River banks are an essential part of riparian ecosystems. They represent the transition between the aquatic and terrestrial environments, receiving influence from both of them. In semiarid climates the vegetation classification is normally done by functional types (Blair and Maddox, 2005; Horton et al, 2001), with the aim of analyzing the interaction between biotic and abiotic factors.

Plant survival not only depends on water availability but on the presence of nutrients, mineral salts, carbon dioxide... Even so in semiarid and arid climates the latter don’t influence a lot, and plant survival mainly depends on soil water availability (Goodwin and Tarboton, 2001; Rodriguez-iturbe and Porporato, 2004). In the river banks the soil moisture and the water table elevation is determined by the river hydrological regime (Michan et al, 1998). Additionally the flow and drought frequency and magnitude is crucial in the plant development. (Tabacchi et al, 1998).

The actual condition of most floodplain sites in Spain is very deteriorated (Ibero, 1996). There are a lot of factors that have caused this situation (agriculture, urbanization, canalisations...) The modification of river flow and the flood intensity and frequency are the main factors that can enable or disable the natural regeneration of the riparian forests.

For this work seven study sites of the Jucar River Basin District have been selected. The sites are mainly selected in the upper and medium river stretches, where the rivers suffer less alterations. Four of the sites have a natural flow regime and three of them a regulated flow regime.

A software package called Ribav-1D has been designed to aid with the model usage. The software has been designed in Visual Basic.net and its data inputs are classified in CSV files which are: Hydrometeorology, Rating Curves, Soil Parameters, Vegetation Parameters and Simulation Points.

The model is validated for six other river study sites of the Jucar Basin. After calibrating, the model was validated for six other river study sites of the Jucar Basin. The calibration/validation process a confusion matrix was used, which also takes into account mixed vegetation functional types.

### 3. Ribav Model Conceptualization

In this model the studied soil section is represented as a water tank filled with porous material (Morales and Frances 2009). The vertical water of the tank will has a daily variation depending on the soil moisture fluxes.

- The vertical limits of the tank are determined by the following equivalent water quantities:
  - (Hf) Equivalent soil moisture height at field capacity [mm].
  - (He) Equivalent soil moisture height at permanent wilting point [mm].

- Depending on the plant functional type there are different active root fractions:
  - (R) Active root fraction or transpiration efficiency on the unsaturated soil zone.
  - (Ri) Active root fraction or transpiration efficiency on the saturated soil zone.

### 4. Ribav-1D Software

A software package called Ribav-1D has been designed to aid with the model usage. The software has been designed in Visual Basic.net and its data inputs are classified in CSV files which are: Hydrometeorology, Rating Curves, Soil Parameters, Vegetation Parameters and Simulation Points.

After calibrating, the model was validated for six other river study sites of the Jucar Basin. The calibration/validation process a confusion matrix was used, which also takes into account mixed vegetation functional types.

### 5. Sensitivity Analysis

The sensitivity analysis was made for: 4 vegetation functional types, 7 different elevations, natural and regulated flow regimes, and several soil types. The results have shown that the most sensible parameters are the ones that deal with root depths (Ze and ZR) and root fractions (RI and Ri).