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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Distribution of lead in single atmospheric particles" *by* D. M. Murphy et al.

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We thank all three referees for their constructive comments.

Anonymous Referee #1

The term "vacuum aerodynamic diameter" is by now fairly firmly established in the literature on sampling aerosol particles into mass spectrometers. It is perhaps not the best term, since aerodynamics would not matter in a perfect vacuum. Instead, it means the aerodynamic diameter in a partial vacuum where the aerosol particles are much smaller than the mean free path of the gas molecules. The distinction between normal and vacuum aerodynamic diameters is given in the third paragraph of the introduction.

Anonymous Referee #2

The reviewer has correctly interpreted our section about the difficulties in calibration.

Nevertheless, the statement in the abstract that “less common particles with high Pb contents contributed a majority of the total amount of Pb” is true for the range of plausible calibrations of our data. “Fine mode” is now mentioned in the caption to Figure 3, and we have added the San Gorgonio site. The absolute Pb levels are somewhat higher than the other west coast sites, and the Pb/Zn ratio is similar to other continental US sites. We have added “PALMS” to the figure 6 caption. We have changed the Figure 14 axis label.

Anonymous Referee #3

The winter maximum of lead at the eastern sites has some complicated correlations with other pollutants. For example, PM2.5 has a summer maximum at many sites but this is probably due to processes that are not relevant to lead, such as photochemical conversion of SO2 to sulfate. The lack of a winter maximum in the lead to zinc ratio is suggestive of some effects of different winter meteorology on both species. The typographical error on page 3788 has been corrected.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 3763, 2007.