



Supplement of

Strong monsoon influence on South Asian methane emissions in 2020 revealed by a Bayesian inversion constrained by satellite observations

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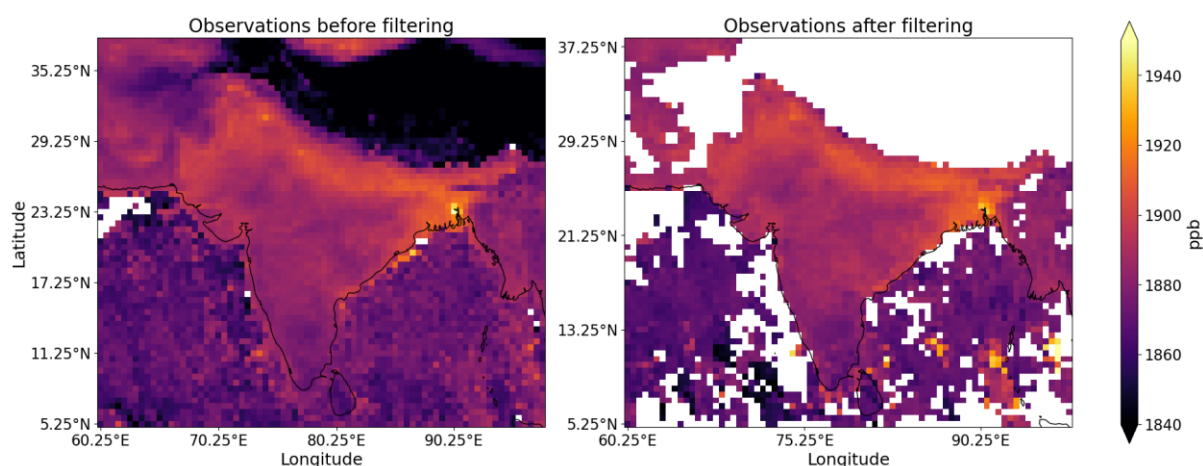


Figure S1. Spatial distribution of TROPOMI XCH₄ observations (ppb) over South Asia before (left) and after (right) filtering.

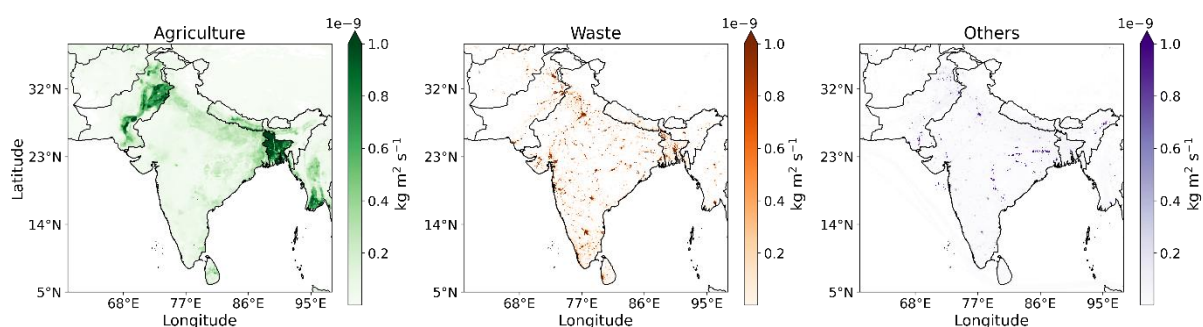


Figure S2. Spatial distribution of the major anthropogenic methane emission subsectors over South Asia: agriculture (left), waste (center), and other sectors (right). Emissions are expressed as fluxes ($\text{kg m}^{-2} \text{s}^{-1}$), highlighting the dominance of agricultural sources across the Indo-Gangetic Plain and localized contributions from waste and other sectors.

