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Temporal Variations of River Morphology: A Case Study Wey Ganga, Sri Lanka

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Abstract

Rivers are among the natural ecosystems most threatened by natural factors and human activities. Tools and techniques of remote sensing, geographical information system and Google earth satellite imagery have been used to determine the morphological changes along Wey Ganga, located in Sabaragamuwa province, Sri Lanka, is a victim of intense riverbed gem mining activities. By using Google earth satellite images of 2006, 2014 and 2018, changes of wetted river area (WR), water covered area (W), bar covered area (B), B/W ratio and sinuosity index (SI) were analysed for the 5 km river segment. Then the river segment was divided into five reaches and changes of same parameters were evaluated. According to the results, WR of the river segment and five reaches were decreased over the period from 2006 to 2018. Similarly B were also decreased in the river segment and in three river reaches out of five. At the same time W was also decreased in river segment and four river reaches except one reach over the period. Nevertheless, from 2006 to 2018 B/W ratios were also decreased in river segment and three reaches out of five. When considering the SI, it was also decreased from 2006 to 2018. The study revealed that the narrowing trend (2006-2018) of the morphological plan of the Wey Ganga form certainly decrease the active channel area. The findings of the study will be important for the wise management of river ecosystems.

Keywords: GIS, Google earth platform, Remote sensing, River parameters, River morphological changes