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Mechanisms and models which govern bending and reconfiguring of trees under water flow action CATHERINE WILSON, Cardiff University, PETER WHITTAKER, JBA Consulting, HYDROENVIRONMENTAL RESEARCH CENTRE TEAM — A model for predicting the drag and reconfiguration of flexible vegetation under hydrodynamic loading is presented. The model is based on a refined "vegetative" Cauchy number to incorporate the magnitude and rate of a tree's reconfiguration. In addition, analysis of data from a tree drag force study conducted at the Canal de Experiencias Hidrodinamicas de El Pardo, Madrid, is also presented. This data enables the analysis of the frontal projected and the side-view areas as well as the bending angle of the main tree stems over a full range of velocities. New physical mechanisms which link tree posture, permeability, and the Reconfiguration number-Cauchy number relationship for various key stages of reconfiguration are proposed. These mechanisms are mainly developed for multi-stem trees in their foliated state. In addition direct comparisons of mechanisms for foliated and defoliated states are also presented.

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