# Airborne campaign using LCTF multi-spectral camera in the Philippines

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The airborne campaign using the Liquid Crystal Tunable Filter (LCTF) multi-spectral camera has been conducted in the Philippines on August 2015 and March 2016. In this campaign, a simultaneous ground validation using spectrometer as well as an on-site discerning of vegetation types were carried out. The main purpose of this campaign is the spectral data acquisition and validation for the Philippine Scientific Earth Observation Microsatellite (PHL-MICROSAT).
The Department of Science and Technology (DOST) and University of the Philippines-Diliman (UPD) have started an international joint program for the development of microsatellites with two Japanese universities, Hokkaido and Tohoku University. The LCTF is a light weight (80 g) and small size (30mm cube) component for spectroscopy, developed by Hokkaido University, was applied for the Spaceborne Multi-spectral Imager (SMI) mounted on the Philippines' first microsatellite, Diwata-1.
As the spectrum of vegetation includes several kinds of information such as vegetation types and growth stages, forests and agricultural crops have been studied using spectral instruments in past publications [e.g., Schmidt and Skidmore, 2003; Shibayama and Watanabe, 2007]. Besides, it is well known that such spectral information changes due to several observational factors, such as the influence of specular reflection, difference of spatial resolution and also varying weather condition at the time of acquisition [e.g., Shaw and Burke 2003; Peltoniemi et al., 2015].
In order to evaluate the LCTF spectral image, we compared the spectral data obtained by the LCTF camera with that of other sensors, and investigated the characteristic of the LCTF spectral image. In this paper, we report the latest results and discuss the relationship between these spectral data.

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