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## PREPROCESSING OF SATELLITE DATA FOR URBAN OBJECT EXTRACTION

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**Abstract.** Very high resolution (VHR) DSMs (digital surface models) derived from stereo- or multi-stereo images from current VHR satellites like WorldView-2 or Pléiades can be produced up to the ground sampling distance (GSD) of the sensors in the range of 50 cm to 1 m. From such DSMs the digital terrain model (DTM) representing the ground and also a so called nDEM (normalized digital elevation model) describing the height of objects above the ground can be derived.

In parallel these sensors deliver multispectral imagery which can be used for a spectral classification of the imagery. Fusion of the multispectral classification and the nDEM allows a simple classification and detection of urban objects. In further processing steps these detected urban objects can be modeled and exported in a suitable description language like CityGML. In this work we present the pre-processing steps up to the classification and detection of the urban objects. The modeling is not part of this work. The pre-processing steps described here cover briefly the coregistration of the input images and the generation of the DSM. In more detail the improvement of the DSM, the extraction of the DTM and nDEM, the multispectral classification and the object detection and extraction are explained. The methods described are applied to two test regions from two satellites: First the center of Munich acquired by WorldView-2 and second the center of Melbourne acquired by Pléiades. From both acquisitions a stereo-pair from the panchromatic bands is used for creation of the DSM and the pan-sharpened multispectral images are used for spectral classification. Finally the quality of the detected urban objects is discussed.

[Conference Paper](#) (PDF, 4064 KB)

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