RESEARCH SEMINAR

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

Biogeophysical feedbacks in the Earth system

26 Oct 2023 (Thu)
4:30 – 6:00 pm (UTC+8)
Rm 221, Chen Kou Bun Building, CUHK

Over the last four decades, there have been significant changes in global vegetation. While some areas of the Earth have become greener, there has also been deforestation in tropical regions. This report explores the impact of these changes on the Earth's climate system and the main mechanisms involved. We present initial findings from our numerical simulations and discuss the challenges we've encountered in our research. Our study utilizes both mesoscale numerical models and Earth system models as crucial tools. However, we've observed limitations in current mesoscale numerical models (like WRF) where land-atmosphere coupling often simplifies processes and neglects changes in water and heat fluxes due to forest degradation. This results in a weaker ability to simulate how vegetation changes affect the climate system. Moreover, many Earth system models currently struggle to accurately represent the feedback of vegetation changes on climate. They often underestimate the importance of vegetation transpiration as a part of total evapotranspiration (T/ET). As a result, these models cannot effectively capture how changes in vegetation dynamics impact the climate system.

In Xinjiang Glacier No.1

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Zhenzhong Zeng graduated from the College of Urban and Environmental Sciences at Peking University in 2016. From 2016 to 2019, he conducted postdoctoral research in the Department of Civil and Environmental Engineering at Princeton University. Since 2019, he has been working at the School of Environmental Science and Engineering at Southern University of Science and Technology. He is an Earth System Scientist working for the Chinese Ministry of Education. His primary research and teaching focus is in the field of Earth system processes and global change. He utilizes surface observation networks, satellite remote sensing technology, and next-generation Earth system models to study land-atmosphere interactions and global change mitigation strategies.

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