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

This 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 types of iron oxide indices such as Ferrous (Fe<sup>2+</sup>) 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 depicts the presence of lineament, joint and fault zone, Second vertical derivative (SVD) Standard Euler Deconvolution, Residual and Regional magnetic field. Residual Magnetic Field values which range from +402.5 to 989.9 nT. This technique 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 derivation of nine (9) profile names with alphabet (A,B,C,D,E,F,G,H,I) ranging from the west-east axis of the TMI data. Using the susceptibility value (0.005) obtained in our case study area (Itakpe hill), two other suspected iron ore mineralized zones were highlighted which fall 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)