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## AUTOMATIC CLOUD DETECTION FROM MULTI-TEMPORAL SATELLITE IMAGES: TOWARDS THE USE OF PLÉIADES TIME SERIES

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**Abstract.** Contrary to aerial images, satellite images are often affected by the presence of clouds. Identifying and removing these clouds is one of the primary steps to perform when processing satellite images, as they may alter subsequent procedures such as atmospheric corrections, DSM production or land cover classification. The main goal of this paper is to present the cloud detection approach, developed at the French Mapping agency. Our approach is based on the availability of multi-temporal satellite images (i.e. time series that generally contain between 5 and 10 images) and is based on a region-growing procedure. Seeds (corresponding to clouds) are firstly extracted through a pixel-to-pixel comparison between the images contained in time series (the presence of a cloud is here assumed to be related to a high variation of reflectance between two images). Clouds are then delineated finely using a dedicated region-growing algorithm. The method, originally designed for panchromatic SPOT5-HRS images, is tested in this paper using time series with 9 multi-temporal satellite images. Our preliminary experiments show the good performances of our method. In a near future, the method will be applied to Pléiades images, acquired during the in-flight commissioning phase of the satellite (launched at the end of 2011). In that context, this is a particular goal of this paper to show to which extent and in which way our method can be adapted to this kind of imagery.

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