البحث الرابع

Title

A 2D Lithospheric Magnetic Anomaly Field over Egypt Using Gradient Data of Swarm Mission

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English Abstract

The current work makes use of the geometrical configuration of the two lower-altitude Swarm satellites (Swarm A and C), moving side by side with a longitudinal distance of 1.4°, to estimate a two-dimensional (2D) model of the lithospheric magnetic anomaly field over Egypt using gradient data. The gradient in both the north–south and the east–west directions have been inverted using the weighted damping least-squares fit technique to estimate the best model coefficients of the 2D model. The best model coefficients have been obtained under the expansion of the Legendre polynomial from degree $n = 7$ to $n = 56$. Results showed that the gradient of the field in the north–south direction is always much smoother than that in the east–west direction. The noise in the east–west direction is attributed to the different environmental conditions surrounding both satellites. The modeled field always showed smoother variations than the observed data, even for the horizontal components (Bx and By).