

Impact of Vegetation on Main Hydrological Processes: A Field Study and Its Implication for Water Quality

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摘要 The impact of vegetation cover on groundwater table was assessed with the observed water level fluctuations at two monitored wells in stilled on a bare ground and a vegetated land, respectively. Substantial differences in water table behavior were observed under two land cover scenarios. In general, the water level in the east grass (EG) well was lower and had much less response to rainfall events than the WNG well mainly due to the difference in the land cover. The effect of vegetation was to lower the water level in the EG well through ET and thus reduce groundwater recharge, which in turn reduced the chemical loads to the creek. The daily and accumulative ET values were estimated with both the Penman-Monteith method and a water table recession model. It is suggested that while the Penman-Monteith method closely modeled hourly ET cycles during the day, it underestimated actual ET during an intensive mid-summer growing period, and especially underestimated actual ET when the water table was close to the landsurface. With the water table recession model, the amount of ET was estimated at its maximum ET of 7.6 mm when the water table was near the groundsurface and then decreases exponentially to zero around day 33 during a dry period with the accumulative ET of 93.9 mm, or 2.84 mm/day. The results from this study clearly demonstrate that landuse and vegetation coverage have significant effects on ET, groundwater recharge and implications for a basin-scale water cycle and chemical loads to rivers and streams.

关键词 [Groundwater; Evapotranspiration; Vegetation cover](#)

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