Atmos. Chem. Phys. Discuss., 3, S735–S736, 2003
www.atmos-chem-phys.org/acpd/3/S735/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Relation between weather radar equation and first-order backscattering theory" *by* F. S. Marzano and G. Ferrauto

F. S. Marzano and G. Ferrauto

Received and published: 4 June 2003

We thank the reviewer for his/her helpful comments. As suggested, we have inserted in the Introduction of the revised paper some explicit comments about the possible practical applications of the presented theoretical framework. The abstract has been left unchanged for sake of brevity.

The mention of the multiple scattering effects has been clarified in the Introduction and specifically referred to a new reference available in literature.

We reply to each item raised by the reviewer:

-In the revised text it is now written: "C-band frequency has been widely adopted for the operational case".

Full Screen / Esc
Print Version
Interactive Discussion
Discussion Paper

-We have specified that W is the solid angle (we leave it not bold for simplicity of notation).

-We have limited the number of figures to the essential ones.

-Indicated as (Sauvageot, 1992).

-Typographic faults have been corrected.

-The comment on path attenuation has been moved just after eq. (3).

-Eq.(13) is a direct consequence of the antenna directive gain definition. The transmitted flux density FT includes all propagation mechanisms up to the range r. In Eq. (13) and following equations of the revised text the dependence of FT on Wr has been deleted for clarity, being a transmitted power density

-The definition of radar reflectivity is, as usually stated, such that h is the average backscattered cross sections per unit volume or, equivalently, the backscattered power (multiplied by 4p) per unit solid angle normalized to the transmitted power and to the unit volume. From these two definitions it comes out that h is given in m-1. The generality of the given definition of the apparent reflectivity stems from the use of the received specific intensity interpreted as a solution of the radiative transfer equation.

-Fig. 3 has been left unchanged since the readiness of the figure itself is more effective in its present form in our opinion.

-The number in dB has been corrected.

Interactive comment on Atmos. Chem. Phys. Discuss., 3, 301, 2003.

ACPD

3, S735–S736, 2003

Interactive Comment