



The University of Hong Kong
School of Biological Sciences

**Qualifying
Seminar**

Linking leaf age phenology to understand mechanism of Amazon forest carbon uptake in response to drier world

Date: 26th June 2023 (Mon)

Time: 11 AM

Venue: KSBS 6N-11 & Zoom



About the speaker:

Xiaorong Wang is a PhD student in the Global Ecology and Remote Sensing (GEARS) lab. Her research focuses on uncovering the mechanism of tropical forest photosynthesis carbon uptake in response to climate change.



Abstract:

The Amazon rainforest plays a critical role in maintaining biodiversity, regulating regional climate, and contributing to the global carbon cycle. However, climate change poses a significant threat to the resilience of this ecosystem. Decreased precipitation and increased evaporative demand, as a result of climate change, can severely impact the rainforest's ability to absorb carbon. Despite ongoing debates on the sustainability of forest ecosystem-scale apparent photosynthesis (gross primary production, GPP) in a drier world, accurately understanding the factors that drive tropical GPP variability is crucial for predicting Amazon carbon sequestration in the future.

My PhD research aims to investigate and extend our understanding of the mechanisms behind Amazon tropical forest photosynthesis using satellite remote sensing techniques and GPP simulation models. Drawing on ecophysiology theory, I hypothesize that forest ecosystem photosynthesis is a function of both abiotic factors (e.g., water) and biotic factors (e.g., leaf age phenology). Specifically, my research will focus on four key objectives: (1) evaluating the performance of current remote sensing GPP models under water stress conditions, (2) developing a methodology to monitor leaf age phenology and generate an Amazon basin-scale dataset using satellite time-series data, (3) investigating the impact of water stress and leaf age phenology on GPP, and (4) predicting the response of Amazon carbon uptake to future hydrological regimes and examining the implications for the global carbon cycle.