

# Supporting Information for “Australian fire emissions estimated by global biomass burning inventories: variability and observational constraints”

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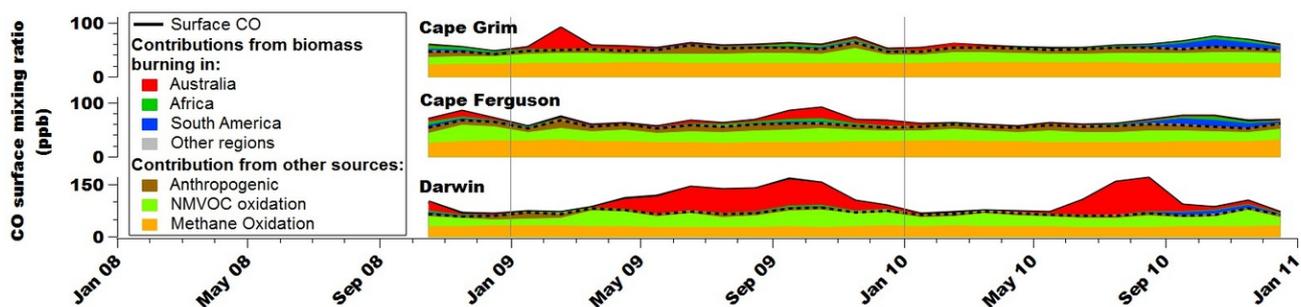
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1. Figures S1 to S7

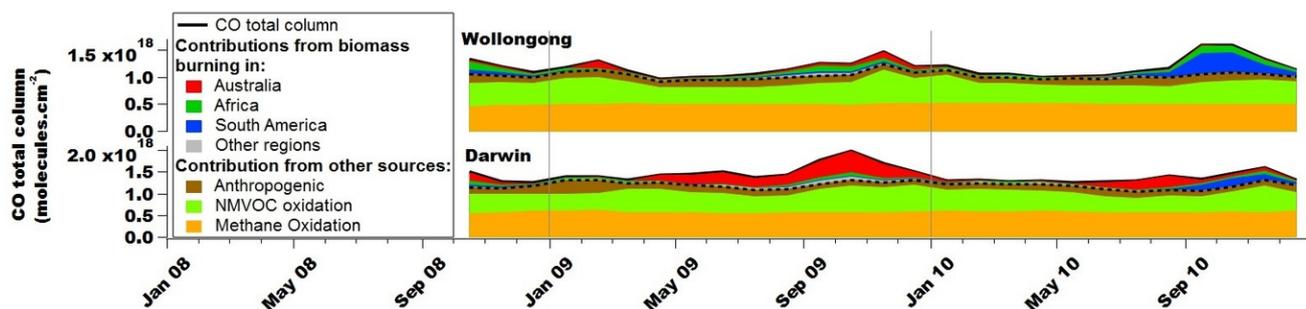
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**Figure S1.** Source attribution of surface CO mixing ratio at Cape Grim, Cape Ferguson, and Darwin as simulated by GEOS-Chem. Sources include primary biomass burning emissions from Australia (red), Africa (green), South America (blue), other regions (grey), primary anthropogenic emissions (brown), and secondary production from non-methane volatile organic compound oxidation (light green) and methane oxidation (orange). The black line represents total simulated surface CO and the dotted line represents the sum of non-biomass burning contributions to simulated surface CO.



**Figure S2.** Same as Figure S1 but for total column CO at Wollongong and Darwin.

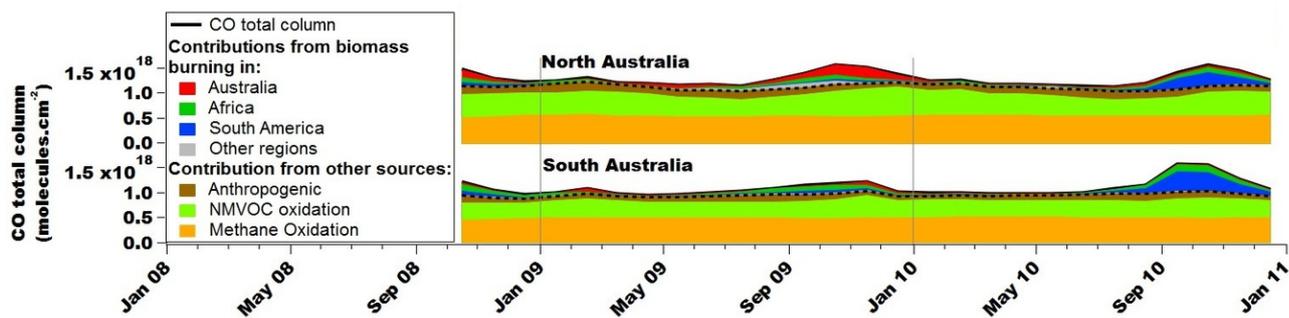


Figure S3. Same as Figure S1 but but averaged over northern and southern Australia.

