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Prediction of Effects of Climate Change Scenarios on Water Quality of Tungabhadra River Using Historical Data

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Abstract: Climate change is a major concern for many researchers since many years. One of the major effects of climate change that the researchers are worried about is the impact of climate change on surface water quality. Two most important parameters affecting the water quality and quantity are changes in rainfall and temperature patterns. In this paper, an attempt is made to study the impact of climate change on 200 km stretch of river Tungabhadra. Historical data indicates a decreasing trend in rainfall and increasing trend in temperature. Sensitivity analysis is carried out with QUAL2K software to investigate the changing behaviour of water quality (dissolved oxygen and biochemical oxygen demand) with the changing climate trends. The result quantifies as to how much impairment is caused by these changing scenarios (stream flow and temperature) on the water quality and the critical stretches in the river that are severely affected. The quality and quantity of the wastewater effluents entering the river stream through different sources are kept same throughout the analysis.

Keywords: Climate change, Surface water quality, Rainfall, temperature, Dissolved oxygen, Biochemical oxygen demand