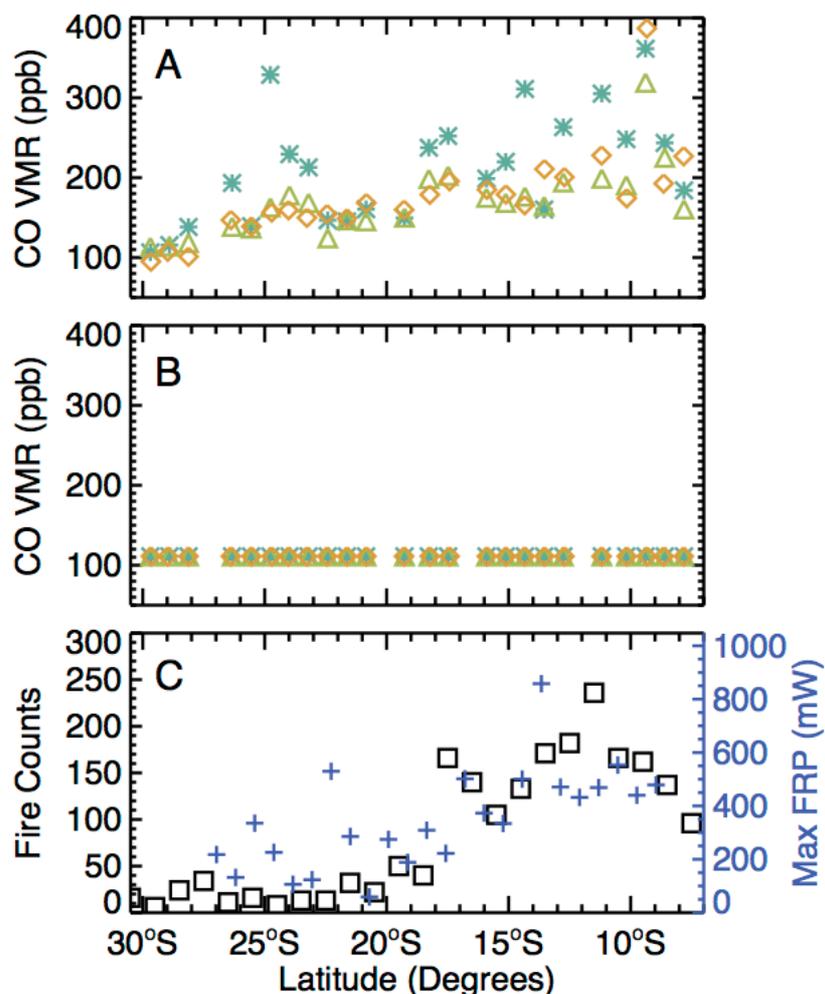


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Supplemental Material Figure 1. Tropospheric carbon monoxide (CO) volume mixing ratio (parts-per-billion) profiles measured by Terra MOPITT (version 6.0) on August 27th, Suomi-NPP CrIS on August 28th 2013, and fire radiative power (milliwatts) measured 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.



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

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

Data Product	Mean ppb	RMS ppb
CrIS –MOPITT TIR	2.8	24.9
CrIS –MOPITT Joint TIR/NIR	-23.6	37.6

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