values measured generally tend to be lower than 0.4, although a "representative" v of 0.1 cm s^{-1} for snow, as suggested by Husar et al. (1978b), would seem to be too low, except for very stable atmospheric conditions.

The above results suggest that seasonal variations in sulfur dioxide dry deposition velocities should be relatively modest--certainly less than the order-of-magnitude changes expected for wet deposition. It seems that for the wintertime, at least in Canada and the northern United States, dry deposition velocities of sulfur dioxide should be somewhat lower than in the summer, due to the larger proportion of the surface covered by snow and dead vegetation. In this connection, it is interesting to compare some estimates of v for the summer (June-August) and winter (December-February) months in Ontario, made using the methods of Sheih et al. (1979). Surfaces were characterized according to their classification, and values of surface roughnesses and resistances were taken from their Table 3. Information on the frequency of occurrence of Pasquill stability classes at 22 stations in Ontario was provided by the Atmospheric Environment Service. Calculated seasonal average deposition velocities are shown in Figures 4 and 5. A comparison of these figures supports the expectation that, for sulfur dioxide, seasonal changes in v should not be large.

The picture for sulfate particulates is much more confusing because of the current controversy regarding deposition velocities of particles in the 0.1 to 1.0 micron size range (where most of the sulfate mass is expected to occur). Theoretical predictions (see, for example, Sehmel and Hodgson, 1978; Ibrahim et al., 1980) indicate that, for this size range, $(r_a + r_b)$ should be generally larger than 10 s cm^{-1} (i.e., v should be no greater than 0.1 cm s^{-1}). Available experimental data on deposition velocities of sulfates, or other substances such as lead (which are expected to be in a similar size range) are shown in Table 3. It would seem that for relatively smooth surfaces, such as snow, water, or filter paper, the deposition velocity is about 0.1 to 0.2 cm s^{-1}, or in some cases so small that the removal of particles is countered by surface emissions (i.e., the effective deposition velocity is negative). For rougher surfaces and vegetation there is little data, but values ranging from less than 0.1 to about 1.0 cm s^{-1} have been