



## **Eco-GEomorphological responses to climate change, along a rainfall gradient, at a desert fringe. Northern Negev, Israel**

Aaron Yair

Hebrew University of Jerusalem, Geography, Jerusalem, Israel (aaron.yair@mail.huji.ac.il)

Dryland areas are usually regarded as highly sensitive to climate change. A positive relationship between average annual rainfall and environmental variables is often assumed for such areas. However, the global climatological models fail to address an important issue. With decreasing annual rainfall water resources may be highly depended on surface properties, and rainfall characteristics at a rainstorm level, which greatly influence the degree to which rainwater will percolate, or will be transformed into runoff, thereby significantly affecting the spatial redistribution of water resources. In other words, a climate change, in dryland areas, would be expected to have differential hydrological effects in a sandy area, a rocky area, or in a loess covered area. Differential spatial hydrological effects would be also expected within each of the areas listed above. The Northern Negev Desert offers unique conditions for the study of the possible environmental effects, along a rainfall gradient, under changing surface properties. Two case studies are considered. The first deals with the environmental effects of loess penetration into the area, during a wet climatic phase. The second considers the differential effects of biological topsoil crusts on the water regime along a rainfall gradient (85-180 mm average annual rainfall) in a sandy area. Data obtained draw attention to the complex relationships between average annual rainfall, and the water regime in a dryland area. In both areas considered the increase in the average annual rainfall had a negative effects on the water resources, and related ecological properties.