



Predicting suspended sediment yield in an ungauged basin transferring information from a nearby monitored catchment via a linear approach

D. Pavanelli, A. Bigi, M. Rigotti

Department of Agricultural Economics and Engineering, University of Bologna, Italy
donatella.pavanelli@unibo.it

Soil erosion in the Apennines is quite a relevant issue, causing land degradation and reducing the land available to farming. Mountain areas abandonment worsened landscape condition, because of the lack of erosion direct and indirect control.

Estimates of soil erosion activity in mountain basins are usually made with a significant degree of uncertainty, because usually few data are available to calibrate erosion models or to directly estimate eroded soil amount, thus leading to inability of taking decision in conservation policies.

In order to evaluate the suspended sediment yield (SSY) carried by the Gaiana torrent, a ~ 9 km² basin in the Bologna Apennines, we applied a very simple linear model previously built on a geomorphologically similar watershed nearby, which has a very large SSY dataset. This model estimates average SSY from the maximum rainfall intensity on a storm event basis: the simplicity of the model might allow application on scarcely gauged basins, where precipitation is the main erosive agent, giving reasonable estimates of soil loss.

A river monitoring station along with a water sampler has been installed at the Gaiana basin outlet on December 2004. The collected data have been employed to verify the linear model prediction capability. Besides we applied the USLE model to the Gaiana catchment, in order to attain a further estimate of the order of magnitude of the sediment yield through the use of a sediment delivery ratio.