

## ***Interactive comment on “The water balance components of undisturbed tropical woodlands in the Brazilian Cerrado” by P. T. S. Oliveira et al.***

### **Anonymous Referee #3**

Received and published: 5 February 2015

#### GENERAL COMMENT:

The manuscript presents new information about water balance over the Brazilian Cerrado based on observations. The study analyses a wide range of hydrological fluxes as precipitation, evapotranspiration, interception, surface runoff, infiltration and soil moisture. The authors conclude that 4–20 % of precipitation is intercepted in the canopy, a small fraction runs off and most of the water infiltrates. It was not clear how water flows out the soil (evaporation, subsurface flow or groundwater recharge). Also, observations and previous studies show that removing Cerrado vegetation may generally increase runoff. The contribution of the paper is to bring new information about hydrological processes over an important region (Cerrado) that is still not fully studied. The questions addressed in the paper are important as Cerrado is an important region of

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Brazil/South America that may experience important transformations, which can cause important impacts over hydrology of major/important river basins. The paper is generally well written, most of the methods are appropriated and conclusions are supported by analyses. I would be pleased to see this work published at HESS. Meanwhile, I have some important comments/suggestions that hopefully will help the authors to improve this manuscript.

#### SPECIFIC COMMENTS:

##### -Findings from two sites vs Cerrado:

How these findings (typical values of hydrological fluxes) from 2 sites can be generalized to the Cerrado region? Can it be generalized over a typical catchment of Cerrado? For example, should we expect similar runoff rates at different parts of a catchment (close to a stream or upland)? Or should we expect most of surface runoff generated close to streams at saturated areas, following Dunnian concept of flow generation processes?

##### -Discharge from stream gauges:

The author did a good job in the analyses most of the hydrological fluxes. However, analyses concerning the sinks of soil water are not conclusive. It would be interesting to look at discharge data from stream gauges and convert it to runoff (mm/year) to compare it with the water balance terms obtained in this study. This way, it would be possible to infer about the sink of soil water (evaporation or subsurface and groundwater flow). For example, how overall runoff coefficient compares with runoff ratio obtained using precipitation and discharge from stream gauges? The conclusions concerning water storage can change depending on the results from such analyses.

##### -ET model:

Eq. 4 is a nonlinear function between EVI and ET. But the authors mention that the fitted equation (5) can be used for daily, monthly and annual scales. But as it is not

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linear, I'm not sure if the equation fitted for one scale (16 days) could be used in other scales (daily or annual).

-Define DBH

-Figure 4: Please improve quality.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 12987, 2014.

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11, C6334–C6336, 2015

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