



Influence of soil moisture on evapotranspiration in semi-arid regions

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The relation between real evapotranspiration and reference evapotranspiration, cultivation coefficient (K_c), under natural non-irrigated conditions are still not yet clearly understood. In addition, the water balance assessment in semiarid regions plays a fundamental role in facing the drought, and it has evapotranspiration as one of its main hydrological processes. For vegetation under natural conditions, such as the Caatinga biome, the coefficient of water stress (K_s) is used to calculate the real evapotranspiration. Therefore, this study aimed to evaluate the temporal distribution of the water stress index under preserved Caatinga condition. The soil moisture data obtained through the TDR sensor and K_s estimation were analyzed between 2003 and 2008 in the Aiuaba Experimental Basin, located in the Brazilian semiarid region. The results of K_s showed high variability between wet and dry season of each year. However, during the wet season, K_s could be disregarded for a considerable part of the year due to water availability in the soil does avoids the water stress, reaching up unit value for consecutive days, leading the soil to at field capacity or over that. During dry season, K_s obtained lower values representing up to half of the soil water availability. For these conditions of water deficit not considering this parameter can be induced to significant errors that can compromise the analysis of the water balance.