RECARE
Preventing and Remediating degradation of soils in Europe through Land Care

RECARE MSc / PhD Research Information

Research Title

PARAMETRIZATION OF RAINFALL-RUNOFF PROCESSES FOR MODELLING AND SIMULATING EXTREME RUNOFF AT THE MYJAVA RIVER BASIN

Abstract

The runoff process of a river basin is a fundamental hydrological process that is important to know to protect catchments from flooding and erosion. The selected Myjava catchment is known for its quick runoff response determined by both natural and socio-economic conditions. Water flowing from agricultural fields is carrying large quantities of soil as suspended sediment or bed load. Flooding, with its high concentration of eroded material, is generating muddy deposits. These processes represent significant environmental and natural hazards in the conditions of the Myjava region. For estimating the runoff we applied the SCS curve number method, which is a widely used and efficient method for determining the approximate amount of runoff from a rainfall event in a particular area. The curve number method (SCS - CN) was developed for use on small agricultural watersheds and has since been extended and applied to rural, forest and urban watersheds. The parameters of the method, the initial abstract coefficient (λ) and the curve number (CN), as proposed by the original methodology, are questionable; for a more reliable determination of runoff, it is necessary to calibrate it based on actual rainfall-runoff datasets for the Myjava catchment.

Objectives of the research

The main goal of the research is the parametrization of rainfall-runoff processes at the Myjava river basin. The necessary steps for the analysis are as follows: (i) the selection of lengthy rainfall-runoff datasets, (ii) the selection of flood waves, (iii) the estimation of curve numbers (CN) based on various approaches, and (iiii) the estimation of the initial abstract coefficient (λ)

RECARE study site

Myjava catchment, Slovakia

Partners in this research

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