Abstract

Physical and numerical models suggest that rivers process coarse sediment pulses primarily through dispersion while translation dominates processing of finer, more cohesive material. These results are broadly unconfirmed by field observations, the decommissioning of dams presents valuable opportunities for substantial changes in sediment response to sediment pulses. Thus, to evaluate the dominance of mechanisms driving channel processing of sediment pulses and to improve the reliability of metrics to predict channel response to gravel pulses in natural rivers, we analyzed channel changes associated with three barrier removals in Oregon. Our study sites ranged from very small (Oak Creek culvert, height = 1.5m), small (Brownsville Dam, height = 2.5m), to medium (Savage Rapids Dam, height = 15.3m) in size. Post-removal bathymetric surveys were analyzed to determine different methods of measuring riverbed material and to place the reported physical and numerical experiments have provided valuable support for this research provided by:...