



CEC as an indicator of degradation of the ecogeomorphological system along a pluviometric Gradient. South of Spain.

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The mountainous area of Southern Spain has great pluviometric variability, which manifests itself in a West to East decreasing gradient. Consequently there is degradation in the ecomorphological processes and in their intensity, which permit to project future scenarios in the Climate Change context.

One method to tackle such processes consists in using physico-chemical soil properties as indicators of degradation. Various authors have demonstrated how the diminution of precipitation and the increase of arid conditions within the ecogeomorphological system lead to the same from the functional point of view i.e. to degradation due to the diminution of vegetation cover and, consequently to the content of organic matter in the soil. The lack of protection increases the soil vulnerability and the predominance of runoff processes to those of infiltration, and thus the diminution of clay content, with the consequent loss of soil structure. We would find ourselves with a cycle of positive retrofeeding whose final result is degradation of the system and its approximation to irreversible situations.

In this context, CEC is a property which reflects some of the different types of interaction within this complex of degradation processes. Its diminution is a direct consequence of the activation of erosive processes and soil degradation.

This paper has as its objectives: i) to analyse CEC variability along the pluviometric gradient, and ii) to determine the relationship between CEC and properties which indicate system degradation.

Soil surface samples, both disturbed and undisturbed (10 cm deep) were collected from a total of 300 geo-referenced points, located in five areas in different Mediterranean climatic conditions (wet, damp, dry, semi-arid and arid) and also of biomass. CEC was determined according to the Bower et al. method (1953) and the matter content by spectrophotometrics. We also measured the quantity of clay content and vegetation cover. The values of all of the properties were standardized.

The results obtained show that: i) the properties analysed (organic matter content, clay, CEC and vegetation cover) are suitable to evaluate the state of the ecogeomorphological system; ii) with the diminution of precipitation and its effects on vegetation cover CEC is reduced from very high levels in Gaucín (1.000 mm year-1) to low levels in Gérgal (240 mm year-1), the relationship established has a Pearson correlation coefficient of 0,812, with $R^2=0.66$; $p<0.05$, $N=300$; iii) the relationship of the precipitation with CEC is stronger than with any other property analysed; iv) so CEC is a good indicative property of the pathology of the ecogeomorphological system along the pluviometric gradient.