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Distributional characteristics of sediment concentration in the lotus-root-shape compound channels

Z. JI[1], C. HU[1], J. LIU[1] and H. SHI[1]

[1] State Key Laboratory of Simulation and Regulation of Water Cycle in River Basin, China Institute of Water Resources and Hydropower Research (IWHR)
20 Chegongzhuang West Road, 100048 Beijing, China
e-mail: shihl@iwhr.com

ABSTRACT

In this paper, the distribution characteristics of sediment concentration in the lotus-root-shape compound channels are analyzed and compared by the data from flume experiments. The averaged sediment concentration of flood plain is smaller than that of main channel in the lotus-root-shape compound channels. The sediment concentration of plain is larger than a single channel because of the affects of momentum transfer between channel and plain. The ratio of the sediment concentration between plain and cross-section goes up with the sediment load. With the increment of water depth or the decrement of sediment load, the sediment concentration of channel and plain always debase, and the amplitude decreases alone the river. The mean sediment concentration in vertical direction reduces gradually from the center zone of channel to two sides of plain. The vertical distribution of sediment concentration doesn't obey Rouse-law. In general, the sediment concentration of channel is smaller, but that of plain is larger than these calculated data of the formula.