Bed roughness effect on flow field in rectangular shallow reservoir

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Description
The sedimentation by suspended sediments in the reservoir is a complex phenomenon operates. Actually, some solutions exist to control or to reduce reservoir sedimentation but, generally, they are not very easy to implement especially in reservoir crossed by the flow. In this context, an experimental study was studied in order to examine the bottom roughness effect in a shallow reservoir. The tests were carried out in rectangular reservoir of width B = 4 m, length L = 6 m and depth h = 0.2 m. The velocity profiles were measured by UVP (Ultrasonic Velocity Profiler). LSPIV (Large Scale Particle Image Velocimetry) was also used to define the field velocity on the surface by interpretating of zenith video images. On the smooth bottom, asymmetrical flow is developed in the reservoir in spite of boundary conditions and geometrical perfectly symmetrical. With the addition a roughness surface at the bottom of reservoir …