



## **Seasonal and interannual variation of Vapor and CO<sub>2</sub> fluxes over a tropical dry forest**

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In seasonally dry ecosystems, precipitation and soil moisture are the main factors controlling biological activity. The present study was carried out to understand the effect of the magnitude and temporality of precipitation over the net ecosystem carbon dioxide exchange (NEE) and the water vapor exchange (ET), as well as the gas exchange interannual and seasonal variation in a tropical dry forest (TDF). The NEE and ET were measured using the Eddy correlation technique in a TDF located in northwest of Mexico from June 2004 to December 2008. Seasonal variation has three different periods perfectly differentiated: a pre-monsoon period, a monsoon period (divided in two stages, an early monsoon and a late monsoon) and a post-monsoon period. Total values of NEE found were 375, -335, -308 and -912 g CO<sub>2</sub> year<sup>-1</sup>, while total precipitation was 406, 497, 510 and 584 mm, for 2005, 2006, 2007 and 2008, respectively. The seasonal variation was influenced by the presence of the North American Monsoon System (NAMS), and the magnitude of the monsoon season played an important role in the carbon balance. There is a strong relationship between the inter-annual variation of gas exchange and precipitation, and the variation was controlled mainly by the total precipitation and temporal distribution of rainfall. Understanding precipitation magnitude and temporality, as well as their annual variation, is important to determine the factors controlling gas exchange between TDF and the atmosphere, and can be a useful tool to study the effect of changes in precipitation regimes.