

# RESEARCH SEMINAR

DEPARTMENT OF GEOGRAPHY & RESOURCE MANAGEMENT  
THE CHINESE UNIVERSITY OF HONG KONG

## Impacts of Climate Change on Terrestrial Carbon and Nitrogen Cycles

13 February 2025 (Thu)  
4:30 – 6:00 pm (UTC+8)  
Rm 221, Chen Kou Bun  
Building, CUHK

How will future climate change affect terrestrial ecosystems from the perspective of biogeochemical cycles? To answer this key question, we propose a model framework that integrates multi-source observations and global carbon-nitrogen cycle models. We explore the response pattern of carbon and nitrogen fluxes in global forests, grasslands, and croplands under elevated atmospheric carbon dioxide, global warming, and altered precipitation regimes. A general benefit for terrestrial ecosystems under elevated carbon dioxide is found in terms of enhanced carbon and nitrogen cycling, resulting in increased productivity and reduced nitrogen loss. On the other hand, warming and changing precipitation are likely to exacerbate inequalities in global carbon and nitrogen cycling, leading to greater development disparities between the Global South and North. Understanding changes in biogeochemical fluxes under climate change could help guide adaptation and mitigation strategies.



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Cui Jinglan graduated from The Chinese University of Hong Kong in 2020, where she obtained her Ph.D. in Geography and Resource Management. Her current research thrust lies in comprehensively understanding how climate change perturbs the carbon and nitrogen cycles in terrestrial ecosystems and formulating nature-based adaptation and mitigation strategies to address these challenges. She has published papers as first-author in *Nature Climate Change*, *Nature Sustainability*, and *Nature Communications*. She serves as a reviewer for *Global Change Biology*.



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