



POTENTIAL USE OF REMOTE SENSING AND AEROGRAVITY TO MAP DOLERITIC SILLS, DYKES AND LAVA FLOWS BELONGING TO THE CAMP, NORTH FLANK OF TINDOUF BASIN

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Abstract

A large volume of magma emplaced in Africa during the Phanerozoic time forming a large igneous provinces. The central Atlantic magmatic province (CAMP) is one of this continental flood basalts, emplaced in western Africa over the Mesozoic time (Triassic-Jurassic limit) which related to the Pangea disruption. The host rocks are especially clays from the Devonian age, the setting up mode of CAMP formations in this region still dubious. The surface manifestation of the CAMP is mainly dolerite in the form of sills, dykes and scarce lava flows. An important part of the African CAMP situated in the Algerian territory, especially in the Tindouf basin. These rocks are geochemically well studied. The aims of this study is to map dolerites and to make a distribution map using remote sensing and geophysics. The north flank of Tindouf basin characterized by a steep terrain, which makes this area not easily accessible, in these conditions remote sensing techniques and geophysics are the best ways to map dolerites. Two data sets where used, Landsat 8 Operational Land Imager (OLI) images and aerogravity data. Several remote sensing treatments were applied to the Landsat 8 OLI images, such as color composites, band ratioing, principal component analysis and a mathematical index. The spectral particularities of dolerites and their high density in comparison to the host rocks, helped us to best recognition both the surface and subsurface distribution of the CAMP formations. All results are confirmed on the field campaign performed in December 2014. 18 samples are collected and analyzed in the economic geology laboratory of Kyushu University. This work demonstrate the useful of combination between remote sensing, geophysics and geochemistry to best mapping dolerites.