Classification Strategies for High Resolution Images of Korean Forests: A Case Study of Namhansansung Provincial Park, Korea

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Recent developments in sensor technologies have provided remotely sensed data with very high spatial resolution. In order to fully utilize the potential of high resolution images, new image classification strategies are necessary. Unfortunately, the high resolution images increase the spectral within-field variability, and the classification accuracy of traditional methods based on pixel-based classification algorithms such as Maximum-Likelihood method may be decreased (Schiewe 2001). Recent development in Object Oriented Classification based on image segmentation algorithms can be used for the classification of forest patches on rugged terrain of Korea.

The objectives of this paper are as follows. First, to compare the pros and cons of image classification methods based on pixel-based and object oriented classification algorithms for the forest patch classification. Landsat ETM+ data and IKONOS data will be used for the classification. Second to investigate ways to increase classification accuracy of forest patches. Supplemental data such as DTM and Forest Type Map of 1:25,000 scale are used for topographic correction and image segmentation. Third, to propose the best classification strategy for forest patch classification in terms of accuracy and data requirement.

The research site for this paper is Namhansansung Provincial Park located at the eastern suburb of Seoul Metropolitan City for its diverse forest patch types and data availability. Both Landsat ETM+ and IKONOS data are used for the classification. Preliminary results can be summarized as follows. First, topographic correction of reflectance is essential for the classification of forest patches on rugged terrain. Second object oriented classification of IKONOS data enables higher classification accuracy compared to Landsat ETM+ and pixel-based classification. Third, multi-stage segmentation is very useful to investigate landscape ecological aspect of forest communities of Korea.