

## **Spectral recognition of Guanajuato city from ASTER images.**

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### **ABSTRACT**

A way of separating and characterizing the different materials of terrestrial surface is the analysis of its spectral signature, that is to say, its capability to reflect the light. The spectral information is integrated in spectral libraries as those who have developed the United States of North America and Europe. This spectral data is obtained from laboratory measurements and field observations (field spectroradiometers). These processes in general need a great initial investment, for that reason, to realize a spectral analysis can be costly. Nevertheless, the use of images of high spectral resolution, as ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer), it's a good solution in order to obtain spectral signatures of a region, since they have good spectral resolution (14 bands) and their better spatial resolution is 15 m.

The current spectral libraries allow us to have a general knowledge of type of covering from diverse parts of Mexico, but this information not necessarily is representative of the studied area, because there are important factors that influence in the variation of reflectivity of the materials as conditions of climate, temperature, topography, moisture, shade or sun illumination and the degree of rock alteration.

At this moment, there is little information about the spectral nature for the surface of the State of Guanajuato. For this reason, the aim of this work is to show some aspects of the methodology and preliminary results of the creation and development of a spectral library from ASTER images for Guanajuato (Mexico). We've initiated with Guanajuato City and its bordering area. The spectral range used in this work is from 520 to 11650 nm which is the spectral range covered by the ASTER images.

The identification of an element of the surface from satellite images increases its precision, if the spectral signature of this element is compared with the local spectral library. Under this novelty the final result of this work will facilitate and improve the tasks of analysis of satellite images for Guanajuato.