



Identification of runoff generation processes - Impact of different forest types on soil-water interrelations

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One main goal of actual scientific research is the development of sustainable forestry management strategies concerning soil and water resources in silvicultural used areas. Unfortunately, information on soil-water-interrelations in soils under different forest stands and of different site properties is lacking. Hence, numerous sprinkling experiments were carried out in four ForeStClim forested catchments (funded by the INTERREG IVB) on plot scale and hillside segments. With this different dominant runoff processes (DRP) of soil water at different forest stands as well as on varying substrates and parent materials were determined. For example new afforested areas were characterized by fast reacting subsurface flow, similar to pasture land, while 30 year old afforestations showed nearly the same runoff reaction like ploughed agricultural land. Douglas fir stands generated considerable amounts of overland flow, while beech/spruce showed subsurface flow dominantly. In contrast to that, other plots within the same catchment or comparable plots in other catchments showed no runoff reaction despite periglacial layer dynamics in subsoil regions. These findings and further investigations are targeted to improve the process knowledge of DRP aiming to identify a sustainable soil and soil water management at forest sites. Additionally the results can be used as a basis for hydrological modelling and GIS-approaches especially for forest stands. Realistic modelling results as well as outdoor investigation based GIS-derivations should deliver resilient data for a silvicultural management with the aim of secure and healthy tree growth in times of a changing climate.