



Remotely Piloted Aircraft Systems (RPAS) for water quality mapping

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Working with optical sensors under Remotely Piloted Aircraft Systems (RPAS) has a lot of potential in different application fields. But retrieving quantitative data from drone-imagery can be challenging and requires correction of geometry, vignetting and atmospheric effects.

This study focusses on consumer and prosumer drone systems. The workflow behind drone-image processing from raw digital numbers (DN) into physical meaningful data will be explained and challenges will be highlighted. Furthermore, employing RPAS systems over water surfaces requires more attention because of the low spectral response of water surfaces, sensitivity to sun glint contamination and the absence of reference points within the image for georectification. The full process will be illustrated with a test case in Loch Leven, where optical data was captured for water quality mapping. Results of a lower-end system, Phantom DJI 4 pro with default RGB camera, and a high-end system, Altura Zenith ATX-8 with multispectral camera (MicaSense RedEdge-M) will be shown.