



Uplift of low-level air in deep convection

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We examine measurements of carbon monoxide measured on 25 flights of the Egrett aircraft during the ACTIVE campaign. This campaign took place from Darwin, Australia from November 2005 to February 2006. During this time a pronounced secular change in CO was observed in the lower and upper troposphere. At lower levels widespread biomass burning over the Northern territories of Australia in early November caused CO concentrations in excess of 130 ppbv with huge variability, while later in the wet season much lower and constant concentrations of ~ 50 ppbv were observed. Above 10 km a constant background level of ~ 80 ppbv up to December 3rd decreased to < 60 ppbv by December 10th. In the monsoon period of 20-30 January CO above 10 km again fell from ~ 80 to ~ 50 ppbv, recovering to ~ 60 ppbv during the monsoon break in February. Trajectory analyses will be used to interpret these measurements.

Cloud particle measurements on board the Egrett have been used to select measurements in and out of convective anvil outflow. A clear uplift signal is found on some flights, when the vertical gradient in CO is large (either positively or negatively). On most flights however this signal is absent. Using these results we suggest that the air in the main convective outflow results from uplift from the lower free troposphere and not from the boundary layer.