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Investigating the Complexities of LS PIV in River Contaminations: A case study of Varuna River Basin

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This study delves into the intricate challenges associated with employing Large Scale Particle Image Velocimetry (LS PIV) in river systems affected by anthropogenic contamination and algae, with a specific focus on the Varuna River Basin. The presence of pollutants and the proliferation of algae pose unique obstacles to the accurate assessment of flow dynamics and sediment transport using LS PIV technology.

In our investigation, we utilize a setup consisting of Jetson Nano with a camera. The setup is checked for feasibility for two cameras: i) GoPro Hero 7 camera and ii) a Sony IMX219-200 Camera. The integration of these technologies allows for real-time observations with Real Time Messaging Protocol (RTMP), providing a dynamic perspective on the impact of contaminants and algae on the LS PIV measurements. Through this detailed case study, we scrutinize the complexities arising from the interplay of contaminants and algal growth, examining their effect on the data captured by our setup. Lastly, a holistic comparison of both the setups is done. The findings contribute valuable insights for researchers and practitioners working on water quality assessment and river management strategies in regions facing similar challenges.