

Parametric and non-parametric methods for growing stock assessment in alpine and mediterranean forest ecosystems

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Abstract: remotely sensed images combined with field measurements and auxiliary data have been used for continuous estimates of forest growing stock in two different study areas in Italy. The project is based both on field information surveyed in productive forest stands in northern Italy and on Regional Forest Inventory plots of Tuscany, in central Italy. Remotely sensed images have been acquired by the Landsat satellite while auxiliary information (altitude and site fertility) have been given by GIS maps. Both parametric (multiregressive) and non-parametric (k-Nearest Neighbors) methods have been used for estimating forest growing stock comparing several configurations of the methods in order to evaluate the effects on the estimate accuracy due to sample size, topographic effect on satellite images and to the type of tested spectral distances. The application of segmentation procedure for satellite imagery pre-elaboration is also presented. The results achieved are finally discussed in order to provide guidelines for the operative application of the examined methods.