

Assessment of Water Quality Changes in Krishna River of Andhrap radesh Through Geoinformatics

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Abstract--- *Pancha Boothas are Life and Death for the Environment. In that any one is Disrupted that can be Escort to the danger of environment. Water is the one of the Pancha Boothas. Quality of the water is very crucial in the present and future users. Natural issues and manmade activities are depending on the water quality. The ratio of transportation of fresh water in liquid form to covert useless form is 70%. The ratio of sedimentation is also one of the parameter of the water quality, if changes are happen in sedimentation the quality of the water also changes. The causes of water pollution source are many, of which sewage discharge, industrial effluents, agricultural effluents and several man made activities are play a key role on water quality. The total percentage of water in the world is 97% in Oceans and reaming 3% of water in form of glaciers, in which the consumption of water quantity is in form of surface and subsurface water bodies. The prevention and monitor of the water quality is very essential for the future users. In the present study an attempt is made assess the surface water quality in the Krishna river course of Andhra Pradesh. The water quality parameters -pH, EC, Co3, HCO3,cl, SO4 , Ca, Mg, Na, K are analyzed. The changes in the quality parameters shows indications that these waters may not be suitable for usage in due course of time.*

Index Terms: Water quality, Krishna River, Chemical Properties, ArcGIS

I. INTRODUCTION

Generally, the availability of surface water is more than the subsurface water [1]. The water quality from the rivers is very crucial for domestic, irrigation, tourism, recreation, etc. Water quality of a river is depends on several interrelated parameters with a local and catchment properties. Water Chemistry analysis will give representative and reliable estimation of water quality from the river courses [Water quality for a river can play impact on the Dams, Reservoirs and constructions durability. The monitoring and predicting of water quality is very crucial. The water contains high toxic metals will impact on the crop yields and productivity [3].

The river surface water is generally more inclined to pollution because as it to exposed environment [4]. Surface water quality is most valuable concern for developing countries. The water quality from rivers is more important because that's play key role on the river aqua system and fishermen's income. The surface water is easily getting polluted compare to the subsurface waters. Toxic elements

are permissible in river water but exceed their level its causes several diseases for users and Toxic elements, excess nutrients create vadose zones in river courses [5]. Most of the assured irrigation in India is surface water of rivers. It is essential to monitor and assess the water quality in the Krishna river course.

Notations:

GDSQ: Gauge Discharge Sediment and Water Quality
GDQ : Gauge Discharge Water Quality
pH : Potential of Hydrogen
EC : Electric Conductivity
CO₃ : Carbonate
Hco₃ : Bicarbonate
Cl : Chloride
So₄ : Sulfate
Ca : Calcium
Mg : Magnesium
Na : Sodium
K : Potassium

II. STUDY AREA

Krishna River is the second largest river in the southern part of India in terms of water inflows and basin area, after the Godavari. Fig. 1 represents location map of study area. The length of the Krishna River is about 1,400 kilometers (870 miles) and having the catchment area of 76252 (sq.km.) both Andhra Pradesh and Telangana. The Krishna River is one of the prime sources of irrigation for Maharashtra, Karnataka, Telangana and Andhra Pradesh. The main tributaries of Krishna River are Ghataprabha River, Malaprabha River, Bhima River, Tungabhadra River and Musi River. The major dams/ reservoirs/ weirs across the main river course are Sunkeshula, Srisailam, Nagarjuna Sagar and Prakasam barrage. It causes heavy soil erosion during the monsoon periods. The location map showing admin river courses along with Dams/ barrages are depicted in Fig. 3.1. In the present study 2 locations are selected in the course of Krishna River for collection of water sample.

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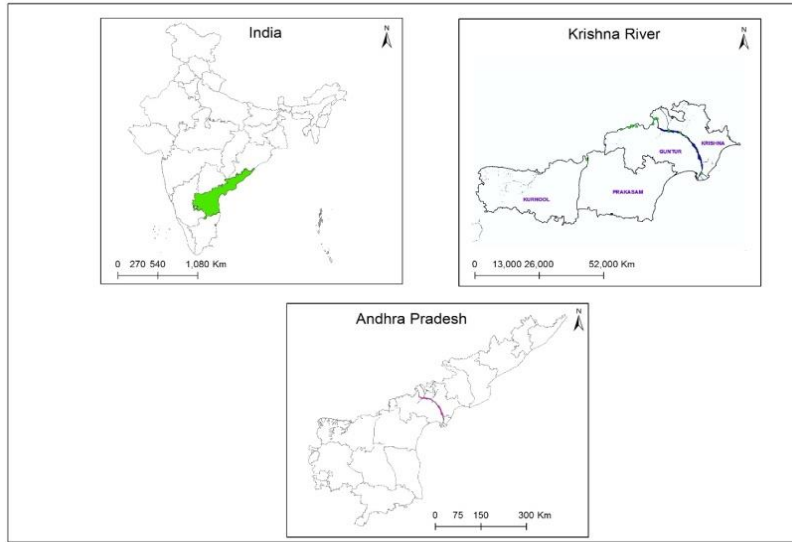


