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**Advanced terrestrial vegetation monitoring using hypertemporal  
observation by Himawari-8/9 AHI**

Kazuhito Ichii, Yuhei Yamamoto, Wei Yang, Ram C. Sharma, Beichen Zhang, Wei Li

Center for Environmental Remote Sensing (CERES), Chiba University

Third-generation geostationary meteorological satellites, such as Himawari 8/9, are characterized by having multiple observation wavelength bands in the visible and near-infrared regions compared to conventional geostationary meteorological satellites. These wavelength bands are similar to those of sensors onboard polar-orbiting satellites (MODIS, SGLI, etc.), which have been widely used for land surface observations. Geostationary meteorological satellites can observe at a high frequency of once every 10 minutes, enabling much higher temporal resolution than conventional satellites. Therefore, they are expected to be applied to the monitoring of land environmental changes such as vegetation and land cover. We have demonstrated the effectiveness of geostationary satellites for land surface monitoring by using Himawari-8 data. In this presentation, we will introduce our efforts and achievements of advanced land surface monitoring by geostationary meteorological satellites as follows: (1) increase the cloud-free data by improving the observation frequency, and thus more accurately monitor the biological seasons of vegetation, (2) detect vegetation phenology in tropical rainforest areas that were previously difficult to observe with satellites due to cloud cover, and (3) use 10-minute changes in ground surface temperature and other data to quickly determine the water stress state of vegetation, and (4) early detection of the water stress state of vegetation using 10-minute interval observation, and (5) establishment of an international observation network.