

Contribution of Landsat satellite images to the litho-structural mapping of the Oumjrane region (eastern Anti-Atlas, Morocco)

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The objective of our study is to develop an operational methodological approach using a geoscientific knowledge base and spectral data from the Landsat sensor in order to produce the mapping of the different facies and the detection of the fracturing network of the Oumejrane region.

The mining district of Oumejrane, is located in the southern part of the Eastern Anti-Atlas, 50 km SE of Alnif town. It is characterized by Cu, Pb, Zn and Ba mineralizations, which are mainly encased in sedimentary terrains of the upper formation of the 2nd Bani group (Upper Ordovician).

The methodological approach adopted is based on the use of Landsat spatial images. The latter, which on a strategic scale is based on the analysis of the radiometric, morphostructural and textural characteristics of the existing geological formation.

The geological interpretation was made from Landsat images. Thus homogeneous geological units have been characterized. The contribution to the criteria of identification and even the fundamental criteria of the photo-interpretation (spectral signature, structure-texture and morphological aspect) is fundamental.

The analysis of satellite images of the region of Oumejrane allowed us to recognize some fractures of regional importance. These faults, of average orientation N00, N75, N85 and N90, all contributed, together or separately, to the structuring of the eastern Anti-Atlas. In summary we have 2 major directions: N-S and E-W.

The digital processing of satellite images shows that the lineaments which have a direction between 45° and 90° are more numerous. They are located in their entirety in the northwestern part of the study area.