



Interpretation of magnetic anomalies using the horizontal gradient analytic signal

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Abstract

In recent years the analytic signal method has been of great utility in the interpretation of potential field data. The amplitude of the 3D analytic signal of magnetic data yields information on the location of the edges of the sources in both the horizontal and vertical dimensions, with the main advantage that the magnetic field and magnetic source parameters need not be known or assumed. Accurate detection of source body coordinates is becoming the main goal for interpreters and therefore enhanced techniques are acquiring an increasing revival in data interpretation. This paper presents a high-resolution approach for detecting source boundaries. These boundaries can be determined from the maxima of the analytic signal computed from the horizontal gradient of the field, defined here as a vector, the components of which are the analytic signals of x- and y-horizontal derivatives, respectively. Synthetic examples have shown the high resolving power of the proposed technique. This approach has also given very good results when applied to real data.

Keywords

horizontal gradient;analytic signal;horizontal derivative;vertical derivative;interpretation;aeromagnetic anomaly;magnetic anomaly

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References

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
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