

Response of Tropical Rainforest to Daily Light Environmental Change

Mitsunori Yoshimura¹ and Megumi Yamashita²

¹Remote Sensing Technology Center of Japan (RESTEC)

²Survey College of Kinki

The tropical rainforest is known as the lung of the earth or the treasury of biodiversity. Most of important processes of tropical rainforest are taking place at the canopy layer. The canopy is the place that trees make photosynthesis and transpiration. Recent years, it is expected to bring closer links between canopy physiological studies and technologies such as remote sensing in order to allow scaling up of the processes and mechanisms taking place within the canopy. Our research site is located in Lambir national park, Sarawak state, Borneo Island, Malaysia and known as one of the typical tropical rainforest regions. The key of links is to understand the light distributions and interactions with the above/below canopies. In order to know the each level of light conditions, we conducted the daily light environment measurements using pyranometers, Photosynthetic Active Radiation (PAR) sensors and spectral radiometer. However the most difficulty is to reach to any position with any height above/below canopy because of high tree height like over 45m. Here we adopted to use canopy crane for its solution. It can make us possible to access cylinder with 75m radius and 85m height three dimensionally. Through our measurements, we clarified the relationship between the reflectance and incident solar radiation as canopy surface light condition, Photosynthetic Photon Flux Density (PPFD) and LAI vertical distribution at any point as below canopy light condition. As the summary of this study, we discussed physical forest characteristic based on daily light environment change.

Corresponding author: Mitsunori Yoshimura

Mitsunori YOSHIMURA

Deputy Senior Research Scientist

Center for Remote Sensing Technology of Japan, Roppongi First Bldg.12F,1 - 9 - 9,
Roppongi, Minato - ku, Tokyo 106 - 0032, JAPAN

Email: yoshimura_mitsunori@restec.or.jp

Megumi YAMASHITA

Lecturer

Survey College of Kinki, 1 - 5 - 9 Yata, Higashi - Sumiyoshi - ku, Osaka, 546 - 0023,
JAPAN

Email: yamashita@kinsoku.ac.jp