

Adjoint inversion of global NMVOC sources using space-based observations of formaldehyde and glyoxal



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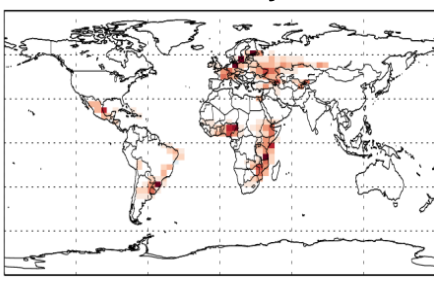
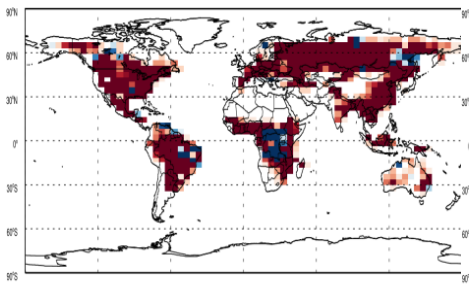


We combined formaldehyde (HCHO) and glyoxal (CHOCHO) vertical column density (VCD) observed by the Global Ozone Monitoring Experiment (GOME2) instrument with the GEOS-Chem adjoint model to optimize Non-Methane VOC sources globally. We also quantified the emission uncertainties using a deterministic method.

Optimized emission scale factor (2009 JUL)

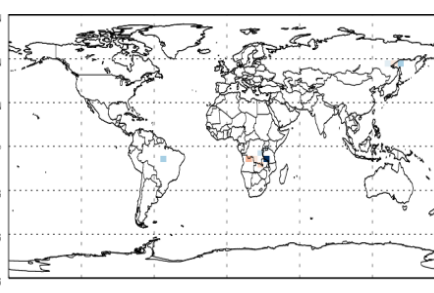
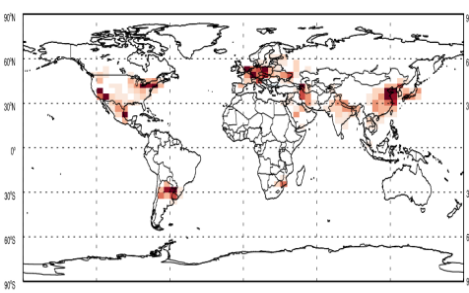
Biogenic Isoprene

Biofuel Acetylene



Anthropogenic Acetylene

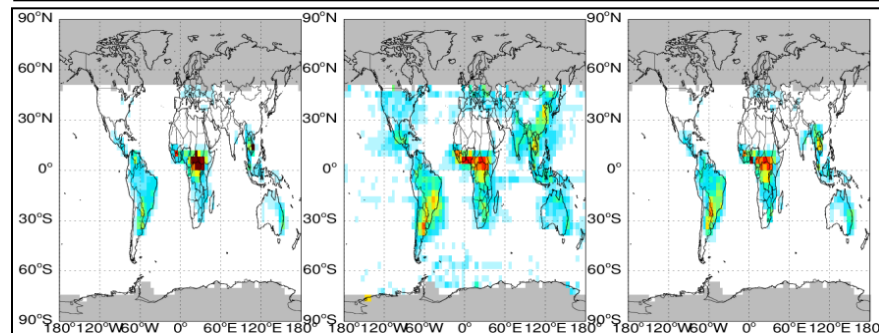
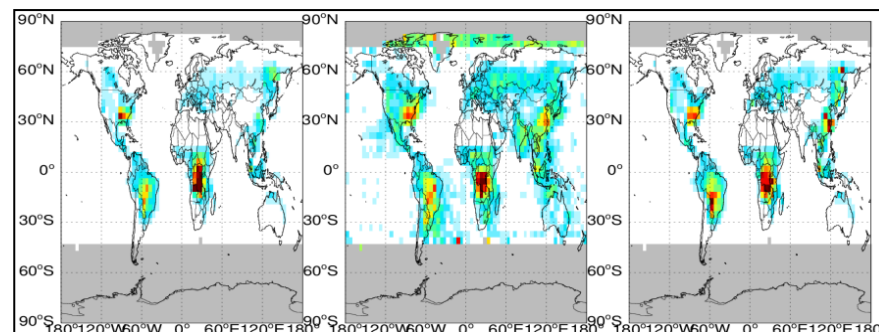
Biomass burning Propene



x 1 priori emission

Comparison of *a priori*, GOME2-observed, and *a posteriori* glyoxal VCDs

a priori GOME2-observed *a posteriori*



x 10¹⁴ molec/cm²

2009 JUL

2010 JAN