



The effects of deforestation and regrowth of secondary forest in the components of hydrological cycle in a micro-basin in the Central Amazon

R.C.S. von Randow (1), J. Tomasella (2), R.W.A. Hutjes (1), R. Trancoso (3), and M.T.F. Monteiro (3)

(1) ESS-CC, Wageningen University and Research Centre, Wageningen, The Netherlands (rita.vonrandow@gmail.com), (2) Instituto Nacional de Pesquisas Espaciais, Cachoeira Paulista, Brazil, (3) Instituto Nacional de Pesquisas da Amazonia, Manaus, Brazil

One of the largest uncertainty factors of future scenarios of global climate is related to the feedback mechanisms among the land cover and hydrological components in the Amazon basin. It is still necessary to improve the knowledge of how the rainfall patterns are affected or redistributed by deforestation and/or regrowth of the vegetation. Studies regarding climate change and water yield are currently developed indicating that climate change will have a significant influence on the streamflow hydrograph and water yield and vice-versa. The shape of hydrographs depends on factors as topography, shape of the basin, soil, land cover and distribution, duration and intensity of precipitation. The objective of this work is to improve the understanding of the hydrological processes on micro-catchments that suffered deforestation and re-growth compared to undisturbed micro-catchment, analyzing the water balance components of a micro-basin covered by primary forest (6.46 km²) and a disturbed micro-basin partially covered by pasture, secondary forest and primary forest (~ 6 km²) in order to evaluate the role of vegetation on them. Both catchments are located in the Central Amazon, near the city of Manaus, Brazil. The catchment covered by primary forest presented the average values 4.00 mm.day⁻¹, 7.51 mm.day⁻¹ and 3.51 mm.day⁻¹ for discharge, rainfall and evapotranspiration respectively, while that covered by mixed vegetation presented the values 2.43 mm.day⁻¹, 7.40 mm.day⁻¹ and 4.97 mm.day⁻¹ respectively. The smaller runoff on the disturbed area was not a result of differences in the rainfall, but a simplified water balance led us to believe in a higher evapotranspiration of regrowth vegetation. In more detailed analysis we will attempt to evaluate the effect of the secondary forest independently in the hydrology components by analysis of the hydrographs.