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Interpretation of offshore gravimetric data in the NW of Mediterranean Sea (Algeria) using the continuous wavelet transform in the case 3-D.

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Rule of gravity and magnetic data in exploration geophysics is increasing since high resolution airborne and marine acquisitions are run to complete seismic and electromagnetic surveys when necessary.
We consider the use of the continuous wavelet transform in the interpretation of potential field data. Basically, it consists in the interpretation in the upward continued domain since dilation of the wavelet transform is the upward continuation altitude. Thus within a range of altitudes, the wavelet transform of the noise is decreased faster than the wavelet transform of the potential field caused by underground sources; this means that the signal to noise ratio is much better than those involved in other enhancing methods (e.g. Euler deconvolution, gradient analysis, or the analytic signals). Then the method has been developed to estimate size and directions of extended sources (e.g. faults and dikes of finite dimensions) and also the magnetization direction in the case of magnetic data. Latest developments show then when combined with a Radon transform, the continuous wavelet transform can help in the automatic detection of elongated structures in 3D, simultaneously to the estimation of their strike direction, shape and depth.
So we present and discuss some preliminary and new results obtained by an application of this method to offshore gravimetric data acquired in NW of Algeria, in Mediterranean Sea, where we depict the geological structures off shore. This region displays a complex geological setting, we try bringing, in this work, a little contribution to identify the causative structures responsible of offshore gravimetric anomalies by giving an image in 3-D.