



## **Overland flow connectivity under different climate conditions**

Lavee Hanoch

Laboratory of Geomorphology and Soil, Bar-Ilan University, Israel

The effect of climate conditions on overland flow connectivity was investigated in arid (mean annual rainfall 120 mm), semi-arid (mean annual rainfall 280 mm) and sub-humid (mean annual rainfall 620 mm) regions.

In each of these regions a hillslope reference plot was established, in which soil properties and hydrological variables were measured.

The results show that at the regional scale soil organic matter content and aggregate stability decreased with increasing aridity. Infiltration rate also decreased with aridity but overland flow increased.

At the hillslope scale, at each of the regions overland flow decreased with increasing hillslope length which means that overland flow is not continuous and water losses increases with hillslope length. In order to understand the controlling factors of overland flow continuity the spatial distribution of soil properties, vegetation cover and overland flow generation mechanisms were measured along hillslopes. The results show that water contributing (source) patches and water collecting (sink) patches exist along the hillslopes, in accordance with the spatial distribution of shrubs.

The conclusion is that overland flow connectivity at the hillslope scale is affected mainly by the size, the density and by the spatial distribution of shrubs.

An application for preventing soil erosion in urban areas (parks), along roads and in cultivated areas is that planting vegetation in patches or strips is more efficient than all over the hillslopes.