



## **Influence of the resolution of digital images on the multifractal spectra of natural porous media**

**P. Baveye** (1,2), J. W. Crawford (1), and I. Young (1)

(1) SIMBIOS, University of Abertay Dundee, Bell Street, Dundee DD1 1HG., UK., (2) Laboratory of Geoenvironmental Science and Engineering, Bradfield Hall, Cornell University, Ithaca, New York 14853, USA., [Philippe.Baveye@Cornell.edu]

Recent research has shown that values found for the fractal dimension and the lacunarity of porous media via image analysis depend strongly on the method used for the measurement of these parameters, in particular on the resolution (pixel size) of images and the algorithm used to segment them. This feature decreases significantly the usefulness of fractal geometry for the description of porous media. At this point, it is not clear whether multifractal measures suffer from the same drawback. In this presentation, we will analyze to what extent the multifractal spectra of a range of natural porous media are affected by the type of image used and the manipulation of these images. Pictures of thin sections of three different soils have been digitized at different resolutions, and the multifractal spectra of the resulting images have been calculated using a robust algorithm. Results in terms of resolution independence of the multifractal spectra are analyzed and compared with traditional fractal descriptors.