

**Table 2.** Particle optical properties in this study compared to the literature. Shown are global annual average properties, including optical depth and the effective mass scattering efficiency (optical depth divided by sulfate loading). Also shown are specific particle properties, including the mass scattering efficiency of crystalline ammonium sulfate particles and of aqueous ammonium sulfate particles at equilibrium with 80% RH. The entry in bold shows our calculation condition most closely approximating the usual treatment in literature. (The mode diameter is the geometric mean diameter. In our study, the Hatch-Choate relation between effective and geometric mean diameters is not perfect because we employ a discrete rather than a continuous size distribution, Hinds, 1999)

		Wavelength (nm)	Mode diameter (nm)	Effective dry diameter (nm)	Annual global average optical depth	Annual global average $\beta$ ( $\text{m}^2 \text{g}^{-1}$ )	$\beta$ (dry) ( $\text{m}^2 \text{g}^{-1}$ )	$\beta$ (80%) ( $\text{m}^2 \text{g}^{-1}$ )
<i>Our study</i>								
Hysteresis	Nitrate?							
Lower	Yes	500	82	247	0.023	10.7	n/a	n/a
Lower	Yes	500	164	493	0.021	9.7	n/a	n/a
Lower	Yes	500	246	740	0.016	7.4	n/a	n/a
Upper	Yes	500	82	247	0.030	13.9	n/a	n/a
Upper	Yes	500	164	493	0.026	12.1	n/a	n/a
Upper	Yes	500	246	740	0.019	8.8	n/a	n/a
Lower	No	500	82	247	0.020	9.2	4.6	4.6
Lower	No	500	164	493	0.018	8.5	5.2	5.2
Lower	No	500	246	740	0.014	6.5	4.3	4.3
<b>Upper</b>	<b>No</b>	<b>500</b>	<b>82</b>	<b>247</b>	<b>0.025</b>	<b>11.7</b>	<b>4.6</b>	<b>17.7</b>
Upper	No	500	164	493	0.022	10.4	5.2	14.1
Upper	No	500	246	740	0.016	7.6	4.3	10.0
<i>Literature</i>								
Boucher and Anderson (1995)		589	56	186			3.1	8.9
van Dorland et al. (1997)		250-680	42				4.0	9.4
Koch et al. (1999)		550		500	0.027	8.4	5.0	10.0
Kiehl et al. (2000)		350-700	100	332			3.2	11.5
Adams et al. (2001)			100	332			3.6	8.0
Chin et al. (2002)		500	89	312	0.040	11	4.0	16.0