Geophysical Research Abstracts, Vol. 7, 02233, 2005
SRef-ID: 1607-7962/gra/EGU05-A-02233


# Soils as indicators for past and present land degradation/restoration on intensively disturbed abandoned land of the Spanish Pyrenees

M. Seeger

Dpt. of Physical Geography, University of Trier, Germany (seeger@uni-trier.de / Fax: +49 651 201-3976 / Phone: +49 651 201-4557

The Pyrenean and Pre-Pyrenean mountain areas have been intensively used at least since the roman times 2000 years ago. At the end of the $19^{th}$ century, demographic pressure caused the use of all accessible land for cereal cropping. After the Spanish Civil War (1936-39), fast depopulation lead to widespread land abandonment without a steering land-management. Vegetation recovery is weak in most abandoned fields. Soil formation and characteristics are conditioned by this fact, and for this, soils show past degradation processes and are mostly predominant factors for continuing land degradation or restoration.

The 3 test areas were set up along a climatic gradient in the sub-humid zone between the Central Pyrenees and Pre-Pyrenees. Here, the increasing Mediterranean influence from the north to the south leads to an increasing variability of precipitations and an increased moisture deficit in the summer months.

The soils mapped and classified following the WRB show in all test areas signs of heavy erosion and weak soil formation processes. So, the parental material determines the nutrient supply (predominantly low) and the general chemical properties. All areas are dominated by Calcisols, Regosols, Lithosols or weak developed Cambisols. Strongly related to the human impact is the development of Gleysols in the inner areas of old terraces and of Luvisols at lower parts of the slopes.

In all sites we can observe residual stone layers at the surface. These enhance on one hand the runoff generation, on the other hand, they limit the actual erosion. Supply of erodible (fine) material to the surface is produced by the edaphon and by freezing-

thawing processes. The water storing capacity of these soils is in general low because of the soil loss. In areas with accumulation the clayey material limits the effective field capacity.

For this, soil moisture evolution during the year shows the great differences between the areas. Whilst the soils in the Central Pyrenees may retain even in summer some acceptable levels of soil moisture, the soils in the Pre-Pyrenees are affected over long periods by severe drought. This affects the restoration capacity of vegetation and soils on abandoned lands.