Monitoring and Modelling Set-up to Assess Water Availability and the Impact of Short Rotation Coppices on the Site Water Balance

Stefan Julich1, Filipa Tavares-Wahren1, Gabriela Fontenla1, Karl-Heinz Feger1

About the project
Dendromass4Europe (2017 – 2022) aims at establishing sustainable, Short Rotation Coppice (SRC)-based, regional cropping systems for woody biomass (dendromass) production on marginal agricultural land. The dendromass produced in SRC ( ligneous biomass, bark and wood) are supplied to dedicated bio-based value chains that create additional income and job opportunities in rural areas. The supply chains will be tailored for optimum efficiency of supply logistics and for reducing CO2 emissions. Innovative bio-based materials will help to replace fossil-based materials.

Our task
In our task we evaluate the site water balance of the SRC. Aim is to quantify the water use efficiency of the poplar plantations as well as the impact on groundwater level. In order to evaluate water supply and fluxes of the plantations, three continuous monitoring sites have been established representing a gradient of close, medium/ fluctuating and far connection to the groundwater level. At all sites soil moisture, matrix potential, groundwater table, transpiration (sap flow via thermal diffusion/HRM) and throughfall are measured.

First Results and Outlook
• Installation of sap flow sensors Heat Ratio Method (HRM) to estimate stand transpiration
• Monitoring data for model parameterization and validation
• Site water balance modelling and scenario based assessment of weather extremes and management practices on the site water availability and biomass yield.

Monitoring Design

1 Technische Universität Dresden, Institute of Soil Science and Site Ecology