**Develop of Cloud Detection Method For PlanetScope Imagery**

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***ABSTRACT***

Recently, the demand of satellite imagery has been increasing across various fields. To improve the usability of satellite imagery, it is important to obtain clear-sky images. However, the presence of clouds in most images obscures the regions of interest, making analysis challenging. In this study, we developed a cloud detection method suitable for PlanetScope satellite imagery and we analyzed its detection performance.

PlanetScope satellite imagery consists of four bands: Blue, Green, Red, and NIR (Near-Infrared). This band composition presents limitations for precise cloud detection. Therefore, we developed a cloud detection method based on the Object Oriented Cloud and Cloud Shadow Matching (OCM) algorithm, which can detect clouds using only visible and near-infrared bands. The OCM technique applies the Modified Automatic Cloud Cover Assessment (ACCA) algorithm to detect high-confidence Cloud Maps (CMH), low-confidence Cloud Maps (CML), and cloud shadows based on thresholds. Through cloud-shadow object matching, it refines the clouds to extract the final cloud areas. Optimized threshold settings are crucial for improving the algorithm's performance. To achieve this, we specified Regions of Interest (ROIs) for clouds and analyzed the spectral reflectance characteristics of each band (Blue, Green, Red, NIR). By comparing the standard deviation between clouds and surface objects, we derived and applied the thresholds for cloud detection.

Experimental results demonstrated that we could obtain optimized thresholds for PlanetScope satellite imagery, and applying these thresholds to extract clouds improved the cloud detection performance.

In the future study, we will detect clouds and generate cloud-free images based on this method. We will apply cloud free image to vegetation detection and disaster monitoring.

**Keywords:** Cloud-Detection, OCM, PlanetScope