

Abstract Submitted  
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**The effects of woody debris on streambed morphology: flume experiments on the spatial patterns of fluid flow and sediment transport around woody debris** VIVIAN LEUNG, DAVE MONTGOMERY, University of Washington — The interaction of woody debris, fluid flow and sediment transport in rivers creates local streambed morphology, such as large pools that are important fish habitat and sediment deposits that bury and stabilize wood. We present the results of 300 experimental runs characterizing the fluid flow field around individual stationary model wood on an immobile bed. Fluid flow patterns on the bottom boundary layer, where bedload sediment transport occurs, were visualized using solid dye crystals. We find that: 1) the presence of roots leads to greater areas of predicted sediment scour and deposition; 2) the amount of predicted sediment scour and deposition are exponentially related to the root cross-sectional area, oriented orthogonal to flow; 3) as root porosity decreases the amount of predicted sediment scour and deposition decrease and the predicted sediment deposit moves away from the roots. Ongoing sediment transport experiments, building on the fluid flow experiments, are investigating the volumes and spatial patterns of sediment scour and deposition around woody debris.

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