

## ***Interactive comment on “A novel rocket-based in-situ collection technique for mesospheric and stratospheric aerosol particles” by W. Reid et al.***

### **Anonymous Referee #2**

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This study describes the concept of a new in situ instrument to collect aerosol particles in the mesosphere and stratosphere.

While the paper gives a rather complete and detailed description of the engineering concept of the instrument, significant questions remain regarding the feasibility of the measurement concept.

Major issues that must be addressed before publication are:

1) The free flying instrument apparently is apparently not stabilized with respect to its attitude. This makes me afraid that it might experience significant tumbling after ejection resulting in an ill-defined (or undefined) sampling geometry.

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2) The instrument will experience significant heating upon "re-entry" at altitudes of about 20km. What will be the consequences for corresponding measurements? The heating should be quantified and corresponding effects should be discussed.

3) The free-flyer has a rather blunt geometry such that aerodynamic effects (see e.g. paper by Hedin et al., ACP 2007) will probably prevent any sampling of particles in the mesosphere. This issue should be addressed with corresponding aerodynamic calculations. If such calculations should confirm my concern then it is clear that this instrument is not suitable for mesospheric particle collection and the paper should be modified accordingly.

4) All collection surfaces are mounted in the same volume such that shattering or reflection of particles in the sampling volume may lead to severe contamination of surfaces which are not directly exposed to the air flow at that time.

Recommendation: Major revision and re-review before publication.

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Interactive comment on Atmos. Meas. Tech. Discuss., 5, 8161, 2012.

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