

Raia Ottenheimer

Self-motivated student at Harvard University pursuing a PhD in Environmental Science and Engineering. Recognised with a solid record of achieving individual and team-based successes in activities requiring out-of-the-box, critical, and quick thinking. Experience in positions in government, administration, and the sciences providing a strong technical foundation to contribute to meaningful scientific advancement in Atmospheric Physics.

Education

Harvard University

PhD in Environmental Science and Engineering
Advisor: Steve Wofsy

Cambridge, MA
Sept 2024 - present

University of Toronto

Honours Bachelor of Science with High Distinction

Toronto, ON
Sept 2021 - Jun 2024

Biological Physics Specialist – Advanced Physics Stream

Undergraduate Thesis: Investigating Cloud Microphysics in the High Arctic Using Downwelling Infrared

Emission Spectra: A Study on Optical Depth, Ice Fraction, Liquid and Water Paths, and Effective Radius of Water/Ice Droplets

Madison College

Associates in Science

Madison, WI
Sept 2019 - May 2021

General Liberal Arts Transfer

Early College STEM Academy dual degree

Honors Program

Madison West High School

High School Diploma

Sept 2017 - Jun 2021

National Honor Society, Spanish Honor Society, OneWEST Student Equity Advisory Group

Extracurricular activities: Debate, Forensics, Mock Trial, Future Problem Solving, Jazz Band

Work Experience

Undergraduate Research Course

Strong Group

Toronto, ON
Sept 2023 - Apr 2024

- Analysed retrievals performed previously with the Optimal Estimation-based CLOUD and Radiation Retrieval Algorithm (CLARRA)
- Performed sensitivity tests on input meteorology to determine retrieval stability while improving retrievals by providing prior knowledge to the forward model.
- Supervised by University of Toronto Physics Department Chair Kim Strong.

GEOS-Chem Inverse Modelling

Atmospheric and Composition Modelling Group

Toronto, ON
Oct 2022 - Aug 2023

- Conducted research using the GEOS-Chem 4D-Var data assimilation system to investigate model sensitivity to wildfire CO plumes.
- Interpreted model impact of the observational coverage from the IASI and MOPITT satellite instruments on CO emission estimates.
- Supervised by University of Toronto Professor Dylan Jones.

Ecometeorology Lab Internship

University of Wisconsin – Madison

Madison, WI
May 2022 - Aug 2022

- Conducted summer research manipulating geostationary satellite readings and eddy covariance towers.
- Advanced computational abilities by juxtaposing satellite and flux tower data via python to constrain the accuracy of the PT-JPL algorithm's evapotranspiration and component estimates.
- Supervised by UW – Madison Professors Ankur Desai and Paul Stoy.

Wisconsin Future Problem Solving

Madison, WI

Evaluator	<i>Sept 2021 - Present</i>
<ul style="list-style-type: none"> - Efficiently and accurately evaluated the six-step Future Problem Solving process at the regional and state level. - Dedicated seven hours each month to advising and supporting middle and high school FPS teams by providing student-specific feedback to booklet submissions. 	
Innis College Student Residence	<i>Toronto, ON</i>
Front Desk Porter	<i>Nov 2021 - May 2022</i>
<ul style="list-style-type: none"> - Fostered a welcoming environment for a population of 300 residents. - Enabled efficient residence operations by staffing the front desk 12 hours each week to manage residence resources, facilitate package delivery, and maintain residence security. 	
City of Madison Clerk's Office	<i>Madison, WI</i>
Poll Worker	<i>Nov 2020 - Present</i>
<ul style="list-style-type: none"> - Served as an election official for the State general, primary, and presidential elections. - Ensured the integrity of State elections by assisting with ballot recount efforts. 	
Office of Governor Tony Evers	<i>Madison, WI</i>
Constituent Services Intern	<i>Aug 2020 - Aug 2021</i>
<ul style="list-style-type: none"> - Assisted constituents across Wisconsin with pardon applications, unemployment, financial assistance, COVID vaccines, and other casework. - Fostered civic engagement by writing personalised replies on behalf of the Governor to K-12 students contacting the office. - Connected over 2000 constituents each month to appropriate State resources. - Coordinated communication between the Office and the legislature. 	
Madison College	<i>Madison, WI</i>
Supplemental Instruction Leader	<i>Jan 2020 - May 2021</i>
<ul style="list-style-type: none"> - Executed twice-weekly non-traditional tutoring sessions focused on group study, collaboration, and peer-interaction. - Enhanced understanding of lecture material for Madison College students in Calculus I and II. 	
Student Ambassador	<i>Jan 2020 - May 2021</i>
<ul style="list-style-type: none"> - Collaborated with a team of 20 peers to deliver college events and introductory programs while providing academic and social mentorship support. - Student Ambassador of Distinction 2021. 	

Presentations, Publications, and Projects

Presentations

Investigating Cloud Microphysics in the High Arctic Using Downwelling Infrared Emission Spectra: A Study on Optical Depth, Ice Fraction, Liquid and Water Paths, and Effective Radius of Water/Ice Droplets

[Oral Presentation] (2024, Apr 4). Physics Student Union Undergraduate Research Conference.

Efficacy of Versions 8 and 13 of the GEOS-Chem Adjoint for Quantifying Wildfire Emissions.

