Geophysical Research Abstracts,
Vol. 10, EGU2008-A-08140, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-08140
EGU General Assembly 2008

Observation of non-methane hydrocarbons in biomass burning plumes using satellite instruments.

R. Parker, V. P. Kanawade, D. P. Moore, M. Panchal and J. J. Remedios
Earth Observation Science, University of Leicester, Leicester, UK (rjp23@le.ac.uk)

Organic compounds play a vital role in the chemistry of the troposphere, for example in ozone chemical cycles and determining the total oxidising capacity of the atmosphere. Non-methane hydrocarbons (such as Alkanes and Alkenes) in particular can influence the oxidising capacity of the atmosphere via their reactions with OH, Ozone and NO3. The burning of vegetation, both living and dead can release large quantities of these gases into the atmosphere. Due to this, biomass burning is a major source for the injection of these trace gas organic compounds into the atmosphere.

This work details the progress in the detection and retrieval of Ethane (C2H6) and Ethyne (C2H2) from MIPAS (Michelson Interferometer For Passive Atmospheric Sounding) infra-red spectral data in biomass burning plumes reaching the upper troposphere. These plumes are identified primarily using height-resolved carbon monoxide concentrations from the MOPITT (Measurement Of Pollution In The Troposphere) instrument. In addition, ATSR (Along Track Scanning Radiometer) Fire Maps allow identification of source regions for biomass burning and Hysplit model trajectories allow the plume location and evolution to be discussed in relation to sources.

The spectral signatures of these non-methane hydrocarbons in the biomass burning outflow are identified in MIPAS spectra for the upper troposphere through a fast automated algorithm and an optimal estimation approach is used to perform retrievals in specific regions of interest. Results show enhanced concentrations in tropical and equatorial biomass burning signatures and demonstrate that these hydrocarbons could be valuable tracers of biomass export.