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The infiltration process in the Badlands of eastern Iberian Peninsula

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Badlands are geomorphological miniature laboratories that have shed light in the understanding of processes and landforms. Infiltration is a key process in the hydrologic cycle as it manages the volume of surface water and therefore the erosion process. To study the infiltration process in the badlands gain insight into both, the infiltration process and the badlands.
This paper presents a review of the State-of-the-Art regarding the infiltration process and rates on badlands areas in the Eastern of the Iberian Peninsula. A review of the experiments and measurements conducted in the last two decades in the badlands of eastern Spain is compiled. The use of simulated rainfall experiments and cylinder infiltrometer has provided relevant information that has been allowed to know the effect of the parent material, Mediterranean seasonality, Climate conditions and slope position on the infiltration process. And then the runoff generation mechanism and the soil loss.
Despite the lack of vegetative cover, and the lack of soil horizon formation, the infiltration process is highly complex in the badlands because the infiltration process take place in macropores. Cracks promote water infiltration and thus the formation of piping or rilling, and both contribute to concentrated flows. Matrix flow is very low due to the high density of the regolith, the lack of porous and the absent plant roots.
Due to the lack of vegetation the surface morphology (mainly cracks) is the dominant factor in the processes of infiltration into the badland regolith. Topographic position is also relevant to understand the geomorphological processes in areas of badland slopes and pediments that behave as a transfer surface of water and sediment coming from the slopes due to its reduced infiltrability and lack of cracks. Cracks explain the high seasonality in the regolith, and also the high infiltration capacity found in some badlands. Thus, the Badland regolith properties determine the infiltration process, and a highly variable seasonal and spatial-temporal process, which are the key to explain highly variable geomorphic processes throughout time and space.