

Interactive comment on “Intercomparison of 15 aerodynamic particle size spectrometers (APS 3321): uncertainties in particle sizing and number size distribution” by S. Pfeifer et al.

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Dear Mr Kulkarni,

thanks for your interest in this rather simple technical note.

Concerning your first question: The performance of a freshly calibrated system should be fine. But naturally, the instrument performance decreases after a certain operating time without any service. The performance of TROPOS F is better than many others, but it is not the best. Unfortunately, there is no general answer. It depends on the measurement conditions, as well as type and scope of maintenance by the user. You

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can see that the performance of TROPOS D, one year after the official calibration, is relatively bad. On the other hand, UHEL (almost ten-year-old official calibration) was well maintained by the user and it is one of the best, if not the best.

To your second question: The sizing accuracy is acceptable over the whole tested size range (up to 3 μ m). The unit-to-unit variability, in terms of the particle number size distribution, was within 10% to 20% in the range of 0.9 μ m up to 3 μ m, also for older and/or less maintained devices (except for outliers). If this is the case, and there is no possibility for comparison or no reference, no rough idea or any other information about the data quality, the size range <0.9 μ m should be rejected for analysis. A general answer is not possible in this case. Finally, a traceable reference method is needed for number concentrations in the size range. This is an important prerequisite to derive individual counting efficiency functions.

Kindest regards

Pfeifer

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