

## Use of airborne LIDAR in the estimation of individual tree heights in natural forest

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### Abstract

Natural resources management, for both economical and conservative purposes, needs detailed and precise spatially related information. Forest inventories based on field assessment are the basic source of information to support forest management at local level as at large area level for strategic forest planning. Forest information acquired in the field are extremely expensive, even if acquired on small areas on the basis of sampling techniques. Information available through Airborne Laser Scanning (ALS) based on LIDAR (Light Detection and Ranging) technology is potentially useful in estimating vertical and horizontal structure of forest, such information cannot be detected by traditional optical sensors.

The precision and accuracy of LIDAR based estimations are strongly influenced by site conditions and by the characteristics of the sensors.

The purpose of this work is to evaluate the accuracy of tree height estimations obtained with the use of LIDAR and compare it with field real data in a multilayered complex forest dominated by *Auracaria angustifolia* located in Curitiba, PR (Brazil). The first results cast a promising light on the possible use of LIDAR data in estimating forest structure even in such complex conditions.

*Keywords: LIDAR, tree heights, VERTEX*