

Braided-Channel Network Influence on Bed Sediment Transport: A Laboratory Flume Study

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Abstract. Relatively few laboratory flume experiments have been conducted of a network of braided channels self-formed in a wide alluvial plain. Such experiments involve several challenging considerations, because braided channels characteristically are relatively wide and shallow, have relatively large bed-sediment loads, readily shift; and (importantly) are self-forming – they are shaped by the magnitude and frequency of their flows, the amount and properties of the sediment they transport, and the slope of the valley they drain. Moreover, they are continually in a state of dynamic equilibrium whereby the network layout, specific channel morphology, and rates of bed sediment transported vary stochastically with time. Our presentation presents findings from extensive experiments aimed at relating the rate of bed sediment transport from a reach of braided channels to the number of main braid channels comprising the braided channel network. The experiments were conducted at CSU’s Hydraulics Laboratory.