



Does a severe drought cause long term structural change in a peatland?

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Severe droughts has been shown to have dramatic consequences for the biogeochemistry of carbon within peat catchments but do severe droughts have a long-term effect on the structure of the peat? In order to understand the controls upon runoff in a peat-covered catchment the probability of runoff initiation was calculated and analysed across a 4 year period: in total 1614 rainfall events were considered. Each rainfall is characterized in terms of its duration, peak intensity and the total depth of rainfall. For each rainfall event the antecedent conditions were characterized in terms of the depth to the water table and the outflow from the catchment. For each characterisable event the discharge record at the outflow of the catchment is examined in order to assess whether in the rainfall did or did not lead to runoff and therefore each rainfall event can be categorized as a runoff event or non-event. Given this database of characterized runoff event and non-events the probability of a rainstorm leading to runoff given the particular antecedent conditions can be calculated using logistic regression. By considering both the inputs and outputs from the system relative the antecedent conditions it is possible to assess whether the structure of the soil has changed. Tracking the runoff initiation probability over time after the severe drought of 1995 shows that the affect of the drought upon runoff was limited to the period of the drought and no long-term change could be found.