

Supplemental Material: Tropospheric column ozone: Matching individual profiles from Aura OMI and TES with a chemistry-transport model

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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^*} | $\mu_{(OMI-TES^*)}$ ^b | σ_{OMI} | σ_{TES^*} | $\sigma_{(OMI-TES^*)}$ | σ_{OMI}^* | $\sigma_{TES^*}^*$ | $\sigma_{(OMI-TES^*)}^*$ |
|------------|---------------|----------------------------------|----------------|------------------|------------------------|------------------|--------------------|--------------------------|
| 2005/01 | 30.0 | +1.4 (+0.4) | 5.6 | 5.1 | 5.4 | 4.2 | 3.9 | 4.2 |
| 2005/02 | 32.9 | +1.3 (+0.3) | 6.1 | 6.1 | 5.9 | 4.2 | 4.2 | 4.5 |
| 2005/03 | 37.1 | +1.6 (-0.2) | 6.2 | 6.4 | 5.5 | 4.5 | 4.5 | 4.1 |
| 2005/04 | 40.6 | +2.1 (+0.3) | 7.2 | 6.9 | 6.5 | 3.1 | 3.6 | 3.2 |
| 2005/05 | 45.7 | +4.3 (+2.4) | 6.4 | 6.4 | 7.1 | 4.0 | 4.4 | 4.7 |
| 2005/07 | 48.3 | +4.5 (+3.8) | 7.3 | 8.3 | 6.6 | 5.5 | 6.4 | 5.6 |
| 2005/08 | 44.2 | +4.5 (+3.4) | 6.7 | 7.5 | 5.9 | 5.1 | 5.9 | 5.0 |
| 2005/09 | 41.3 | +3.2 (+2.0) | 6.1 | 6.3 | 5.3 | 3.8 | 4.1 | 3.9 |
| 2005/10 | 34.6 | +2.0 (-0.2) | 5.6 | 5.5 | 4.9 | 4.4 | 4.3 | 4.3 |
| 2005/11 | 31.0 | +1.3 (-0.9) | 5.1 | 5.0 | 4.9 | 3.9 | 4.1 | 4.2 |
| 2005/12 | 29.3 | +1.0 (-1.4) | 4.9 | 4.7 | 4.8 | 3.7 | 3.8 | 4.0 |
| 2006/01 | 29.8 | +1.3 (-0.8) | 5.7 | 5.1 | 5.1 | 4.6 | 4.4 | 4.5 |
| 2006/02 | 31.8 | +2.1 (-1.1) | 6.1 | 5.7 | 5.7 | 5.0 | 4.7 | 4.8 |
| 2006/03 | 36.7 | +2.2 (-0.6) | 7.6 | 7.0 | 6.9 | 6.2 | 5.9 | 6.0 |
| 2006/04 | 41.0 | +2.6 (+0.5) | 7.3 | 7.0 | 6.7 | 5.9 | 5.8 | 5.8 |
| 2006/05 | 44.5 | +3.1 (+1.3) | 7.2 | 7.2 | 7.4 | 5.6 | 6.2 | 6.5 |
| 2006/06 | 47.4 | +4.2 (+2.9) | 7.6 | 8.0 | 7.5 | 5.9 | 6.5 | 6.4 |
| 2006/07 | 47.6 | +4.8 (+4.2) | 7.5 | 8.2 | 7.0 | 5.7 | 6.6 | 5.8 |
| 2006/08 | 45.7 | +4.0 (+3.6) | 6.8 | 7.7 | 6.0 | 4.9 | 6.0 | 5.1 |
| 2006/09 | 39.0 | +3.0 (+1.8) | 5.4 | 5.9 | 5.4 | 4.0 | 4.7 | 4.4 |
| 2006/10 | 34.6 | +1.9 (+0.5) | 4.8 | 5.4 | 5.2 | 3.9 | 4.4 | 4.6 |
| 2006/11 | 31.7 | +1.5 (-0.0) | 4.9 | 4.9 | 5.0 | 3.9 | 4.0 | 4.4 |
| 2006/12 | 29.8 | +0.8 (-0.5) | 5.3 | 4.9 | 5.5 | 4.3 | 4.2 | 4.8 |

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

^bValues in parentheses show the mean OMI-TES bias referring to the CTM calculated by Eq. 9.

