

## ***Interactive comment on “Analysis of snow bidirectional reflectance from ARCTAS spring-2008 campaign” by A. Lyapustin et al.***

### **Anonymous Referee #2**

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The paper describes the analysis of CAR and ground truth data in a snow region during the ARCTAS spring 2008 campaign. I found their work to be quite extensive and very well done, providing a great deal of detail concerning how the data were collected and analyzed and reasonable conclusions as to the significance of the results. This paper provides some well-needed snow/ice BRF information for satellite remote sensing, where relatively little information is available.

I had some questions while reading the paper:

In section 2, describing the directional snow reflectance experiment, a number of participating instruments are noted, including the HSRL, MISR and MODIS. Data from these three instruments, however, were not included in your analysis. Are they to be analyzed in a later publication on this topic, were found to be not useful, or used in your

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analysis in a very supplemental way as not to be mentioned?

How much of the AATS and AERONET data were used in the CAR data atmospheric correction analysis? Clearly spectral optical depth is a fundamental parameter (shown in Table 2), but what about the aerosol phase function which could be derived from the AERONET data? What choices were made for the phase function (and aerosol height distribution) when working with Eqns. (1-4)?

In section 5, the CAR-derived snow BRF is described. It would be useful to have more information concerning the footprint size of the CAR data as a function of view zenith angle and height, With this information the reader can better interpret the surface inhomogeneity comments scattered throughout the text. In fact, it's not clear how large a footprint size the retrieved surface BRF corresponds to.

In Fig. 5, I presume that the BRF figures in the right-hand column for both 0.68 and 1.22 micrometers are high contrast versions of the BRFs in the left-hand column, If so, this should be stated explicitly in the caption.

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Interactive comment on Atmos. Chem. Phys. Discuss., 9, 21993, 2009.

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