

Table S1. Monthly means (μ), biases, and standard deviations (σ) of CTM vs. OMI TCO (unit: DU) on $5^\circ \times 5^\circ$ grids over NH mid-latitudes ($35^\circ \text{ N} < \text{Lat} \leq 60^\circ \text{ N}$) for years 2005–2006^a

Year/Month	μ_{OMI}	$\mu_{(CTM-OMI)}$	σ_{CTM}	σ_{OMI}	$\sigma_{(CTM-OMI)}$	σ^*_{CTM}	σ^*_{OMI}	$\sigma^*_{(CTM-OMI)}$
2005/01	31.2	+1.7	5.0	6.0	3.2	4.6	5.4	3.0
2005/02	34.0	+1.8	5.4	6.7	3.9	4.9	6.0	3.6
2005/03	38.3	+2.1	5.5	6.7	4.1	4.9	6.2	3.9
2005/04	44.0	+1.1	6.2	7.7	4.9	5.5	7.2	4.7
2005/05	47.7	+0.7	5.6	7.4	5.1	4.6	6.6	4.9
2005/06	51.3	-1.2	5.6	8.2	5.7	4.6	7.1	5.3
2005/07	52.7	-4.1	5.2	8.2	5.9	4.5	6.8	5.3
2005/08	49.0	-3.6	5.0	7.3	4.8	4.0	6.1	4.4
2005/09	43.2	-2.2	5.3	6.7	4.0	4.1	5.8	3.8
2005/10	37.8	-0.8	5.3	6.6	3.9	4.4	5.8	3.7
2005/11	32.8	+0.5	4.7	6.0	3.5	4.2	5.2	3.1
2005/12	30.0	+2.1	4.7	5.1	2.9	4.3	4.5	2.6
2006/01	31.1	+3.2	5.7	6.3	3.8	5.3	5.6	3.4
2006/02	34.0	+4.7	6.1	6.5	4.3	5.7	6.1	4.0
2006/03	39.2	+5.1	7.4	7.9	4.8	6.9	7.5	4.6
2006/04	44.3	+4.1	6.7	7.7	5.0	5.8	7.0	4.8
2006/05	48.0	+2.3	6.1	7.6	5.6	5.1	6.8	5.3
2006/06	52.1	-0.7	5.8	8.1	6.0	4.7	7.0	5.6
2006/07	52.7	-4.0	5.2	7.9	5.5	4.3	6.7	5.1
2006/08	49.9	-4.5	4.7	7.4	4.9	3.7	5.9	4.3
2006/09	43.7	-2.3	4.6	6.5	3.9	3.8	5.7	3.8
2006/10	37.7	-0.9	4.2	5.7	3.4	3.5	5.0	3.3
2006/11	33.5	+0.1	4.3	5.6	3.1	3.8	5.0	2.9
2006/12	30.6	+0.9	4.6	5.8	3.0	4.2	5.1	2.7

^a σ and σ^* denote for the standard deviations relative to the regional mean for the latitude band and the $5^\circ \times 5^\circ$ local means, respectively.

Table S2. Same as Table S1 for CTM vs. TES TCO

Year/Month ^a	μ_{TES}	$\mu_{(CTM-TES)}$	σ_{CTM}	σ_{TES}	$\sigma_{(CTM-TES)}$	σ_{CTM}^*	σ_{TES}^*	$\sigma_{(CTM-TES)}^*$
2005/01	34.7	+1.4	4.5	6.0	4.9	3.4	4.9	4.2
2005/02	35.7	+1.9	4.6	6.3	4.9	3.2	5.0	4.3
2005/03	38.3	+1.9	4.8	6.4	5.0	3.3	5.1	4.5
2005/04	40.3	+1.3	4.8	6.9	5.1	2.6	4.3	3.7
2005/05	43.8	+2.0	5.4	6.8	5.5	3.1	4.9	4.5
2005/07	47.1	-0.8	7.3	8.9	5.7	4.9	6.9	5.3
2005/08	45.3	-0.5	6.5	8.1	5.3	4.6	6.5	5.0
2005/09	43.4	-0.3	5.5	6.9	5.0	3.9	5.3	4.3
2005/10	39.2	-0.3	5.3	6.4	4.4	4.1	5.4	4.1
2005/11	36.1	-0.3	4.8	5.8	4.3	3.6	4.7	4.0
2005/12	34.1	+0.7	4.5	5.6	4.2	3.3	4.6	3.8
2006/01	34.3	+2.5	4.7	5.8	4.5	3.8	5.0	4.2
2006/02	34.9	+4.0	5.1	6.2	5.0	4.1	5.3	4.6
2006/03	38.0	+4.8	6.0	7.1	5.5	4.9	6.1	5.2
2006/04	40.5	+5.2	5.9	7.2	5.5	4.6	6.2	5.3
2006/05	43.1	+4.2	5.9	7.5	6.1	4.6	6.5	5.9
2006/06	45.5	+2.6	7.0	8.5	6.2	5.2	7.0	5.9
2006/07	46.6	+0.1	7.7	9.2	5.8	5.5	7.1	5.5
2006/08	46.1	-0.8	6.6	8.3	5.6	4.4	6.4	5.2
2006/09	41.3	+0.5	5.3	6.5	4.8	4.0	5.4	4.4
2006/10	38.2	+0.6	4.9	6.0	4.5	3.7	5.0	4.2
2006/11	36.3	+0.1	4.6	5.6	4.3	3.5	4.7	4.1
2006/12	34.5	+0.4	4.7	5.5	4.6	3.7	4.7	4.3

^aTES has no data for June 2005.

Table S3. Same as Table S1 for OMI vs. TES TCO

Year/Month	μ_{TES}	$\mu_{(OMI-TES)}$	σ_{OMI}	σ_{TES}	$\sigma_{(OMI-TES)}$	σ_{OMI}^*	σ_{TES}^*	$\sigma_{(OMI-TES)}^*$
2005/01	33.8	-2.4	5.6	5.7	5.8	4.2	4.1	4.4
2005/02	35.4	-1.3	6.1	6.2	6.2	4.2	4.2	4.6
2005/03	38.1	+0.5	6.2	6.5	5.9	4.5	4.3	4.4
2005/04	40.2	+2.5	7.2	6.8	6.6	3.1	3.5	3.2
2005/05	44.2	+5.8	6.4	6.4	7.0	4.0	4.4	4.7
2005/07	47.5	+5.3	7.3	9.1	7.6	5.5	6.6	5.7
2005/08	45.0	+3.7	6.7	8.0	6.6	5.1	6.1	5.1
2005/09	43.6	+0.9	6.1	6.6	5.9	3.8	4.4	4.2
2005/10	38.8	-2.2	5.6	6.1	5.6	4.4	4.8	4.9
2005/11	35.7	-3.4	5.1	5.7	5.3	3.9	4.4	4.4
2005/12	33.9	-3.7	4.9	5.5	5.2	3.7	4.2	4.1
2006/01	33.9	-2.8	5.7	5.6	5.6	4.6	4.7	4.7
2006/02	34.8	-0.8	6.1	5.9	6.1	5.0	4.7	5.1
2006/03	38.0	+0.9	7.6	7.1	7.3	6.2	5.8	6.3
2006/04	40.5	+3.2	7.3	6.9	7.0	5.9	5.6	6.1
2006/05	43.3	+4.4	7.2	7.2	7.6	5.6	6.1	6.5
2006/06	45.6	+6.0	7.6	8.3	7.9	5.9	6.5	6.2
2006/07	46.6	+5.8	7.5	9.1	7.9	5.7	6.8	5.8
2006/08	46.2	+3.5	6.8	8.2	6.6	4.9	6.1	5.2
2006/09	41.4	+0.6	5.4	6.3	5.8	4.0	4.9	4.7
2006/10	38.0	-1.5	4.8	5.8	5.7	3.9	4.6	4.9
2006/11	36.0	-2.8	4.9	5.4	5.3	3.9	4.3	4.5
2006/12	34.3	-3.8	5.3	5.4	5.5	4.3	4.4	4.7

