ABSTRACT

The availability of adequate, timely and assured supply of water is an important determinant of agricultural productivity. Irrigation raises cropping intensity and crop yields besides facilitating changes in cropping patterns. The increase in food grain output in the country has come mainly from increase in land productivity. Poor management of water as a resource has led to scarcity in some places and at times when it is most needed [1].

Human interventions to the hydrologic cycle have intensified to the extent that water resources cannot be managed and understood in isolation from anthropogenic influences. New approaches are needed to understand the effects of humans on hydrology, especially in regions of the world with limited hydrologic records.

In this research work, T G Halli catchment is selected as study area, located in Bangalore rural area, Karnataka state, India. T G Halli catchment is part of Arkavathi, which is a tributary of Cauvery. The T G Halli basin is having two large and many small irrigation tanks interconnected with cascade system that runs from Nandi Hills to the TG Halli dam.

With Bangalore continuing to expand its water footprint and local groundwater resources drying up, moving towards sustainable water resources management in the T G Halli catchment requires overcoming the general absence of local hydrological records to develop an understanding of the changing hydrology of the watershed. Issues and challenges in T G Halli Catchment is;
1. Hydrologic change within the watershed, which is spatially heterogeneous,

2. Maximum major reservoir and minor tanks are dry.

3. Exploitation of groundwater for irrigation, climate variation, obstruction in natural drainage due to urbanization, etc., resulting reduction in inflow to T G halli reservoir, reduction in recharge and draw down of water table effecting both water supply and irrigation. [2].

Keeping all the above aspects in view, an extensive field and laboratory study have been conducted. An integrated water resources management approach is applied to address issues and challenges by supporting long-term predictions by developing IDF curves, surface flow models, groundwater recharge and draft in T G Halli.

By integrating various thematic maps prepared in this research work, soil erosion map, groundwater prospect map, land and crop suitability maps useful for sustainable irrigation planning have been developed.