

MAPPING USING HIGH-RESOLUTION SATELLITE IMAGERY – A REVIEW

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ABSTRACT:

The paper gives an overview on the status of 2D/3D mapping from current high resolution (HR) and very-high resolution (VHR) spaceborne civil optical sensors. The first part of the review addresses the principles of optical imagery acquisition and sensors characteristics (in terms of geometric, radiometric, spectral and temporal resolutions), and the properties of the images produced by these sensors. In the second part the processing pipeline for the production of 2D/3D georeferenced products from single and stereo images is addressed. The main steps (radiometric processing, image orientation, orthorectification, 2D/3D information extraction) are discussed, with special attention to the latest algorithm developments.

In the final part applications in web global mapping, cartography, land monitoring, disaster mapping, emergency mapping and others, with scale up to 1:5`000, will be reported and discussed. The dependencies between sensors characteristics, image properties and mapping requirements are deeply analysed and demonstrated with examples.

The topics of this review were proposed to students through the EduServ12 e-learning course organized by EuroSDR. Theory was demonstrated with examples and exercises on real data using the benchmark from ISPRS Commission I/4 too.

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