

snowflakes, which usually agreed with available field data to within a factor of three. For particles of about 0.5 microns in diameter, and a precipitation intensity of  $1 \text{ mm h}^{-1}$ , their model predicts scavenging coefficients in the range of  $0.5$  to  $1.0 \times 10^{-5} \text{ sec}^{-1}$ , depending on the type of snow. These values may be compared to some data on rain scavenging coefficients for particles of similar size compiled by McMahon and Denison (1979). Table 1 is abstracted from their Table 9. No attempt was made at a critical evaluation of the methods used to arrive at the scavenging coefficients in this table. However, the last value shown (for 0.3 to 0.5 micron particles) was obtained by Graedel and Franey (1977) (McMahon and Denison, in their Table 9, have incorrectly labelled Graedel and Franey's data as being obtained from snowfalls), and if we accept Slinn's criticism of their methodology (see above) and reject their data point, all we can say is that, for a particle size which might be representative of sulfates, most of the available data suggest that below-cloud rain and snow scavenging coefficients should be about the same order-of-magnitude for comparable rainfall rates. The scanty relevant data on washout ratios support the above conclusion (see McMahon and Denison, 1979) although in this case, both within- and below-cloud processes are involved. Scott (1981) has recently presented data on washout ratios of sulfates in snowstorms, which fall within about the same range of values as has been observed for a number of other substances in rain. However, he found that the

Table 1. Field Measurements of Rain Scavenging Coefficients of Particles Expected to be Mainly in Submicron Size Range

Source of Data	$10^5 \Lambda (\text{s}^{-1})$	Comments
Kalkstein et al. (1959)	2	$\text{SO}_4$ washout
Makhonko (1964)	1	Fission products washout
Bakulin et al. (1970)	3	Pb washout from thunderstorm
Burtsev et al. (1970)	$15 \text{ J}0.5$	$0.2 \mu\text{m}$ particle washout
Graedel and Franey (1977)	18	$0.3\text{-}0.5 \mu\text{m}$ particle washout