



Soil water Regime in different Ecosystems

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Some areas in Slovakia witness extreme maximum or minimum or lacking precipitation much more frequently. The first example results into floods and the second one into excessive soil drying. Water regime, which determines soil productive ability, depends on water inflow and outflow into or out of unsaturated soil zone. Soil as vital entity of the biosphere is not homogenous medium. Unsaturated soil zone is one of the most important and complicated part evaluated water movement in hydrologic cycle.

The water supply in the unsaturated soil zone is directly influenced by a water transfer through its upper and lower boundary. The lower boundary is usually delimited by ground water table. The upper boundary is the soil surface with or without plant canopy. It reacts directly on meteorological and climate conditions through evapotranspiration. It is a place enabling the water inflow from precipitation into lower layers of a soil profile. Quantification of changes of various physical and hydrophysical characteristics of the surface layer of soil tapes depending also on the kind of vegetation.

Water store in unsaturated soil zone was determined by monitoring of water content in soil profile and groundwater tables in localities in region around Danube in Slovakia. The localities relate to forest ecosystem and also to agricultural cultivated soil.

Soil water contents from soil surface to groundwater level with discretization 10cm were measured by neutron probe. The integral water contents of individual soil layers were calculated from monitored data of soil water contents. The measured soil water retention curves of soil layers were used for hydrolimits calculations (field capacity, point of decreased availability for plants and wilting point). In the case that a soil profile in a vertical direction is not homogeneous but it consists of layers of different composition and properties, it is necessary to determine the water retention curves of all the layers.

Water supply for plants (in different ecosystems) was estimated from actual integral water contents and integral water contents that are related to hydrolimits.

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