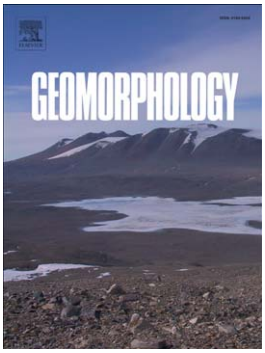

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A single width-discharge regime relationship for individual threads of braided and meandering rivers from the Himalayan Foreland

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Abstract

We explore the existence of a single width-discharge regime relation for alluvial rivers of braided and meandering patterns. The study relies on the field measurement of a channel's cross section geometry (width, depth), discharge, and grain size of 98 individual threads of braided and meandering rivers from the Ganga-Brahmaputra plains of the Himalayan Foreland. Using this data set, we show that, irrespective of the diverse climatic and geologic setting along the strike, the braided and meandering threads share statistically indistinguishable regime relations and scale according to Lacey's law. To explain the observed trend in this empirical relationship, we use the threshold theory introduced by Glover and Florey (1951). Using this theory we detrend our data with respect to discharge to produce a statistically homogeneous ensemble of width measurements. The statistical distribution of the detrended width is similar for braided and meandering threads of the entire plains of

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