

Forest Observation from High Spatial Resolution Image

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Japan is one of the most extensively forested countries in the world. There are over 24 million ha (66% of the land) are forested within conifer plantations about 10 million ha. The Japanese cypress, cedar, larch, and red pine are the main planting tree species. These main plantations with 31-50-year-old trees are managed by thinning or selection cutting. However, management operations have been abandoned in some forests following the depression of timber prices or aging of the land owners. Detection of high density stands without thinning and not good condition of conifer stands occupied by shrub and broad leaved trees are required for higher productive stands and land protection purposes.

Satellites have the advantage of being able to obtain data for a large area simultaneously. Remote sensing image analysis techniques make this possibility worth pursuing. Though very encouraging, the difference of the tree species with leaf on/off high resolution images has not yet been considered though the tree crown extraction.

The purpose of study is to (i) present estimation accuracy of tree isolation and delineation crowns by four main planting species, (ii) compare leaf on and leaf off images, (iii) evaluate stand polygons derived from stand parameters and (iiii) determine under what conditions the approximate techniques are valid.