Canopy interception implementation into a Thornthwaite-type hydrological model

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Water availability is a key factor to maintain forest vegetation in the region of xeric limit. Trees are not only transpire vast quantities of water, but influence the net water intake of forest soils. Tree canopies intercept significant amounts of precipitation with their large surface area. The intercepted water evaporate back into the atmosphere during and after precipitation event. In this study we try to implement a simple interception equation into a Thornthwaite-type monthly step water balance model, which is outworked in the framework of the Agroclimate.2 project.

This simple model uses only temperature, precipitation and LAI time series as inputs. The FORESEE database, which is developed for climate change related impact studies, is selected as a climatic data source. It contains observation based data for the past and uses bias correction method for the climate projections. MODIS LAI dataset (after validation) is selected to represent the changes in the canopy storage capacity. The model is calibrated with actual evapotranspiration data, which derived by a remote-sensing based method (CREMAP).