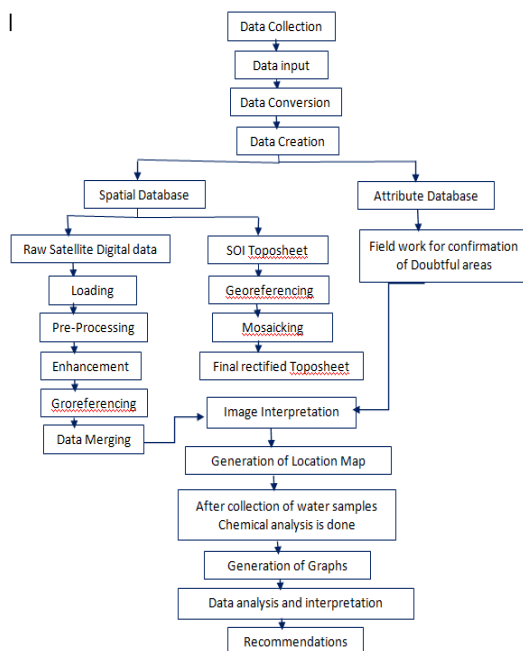
Fig. 1: Location map of study area

III. METHODOLOGY

The locations for the collections of water samples are selected topographic characteristics of the main river using Survey of India toposheet's of 1:50,000 scale and high resolution satellite.

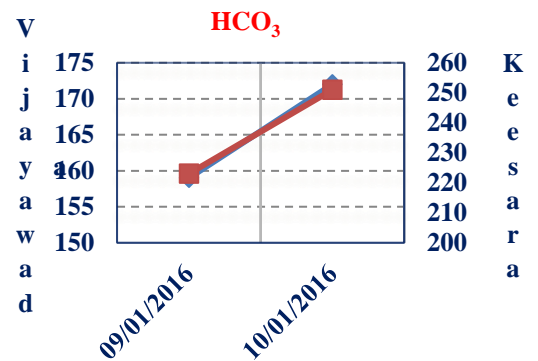
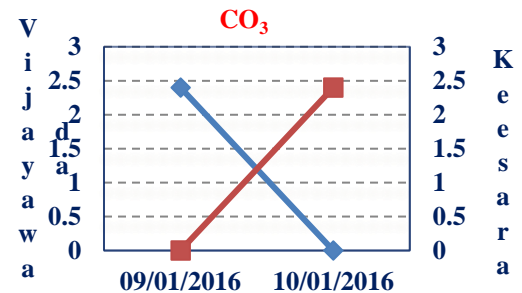
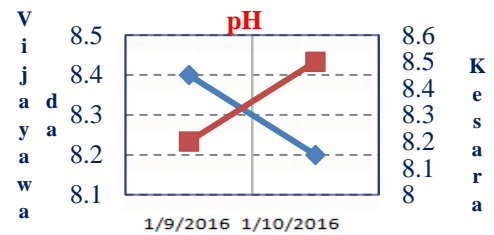
Criteria for the collection of water sample's is before and after stream added to the river course and before and after the dams, barrages and their river mouths.

The CWC collect samples GDSQ and GDQ stations of particular river Courses. The water samples are collected at depth of 0.6cm (CWC Handbook -2017) of flowing water using half litter cans during November-2018 at the 2 locations. The chemical properties analyzed are pH, EC, CO_3 , HCO_3 , cl, SO_4 , Ca, Mg, Na, K The detailed methodology depicted in the following flow chart.



Flowchart: Flow chart Shown methodology for this study area.

