

## ***Interactive comment on “Continuous Light Absorption Photometer for Long-Term Studies” by John A. Ogren et al.***

### **Anonymous Referee #2**

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#### General

The paper describes the technical details and performance of the CLAP, an instrument that is developed at NOAA for measuring light absorption by particles. The instrument is basically a new version of the already almost 20-year-old PSAP. It is excellent that the authors have continued the development since the original PSAP was probably the best instrument in the market for long-term absorption measurements in background conditions but it has the problem of manually changing filter spot after every time the transmittance decreased below a certain limit. And the manufacturer does not make them any more. The paper shows that the instrument obviously works very well. The noise of the instrument is low, the noise characteristics have been described in detail. There is also an intercomparison of PSAPs and CLAPS at 17 stations which is an

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impressive number, not possible to accomplish by many if any other group. The comparison shows that the two instruments compare well which is important for switching from one to the other at long-term monitoring sites. The paper is very well written and I can recommend publishing it at AMT. I only have a few comments or questions.

#### Detailed comments

1) P3,L27-28. About the flow through two reference spots. "the reference measurement alternates between the two...". Is this done with a magnetic valve that switches continuously or what? How frequently? Doesn't this create a pulsating flow? I don't quite understand.

2) It is mentioned in many pages that there is a heater but no details are given. In section 2 there should be a description of it. How is this done, how warm, where, and how stable is it? Potentially this is important and could be included in all filter-based instruments.

2) Section 3.3, Spot area. I like this method for defining the area. Traditionally people measure it manually for all filter-based instruments, this is more scientific. I suppose you have made some comparison with the manual way – please report the results of that also.

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