



A study of histograms of wavelet coefficients of the Mars topography to determine its scaling properties

Thomas Kleynssens

University of Liege, Mathematics, Belgium (tkleynssens@ulg.ac.be)

Recently, the scaling properties of the Mars topography have been analysed through the Wavelet Leaders Method (WLM) [1]. The scalings of some signals (15%) depart significantly from the others. They can be explained by the presence of specific regions such as craters. These scalings can disrupt the fractal study of the signals and the interpretation of the results is thus more difficult.

Some recent methods based on the use of histograms of wavelet coefficients allow to avoid these scaling problems. These methods are the Wavelet Profile Method (WPM) [3] and the Leaders Profile Method (LPM) [2]. They provide an intuitive way to make the distinction between mono and multifractal signals. In particular, they do not rely on the usual technique involved in the WLM for example.

In this work, we show that this approach applied on Mars Orbiter Laser Altimeter (MOLA) data allows to have additional information on the topography of Mars compared to the usual methods.

References :

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