Table S4. Same as Table S1 for OMI vs. TES* TCO^a

Year/Month	μ_{TES^*}	$\mu_{(OMI-TES^*)}$	σ_{OMI}	σ_{TES^*}	$\sigma_{(OMI-TES^*)}$	σ_{OMI}^*	$\sigma_{TES^*}^*$	$\sigma_{(OMI-TES^*)}^*$
2005/01	30.0	+1.4	5.6	5.1	5.4	4.2	3.9	4.2
2005/02	32.9	+1.3	6.1	6.1	5.9	4.2	4.2	4.5
2005/03	37.1	+1.6	6.2	6.4	5.5	4.5	4.5	4.1
2005/04	40.6	+2.1	7.2	6.9	6.5	3.1	3.6	3.2
2005/05	45.7	+4.3	6.4	6.4	7.1	4.0	4.4	4.7
2005/07	48.3	+4.5	7.3	8.3	6.6	5.5	6.4	5.6
2005/08	44.2	+4.5	6.7	7.5	5.9	5.1	5.9	5.0
2005/09	41.3	+3.2	6.1	6.3	5.3	3.8	4.1	3.9
2005/10	34.6	+2.0	5.6	5.5	4.9	4.4	4.3	4.3
2005/11	31.0	+1.3	5.1	5.0	4.9	3.9	4.1	4.2
2005/12	29.3	+1.0	4.9	4.7	4.8	3.7	3.8	4.0
2006/01	29.8	+1.3	5.7	5.1	5.1	4.6	4.4	4.5
2006/02	31.8	+2.1	6.1	5.7	5.7	5.0	4.7	4.8
2006/03	36.7	+2.2	7.6	7.0	6.9	6.2	5.9	6.0
2006/04	41.0	+2.6	7.3	7.0	6.7	5.9	5.8	5.8
2006/05	44.5	+3.1	7.2	7.2	7.4	5.6	6.2	6.5
2006/06	47.4	+4.2	7.6	8.0	7.5	5.9	6.5	6.4
2006/07	47.6	+4.8	7.5	8.2	7.0	5.7	6.6	5.8
2006/08	45.7	+4.0	6.8	7.7	6.0	4.9	6.0	5.1
2006/09	39.0	+3.0	5.4	5.9	5.4	4.0	4.7	4.4
2006/10	34.6	+1.9	4.8	5.4	5.2	3.9	4.4	4.6
2006/11	31.7	+1.5	4.9	4.9	5.0	3.9	4.0	4.4
2006/12	29.8	+0.8	5.3	4.9	5.5	4.3	4.2	4.8

^aTES* represents for the TES data processed with the OMI a priori.

Table S5. Same as Table S1 for NH jet ($25^\circ \text{N} < \text{Lat} < 35^\circ \text{N}$)

Year/Month	μ_{OMI}	$\mu_{(CTM-OMI)}$	σ_{CTM}	σ_{OMI}	$\sigma_{(CTM-OMI)}$	σ_{CTM}^*	σ_{OMI}^*	$\sigma_{(CTM-OMI)}^*$
2005/01	37.8	+0.1	6.0	7.6	4.5	5.5	6.9	4.3
2005/02	39.0	+0.1	6.0	7.9	4.8	5.4	6.9	4.3
2005/03	41.7	-0.1	6.8	8.2	5.4	6.4	7.6	5.0
2005/04	49.5	-2.4	7.2	9.4	6.2	6.6	8.7	5.8
2005/05	52.6	-3.4	6.2	8.1	6.1	5.7	7.3	5.7
2005/06	51.8	-3.9	5.9	8.0	5.7	4.8	6.6	5.3
2005/07	47.0	-3.6	5.7	7.7	4.9	3.9	5.5	4.3
2005/08	44.1	-1.5	5.1	6.6	4.8	3.5	4.7	4.0
2005/09	41.9	-0.5	4.5	5.5	4.3	3.4	4.4	3.8
2005/10	40.2	-0.3	4.9	5.2	4.5	3.8	4.6	4.0
2005/11	37.1	-1.0	4.9	5.6	3.9	4.0	5.0	3.7
2005/12	36.2	-0.8	4.5	6.2	4.4	4.0	5.5	4.1
2006/01	37.4	+0.1	5.7	7.6	5.3	5.3	6.8	5.0
2006/02	36.3	+1.8	6.2	6.9	5.7	5.6	6.4	5.4
2006/03	41.2	+2.0	7.7	8.3	5.9	7.0	7.5	5.5
2006/04	47.8	+1.1	7.9	8.5	6.8	7.0	7.6	6.2
2006/05	52.6	-1.5	6.6	7.6	6.6	6.0	6.9	6.2
2006/06	50.6	-3.0	5.8	7.3	5.3	4.5	6.0	5.1
2006/07	46.6	-3.9	5.4	7.3	4.4	3.7	5.2	4.0
2006/08	43.9	-4.0	4.8	6.9	4.3	3.2	4.8	3.7
2006/09	41.1	-2.5	4.1	5.4	3.6	3.0	4.3	3.3
2006/10	39.6	-1.8	4.0	5.0	3.5	3.0	4.4	3.3
2006/11	37.1	-1.3	4.0	5.3	3.6	3.5	4.8	3.4
2006/12	37.3	-1.3	4.5	6.7	4.5	4.0	5.9	4.2

Table S6. Same as Table S1 for CTM vs. TES over NH jet ($25^\circ \text{N} < \text{Lat} \leq 35^\circ \text{N}$)

Year/Month	μ_{TES}	$\mu_{(CTM-TES)}$	σ_{CTM}	σ_{TES}	$\sigma_{(CTM-TES)}$	σ_{CTM}^*	σ_{TES}^*	$\sigma_{(CTM-TES)}^*$
2005/01	35.9	+3.5	7.1	7.6	4.8	5.1	5.7	4.1
2005/02	36.7	+3.1	7.2	8.3	5.3	5.3	6.2	4.4
2005/03	38.7	+2.2	8.1	8.4	5.5	6.3	6.3	4.7
2005/04	42.6	+0.6	7.4	8.3	4.9	4.3	4.7	3.4
2005/05	43.4	+1.4	7.8	8.4	5.7	4.8	5.8	4.5
2005/07	44.0	-0.2	8.4	9.8	5.5	4.6	6.2	4.7
2005/08	41.7	+0.8	7.8	8.9	5.6	4.5	5.6	4.4
2005/09	41.0	+1.0	7.0	7.8	5.1	4.1	4.8	3.8
2005/10	38.9	+0.8	5.9	6.7	4.5	4.2	5.3	4.2
2005/11	36.8	+1.3	5.8	6.8	4.4	3.8	5.0	4.0
2005/12	34.6	+1.9	5.5	6.6	4.3	3.8	5.1	3.9
2006/01	35.7	+3.5	7.0	7.6	4.8	5.2	5.9	4.4
2006/02	35.2	+5.0	7.3	7.8	5.5	5.6	6.3	5.0
2006/03	37.1	+6.3	8.7	8.3	5.3	6.7	6.2	4.9
2006/04	40.7	+5.8	8.8	9.2	5.9	7.2	7.2	5.5
2006/05	43.6	+3.9	8.9	8.8	6.2	7.2	7.2	5.8
2006/06	43.4	+2.0	8.5	9.3	5.4	5.6	6.4	5.0
2006/07	43.7	+0.9	8.1	9.2	5.2	4.3	6.0	4.6
2006/08	42.5	-0.1	8.0	9.6	5.7	4.6	6.2	4.6
2006/09	39.7	+1.3	6.5	7.3	4.7	4.4	5.1	4.0
2006/10	38.0	+1.5	6.1	7.2	4.6	4.4	5.8	4.4
2006/11	36.6	+1.5	6.0	6.8	4.4	4.2	5.2	4.0
2006/12	36.2	+1.9	6.2	6.9	4.3	4.4	5.2	4.0

