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Statistical Analysis of Groundwater Table Depths in Upper Swarnamukhi River Basin

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ABSTRACT

Development and effective utilization of groundwater resources is essential in semi-arid regions for activities such as water supply and irrigation. The present study aims to analyze statistically the groundwater data at the Chinnagottigallu, Yerravaripalem, Chandragiri, Sriramapuram, Tirupati, Renigunta, Karvetinagaram and Yerpedu piezometric stations of upper Swarnamukhi river basin in the drought prone Rayalaseema region of Andhra Pradesh, India and to develop models through multiple linear correlation and regression analysis. The monthly rainfall and groundwater data at the raingauge and piezometric stations of the basin for the period 2001-2006 were collected from the Groundwater and Irrigation Departments of the region. It is observed from the analysis that the groundwater table depth in any period is influenced by the rainfall in the period and, the rainfall and groundwater table depth in the previous period. The study also reveals that the effect of antecedent groundwater table depth is more pronounced than that of rainfall and antecedent rainfall. The models proposed may be adopted for the estimation of groundwater table depths to effectively plan and efficiently manage groundwater resources of the basin.

KEYWORDS

Multiple Linear Correlation, Partial Correlation Coefficient, Root Mean Square Error, Efficiency Coefficient

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