

Geosci. Instrum. Method. Data Syst. Discuss., referee comment RC2
<https://doi.org/10.5194/gi-2021-3-RC2>, 2021
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Comment on gi-2021-3

Anonymous Referee #2

Referee comment on "Intercomparison of photoacoustic and cavity attenuated phase shift instruments: laboratory calibration and field measurements" by Jialuo Zhang et al., Geosci. Instrum. Method. Data Syst. Discuss., <https://doi.org/10.5194/gi-2021-3-RC2>, 2021

The paper "Intercomparison of Photoacoustic and Cavity Attenuated Phase Shift Instruments: Laboratory Calibration and Field Measurements" by Zhang et al undertake measurements of aerosol optical properties using photo-acoustic and cavity attenuated phase shift instruments and make inter-comparison. These are my comments.

■

The calibration of the instruments in the lab has both offset and multiplication factor to account for the drift. This means that there is an inherent absorption/ scattering even in the absence of the absorber/ scatterer. Since CAPS and PAX are commercial instruments, such huge drifts are not expected. Can you explain if there any specific reason for the drift in the instrument calibration from the original factory specified ones?

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CAPS-ALB and PAX, each is running at a single wavelength (530 nm/ 532 nm). One is using an LED and the other is using a laser. Another setup, IBBCEAS instrument uses a broadband source with a CCD array spectrometer. So, in the analysis of each instrument, corresponding spectral resolution must be taken into account, especially when using gas calibration with NO₂ etc. What is the strategy used in this study? This must be made clear and added to the manuscript.

■

Both laboratory calibration and field measurement campaign are done in this study. It will be beneficial to add one sentence or two in the abstract regarding the field campaign undertaken.

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Please explain a little more about the IMPROVE model and provide relevant references

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The manuscript in general easy to read. However, it advised to have it corrected by a native speaker for proper English grammar and usage. Suggestions to correct some obvious text errors that I noticed are listed below:

a.

The sentence in line 49 – 51 or page 2 has “technique” used three times. When you specify “spectroscopy” it is interpreted as a technique in itself. Just delete the word from the sentence.

b.

Lines 83-84, page 3, “ ... Spectroscopy (IBBCEAS) setup was used ...” is used. You may use “ ... Spectrometer (IBBCEAS) was used ...” instead.

c.

Line 152, page 6, “self-developed” was used. I guess the authors meant that they developed it instead of a commercial purchase. If it is so, it is better to use “developed in-house” or something similar.

d.

Is it “PAX” or “PAS”? Page 9, line 217.