Table S7. Same as Table S1 for OMI vs. TES over NH jet ($25^{\circ} \text{N} < \text{Lat} \leq 35^{\circ} \text{N}$)

Year/Month	μ_{TES}	$\mu_{(OMI-TES)}$	σ_{OMI}	σ_{TES}	$\sigma_{(OMI-TES)}$	σ_{OMI}^*	σ_{TES}^*	$\sigma_{(OMI-TES)}^*$
2005/01	36.7	+0.6	6.5	6.1	5.1	4.2	4.3	3.5
2005/02	37.3	+1.0	6.7	6.8	5.4	4.3	4.7	3.8
2005/03	40.3	+0.5	6.9	7.1	5.1	4.8	5.0	3.7
2005/04	44.0	+2.6	6.6	6.3	6.1	2.7	2.9	2.2
2005/05	45.0	+8.5	7.5	7.0	6.5	4.7	4.7	3.8
2005/07	45.1	+2.6	7.4	9.8	8.0	4.2	5.6	5.3
2005/08	42.4	+1.7	6.1	8.4	6.7	3.3	5.1	4.5
2005/09	42.3	-0.9	4.5	7.3	6.0	2.3	3.9	3.5
2005/10	39.9	-1.4	4.4	6.2	4.8	3.3	4.8	4.0
2005/11	37.5	-2.6	4.8	6.1	4.8	3.4	4.4	4.0
2005/12	35.3	-1.4	5.3	5.5	5.0	4.0	4.4	4.0
2006/01	36.0	-1.3	6.5	6.7	5.4	4.9	4.9	4.6
2006/02	35.6	-1.5	6.2	6.7	5.4	4.9	5.3	4.6
2006/03	38.2	+1.0	7.8	7.0	6.1	6.1	5.4	5.2
2006/04	42.1	+3.7	8.4	8.2	6.7	6.3	6.6	5.6
2006/05	44.5	+7.0	7.4	7.8	7.5	5.8	6.4	5.9
2006/06	44.4	+6.7	6.9	9.1	8.5	4.8	5.8	5.5
2006/07	44.7	+3.2	7.1	9.0	8.2	4.1	5.3	5.1
2006/08	43.7	+0.8	6.7	9.3	7.4	3.6	5.2	4.7
2006/09	40.5	-0.8	4.7	7.0	5.6	2.8	4.5	4.1
2006/10	38.9	-0.5	4.6	6.5	5.6	3.5	5.0	4.5
2006/11	37.5	-1.3	4.6	5.5	4.9	3.9	4.4	4.1
2006/12	36.8	-1.3	6.0	5.7	5.2	4.4	4.4	4.4

Table S8. Same as Table S1 for OMI vs. TES* over NH jet ($25^{\circ} \text{N} < \text{Lat} \leq 35^{\circ} \text{N}$)

Year/Month	μ_{TES^*}	$\mu_{(OMI-TES^*)}$	σ_{OMI}	σ_{TES^*}	$\sigma_{(OMI-TES^*)}$	σ_{OMI}^*	$\sigma_{TES^*}^*$	$\sigma_{(OMI-TES^*)}^*$
2005/01	34.8	+2.4	6.5	5.8	4.8	4.2	4.2	3.2
2005/02	36.1	+2.3	6.7	6.7	5.4	4.3	4.7	3.8
2005/03	39.7	+1.1	6.9	7.4	5.2	4.8	5.2	3.8
2005/04	44.5	+2.1	6.6	6.3	6.3	2.7	2.9	2.3
2005/05	45.9	+7.6	7.5	6.8	6.0	4.7	4.7	4.0
2005/07	45.7	+1.9	7.4	9.1	6.7	4.2	5.8	5.1
2005/08	42.5	+1.6	6.1	8.0	6.1	3.3	5.3	4.6
2005/09	41.7	-0.2	4.5	7.1	5.7	2.3	4.1	3.4
2005/10	38.2	+0.3	4.4	6.2	4.9	3.3	4.8	4.0
2005/11	34.5	+0.4	4.8	5.6	4.3	3.4	4.4	3.7
2005/12	32.7	+1.2	5.3	5.2	4.9	4.0	4.3	3.9
2006/01	33.6	+1.1	6.5	6.3	5.2	4.9	4.7	4.4
2006/02	33.9	+0.1	6.2	6.4	5.2	4.9	5.1	4.5
2006/03	37.4	+1.9	7.8	7.0	6.0	6.1	5.5	5.2
2006/04	42.8	+3.1	8.4	8.3	6.7	6.3	6.6	5.7
2006/05	45.9	+5.6	7.4	7.5	7.2	5.8	6.3	6.2
2006/06	45.9	+5.1	6.9	8.5	7.3	4.8	6.0	5.6
2006/07	45.3	+2.5	7.1	8.5	6.9	4.1	5.7	5.1
2006/08	43.9	+0.6	6.7	8.8	6.9	3.6	5.5	4.8
2006/09	40.1	-0.4	4.7	6.9	5.6	2.8	4.7	4.2
2006/10	37.2	+1.1	4.6	6.5	5.4	3.5	5.1	4.4
2006/11	34.9	+1.3	4.6	5.4	4.7	3.9	4.5	4.1
2006/12	34.2	+1.3	6.0	5.6	5.2	4.4	4.4	4.4

Table S9. Same as Table S1 for NH tropics ($0 < \text{Lat} \leq 25^\circ \text{ N}$)

Year/Month	μ_{OMI}	$\mu_{(CTM-OMI)}$	σ_{CTM}	σ_{OMI}	$\sigma_{(CTM-OMI)}$	σ_{CTM}^*	σ_{OMI}^*	$\sigma_{(CTM-OMI)}^*$
2005/01	34.5	-0.1	3.8	5.3	4.4	2.6	3.8	3.6
2005/02	34.0	-0.2	4.0	5.4	4.5	2.4	3.8	3.7
2005/03	36.9	-1.6	5.6	7.8	5.1	3.3	5.0	4.2
2005/04	41.2	-3.7	7.3	10.6	5.8	3.3	5.0	4.3
2005/05	41.0	-3.0	8.5	11.0	5.2	3.5	4.9	4.3
2005/06	37.1	-0.0	6.9	7.5	4.0	2.9	4.1	3.5
2005/07	33.2	+1.6	4.0	4.0	3.4	2.7	3.2	2.9
2005/08	33.2	+0.7	3.2	3.6	3.4	2.3	3.1	3.0
2005/09	34.6	-1.2	3.5	4.1	3.9	2.3	3.4	3.3
2005/10	34.2	-1.7	3.9	4.2	4.0	2.5	3.5	3.5
2005/11	33.4	-0.8	3.0	3.9	3.7	2.1	3.3	3.3
2005/12	33.9	+0.3	3.1	4.2	4.3	2.5	3.6	3.7
2006/01	33.0	+1.5	3.7	4.8	4.7	2.7	3.9	4.1
2006/02	32.4	+2.0	4.1	4.8	4.5	3.0	4.1	4.1
2006/03	37.5	+0.3	4.9	7.1	5.0	3.4	4.8	4.3
2006/04	42.1	-2.9	6.5	9.5	5.5	3.5	4.9	4.4
2006/05	41.4	-2.8	7.1	9.8	5.4	3.5	4.4	4.2
2006/06	37.3	+1.4	4.2	6.0	4.8	2.9	3.7	3.6
2006/07	34.1	+3.2	3.6	3.6	4.1	2.8	3.1	3.0
2006/08	33.5	+3.1	4.5	3.5	4.3	2.6	2.9	3.2
2006/09	34.7	+0.8	4.7	4.2	4.0	2.6	3.1	3.1
2006/10	35.3	-1.1	3.6	3.9	3.8	2.5	3.4	3.3
2006/11	34.3	-1.5	2.9	3.7	3.8	2.2	3.3	3.2
2006/12	32.8	-0.5	3.4	4.6	4.0	2.3	3.5	3.4

