Analysis of ALOS/PALSAR Polarimetreic Signatures and Scattering Mechanisms of Forest Types in Tapajos Region, Brazil

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In this paper we analyzes the PALSAR polarimetric signatures and scattering mechanisms of tropical forest typologies based on target decomposition. At the representation of polarimetric signatures, the cross-section of the forest target (?σ) was plotted on a three-dimensional graphic as a function of the orientation angle, ellipticity angle and the intensity of co-polar components of the radar signal. The analysis of scattering mechanisms was done by the association of entropy and mean alpha angle values for each sample, introduced to the bi-dimensional classification space. Some results can be mentioned: (a) from the analysis of signatures one can verify that the secondary succession stages present a relatively high pedestal when compared to the forested sections; (b) the pixel distribution in the (H,ᾱ) bi-dimensional space was more frequent at zones 4, 5 and 9 for forest with or without timber exploitation and for the advanced secondary succession. This study improves the understanding of the interaction mechanisms between L-band PALSAR signals and structural parameters, subsidizing the forest inventory in the Brazilian Amazon region.

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