

Paper Number: 2498

**Multispectral Landsat 7 ETM+ enhancement images and airborne geophysics data processing for geological mapping of the Ahnet terrane (Western Hoggar, Algeria).**

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This study focuses on the realization of a 1/200 000 geological map of the Ahnet terrane (Western Hoggar). As a first step, we have resorted to multispectral satellite data (Landsat 7 ETM+) and geological fieldwork. Landsat 7 ETM+ data processing (Principal Component PC, Color Composite CC, Band Ratio BR, and Minimum Noise Fraction MNF) was carried out on soil reflectance calibrated data.

The enhancement of the ETM+ data applied to the Ahnet region has allowed us to distinguish five principal lithological domains; a metasedimentary domain, a Neoproterozoic basic and ultra-basic domain, a granitic and migmatitic domain affiliated to the Pharusian (Neoproterozoic), an Archean domain (In Ouzal Granulites), a Neoproterozoic basins domain (Purple series) and the Tassili n'Ajers Paleozoic sedimentary rocks.

We have resorted to airborne geophysical data, particularly pole reduction aeromagnetic map deduced according to DGRF 1975 and an aeroradiometric data gridded in four channels (Th, U, K, Total Count); All data were gridded in 2 km cell size. The processing of this data has allowed us to better highlight the outcroppings lithologies, to determine the different geological structure types and hence refine the geological map of this area. Fieldwork missions confirmed the results obtained by the processing of these methods.

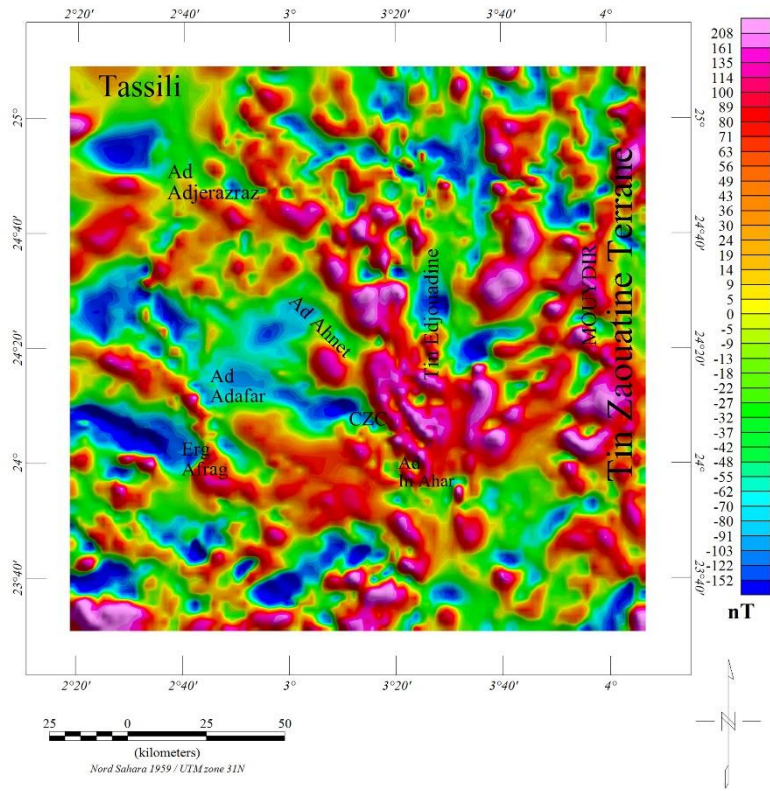


Figure 1: Magnetic Anomaly map of the Ahnet terrane, Western Hoggar.

