

Development of sediment rating curve for the Lower Ganges River in Bangladesh: A new approach

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ABSTRACT:

The relationship between the discharge and the sediment transport, expressed by a curve, is generally referred to as a sediment rating curve. This curve is widely used to estimate the sediment concentration or the sediment transport for periods where discharge data are available, but sediment data are not. In this study, the sediment rating curve of the Ganges river at Hardinge bridge gauge station has been developed by establishing power relations between sediment transport as dependent variable and discharge, shear stress, stream power and unit stream power as independent variables separately. It is found that the sediment rating curve should be updated every year. The discharge and unit stream power when used as independent variables give better curve as compared to shear stress and stream power when developed for each year. When single sediment rating curve is developed by considering the data of all the years, then the curve between discharge as dependent variable and unit stream power as independent variable gives better results. The sediment rating curve improves significantly when it is developed by partitioning the data into rising, flood and falling limbs.

Key words: Sediment, rating curve, lower Ganges River, discharge, unit stream power.
