

## ECOHYDROLOGICAL RELATIONS BETWEEN WOODY PLANT DIVERSITY AND GROUNDWATER IN THE CERRADO RIPARIAN ZONE

### ÖKOHYDROLOGISCHE ZUSAMMENHÄNGE ZWISCHEN GEHÖLZDIVERSITÄT UND GRUNDWASSER IN UFERRANDSTREIFEN DES CERRADO

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#### SUMMARY

The Brazilian Cerrado is the most diverse savanna in the world, with high levels of biodiversity, being a hotspot ecosystem. However, in the last 30 years, Cerrado vegetation was deforested mainly by agricultural activities. On the predominant plateau areas (Mato Grosso State), inside the farms, only remnant riparian zones exist, due to Brazilian legislation restrictions to conserve native vegetation along rivers. The riparian vegetation maintains the water quality and prevents erosion, filter nutrients, sediments, sustains the soil organic carbon storage, and influences the groundwater quality. Our study focused on an affluent of the *Rio das Mortes*, due to the environmental importance of riparian zones (RZ's) with high plant diversity in the Cerrado and the peculiar *campo de murundus* vegetation. The aim of this study was to analyse the relationship between plant biodiversity and groundwater level in riparian zones of Cerrado and to identify plant species as indicators to characterise groundwater (GW) conditions. – Along one stream, embedded into the agricultural landscape, two transects with two vegetation types – *campo de murundus* and gallery forest – were studied with 18 plots (30 x 20 m). We sampled only trees and shrubs with a diameter at breast height with minimum 15.5 cm and monitored groundwater wells from August 2014 until September 2016. The groundwater table of gallery forest showed a maximum depth of 5.86 meters and a minimum depth of 0.12 meters below ground. Besides, *campo de murundus* revealed a maximum depth of 4.75 meters and a minimum depth of zero meters, indicating a waterlogged environment. Groundwater variation is shown to be a dominant factor in the *campo de murundus* zone and its plant diversity. The floristic survey confirmed that some plant species exist only in the *campo de murundus* (e.g. *Tachigali vulgaris*, *Maprounea guianensis*, *Vismia guianensis*, *Tibouchina stenocarpa*, *Miconia albicans*) and other only in the gallery forest (e.g. *Protium spruceanum*, *Cordia bicolor*, *Sacoglottis guianensis*). Besides, some groundwater nutrients (Cu and Zn) were significantly correlated with the gallery forest. The total inorganic carbon was correlated with *campo de murundu* vegetation, due to the fertilization every year with lime to increase the pH in the soil in the surrounding croplands. With the DCA-analyses specific