Geophysical Research Abstracts
Vol. 14, EGU2012-10780, 2012
EGU General Assembly 2012

Modelling soil erosion using artificial neural networks in an olive orchard microcatchment in Spain

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Catchment models allow to describe and to quantify the complex interactions of the rainfall and other inputs such the flow on the sediment transport. Under this context, neural networks may complete or improve the information derived from the application of complex physically based models for soil erosion prediction. The aim of this work is to investigate the applicability of using neural networks to quantitatively predict soil loss in a small catchment of olive orchard land-use.

Data (rainfall, intensity, duration, erosivity, runoff, peak flow, sediment load) from 82 observed events occurred between the years 2005-2011 were used for checking the soil erosion prediction from neural artificial networks at different temporal scales and input sets. The results of the analysis will be discussed for evaluating the implications of hydrological variability on the catchment responses, modeling constraints and efficient management strategies for soil protection.