Geophysical Research Abstracts, Vol. 9, 04041, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-04041

Biomass Burning and Dust Aerosol in West Africa: Highlights from the AMMA SOP0 experiment

G. Capes (1), H. Coe (1), J. Haywood (2), S. Osborne (2), E. Highwood (3), C. McConnell (3), Jacques Pelon (4), Paola Formenti (5)

(1) University Of Manchester, Manchester, UK, (2) Met Office, Exeter, UK, (3) University Of Reading, Reading, UK (4) CNRS, Paris, France, (5) LISA, Paris, France (gerard.capes@postgrad.manchester.ac.uk / Phone: +441613063914)

Biomass burning aerosols have a significant influence on the radiative budget of the Earth's surface and its atmosphere through their ability to scatter and absorb solar radiation. Mineral dust also exerts a significant influence on both solar and terrestrial radiation. During the dry season in the sub-Sahelian region of West Africa large areas of biomass are burnt each year, most of which is anthropogenic, and hence the region is a large source of biomass burning aerosol during December, January and February. This aerosol is often lofted and advected westwards, impacting the whole and extending over the eastern Atlantic Ocean. In the same period, low level flow from the Sahara advects naturally suspended dust into the Sahel region. The interaction of these aerosol types within the atmospheric column is unclear and needs to be quantitatively assessed, and the impact of mixing of these aerosol types needs to be established to assess their regional effect on the radiative balance.

The first Special Observation Period (SOP0) of the African Monsoon Multidimensional Analyses (AMMA) project took place during January and February 2006 in West Africa to study these interactions. Several ground based measurement sites performed in situ aerosol characterization and radiation measurements. An Atmospheric Radiation Measurement (ARM) programme mobile facility is currently based at Niamey airport, Niger, and was operational throughout SOP0. The UK FAAM research aircraft was also based in Niamey and performed a combination of in situ aerosol characterization and radiation measurements, in combination with the ground stations and satellites and a microlight, fitted with a LIDAR was also flown. This paper discusses how the combination of these measurements was used to probe the interac-

tion of biomass burning and dust aerosols, and atmospheric radiation across the West African region during the dry season and focuses on key scientific highlights from the experiment.