

The comparison and analysis of sediment contour extraction based on image processing

XU Linjuan^{1, 2, 3}, CAO Wenhong^{1, 2, 3}, LIUChunjing^{1, 2, 3}

(1. *State Key Laboratory of Simulation and Regulation of Water Cycle in River Basin, Beijing 100048, China;*

2. *Key Laboratory of Hydraulic and Sediment Science and River Harnesting
of the Ministry of Water Resources, Beijing 100048, China;*

3. *Department of Sediment Research, China Institute of Water Resources and Hydropower Research, Beijing 100048, China)*

Abstract: Digital image processing technology is useful for processing sediment particle images, extracting the sediment particles contours and position coordinates, which provides the basis for real-time measurement of bedload sediment transport rate. Based on digital image processing technology in this paper, some basic knowledge of image contour extraction were expounded, the three commonly used image contour extraction methods were introduced, the effects with the three methods about image contour extraction were showed, and the contrast analysis was carried out among them. The results show that when the processing of image containing different particle size of sediment particle, the research results that using edge detection algorithm to extract the numbers of the sediment particles are best.

Key words: contour extraction; image processing; algorithm; comparison analysis; sediment particles