

Comparative assessment of surface and ground water quality using geoinformatics

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Abstract. Water quality demonstrates physical, chemical and biological characteristics of water. The quality of surface and groundwater is currently an important concern with population growth and industrialization. Over exploitation of water resources due to demand is causing the deterioration of surface water and ground water. Periodic water quality testing must be carried out to protect our water resources. The present research analyses the spatial variation of surface water and groundwater in and around the lakes of Hyderabad. Twenty-Seven lakes and their neighboring bore water samples are obtained for water quality monitoring. Samples are evaluated for specific physico-chemical parameters such as pH, Total Dissolved Solids (TDS), Cl, SO₄, Na, K, Ca, Mg, and Total Hardness (TH). The spatial variation of water quality parameters for the 27 lakes and groundwater were analysed. Correlation and multiple regression analysis were carried out to determine comparative study of lake and ground water. The study found that most of the lakes were polluted and this had an impact on surrounding ground water.

Keywords: water quality; physico-chemical parameters; surface water; ground water; urbanization

1. Introduction

Water is significant element and most important source for our life. Earth surface contains 70% of water. In maintaining human health water plays a major role, because our body contains two third of water. Among all natural resources water is most important one. On earth water occurs in three physical states of matter i.e., liquid, solid and gas. Water presents mostly in liquid state, next comes gases and at last solids. From total earth's water 0.3% is usable by humans and 99.7% by oceans, soils and icecaps. From 0.3% usable water lake contains 87%, swamps contain 11% and 2% in rivers. To maintain a significant role in natural heritage, lake and river water plays a major role. Human beings depend on water for variety of purposes like agriculture use, industrial use and for domestic purposes. In the past few decades ground water and lakes have been polluted owing to disposal of waste without treatment and overexploitation. The problems of groundwater quality

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5. Conclusions

A clear surface water impact was identified on groundwater. Multiple correlation indicated a significant value of less than 0.005, rejecting null hypothesis and concluding a significant relationship between lake and groundwater. The approach presented contributes to efficient water quality monitoring and is useful in regulation of water management in surface and ground water. The correlation between groundwater and surface water is mainly considered for urban area but other anthropogenic activities like leaking and overflowing of sewers also affect the quality of both lake and ground water.

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