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 (+2.2) | 6.5 | 5.8 | 4.8 | 4.2 | 4.2 | 3.2 |
| 2005/02 | 36.1 | +2.3 (+1.6) | 6.7 | 6.7 | 5.4 | 4.3 | 4.7 | 3.8 |
| 2005/03 | 39.7 | +1.1 (+0.4) | 6.9 | 7.4 | 5.2 | 4.8 | 5.2 | 3.8 |
| 2005/04 | 44.5 | +2.1 (+0.5) | 6.6 | 6.3 | 6.3 | 2.7 | 2.9 | 2.3 |
| 2005/05 | 45.9 | +7.6 (+5.9) | 7.5 | 6.8 | 6.0 | 4.7 | 4.7 | 4.0 |
| 2005/07 | 45.7 | +1.9 (+3.1) | 7.4 | 9.1 | 6.7 | 4.2 | 5.8 | 5.1 |
| 2005/08 | 42.5 | +1.6 (+1.6) | 6.1 | 8.0 | 6.1 | 3.3 | 5.3 | 4.6 |
| 2005/09 | 41.7 | -0.2 (-0.1) | 4.5 | 7.1 | 5.7 | 2.3 | 4.1 | 3.4 |
| 2005/10 | 38.2 | +0.3 (-1.2) | 4.4 | 6.2 | 4.9 | 3.3 | 4.8 | 4.0 |
| 2005/11 | 34.5 | +0.4 (+0.2) | 4.8 | 5.6 | 4.3 | 3.4 | 4.4 | 3.7 |
| 2005/12 | 32.7 | +1.2 (+0.6) | 5.3 | 5.2 | 4.9 | 4.0 | 4.3 | 3.9 |
| 2006/01 | 33.6 | +1.1 (+0.9) | 6.5 | 6.3 | 5.2 | 4.9 | 4.7 | 4.4 |
| 2006/02 | 33.9 | +0.1 (+0.8) | 6.2 | 6.4 | 5.2 | 4.9 | 5.1 | 4.5 |
| 2006/03 | 37.4 | +1.9 (+1.6) | 7.8 | 7.0 | 6.0 | 6.1 | 5.5 | 5.2 |
| 2006/04 | 42.8 | +3.1 (+1.9) | 8.4 | 8.3 | 6.7 | 6.3 | 6.6 | 5.7 |
| 2006/05 | 45.9 | +5.6 (+4.0) | 7.4 | 7.5 | 7.2 | 5.8 | 6.3 | 6.2 |
| 2006/06 | 45.9 | +5.1 (+4.5) | 6.9 | 8.5 | 7.3 | 4.8 | 6.0 | 5.6 |
| 2006/07 | 45.3 | +2.5 (+4.5) | 7.1 | 8.5 | 6.9 | 4.1 | 5.7 | 5.1 |
| 2006/08 | 43.9 | +0.6 (+3.1) | 6.7 | 8.8 | 6.9 | 3.6 | 5.5 | 4.8 |
| 2006/09 | 40.1 | -0.4 (+1.8) | 4.7 | 6.9 | 5.6 | 2.8 | 4.7 | 4.2 |
| 2006/10 | 37.2 | +1.1 (+1.5) | 4.6 | 6.5 | 5.4 | 3.5 | 5.1 | 4.4 |
| 2006/11 | 34.9 | +1.3 (+1.4) | 4.6 | 5.4 | 4.7 | 3.9 | 4.5 | 4.1 |
| 2006/12 | 34.2 | +1.3 (+1.2) | 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 (-0.3) | 4.7 | 6.8 | 5.8 | 2.2 | 3.4 | 3.3 |
| 2005/02 | 31.9 | -0.5 (-1.0) | 4.6 | 6.9 | 5.7 | 2.1 | 3.5 | 3.1 |
| 2005/03 | 35.2 | -1.2 (-1.9) | 6.9 | 8.9 | 5.6 | 2.7 | 4.3 | 3.2 |
| 2005/04 | 37.2 | +0.6 (+0.1) | 8.9 | 9.1 | 5.3 | 1.6 | 2.5 | 1.9 |
| 2005/05 | 36.4 | +3.1 (+1.3) | 10.2 | 9.5 | 5.9 | 2.8 | 3.9 | 3.3 |
