

IGARSS '9S

Preferred Topic Area: Vegetation Cover Classification

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MAPPING VEGETATION TYPES USING SIR-C DATA

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Significant progress has been made recently in mapping vegetation types using radar image data. Supervised classification using multi-frequency, polarimetric radar data from the NASA/JPL AIRSAR system has been most successful, with a demonstrated capability to separate many different classes of vegetation. Models of radar interaction with vegetation suggest strongly that this capability is due to radar's sensitivity to the vegetation structure in the canopy and in the trunks or stems and understory. Recently, an approach has been adopted in the radar remote sensing community to first perform an unsupervised classification on the data into simple classes, such as forest, grassland, bare soil, water, urban areas, etc. This initial classification is then used as a starting point for a supervised classification into further subclasses.

The success of classification using AIRSAR suggests that similar results can be achieved with the spaceborne imaging radar SIR-C. Results obtained from the two SIR-C missions so far indicate that this is the case. A major difference between the airborne and spaceborne radar data are that the spaceborne data covers a much smaller range of incidence angles. This means that the backscatter does not vary dramatically across the swath as in the airborne case. Thus in using SIR-C data one can train on one area in an image and expect the results to be applicable all the way across the image.

In this paper, results on vegetation classification using SIR-C data will be presented for two sites: one a tropical rain forest area near Manaus in Brazil; the other an agricultural site (Flevoland) in the Netherlands. Results will be compared with AIRSAR results for the Flevoland site.

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