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Modulation of flow field due to near-bank roots in small rivers CHRISTIAN FRIAS, JORGE ABAD, University of Pittsburgh, EDDY LANGENDOEN, U.S. Department of Agriculture — It is well known that the presence of vegetation or log jams decreases the bank shear stress exerted by the water on a river. This fact is used in river restoration to design bank erosion control structures such as engineered log jams or streambank revegetation zones. Also it has been observed in small rivers the presence of exposed near-bank roots and rootwads that could have a similar effect as riparian vegetation or log jams. However, the role of them on the modulation of river bank erosion and sediment transport is still not well understood. An exposed root in the river does not only modify the averaged shear stress or the averaged velocities on the flow field but it changes the instantaneous hydrodynamics too. Thus, it is expected that a root or rootwad produce turbulence coherent structures in the flow field. The analysis of these turbulence coherent structures will give a better insight of the relationship between rootwads geometry and flow field modulation because of them. Herein it is presented a Large Eddy Simulation (LES) of an exposed rootwad at selected small creek in Pennsylvania. The geometry of the rootwad was measured with a terrestrial LiDAR system. The results will be used to characterize the flow field turbulence and associate it to the bank erosion.

Christian Frias
University of Pittsburgh

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