temperature, among other things. Obviously, seasonal changes in the surface coverage will lead to corresponding changes in r_c.

For a more detailed discussion of the individual resistances which determine the overall magnitude of the deposition velocity, and the factors affecting them, see Wesely and Hicks (1977), Sheih et al. (1979), Chamberlain (1979) and Sehmel (1980).

2.2.2 Experimental Results

Several authors have recently presented compilations of experimental data on the deposition velocities of gases and particulates, which are of value in assessing the effects of seasonal variations on v (see Garland, 1978; McMahon and Denison, 1979; Chamberlain, 1979; Sehmel, 1980).

For the case of sulfur dioxide, a reasonably consistent picture emerges. For a wide range of surfaces, including vegetation, water, and soils, the deposition velocity has been found to be typically in the range 0.4 to 0.8 cm s^{-1}. Garland (1978) rationalizes the above result by pointing out that, in general, there is a counter-balance between the aerodynamic and surface resistance terms [r_a and r_s in Equation (11)]. For relatively smooth surfaces, r_s has been found to be rather small, and uptake is largely determined by r_a. On the other hand, surfaces with taller vegetation, such as wheat and forest, exhibit a higher r_s, which counteracts the reduced r_a.

Of course, there are exceptions to the above generalizations: for example, much higher v values than indicated above may apply to wet or snow-covered forests (Chamberlain, 1979). However, it would seem that such exceptions have only marginal relevance when seasonal variations are being considered (unless, for example, the percentage of the time that a forest is wet changes significantly, due to seasonal changes in precipitation).

It is interesting to compare measured deposition velocities to snow with the 0.4 to 0.8 cm s^{-1} range in v noted above, which is assumed to be representative of surfaces for most of the year other than winter. Table 2 lists the available data for sulfur dioxide deposition to snow surfaces. The