

Case selection ^a	Fitting parameters	Number of parameters	A priori	A priori error
AIRS+OMI, AIRS, OMI	O ₃ at each pressure level	25	MOZART-4 ^b	MOZART-3 ~ 10–40 %
AIRS+OMI, AIRS	H ₂ O at each pressure level	16	GEOS-5 ^c	NCEP ^d ~ 30 %
AIRS+OMI, AIRS	Surface temperature	1	GEOS-5	0.5 K
AIRS+OMI, AIRS	Surface emissivity ^e	23	UOW-M ^f	~ 0.006
AIRS+OMI, AIRS	Cloud extinction ^g	11	Initial BT difference	300 %
AIRS+OMI, AIRS	Cloud top pressure ^g	1	500 mbar	100 %
AIRS+OMI, OMI	UV1 surface albedo	1	OMI climatology ^h	0.05
AIRS+OMI, OMI	UV2 surface albedo (zeroth order) ⁱ	2	OMI climatology	0.05
AIRS+OMI, OMI	UV2 surface albedo (first order) ⁱ		0	0.01
AIRS+OMI, OMI	UV1, UV2 ring scaling factors	2	1.9	1.0
AIRS+OMI, OMI	UV1, UV2 radiance/irradiance wavelength shifts	2	0	0.02 nm
AIRS+OMI, OMI	UV1, UV2 radiance/O ₃ cross-section wavelength shifts	2	0	0.02 nm
AIRS+OMI, OMI	Cloud fraction ^j	1	Derived from 347 nm	0.05