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Badlands: too complex to be simple?

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Badlands are an intensively dissected barren landscape, devoid of soil cover, with a sparse or absent vegetation. The very high drainage densities, V-shaped valleys and steep slopes, have often led to believe that badlands represent a landscape where the frequency and magnitude of overland flow and erosion processes are very high, resulting in rapid landscape evolution and a close connection between form and process. This perceived proximity between form and process is the main reason why badlands have sometimes been regarded as "ideal field laboratories" for testing landscape evolution hypothesis.
Recent research has shed a critical light on the “simple landscape” perspective. Two key issues support this change in persprective. First, the erosion rates and sediment yields observed badland areas vary widely. As a consequence, only weak relationships were found between average annual rainfall and average erosion rates for annual rainfalls in the wide range of 80-1250 mm. Both the spatial variability and the limited relationship to annual rainfall present a serious barrier for the extrapolation of erosion rates from the hill slope to catchment scales and certainly to landscape evolution over longer geological time scales under changing climatic conditions. A second reason contradicting the simple landscape assessment is the mismatch observed between current erosion rates and the long-term denudation rates, indicating a hiatus between a potentially short period of badland formation and the overall age of the landform. As a consequence, the actual meaning of badland has been questioned, ranging from a description for features to a more complex meaning including current erosion and complex interaction of processes, such as pipe and tunnel erosion.
In the light of this critical assessment, the idea of badlands as a “natural and simple laboratory” for landscape development can be questioned because badlands are too complex to be simple. However, one could also wonder whether geomorphic systems are just more complex than we thought.