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## SHUTTLE IMAGING RADAR SIR-A FOR GEOLOGICAL AND GEOMORPHOLOGICAL MAPPING IN THE COLOMBIAN ANDES

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**ABSTRACT** - In 1981 Shuttle Imaging Radar (SIR-A) produced two strips of L band imagery of 50 km swath width and a total length of 1600 kms across the entire width of the Colombian Andes and part of the Orinoco and Amazon region, at a scale of 1:430,000; The NW-SE oriented strips covering many different physiographic provinces, created the suitable conditions for a proper assessment of the value of this type of imagery in diverse terrain types.

The present paper is the result of this evaluation and describes to what extent the particular combination of L band wavelength, illumination geometry, incidence angle as a function of topographic slope as well as the synoptic view, give rise to specific characteristics of pattern, texture and tone that provide useful identification criteria for image interpretation. In deeply incised mountainous terrain, SIR-A imagery, because it produces practically no shadows, suffers no lay-over effects and seems less sensitive to look direction, is clearly superior to conventional airborne radar. This resulted in the discovery of previously unknown longitudinal and circular lineaments. On the other hand, in flat terrain such as the Antioquian Batholith peneplain and the Llanos Orientales, L band backscatter and homogeneous illumination result in specific patterns, textures and tones that enable the differentiation of physiographic units which are the expression of geomorphological features and subsurface geology.

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