Airborne High Resolution Infrared Spectroscopy of Western Wildfires

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NOTE:
R. Beer has applied for AGU membership but it will not become effective until Jan 1 1995

In August 1994 the Airborne Emission Spectrometer was used to obtain high resolution (0.07 cm⁻¹) infrared spectra of a forest fire in northern Oregon and a brushfire in central California (San Luis Obispo) from the NASA DC8 aircraft flying at an altitude of 11 km.

Both measurement series were opportunistic. Therefore, the instrument and experimental plan were not optimized for these observations. However, we have been able to derive flame temperature, smoke/gas plume temperature, wind speed, wind direction and column densities for CO, CO₂, H₂O and NH₃. Other species are being sought but there are a number of unidentified features in the spectra that have so far defied interpretation.

Using these data and similar future observations (preferably with ground truth and/or correlative measurements), we hope to develop a retrieval method that will be applicable to space-based remote sensing of biomass burning episodes.