



Supplement of

Quantifying CO emissions from boreal wildfires by assimilating TROPOMI and TCCON observations

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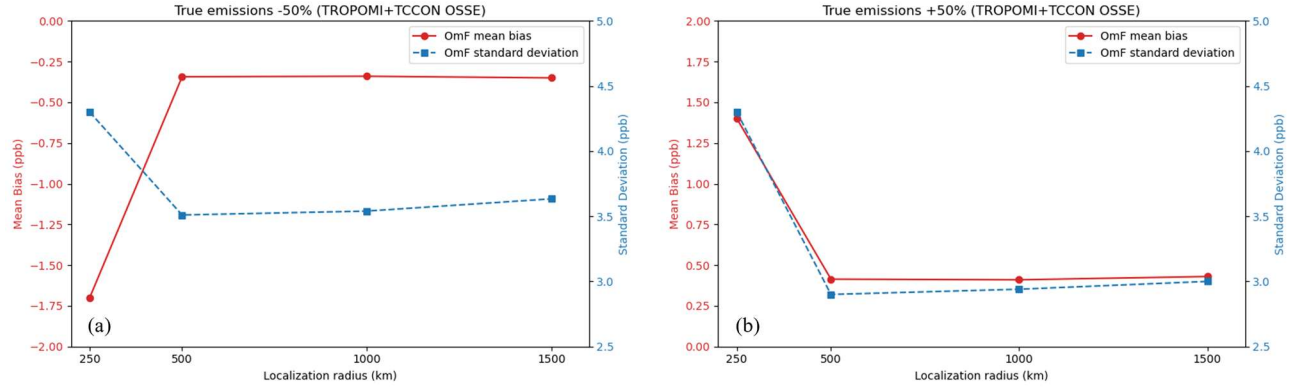


Figure S1: Comparison of OmF between OSSEs with different localization distances used in the inversion. Using (a) -50% prior emissions relative to the true emissions and (b) $+50\%$ prior emissions relative to the true emissions, based on TROPOMI+TCCON inversion.

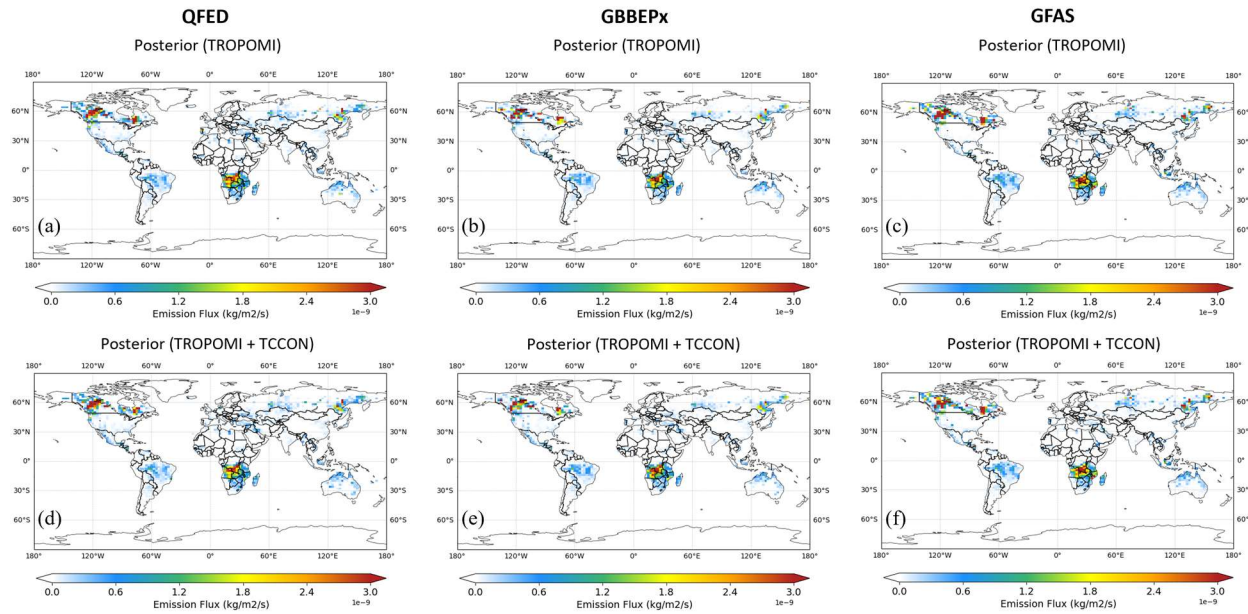


Figure S2: Comparison of the spatial distribution of the time-averaged biomass burning CO emissions in the (a-c) a posteriori using TROPOMI-only assimilation, and (d-f) a posteriori using TROPOMI+TCCON assimilation, from three global biomass burning inventories of QFED, GBBEPx, and GFAS.

