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1165 | 565 | How do mineralogical and physicochemical properties of badland materials change during weathering and erosion processes? | M. Stefanović 1, B. Jovančićević 2, Đ. Janaćković 3, N. Antić 4, F. Gallart 5, M. Moreno-de las Heras 6, M. Kašanin-Grubin 4

This study involves establishing a relationship between weathering and erosion processes in badlands comparing the mineralogical and physicochemical properties of unweathered and weathered material formed in the natural environment and under laboratory climate simulation experiments. Three unweathered samples with different mineralogical contents were taken from the badlands of Vallcebre and Bagà in Spain. The climatic conditions in these areas are humid-Mediterranean. Besides quartz and calcite as dominant minerals, one unweathered sample contained smectite and gypsum, the second smectite and the third neither smectite nor gypsum. The laboratory climate

simulating rain (~140 ml) or snow (~150 g). After 15 cycles, in the second part of the experiment, all samples were exposed to rain (~140 ml) and placed in a climate chamber at a temperature of 50 °C. These treatments were repeated 8 times. Analyses of the mineralogical and physicochemical properties of the material before and after the experiment give a clear insight into the changes in mineralogy, chemical composition, grain size, porosity, etc. The changes in the microstructure were analysed using Field Emission Scanning Electron Microscopy (FESEM). The particle size distribution was determined by laser diffraction, while mineralogy was determined by X-ray diffraction (XRD). The Brunauer-Emmett-Teller (BET) surface analysis confirmed that the sample with smectite had the highest specific surface area. It was also proved that other measured parameters such as volume and diameter of the pores changed with weathering rate.

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