

# APPRAISAL OF THE MEAN HEIGHT OF TREES BY MEANS OF IMAGE MATCHING OF DIGITISED AERIAL PHOTOGRAPHS

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## **ABSTRACT**

*The mean height of a forest stand is an important parameter in forest planning and management. A commercial image-matching algorithm was used to generate the elevation data of forest canopies. Fifteen fully measured stands from Southern Finland and digitised aerial photographs at a scale of 1:12000 were used in the experiments. The canopy elevation point data sets were processed in a local window so as to provide an estimator for the mean height of trees. The results suggest that the mean height of trees is inherently underestimated, but that the estimates are precise and capture a part of the spatial variation in tree height. The performance of the photogrammetric estimator was best in the non-thinned stands with dense canopies, and was also affected by the amount of image overlap and dominant tree species. The whole stereo model proved equally usable. The results implied that the methodology cannot be applied as such for stand height estimation. The methodology is readily usable for applications which can benefit from coarse information about the canopy elevation.*