

Evaluating the Accuracy of Oblique Photography in Determining Urban Tree Heights

Gabriel Scarmana (Australia)

Key words: Land management; Photogrammetry; Spatial planning; Tree height; Oblique imagery; Surveying measurements; Urban forest

SUMMARY

Trees provide a multitude of ecosystem services for our cities and their inhabitants, from temperature reduction to improved health and wellbeing. To ensure these services are optimised, cities need vigorous, functional and a variety of urban forests, thus requiring appropriate planning and managing schemes. In this context, tree inventory and tree dimensions are an important part of evaluating and monitoring the growth, size, and health condition of urban trees.

In this contribution, the actual tree heights of 25 open-grown eucalyptus trees (*Eucalyptus tereticornis*) were measured with an electronic surveying total station and compared to the height of the same trees computed via oblique photography. For the case study investigated here, the regression models of actual heights reasonably validated the proposed estimates of height for urban trees using oblique photography (Correlation Coefficient=0.991).

Oblique imagery estimated that tree heights differed by a minimum of 0.03 m and a maximum of 1.18 m from the actual height for all 25 eucalyptus trees, where the average of the differences was equal to 0.53 m. In view of these results, tree height determined via oblique photography can be considered as a viable complement (or substitute) to time consuming field-based tree height estimation in urban settings. This may well be the case of locations found in public open-spaces, parks and/or street areas.

Evaluating the Accuracy of Oblique Photography in Determining Urban Tree Heights (12351)
Gabriel Scarmana (Australia)

FIG Working Week 2024

Your World, Our World: Resilient Environment and Sustainable Resource Management for all
Accra, Ghana, 19–24 May 2024