

Evaluation of flood discharge hydrographs and bed variations in a channel network on the Ota River delta, Japan

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Abstract A channel network consisting of the Ota River floodway and five branched rivers is formed on the Ota River delta. To estimate bed variation and flood discharge distributions in the channel network of the Ota River delta is important for proper river management. The objective of this study is to develop the calculation method of flood flows and bed variations by using time series of water surface profiles measured in the channel network of the Ota River delta. We developed a quasi-3D numerical model for the flood flow and bed variation analyses using time series of observed water surface profiles. The unsteady quasi-3D analysis of flood flows and 2D analysis of bed variations using time series of observed water surface profiles are found to provide good explanations for the flood discharge distributions and bed variations of the channel network on the Ota River delta.

Key words channel network; Ota River delta, Japan; time series of observed water surface profiles; flood discharge distributions; bed variation