

Tagungsnummer

V342

Thema

Kommission I: Bodenphysik und Bodenhydrologie

Freie Themen

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Pedogenic processes are reflected in the effective hydraulic properties in Sphagnum bog profiles

Abstract

delimited, and horizon-specific soil physical and chemical properties can be specified. This is different for Sphagnum bog peatlands, because Sphagnum mosses grow continually upward in the Acrotelm and leave behind dead plant remnants, which are increasingly decomposed with increasing depth. Thus, a continuous change of soil properties is characteristic for these profiles. To be able to quantify the change of soil hydraulic properties (SHP) with depth in Sphagnum bog profiles, we conducted transient evaporation experiments in the laboratory on a series of samples from the entire profile of the acrotelm. The identified effective pore size densities for Sphagnum are trimodal in the upper part of the acrotelm. We present size classes defining a unifying nomenclature to be used when describing the pore size classes in Sphagnum moss and peat. These size classes refer to the inter-plant pore space which is constituted of the voids between individual mosses, the intra-plant pore space representing the voids between branches and leaves, and the inner-plant pore space which is the space constituted by the water bearing hyaline cells.