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GEOSPATIAL MAPPING OF IRON ORE DEPOSITS IN ITAKPE MINERALIZED ZONE, KOGI
STATE, NORTH CENTRAL. NIGERIA.

Abstract

These study, states the integration of remote sensing and geophysical (aeromagnetic data) method employed to assess the potential zones of iron ore deposit in the middle belt, Kogi state. Nigeria. The use of Landsat 8 OLI imagery in assessing the surface iron minerals present in the study area. This was achieved using Erdas imagine 2015 software applying three type of iron oxide indices such; as Ferrous (Fe^{2+}) iron index, Ferrous mineral index in water and iron oxide index. Also the total magnetic intensity data (TMI) also known as aeromagnetic data was enhanced using Oasis Montaj, applying various techniques which include the Noise Removal Filter using upward continuity tool, Reduce to Magnetic Equator (RTE), Total Horizontal Derivative (THD) Which trend from SW-SE direction that depict the present of lineament, joint and fault zone, Second vertical derivative (SVD) Standard Euler Deconvolution, Residual and Regional magnetic field. Residual Magnetic Field values which ranges from +402.5 to 989.9 nT. This techniques was used to evaluate the sub-surface structure in the study area. The application of magnetic modelling (GM-SYS) was used to determine minerals with high magnetism, leading to the deriving of nine (9) profile name with alphabet(A,B,C,D,E,F,G,H,I,) ranges from the west-east axis of the TMI data. Using the susceptibility value (0.005) obtained our case study area (Itakpe hill), Two other suspected iron ore mineralized zone were highlighted which falls within profile B, and E.

KEY WORD: Iron ore, Total magnetic intensity (TMI), Oasis montaj, Erdas Imagine, (GMSYS), Upward continuation, Euler Deconvolution, Total Horizontal Derivative (THD), Second vertical derivative (SVD)