Open Access
Volume 5 Issue 4
Research Article

International Journal of Water Research
ISSN: 2694-4049

PUBTEXTO

# Watershed Management Using Open-Source Geospatial Technology and Insitu Data of The Lower Bhadra River Basin

**Umeshchandra HG[a]* and Sindhe DS[b]**

[a]Department of Civil Engineering, Alva's Institute of Engineering and Technology, Associate Professor, Dakshin Kannada, India
[b]Department of Civil Engineering, Alva's Institute of Engineering and Technology, UG scholar Dakshin Kannada, India

Article Info

**Article History:**
**Received:** 28 July 2023
**Accepted:** 10 August, 2023
**Published:** 20 August, 2023

*Corresponding author: Umeshchandra HG, Department of Civil Engineering, Alva's Institute of Engineering and Technology, Associate Professor, Dakshin Kannada, India; DOI: https://doi.org/10.36266/IJWR/164

## Abstract

Up-to-date information on water resources is critical in the emerging knowledge society and widespread use of IT tools in various sectors to support economic development, improve quality of life, and conserve nature and the environment. In this regard, a national operational water resources information system is critical for country planning and development. Water resource management decision-making methods are characterized by a typical hierarchical structure and a high degree of complexity. Water resource planning necessarily requires a multidisciplinary approach that brings together a variety of technical tools and expertise, as well as stakeholders with varying interests and priorities. In general, a set of linked physicals, biological, and socioeconomic factors such as surface water hydrology, groundwater hydrology, climate, soil topography, land use, water quality, ecosystems, demographics, institutional arrangements, and infrastructure shape and influence the water management scenario. The current study attempted to investigate the extensive use of Geo-Spatial Technology and In-situ Data in watershed management. The Lower Bhadra River Basin has been chosen for this purpose.

Keywords: Watershed Management; Geo-Spatial Data; NVDI; Water quality; GIS.



## Introduction

One of the definitions of watershed management is "The process of creating and implementing plans, communities within watershed boundary". A watershed is also called a drainage basin or catchment area in which all water flowing into it goes to a common outlet. Despite sufficient rainfall, people have to depend upon tankers for their domestic water supply in the summer in most areas. This is mainly due to large runoff which is responsible for water loss as well as soil loss of land". A raindrop, when flows along the slope carries the loose soil along it. In this case, the topmost layer of soil is lost rapidly. The rain-fed agriculture contributes 58% to the world's food basket from 80% of agricultural land.Management of natural resources at the watershed scale produces multiple benefits in turns of food production, improving livelihoods, protecting the environment, equality issues along with biodiversity concerns.

Landuse landcover change is increasingly recognized as an important driver of environmental change on all spatial and temporal scales. Landuse landcover change contributes significantly to earth's atmosphere interactions, forest fragmentation, and biodiversity In addition, it is also one of the factors for local environment disturbance by influencing runoff, soil loss, and stream flow. Landuse landcover change is increasingly recognized as an important driver of environmental change on all spatial and temporal scales. Thus, this study is aimed to analyze the Landuse landcover changes from 1999 to 2019 periods and predict the situation for future periods.

Groundwater and Surface-water are important issues for successful crop production and to assure food security in developing countries of the world. Those are the most vital widely geospatially distributed valuable natural resources that play a great role in sustainable green socioeconomic development and environmental protection in the world, especially in arid and semiarid regions of the globe.Groundwater and Surface-water quality and quantity is a dynamic process that has equal importance. Exercising irrigation action has an important role to elevate the irrigation production rate and to meet the continuously increasing food demands of the growing population. Irrigation water quality is evaluated by the total amounts of soluble salts and the types of salts present within