

JERS-1 SAR IMAGE MOSAICS OF THE NORTH AMERICAN BOREAL FORESTS: SEASONAL MOSAICS AND NATURAL RESOURCE APPLICATIONS

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ABSTRACT

Synthetic Aperture Radar reliably provides the complete image coverage needed for mosaicking and ecological modeling over large areas. In the mid-1990s the National Space Development Agency of Japan initiated the Global Boreal Forest Mapping, an international collaboration to map boreal forests worldwide using L-band, single-polarization SAR imagery from the Japanese Earth Resources (JERS-1) satellite.

Here we present the primary products of the North American GBFM program. The Winter and Summer 100m resolution mosaics of Alaskan and Canadian boreal regions will be available on DVD for scientific and educational purposes. The methods used to mosaic the imagery were used for mapping South America in the Global Rain Forest Mapping project, and are similar to techniques applied by the NASA Shuttle Radar Topography Mission (STRM).

These mosaics and derived products will contribute to ongoing forest monitoring efforts of the CEOS Global Observations of Forest Cover program. Future imagery and mosaics from the NASDA Advanced Land Observing Satellite PALSAR sensor will be closely comparable. Our mosaics and regional classifications demonstrate baseline information about the distribution and extent of woodlands, inundation, seasonal and perennial wetlands, and arctic and alpine treelines. We expect specific applicability of these and future SAR mosaics to modeling of carbon fluxes in boreal ecosystems through the estimation of biomass, structurally-defined vegetation types, inundation, soil exposure, and growing season length.

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