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Title: Sub-basin Prioritization of Mann River basin to identify Groundwater Recharge Zones.

Abstract:

The presence of groundwater in the Deccan Traps of Maharashtra is governed by the heterogeneities in the basaltic flow morphology, weathered thickness, and morphological features. The rapid growth of population has led to a rise in water demand vis-a-vis severe water scarcity, especially in drought-prone regions. An attempt has been made to locate the areas that are favorable for groundwater recharge by analyzing various morphometric indices for nine sub-basins of Mann River basin in south-eastern Maharashtra, derived using satellite data and geographical information system (GIS). Eleven influential morphometric parameters are considered to prioritize these sub-basins performing the weighted sum analysis (WSA) technique, wherein weights are assigned to individual morphometric parameters based on their importance. The analysis reveals that out of nine sub-basins, sub-basin 6 (SB-6) with suitability index value 2.8 is most favorable whereas, SB-1 with index value 7.48 is least suitable due to its high undulation, greater runoff, poor vegetation cover, and steeper slopes. Furthermore, these sub-basins have been categorized into five classes of groundwater recharge on the basis of prioritization index values. These suggest that 42% of the area spread over sub-basins is of very good to good priority type. Thus, it is suggested to adopt conservation measures in high priority areas, like rainwater harvesting, aquifer recharge, and resource management for effective land and water management