

## ***Interactive comment on “Measurements of atmospheric aerosol vertical distributions above Svalbard, Norway using unmanned aerial systems (UAS)” by T. S. Bates et al.***

**Anonymous Referee #1**

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### General comments

The manuscript introduces an interesting concept to measure atmospheric meteorological parameters, total aerosol concentration, aerosol absorption and their composition using an unmanned aerial system (UAS). The UAS was tested at Svalbard, and an example of the vertical profiles was introduced. More details of its limitations would be useful, see also the specific comments below.

### Specific comments

- What was a typical climbing rate for these research flights? How much time was spent

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in the layer with highest particle concentration?

- Please specify the response time of the instruments. This with the climbing rate specify the vertical resolutions. Please also specify the horizontal resolution in kilometers for a typical flight pattern.
- Please speculate why the filter sample analysis did not work.
- Svalbard is situated very north. What were the meteorological limitations for such UAS flights?
- Page 2484, row 10: Please put into the context the concentration of 1000 cm<sup>-3</sup>. What were typical on-ground values measured for example at Gruvebadet Laboratory in same season?

### Technical corrections

- Page 2484, row 10: ')' missing
- Please add the scale of the map to Fig. 4.

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Interactive comment on Atmos. Meas. Tech. Discuss., 6, 2483, 2013.

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