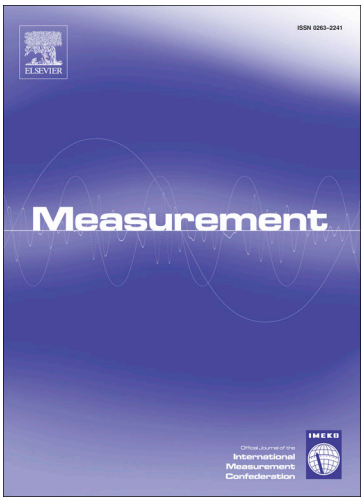

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Template for high-resolution river landscape mapping using UAV technology

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Abstract

This paper presents the template for high-resolution mapping of a river landscape by Unmanned Aerial Vehicle (UAV) technology with the following five steps: (i) reconnaissance of the mapped site; (ii) pre-flight field work; (iii) flight mission; (iv) quality check and processing of aerial data; and (v) operations above the processed layers and landforms (objects) mapping (extraction). The small multirotor UAV (HiSystem Hexakopter XL) equipped with Sony NEX 6 camera with standard 16-50 mm lens provided image capture and workflow design applications. Images were processed by Agisoft PhotoScan software and georeferencing was ensured with 20 Ground Control Points (GCP) and 18 check points certifying accuracy assessment. Three imaging methods for 3D model creation of the study area were used: (i) nadir, (ii) oblique and (iii) horizontal. This minimized geometric error and captured topography under treetop cover and overhanging banks.

Key words: UAV, fluvial landscape mapping, workflow, UAV photogrammetry, data extraction