



Application of Teledetection Methods for quantitative analysis of non-metallic deposits in Cotopaxi-Ecuador

Santiago OÑA, Washington LOMAS, Franz BETANCOURT, Aracely LIMA, and Colon VELASQUEZ
Geological, Mining and Metallurgical National Investigation Institute, Laboratories Direction, Quito, Ecuador
(marco_ona@inigemm.gob.ec)

The present study shows the ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer) (1) sensor applications , used to find surface deposits of pumice stone in the Inter-Andean Valley area of the province of Cotopaxi - Ecuador, involving field spectrometry with spectral mapping. The purpose is to improve the distribution of deposits founded and to seek new areas of interest. To acquire the spectral signature, Reflectance Spectroscopy technique, which has produced a great impact on mineral exploration (2), was used associated with the spectroradiometer SVC HR 1024 to capture spectral signature of Pumice stone in order to identify their spectral characteristics within the ranges VNIR and SWIR (3). After, the spectrum was transformed to Aster parameters to perform the spectral mapping of the image using SAM (Spectral Angle Mapper) method, which identifies the pixels associated to the spectral signature with similar spectral absorption characteristics within the wavelengths associated with ASTER bands, this selection of pixels can be interpreted as accumulation or outcrops, allowing to detect possible lithologies associated with deposits of this material. The results of this study define important areas accumulation of pumice stone , locating a large deposit of this volcanic material to the south and southwest of Latacunga main city set in the study area. This data are consistent with the direction of the pyroclastic flow, which formed this deposit. With these results, we can conclude that the detection of materials using ASTER images , can be applied in areas of hydrothermal alteration and nonmetallic minerals.

References

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