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An exponent (-1) was missing in the expression for the coefficient C given four lines above Eq. (19). The correct expression for this coefficient in the $W = CZ^b$ relation is

$$C = (0.909\rho D^3 \times 10^{-6})^{-1},$$

where ρ is the effective bulk density of particles of median volume diameter D . This error caused the error in Eq. (19). The correct version of this equation is

$$C_j/C_1 = (0.92/\rho_j)(D_1/D_j)^3, \quad (19)$$

where the subscript 1 represents the values for particles of $D_1 = 100 \mu\text{m}$ with a density of 0.92 g cm^{-3} , D_j corresponds to the successive values of the median volume diameter at integral multiples of 2–9 with the maximum diameter of $900 \mu\text{m}$, and ρ_j is their corresponding bulk density. Note that it is assumed here that ρ_j is an effective bulk density of the median volume diameter that we have used to represent the entire particle population. Also the exponent b in the $W = CZ^b$ relation is assumed to be unity, which is close to the average experimental value of $b = 0.95$ in Table 2 of Atlas et al. (1995).

Equation (19) was used to estimate the effective bulk densities for particle populations with different values of D_j . Although Eq. (19) in the original version of the paper

was written erroneously, the effective density estimates were performed using the correct version of Eq. (19) so that these estimates are correct. Values of the coefficients C_j were computed by regressing $\log W$ versus $\log Z$ shown in Fig. 5 of Atlas et al. (1995), which represent the original data. The values of C_j in Table 2 were inadvertently increased by a constant factor. This fact did not cause errors in estimating effective bulk densities, because the ratio C_j/C_1 was used for these estimates. It should be mentioned, though, that some uncertainty in density estimates exists because of truncation of the C_j values to two digits after the decimal point.

In essence, both our method and that of Brown and Francis (1995) of estimating bulk densities involve approximations and both lead to the inverse relationship of density to diameter. This relationship, in turn, results in the increase of Z with median volume diameter (for $D_0 > 100 \mu\text{m}$) by about two rather than three orders of magnitude at constant ice water content.

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REFERENCES

- Atlas, D., S. Matrosov, A. J. Heymsfield, M.-D. Chou, and D. B. Wolff, 1995: Radar and radiation properties of ice clouds. *J. Appl. Meteor.*, **34**, 2329–2345.
Brown, P. R. A., and P. N. Francis, 1995: Improved measurements of the ice water content in cirrus using a total water probe. *J. Atmos. Oceanic Technol.*, **12**, 410–414.

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