



## Groundwater Potential Mapping Using Dempster – Shafer Theory of Evidence for Tiruvannamalai District, India

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**Abstract:** An attempt was made to delineate the zones with high groundwater potential for Tiruvannamalai district, Tamilnadu, India. GIS based Dempster Shafer Evidential Belief Function model is used to predict the groundwater potential zone. The influencing thematic factors such as geology, geomorphology, soil, lineament density, drainage density, land use/land cover, slope, groundwater depth and rainfall were selected and mapped. The four series of mass functions of EBF models (belief, disbelief, uncertainty and plausibility) were estimated for the selected thematic factors using likelihood ratio algorithms. Dempster's algorithm rule was applied to integrate the mass functions of each evidential thematic layer. The Dempster Shafer theory model has high prediction accuracy of 91.81 per cent to delineate the groundwater potential zones. The proposed methodology is an accurate and comprehensive prediction model for groundwater potential zone mapping. Therefore, ground water potential map generated using Dempster – Shafer Theory of Evidence can be effectively used for planning of groundwater exploration and land use planning

**Keywords:** Groundwater potential zones, Dempster Shafer Evidential Belief Function model, Evidential Mass Function, Belief Function

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