



Atmospheric Boundary Layer of a pasture site in Amazônia

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A great effort has been made by the community of micrometeorology and planetary boundary layer for a better description of the properties of the Atmospheric Boundary Layer (ABL), such as its height, thermodynamics characteristics and its time evolution. This work aims to give a review of the main characteristics of Atmospheric Boundary Layer over a pasture site in Amazonia. The measurements dataset was carried out from 3 different LBA field campaigns: RBLE 3 (during the dry season from 1993), RaCCI (during the dry-to-wet transition season from 2002) and WetAMC (during the wet season from 1999), collected with tethered balloon, radiosondes and eddy correlation method in a pasture site in the southwestern Amazonia. Different techniques and instruments were used to estimate the ABL's properties. During the daytime, it was possible to observe that there is an abrupt growth of the Convective Boundary Layer (CBL) between 08 and 11 LT, with a stationary pattern between 14 and 17 LT. The maximum heights at late afternoon were around 1600 m during the dry season, whilst the wet season it only reached 1000 m. This is due to the lower surface turbulent sensible heat flux as the soil is wetter and the partition of energy is completely different between wet to the dry season. For the transition period (RaCCI 2002), it was possible to analyze and compare several estimates from different instruments and methods. It showed that the parcel method overestimates the heights of all measurements (mainly at 14 LT) due to the high incidence of solar radiation and superadiabatic gradients. The profile and Richardson number methods gave results very similar to estimate the height of the CBL. The onset of the Nocturnal Boundary Layer (NBL) occurs before the sunset (18 LT) and its height is reasonable stable during the night (typical values around 180-250 m). An alternative method (Vmax) which used the height of the maximum windspeed derived from a SODAR instrument during RaCCI 2002 was proposed and it showed to be satisfactory comparing with the others methods. Besides that, it has the advantage to have measurements each 30 min.