IV. RESULTS AND DISCUSSIONS



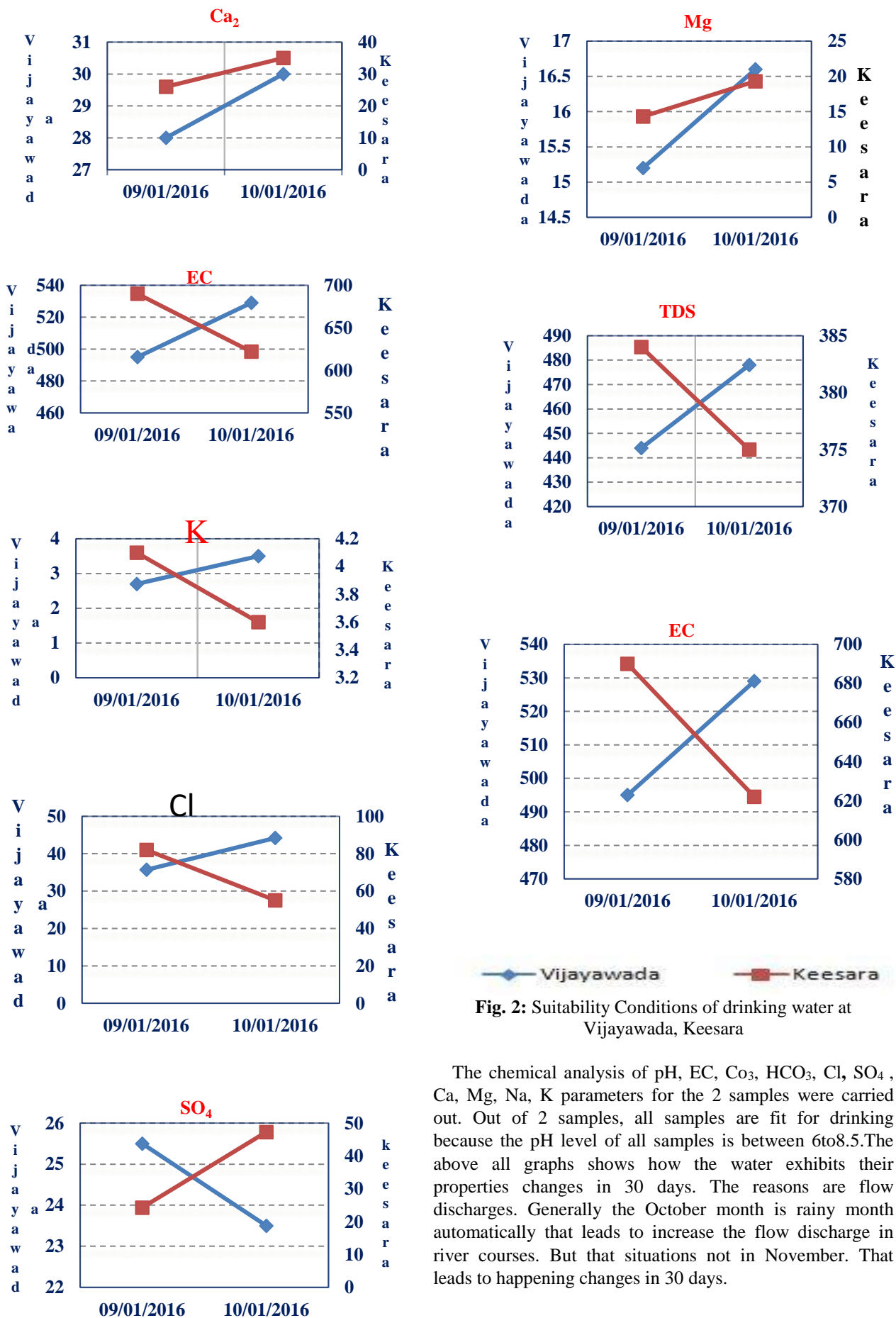


Fig. 2: Suitability Conditions of drinking water at Vijayawada, Keesara

The chemical analysis of pH, EC, CO₃, HCO₃, Cl, SO₄, Ca, Mg, Na, K parameters for the 2 samples were carried out. Out of 2 samples, all samples are fit for drinking because the pH level of all samples is between 6 to 8.5. The above all graphs shows how the water exhibits their properties changes in 30 days. The reasons are flow discharges. Generally the October month is rainy month automatically that leads to increase the flow discharge in river courses. But that situations not in November. That leads to happening changes in 30 days.

V. CONCLUSIONS

The two sample location points are same river course, but exhibit different characterizes that difference will comes for different conditions. Controlling of that different conditions are very necessity because its play on key role the water quality. There are several methods to control the water quality. Let us discussed in the below.

In India the all river courses are majorly used for irrigation and drinking purpose there are very crucial. So the controlling methods are implementing the usage of natural fertilizers in spite of chemical fertilizers, which will leads to stop changes of soil characteristics. Because that chemical impact on water quality is high level. We also control the deforestation activity. Those will leads to control soil erosion and sedimentation in river course. Controlling of industrial emissions merging to the river courses without treatment that could help to the fear from the water quality changes.

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