

**Experimental Design for RADARSAT Ground Data Acquisition in Tucuruí
Reservoir and Lago Grande Floodplain, Brazilian Amazon.**

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In order to validate the RADARSAT data acquired as part of the ADRO program, an experimental design was conceived to collect ground information for aquatic and floodplain ecosystems. The ground data collection is oriented to answer scientific questions regarding the application of RADARSAT data for accomplishing the following tasks: 1) to understand the interaction between microwave radiation and aquatic plant features; 2) to estimate the area occupied by different ground classes found in those ecosystems; 3) to understand the seasonal dynamics of these ecosystems as a response to the hydrocycle. The objective of this research is to report the methodological aspects of the experimental stage to support ADRO program investigations.

Ground data were collected concurrently with RADARSAT acquisitions during the following months of 1996: May (high water) August (falling water) and November (low water). During the May campaign, aerial photographs at the scale of 1: 10 000 and 1:20 000 were also obtained. The data collection was divided into three segments: 1) a qualitative survey including the acquisition of ground control points, hand held photographs and descriptions of selected areas for the sample sites. Qualitative information on weather conditions were obtained for each sampling site; 2) a quantitative survey consisted of measuring macrophyte canopy features (wet and dry weight, height, leaf area index, average inclination, inclination range, percent of ground cover at different viewing angles, biomass, canopy roughness, and the dominant genera in the stand); 3) ancillary data collection which consisted of water sampling for methane emission and reduced dissolved gases. Water column properties such as pH, temperature, maximum depth and transparency were also taken.