

VALIDATION OF THE REFLECTANCE CALIBRATION OF THE ADS40 AIRBORNE SENSOR USING GROUND REFLECTANCE MEASUREMENTS

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ABSTRACT:

In the past years digital airborne imaging data have become an appropriate tool to perform remote sensing tasks. With Leica XPro, a processing software for the ADS 40/80 sensor is now available that allows calculating ground reflectances during rectification. Furthermore a BRDF correction of the individual flight lines is possible. Since the two processing options are without additional user input, they are also used regularly for mapping purposes to speed up the mosaicking process. In this paper, a validation of the atmospheric correction and reflectance calibration is shown using data from an image block in southern Germany which was used in the project of the German Photogrammetric Society (DGPF) "Evaluation of Digital Camera Systems". Compressed and uncompressed image data was available in 8 and 20 cm ground pixel size together with in situ ground reflectance measurements of different tarps and natural targets at the time of overflight. Since in the compressed data set the targets were observed several times at different view angles, also results from the BRDF correction could be compared. The results show a reasonably good agreement between reflectances measured on the ground and those calculated from image data during the atmospheric correction. Furthermore it could be shown that the BRDF correction option considerably reduces the intra-class variations within selected targets of the test area. The discussion shows the limitation of the method since part of the data suffered from cloud shadows. Finally, improvements are proposed to further increase the accuracy.

TOPIC: Physical modeling and signatures

ALTERNATIVE TOPIC: Remote sensing applications