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### 3D CAPABILITIES OF PLEIADES SATELLITE

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Abstract. End of 2011 a new optical satellite, called Pléiades, was launched by the French space agency (CNES). It provides 20 km x 20 km images at 0.5 meters. This agile acquisition system is able to relocate very rapidly and scan earth in any direction. The agility of the system offers the ability to acquire multi viewing angle images of the same area during the same orbit. This ability to capture, from a single stereoscopic pair, to a sequence of 25 images, allows enhancing the quality and the completeness of automatically extracted 3D maps.

The aim of the study is to validate and quantify the capacity of the Pléiades system to perform 3D mapping. The analysis explores the advantages in terms of quality and automatism to use more than 2 stereoscopic images.

In the last 10 years, automatic 3D processing of digital images became more and more popular and efficient. Thanks to aerial images with very large overlap and very high resolution satellite images, new methodologies and algorithms have been implemented to improve the quality and accuracy of automatic 3D processing. We propose to experiment the same type of approaches using Pléiades images to produce digital elevation models (DEM). A focus is made on analysing 3D processing using video like (multi viewing) acquisitions. Different reference sites with very accurate 3D control points are used to quantify the quality of the Pléiades DEM. Different acquisition modes are explored from a single stereoscopic pair to a sequence of 17 images.

[Conference Paper](#) (PDF, 957 KB)

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