Forest Observations by ERS and JERS data

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On a global scale, forests play an important role in terrestrial ecology
since they provide 80% to 90% of the standing biomass. The natural and
anthropogenic changes observed continuously in forest covers affect
exchanges of energy, water, carbon and other elements between the biosphere
and the atmosphere.
In recent years, with the launches of spaceborne SARs on board ERS-1/2,
JERS-1 and RADARSAT, an increasing development is observed in the radar
remote sensing of forest covers.

Recent research results have indicated that SAR plays a major role among
remote sensing techniques to make the following forest observations:
- mapping of forest cover in regions characterised by frequent cloud cover,
- monitoring of changes in the forest environment, both man made and natural,
- measuring forest parameters(biomass, height..).

This paper will present a comparison between the information content of
JERS-1 data (L band, HH polarisation, 35° of incidence), and ERS data (C
band, VV polarisation, 23° of incidence) regarding radar backscatter and
its temporal change over different land cover types in a forest environment.
A theoretical backscatter model is used to simulate the radar backscatter
at both ERS and JERS-1 specification. The different backscatter mechanisms
contributing to the backscatter will be given.

Results obtained on a temperate forest (Landes) and on a tropical forest
environment (Centre and South Sumatra) will be presented.
Emphasis will be put on the recent research conducted in the frame of the
'Monitoring of Forest Environment' NASDA project on rain forest
observations. JERS-1 data sets have been acquired on Sumatra test sites
between June and September 1996 in the frame of this NASDA project. On the
other hand, ERS-1 and ERS-2 data have been made available in the frame of
TREES-ERS1-94 and the INDREX project.

Possibilities and limitations of JERS1 and ERS data will be discussed, on
the following applications: mapping of forest, mapping of the presence and
intensity of deforestation, retrieval of forest parameters.