

Feasibility study and quality assessment of unmanned aircraft system-derived multispectral images

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The purpose of study is to explore the precision and the applicability of UAS-derived multispectral images. In this study, the Micro-MCA6 multispectral camera was mounted on quadcopter. The Micro-MCA6 shoot images synchronized of each single band. By means of geotagged images and control points, the orthomosaic images of each single band generated firstly by 14cm resolution. The multispectral image was merged complete with 6 bands. In order to improve the spatial resolution, the 6 band image fused with 9cm resolution image taken from RGB camera. Quality evaluation of the image is verified of the each single band by using control points and check points. The standard deviations of errors are within 1 to 2 pixel resolution of each band. The quality of the multispectral image is compared with 3 cm resolution orthomosaic RGB image gathered from UAV in the same mission, as well. The standard deviations of errors are within 2 to 3 pixel resolution. The result shows that the errors resulting from the blurry and the band dislocation of the objects edge identification. To the end, the normalized difference vegetation index (NDVI) extracted from the image to explore the condition of vegetation and the nature of the environment. This study demonstrates the feasibility and the capability of the high resolution multispectral images.