The University of Hong Kong
School of Biological Sciences

Public Seminar

Monitoring and understanding fine-scale phenological variability in temperate forests

Date: 22 Aug 2024 (Thu)

Time: 10:00 AM

Venue: KBSB 6N-11 & Zoom

About the speaker:

Yingyi Zhao is a PhD candidate from Dr. Jin Wu's lab, interested in exploring plant-environment interactions. Her work focuses on monitoring fine-scale phenology and exploring the underlying mechanisms of phenological variability.

Abstract:

Leaf phenology, referring to the study of the timing of periodic and recurring events in plant leaves, is an important indicator of climate change and a main regulator of carbon and water cycling in forest ecosystems. While abiotic factors such as climate and topography are recognized as primary drivers of variations in leaf phenology, significant phenological variations exists among individuals and species within localized regions that share similar environmental conditions. This indicates that beyond abiotic factors, biotic factors also play a crucial role in regulating phenological variations, although the mechanisms remain understudied. To address this knowledge gap, I first evaluated the capacity of high-resolution PlanetScope data for individual- and species-scale phenology monitoring. Subsequently, I investigated the role of biotic factors in regulating the spatial variability of land surface phenology within four temperate forest sites. Lastly, I further explored how functional traits and diversity influence interannual phenological variability and the stability of ecosystem productivity. Collectively, this thesis underscores the presence of significant fine-scale phenological variations and demonstrates the potential of using satellite data with high spatial and temporal resolutions for fine-scale phenology monitoring. Moreover, it emphasizes the crucial role of biotic factors in regulating both spatial and temporal phenological variability. The findings contribute to enhancing our understanding of the mechanisms driving phenological variability and have implications for predicting plant phenological responses to climate change.