Higher order statistics of Reynolds shear stress in nonuniform sand bed channel

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ABSTRACT

Experimental investigation was carried out to investigate the the flow turbulent structure, including the Reynolds stresses distribution in non-uniform sand bed channels with and without seepage. Steady flows over non-uniform sand bed channel were simulated experimentally with downward seepage applied through the boundary. Measured time average velocity and Reynolds stresses increase with the application of seepage. The quadrant analysis suggests that the relative contributions of bursting events increased throughout the flow layer and the thickness of the zone of dominance of sweep event increases with seepage which is responsible for increment in bed material transport with seepage. The mean time of occurrence of ejections and sweeps in downward seepage are more persistent than those in no seepage.