IAP
lleida
2016

Interfaces
Against
Pollution

Environmental
Challenges
& Opportunities

P 138

A protocol for wide range porosity data image aquisition

C. García-Gutiérrez[1], F. San José[2], and J. Caniego[2]

1 Dpto.Matemática Aplicada, ETSINavales, Univesidad Politécnica de Madrid
2 Dpto.Matemática Aplicada, ETSIAgrónomos, Univesidad Politécnica de Madrid
E-mail contact: carlos.garciagutierrez@upm.es

A protocol for obtaining soil digital images with a wide range of pore sizes, intended for fractal studies of the porosity, using a photo- camera and a confocal microscope images is proposed. It is the first time that confocal microscopy is used for this purpose. The use of fluorescent compounds to enhance the contrast between the solid and the pore phase is also tested. Artificial soil ground truth images are created through random Sierpinski carpet fractals,
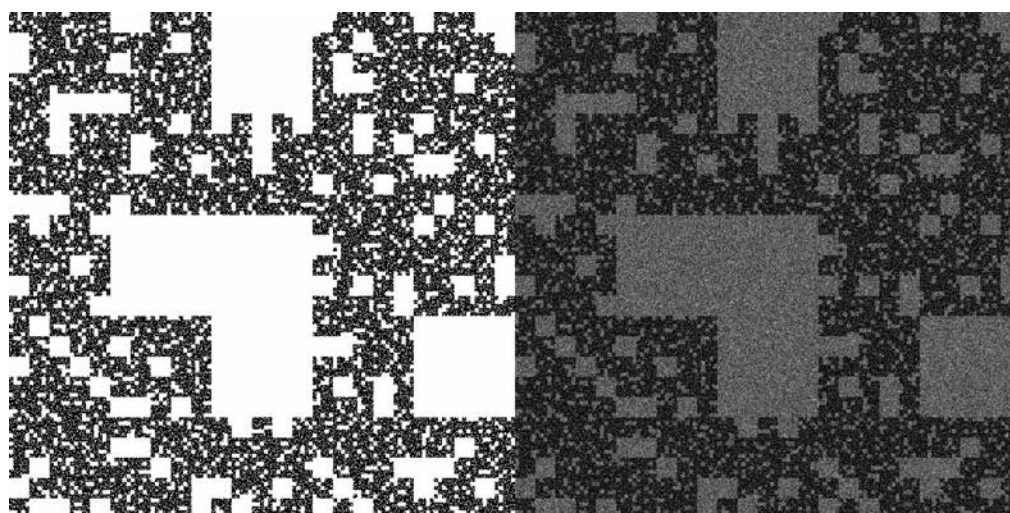

Figure 1: Artificial soil image with random fractal

These artificial soil images were used to make a objective comparison of automatic segmentation algorithms for the obtained images. A statistical classification on the performance of several automatic segmentation algorithms for this type of images is shown.

This protocol yields images with high resolution and a broad range in pore sizes, to be used in the characterization of the architecture of the pore space and the study of the flux and transport processes in soils.

POSTERS