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GEO-INFORMATICS FOR EVALUATION OF WATERSHEDS IN ANDHRA PRADESH

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Abstract

Watershed development is an integrated approach to utilize the existing natural resources in a sustainable manner. Considerable efforts were made by the Government machinery in terms of manpower and money, still there is a need to assess the progress of watershed management interventions using state of art technologies. Aim of the current study is to assess the impact of 62 watersheds using remote sensing data. These watersheds are distributed in six districts of Andhra Pradesh and were implemented under Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) project during 2009-10. To achieve this, IRS LISS-III / LISS-IV and Cartosat data of 2010-11 (pre) and 2015-16 (post) satellite data have been used. On-screen visual interpretation techniques have been used to delineate different land use / land cover categories in ArcGIS environment and the same have been classified into different vegetation levels using Normalized Difference Vegetation Index (NDVI) in ERDAS Imagine s/w. Change detection studies have been carried out for evaluation of the 62 watersheds in the State and it was observed that there is an increase in plantation area (4778 ha). The cropland has significantly increased from 115424 ha (24.09%) to 162544 ha (33.93%) from 2011 to 2016 respectively. It can be noted that cropland area has increased at the cost of current fallow land. The output of NDVI classification indicates an increase in dense vegetation from 47233 ha to 80375 ha due to watershed developmental activities and drought-proofing works. NDVI studies indicate that there is a huge improvement in dense and open vegetation categories due to conservation of rainfall under watershed activities during 2011 and 2016. It was observed that about 90% of the watersheds have performed positively in terms of increased vegetation cover and cropland, based on remote sensing analysis.

Keywords: Watershed, Land use / Land cover, Sustainable development, Remote Sensing, GIS.