

SPECTRAL AND SPATIAL ATTRIBUTES EVALUATION OF SPOT DATA IN GEOLOGICAL
MAPPING OF PRECAMBRIAN TERRAIN IN SEMI-ARID ENVIRONMENTS OF BRAZIL

W. R. Paradella

I. Vitorello

C. C. Liu

P. R. Meneses

J. T. Mattos

L. V. Dutra

Instituto de Pesquisas Espaciais (INPE)

Av. dos Astronautas, 1758, C. P. 515

12201 - São José dos Campos - SP, Brazil

Telephone (0123)22-9977, Telex (123)3530

ABSTRACT

SPOT imagery of August 86 (25 degree looking west, in XS and P mode) and November 86 (25 degree looking east, P mode) received by INPE in June 87 are being analysed and compared to various others remote sensing products within a geological mapping context. The test area is the Curaça River Valley, Northeast of Brazil, characterized by gneissic and granulitic associations, interbanded with ferruginous rocks, quartzites, amphibolites and a series of mafic-ultramafic intrusives, mineralized in copper, typical of Archean Mobile Belts. Superimposed on these units are found marbles, phyllites and schists, of Upper Proterozoic age. On a regional approach, black and white print of XS and P SPOT imagery are compared to SLAR (X band) and TM imagery at 1:200,000 scale. On a detailed approach spatial attributes are analysed by comparisons between black and white prints of P SPOT (1:100,000) and panchromatic airphotos (1:70,000), both with stereoscopic analysis. Finally, spectral analysis has been carried out by means of XS SPOT, MSS and TM LANDSAT CCT's using several digital imagery processing techniques such linear contrast stretch, band-ratio, principal components and IHS transformations. A merged SPOT XS and P mode and SPOT and TM data is also been attempted using IHS transformation, in the context of discrimination of rock and structural pattern enhancement.