Application of gravity methods to the exploration of Pb-Zn-Ba deposits, case study: Fej Lahdoum mine, Northern Tunisian Atlas

Anis Elbarhoumi*, Wajdi Belkhiria, Jamel El Ayari
Office National des Mines,24 Rue de l'Energie, 2035 La Charguia, 1080 Tunis, Tunisia
*E-mail: elbarhoumianis@yahoo.fr

This study investigates the benefits of using gravity, structural and drilling data for mineral exploration around abandoned Fej Lahdoum Pb-Zn-Ba mine, in northern Tunisia. The analysis of gravity and microgravity data calibrated by field and drilling data highlights four major directions: NE–SW, NS, EW and NW–SE. The NE–SW lineaments are essentially related to the direction of the structures, while the NS, EW and NW–SE lineaments seem to correspond to faults. Indeed, the mineralization in the study site is mainly concentrated in areas where the land is dense, located at the intersections of the density discontinuities, essentially in the NS and EW directions. Positive anomalies close to the Triassic–Cretaceous contact zone and the NS lineament, highlighted on the residual anomalies map and well-marked on the vertical gradient map, require particular attention. The results of this study provide a notable step forward in the knowledge of the regional structures and the mineralization pattern of the Fej Lahdoum Pb-Zn-Ba mine, and will constitute a solid basis for mineral exploration.