Table S10. Same as Table S1 for CTM vs. TES over NH tropics ($0 < \text{Lat} \leq 25^\circ \text{ N}$)

Year/Month	μ_{TES}	$\mu_{(CTM-TES)}$	σ_{CTM}	σ_{TES}	$\sigma_{(CTM-TES)}$	σ_{CTM}^*	σ_{TES}^*	$\sigma_{(CTM-TES)}^*$
2005/01	34.1	+1.9	6.8	7.4	4.4	3.6	4.3	3.5
2005/02	33.2	+1.5	7.7	7.4	4.8	3.5	4.2	3.4
2005/03	36.1	-0.7	8.6	8.8	5.5	4.9	5.4	4.0
2005/04	36.4	-0.5	7.7	9.2	5.0	2.9	3.9	3.0
2005/05	35.4	-0.3	8.9	9.8	5.2	3.0	4.1	3.4
2005/07	32.2	+1.8	8.3	9.1	4.4	3.1	4.3	3.7
2005/08	31.2	+1.8	8.1	8.5	4.5	3.0	3.9	3.5
2005/09	32.4	+0.1	8.3	8.4	4.9	2.6	3.6	3.3
2005/10	32.1	-0.2	7.8	8.2	4.3	3.5	4.4	3.7
2005/11	32.8	+0.5	6.9	7.4	4.4	3.1	4.1	3.6
2005/12	35.0	+1.6	6.5	7.5	4.5	3.3	4.3	3.8
2006/01	33.9	+2.6	7.4	7.7	4.5	3.8	4.6	4.0
2006/02	32.3	+3.6	9.0	8.2	4.7	4.8	4.6	3.8
2006/03	34.8	+3.6	8.5	8.4	4.8	4.6	4.8	4.0
2006/04	36.4	+2.3	8.9	10.0	5.6	4.8	5.6	4.3
2006/05	35.3	+1.5	9.5	9.5	5.6	4.8	5.1	4.4
2006/06	32.9	+3.5	8.6	8.9	5.0	3.7	4.7	4.0
2006/07	32.0	+4.6	8.8	9.4	4.9	3.5	4.6	3.8
2006/08	31.6	+3.7	8.2	8.9	4.9	3.4	4.4	3.8
2006/09	31.9	+2.0	8.2	8.1	4.8	3.4	4.1	3.6
2006/10	32.2	+0.9	8.1	8.3	4.5	3.9	4.8	3.9
2006/11	33.2	+0.3	7.3	7.3	4.6	3.9	4.7	3.8
2006/12	33.0	+1.9	7.6	7.0	4.6	4.0	4.4	3.7

Table S11. Same as Table S1 for OMI vs. TES over NH tropics ($0 < \text{Lat} \leq 25^\circ \text{ N}$)

Year/Month	μ_{TES}	$\mu_{(OMI-TES)}$	σ_{OMI}	σ_{TES}	$\sigma_{(OMI-TES)}$	σ^*_{OMI}	σ^*_{TES}	$\sigma^*_{(OMI-TES)}$
2005/01	33.7	-1.7	4.7	7.5	6.5	2.2	3.4	3.2
2005/02	32.4	-1.0	4.6	7.4	6.2	2.1	3.5	3.0
2005/03	35.3	-1.3	6.9	9.0	6.0	2.7	4.2	3.1
2005/04	36.3	+1.5	8.9	9.5	6.0	1.6	2.6	2.0
2005/05	35.9	+3.5	10.2	9.6	6.8	2.8	3.9	3.4
2005/07	32.2	+0.5	3.6	9.3	7.8	2.1	4.1	3.8
2005/08	31.2	+1.5	3.0	8.6	7.3	2.0	3.8	3.4
2005/09	32.6	+0.7	3.3	8.6	7.9	1.7	3.2	3.1
2005/10	32.3	+0.2	3.5	8.3	7.0	2.3	4.2	3.7
2005/11	33.0	-1.4	3.2	7.3	6.2	2.2	3.7	3.4
2005/12	34.7	-2.5	3.4	7.4	6.9	2.5	3.9	3.7
2006/01	33.9	-2.9	3.7	7.7	6.6	2.7	4.1	3.9
2006/02	31.9	-1.5	3.8	8.1	6.6	2.5	3.9	3.5
2006/03	34.8	+0.3	5.8	8.4	5.9	3.4	4.3	3.7
2006/04	36.6	+3.8	8.7	10.3	7.0	3.7	5.2	4.1
2006/05	35.4	+5.2	9.3	9.6	7.0	3.4	4.9	4.3
2006/06	32.8	+4.2	5.6	9.0	7.2	2.6	4.4	4.2
2006/07	31.9	+2.1	3.2	9.5	8.3	2.3	4.4	3.9
2006/08	31.8	+1.4	2.9	9.1	8.4	1.9	4.2	3.9
2006/09	32.0	+1.6	3.7	8.5	8.0	2.0	3.8	3.4
2006/10	32.3	+1.4	3.1	8.1	7.2	2.3	4.4	3.9
2006/11	33.1	-0.3	3.3	7.4	6.5	2.4	4.4	3.9
2006/12	33.0	-1.7	4.1	7.0	5.9	2.6	4.1	3.7

Table S12. Same as Table S1 for OMI vs. TES* over NH tropics ($0 < \text{Lat} \leq 25^\circ \text{ N}$)

Year/Month	μ_{TES^*}	$\mu_{(OMI-TES^*)}$	σ_{OMI}	σ_{TES^*}	$\sigma_{(OMI-TES^*)}$	σ_{OMI}^*	$\sigma_{TES^*}^*$	$\sigma_{(OMI-TES^*)}^*$
2005/01	32.8	-0.8	4.7	6.8	5.8	2.2	3.4	3.3
2005/02	31.9	-0.5	4.6	6.9	5.7	2.1	3.5	3.1
2005/03	35.2	-1.2	6.9	8.9	5.6	2.7	4.3	3.2
2005/04	37.2	+0.6	8.9	9.1	5.3	1.6	2.5	1.9
2005/05	36.4	+3.1	10.2	9.5	5.9	2.8	3.9	3.3
2005/07	32.8	-0.0	3.6	7.6	5.9	2.1	4.3	3.9
2005/08	31.9	+0.8	3.0	6.9	5.7	2.0	4.0	3.7
2005/09	33.0	+0.3	3.3	7.2	6.3	1.7	3.5	3.3
2005/10	32.4	+0.0	3.5	7.2	5.7	2.3	4.4	3.9
2005/11	32.2	-0.6	3.2	6.4	5.6	2.2	3.7	3.6
2005/12	33.7	-1.5	3.4	6.8	6.6	2.5	3.9	3.9
2006/01	33.1	-2.1	3.7	7.0	6.1	2.7	4.2	4.1
2006/02	31.4	-1.0	3.8	7.2	5.9	2.5	3.9	3.6
2006/03	34.9	+0.2	5.8	8.1	5.4	3.4	4.5	3.8
2006/04	37.5	+2.9	8.7	10.1	6.5	3.7	5.3	4.2
2006/05	36.1	+4.5	9.3	9.4	5.9	3.4	5.2	4.3
2006/06	33.5	+3.5	5.6	8.2	5.8	2.6	4.6	4.2
2006/07	32.3	+1.6	3.2	8.0	6.7	2.3	4.6	4.1
2006/08	32.3	+0.9	2.9	7.6	6.8	1.9	4.5	4.1
2006/09	32.5	+1.2	3.7	7.4	6.8	2.0	4.1	3.7
2006/10	32.4	+1.3	3.1	7.0	6.1	2.3	4.6	4.0
2006/11	32.5	+0.3	3.3	6.8	5.9	2.4	4.5	4.1
2006/12	32.0	-0.8	4.1	6.4	5.3	2.6	4.0	3.8

