Geophysical Research Abstracts,
Vol. 10, EGU2008-A-04695, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-04695
EGU General Assembly 2008

Spatial distribution and temporal variability of runoff processes in Mediterranean Mountain environments– coupling experimental and modeling approaches

M. Seeger, V. Butzen, S. Wirtz and M. Casper

Department of Physical Geography, University of Trier, Germany, (seeger@uni-trier.de / Fax: +49-651-2013976)

Runoff generation inside a catchment is a complex interaction of local processes with a spatial and temporal link which is highly variable within time. It is defined by topography, soils, and the spatial occurrence of structures linking the different units as well as the different behavior of the well defined hydrological response units under different conditions of moisture and drought. Mediterranean mountain catchments are very suitable natural laboratories for understanding process variability due to their variation between both extremes of moisture conditions.

An experimental approach, combining rainfall, infiltration and runoff experiments gives information about the variability in process intensity concerning runoff generation and erosion. The combination of experiments allows also to evaluate the effect of singular features like linear structures (paths, ephemeral gullies) or surface characteristics (vegetation and rock fragment covers).

Combining the experimental information with GIS-based mapping techniques allows to generate dynamically changing maps, such like a moisture dependent topographical index map, which may be used as basis for distributed modeling.

The results show, within a catchment dominated by abandoned agricultural land and very variable plant cover recovery and soils, areas with extremely high variability in runoff generation, this is consisting areas of re-infiltration under dry conditions and areas of very fast runoff generation under wet conditions. But the results show

also the importance of small linear structures for runoff generation and especially connectivity of source areas. The experimental results demonstrate, that these features have to considered as very important sediment sources.

Concluding the importance of different experimental approaches for understanding hydrological and geomorphological processes is stressed out.