

Review of SPfeifer et al. The influence of the baseline drift on the resulting extinction values of a CAPS PMex

This technical note reports the observed baseline drift of CAPS PMex instruments during a 2-week sampling period at an urban location. The baseline drift at the shorter wavelengths are attributed to the varying amount of NO₂ in the ambient air throughout the day. The authors proposed the use of cubic smoothing splines to interpolate and smooth the periodic background measurements and concluded that the new method help reduce the artifact caused by the varying baseline values thus provide more reliable extinction measurements.

In general, this manuscript lacks thorough discussion of the observations and detailed description of the methodology. In particular, I found the figures and their captions in poor quality and are not self-explanatory. The captions need to be substantially expanded to include more details of what are presented in the figures. Figure 2 misses the purple traces on the top panel, and is hard to interpret because the caption is inadequate.

Also, the proposed baseline correction method should be validated via simultaneous continuous baseline measurement before the authors can conclude that the corrected baseline represents the true values.

More descriptions of the cubic smoothing splines are needed. What are the chosen parameters for each instrument, and how were the data during the missing baseline period interpolated?

Figure 1: are the gradually increasing baseline of the Loss signal at 530 nm between 9/21 and 9/26 due to contamination building up on the cavity mirrors? Why is it only observable at the green wavelengths but not the other two? What causes the red loss signal to drift if it is not related to the NO₂ level in the ambient air? These points should be thoroughly discussed in the text with great detail.

Technical Corrections:

Page 1 Line 6: where -> were

Page 2 Line 2: which only -> which not only

Page 3 Line17: The use of “carrier gas” is a bit confusing here. Change it to “ambient air”.

Page 4 Line 14: delete the duplicate “for the”

Page 4 Line 17: I don't see any “secondary plot” in Figure 4