| 2005/07 | 32.8 | -0.0 (-0.5) | 3.6 | 7.6 | 5.9 | 2.1 | 4.3 | 3.9 |
| 2005/08 | 31.9 | +0.8 (+0.1) | 3.0 | 6.9 | 5.7 | 2.0 | 4.0 | 3.7 |
| 2005/09 | 33.0 | +0.3 (-0.5) | 3.3 | 7.2 | 6.3 | 1.7 | 3.5 | 3.3 |
| 2005/10 | 32.4 | +0.0 (-0.7) | 3.5 | 7.2 | 5.7 | 2.3 | 4.4 | 3.9 |
| 2005/11 | 32.2 | -0.6 (-0.6) | 3.2 | 6.4 | 5.6 | 2.2 | 3.7 | 3.6 |
| 2005/12 | 33.7 | -1.5 (-0.3) | 3.4 | 6.8 | 6.6 | 2.5 | 3.9 | 3.9 |
| 2006/01 | 33.1 | -2.1 (-0.9) | 3.7 | 7.0 | 6.1 | 2.7 | 4.2 | 4.1 |
| 2006/02 | 31.4 | -1.0 (-0.5) | 3.8 | 7.2 | 5.9 | 2.5 | 3.9 | 3.6 |
| 2006/03 | 34.9 | +0.2 (+0.9) | 5.8 | 8.1 | 5.4 | 3.4 | 4.5 | 3.8 |
| 2006/04 | 37.5 | +2.9 (+3.1) | 8.7 | 10.1 | 6.5 | 3.7 | 5.3 | 4.2 |
| 2006/05 | 36.1 | +4.5 (+3.3) | 9.3 | 9.4 | 5.9 | 3.4 | 5.2 | 4.3 |
| 2006/06 | 33.5 | +3.5 (+1.3) | 5.6 | 8.2 | 5.8 | 2.6 | 4.6 | 4.2 |
| 2006/07 | 32.3 | +1.6 (+0.9) | 3.2 | 8.0 | 6.7 | 2.3 | 4.6 | 4.1 |
| 2006/08 | 32.3 | +0.9 (-0.5) | 2.9 | 7.6 | 6.8 | 1.9 | 4.5 | 4.1 |
| 2006/09 | 32.5 | +1.2 (-0.4) | 3.7 | 7.4 | 6.8 | 2.0 | 4.1 | 3.7 |
| 2006/10 | 32.4 | +1.3 (+0.0) | 3.1 | 7.0 | 6.1 | 2.3 | 4.6 | 4.0 |
| 2006/11 | 32.5 | +0.3 (+0.3) | 3.3 | 6.8 | 5.9 | 2.4 | 4.5 | 4.1 |
| 2006/12 | 32.0 | -0.8 (+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 (-2.6) | 4.4 | 7.1 | 6.0 | 2.0 | 3.9 | 3.3 |
| 2005/02 | 27.2 | +0.1 (-2.7) | 4.4 | 6.9 | 5.6 | 1.7 | 3.0 | 2.8 |
| 2005/03 | 28.0 | -1.2 (-2.5) | 4.3 | 6.6 | 6.0 | 1.8 | 3.5 | 3.2 |
| 2005/04 | 27.9 | -0.9 (-2.5) | 4.3 | 6.6 | 5.9 | 0.9 | 1.9 | 1.8 |
| 2005/05 | 28.2 | +1.6 (+1.3) | 3.4 | 4.6 | 4.5 | 1.5 | 2.4 | 2.3 |
| 2005/07 | 32.4 | +0.5 (+1.8) | 4.7 | 5.8 | 6.2 | 2.7 | 3.8 | 3.7 |
| 2005/08 | 32.8 | +0.9 (+0.3) | 5.1 | 7.2 | 6.6 | 3.1 | 4.3 | 3.9 |
| 2005/09 | 35.9 | +1.0 (-1.9) | 5.4 | 8.5 | 7.1 | 2.3 | 3.7 | 3.5 |
| 2005/10 | 39.6 | -0.8 (-3.8) | 5.6 | 8.3 | 6.6 | 3.4 | 5.3 | 4.4 |
| 2005/11 | 36.5 | -0.9 (-3.5) | 5.1 | 8.4 | 6.1 | 3.0 | 4.9 | 4.0 |
| 2005/12 | 33.5 | -1.1 (-3.4) | 4.5 | 7.2 | 6.1 | 2.7 | 4.2 | 4.0 |
