

Ground Truth of Earth Observation Satellites using UAV

HONDA, Yoshiaki^{1*} ; KAJIWARA, Koji¹ ; TANIGAWA, Satoshi¹ ; ONO, Yusaku²

¹Center for Environmental Remote Sensing, Chiba University, ²Earth Observation Research Center, Japan Aerospace Exploration Agency

Japan Aerospace Exploration Agency (JAXA) is going to launch new Earth observation satellite GCOM-C1 in near future. The core sensor of GCOM-C1, Second Generation Global Imager (SGLI) has a set of along track slant viewing Visible and Near Infrared Radiometer (VNR). These multi-angular views aim to detect the structural information from vegetation canopy, especially forest canopy, for estimating productivity of the vegetation. SGLI Land science team has been developing the algorithm for 10 standard products (above ground biomass, canopy roughness index, shadow index, etc).

In this paper, we introduce the ground observation method developed by using Unmanned Aerial Vehicle (UAV) in order to contribute the algorithm development and its validation. Mainly, multi-angular spectral observation method and simple BRF model have been developed for estimating slant view response of forest canopy. The BRF model developed by using multi-angular measurement has been able to obtain structural information from canopy. In addition, we have conducted some observation campaigns on typical forest in Japan in collaboration with other science team experienced with vegetation phenology and carbon flux measurement. Primary results of these observations are also be demonstrated.

Keywords: UAV, Second Generation Global Imager (SGLI), Multi-angular observation, Forest canopy, Vegetation productivity