



Water regime of soils under the different vegetative cover, the Giant Mountains, Czech Republic.

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Several monitored plots, located in the Giant Mountains in different positions (valley, slope), are covered by different vegetation (dwarf pine forest, spruce forest, meadow). Soil moisture properties in relation to vegetative cover (dwarf pine versus grassland stands) were studied from the year 2000 to 2006. The main goal was to analyse chosen rainfall-runoff periods with respect to different vegetative cover. Every plot was arranged by automatic station for continual soil moisture measurements by VIRRIB sensors (Phase Transmission) in depth of 15 and 45 cm, tensiometer suction pressure in depth of 15, 30, 45 and 60 cm and temperature of soil and air. Three plots were also arranged by rain gauges for precipitation measurements in the vegetation season. To complete the characteristics of the unsaturated zone the particle-size analysis and retention curves for depths of 15, 30, 45 and 60 cm were done. Four groups of three rod probes (0.3, 0.6 and 0.9 m) for TDR (Time Domain Reflectometry) soil moisture measurements for seven plots were installed. The irregular measurements were done during 2000, 2001, 2002 and 2003 vegetation seasons. The values of soil moisture for depth intervals of 0-30 cm, 30-60 cm and 60-90 cm were computed for each plot. The TDR values of soil moisture are generally lower than the results obtained from VIRRIB sensors. The explanation of this fact should be that the used TDR measurements involve bigger interval of soil profile than VIRRIB sensors which measure smaller area of soil. The other reason could be the different way of probe installation for each method. The results were compared with the data obtained from VIRRIB sensors, and where possible, the TDR data was used for giving precision to the VIRRIB data.

Significant influence of different vegetative cover on water regime in soils of tundra area of the Giant Mountains was determined but not sufficiently explained yet. Surprisingly the water regime under the grassland showed similar behavior as a forest area against the dwarf pine stands during the most rainfall-runoff periods studied.

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