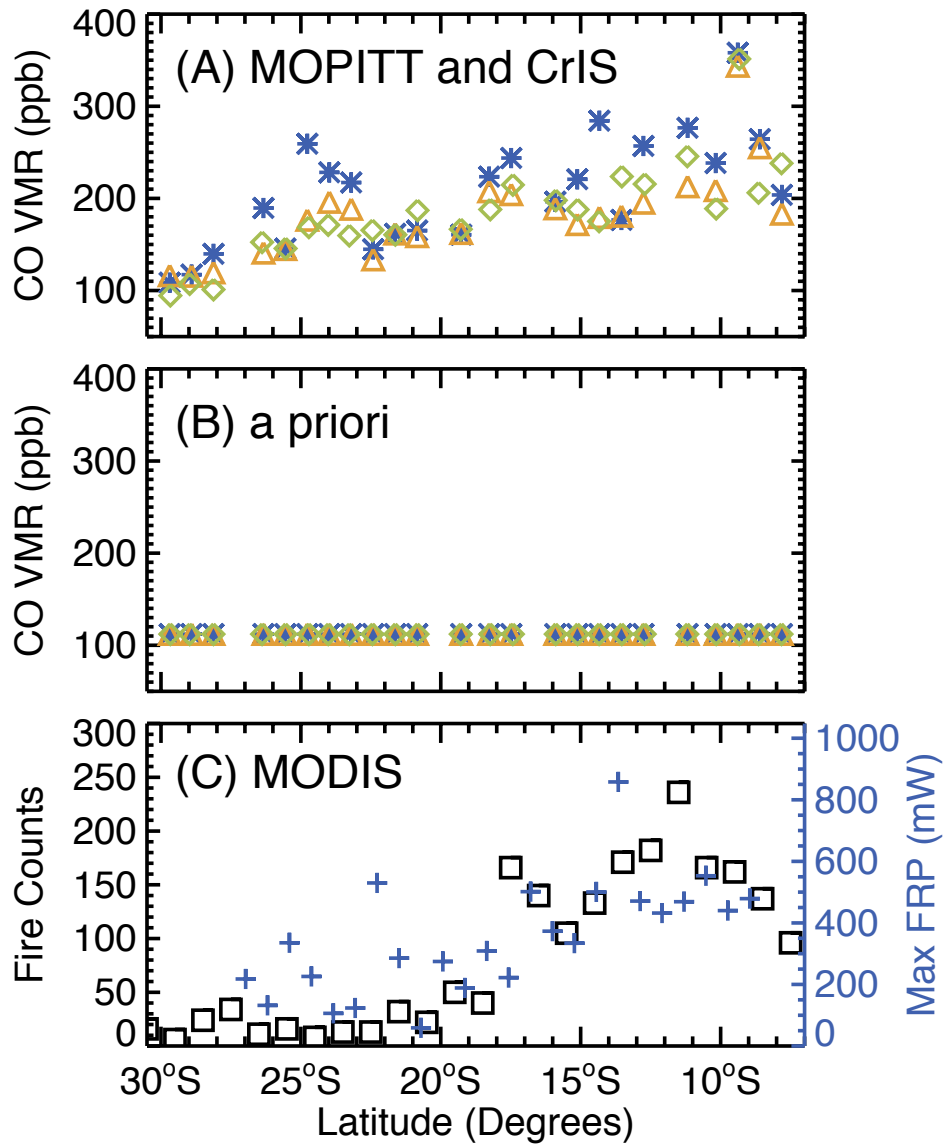


Supplemental Material Figure 1. Tropospheric carbon monoxide (CO) volume mixing ratio (parts-per-billion) profiles measured by Terra MOPITT (version 6.0) on August 27th, Suomi-NPP CrIS on August 28th 2013, and fire radiative power (milliwatts) measured by Aqua MODIS. A common a priori profile was used in the Terra MOPITT and Suomi-NPP CrIS retrievals. (Panel A) MOPITT multiple spectral CO fields; (Panel B) MOPITT thermal infrared CO fields; (Panel C) CrIS thermal infrared CO fields in the 10-pressure grid identical to the one used in the MOPITT version 6 operational retrieval algorithm; (Panel D) CrIS thermal infrared CO fields in the 67-pressure grid identical to the one used in the TES version 5 operational retrieval algorithm. (Panel E) a priori profiles used in the retrievals; (Panel F) Fire radiative power measured by Aqua MODIS over Africa for August 28th, 2013.



Supplemental Material Figure 2. Carbon monoxide (CO) volume mixing ratio (parts-per-billion) from surface to 700 hPa, fire counts and maximum fire radiative power (milliwatts) measured by Aqua MODIS over Africa for August 28th, 2013. A common a priori profile was used in the MOPITT and CrIS retrievals. (Panel A) MOPITT joint TIR/NIR (blue stars), MOPITT TIR CO (green triangles), and CrIS TIR CO from MUSES algorithm (golden diamonds); (Panel B) a priori CO vmr used in retrievals shown in Panel A. (Panel C) Fire counts (black squares) and maximum fire radiative power (blue plus) among the Aqua MODIS measurements whose data quality confidences are greater than 70%.

Supplemental Material Table 1. The differences of carbon monoxide volume mixing ratio in the lower troposphere (surface to 3km (~700 hPa)) between CrIS and MOPITT measurements shown in the supplemental material figure 2A.

Data Product	Mean		RMS	
	ppb	%	ppb	%
CrIS –MOPITT TIR	2.8	1.6	24.9	13.9
CrIS –MOPITT Joint TIR/NIR	-23.6	-9.7	37.6	16.8