The University of Hong Kong
School of Biological Sciences

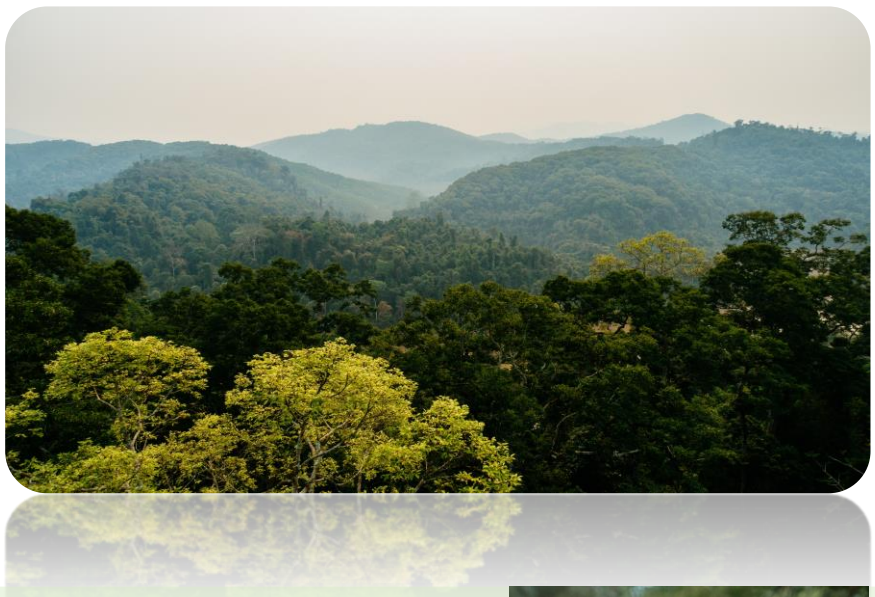
Qualifying Seminar

Linking foliar spectra with functional traits and functional diversity to understand climate change effects on ecosystem function

Date: 14th Dec 2022

Time: 5:00 PM

Venue: Room 6N-11 & Zoom



About the speaker:

Shuwen Liu is a PhD student in the Global Ecology and Remote Sensing (GEARS) lab. His research focuses on how to use state-of-the-art remote sensing techniques to derive plant leaf trait data, and use trait-based approach to better understand the mechanisms by which biodiversity influences ecosystem function.

Abstract:

Understanding the impact of biodiversity changes on ecosystem functioning is a key task in ecology. The trait-based approach is of special interest because of functional traits response to environmental conditions and direct relationship with growth, reproduction, and survival. Experimental studies at a local scale dominate the understanding of functional diversity-ecosystem function relationships. It is unknown whether functional diversity–ecosystem function relationships at fine scales differ systematically from those at larger spatial scales. Quantifying the effects of functional diversity on ecosystem functions over a large spatial extent is not feasible using field-based approaches alone. Remote sensing is a tool with the potential to help address this challenge. My PhD research aims to use remote sensing to decipher the functional diversity –ecosystem function relationships at a large spatial extent. Specifically, I will (1) develop a method for deriving key foliar physiological traits; (2) generate trait maps across large-scale using time-series satellite data; (3) test to what degree functional diversity is related to ecosystem productivity and which dimension of functional diversity contributes most to the biodiversity–resilience relationship, (4) how does variation in environmental conditions across the region influence ecosystem productivity, either directly or indirectly via changes in functional diversity.