further improvement in simulation. However, it is recommended that dry deposition simulation in current models incorporate information that is available on the temporal and spatial dependences of v_d. Very high priority must be given to developing and implementing dry deposition measurement techniques. Also of high priority is the need for high quality atmospheric concentration measurements of important sulfur and nitrogen species, with which dry deposition may be calculated. Research is required in the following areas: improved understanding of particle deposition (including the time dependence of particle size distribution); the magnitude of surface resistance to deposition as a function of time and space; deposition measurements for almost all species, as well as more for SO_2.

5.4.2 Wet Deposition

Wet deposition is an area in which our understanding of important processes is still incomplete and which is generally simulated poorly in large-scale models. A basic discrepancy exists between the nature of precipitation processes - episodic, stochastic, small time and space scales - and the manner in which wet deposition is necessarily included in models - limited by model time and space steps and input data resolution. A major effort is required either to reproduce the small scale characteristics of wet deposition, or to find a better way to represent the dominant processes on larger scales. It is strongly recommended that research efforts be increased to investigate the SO_2-uptake-oxidation-deposition pathway, relationships with the chemistry of other compounds in clouds (including catalysis), the role of SO_4^{2-} - nucleation scavenging, and the so-called non-linear and saturation aspects of aqueous-phase chemistry. Current scavenging formulations in large-scale models require a more realistic physical basis, in some cases, and more and better scavenging parameter values which show storm-type and precipitation rate dependence. Finally, it