MAPPING OF IRON-MINERALIZED LATERITES INTHE CARAJAS MINERAL PROVINCE (BRAZIL) THROUGH TEXTURAL ATTRIBUTES FROM C-BANDAIRBORNE SAR DATA

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The N1 iron deposit is located in theCarajas Mineral Province (BrazilianAmazon Region), with an estimatedreserve of 854 million metric tons with66.4% of iron concentration. The depositis related to a horizontal plateau,covered by hard iron-rich crustsdeveloped over volcanic rocks andironstones. The lateritic cover showssub-units related to the ironmineralizations and to a specific lowdense savanna-type vegetation (campusrupestres). As the changes in thelateritic compositions play an importantrole in the expression of the macro andthe micro topography (roughness), it wasconsidered an interesting approach toevaluate SAR texture classificationaiming at the automatic mapping of thelateritic units. Thus, high resolutionC-band SAR images (dual polarization,distinct illumination geometry),acquired in the area during the SAREX'92campaign, were analyzed through texturalclassifications derived from first andsecond order measures (Gray LevelCo-occurrence Matrix). The research hasshown that SAR texture attributes can beused for the discrimination of the mainlaterites in this area. In addition,texture patterns were sensitive to the(1) SAR polarization, (2) SARillumination geometry (look azimuth andincident angles) and (3) targetparameters (macro-topography androughness). Surface roughness wereimportant for the evaluation of theclassification results.