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Source Depth Determination using Potential Field Data by Continuous Wavelet Transform

ASHUTOSH CHAMOLI and V.P.DIMRI
National Geophysical Research Institute, Hyderabad, India – 500 007

The Continuous wavelet transform can be used to locate and characteriz e the source of the potential field by transferring the data into an auxiliary space. Using Poisson wavelets, the wavelet transform of potential field exhibits cone like structures for isolated and extended bodies. The modulus maxima lines (the lines of extrema of the wavelet transform), generally referred as ridges of the wavelet transform constitutes cone shape and their point of intersection gives the location and depth of the source. The homogeneity of the source can also be estimated as the magnitude of the wavelet transform along the modulus maxima lines . This follows power law behaviour of the form a^{α}, where a is the dilation and α is homogeneity degree, an indicative of the source geometry. The technique has been tested on several synthetic source anomalies and applied to potential field data from Vindhyan basin, India.

Keywords: Wavelet transform; potential field; power law