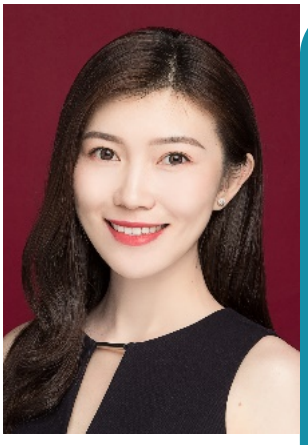
RESEARCH SEMINAR

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

Assessment of Methane Emissions from Shale Gas Production in China

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

China, holding the world's largest shale gas reserves, requires accurate methane emission data from its expanding production. We conducted the first comprehensive ground-level measurements using a two-tiered mobile approach across 125 well pads in four major production blocks, representing more than 84% of China's shale gas production in 2023. Through stationary downwind monitoring and mobile methane concentration measurements, we detected emission rates ranging from 0.002 to 98.86 kg/h, with 10% of well pads contributing 89% of total emissions. Using bootstrapping and log-normal fitting methods, we estimate China's 2023 shale gas methane emissions between 11,558 t and 29,443 t, with loss rates of 0.07% to 0.17% — lower than major US fields. We identified well pads with compressors and construction-phase blocks as significant super-emitter sources. These findings suggest that targeting high-emitting well pads could effectively reduce emissions, demonstrating how comprehensive site-specific measurements can inform targeted methane control policies in China's shale gas sector.



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Prof. Guo is an Assistant Professor in Geography Department at Hong Kong Baptist University and a research fellow at the Asia Energy Study Centre. Her research focuses on energy production and environmental governance, with particular expertise in unconventional energy development in China and the US. Her work is distinguished by extensive field investigations across China's emerging shale industry. After completing her Ph.D. in Geography from the Chinese University of Hong Kong (2016), she has secured several competitive grants as Principal Investigator, including GRF, ECS and NSFC. Her influential work has resulted in a book with Springer Nature and over 30 publications in leading journals. Through active collaboration with major oil and gas companies, her research has contributed to industry practices and policy development.

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