Evan Nelles Henderson | Curriculum Vitae

MSc Student in Physics and Astronomy · McMaster University

hendee7@mcmaster.ca evannelles.github.io github.com/evannelles

linkedin.com/in/evan-nelles

Research Interests

Origins of Life – Planetary Science – Prebiotic Chemistry – Magma Ocean Processes

Coupled Interior-Atmosphere Evolution – Exoplanets – Early Earth History

Education

M.Sc. in Physics (Astrobiology Collaborative Program) **2025 – Present**
McMaster University *Hamilton, Canada*
Thesis: *Methane from the Mantle: Geophysical Pathways to Prebiotic Atmospheres (In Progress)*
Supervisor: Dr. Ralph Pudritz

B.Sc. in Physics (Minor Natural History) **2020 – 2024**
McGill University *Montreal, Canada*

Research Experience & Fieldwork

Graduate Researcher — Planetary Interiors and Atmospheres **2025 – Present**
McMaster University *Hamilton, Canada*
Advisors: Dr. Ralph Pudritz & Dr. Tim Lichtenberg

- Modelling the coupled evolution of magma oceans and protoatmospheres on rocky planets using the PROTEUS framework, with the goal of identifying geophysical pathways to prebiotic atmospheres.
- Conducting parameter sweeps of volatile outgassing scenarios to characterise atmospheric composition during and after magma ocean solidification.
- Researching surface-atmosphere interactions, including volcanism, serpentinization, and carbonate formation.

A Bayesian Investigation of the Transit Method **2023**
McGill University *Montreal, Canada*
Advisor: Dr. Adrian Liu

- Modelled exoplanet transit light curves using MCMC methods as part of a supervised undergraduate project.

Palaeontology Field Research **2023**
McGill University *Dinosaur Provincial Park, Canada*
Advisor: Dr. Hans Larsson

- Three weeks of Cretaceous fossil excavation and field data collection in the badlands as part of a supervised field research course.

Science Communication Experience

Author and Editor **2026 – Present**
Astrobites

Science Communicator **2025 – Present**
W. J. McCallion Planetarium *Hamilton, Canada*

Science Communication Publications

- Hang On To Your Water, Super-Earths!, *Astrobites*, Feb 17th, 2026.
- Admiring the Atmospheric Egg Shell of Sub-Neptune TOI-270d, *Astrobites*, Apr 6th, 2026.

Talks & Posters

- Talk: "Magma Ocean-Protoatmosphere Evolution", Astronomy Journal Club, McMaster University, 2026.
- Talk: "Mantle-Atmosphere Coupling on Terrestrial Planets", McMaster-Waterloo Exoplanet Symposium, McMaster University, 2025.

Teaching Experience

Teaching Assistant **2025 – Present**
McMaster University *Hamilton, Canada*

- Integrated Science (ISCI 1A24 A) Fall 2025
- Introductory Mechanics (PHYS 1D03) Fall 2025
- Explorations in Medical and Biological Physics (BIOPHYS 2S03) Winter 2026
- Integrated Science (ISCI 1A24 B) Winter 2026

Technical Skills

Languages: Python, MATLAB, R, Bash, HTML, LaTeX, NetLogo
Scientific: NumPy, Matplotlib, Jupyter, emcee, batman, PROTEUS (SPIDER, AGNI, FastChem)
Simulation: Climate modelling, prebiotic chemistry, transit light curves, protocell replication
Operational: Git, Linux, SSH, HPC, Anaconda

Awards & Scholarships

- **McMaster Graduate Entrance Scholarship** **2025**
- **Martlet Student Athlete Honour Roll (McGill Varsity Rowing Team)** **2023**
- **Scotiabank Scholarship (Scholarships Partners Canada)** **2020 – 2024**

References

Available upon request.