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Assessment of Physico-chemical Integrity of Lotic Ecosystems in Central Western Ghats through Multivariate Techniques

T. V. Ramachandra[1, 2,3*], V. Sincy[1], K. S. Asulabha[1] and S. Vinay[1]

[1]Energy and Wetlands Research Group, Centre for Ecological Sciences (CES), Indian Institute of Science, Bangalore, Karnataka, India
[2]Centre for Sustainable Technologies (ASTRA), Indian Institute of Science, Bangalore, Karnataka, India
[3]Centre for Infrastructure, Sustainable Transportation and Urban Planning (CiSTUP), Indian Institute of Science, Bangalore, Karnataka, India

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ABSTRACT The Western Ghats is the water tower sustaining perennial rivers of peninsular India. This study assesses the physico-chemical integrity of lotic ecosystems in central Western Ghats through field investigations and multivariate analyses. This helped in understanding the seasonal variation pattern of water quality in different streams of Aghanashini river basin, Karnataka. Principal Component Analysis (PCA) reveal that water quality parameters such as total dissolved solids, electrical conductivity, total hardness, calcium, magnesium, potassium, ortho-phosphate, nitrate and water discharge play an important role in the streams across seasons. The cluster analysis grouped stations based on physico-chemical integrity considering temporal and spatial aspects. PCA and cluster analyses confirm the vital role of water discharge during the three seasons. Discharge characteristics of a stream which varies among seasons and anthropogenic activities bring in wide variations in water quality of lotic ecosystems. Regular monitoring of streams is necessary to maintain and protect these pristine ecosystems.