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Contribution of the climatic transect approach application to the study of soil degradation in South of Spain.

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Since 1990s, the climatic transect approach has been widely applied to Mediterranean mountainous areas where climatic conditions are modified in few kilometres, from semiarid to humid conditions. The target in most of the cases was to evaluate the climatic change effect on the spatial variability of eco-geomorphological system, runoff and erosion and soil degradation processes, especially, in abandoned fields and Mediterranean rangeland.
The Physical Geography and Land Management Research Group from the University of Málaga is applying this experimental approach since 2001. The study area corresponded to the Mediterranean Cordillera Bética in South of Spain, from the Strait of Gibraltar to Cabo de Gata, where a longitudinal climatic transect can be observed: from humid Mediterranean climate in the West (>1,500 mm/y) to nearly arid Mediterranean climate in the East (200 mm/y). More specifically, the investigations were focussed on the spatial and temporal variability of eco-geomorphological system (vegetation, soil and water relationship), runoff and erosion processes and controlling factors affecting to abandoned fields located in steep hillslopes of metamorphic and acid bedrocks (phyllites, schists and mica-schists) but differing in climatic conditions (humid, subhumid, dry and semiarid Mediterranean climate). The aim of this contribution is to share our findings and challenges from the last 13 years being some of the most important ones: i) Mediterranean summer drought homogenise the functioning of eco-geomorphological system independently of the geographical location along the climatic transect; ii) drought period affects more dramatically to humid and subhumid Mediterranean areas, especially, to the vegetation cover and pattern; iii) areas characterised by dry-Mediterranean climate are found as threshold areas and in risk of aridification due to Climate Change; iv) runoff and erosion processes can be similar in humid and semiarid abandoned lands as it has to be taken into account local factors, such as exposure, repellency of soils to water and, especially, soil surface conditions. Further researches follow the transect approach but being applying to areas affected by recent and old fires in order to assess the effects of climate in the post-fire recovery of Mediterranean eco-geomorphological system and erosion processes.