

## **Suspended sediment flux modelling in a transboundary Himalayan river basin**

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**Abstract** Artificial neural network (ANN) models have been developed for simulation of daily suspended sediment flux in the Subansiri River basin, which is a transboundary eastern Himalayan basin and the biggest sub-basin of the Brahmaputra River in India. Modelling was conducted on two datasets: (1) daily discharge and suspended sediment concentration data of 15 years (1993–2007) and (2) daily data of climate (rainfall, temperature) and snow cover area along with discharge and suspended sediment concentration for six years (2001, 2003–2007). The performance of ANN models has been compared with conventional sediment rating curves (SRC) and multiple linear regression models (MLR) having similar input data. ANN models were found to be considerably better than the SRC and MLR models. This paper concludes by providing discussion about how the different type of input data, length of input data and lagging of input data affects the accuracy of sediment flux estimation in a large Himalayan River basin and also provides guidance on the types of tasks for which different types of input data may be preferable.

**Key words** suspended sediment flux; artificial neural networks; multiple linear regression; Himalaya; Brahmaputra River; Subansiri River; India