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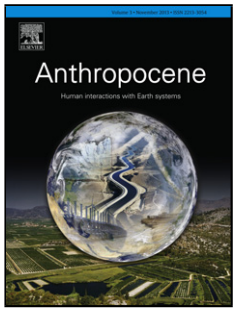

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Urban catchment runoff increases bedload sediment yield and particle size in stream channels

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Abstract

Physical degradation of urban rivers negatively impacts the environmental and social values they provide, and imposes significant financial costs on waterway management agencies. While the impact of urban stormwater runoff on streams is well recognised, the influence of altered bed sediment regimes on urban stream geomorphology is poorly understood. This study reports bedload sediment yields and bedload particle size distributions measured with sediment traps in nine small streams in eastern Melbourne, Australia, across a gradient of urbanization. We assessed relationships between the yield and size of bedload sediment and measures of catchment urbanization (including total imperviousness, effective imperviousness, road density and pipe density) and hydrology (measured through flow gauging at each site). Bedload yields were greater and bedload sediments were coarser-grained in more urbanized catchments. Bedload yields were strongly related to drainage connection of the urban land surface to the stream (captured by