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Supplement of

Evaluating consistency between total column CO₂ retrievals from OCO-2 and the in situ network over North America: implications for carbon flux estimation

Bharat Rastogi et al.

Correspondence to: Bharat Rastogi (bharat.rastogi@noaa.gov)

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This document contains scatterplots showing the difference between simulations and OCO-2 retrievals ($\Delta X_{CO_2}$) and several parameters, some of which are used in the bias correction of OCO-2 $X_{CO_2}$. In each figure, the top row contains correlations between a parameter of interest (e.g. AOD) and the difference between bias corrected and ‘raw’ OCO-2 retrievals (i.e., $\Delta X_{ret-bc}$). The middle row contains correlations between a parameter of interest and the difference between simulated $X_{CO_2}$ and OCO-2 retrievals prior to the bias correction ($\Delta X_{sim-ret}$). Finally, the third row shows correlations between a parameter of interest and the difference between bias corrected OCO-2 and simulated $X_{CO_2}$ (i.e., $\Delta X_{ret,bc-sim}$). All parameters compared here are obtained from the OCO-2 v10 lite files, obtained at [https://disc.gsfc.nasa.gov/datasets?page=1&keywords=OCO-2](https://disc.gsfc.nasa.gov/datasets?page=1&keywords=OCO-2), last accessed on August 7, 2021.
Autumn: SON, 2014

\[ y = 0.01x + 1.81 \]
\[ r = 0.16 \]

\[
\Delta X_{\text{rel, bc}} \text{ [ppm]}
\]

\[
\Delta X_{\text{lim, rel, tol} \text{ [ppm]}}
\]

\[
\Delta X_{\text{rel, cm}} \text{ [ppm]}
\]

Winter: DJF, 2014-15

\[ y = 0.02x + 2.16 \]
\[ r = 0.29 \]

\[
\Delta X_{\text{rel, bc}} \text{ [ppm]}
\]

\[
\Delta X_{\text{lim, rel, tol} \text{ [ppm]}}
\]

\[
\Delta X_{\text{rel, cm}} \text{ [ppm]}
\]

Spring: MAM, 2015

\[ y = 0.02x + 2.18 \]
\[ r = 0.19 \]

\[
\Delta X_{\text{rel, bc}} \text{ [ppm]}
\]

\[
\Delta X_{\text{lim, rel, tol} \text{ [ppm]}}
\]

\[
\Delta X_{\text{rel, cm}} \text{ [ppm]}
\]

Summer: JJA, 2015

\[ y = -0.0x + 2.15 \]
\[ r = 0.05 \]

\[
\Delta X_{\text{rel, bc}} \text{ [ppm]}
\]

\[
\Delta X_{\text{lim, rel, tol} \text{ [ppm]}}
\]

\[
\Delta X_{\text{rel, cm}} \text{ [ppm]}
\]
Autumn: SON, 2014

\[ y = -0.0x + 2.0 \]
\[ r = -0.17 \]

Winter: DJF, 2014-15

\[ y = -0.0x + 1.93 \]
\[ r = -0.21 \]

Spring: MAM, 2015

\[ y = -0.0x + 1.76 \]
\[ r = -0.0 \]

Summer: JJA, 2015

\[ y = -0.0x + 2.34 \]
\[ r = -0.03 \]