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THE ASSESSMENT OF THE ABSOLUTE PLANIMETRIC ACCURACY OF AIRBORNE LASERSCANNING

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Abstract. In acquisition and processing of Digital Elevation Models (DEMs) derived from airborne laser scanning (ALS) blunders and systematic errors occur. An assessment of the geometric quality of DEMs is necessary during production and before using the final DEM for an application. The vertical as well as the horizontal (planimetric) accuracy have to be assessed. Commonly agreed accuracy measures and procedures are necessary. The work of existing procedures and standards is analyzed. A new method to derive the absolute planimetric accuracy of ALS point clouds reliably and accurately is described. It is based on derivation of roof planes which are intersected to lines and points from the laser foot prints. The coordinates of generated points are then compared with points determined by aerial photogrammetry. From the differences accuracy measures are derived. Tests regarding the type of error distribution are carried out in order to apply either standard accuracy measures or robust accuracy measures. The results of a practical test are used to assess the planimetric accuracy by means of various accuracy measures. Suggestions for a new standard for the assessment of the absolute planimetric accuracy of airborne laserscanning are made.

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