

Spatial distribution of water abundance and scarcity in floodplains

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Due to variable hydrogeological and soil properties, wetlands in floodplains may show rather different water budgets. In the study area, the Drava floodplain, Fluvisols fall into 9 physical types from coarse sand to heavy clay. The relative relief is maximum 5 m, the average depth of the groundwater table is 3 m and its mean annual range is ca 1.5 m. Recently, flood hazard is typically replaced by drought hazard. Our research objective was to identify thresholds in groundwater table critical for water availability in the root zone (0-30 cm). Modelling was based on the spatial distribution of physical soil types occurring in the swales of scroll bar sequences. To calibrate input data to the HYDRUS model pF curves were applied. Water availability was regarded optimal in sites where capillarity and typical groundwater table depth in the physical soil type allows water storage to field capacity (pF 2.5) and minimum 2 mm d⁻¹ water conductivity in the root zone. Three scenarios were identified: 1) actual mean groundwater table (at -3 m); 2) groundwater at -2 m level; 3) at -4 m level. In case 2 excess water inundations become predominant. In case 3 the area with optimal conditions is shifted and drought hazard occurs at sites with silty and sandy texture. Water management interventions should take into account groundwater dynamics and capillarity in the environs of wetlands.