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Understanding the potential sources and environmental impacts of dissolved and suspended organic carbon in the diversified Ramganga River, Ganges Basin, India

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The river network is one of the important transporters of nutrients from the environment and land masses to the oceans and regularly provides storage for several compounds. The human activities significantly affect the biogeochemical cycling of elements. With the developing attention to the human effect on nature of rivers, the accentuation is given more towards an all encompassing treatment of a river as an ecosystem. The variations in suspended and dissolved discharge of the river are more substantial than the changes in water discharge. Suspended and dissolved organic carbons are imperative segments in the carbon cycle and fill in as essential food sources for amphibian sustenance networks. Furthermore, dissolved organic carbon (DOC) modifies the chemistries of an aquatic ecosystem by adding to fermentation in low alkalinity, feebly supported, freshwater systems. A quantitative comprehension of the components controlling the variation of DOC and suspended organic carbon (SOC) in rivers is of scientific concern for no less than two reasons. First, evaluating the general carbon budgets of lotic ecosystems is required for an essential comprehension of these ecosystems. Second, DOC communicates emphatically with other dissolved substances (heavy metals in general) and assumes an imperative part in the transport of contaminants. In the present study, an attempt is made to estimate the organic carbon transport from the Ramganga River, a tributary of the Ganges River, India. To achieve the objective, 26 samples of water were collected from different locations over the 642 km stretch of the Ramganga River and its adjoining tributaries to observe the spatial variation of DOC and SOC in river water. In case of the mainstream the values of DOC range between 11.3 mg/L to 38.82 mg/L with an average concentration of 22.50 mg/L, whereas in case of tributaries, the values of DOC range between 7.38 mg/L to 42.48 mg/L with an average concentration of 23.42 mg/L. The SOC values in the mainstream vary between 2.58 g/Kg to 28.67 g/Kg with an average concentration of 10.53 g/Kg, whereas in tributaries, these values range between 1.12 g/Kg to 70.17 g/Kg with an average concentration of 14.40 g/Kg. The results also show the higher values of DOC as compared with SOC and these values shows an increasing pattern with decreases in elevation.

Keywords: Ramganga River; Suspended organic carbon; Dissolved organic carbon; Carbon Budgets