

# Applied ASTER remote sensing and GIS: a combined tool to map Proterozoic outcrops recognising Iguerda-Tayfast inlier (Central Anti-Atlas, Morocco)

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## Abstract

The Iguerda inlier of Central Anti-Atlas, Morocco constitutes a flat rigid bottom of crystalline rocks amenable to accuracy mapping with their various rocks. To provide better tools for lithological mapping, this study will be thus related to previous geological work using remote sensing data. The objectives were (1) correct system products to maps can be implemented over limited without calibrated for sensor and offset, nevertheless indicate properties of atmospheric influence as a function of band; and obviously corresponding to the average radiance measured in each pixel, integrating before a process analog to digital signal conversion. (2) Calibrate digital data, remedied to ASTER reflectance relative done with the IAR-reflectance, and followed by another algorithm modelled, to require correction which will make them closer to interpret; ranging from simple -for raw data path radiometric- to data corrected -for selective enhancement and effective target discrimination-. This procedure may not cover all aspect of image processing, but the results what we have, make it useful guide to enhance a workable processing strategy, depending only on the natural of the application. (3) Obtain images with removing the local noise including in every images involving an extra preceding steps with MNF transform. This computational method was coupled with PPI (Purity Pixel Index) and spatial spectral endmember extraction, which can be used for classification and for the computational requirements for subsequent processing. (4)Maximize the differences between a various targets matched with relative reflectance; several geological outcrops derived from the selected signatures identify its own spectral signature, to determinate the difference magnitude between their targets. Hence, the spectral information extraction needs to be distinctively different. (5) According to visual quality assessment with classification algorithms, isolated and micro-sized pixel-clusters representing very sparse outcrops patches were determined as not related to tectonics processes.

A Conversion of raster data into vector format within the GIS finally allowed calculating the surface area of every polygon. The mapping revealed several lithological classes of potential extend with high and very high potential poorly represented and previous work and Maps.

**Keywords:** ASTER; Remote Sensing; Iguerda Inlier; lithological mapping, accuracy, GIS