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Aeromagnetic data analysis using the 2D Directional Continuous Wavelet Transform (DCWT).

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In this paper, we have analyzed the geomagnetic anomaly field reduced to the pole by the 2D directional continuous wavelet transform (DCWT). The objective is to identify geological contacts. The proposed idea has been applied firstly at a synthetic model, the obtained results showed the robustness of the proposed technique, after that the synthetic data has been noised; analysis shows that contacts identified by DCWT are affected by noise. To resolve this problem we have proposed an algorithm to reduce the noise effect in the contacts model. Application on the real geomagnetic data of In Ouzzal area located in the West of Hoggar (Algeria) shows clearly the robustness of the proposed method. Comparison with the analytic signal solutions exhibits a difference between the two models of contacts. Our method gives results that accurate with the structural geological map.
Keywords: geomagnetic anomaly, directional wavelet transform, analytic signal, contacts.