



Experimental Study of Flows Induced Scour around compound Vegetation Patch in Different Densities

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In the natural rivers, woody vegetation commonly grows along the riverbank. When flows run through the woody vegetation zones, the stream processes are markedly affected. Previous studies were to explore Single-density vegetation group. This study used a combination of dual-density vegetation group. We experimentally investigated the flows induced scour around vegetation patch in different density. Since vegetation grows along the nature bank, so the vegetation model is arranged along one side of the flume wall. The experiments were expected to simulate the near bank scour in the jointed effects of vegetation and levee. The woody vegetation was set in 10 square centimeters. Modelled vegetation was simulated by the steel columns in the emergent flow conditions. Uniform sand with a median size of 0.88 mm was used as the bed sediment. The experimental flow was steady and flow velocity was adopted to close to the initiation of sediment motion. It was observed sediment erosion phenomenon around the vegetation zone. The bed morphology of equilibrium scour condition was measured by a Laser Distance Meter in the cases of vegetation density equal to 0.03, 0.04, 0.05, 0.07, 0.09, 0.12, 0.15, 0.2, and 0.3. Test result of the vegetation group compound arrangement made by a combination of density 0.03, 0.05, 0.09, and 0.12. The difference between double density and single density of the vegetation was compared. Vegetation densities were used to research the effects of vegetation on the maximum scour depth of the scour hole. Near the vegetation zone, the size of the scour hole increased as the vegetation density increased. However, the height of depositing dune is in a low correlation with vegetation density. Location of Maximum scour depth and the maximum accumulation will move upstream with the density increase.