

Targeting Mineral Resources of the Upper Benue trough, Northeastern Nigeria Using Linear Spectral Unmixing

Authors : Bello Yusuf Idi

Abstract : The Gongola arm of the Upper Benue Trough, Northeastern Nigeria is predominantly covered by the outcrops of Limestone-bearing rocks in form of Sandstone with intercalation of carbonate clay, shale, basaltic, felsphatic and migmatide rocks at subpixel dimension. In this work, subpixel classification algorithm was used to classify the data acquired from landsat 7 Enhance Thematic Mapper (ETM+) satellite system with the aim of producing fractional distribution image for three most economically important solid minerals of the area: Limestone, Basalt and Migmatide. Linear Spectral Unmixing (LSU) algorithm was used to produce fractional distribution image of abundance of the three mineral resources within a 100Km² portion of the area. The results show that the minerals occur at different proportion all over the area. The fractional map could therefore serve as a guide to the ongoing reconnaissance for the economic potentiality of the formation.

Keywords : linear spectral un-mixing, upper benue trough, gongola arm, geological engineering

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