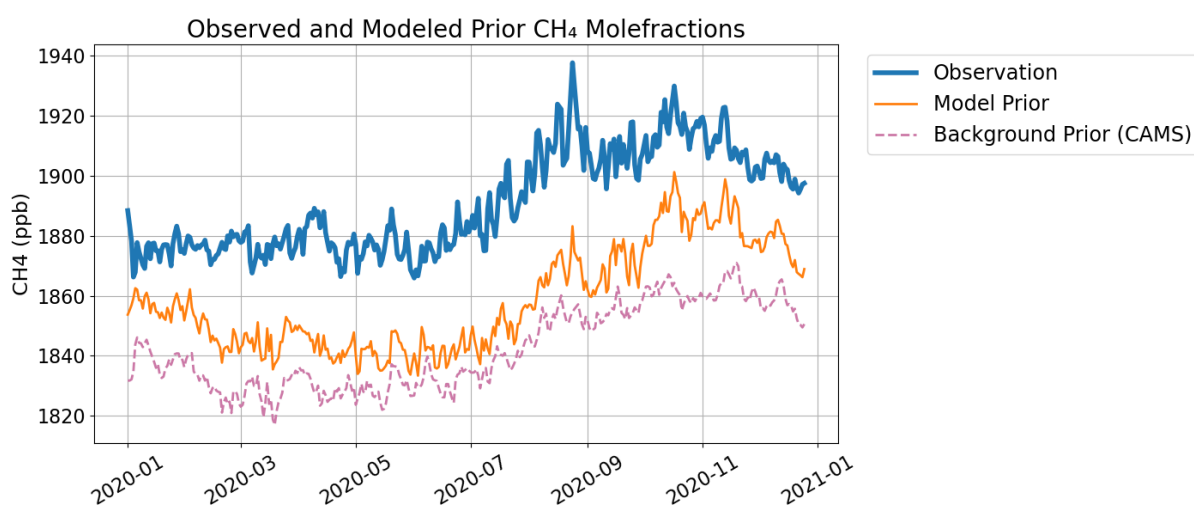


Figure S3. Time series of observed and modeled prior CH₄ column mole fractions over South Asia, highlighting the modeled background (dashed pink line) derived from CAMS data.

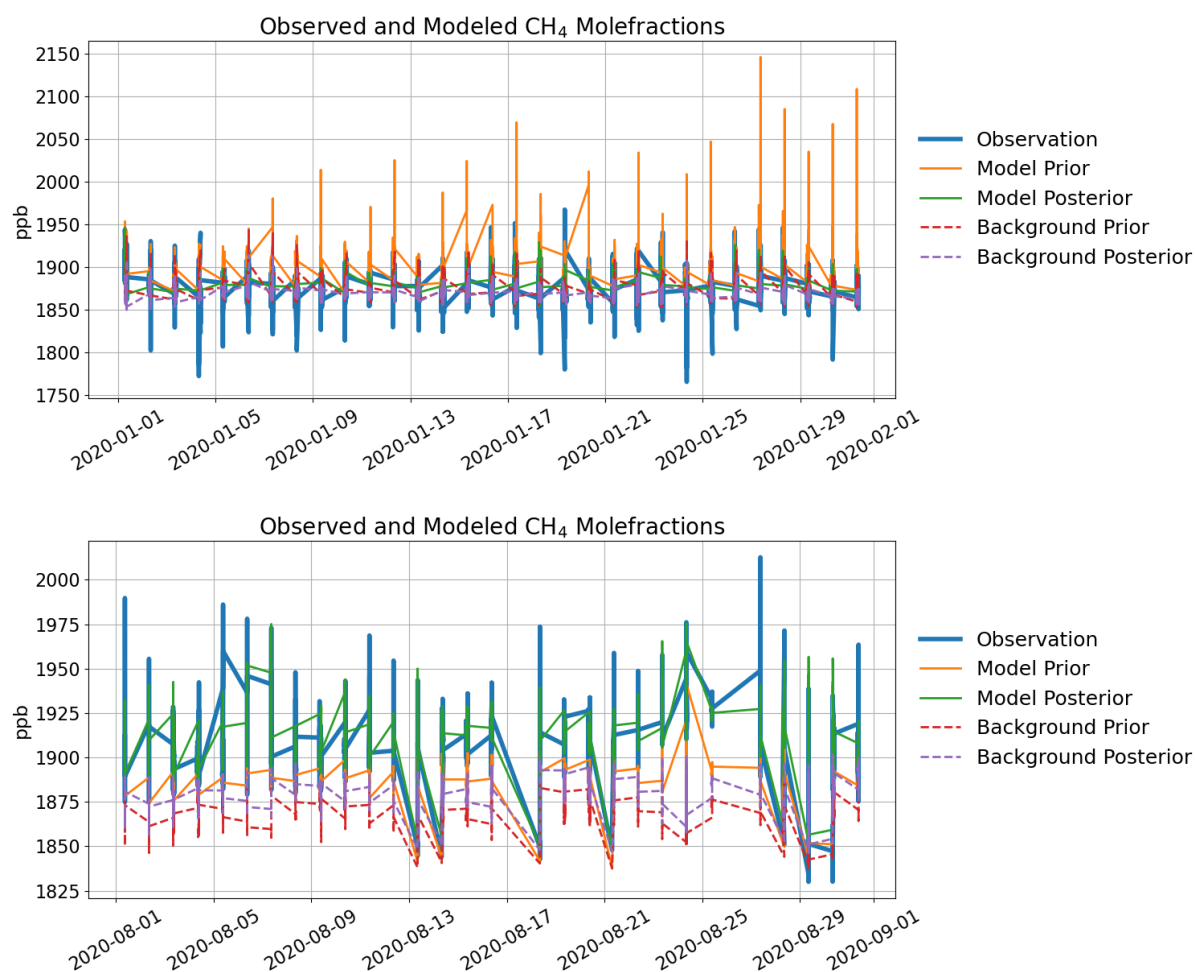


Figure S4: Observed and modeled CH₄ mole fractions (ppb) for all individual satellite retrievals used in the inversion during January (top) and August (bottom).