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Quantifying spatiotemporal change in land use and land cover and accessing water quality: Case study of Missouri watershed James sub-region, North Dakota

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Diversity in landform and rainfall gives rise to a varied land use pattern within a particular region. It is important that we shift from a generalized notion to a particularity in the region where agriculture is predominant. Monitoring the change over a period of time in land use patterns using satellite imagery, soil and water data analysis would help in prioritizing our study area: The Missouri Watershed James Sub region in North Dakota. Use of remote sensing (RS), Geographic Information System (GIS), parameters like in situ soil and water quality data were used to monitor the spatio-temporal change in this area from 1976 to 2016. Land sat images were used to detect the temporal change over the period, whereas in situ soil and water quality data were used to overlay was done of the data collected to generate images showing areas of non-point source pollution. Accurate and consistent change in the land use was thus extracted on a remote sensing platform using ENVI (Exelis Visual Information Solutions). This was validated using in situ soil and water samples from the vulnerable areas. The changes of the land use pattern were analyzed using spatial metrics on a statistical platform. The results confirmed the effectiveness of the combined methods used to identify an impaired watershed.

Biography

Papia Faustina Rozario is currently pursuing her PhD in Environmental and Conservation Science from North Dakota State University, USA. She has completed her MS in Geography from the University of Madras, India. She is the co-author of the paper, "Landuse and Landcover Change Detection in Pipestem Creek Watershed, North Dakota, USA" published in International Journal of Geomatics and Geosciences. Her work has been published in several conference proceedings.

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