

## **PRELIMINARY RESULTS IN INTERPRETING THE SHENDI GRAVITATIONAL ANOMALY**

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The current study focuses on interpreting the gravity anomaly centered southeast of Shendi town in central Sudan. This anomaly, referred to in this study as the Shendi Anomaly, exhibits a notable Bouguer anomaly over an area covered by sedimentary rocks underlain by a granitic gneiss basement, in contrast to the exposed basement rocks in surrounding regions, such as the Butana Basement, Sabaloka Inlier, and Bayuda Basement. The study utilizes the high resolution GGMplus satellite gravity data and apply effective 2D data filtering to infer the main structural elements of the area, perform spectral analysis for depth estimation, and ultimately map the 3D density interface. The Total Horizontal Derivative (THD) of a gravity anomaly is effectively used to locate boundaries of density contrasts from gravity data, while various other spectral analysis techniques have been employed, too. Finally, a 3D FFT-based inversion is used to map the depth of the density interface. The structural mapping reveals different patterns extending in NE and NW directions, along with other circular lineaments. The depth map indicates the top of the Shendi anomaly at a depth between 1 and 2 km, showing good agreement with previous studies. It is worth mentioning that this study is the first attempt to interpret the Shendi Gravitational Anomaly, and due to some circular structural features and relatively high density contrasts, the causative body is thought to be a basic intrusion.