

WENXI LIAO

Address: 832 Bay Street, unit 2605, Toronto, ON, Canada
Tel.: 416-876-4905 | email: wenxi.liao@mail.utoronto.ca

EDUCATION

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| 2019 – 2024 | Doctor of Philosophy (direct entry), University of Toronto GPA: 4.0/4.0 <i>Thesis: Biochar effects on hydrological and vegetation performance on green roofs</i> Supervisor: Dr. Sean Thomas and Dr. Jennifer Drake |
| 2015 – 2019 | Honours Bachelor of Science (with High Distinction), University of Toronto Double Major in Forest Conservation and Physical and Environmental Geography, Minor in GIS |

BACHELOR THESIS

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| 2018 – 2019 | <i>Household and community exposure to the 2011 flood in the Peruvian Amazon using remote sensing and survey data</i> Supervisor: Dr. Christian Abizaid |
| 2017 – 2018 | <i>Biochar particle size and post-pyrolysis mechanical processing affect soil pH, water retention capacity, and plant performance</i> Supervisor: Dr. Sean Thomas |

RESEARCH INTERESTS

- Biochar manipulation and its applications on green roofs
- Remote sensing / GIS applications in urban forestry and green infrastructure
- Soil science, plant performance, and environmental water quality

PUBLICATIONS

- **Liao, W.**, Drake, J., & Thomas, S. C. (2021). Biochar granulation enhances plant performance on a green roof substrate. Manuscript under review with *Sci. Total Environ.*
- **Liao, W.**, & Thomas, S. C. (2019). Biochar particle size and post-pyrolysis mechanical processing affect soil pH, water retention capacity, and plant performance. *Soil Systems*, 3(1), 16.

CONFERENCES

- **Liao, W.** (2021). Remote sensing assessment for vegetation performance on green roofs. Presented at the GIS Day 2021 “Discover Your City Through GIS”, online [presentation].
- **Liao, W.** (2021). *Biochar effects on plant performance and discharge quality on green roofs*. Presented at the Grey to Green Research Showcase, online [presentation].

- **Liao, W.** (2020). *The influence of biochar granulation and particle size on plant growth and discharge quality from green roofs*. Presented at the Grey-to-Green CitiesAlive Conference, online [presentation].
- **Liao, W.,** Zhu, Y., Sifton M., Drake J., Thomas, S. C. (2020), Biochar processing methods influence biochar water retention capacity and green roof discharge quantity [Poster session]. TRIECA, Toronto, ON, Canada
- **Liao, W.** (2019). *Effects of biochar particle size and particle shape on soil moisture and plant growth*. Presented at the Haliburton Forest and Wildlife Reserve Ltd. Research Day, Haliburton, ON, Canada [presentation].
- **Liao, W.** (2018). *Biochar particle size: effects on soil water retention capacity and plant performance*. Presented at the Centre for Global Change Science Presentation Day, University of Toronto, ON, Canada [presentation].

HONOURS AND AWARDS

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| 2021-2022 | Edward H. Buckley and Grace B. Buckley Graduate Scholarship (\$17000) |
| 2019-2021 | Buckley Graduate Scholarships (\$17000) |
| 2019-2021 | Charles Percival Howard Scholarship Fund (\$9600) |
| 2019-2020 | Forest Soils Graduate Scholarship (\$5000) |
| 2019-2020 | University of Toronto Fellowship/Graduate Student Aid (\$2000) |
| 2018 & 2019 | Dean's List Scholar |
| 2019 | Edward H. Buckley and Grace B. Buckley Undergraduate Scholarship (\$2000) |
| 2018 | University of Toronto Association of Geography Alumni (UTAGA) Outstanding Performance Award in Physical and Environmental Geography |
| 2017 | University of Toronto Association of Geography Alumni (UTAGA) Outstanding Performance Award in Methods/GIS |
| 2017 | University of Toronto Excellence Award in Natural Science and Engineering (NSERC-UTEA) (\$6,000) |
| 2015 | University of Toronto Admission Scholarship as one of the most outstanding new students (\$6,000) |

PROFESSIONAL AND RESEARCH EXPERIENCE

January 2020 – Present

Teaching Assistant

FOR201: Conservation and Management of Tropical and Subtropical Forests (undergraduate)

CIV358: Survey Camp (undergraduate)

FOR3012: Analytical Methods in Forestry (graduate)

- Delivered tutorials, managed discussion sessions, and provided valuable supports to over 80 students
- Graded exams and assignments, with constructive feedback provided

September 2021 – Present

Graduate Student Library Assistant at Map and Data Library (UofT)

- Provided data and technical supports to patrons and assisted with various GIS related projects.

