



Spatio-temporal analysis of soil erosion risk and runoff using AnnAGNPS

Eleni Yeshaneh (1), Wolfgang Wagner (2), and Günter Blöschl (3)

(1) Vienna Doctoral Programme on Water Resources Systems, Vienna University of Technology, Vienna, Austria (elleniyeshaneh@yahoo.com), (2) Vienna Doctoral Programme on Water Resources Systems, Vienna University of Technology, Vienna, Austria (ww@ipf.tuwien.ac.at), (3) Vienna Doctoral Programme on Water Resources Systems, Vienna University of Technology, Vienna, Austria (bloeschl@hydro.tuwien.ac.at)

Soil erosion is one form of land degradation in Ethiopia deteriorating the fertility and productivity of the land. This fact indicates the need to delineate high erosion risk areas for appropriate soil and conservation measures. Land use/cover change is one of the important factors in soil erosion. This study attempts test and implement AnnAGNPS model to estimate the spatio-temporal patterns of soil erosion and runoff associated with land use changes in the past 50 years in the 9900 ha upstream part of the Koga catchment. High erosion risk areas will then be delineated for simulation of the appropriate soil and water conservation measures that would reduce the soil loss. The study is based on two years high temporal resolution data on discharge, sediment, and rain fall accompanied by historical land use/cover data generated from satellite imagery. In addition, it uses several documented physical parameters of the study area.

The Koga catchment is one of the agriculture dominated typical catchments in the North Western Ethiopian highlands with high population density that lead to increased pressure on natural resources.