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Land use changes impact on groundwater quality using remote sensing and GIS in Quetta Valley

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Land use/land cover (LU/LC) changes have been impacted environmental ecosystem, especially groundwater system. Availability of freshwater quality is drastically affected by human activities. Water is vital for humans, plants and animals but its availability and quality is depleting in the world. Quetta Valley is facing water scarcity and land management issues. In this paper expansion of land use and land cover of last twenty years in Quetta Valley and their impacts on groundwater quality and availability are represented. The spatial and temporal land cover changes show significant impacts on limited natural resources. DEM models from Landsat-8 were downloaded and used remote sensing applications to explore land cover changes of various time periods. GIS software was employed for groundwater modelling and to compare spatial/temporal land cover changes. Key findings showed large scale land cover over last twenty years and stress increased on aquifer system regarding water quality and quantity. Due to unsustainable land use planning has blocked groundwater recharge zones, while overexploitation and anthropogenic activities are observed major source to groundwater deterioration. Hotspots of low water quality are highlighted which can be useful for management and planning of water resources for future. Findings of this research work can be use to design a comprehensive research with high quality data. The results are useful for general public and concern department.
Key words: Quetta, Land use and Land cover, water quality, GIS, Remote Sensing

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