Table S13. Same as Table S1 for SH tropics ($25^{\circ} \text{S} < \text{Lat} \leq 0$)

Year/Month	μ_{OMI}	$\mu_{(CTM-OMI)}$	σ_{CTM}	σ_{OMI}	$\sigma_{(CTM-OMI)}$	σ_{CTM}^*	σ_{OMI}^*	$\sigma_{(CTM-OMI)}^*$
2005/01	29.4	+3.3	4.2	5.0	3.7	2.8	3.5	3.3
2005/02	28.2	+2.9	4.4	4.8	3.3	2.4	3.1	3.0
2005/03	28.0	+1.8	4.2	4.8	3.1	2.4	3.2	2.8
2005/04	28.2	+1.3	3.3	4.5	3.0	2.0	2.9	2.7
2005/05	29.9	-0.2	3.0	4.1	3.2	2.1	3.2	2.6
2005/06	33.1	-2.0	3.4	4.2	3.7	2.1	3.4	2.9
2005/07	34.1	-1.5	3.9	5.1	4.0	2.6	3.9	3.3
2005/08	35.4	+0.2	4.6	5.5	4.0	3.0	4.3	3.6
2005/09	39.4	+0.8	5.8	5.8	5.2	3.3	4.6	4.3
2005/10	41.2	+0.9	7.4	6.4	6.5	3.6	4.9	4.6
2005/11	38.1	+1.6	6.2	6.0	5.5	3.3	4.5	4.2
2005/12	34.4	+3.3	4.2	5.5	4.2	3.2	4.1	3.8
2006/01	29.6	+3.0	4.6	5.2	3.5	3.0	3.6	3.3
2006/02	28.4	+3.6	4.9	5.0	3.3	2.6	3.2	3.0
2006/03	28.3	+4.3	4.2	4.7	3.7	2.7	3.0	3.0
2006/04	28.9	+4.3	3.4	3.9	3.4	2.5	2.8	2.9
2006/05	31.6	+2.0	3.3	3.8	3.4	2.4	3.2	3.0
2006/06	35.1	-0.5	4.3	4.6	4.8	2.9	3.7	3.4
2006/07	35.4	+0.7	5.0	4.7	5.0	3.2	3.9	3.6
2006/08	37.0	+1.2	4.9	5.0	4.6	3.5	4.2	4.0
2006/09	40.3	+1.3	4.9	5.6	4.8	3.6	4.4	4.3
2006/10	39.7	+2.8	5.6	5.8	5.3	3.7	4.7	4.8
2006/11	37.0	+3.2	5.9	5.6	5.1	3.2	4.2	4.3
2006/12	32.6	+4.2	5.1	5.3	4.6	3.1	3.9	3.9

Table S14. Same as Table S1 for CTM vs. TES over SH tropics ($25^{\circ} \text{S} < \text{Lat} \leq 0$)

Year/Month	μ_{TES}	$\mu_{(CTM-TES)}$	σ_{CTM}	σ_{TES}	$\sigma_{(CTM-TES)}$	σ_{CTM}^*	σ_{TES}^*	$\sigma_{(CTM-TES)}^*$
2005/01	28.6	+2.4	7.0	7.2	4.8	3.5	4.0	3.2
2005/02	27.1	+1.9	7.7	7.6	4.7	3.0	3.5	3.1
2005/03	27.6	+0.8	7.1	7.0	5.5	3.2	3.9	3.4
2005/04	28.2	+0.7	6.3	7.2	5.4	2.0	2.5	2.5
2005/05	29.3	+1.5	5.6	5.3	4.6	2.3	2.6	2.8
2005/07	33.1	+1.6	6.5	6.7	4.1	3.3	4.1	3.6
2005/08	33.4	+2.4	7.8	8.1	4.1	3.7	4.4	3.7
2005/09	36.4	+1.1	7.9	9.0	5.0	3.7	4.1	3.9
2005/10	39.3	+0.4	9.3	8.8	5.8	5.3	5.4	4.6
2005/11	36.0	+1.2	8.8	8.4	6.0	4.7	5.1	4.4
2005/12	33.4	+1.9	7.5	7.4	5.4	4.2	4.4	3.9
2006/01	30.3	+2.2	7.4	7.8	4.8	3.9	4.6	3.8
2006/02	27.6	+3.1	8.8	9.1	4.8	3.4	4.1	3.5
2006/03	26.0	+4.2	8.0	7.9	5.2	3.4	3.7	3.6
2006/04	25.6	+5.8	6.8	6.5	5.4	3.2	3.5	3.7
2006/05	30.0	+4.2	6.4	6.3	5.2	3.2	4.2	3.9
2006/06	32.8	+2.8	6.2	6.4	5.1	3.4	4.4	3.9
2006/07	31.8	+5.0	6.9	7.0	4.3	3.7	4.2	3.6
2006/08	33.9	+4.3	7.8	7.8	4.3	4.2	4.5	3.9
2006/09	37.3	+2.9	7.9	8.5	4.9	4.6	4.9	4.1
2006/10	35.9	+3.7	9.8	9.3	6.0	5.6	5.4	4.8
2006/11	34.7	+3.2	9.2	7.7	6.1	5.1	4.8	4.6
2006/12	31.5	+3.0	8.2	7.1	5.7	4.3	4.5	4.1

Table S15. Same as Table S1 for OMI vs. TES over SH tropics ($25^{\circ} \text{S} < \text{Lat} \leq 0$)

Year/Month	μ_{TES}	$\mu_{(OMI-TES)}$	σ_{OMI}	σ_{TES}	$\sigma_{(OMI-TES)}$	σ_{OMI}^*	σ_{TES}^*	$\sigma_{(OMI-TES)}^*$
2005/01	28.8	-0.8	4.4	7.3	6.9	2.0	3.8	3.2
2005/02	27.0	+0.3	4.4	7.4	6.7	1.7	2.9	2.6
2005/03	27.5	-0.6	4.3	7.1	6.7	1.8	3.4	3.0
2005/04	28.0	-1.0	4.3	7.1	6.5	0.9	1.8	1.7
2005/05	29.4	+0.4	3.4	5.3	5.3	1.5	2.4	2.3
2005/07	33.0	-0.1	4.6	6.6	7.1	2.7	3.7	3.7
2005/08	33.3	+0.4	5.1	8.2	7.8	3.1	4.2	3.8
2005/09	36.2	+0.7	5.4	9.3	8.1	2.3	3.6	3.3
2005/10	39.6	-0.8	5.6	8.8	7.6	3.4	5.2	4.2
2005/11	36.4	-0.8	5.1	8.6	6.8	3.0	4.8	3.8
2005/12	33.3	-1.0	4.5	7.4	6.8	2.7	4.1	3.9
2006/01	30.5	-2.0	4.5	7.8	6.8	2.6	4.4	4.1
2006/02	27.5	-0.1	4.4	8.9	7.3	2.2	3.8	3.5
2006/03	25.8	+1.5	4.1	7.9	7.2	2.0	3.5	3.4
2006/04	25.4	+2.3	3.3	6.6	5.9	1.8	3.3	3.0
2006/05	29.8	+0.9	3.3	6.5	5.6	2.3	4.0	3.4
2006/06	32.7	+1.5	4.2	6.5	6.5	2.9	4.2	3.9
2006/07	31.6	+2.5	4.0	7.0	7.0	2.9	3.9	3.6
2006/08	33.7	+1.7	4.3	7.6	7.4	2.9	4.1	3.7
2006/09	37.2	+1.2	4.8	8.7	7.6	2.9	4.6	4.0
2006/10	36.0	+1.1	4.9	9.2	7.4	3.2	5.0	4.0
2006/11	34.7	+0.1	4.6	7.5	6.3	2.7	4.6	4.0
2006/12	31.5	-0.5	4.6	7.1	6.3	2.8	4.3	4.0

