



Modeling of biomass burning emissions using satellite observations of aerosol optical depth.

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We describe the development of a new technique to use satellite-based measurements of aerosol optical depth to infer gaseous emissions from biomass burning. Remote sensing observations of Australian wildfires have shown that enhanced amounts of key trace gases and aerosol optical depth are strongly correlated in smoke-affected atmospheres. These spectroscopic measurements have been made through smoke plumes from both forest fires and savanna fires to characterize these relationships. Satellite observations of aerosol optical depth will be used to optimize the estimated strength of biomass burning emissions by use of an inverse model incorporated into the 3D chemical transport model “GEOS- Chem”. We aim to use this technique with GEOS-Chem to study the impact of individual fire events (including the Canberra fires of 2003) and to make estimates of total annual emissions from biomass burning in Australia.