

Contribution of remote sensing and hydrographic morphology observation to map Proterozoic rocks in Côte d'Ivoire

Kadio Hilaire Niamke^{1,*}, Brou Etienne N'Dri², Aimé Koudou²

¹*Université Félix Houphouët-Boigny, Abidjan 22 BP 801, Côte d'Ivoire* ; ²*Université Jean Lorougnon Guédé, Daloa BP 150, Côte d'Ivoire*

*E-mail : niamkehilaire@gmail.com

The context of this work is the development of indirect techniques in the recognition of rocks by using remote sensing. The aim is to use hydrographic network legs morphology to discriminate Proterozoic rocks in Côte d'Ivoire. Preliminary processing of Landsat 7 ETM+ data consisted to show the contents of channels which eliminate vegetation and outcrops. The ratio ETM+5/ETM+7 was followed by Laplacian filter to enhance dissonance areas and their internal change. A Principal Components Analysis (PCA) and colored composition of PCA channels have been addressed to see legs morphology. Findings have been validated by field observations. It follows from this methodology that the formation of narrow valleys means that the substratum is granitic. Conversely, under weak vegetation coverage, the formation of wide valleys is an expression of sand schists substratum. Granite outcrop setting is linked to vegetation coverage, while sand schists bedrock levels are only seen in streams. Granitic sands is setting to Northwest. Alluvia which are layered in N'Zi stream are discriminated in mud, sands and gravels. Laterite and clays fill 80% of the study area. This is a good result for geochemical soil prospection.

Keywords: Remote sensing, granitic sand, laterite, Landsat 7 ETM+, field observation