

EARTH OBSERVATION SYMPOSIUM (B1)

Water resources management (6)

Author: Dr. D K Prabhuraj
KRSRAC, India

Dr. Ashok Reddy
KRSRAC, India

Mr. Rajshekhar AS
KRSRAC, India

Dr. Mukund Kadursrinivas Rao
National Institute of Advanced Studies (NIAS), India

TANK INFORMATION SYSTEM IN KARNATAKA USING EO IMAGES AND GIS INTEGRATION

Abstract

Water conservation is an important element of global strategy for the long-term sustenance of human society. A critical aspect is to identify, tap and conserve freshwater sources. In the state of Karnataka in India, management of surface water is an on-going task that the government undertakes on a regular basis. Karnataka state has 36,753 tanks spread over the state and tank-water is utilized for irrigation and potable purposes. The size of tanks varies from around 2 ha to 2000 ha. Tanks with a command area of less than 40 ha are owned and managed by local bodies (Zilla Panchayats) and larger tanks are under control of the Department of Minor Irrigation. Over the years, tanks have got silted up, degraded or have been converted into cultivable lands in the rural areas and urban captured. Destruction of forest cover in the catchments, siltation of the tanks due to erosion, encroachment of drainages and dilapidated bund and waste weirs have caused the reduction of water flow into tank systems. Thus, tank rejuvenation and creation of smaller water reservoirs is of utmost priority. EO images from IRS, coupled with GPS based inventory, have been the major source of spatial and water-related information on tanks and land resources, apart from combining with social and economic data at village-level using GIS techniques. A state-wide survey of tanks has been undertaken using IRS images of 2012-13 and GIS based integration to create a comprehensive tank-information database. The study reveals the total area of tank is 2799.48 Km², out of this 740.62 Km² is standing water and the remaining area includes Weed infestation, Dry area and probable encroachment. A repeat monitoring using 2013-14 images has shown the changes in tank areas and water areas. This difference has identified tanks that need immediate rejuvenation and reclamation measures. With a ranking of tanks for rejuvenation and also estimation of efforts/costs, the state has been able to make a local-area plan and allocate funds for the tank reclamation process. In a very cost-effective manner, EO images and GIS have helped the state water resource managers to be able to quickly prepare local plans and also take up implementation. In 2015-16, a repeat monitoring should show the impact of rejuvenation schemes and how the tanks have been reclaimed.

This paper discusses methods and results of using EO images and GIS that have helped a state-wide monitoring of tanks.