

Paper Number: 5596

The application of historical geological and airborne data in Mining Industry – case of coal sector in Mozambique

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An exploration company's initial decisions to invest are directly dependent on historical data availability in the country, mostly based on Geological Surveys. The database with range of data from geological maps, topo-sheets, aerial photography, satellite imagery and airborne-geophysical data can provide very useful information to the first step of knowledge of identified deposits. In the case of Moatize basin, this datasets support the first assessment of the area concerning the extension of the basin and delimitation of potential areas prone to occurrence of coal deposit.

The geological structures interpreted from airborne geophysics were used to provide an assessment of the distribution (and volume) of intrusive which can affect the quality of coal, in addition to building an understanding of the basin structures/zones which are considered to have significant potential for enhanced coal development. From the aerial photography information such as roads, tracks, vegetation areas, inhabited areas, water courses and streams as well as built infrastructure around the planned mining area could be extracted. With the processing of hyperspectral data, with advanced image processing software, it is possible to automatically identify the location and condition of features that display specific spectral signatures, such as the analysis of vegetation and thus, produce hyperspectral maps. The DEM data in sedimentary basin will help to distinguish between sandstone environment from mudstone and alluvial systems, and clearly show the flat lands from high lands.

