Geophysical Research Abstracts
Vol. 15, EGU2013-1424, 2013
EGU General Assembly 2013

Calibration of Rainfall-Runoff Parameters in Peatlands

Meseret Walle Menberu, Ali Torabi Haghighi, and Bjørn Kløve
Water Resources and Environmental Engineering Laboratory, University of Oulu, Oulu, Finland (mmenberu@paju.oulu.fi)

Finland is a country where its possession of peatlands compared to the total surface area of the country puts in the leading categories globally in peatland possession having 33.5% of its total land area covered with peatlands. Recent interest has grown in using peatlands as temporary flood control barriers by taking advantage of the high water holding capacity of peat soils. Water holding capacity of peat soils enables to reduce high rate of runoff and peak flow which might endanger downstream of the flow and in the process of doing that, the rest of the water leaving the peatland areas is less polluted due to the wetlands' potential in purifying polluted water. Therefore, in order to understand how capable enough peatlands are in holding water by reducing the peak flow or slowing down the rate of runoff, this paper analyses the rainfall-runoff phenomena in peatland catchments through important runoff parameters. Among the most important runoff parameters; the initial abstraction, the curve number and lag time are selected for this paper due to their highest impact on rainfall-runoff process. For this study, two peatland catchments of drained and pristine are selected. Managing to explain the initial abstraction and curve number behaviour in the catchments will able to clearly understand and as well predict the rainfall-runoff process in the catchments. In the selected study sites, observed rainfall and runoff data are collected. The study sites are modelled with the help of Arc-GIS and Hec-GeoHMS and from that are exported to HEC-HMS (Hydrologic modelling software) for rainfall-runoff analysis. The two important parameters; the initial abstraction and curve number are used to calibrate the model. And finally, the parameters that have given the best fit between the modelled and observed rainfall-runoff process are suggested for the study sites. Having these parameters estimated eases to understand rainfall-runoff process in the catchments for whatsoever purpose the catchments are going to be used in (in this case, water holding capacity of the catchments).