[Oral Presentation] (2024, Feb 9). University of Toronto Arts and Science Student's Union's Undergraduate Research Conference, Toronto, ON.

[Oral Presentation] (2024, Jan 21). Canadian Conference for Undergraduate Women in Physics, Montreal, QC.

[Oral, Poster Presentation] (2023, Aug 24). Centre for Global Change Science Research Day, Toronto, ON.

Evaporation and Transpiration from Proximal Forests and Wetlands: Partitioning Water Fluxes to Improve Remote Sensing Algorithms and Hydrologic Theory [Group Presentation Figure]. (2023, May 1 - 4). American Meteorological Society Conference on Agricultural and Forest Meteorology, Minneapolis, MN.

Closing Remarks for "The Time it Takes" Lecture by Melissa Franklin. (2023, Apr 5). Innis Alumni Lecture, Toronto, ON.

Using PT-JPL to estimate ET & components from space

[Oral Presentation]. (2023, Jan 20 - 22). Canadian Conference for Undergraduate Women in Physics, University of Regina, BC.

[Poster Presentation]. (2022, Sept 7 - 9). Ameriflux National Conference, Traverse City, MI.

GC32G-0703: Toward Geostationary Remote Sensing of the Coupled Terrestrial Carbon and Water Cycles

[Poster Figure]. (2022, Dec 12 - 16). American Geophysical Union Fall Meeting, Chicago, IL.

Publications

“Not Physics” [Lyrics and Recording]. (2022, May). *Science Rendezvous’ 2022 Virtual SciArt Gallery*

- A song for voice and guitar reflecting on career selection processes.

“Disabled Athletes Can’t Get Credit” [Letter to the Editor]. (2021, Jan 9). *Wisconsin State Journal*

Projects

Machinations in McLennan Physics: the Coefficient of Static Friction Between a Keen McKenzie II Shoe

and Tiled Floor

Toronto, ON

University of Toronto Undergraduate Physics

Sept 2021 - Dec 2021

- Final project for Foundations of Physics I (PHY151) practicals at the University of Toronto.
- Poster selected for exhibition in the halls of McLennan Physics building.

Dandelion Triptych

Madison, WI

Madison College Honors Program

Jan 2021 - May 2021

- Composed and produced a quartet for four clarinets using Musescore, KDENLive, and Audacity.
- Mentored by Madison College Music Faculty Joseph Bernstein.

American Cultural Revolution

Madison, WI

Madison College Honors Program

Sept 2020 - Dec 2020

- 25-page literature review and research paper on the history, change, and rise of identity politics following the 1960s American Cultural Revolution.
- Mentored by Madison College History Department Chair Michael Dubin.

A Literature Review on Upper Extremity Prostheses

Madison, WI

Madison College Honors Program

Jan 2020 - May 2020

- 25-page literature review of the types of commercialised upper extremity prostheses and their usage, the importance of myoelectric prostheses, home usage of prostheses, and prosthetic improvements over time, including targeted muscle reinnervation.
- Mentored by Madison College Biology Department head Elise Van Ginkel.

University of Toronto On-Campus Involvement

Not Quite A Lecture Outreach Program

Toronto, ON

Co-director

Sept 2023 - May 2024

Physics Department IDEA Committee

Toronto, ON

Group Member

June 2023 - May 2024

Physics Student Union

Toronto, ON

Vice President Secretary

May 2023 - May 2024

Innis College

Toronto, ON

Innis Insider Mentor

May 2023 - May 2024

Innis Residence Council

Director of Operations

Mar 2023 - May 2024

Vice President Communications

Mar 2022 - May 2023

International Committee Chair

Sept 2021 - May 2022

Equity, Diversity, and Inclusion Programming in Residence Discussion Group

Toronto, ON

Group Member

Dec 2022 - May 2024

University of Toronto Arts and Science Student Union

Toronto, ON

Languages	English (Native Proficiency), Spanish (Semi-fluent)
Programming	Python (Pandas, NumPy, SciPy, OpenCV, Cartopy, Matplotlib, etc.), R, Fortran, Linux (Bash)
Miscellaneous	Panoply, LaTeX, Microsoft Office, G-Suite, Intranet Quorum, WebMO, StarRez

Recognitions

2024	Mary Ann Duffy Graduating Student Award	Innis Leadership Awards
	Awarded to an outstanding female Innis College undergraduate student graduating from the Faculty of Arts and Science who has distinguished herself in the quality of her voluntary service (not undertaken for academic credit) outside of the university.	
2024	Innis College Recognition Award	Innis Leadership Awards College
2023	Innis College Alumni Association Scholarship	Innis College
2023	Centre for Global Change Science Internship Selection	University of Toronto Physics
2022, 2023	Taddle Creek Residence Life Award	Innis Leadership Awards
	Awarded to a student demonstrating distinguished commitment to fostering and supporting community life in the Innis Residence.	
2022, 2023, 2024	Dean's List Scholar	University of Toronto
2022	Later Life Learning Scholarship	Innis College Academic Awards
	Awarded to students with academic distinction	
2021	Student Ambassador of Distinction	Madison College Leadership Awards
2020, 2021	Dean's List Scholar	Madison College