| 2006/01 | 30.4 | -1.9 (-2.0) | 4.5 | 7.5 | 6.2 | 2.6 | 4.5 | 4.2 |
| 2006/02 | 27.8 | -0.4 (-1.7) | 4.4 | 8.2 | 6.4 | 2.2 | 3.9 | 3.6 |
| 2006/03 | 26.2 | +1.1 (-1.3) | 4.1 | 7.1 | 6.1 | 2.0 | 3.7 | 3.5 |
| 2006/04 | 25.4 | +2.4 (-0.0) | 3.3 | 6.2 | 5.2 | 1.8 | 3.5 | 3.2 |
| 2006/05 | 29.3 | +1.3 (+1.1) | 3.3 | 6.3 | 5.2 | 2.3 | 4.2 | 3.5 |
| 2006/06 | 32.1 | +2.1 (+2.5) | 4.2 | 6.2 | 6.0 | 2.9 | 4.3 | 3.9 |
| 2006/07 | 31.1 | +3.0 (+3.1) | 4.0 | 6.4 | 6.1 | 2.9 | 4.0 | 3.6 |
| 2006/08 | 33.5 | +1.9 (+1.4) | 4.3 | 6.6 | 6.2 | 2.9 | 4.2 | 3.8 |
| 2006/09 | 37.4 | +1.0 (-1.1) | 4.8 | 8.2 | 6.9 | 2.9 | 4.7 | 4.1 |
| 2006/10 | 36.2 | +0.8 (-2.3) | 4.9 | 8.6 | 6.6 | 3.2 | 5.0 | 4.2 |
| 2006/11 | 34.8 | +0.0 (-2.8) | 4.6 | 7.4 | 5.7 | 2.7 | 4.7 | 4.1 |
| 2006/12 | 31.8 | -0.8 (-3.3) | 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 (-3.1) | 4.1 | 6.1 | 4.5 | 2.7 | 3.9 | 3.1 |
| 2005/02 | 30.7 | +1.2 (-3.7) | 3.6 | 5.1 | 4.0 | 2.3 | 3.1 | 2.5 |
| 2005/03 | 28.3 | +2.1 (-3.2) | 3.8 | 4.4 | 3.7 | 2.4 | 3.0 | 2.7 |
| 2005/04 | 29.0 | +2.4 (-1.5) | 4.2 | 4.8 | 4.3 | 1.7 | 2.2 | 2.2 |
| 2005/05 | 27.1 | +3.1 (-0.8) | 4.7 | 4.0 | 4.5 | 2.5 | 2.7 | 2.8 |
| 2005/07 | 30.3 | +5.1 (+0.1) | 6.7 | 5.3 | 5.1 | 5.4 | 4.3 | 4.4 |
| 2005/08 | 30.9 | +5.0 (-1.0) | 6.6 | 5.9 | 5.6 | 5.3 | 4.7 | 4.7 |
| 2005/09 | 34.8 | +2.8 (-4.0) | 6.5 | 6.6 | 5.6 | 4.3 | 4.5 | 4.2 |
| 2005/10 | 37.2 | +2.4 (-4.9) | 6.8 | 6.5 | 5.0 | 5.2 | 5.2 | 4.4 |
| 2005/11 | 35.3 | -0.3 (-5.3) | 5.8 | 6.9 | 4.6 | 4.2 | 5.1 | 3.7 |
| 2005/12 | 34.0 | +0.6 (-3.8) | 5.2 | 6.2 | 4.3 | 3.7 | 4.6 | 3.6 |
| 2006/01 | 34.1 | -1.0 (-4.4) | 4.1 | 6.1 | 4.9 | 3.2 | 4.5 | 3.9 |
| 2006/02 | 32.0 | +0.1 (-4.2) | 3.8 | 5.9 | 4.5 | 2.9 | 4.4 | 3.7 |
| 2006/03 | 29.4 | +2.4 (-1.0) | 3.6 | 5.3 | 4.4 | 2.6 | 4.0 | 3.5 |
| 2006/04 | 27.1 | +3.6 (+0.8) | 3.8 | 4.5 | 4.2 | 2.8 | 3.6 | 3.3 |
| 2006/05 | 26.2 | +3.2 (-0.1) | 4.5 | 4.2 | 3.8 | 3.7 | 3.5 | 3.4 |
| 2006/06 | 28.4 | +2.8 (+1.2) | 6.1 | 5.3 | 4.5 | 5.1 | 4.2 | 3.9 |
