CLASSIFICATION OF THE AMAZON RAIN FOREST USING JERS-1 SAR DATA

A. Freeman, C. Kramer and B. Chapman

Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109

The Amazon rain forest is a region of the earth that is undergoing rapid change.. h'lan-made disturbance such as clear cutting for agriculture or mining is altering the rain forest ecosystem. 1 or many parts of the. rain forest, seasonal changes from the wet to the dry scam arc also significant. Changes in the seasonal cycle of flooding and draining can cause significant alterations in the forest ecosystem.

Because much of the Amazon basin is regularly covered by thick clouds, optical **and** infrared coverage from the LANDSAT and SPOT satellites is sporadic.. Imaging radar offers a much better potential for regular monitoring of changes in this region. In particular, the JERS-1 sate.lli[c carries an 1.-band HH SAR system which, via an on-board type recorder, can collect data from almost anywhere on the globe, at any time of year.

In this paper, we show how JERS- 1 radar images can be used to accurately classify different forest type.s (i.e. flood plain vs. upland fore.sl) anri detect clear-cu[areas and river courses in the Amazon basin. JERS- 1 data has also shown significant differences between data obtained during the dry season and the wet season, indicating a strong potential for monitoring seasonal change. The algorithms used to classify JERS- 1 data is a standard maximum-likelihood classifier, using the radar image local mean and standard deviation of texture as input. Rivers are detected using an edge detection and edge.-follmvillfi algorithm.