Atmos. Meas. Tech. Discuss., 4, C87–C88, 2011
www.atmos-meas-tech-discuss.net/4/C87/2011/

Atmospheric Measurement Techniques Discussions

Interactive comment on "Remote sensing of aerosols over snow using infrared AATSR observations" *by* L. G. Istomina et al.

Anonymous Referee #3

Received and published: 7 March 2011

This paper offers a nice way to retrieve a single aerosol property over bright surfaces by means of two AATSR measurements; the methodology is well explained and the paper quite well organized. The paper is certainly suitable for the AMT journal. Previous reviewers have already covered a number of issues, and I have only a few additional comments.

The paper is stylistically uneven and appears to be written by different people. The abstract, though comprehensive, suffers from instances of incorrect English usage and should be re-written. As noted already, the whole manuscript would benefit from a thorough copy-editing.

P38 Lines 9-16. Apart from the aerosol properties, there are a number of assumptions in the RT simulations in Figs 3 and 4 which are not mentioned. For example:

(1) what is TOA? (state the height), (2) is aerosol confined to the troposphere and if so, to what extent? (3) what other atmospheric distributions are you assuming (pressure/temperature, presumably no gas absorption at 0.55 and 3.7 microns, source of Rayleigh scattering, any stratospheric aerosols?); (4) surface assumptions. Also some details such as number of discrete ordinates, the use of deltam-scaling ansatz and exact single-scatter computation, should be given here.

Although the term 'pseudo-spherical' is mentioned briefly (P43 Line 16), this is not explained. With off-nadir views of 55 degrees, it is necessary to treat path attenuations in spherical-shell geometry, not only for the incoming solar but also for the outgoing view path.

The equations in Section 4.1 do not appear to match the text. Equations (2) and (3) refer to the BT conditions, but the text has these as Equations (4) and (5). Please sort out this confusion.

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 33, 2011.