



The rainfall interception in the semiarid plateau of center of Mexico

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The strong pressure over natural resources and the accelerated population growth modify natural ecosystems and decrease the canopy cover. The ecosystems of central Mexico plateau are not an exception. Although it is a natural semi-arid region induced by the continental screen effect of the Sierra mountains that regulates the humidity entrance from the Gulf and the Pacific, the semi-arid ecosystems are degraded day after day, showing a clear tendency to desertification. The aim of the study is to show the importance of rainfall interception by the vegetation of the semiarid of central plateau of Mexico, EI, on the annual water balance. This work was carried out during 2006 in three sites: one located in the Guanajuato state, "El Carmen", and two in the Queretaro state, "Amazcala" and "Cadereyta". The experimental sites are separated by at least 60 km. In each site two isolated trees representative of the dominant species *Prosopis laevigata* and *Acacia farnesiana* were selected. The methodology developed by Guevara Escobar et al. (J. Hydrology, 2007) was used to instrument the trees to measure EI. The data were modeled using the models described by Rutter et al. (1971), Gash (1979) and multiple linear regressions in order to better understand the interception process in the semi-arid ecosystems. Precipitation in 2006 in Carmen and Cadereyta was 770 and 732 mm respectively while Amazcala reached 451 mm of precipitation during the August-November period. On the measurement period, interception by *Acacia farnesiana* was 30%, 20% and 15% for Cadereyta, El Carmen and Amazcala, respectively. The figures were 27%, 21% and 14% for *Prosopis laevigata*. The performance of the three models in simulated the measured data was satisfactory, with efficiencies ranging from 0,74 to 0,99 and RMSE ranging from 0,83 to 2,0 mm. The results show that the rainfall interception impact on the water balance at catchment scale would be considerable in case of a total cover by the studied vegetations. The results of the study show that interception (EI) losses of the semi-arid region of the center of Mexico have a significant weight in the water budget and considerable ecological value in the conservation of this type of ecosystems.