



## **Tracing biomass burning plumes from the Southern Hemisphere during the AMMA 2006 wet season experiment**

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The Lagrangian particle dispersion model FLEXPART coupled with daily active fire products provided by the MODIS instrument was used to forecast the intrusions of the southern hemispheric fire plumes in the northern hemisphere during the AMMA fourth airborne campaign from 25 July to 31 August 2006 (Special Operation Period SOP2\_a2). The imprint of the biomass burning plumes over the Gulf of Guinea showed a well marked intraseasonal variability which is controlled by the position and strength of the southern hemispheric African Easterly Jet (AEJ-S). Three different periods were identified which correspond to active and break phases of the AEJ-S: 25 July - 02 August (active phase), 03 July - 08 August (break phase) and 09 August - 31 August (active phase). During the AEJ-S active phases, the advection of the biomass burning plumes out over the Atlantic ocean was efficient in the mid-troposphere. During the AEJ-S break phases, pollutants emitted by fires were trapped over the continent where they accumulated. The continental circulation increased the possibility for the biomass burning plumes to reach the convective regions located further north. As a consequence, biomass burning plumes were found in the upper troposphere over the Gulf of Guinea during the AEJ-S break phase. Observational evidences from the ozonesounding network at Cotonou and the carbon monoxide measured by MOPITT confirmed the alternation of the AEJ-S phases with low ozone and CO in the mid-troposphere over the Gulf of Guinea during the break phase.