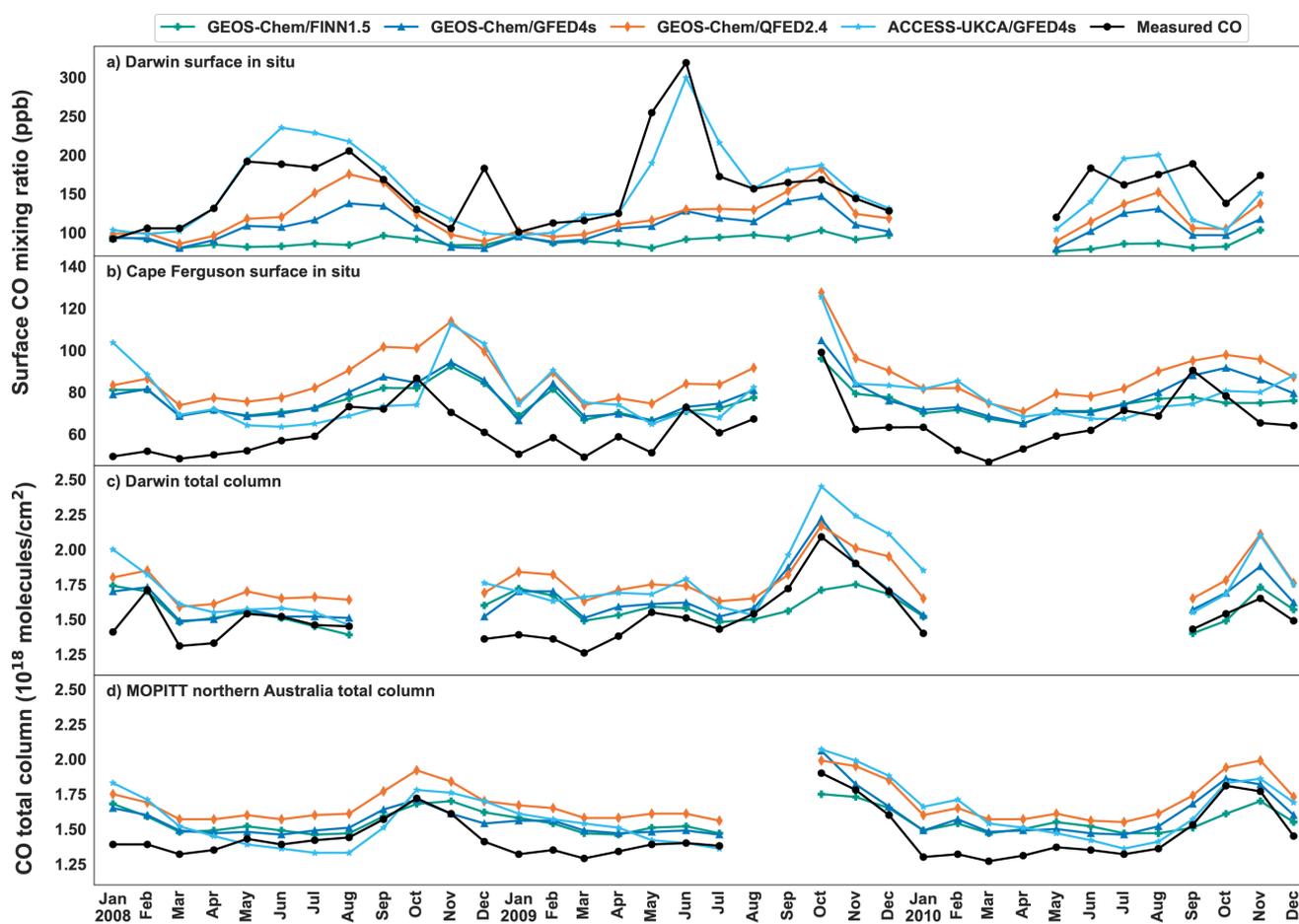
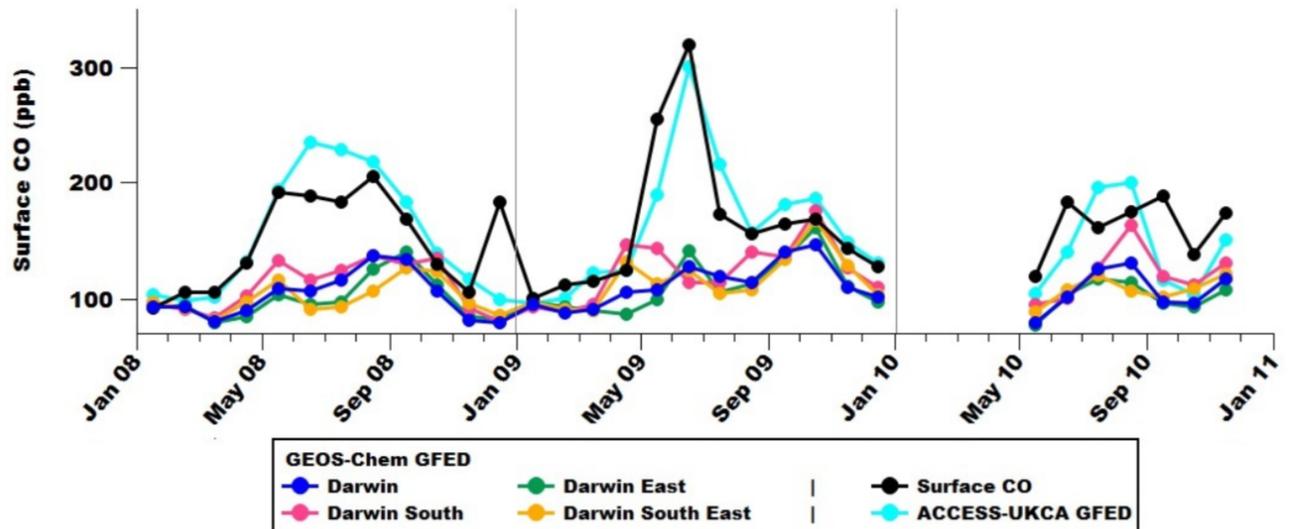
