

GEOS-Chem-CarbonTracker

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Atmospheric transport models are usually assumed to be unbiased when used in trace gas inversions such as CarbonTracker. The most direct way to test this assumption, and to incorporate transport error in inversions is to use more than one transport model. In this poster, we present emerging comparisons of the current CarbonTracker atmospheric transport model (TM5 with ERA-interim meteorology) and an alternative transport model (GEOS-Chem v9.2 using MERRA meteorology) being developed for inclusion in a future CarbonTracker product. The GEOS-Chem transport model is configured at 2.5° longitude x 2° latitude, similar to the resolution currently used for TM5. Results indicate that GEOS-Chem has similar performance to TM5 (Figure 1), but systematic differences also suggest that the two models have important differences that may inform our estimates of transport uncertainty.

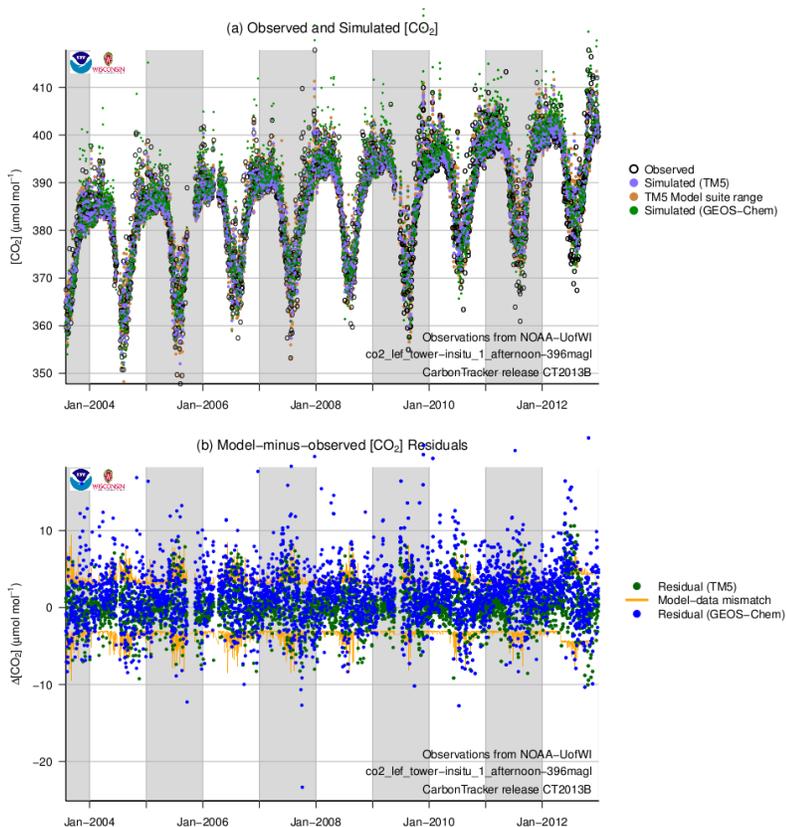


Figure 1. (Top panel) Measured and simulated atmospheric carbon dioxide (CO₂) at the 396m level of the WLEF tower (Park Falls, WI). Simulated values are created by both the TM5 and GEOS-Chem models, using surface fluxes from CT2013B. (Bottom panel) Simulated-minus-observed residuals for both transport models.