

Interactive comment on “High-accuracy measurements of snow Bidirectional Reflectance Distribution Function at visible and NIR wavelengths – comparison with modelling results” by M. Dumont et al.

Anonymous Referee #2

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The manuscript presents a careful study of the BRDF of snow - probably one of the most accurate observations made to date. The results are compared to the predictions of two numerical models. Largely agreement is found and the small discrepancies are carefully discussed and explained. The paper is well-written and I suggest to publish the manuscript after consideration of the following minor points:

equation 1: In my understanding, F is not the radiance but the incident irradiance. The radiance of a collimated beam would be infinity anyway. Please check! This is confirmed by equation (2) because albedo is the ratio of reflected to incident irradiance.

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Section 3.1: Please outline the significance of BRDF in contrast to HDRF (BRDF allows to calculate reflected radiance for any given incident sky radiance distribution while HDRF is in principle only applicable to the specific conditions during the observation)

page 19284, line 16: Please reference Stamnes et al. [1988] for DISORT

page 19287, line 20: please replace by "symmetric with respect to the principle plane"! The "along the principle plane" made me think into the wrong direction.

page 19288, line 19: it is actually the "ice absorption bands", not the "water molecular absorption bands"; absorption properties of water vapour, liquid water and ice are completely different,

page 19290, line 12: please make clear that each data point belongs to a different wavelength (?)

page 19296, line 12: you might note that the 23 degree maximum is the well-known halo occurring for ice clouds with hexagonal columns

Fig 5: It is actually "two wavelengths", not "several"

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 19279, 2009.

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