

Hehan (Zoe) Zhang

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RESEARCH INTEREST

As a master's student at the Micrometeorology Lab of the University of British Columbia, I specialize in exploring land-atmosphere exchanges of greenhouse gas fluxes within disturbed peatland ecosystems. My research centers around understanding the ecological responses of wetlands to disturbances and various management practices. I utilize data from chamber sampling and eddy covariance flux towers. I'm interested in examining the terrestrial carbon and water cycles across various temporal and spatial scales.

EDUCATION

University of British Columbia	Micrometeorology lab, Geography	MSc, 2022-2024
University of British Columbia	Honours in Environmental Science, Minor in Economics	BSc, 2017-2022

RESEARCH EXPERIENCE

Research Assistant, University of British Columbia September 2023 – Present

Topic: Impacts of Heatwaves on Greenhouse Gas Fluxes (CO_2 and CH_4) in a Restored Bog Ecosystem: Nonlinearity, Asynchrony and Causality

Overview: Using gap-filled flux data from the eddy covariance system (Ameriflux ID: CA-DBB) to compare variations of carbon fluxes with biophysical controls before, during and after heatwave events; employing information theory (mutual information and transfer entropy) to investigate dominant controls and causal interactions between the fluxes and their primary drivers under heatwave events.

Research Assistant, Metro Vancouver & University of British Columbia September 2022 – Present

Master's Thesis: Investigating Impacts of Seedling Removal on Soil Respiration (CO_2 and CH_4) in a Restored Bog Ecosystem

Overview: Conducting monthly chamber measurements at designated study sites using a Licor portable trace gas analyzer (LI-7810) combined with a smart chamber (LI-8200-01S); using linear mixed-effects models to investigate the impacts of seedling removal on soil and ground-level respiration (CO_2 and CH_4) and their biophysical controls within the burned zone of a restored bog ecosystem, comparing flux data between manual chamber measurements and a temporary eddy covariance flux tower.

Undergraduate Research Assistant, University of British Columbia September 2021 – September 2022

Honours Thesis: Postfire Greenhouse Gas Exchange (CO_2 , CH_4 and N_2O) of Three Vegetation Types in a Bog Ecosystem

Overview: Conducted monthly chamber measurements at designated study sites using syringes and exetainers & analyzed CO_2 , CH_4 and N_2O concentrations from the samples using Agilent 7890A gas chromatography; quantified the postfire greenhouse gas fluxes and identified the corresponding biophysical controls.

Undergraduate Research Assistant, Chinese Academy of Sciences May 2019 – August 2019

Topic: Evaluating Concentrations of Polycyclic Aromatic Hydrocarbons in Soils in a Sewage Irrigation Area

Overview: Assisted sample preparation, including ground and sieved collected samples, extracted soil samples with a mixture of acetone and dichloromethane by ultrasonic oscillation, cleaned the eluent with silica gel, and diluted with acetonitrile.

TEACHING AND MENTORING EXPERIENCE

University of British Columbia

September 2023 – Present

Teaching Assistant:

- GEOS200 (Atmospheric Environments) - Leading Labs, Office Hours and Grading
- GEOS300 (Microscale Weather and Climate) - Office Hours and Grading
- URST200 (Cities) - Leading Discussion Groups, Office Hours and Grading
- GEOG211 (The State of the Earth) - Office Hours and Grading

Mentoring:

- Co-supervisor for an Undergraduate Direct Study (The Impacts of June 2021 Western North America Heatwave on Greenhouse Gas Exchange (CO₂ and CH₄ Fluxes) in a Restored Peatland)
- Co-supervisor for a Summer Work Learn Undergraduate Student

EXTRACURRICULAR ACTIVITIES

Bamboo Climate Solutions Conference Coordinator, Forestry Department, University of British Columbia	2023
Three-Minute Thesis Symposium Facilitator, Geography Department, University of British Columbia	2023
Public Welfare Lecturer for Applying for Master Programs, Step-Silu Education Corporation	2022&2023
Undergraduate Students Academic Advisor, University of British Columbia	2021
Biology Tutor, Florence Nightingale Elementary School	2019
Science Museum Guide, Liaoning Science and Technology Museum	2018

AWARDS

UBC Faculty of Arts Graduate Award	2022&2023
UBC International Student Award	2022&2023
UBC Robert and Kazuko Barker Award	2022
UBC Department of Earth, Ocean and Atmospheric Sciences Award for Research	2022
UBC 2021W Dean's Honour List	2021&2022

TECHNICAL SKILLS

Field & Research Methods	Programming Languages	Software & Applications
• Eddy Covariance • Flux Chamber Sampling - Gas Chromatography • Flux Chamber Sampling - Portable Analyzer	• Matlab • Python • R	• ArcGIS Pro • Eddy Pro • Git & GitHub • Loggernet • Quarto

REFEREES

Dr. Andrew Black, University of British Columbia

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Dr. Sara H. Knox, McGill University

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Dr. Sung-Ching Lee, Max Planck Institute for Biogeochemistry

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