

Estimation of Reservoir Capacity and Sediment Deposition Using Remote Sensing Data

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Abstract : In this study, the reservoir capacity and sediment deposition were estimated using remote sensing data. The satellite images were synchronized with water level and storage capacity to find out the change in sediment deposition due to soil erosion and transport by streamflow. The water bodies spread area was estimated using vegetation indices, e.g., normalize differences vegetation index (NDVI) and normalize differences water index (NDWI). The 3D reservoir bathymetry was modeled by integrated water level, storage capacity, and area. From the models of different time span, the change in reservoir storage capacity was estimated. Another reservoir with known water level, storage capacity, area, and sediment deposition was used to validate the estimation technique. The t-test was used to assess the results between observed and estimated reservoir capacity and sediment deposition.

Keywords : satellite data, normalize differences vegetation index, NDVI, normalize differences water index, NDWI, reservoir capacity, sedimentation, t-test hypothesis

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