

## **Evaluation Of Radarsat-1 And Jers-1 Sar Data For Lithologic Discrimination In The Tucano Basin, Northeastern Brazil**

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RADARSAT-1 data in the Fine 2, Standard 7 and Extended High 4 beam modes and a JERS-1 SAR image were evaluated for lithologic discrimination in the Tonã plateau region, Tucano basin, northeastern Brazil. The region is part of the Recôncavo-Tucano-Jatobá rift, a series of elongated half-grabens formed during the South Atlantic opening in Early Cretaceous. The study area has a flat topography, with a dense dry savanna-like vegetation cover characterized by small trees with profusion of stems and branches.

Image analysis showed that the increased penetration of L-band (23.5 cm) in the vegetation cover improves the JERS-1 SAR performance for lithologic mapping, allowing discrimination of surface materials based on roughness categories. Some of these materials correspond to mappable lithologic units, specially cherty limestone layers in the Tonã plateau. Conversely, C-band received signal (5.6 cm) is mainly dominated by volume scattering related to the dry savanna vegetation cover. This results in similar surface roughness at this radar frequency. Therefore, different geologic materials are not distinguishable in the study area using RADARSAT-1 data.

Rock and soil mineralogical differences identified using Landsat-5 TM color composites provided better results for lithologic discrimination compared to surface roughness information derived from both C- and L-band radar data in the study area.