

Evaluation of Covered Area with Tree in Forest using Satellite Remote Sensing

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Forest occupies important position for global environment. Especially, trees in forest play major role for fixing carbon dioxide, leading to deceleration of global warming. In our knowledge, the covered area with tree in forest is evaluated by the cost- and time- consuming method such as aircrafts, high resolution satellite images, and field survey. Alternative inexpensive method covering the wide area is issue of interest. Here, we propose the method which combines the new index R described below with low-resolution Landsat 7 remote sensing, applying to branches of trees on mountainous areas covered with snow because it's easy there to distinguish between vegetation and non-vegetation. Figure displays two new index $R = (\text{band1}(4) - \text{band5}) / (\text{band1}(4) + \text{band5})$ and normalized difference vegetation index (NDVI) in varying the ratio of branches to snow in a pixel. As to the reflectance spectra of branch, Beech (that is a deciduous broad-leaved tree and widely distributes in Japan) is adopted as the model species. Both slopes of our new indexes Rs have more steep than conventional index, NDVI, which means the formers are more sensitive than the latter.

Following these results, we would examine other indexes using other wavebands. Our final goal of this study is to establish the most effective index to estimate quantity of trees by satellite remote sensing. The detail will be shown in the presentation.

Keywords: Remote sensing, Beech, Forest, Covered Area

