

Estimating Natural Recharge in Granitic Terrain: An Entropy Approach

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An entropy-based approach is developed for estimating natural recharge in granitic terrain (in Southern India). Wells are located in a sparolite aquifer of this terrain, which exhibit spatial variability in natural recharge. To determine the fractional amount of rainfall, called natural recharge, marginal entropy and transinformation of rainfall and depth to the water table at selected wells are calculated. Then a ratio of transinformation to marginal entropy of rainfall is used as a measure for assessing natural recharge. The mean natural recharge values at 28 wells distributed over the study area are computed for the different periods. The average recharge rate is about 62.95 mm/year or 14.48% of local average seasonal rainfall. The calculated annual input of rainfall to ground water reserves is about $0.11 \times 10^9 \text{ m}^3/\text{year}$.