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Integration of the finite element approach(fea) in garvity processing for a qualitative evaluation of solid minerals potentialities over the Congo Craton Belt in Cameroon and Southwest Central African Republic

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In geophysical exploration during the last decade, potetial field methods have a renewed interest in the search for solid mineral and hydrocarbons. In the gravity method data processing, the first and the most crucial step is the removal of the effect of deep-seated structures from the observed Bouguer gravity field in order to enhance the signatures of sahllow bodies. These shallow bodies are associated in solid mining exploration to substances(gold, diamond, ore) wich have a density different with the surroundings(basement). A space domain-technique based on the finite element approach(FEA) using the eight and twelve nodes grid rectangle has ben applied to separate the gravity regiona(related to deep-seated bodies) and residual(related to shallower bodies or local anomalies) components. The region under study is covering a space domain of approximately 385km x 300km in the East province of Cameroon and the South west part of the Central African Republic. In this area where many indications of gold, diamond and ore have been identified and where the artisanal small-scale mining is taking place, a qualitative analysis of regional and residual maps has revealed respectively: (1) a non homogeneous basement which is fractured and has intrusions of materials different to those of the Congo Craton; (2) A positive anomaly related to mineral with a density greater than the surroundings basement which has been taken equal to standard value 2.67 g/cm3 using during the Bouguer gravity anomaly recording.