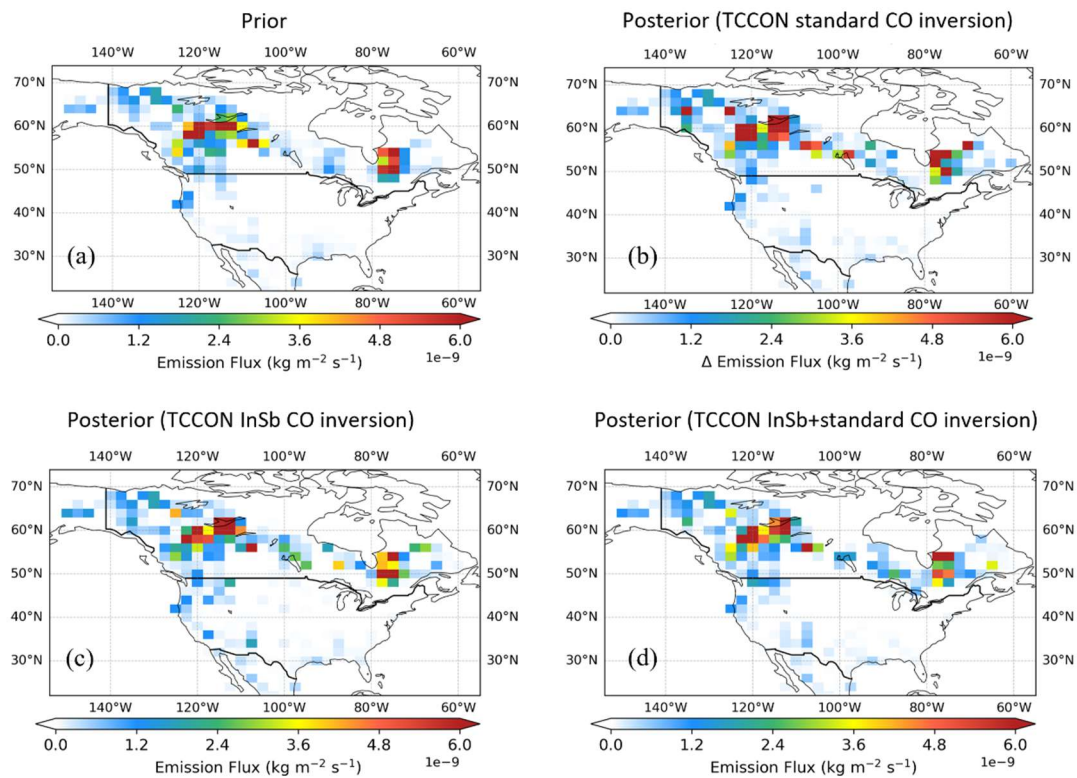


Figure S3. Comparison of the spatial distribution of the time-averaged (May-September) biomass burning CO emissions from CFFEPS in the (a) a priori model, (b) a posteriori using TROPOMI and standard TCCON, (c) a posteriori using TROPOMI and InSb TCCON, and (d) a posteriori using TROPOMI plus TCCON standard and TCCON InSb data.

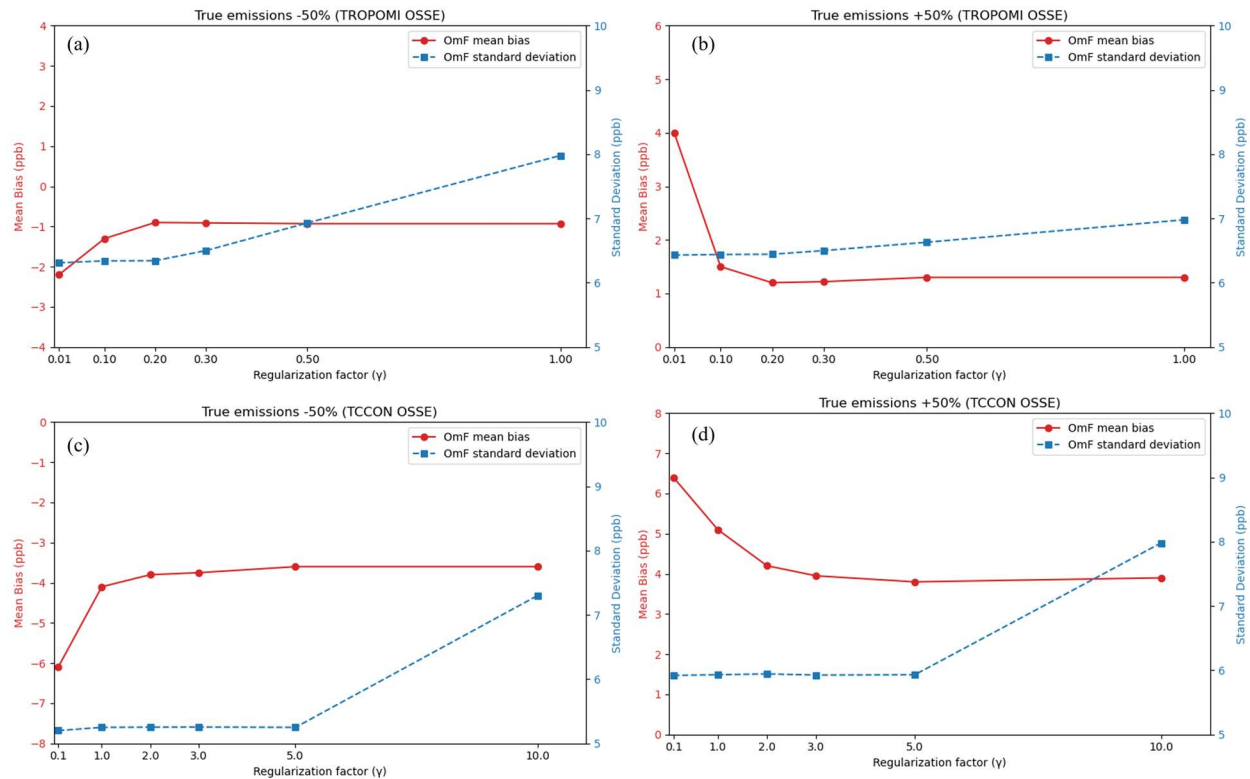


Figure S4: Comparison of OmFs between OSSEs with different regularization factors (γ) used in the inversion. Using (a-b) $\pm 50\%$ prior emissions relative to the true emissions, based on TROPOMI inversion and (c-d) $\pm 50\%$ prior emissions relative to the true emissions, based on TCCON inversion.