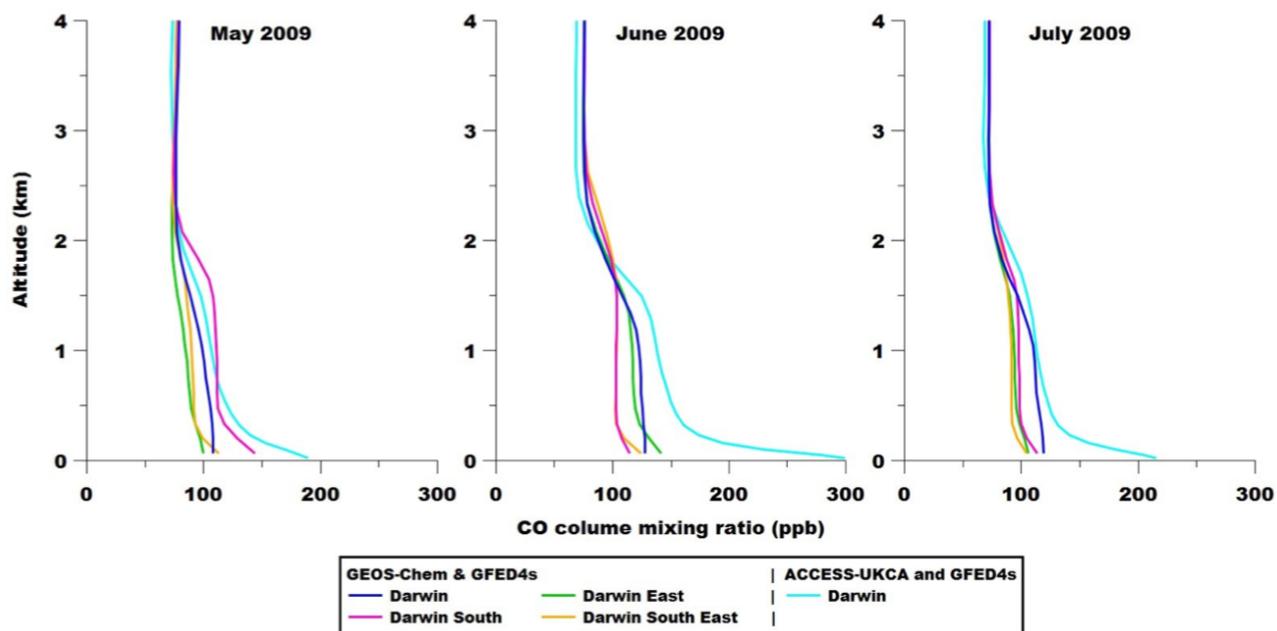