Table S16. Same as Table S1 for OMI vs. TES* over SH tropics ($25^{\circ} \text{S} < \text{Lat} \leq 0$)

Year/Month	μ_{TES^*}	$\mu_{(OMI-TES^*)}$	σ_{OMI}	σ_{TES^*}	$\sigma_{(OMI-TES^*)}$	σ_{OMI}^*	$\sigma_{TES^*}^*$	$\sigma_{(OMI-TES^*)}^*$
2005/01	28.7	-0.7	4.4	7.1	6.0	2.0	3.9	3.3
2005/02	27.2	+0.1	4.4	6.9	5.6	1.7	3.0	2.8
2005/03	28.0	-1.2	4.3	6.6	6.0	1.8	3.5	3.2
2005/04	27.9	-0.9	4.3	6.6	5.9	0.9	1.9	1.8
2005/05	28.2	+1.6	3.4	4.6	4.5	1.5	2.4	2.3
2005/07	32.4	+0.5	4.7	5.8	6.2	2.7	3.8	3.7
2005/08	32.8	+0.9	5.1	7.2	6.6	3.1	4.3	3.9
2005/09	35.9	+1.0	5.4	8.5	7.1	2.3	3.7	3.5
2005/10	39.6	-0.8	5.6	8.3	6.6	3.4	5.3	4.4
2005/11	36.5	-0.9	5.1	8.4	6.1	3.0	4.9	4.0
2005/12	33.5	-1.1	4.5	7.2	6.1	2.7	4.2	4.0
2006/01	30.4	-1.9	4.5	7.5	6.2	2.6	4.5	4.2
2006/02	27.8	-0.4	4.4	8.2	6.4	2.2	3.9	3.6
2006/03	26.2	+1.1	4.1	7.1	6.1	2.0	3.7	3.5
2006/04	25.4	+2.4	3.3	6.2	5.2	1.8	3.5	3.2
2006/05	29.3	+1.3	3.3	6.3	5.2	2.3	4.2	3.5
2006/06	32.1	+2.1	4.2	6.2	6.0	2.9	4.3	3.9
2006/07	31.1	+3.0	4.0	6.4	6.1	2.9	4.0	3.6
2006/08	33.5	+1.9	4.3	6.6	6.2	2.9	4.2	3.8
2006/09	37.4	+1.0	4.8	8.2	6.9	2.9	4.7	4.1
2006/10	36.2	+0.8	4.9	8.6	6.6	3.2	5.0	4.2
2006/11	34.8	+0.0	4.6	7.4	5.7	2.7	4.7	4.1
2006/12	31.8	-0.8	4.6	7.3	5.9	2.8	4.4	4.1

Table S17. Same as Table S1 for SH jet ($35^\circ \text{ S} < \text{Lat} < 25^\circ \text{ S}$)

Year/Month	μ_{OMI}	$\mu_{(CTM-OMI)}$	σ_{CTM}	σ_{OMI}	$\sigma_{(CTM-OMI)}$	σ_{CTM}^*	σ_{OMI}^*	$\sigma_{(CTM-OMI)}^*$
2005/01	36.1	+0.8	3.7	5.2	4.0	3.2	4.9	3.9
2005/02	34.6	+1.4	3.6	4.5	3.5	2.9	4.0	3.4
2005/03	32.9	+0.9	4.1	4.8	3.3	3.1	4.1	3.2
2005/04	33.3	-1.2	3.9	5.2	3.2	3.1	4.5	3.1
2005/05	31.8	-0.3	3.8	5.2	3.1	3.4	4.8	2.9
2005/06	32.2	+0.7	4.7	6.1	3.3	4.3	5.6	3.1
2005/07	36.4	+1.2	5.1	7.5	4.8	4.7	6.8	4.5
2005/08	36.9	+3.0	5.9	7.4	4.5	5.4	6.4	4.1
2005/09	39.6	+5.0	6.1	7.2	4.6	5.2	6.2	4.4
2005/10	42.2	+6.2	6.5	7.8	4.8	5.3	6.7	4.7
2005/11	39.1	+5.7	6.2	7.2	4.8	5.2	6.2	4.6
2005/12	38.0	+3.1	4.4	6.4	4.6	3.9	5.7	4.3
2006/01	35.7	+3.4	3.7	5.2	4.2	3.3	4.8	4.0
2006/02	34.2	+2.8	4.1	4.7	3.9	3.2	4.2	3.7
2006/03	33.8	-0.0	3.4	4.6	3.4	2.7	4.0	3.3
2006/04	32.6	+0.3	3.8	4.5	3.1	3.1	4.0	3.0
2006/05	30.8	+1.7	4.0	5.2	3.1	3.6	4.7	3.0
2006/06	32.8	+0.7	4.8	6.8	4.4	4.5	6.2	4.0
2006/07	33.8	+2.0	5.2	6.8	4.7	4.8	6.0	4.4
2006/08	35.4	+3.7	5.4	7.2	4.9	4.9	6.2	4.6
2006/09	38.2	+5.3	5.8	7.1	4.7	5.0	6.1	4.5
2006/10	39.5	+6.5	5.5	6.9	4.9	4.5	6.1	4.8
2006/11	38.5	+6.1	5.5	6.7	4.6	4.3	5.7	4.4
2006/12	37.1	+4.7	4.4	5.9	4.4	3.7	5.3	4.3

Table S18. Same as Table S1 for CTM vs. TES over SH jet ($35^\circ \text{ S} < \text{Lat} \leq 25^\circ \text{ S}$)

Year/Month	μ_{TES}	$\mu_{(CTM-TES)}$	σ_{CTM}	σ_{TES}	$\sigma_{(CTM-TES)}$	σ_{CTM}^*	σ_{TES}^*	$\sigma_{(CTM-TES)}^*$
2005/01	30.6	+0.4	6.0	6.8	4.0	4.1	4.9	3.3
2005/02	28.3	-0.7	5.6	5.7	3.8	3.8	4.0	3.2
2005/03	26.9	-0.5	4.9	5.1	3.4	3.7	3.8	2.9
2005/04	28.5	-0.6	5.0	5.6	3.9	3.0	3.2	2.4
2005/05	28.0	+0.1	4.3	4.6	3.9	2.5	3.2	3.1
2005/07	30.7	+2.5	5.7	5.7	4.2	4.8	4.8	4.0
2005/08	30.6	+3.0	6.2	6.3	4.5	5.0	5.1	4.3
2005/09	33.1	+1.8	6.0	6.6	5.2	4.4	4.9	4.4
2005/10	34.5	+3.6	7.3	7.2	5.1	6.1	5.8	4.8
2005/11	32.4	+3.6	8.3	7.3	5.2	6.7	5.7	4.8
2005/12	31.0	+2.1	6.4	6.9	4.3	5.0	5.4	4.0
2006/01	31.2	+1.4	6.4	6.8	4.0	5.0	5.1	3.7
2006/02	29.2	+0.9	6.2	6.6	3.6	4.3	4.8	3.3
2006/03	28.3	+0.7	5.0	5.7	3.6	3.7	4.3	3.3
2006/04	27.0	+2.7	4.5	4.8	3.6	3.6	3.9	3.3
2006/05	26.5	+3.0	4.7	4.5	3.4	3.9	3.8	3.2
2006/06	29.1	+3.3	5.7	5.6	3.7	4.7	4.7	3.5
2006/07	29.2	+5.2	6.0	5.3	4.0	4.8	4.3	3.8
2006/08	29.9	+5.1	6.1	5.8	4.4	5.0	4.7	4.2
2006/09	32.9	+4.6	6.7	6.6	4.9	5.3	5.1	4.5
2006/10	32.5	+4.5	6.6	6.5	4.8	5.5	5.4	4.5
2006/11	31.3	+5.1	7.1	6.5	4.7	5.7	5.2	4.4
2006/12	31.3	+2.8	6.7	6.7	4.2	5.0	5.2	3.9

