

## **Overview of Particle Size Trends of Gravel Bars on the Upper Rio Chagres, Panama**

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**Abstract.** It is generally recognized that sediment fines downstream over large distances, however a study on the Rio Chagres, Panama indicates that grain size is poorly correlated with downstream distance. The Rio Chagres is the largest river that drains into the Panama Canal, making it a river of global importance. This study focused on the upper 414 km<sup>2</sup> of the Rio Chagres drainage basin, which is heavily forested and virtually untouched by humans. Gravel bars were sampled along the upper 45 km of the Rio Chagres and five major tributary streams using a Wolman pebble count. Statistical analysis reveals a very weak downstream decrease of sediment size on gravel bars along the Rio Chagres, and no consistent trends in grain size between major sources of lateral sediment input (e.g. tributary streams). Sediment input due to frequent landsliding, as well as river discharge rates competent to transport large particles, have been identified as controlling factors for the grain size trends on gravel bars along the Rio Chagres. Moreover, stream reaches were divided into categories of wide and narrow based on qualitative observations, and larger grain sizes are associated with narrow channel reaches while smaller grain sizes are associated with wide channel reaches. The results indicate that gravel bar grain size trends found along the study reach of the Rio Chagres are strongly related to both stream hydrology and channel morphology.

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