

Abstract for the poster exhibition

A process-based hydraulic resistance coefficient for flow over vegetation

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A simple description for the hydraulic resistance coefficient as affected by obstructing vegetation is presented. The description is based on physical principles, is based on quantities that can be measured in the field and gives good agreement with laboratory and field measurements. The process-based resistance coefficient may be used to evaluate the hydraulic response in vegetated streams, and to anticipate on hydraulic effects of nature developments in floodplains. Because of its mathematical simplicity, the proposed method is particularly suited to be incorporated in numerical models to predict flood behavior on river-reach scales.

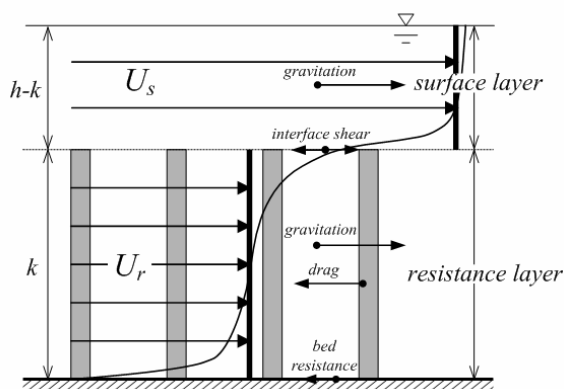


Figure 1. Two flow layers are used to describe the average flow field through and over the vegetation. Together they yield an effective resistance coefficient for the entire flow depth.

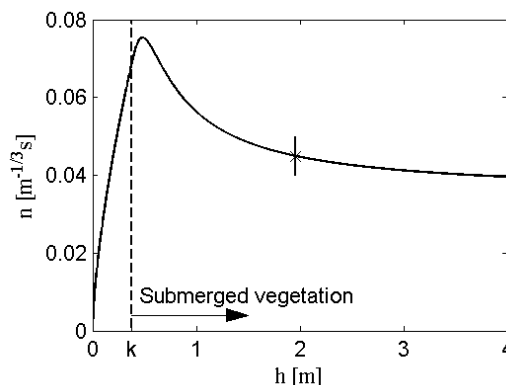


Figure 2. Effective Manning resistance coefficient n as function of flow depth h , for vegetation with height k and particular spatial density.