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Interactive comment on "Odin-OSIRIS detection of the Chelyabinsk meteor" *by* L. A. Rieger et al.

Anonymous Referee #2

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The paper presents OSIRIS detection of Chelyabinsk meteor and illustrate OSIRIS capability to detect the presence and lifetime of stratospheric debris left by Chelyabinsk meteor.

The manuscript is very short and doesn't offer anything new beyond what was presented by the OMPS paper, since OSIRIS measurements missed the initial impact of the meteor and the first month afterward. The authors choice to use the simpler approach of "scattering ratio" rather than OSIRIS aerosol retrieval to track the meteor plume is puzzling, when they have OSIRIS unique capability of measuring extinction and particle size.

The topic of the manuscript is of importance for the scientific community. However in my opinion the article can't be published as is. I would suggest that the authors use OSIRIS extinction and particle size retrieval to analyze the meteor plume evolution and

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dispersion, add proper data analysis and discussions, and resubmit the manuscript.

Specific comment:

Page 8437 line 25, "However, this requires assumptions on the particle size and composition, and it is unlikely the typical sulphate aerosol with a lognormal distribution are representative of the meteoric particles investigated here. With an inaccurate particle size and composition, inversion provides little additional information". In an AMTD paper, Rieger et al. (2013) describe the OSIRIS aerosol and particle size algorithm which uses 750 and 1530 nm and couple the retrieval of extinction with mode radius parameter of the log-normal distribution. They conclude that the retrieved Ångström coefficient is realistic during both volcanic and non-volcanic periods, albeit with a bias. OMPS also uses similar background aerosol model for the aerosol retrieval. If the aerosol algorithm can adequately retrieve volcanic aerosol extinction and size information using background aerosol model, I see no reason why the same argument don't apply to meteoric particles.

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 8435, 2013.

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