Table S19. Same as Table S1 for OMI vs. TES over SH jet ($35^\circ \text{ S} < \text{Lat} \leq 25^\circ \text{ S}$)

Year/Month	μ_{TES}	$\mu_{(OMI-TES)}$	σ_{OMI}	σ_{TES}	$\sigma_{(OMI-TES)}$	σ_{OMI}^*	σ_{TES}^*	$\sigma_{(OMI-TES)}^*$
2005/01	30.4	+2.7	4.1	6.7	4.9	2.7	4.1	3.1
2005/02	28.0	+3.9	3.6	5.6	4.2	2.3	3.2	2.5
2005/03	26.7	+3.6	3.8	4.6	3.7	2.4	3.1	2.4
2005/04	28.6	+2.8	4.2	5.1	4.3	1.7	2.4	2.0
2005/05	27.7	+2.4	4.7	4.4	4.7	2.5	2.7	2.8
2005/07	30.6	+4.8	6.7	5.6	5.0	5.4	4.4	4.3
2005/08	30.6	+5.3	6.6	6.3	5.5	5.3	4.8	4.6
2005/09	33.0	+4.6	6.5	6.8	5.5	4.3	4.5	4.2
2005/10	34.6	+5.1	6.8	7.1	5.1	5.2	5.3	4.2
2005/11	32.4	+2.7	5.8	7.4	4.9	4.2	5.1	3.6
2005/12	30.8	+3.8	5.2	6.8	4.6	3.7	4.8	3.5
2006/01	31.3	+1.8	4.1	6.6	5.0	3.2	4.6	3.8
2006/02	29.5	+2.6	3.8	6.4	4.9	2.9	4.5	3.5
2006/03	28.3	+3.5	3.6	5.7	4.6	2.6	4.1	3.3
2006/04	26.8	+3.9	3.8	4.7	4.2	2.8	3.7	3.2
2006/05	26.4	+3.0	4.5	4.5	3.9	3.7	3.6	3.4
2006/06	29.0	+2.3	6.1	5.6	4.5	5.1	4.4	3.8
2006/07	29.2	+3.2	5.9	5.3	5.2	4.5	4.0	4.1
2006/08	29.8	+3.6	6.4	5.5	5.1	4.9	4.3	4.2
2006/09	33.4	+3.6	5.7	6.3	5.1	4.0	4.3	3.8
2006/10	32.6	+4.1	5.4	6.4	5.4	4.3	5.0	4.3
2006/11	31.2	+4.1	5.4	6.5	4.6	4.2	5.1	3.7
2006/12	31.1	+3.1	4.6	6.6	5.1	3.7	4.8	3.9

Table S20. Same as Table S1 for OMI vs. TES* over SH jet ($35^\circ \text{S} < \text{Lat} \leq 25^\circ \text{S}$)

Year/Month	μ_{TES^*}	$\mu_{(OMI-TES^*)}$	σ_{OMI}	σ_{TES^*}	$\sigma_{(OMI-TES^*)}$	σ_{OMI}^*	$\sigma_{TES^*}^*$	$\sigma_{(OMI-TES^*)}^*$
2005/01	33.4	-0.2	4.1	6.1	4.5	2.7	3.9	3.1
2005/02	30.7	+1.2	3.6	5.1	4.0	2.3	3.1	2.5
2005/03	28.3	+2.1	3.8	4.4	3.7	2.4	3.0	2.7
2005/04	29.0	+2.4	4.2	4.8	4.3	1.7	2.2	2.2
2005/05	27.1	+3.1	4.7	4.0	4.5	2.5	2.7	2.8
2005/07	30.3	+5.1	6.7	5.3	5.1	5.4	4.3	4.4
2005/08	30.9	+5.0	6.6	5.9	5.6	5.3	4.7	4.7
2005/09	34.8	+2.8	6.5	6.6	5.6	4.3	4.5	4.2
2005/10	37.2	+2.4	6.8	6.5	5.0	5.2	5.2	4.4
2005/11	35.3	-0.3	5.8	6.9	4.6	4.2	5.1	3.7
2005/12	34.0	+0.6	5.2	6.2	4.3	3.7	4.6	3.6
2006/01	34.1	-1.0	4.1	6.1	4.9	3.2	4.5	3.9
2006/02	32.0	+0.1	3.8	5.9	4.5	2.9	4.4	3.7
2006/03	29.4	+2.4	3.6	5.3	4.4	2.6	4.0	3.5
2006/04	27.1	+3.6	3.8	4.5	4.2	2.8	3.6	3.3
2006/05	26.2	+3.2	4.5	4.2	3.8	3.7	3.5	3.4
2006/06	28.4	+2.8	6.1	5.3	4.5	5.1	4.2	3.9
2006/07	29.0	+3.4	5.9	5.0	5.2	4.5	3.9	4.1
2006/08	30.4	+3.1	6.4	5.2	5.3	4.9	4.2	4.3
2006/09	35.5	+1.5	5.7	6.2	5.3	4.0	4.2	4.0
2006/10	35.4	+1.4	5.4	6.3	5.7	4.3	5.0	4.5
2006/11	34.1	+1.3	5.4	6.1	4.6	4.2	5.0	4.0
2006/12	34.5	-0.3	4.6	5.9	4.7	3.7	4.7	4.0

Table S21. Same as Table S1 for SH mid-latitudes ($60^{\circ} \text{ S} < \text{Lat} \leq 35^{\circ} \text{ S}$)

Year/Month	μ_{OMI}	$\mu_{(CTM-OMI)}$	σ_{CTM}	σ_{OMI}	$\sigma_{(CTM-OMI)}$	σ_{CTM}^*	σ_{OMI}^*	$\sigma_{(CTM-OMI)}^*$
2005/01	25.5	+0.9	5.2	5.8	2.1	3.4	4.4	2.1
2005/02	25.7	+0.5	4.8	5.3	2.0	3.4	4.2	2.0
2005/03	24.7	+0.2	3.4	4.0	1.9	2.8	3.6	1.8
2005/04	25.6	+0.0	3.6	4.5	2.2	3.2	4.0	2.2
2005/05	24.9	+1.2	3.3	4.0	2.0	3.0	3.4	1.9
2005/06	25.2	+2.6	3.6	3.8	1.9	3.1	3.3	1.8
2005/07	26.9	+3.9	4.3	4.5	2.3	3.9	4.1	2.2
2005/08	29.4	+4.8	4.8	5.3	3.5	4.5	5.1	3.3
2005/09	31.7	+4.7	5.3	5.4	4.0	4.3	5.0	3.5
2005/10	31.2	+5.3	5.6	5.5	3.6	4.7	5.1	3.4
2005/11	29.2	+4.8	5.5	5.4	2.9	4.4	4.7	2.8
2005/12	27.7	+3.7	5.0	5.3	2.4	3.9	4.5	2.3
2006/01	25.9	+3.0	5.8	6.2	2.2	3.8	4.5	2.1
2006/02	25.2	+2.5	4.6	5.0	2.0	3.2	3.7	1.9
2006/03	25.3	+1.3	4.0	5.0	2.2	3.4	4.2	2.1
2006/04	25.2	+1.5	3.7	4.5	2.2	3.3	4.0	2.1
2006/05	25.2	+2.7	3.5	3.9	2.0	3.2	3.4	1.9
2006/06	25.1	+3.7	4.0	4.3	2.1	3.6	3.7	2.0
2006/07	26.6	+4.6	4.3	4.4	2.4	4.1	4.1	2.3
2006/08	28.7	+5.2	4.4	5.2	2.9	4.2	5.0	2.8
2006/09	30.9	+5.0	4.6	5.2	3.2	4.2	5.1	3.0
2006/10	30.5	+5.0	5.5	5.7	3.2	4.5	5.3	3.0
2006/11	28.4	+4.5	5.4	5.2	2.8	4.1	4.5	2.6
2006/12	27.0	+3.8	5.6	5.5	2.6	3.8	4.4	2.4

