

GEOGRAPHIC INFORMATION SYSTEM (GIS) APPLIED TO MINERAL EXPLORATION IN MINAS-BAHIA GRAPHITE PROVINCE, EASTERN BRAZIL

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Integrated approach of data has been extremely important in mineral exploration works involving lots of information sources. The use of GIS methodology applied to mineral exploration of non-metallic deposits allowed us to compile all available data from Minas-Bahia graphite province in order to prepare an alpha-numeric, vectorial and raster database. The aim of this study is to provide support for mineral exploration activities and scientific research on the richest graphite province of South America. This province is located along the frontier between of northeastern Minas Gerais and southern Bahia states. The use of remote sensing imagery is required for improving the geologic knowledge of the focused region. Our database contains thematic layers consisting of georeferenced Landsat, Spot, and Radar images, magnetometric geophysics, aerial photographs, and a hipsometric-hydrographic base in 1:100,000 scale, together with geologic maps. High-pass filter algorithms applied on digital files of satellite images allow us to interpret structural and lithologic features that may be useful as prospective criteria. The magnetometric layer matches with these criteria, improving the reconnaissance of graphite-rich zones. Triplet bands combinations for Landsat images aid geological interpretation. Finally, we present a digital geologic image-chart with studied examples of graphite prospecting targets. The latter were selected by intersection of buffers that wrap mineral occurrences, structural features, lithologic assemblages and geophysics data. In addition, a georeferenced database with outcrop descriptions and photographic record is also available in our Minas-Bahia graphite database.