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## **Modeling of Basic Water Quality and Fate of Organic Contaminants in Swarna River Basin, Southwestern India.**

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Perennial rivers often are surrounded by agricultural land, which are used by local communities for various activities. Proper land-use planning in the river bed area will prevent infringements and thus protect the aquatic community and the surface water quality. The aim is to begin to develop a conceptual model for the nutrient transport of Swarna River in a two-dimensional manner. The River carries a discharge of 16,512 m<sup>3</sup> annually to the Arabian Sea. The study area experiences typical tropical climate with hot temperatures (20-38 °C), heavy rainfall (~4,500 mm), and high-surface runoff (~3,400 mm). The basin has an area of 603 km<sup>2</sup>.

Model development is done by performing the numerical solution to a set of differential equations representing a river network with the help of Finite Difference Method (FDM). The model predicts the distance at the downstream at which the injected pollutant gets completely dispersed in a 2-D manner. The resulting data can be used to simulate dissolved oxygen (DO) and biochemical oxygen demand (BOD) concentration in the river. The combination of current understanding of essential components of surface water hydrology and simulated results will provide new insights into water quality modeling and nutrient transport of River Swarna.