Table S22. Same as Table S1 for CTM vs. TES over SH mid-latitudes ($60^\circ \text{ S} < \text{Lat} \leq 35^\circ \text{ S}$)

Year/Month	μ_{TES}	$\mu_{(CTM-TES)}$	σ_{CTM}	σ_{TES}	$\sigma_{(CTM-TES)}$	σ_{CTM}^*	σ_{TES}^*	$\sigma_{(CTM-TES)}^*$
2005/01	21.3	+0.3	5.3	5.7	2.9	3.4	3.9	2.6
2005/02	21.6	-0.2	5.0	5.5	3.1	3.5	4.0	2.7
2005/03	21.4	-0.3	3.5	4.1	2.8	2.6	3.2	2.5
2005/04	23.1	-0.3	3.4	4.2	2.8	2.0	2.7	2.2
2005/05	24.9	-0.4	2.5	3.4	3.1	1.7	2.7	2.6
2005/07	27.3	+0.7	3.1	3.8	4.1	2.5	3.5	3.8
2005/08	27.6	+1.4	3.0	3.9	4.2	2.5	3.6	3.9
2005/09	28.0	+1.8	3.6	4.2	4.2	2.3	3.3	3.5
2005/10	26.4	+2.3	4.2	4.2	3.9	2.9	3.6	3.6
2005/11	23.7	+2.3	4.6	4.3	3.4	3.0	3.3	3.1
2005/12	21.4	+1.8	4.6	4.6	3.1	2.9	3.3	2.9
2006/01	21.9	+1.4	6.1	6.3	3.0	4.0	4.3	2.8
2006/02	21.2	+1.0	5.1	5.4	2.8	3.5	3.8	2.6
2006/03	22.4	+0.7	4.4	5.2	3.0	3.3	3.9	2.8
2006/04	22.6	+1.9	3.5	3.9	2.8	2.8	3.3	2.7
2006/05	24.0	+2.5	2.7	3.4	3.1	2.2	3.1	3.0
2006/06	25.4	+3.0	3.0	3.5	3.4	2.5	3.3	3.2
2006/07	26.8	+3.5	3.0	3.7	3.7	2.6	3.5	3.5
2006/08	27.6	+3.3	2.9	3.8	3.9	2.5	3.6	3.7
2006/09	28.1	+3.1	3.8	4.2	4.1	2.7	3.6	3.6
2006/10	26.2	+3.1	4.5	4.5	3.8	3.3	3.8	3.5
2006/11	22.5	+3.7	4.7	4.2	3.3	3.0	3.1	3.0
2006/12	21.1	+2.7	5.0	4.9	3.0	3.1	3.4	2.8

Table S23. Same as Table S1 for OMI vs. TES over SH mid-latitudes ($60^\circ \text{ S} < \text{Lat} \leq 35^\circ \text{ S}$)

Year/Month	μ_{TES}	$\mu_{(OMI-TES)}$	σ_{OMI}	σ_{TES}	$\sigma_{(OMI-TES)}$	σ_{OMI}^*	σ_{TES}^*	$\sigma_{(OMI-TES)}^*$
2005/01	21.1	+3.6	5.2	5.6	3.4	3.3	3.3	2.5
2005/02	21.5	+3.4	4.9	5.6	3.2	3.0	3.4	2.3
2005/03	21.5	+2.6	3.5	4.0	3.2	2.7	2.7	2.4
2005/04	22.9	+2.1	3.7	4.0	3.2	2.0	1.9	1.5
2005/05	24.9	+0.2	3.7	3.4	3.7	2.0	2.5	2.4
2005/07	27.3	+0.3	4.6	3.8	4.6	3.6	3.4	3.9
2005/08	27.8	+2.4	5.0	3.8	5.2	4.2	3.5	4.5
2005/09	28.1	+4.0	4.8	4.3	4.8	2.9	3.0	3.4
2005/10	26.5	+4.8	5.0	4.3	4.9	4.1	3.5	4.3
2005/11	23.6	+4.4	4.8	4.3	4.7	3.6	3.1	3.7
2005/12	21.5	+5.3	4.6	4.7	3.8	3.4	3.1	3.2
2006/01	21.8	+3.7	5.6	6.3	3.5	3.9	4.1	2.9
2006/02	21.2	+3.8	4.8	5.5	3.1	3.2	3.5	2.5
2006/03	22.5	+2.1	4.5	5.3	3.4	3.5	3.7	2.8
2006/04	22.6	+2.2	3.9	3.9	3.5	3.1	3.2	3.0
2006/05	24.0	+1.3	3.7	3.3	3.8	2.9	3.0	3.2
2006/06	25.4	-0.1	4.1	3.6	4.0	3.1	3.1	3.3
2006/07	26.9	-0.0	4.4	3.8	4.6	3.6	3.4	3.9
2006/08	27.7	+1.4	5.2	3.8	5.4	4.5	3.4	4.6
2006/09	28.1	+2.4	4.6	4.3	4.9	3.7	3.4	4.0
2006/10	26.3	+3.8	5.2	4.5	4.9	4.2	3.7	4.3
2006/11	22.6	+5.0	4.7	4.3	4.1	3.6	3.0	3.4
2006/12	21.2	+5.3	5.0	5.1	4.0	3.8	3.3	3.3

Table S24. Same as Table S1 for OMI vs. TES* over SH mid-latitudes ($60^\circ \text{ S} < \text{Lat} \leq 35^\circ \text{ S}$)

Year/Month	μ_{TES^*}	$\mu_{(OMI-TES^*)}$	σ_{OMI}	σ_{TES^*}	$\sigma_{(OMI-TES^*)}$	σ_{OMI}^*	$\sigma_{TES^*}^*$	$\sigma_{(OMI-TES^*)}^*$
2005/01	24.4	+0.4	5.2	5.2	3.6	3.3	3.1	2.7
2005/02	24.2	+0.7	4.9	5.1	3.5	3.0	3.1	2.6
2005/03	22.9	+1.2	3.5	3.6	3.4	2.7	2.6	2.8
2005/04	23.2	+1.8	3.7	3.5	3.3	2.0	1.8	1.6
2005/05	24.8	+0.3	3.7	3.2	4.2	2.0	2.4	2.5
2005/07	26.9	+0.7	4.6	3.8	4.7	3.6	3.4	3.9
2005/08	28.1	+2.0	5.0	3.9	4.9	4.2	3.6	4.3
2005/09	29.2	+2.9	4.8	4.3	4.5	2.9	3.1	3.2
2005/10	29.5	+1.8	5.0	4.4	4.7	4.1	3.8	4.2
2005/11	27.1	+1.0	4.8	4.4	4.5	3.6	3.5	3.6
2005/12	25.3	+1.5	4.6	4.7	3.7	3.4	3.4	3.2
2006/01	24.8	+0.6	5.6	5.9	3.7	3.9	3.9	3.2
2006/02	23.9	+1.1	4.8	4.9	3.4	3.2	3.3	2.9
2006/03	23.7	+0.9	4.5	4.6	3.6	3.5	3.4	3.2
2006/04	23.1	+1.8	3.9	3.5	3.7	3.1	3.0	3.2
2006/05	23.8	+1.6	3.7	3.1	4.1	2.9	2.9	3.3
2006/06	24.9	+0.4	4.1	3.4	4.1	3.1	3.1	3.3
2006/07	26.6	+0.3	4.4	3.8	4.5	3.6	3.4	3.8
2006/08	28.0	+1.1	5.2	4.0	5.0	4.5	3.6	4.3
2006/09	29.3	+1.2	4.6	4.4	4.5	3.7	3.5	3.7
2006/10	28.9	+1.2	5.2	4.5	4.6	4.2	3.9	4.1
2006/11	25.8	+1.7	4.7	4.3	3.9	3.6	3.4	3.3
2006/12	25.0	+1.4	5.0	5.0	3.8	3.8	3.6	3.4