



Local Hölder regularity-based modelling of airborne spectrometric data. Case study: Gamma Ray measurements in the Hoggar region (Algeria)

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The conventional analysis of the airborne spectrometric data provides information about the spatial distribution of the radioactive minerals. This approach can be enriched by investigating the regularity of the measurements. In order to take into consideration the spatial variation of their regularity, the measurements are assumed to be 2D-multifractional Brownian motions (2D-mBms).

First, synthetic paths of 2D-mBms are generated using the Kriging method. Then, we suggest the Generalized Quadratic Variations (GQV) algorithm to estimate the local Hölder function (or the regularity profile). The results illustrate the accuracy of the GQV algorithm in estimating the Hölder values.

Second, we perform a local regularity analysis of Gamma Ray measurements recorded in the Hoggar region with the suggested technique. The obtained Hölder maps show a correlation with the geological aspects of the area. The Hölder exponent can then be used as a tool for a geological characterization.

Keywords: Hoggar, airborne spectrometric data, fractal, Hölder exponent.