

***Interactive comment on “Two weather radar time series of the altitude of the volcanic plume during the May 2011 eruption of Grímsvötn, Iceland” by G. N. Petersen et al.***

**Anonymous Referee #2**

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GENERAL COMMENTS The paper is clear and interesting. Having simultaneous, comparable data from two instruments for the same eruption is rare, and the data may be used to illustrate not only the properties of the eruption but also properties of the instruments.

SPECIFIC COMMENTS Even though technical properties of Keflavik radar have been described in previous papers, it would be useful to see them in similar format to Table 1 of mobile X-band radar. For both radars, and for pulse durations of the X-band radar, a minimum detectable signal (MDS) would be interesting to see. It is usually given as a standard number at 1 km distance, but here calculation to the eruption distance would

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be more appropriate. It is also possible to calculate, at which distance the MDS meets the selected threshold of -20 dBZ.

I agree with the authors that ideally higher resolution volume data could potentially give information about the concentration and size distribution of particles, which is important for downstream dispersion analysis and forecasts. Even from this dataset, it would be interesting to see the dBZ values in a cross-section of the measurement volume ("VCUT" or "Pseudo RHI") to see the shape of the plume.

In the dataset, the missing values are indicated within the dataset with "1000", "2000". I would prefer to see them labelled just not available (N/A) and then the quality / explanation flags in a separate column of the table. This would increase the data volume but it is not huge at the moment, and it would make the processing of the data easier and to avoid misinterpretations. (In my experience, this is the 21st century style, when data volumes are not so crucial. But I am not familiar with the conventions of this journal.)

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