| 2006/07 | 29.0 | +3.4 (+1.6) | 5.9 | 5.0 | 5.2 | 4.5 | 3.9 | 4.1 |
| 2006/08 | 30.4 | +3.1 (-0.5) | 6.4 | 5.2 | 5.3 | 4.9 | 4.2 | 4.3 |
| 2006/09 | 35.5 | +1.5 (-2.7) | 5.7 | 6.2 | 5.3 | 4.0 | 4.2 | 4.0 |
| 2006/10 | 35.4 | +1.4 (-4.4) | 5.4 | 6.3 | 5.7 | 4.3 | 5.0 | 4.5 |
| 2006/11 | 34.1 | +1.3 (-3.9) | 5.4 | 6.1 | 4.6 | 4.2 | 5.0 | 4.0 |
| 2006/12 | 34.5 | -0.3 (-4.6) | 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 (-1.5) | 5.2 | 5.2 | 3.6 | 3.3 | 3.1 | 2.7 |
| 2005/02 | 24.2 | +0.7 (-1.5) | 4.9 | 5.1 | 3.5 | 3.0 | 3.1 | 2.6 |
| 2005/03 | 22.9 | +1.2 (-1.4) | 3.5 | 3.6 | 3.4 | 2.7 | 2.6 | 2.8 |
| 2005/04 | 23.2 | +1.8 (-1.1) | 3.7 | 3.5 | 3.3 | 2.0 | 1.8 | 1.6 |
| 2005/05 | 24.8 | +0.3 (-1.8) | 3.7 | 3.2 | 4.2 | 2.0 | 2.4 | 2.5 |
| 2005/07 | 26.9 | +0.7 (-2.9) | 4.6 | 3.8 | 4.7 | 3.6 | 3.4 | 3.9 |
| 2005/08 | 28.1 | +2.0 (-2.8) | 5.0 | 3.9 | 4.9 | 4.2 | 3.6 | 4.3 |
| 2005/09 | 29.2 | +2.9 (-2.3) | 4.8 | 4.3 | 4.5 | 2.9 | 3.1 | 3.2 |
| 2005/10 | 29.5 | +1.8 (-3.5) | 5.0 | 4.4 | 4.7 | 4.1 | 3.8 | 4.2 |
| 2005/11 | 27.1 | +1.0 (-3.5) | 4.8 | 4.4 | 4.5 | 3.6 | 3.5 | 3.6 |
| 2005/12 | 25.3 | +1.5 (-2.9) | 4.6 | 4.7 | 3.7 | 3.4 | 3.4 | 3.2 |
| 2006/01 | 24.8 | +0.6 (-2.3) | 5.6 | 5.9 | 3.7 | 3.9 | 3.9 | 3.2 |
| 2006/02 | 23.9 | +1.1 (-2.0) | 4.8 | 4.9 | 3.4 | 3.2 | 3.3 | 2.9 |
| 2006/03 | 23.7 | +0.9 (-1.5) | 4.5 | 4.6 | 3.6 | 3.5 | 3.4 | 3.2 |
| 2006/04 | 23.1 | +1.8 (-0.2) | 3.9 | 3.5 | 3.7 | 3.1 | 3.0 | 3.2 |
| 2006/05 | 23.8 | +1.6 (-0.3) | 3.7 | 3.1 | 4.1 | 2.9 | 2.9 | 3.3 |
| 2006/06 | 24.9 | +0.4 (-0.5) | 4.1 | 3.4 | 4.1 | 3.1 | 3.1 | 3.3 |
| 2006/07 | 26.6 | +0.3 (-1.0) | 4.4 | 3.8 | 4.5 | 3.6 | 3.4 | 3.8 |
| 2006/08 | 28.0 | +1.1 (-2.0) | 5.2 | 4.0 | 5.0 | 4.5 | 3.6 | 4.3 |
| 2006/09 | 29.3 | +1.2 (-2.6) | 4.6 | 4.4 | 4.5 | 3.7 | 3.5 | 3.7 |
| 2006/10 | 28.9 | +1.2 (-2.8) | 5.2 | 4.5 | 4.6 | 4.2 | 3.9 | 4.1 |
| 2006/11 | 25.8 | +1.7 (-1.8) | 4.7 | 4.3 | 3.9 | 3.6 | 3.4 | 3.3 |
| 2006/12 | 25.0 | +1.4 (-1.9) | 5.0 | 5.0 | 3.8 | 3.8 | 3.6 | 3.4 |