



Soil–geomorphology relations in gypsiferous materials of the Tabernas Desert (Almería, SE Spain)

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Received 28 May 2002; accepted 31 December 2002

Abstract

A detailed pedological study in an apparently homogeneous badlands area of gypsiferous mudstones in the Tabernas Desert (Almería, SE Spain), with an annual precipitation of 200 mm, has been shown to be composed of different soil units belonging to different stages of soil development. Twenty-four soil profiles in four topographic transects within a small instrumented catchment have been described and analysed, along with over 100 probings and observations. A complementary approach to ascertain the relationships of soil-units with topography made use of a 1-m resolution digital elevation model (DEM) and derived terrain attributes. Moreover, the relationships with soil cover, surface hydrology and erosion have all contributed to understanding pedogenic and evolutionary processes. The five soil units identified correspond to distinct topographic positions, from steep S-oriented slopes with incipient soil development under bare surfaces (*Epileptic Regosol*), to moderately sloping, N-oriented soils, fairly well developed below a dense cover of annual and perennial plants (*Haplic Calcisol*). Both the spatial distribution and the topographic position of soil units favour gypsum and salt washing processes and gypsum accumulation is restricted to higher positions with very small contributing areas and minimum overland flow and thus reduced leaching. *Gypsic* horizons and *Gypsisols*, while previously described in the area associated to gypseous rock outcrops, are now described associated to gypsiferous mudstones.

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Keywords: Gypsic horizon; Semi-arid environment; Badlands; DEM; Terrain attributes; Soil micromorphology; Crusting

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