Table 2-3. Summary of Deposition and Chemical Transformation Rates for Sulfur Compounds

Parameter	Representative Range (Observed) Summer Conditions	Representative Range (Observed) Winter Conditions	Suggested (Winter/Summer) Ratio	Comments
$\Lambda(S^{-1})$ Sulfates	$\sim 10^{-5}$	$\sim 10^{-5}$	~ 1	washout: based on very few data
			10^{-1}(?)	rainout: order-of-magnitude seasonal variation could be possible, depending on storm types (e.g., Scott, 1981)
$\Lambda(S^{-1})SO_2$	$(3\text{-}8)\times 10^{-4}$	$(1\text{-}25)\times 10^{-7}$	$\sim 10^{-3}$	rainout: based on data of Summers (1977); applies to areas where wintertime precipitation is largely in the form of dry snow
			~ 10(?)	theoretically predicted possibility for areas which largely receive cold rain or wet snow during the winter
$v(cms^{-1})$ Sulfates	(?)	<0.2	(?)	very large uncertainty about deposition velocity for sulfates
$v(cms^{-1})$ SO_2	0.4 to 0.8	0.1 to 0.4	$\sim 1/2$	seasonal changes expected to be modest (i.e., not order-of-magnitude)
$SO_2 \rightarrow SO_4$ transformation rate h^{-1}	1 to 4 (chimney plumes) 1 to 30 (urban plumes)	<1 (chimney plumes) 1 to 25 (urban plumes)	(?)	gas-phase homogeneous processes should be small at latitudes greater than 45°N in the winter. However, there is too much uncertainty about the magnitude of heterogeneous processes, including in-cloud SO_2 conversion, to allow conclusions about seasonal variations