



Sensitivity of the Zin badlands (Israel) to climate change

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Badland development is usually associated with unconsolidated or poorly cemented materials, such as shales and marls. They are widespread in arid and semi-arid areas. They represent an intensely dissected landscape; where the vegetation is sparse or absent. They are of fluvial origin with very high drainage densities, V shaped valleys and steep slopes. These characteristics, together with the assumed impermeable regolith, have often led to believe that badlands represent a landscape where the frequency and magnitude of Hortonian overland flow are high, resulting in high erosion rates and rapid evolution. Consequently, several authors have suggested that badlands form ideal field "laboratories" for testing landscape evolution hypothesis. Hydrological and archeological studies conducted in the Zin badlands of Israel do not support the views listed above. They point to a very low frequency and magnitude of runoff generation and low hydrological connectivity between the valley side slopes and the channels. Furthermore, runoff generation processes conducted in the Zin badlands, under present day rainfall conditions, conform the concept of partial and various source areas. Archeological-geomorphological studies conducted in the area support the said above. They point at the possibility that the present Zin badlands landscape may be regarded as a fossil landscape inherited from previous, more humid phases, when the duration, frequency and magnitude of extreme rain events, must have been much higher than at present.