**Interactive comment on** “Snow physics as relevant to snow photochemistry” by F. Domine et al.

R. Essery (Referee)
rie@aber.ac.uk

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Domine and his coauthors provide an excellent overview that will provide a valuable reference for researchers interested in modelling snow chemistry. This review is strongly related to that of Grannas et al. (2007), and this connection should be more clearly stated in the introduction. Otherwise, I have only minor comments to make.

P5943 LAI may be much lower than SSA, but vegetation canopies have much higher porosity than snowpacks. Snow can be intercepted in canopies, with possible implications for snow chemistry (Pomeroy et al. 1999). Snow in turbulent suspension is even better ventilated (Pomeroy et al. 1993).

P5955 Density is variously quoted in kg/m3, g/m3 (incorrectly) and g/cm3 in this one paragraph.
Many models use even simpler density parametrizations, e.g. Verseghy 1991. Equations (2.3-4) and (2.3-5) would be clearer as \( \exp[] \) rather than \( e^[] \). It might make sense to have sections 2.5 - 2.9 preceding 2.4.

Use of the symbol \( \rho \) here clashes with its more general use to represent snow density in this paper.

A useful review of remote sensing of snow is given by Dozier and Painter (2004). As you have already given 5 - 25 cm as the e-folding depth, a 5 cm snow layer is not semi-infinite in the visible.

There are certainly tens of snow models in common use, and hundreds of models and model variants may well have been developed, but "literally thousands"?

I believe that the PHANTAS model of Kenjiro Toyota includes physical and photochemical processes in snow, but I have not yet seen published model descriptions or results.

The paragraph on heat transfer and porosity would sit better in section 2, and so might the SSA and light flux paragraphs on the next page.

I think that the last sentence in the caption for Figure 6 actually refers to Figure 7.

The reference list will have to be thoroughly checked. I noticed cases where papers were referred to in the text but not included in the list (e.g. Sturm et al. 2005, Arons and Colbeck 1995) and other references where author names are misspelled.

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