



Factors governing spatial and temporal variations of atmospheric carbonyl sulfide

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The tropospheric carbonyl sulfide (COS) distribution is determined by a complex mix of sources and sinks that include vegetation, soils, the ocean and industrial activity. Uncertainty remains on the magnitude and distribution of these fluxes. Recent atmospheric COS measurements have identified significant levels of temporal and spatial variability, especially in the boundary layer [Montzka et al. in press]. This has been ascribed to seasonal and regional variability in natural COS sources and sinks, local anthropogenic emissions, and atmospheric transport processes.

We present initial results from an investigation into the relative importance of these underlying factors using 3-D chemical transport model (CTM) simulations of COS, in conjunction with measurements from the surface flask network of Montzka et al. [in press]. Model simulations are developed using the GEOS-Chem global atmospheric CTM in combination with recent best estimates of surface fluxes [Kettle et al. 2002]. We focus here on identification of the primary factors driving observed seasonal variations at the network of surface sites.

References

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