

Interactive comment on “Eyjafjallajökull volcano plume particle-type characterization from space-based multi-angle imaging” by R. A. Kahn and J. Limbacher

Anonymous Referee #1

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This manuscript describes the characterization of volcanic ash particles produced by the eruption of the Eyjafjallajökull volcano in the spring of 2010 using a research version of the MISR algorithm. Volcanic ash is a type of primary aerosol whose lifetime varies from a few hours to a few days with gravitational deposition acting the main removal mechanism. Because of the short lifetime of volcanic ash particles and the low frequency of occurrence of explosive eruptions, the role of volcanic ash in climate is considered unimportant.

Detection, monitoring and quantification of plumes of volcanic ash is very important for air safety applications. Volcanic ash ingested by aircraft engines can potentially melt

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inside jet engines with catastrophic results in both human life and economic losses. The value of the detection of volcanic ash by satellite observations lies in the ability to accurately determine its location in the atmosphere and determine its mass concentration with the purpose of re-routing and/or rescheduling air traffic. MISR's capability of estimating the height of the ash layer is therefore an important contribution toward these goals. Unfortunately the once-a-day snapshot characteristic of polar orbiting sensors and the limited across-track MISR coverage limit the usefulness of the spaceborne observations to address the actual needs associated with the real importance of volcanic ash plumes.

In view of the foregoing, the special ACP issue on ' Observations and modeling of aerosol and cloud properties for climate studies' is clearly not the adequate forum for the discussion of this work. Thus, based only on the stated narrow scope of this ACP special issue, I recommend rejection of the article unless the authors can establish in the discussion a clear climate connection. The final decision, however, is at the discretion of the editor

The detailed particle type characterization presented in this paper constitutes an excellent research work, and is clearly publishable material. It illustrates the sophistication level of the MISR algorithm that making use of the sensors multi-angle observing capability can provide detailed particle characterization information. I suggest submission to a regular AMT or ACP (or other suitable scientific journal) edition.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 17943, 2012.

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