Figure S4. Same as Figure 6 in the main text but without removing the mean bias.



**Figure S5.** Time series of in situ surface CO mixing ratios at Darwin from measurements (black), ACCESS-UKCA/GFED4s (light blue) and GEOS-Chem/GFED4s sampled in the Darwin grid cell (dark blue) and the grid cells directly to the south (pink), southeast (orange), and east (green) of the Darwin grid cell.



**Figure S6.** May-July 2009 0-4 km vertical profiles of simulated CO mixing ratios at Darwin from ACCESS-UKCA/GFED4s (light blue) and GEOS-Chem/GFED4s sampled in the Darwin grid cell (dark blue) and the grid cells directly to the south (pink), southeast (orange), and east (green) of the Darwin grid cell.

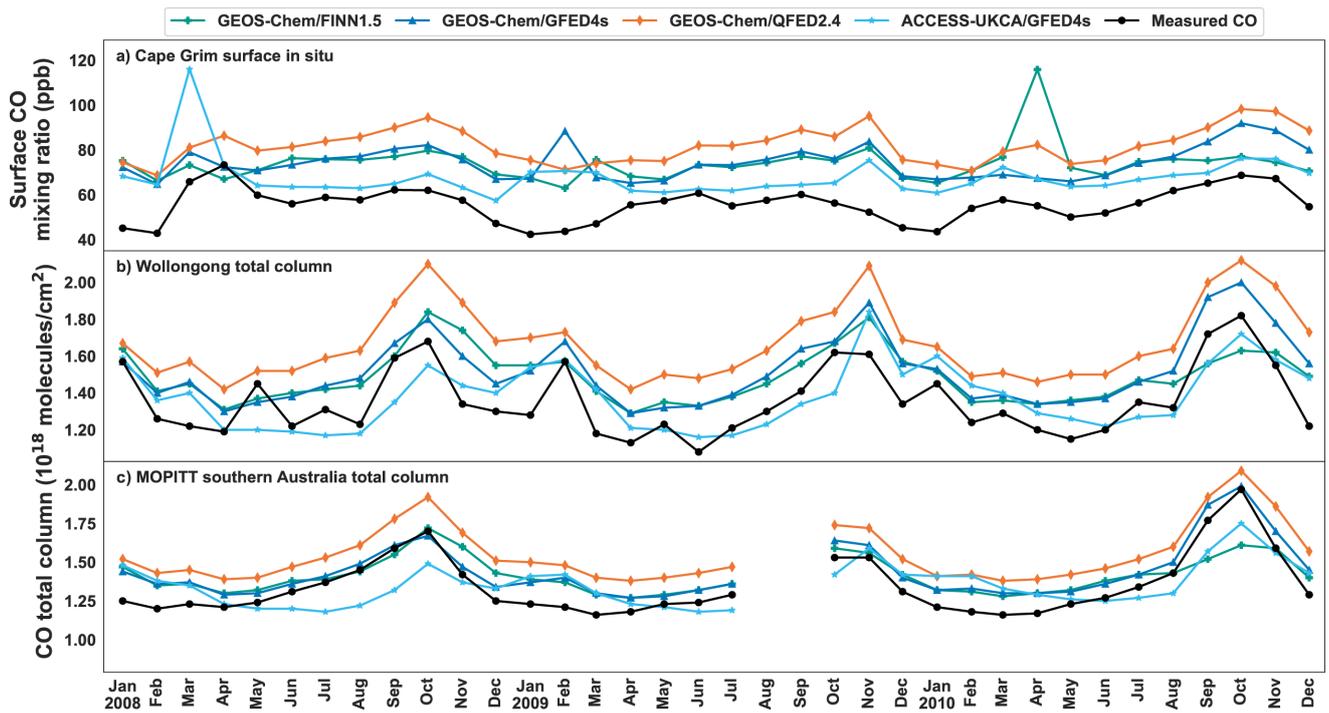


Figure S7. Same as Figure 9 in the main text but without removing the mean bias.