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## Determination of Wetland Vegetation Height with LIDAR

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**Abstract:** Light Detection and Ranging (LIDAR) is a new technology that offers a potential alternative to field surveying and photogrammetric techniques for the collection of elevation data. It has the advantages of being rapid accurate and able to map areas that are difficult to access. LIDAR has demonstrated the capability to accurately estimate important vegetation structural characteristics such as forest canopy height. For these reasons, airborne LIDAR data were used to compare vegetation height determinations with field observations on one selected transect in the vicinity of Lake Hatchineha in Florida, USA. The approach was based on the LIDAR and field measurements. The results showed that the lowest height (0 cm) appeared to be open water and barren fields. Vegetation heights of 0-30 cm corresponded to short grassy areas and 90-180 cm corresponded to medium height plants. Tall plants were determined to be vegetation heights ranging from 180 to 365 cm and very tall plants were determined to range from 365 to 600 cm. In addition, vegetation heights ranging from 600 to 1200 cm and from 1200 to 1700 cm corresponded to low and medium-height trees, respectively. Sources of potential error in determining forest tree canopy height were found to evolve from the fact that medium-height tree branches were sometimes reflected and recorded as a first hit and so were incorrectly classified as either low tree or tall plant classes. The results showed that, in most cases, while field and photogrammetric methods fail to determine tree and other plant heights, they could be accurately detected by using LIDAR classification in the wetlands where the ground is not visible. The next step will be to try to find a correlation between LIDAR vegetation heights and water boundaries.

**Key Words:** LIDAR, Wetland, Vegetation Heights, Vegetation Classification, Remote Sensing

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