Estimation of forest resources by a dual-wavelength imaging LiDAR system

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We propose a mission of a dual-wavelength imaging LiDAR system, which measure global forest resources such as canopy heights and forest biomass with high accuracy. The purpose of the mission is to clarify global carbon cycle, countermeasure climate change, and to protect biodiversity. They are useful to evaluate forest resources for REDD+ and MRV.

This system includes two new technologies. One is imaging LiDAR with modulating Laser light to measure spatial distribution of forest resource in a footprint. Another is dual-wavelength to detect ground surface with high accuracy. Measuring spatial distribution of forest in a footprint by modulating Laser Light gives us information about canopy height and biomass with high accuracy compared with the former sensor such as ICESat/GLAS. A dual-wavelength is able to detect forest surface and ground surface more correctly than the former sensor. This system can increase measurement accuracy for canopy height on a slope, which is difficult situation for evaluating canopy height by the former systems because the system is able to measure a shape of ground surface in the area of Laser irradiation. One of the objective of this mission is to evaluate canopy height with 1 m accuracy; the accuracy of canopy heitht of ICESat/GLAS was 5 m and that of MOLI will be 3 m.

