioxide above Mexico City, which is discussed briefly on page 15543-15544. This discussion could be strengthened somewhat, with only a little extra effort:

The authors present results from two flight lines (flights 6 and 7; fig. 9) which sample air at about 2.6 km elevation. This is somewhat lower than the elevation at which gases from the nearby volcan Popocatepetl are emitted into the atmosphere (ca. 5500 m).

The back trajectory model for flight 7 (fig. 5) suggests that there was little vertical mixing of mid-tropospheric air at the time, so the absence of evidence for a correlation between sulphur dioxide and gas phase elemental mercury, at least in flight line 7, is consistent with the suggestion that Hg(o) at low altitudes above Mexico City might reflect local pollution sources: presumably at the time of sampling, any volcanic signal would have been at a higher altitude.

More detailed interpretation of the significance of the correlations in fig. 9 would be greatly helped if the paper contained an indication of the lat/long path sampled by these flights (in addition to the local time). The hypothesis that sulphur dioxide might be from industrial point sources in the region (e.g. the Tula industrial site to the north of Mexico City) is presumably readily testable with trajectory analysis, or by reference to the detailed analysis of the meteorological conditions in Mexico City at the time of sampling (which coincided with the MILAGRO Campaign) which was published recently (JD Fast et al., ACP, 7, 2233-2257, 2007).

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 15533, 2007.