Evaluating the Effects of Heat Transfer in Riparian Vegetation Canopy on Vegetated Flow

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Riparian zone management is one of the main topics in Ecohydraulics, especially when dealing with vegetated reclamation channels massively covered by weed riparian vegetation species. It is important to highlight here that riparian vegetation plays a key role in the field-scale Ecohydraulic traits of vegetated open channels. Depending on their phenological evolutive stage, riparian plants and/or stands have very different impacts on the hydrodynamic behavior of real vegetated water bodies. In particular, riparian vegetation stems and canopy has a paramount effect on cross-sectional flow velocity and turbulence flow fields along with the examined vegetated open channels. In the present study, the heat transfer phenomena associated with riparian vegetation canopy at mature phenological stage were first evaluated by UAV-based remote sensing image acquisitions and processing, and then correlated to the main flow dynamic features of a real vegetated reclamation channel covered by 9-10 m high mature Arundo donax L., most commonly known as Giant reed stands, experimentally measured at thirty cross-sections uniformly distributed along the examined vegetated reclamation channel. The outcomes of the present study constitute an extremely interesting advance in the study of the interplay between riparian vegetation stands and the main water flow dynamic features within real vegetated streams.