Special Seminar

July 9 (Thu), 16:00-17:00
ALRC Multipurpose Room
(Onsite only)

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Emerging Challenges in the Era of Abundant Satellite Data

Satellite observations have become an essential means of monitoring the Earth's surface over broad spatial scales, complementing the limitations of in-situ observations. From the 1970s to the early 1980s, the Multispectral Scanner (MSS) and Advanced Very High Resolution Radiometer (AVHRR) were the primary satellite sensors available for observing terrestrial vegetation indices. Since the 2000s, the development of sensors such as the Moderate Resolution Imaging Spectroradiometer (MODIS) and SPOT Vegetation has enabled medium-resolution, high-frequency observations, resulting in the availability of numerous vegetation index products. Furthermore, advances in processing methodologies have generated multiple products even from identical sensor reflectance data. However, the abundance of data has introduced a new challenge: vegetation index products do not necessarily produce consistent long-term trends. Although many datasets indicate global vegetation greening, others suggest browning, and even among greening products, the magnitude of trends differs substantially. We also found that regional greening patterns can change following algorithm updates.
This study reviews existing vegetation index products and discusses approaches to identify the most reliable estimates. Rather than simply averaging products, we argue that each dataset should be critically evaluated using scientifically robust criteria to support the development of next-generation vegetation index products. Addressing this issue requires coordinated efforts across the research community.

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