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Abstract
A simple idealized model to describe the hydraulic resistance caused by vegetation is compared to results from flow experiments conducted in natural waterways. Two field case studies are considered: fixed-point flow measurements in a Green River (case 1) and vessel-borne flow measurements along a cross-section with floodplains in the river Rhine (case 2). Analysis of the two cases shows that the simple flow model is consistent with measured flow velocities and the present vegetation characteristics, and may be used to predict a realistic Manning resistance coefficient. From flow measurements in the river floodplain (case 2) an estimate was made of the equivalent height of the drag dominated vegetation layer, as based on measured flow characteristics. The resulting height corresponds well with the observed height of vegetation in the floodplain. The expected depth-dependency of the associated Manning resistance coefficient for could not be detected due to lack of data for relatively shallow flows. Furthermore, it was shown that topographical variations in the floodplain may have an important impact on the flow field, which should not be mistaken as roughness effects.

Keywords
Hydraulic Roughness; Vegetation; River Flow; Floodplains; ADCP Measurements

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