The University of Hong Kong
School of Biological Sciences

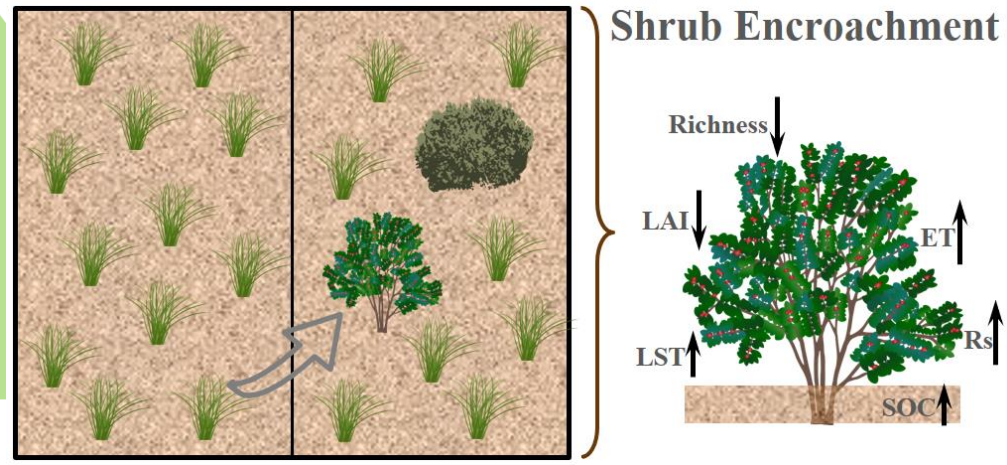
Qualifying Seminar

Quantifying Shrub Abundance: Changes and Drivers on the Mongolian Plateau

Date: 21 November 2024

Time: 11:00 AM

Venue: KBSB 6N11



About the speaker:

Zhonghua Liu is a PhD student in the Global Ecology and Remote Sensing Lab, supervised by Prof. Jin Wu. His research focuses on integrating multi-source remote sensing and machine learning algorithms to address ecological questions, with a particular emphasis on arid ecosystems.

Abstract:

Global climate change and intensified human activities have significantly altered vegetation patterns worldwide, particularly in dryland ecosystems. A prominent transformation is the shift from grass to shrub dominance, which reflects changing environmental dynamics. This transition has crucial ecological implications, including reduced grass cover and accelerated desertification, but it may also enhance certain aspects of ecosystem productivity. Despite the prevalence of these changes, the causes and impacts are not well understood, necessitating further research to clarify their role in ecosystem degradation and long-term effects.

My PhD research addresses these gaps by using remote sensing and big data technologies to study changes in shrub abundance on the Mongolian Plateau, a representative grassland ecosystem in the Northern Hemisphere. The research objectives are to (1) develop a method for mapping shrub fraction, a key indicator of shrub abundance; (2) conduct time-series analyses of shrub fraction changes over the past 30 years; (3) identify and quantify the drivers, including climate change and human activities; and (4) evaluate the ecological impacts in arid regions. This approach aims to provide critical insights into the dynamics of shrub encroachment and its broader ecological consequences.