Multifrequency Versus Multiangle Radar Data for Ground Target Discrimination: Tucuruí reservoir, Amazon.

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In this study we compare the information content of multifrequency radar data with that provided by multiangle radar data for aquatic vegetation discrimination. At present, multifrequency radar information is available through the combination of JERS-1 L-band data and RADARSAT C-band data. Multiangle RADARSAT images with varying incidence angles provide steep to shallow scene viewing for increased information content. In theory, the incidence angle is the most important system variable affecting radar backscatter and the multiangle images allow better discrimination among the ground targets.

Both JERS-1 and RADARSAT imagery were acquired over the Tucuruí reservoir study site. The RADARSAT data was acquired in Standard Mode beams with three different viewing angles: S1 (20 to 27 degrees), S5 (36 to 42 degrees) and S6 (41 to 46 degrees). The JERS-1 and S6 RADARSAT were acquired concurrently with a May ADRO field campaign in Tucuruí and the S1 and S5 images were acquired with a August field campaign.

RADARSAT S1 and JERS-1 imagery, with almost identical viewing angles, were used to select sets of ground samples. Examples from both May and August were used to assess the effect of radar frequency on class discrimination. The cross-effect of frequency and viewing angle for data acquired on similar dates (S6 and JERS-1) and different incidence angles (RADARSAT S1 and S5) were also investigated for class discrimination. Preliminary results show that there is a great deal of information provided by various data sets which can be used to discriminate aquatic vegetation classes.