Structural Boundaries delimitation from gravity data using the wavelet transform

L. Aliouane (1,2), S. Ouadfeul (3), and A. Boudella (2)

(1) Geophysics Department,LABOPHYT, UMBB, Algeria, (2) Geophysics Department, FSTGAT, USTHB, Algeria, (3) Geosciences and Mines, IAP, Algeria

The main goal of this work is to provide an image of the subsurface of an area located in the Algerian Sahara by the multiscale analysis of the potential gravity data using the wavelet transform.

The Bouguer anomaly of this area is processed with a regular grid of 2000mX2000m. Firstly a 2D directional continuous wavelet transforms has been applied, the analyzing wavelet is the Poisson's Kernel. After that the maxima of the modulus of the continuous wavelet transform have been mapped for all range of scales.

These maxima will provide an image of the structural boundaries; obtained results are compared with the structural map of the area.

This last exhibits a big correlation. The continuous wavelet transform is a powerful tool that can be used for mapping the structural boundaries from potential gravity and geomagnetic data.

Keywords: Structural image, wavelet transform, boundaries, seismic data.