

## **Abstract**

In 2016, DigitalGlobe's third-generation commercial Earth observation satellite WorldView-4 (WV-4), which offered 31 cm spatial resolution for panchromatic imagery, was launched and was active up to January 2019. Together with WorldView-3, this is the highest ground resolution of civilian optical space-borne missions. In this study, the information content of WV-4's pan-sharpened stereo imagery is comprehensively investigated by manual and automatic object extraction approaches in a study area with rolling urban topography. The potential of automatic extraction was maximized by a group of refinement methods supported by the normalized digital surface model (NDSM) generated from WV-4 stereo pair. The NDSM was used as an additional band in the segmentation for revealing the object height heterogeneity. The results demonstrated that our method increased the precision, completeness and overall quality of WV-4 automatic extraction up to 8.4% for the number of buildings and up to 3.4% for the road length.