November 2019 – August 2021

Graduate Student Library Assistant at Collection Development Department (UofT)

- Accomplished over 10 projects and managed data for over 40 libraries at UofT, with responsibilities including updating dashboards, performing statistical analysis, visualizing data, and writing reports using Tableau, R, OpenRefine, and MS software, which contributed to the library service improvement

August 2018 – April 2019

Bachelor's Thesis in the Department of Geography

Thesis title: Household and community exposure to the 2011 flood in the Peruvian Amazon using remote sensing and survey data (Supervisor: Dr. Christian Abizaid)

- Managed large spatial and survey data collected in the Peruvian Amazon, and performed statistical tests and built models using ArcMap, python, and R, which practiced the geospatial and statistical analysis skills
- Created flood extent and community flood risk maps using supervised classification (ASTER, Landsat, and NASADEM satellite images) using ArcMap and ArcPy, which provided solutions for local flood management

May 2018 – August 2018

Centre for Global Change Science (CGCS) Intern

- Continued the independent research on biochar and published the **1st-author** manuscript in a peer-reviewed scientific journal – *Soil Systems*, which contributed to biochar manufacturing and application

September 2017 – May 2018

Bachelor's Thesis in the Department of Forestry

Thesis title: Biochar particle size and post-pyrolysis mechanical processing affect soil pH, water retention capacity, and plant performance. (Supervisor: Dr. Sean Thomas)

- Designed and conducted independent research on biochar
- Collected and organized data for biochar property and plant physiology, and analyzed the data using R and Excel, which provided statistical basis for the research arguments

January 2017 – May 2019

Research Assistant in Forest Ecology and Silviculture lab

- Collaborated with PhD students on biochar application on urban forests project and soil greenhouse gas emission project, which improved the experiment design and facilitated the research process
- Entered and managed the data accurately and effectively, which increased the research

efficiency

May 2017 – August 2017

Research Assistant in Remote Sensing and GIS lab

- Performed geometric correction for satellite images and classified the images using ArcGIS, which increased the data reliability and provided basis for further GIS research
- Created maps, analyzed geospatial data, and wrote technical reports based on the analysis and results

WORKSHOPS AND CONFERENCES ATTENDED

2020 – 2021

Ten Thousand Coffees Member (Certificated)

August 2021

DesignLIFES Summer School Program

June 15-16 2021

Grey to Green Conference: Designing For Tomorrow

- Talks and presentations from over 30 designers, researchers, and policymakers include biophilic design, integrated stormwater management practices, urban agriculture, green roof and green wall best practices, and more.

June – July 2020

DesignLIFES Summer School Program (Certificated)

- Content includes principles of successful low impact development (LID) construction, certification, inspection, and maintenance; green roof design and construction; soil design, bioretention/LID soil and green roof mixes.

EXTRACURRICULAR ACTIVITIES

September 2018 – May 2020

Vice President, University of Toronto Table Tennis Club (UTTTC)

- Arranged club events and coaching program in the table tennis club.
- Prepared sponsorship packages; searched for sponsors for the club.

September 2017 – May 2018

Competitive Team Coordinator/Captain, University of Toronto Table Tennis Competitive Team

- Represented the University of Toronto in National Collegiate Table Tennis Association (NCTTA) and won the championship in Women's Team Regional Competition (2017).
- Communicated with team members and organized team events and team practice.

January 2018 – March 2020

Table Tennis Coach, University of Toronto Table Tennis Club (UTTTC)

- Coached the University of Toronto alumni in table tennis skills.

VOLUNTEER EXPERIENCE

September 2017 – May 2018

STEP Forward Program

- Participated in workshops on graduate school applications.
- Discussed academic success and future career path monthly with my mentor.

September 2016 – April 2017

First in the Family (FITF) Program

- Conducted literature search and information organization for meta-analysis on creativity.
- Prepared PowerPoint for a communication strategy for a conference.
- Communicated with team members and mentor weekly to discuss research opportunities; learned to work and communicate with team members.

March 2016

Environmental Career Day

- Volunteered as a receptionist to communicate with people and sign them in.

October 2016

“Heart of Fire” World Vision Charity Concert

- Called for donation for poor children; communicated with team members.

October 2016

Scotia Bank Toronto Waterfront Marathon

- Volunteered as a course marshal and communicated with team members.

September 2015 – April 2016

IConnect Program

- Interacted with mentors and people from different cultural backgrounds.

SKILLS AND CERTIFICATES

- **Programming languages:** Python, R, and ArcPy.
- **Remote sensing/GIS:** ESRI software (ArcMap, ArcGIS Pro, ArcScene), ENVI, and SNAP
- **Data management and visualization:** Microsoft software (Word, Excel, and PowerPoint), Tableau, OpenRefine, Gephi
- **Languages:** Proficient in English and Mandarin (oral and written)
- **Certificates:** Ontario G driver’s licence, First Aid and CPR certificate
- **Interests:** table tennis (National Athlete of 2nd Grade), scuba diving (PADI certificate), guitar, skiing.

REFERENCES

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- Professor Sean Thomas
Tel.: 416-978-1044 E-mail: sc.thomas@utoronto.ca
Relationship: supervisor
 - Professor Jennifer Drake
Tel.: 416-978-8248 E-mail: jenn.drake@utoronto.ca
Relationship: supervisor