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# WAWELET ANALYSIS OF FLUXES AND METEREOLOGICAL VARIABLES OF AN AMAZONIAN TROPICAL RAINFOREST

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## ABSTRACT

Amazonian forest has been widely recognized as a major component of the regional and global hydroclimate system, with spatial and temporal variability and hosts the largest block oftropical rain forest, considered as the prime contributor to land surface evapotranspiration . The goal of this study was to apply wavelet analysis to fluxes and micrometeorological variables, to yield additional information about underlying processes by examining temporal patterns and relationships among them. We used data collected from Amazonian rainforest site situated in Jaru Biological Reserve site (REBIO Jaru) in southwest of Amazonia, located about 80 km north of Ji-Paraná, Rondônia, Brazil. The area contains seasonally-dry tropical forest with relatively closed canopy structure and emergent trees. Understory vegetation of only a few meters height consists mainly of palms. The mean canopy height is 30 m, but the tallest emergent trees reach 44 m. Net radiation (Rn), air temperature (T), air relative humidity (RH), wind speed (u) and sensible (H) and latent (LE) heat fluxes were measured in a local micrometeorological tower from 2004 to 2010. The Morlet Wavelet Transform was used for a time series analysis, in hourly and daily scales to identify the existence of well-defined seasonal patterns, with differentiation between the seasons and annual microclimate variations over the years. The Morlet Wavelet indicated the dominant periods as well as the fluctuations in the energy levels occurring in LE, Rn, T and RH, enabling the detection of variances consistent with the behavior of microclimate data that occurs in shorter periods (12 and 24 h, 2 and 4 days), which demonstrated the applicability of this method to define patterns which some time are difficult to identify.