



## Multiscaling analysis applied to landscape spatial characterization influenced by reservoir level

P.L. Aguado (1), J.P. del Monte (1), R. Moratiel (2), and A.M. Tarquis (2)

(1) Dpto. de Producción Vegetal: Botánica, E.T.S.I.A., U.P.M, Madrid, Spain (pl.aguado@upm.es, jp.monte@upm.es), (2) CEIGRAM, Universidad Politecnica de Madrid, Madrid, Spain (ruben.moratiel@upm.es, anamaria.tarquis@upm.es)

Landscapes have been shown to exhibit numerous scaling laws from Horton's laws to more sophisticated scaling in topography heights, river network topology and power laws in several geomorphic attributes. This scaling and multiscaling analysis has the potential to characterize the landscape through the statistical signature of the measure selected.

In this paper, we study an area represented by a 1024 x 1024 data matrix obtained from a Digital Elevation Model (DEM) with a resolution of 10x10x1 m each point, which correspond with a region known as "Monte de El Pardo". This area is homogeneous respect to soil characteristics and climatology, although presents a reservoir on Manzanares River which filling level fluctuates depending on the season and year.

The aim of this work was to know whether the multifractal analysis of a DEM show some common features which can be used to reveal the underlying patterns and information of the landscape of the DEM mapping as well as to study the effect of water reservoir fill level in the applied analysis.

### References

del Monte, J.P., Aguado, P., Tarquis, A.M. and H. Gaonac'h. GIS-based statistical multifractal analysis from a DEM. *Geophysical Research Abstracts*, Vol. 9, 10874, 2007.

Aguado, P.L., del Monte, J.P. and A.M. Tarquis. Structure function and Multifractal spectrum applied to Digital Elevation Model. *Geophysical Research Abstracts*, Vol. 13, EGU2011-5720, 2011.

### Acknowledgements

Funding provided by Spanish Ministerio de Ciencia e Innovación (MICINN) through project no. AGL2010-21501/AGR is greatly appreciated.