CONTINUOUS WAVELET TRANSFORM ANALYSIS OF GRAVITY AND MAGNETIC ANOMALIES

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The relevant information of a signal is carried by its regions of rapid variations or, in other words, by its singularities. In the case of gravity and magnetic anomalies, singularities are likely to be localised in correspondence of the edges of source bodies. The Continuous Wavelet Transform (CWT) is a powerful tool to locate and characterise singularities.
The space-scale decomposition (Scalogram), obtained using the CWT, allows indeed pointing out the local properties of a signal across different scales. In the Scalogram the lines joining the modulus maxima of the wavelet coefficients at different scales converge to the singular points of the signal, provided an adequate analyzing wavelet is chosen. We show how the analysis of scalograms of potential field anomalies may allow the depth and the horizontal position of each source edge to be independently estimated. By this way other source parameters, such as the dip of a fault, may also be defined.