# Henry Olling

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## Education

**Bachelors of Science in Astrophysics** — Santa Cruz, CA
*UC Santa Cruz* — *Sept. 2018 – Jun 2023*

**Bachelors of Science in Environmental Science** — Santa Cruz, CA
*UC Santa Cruz* — *Sept. 2018 – Jun 2023*

## Experience

**Undergraduate Researcher** — Fall 2019 - Summer 2023
*UCSC Earth and Planetary Sciences* — *Santa Cruz, CA*

- Currently completing thesis project involving analysis of CFD data and computationally intensive simulations
- Developed Python scripts and C programs to analyze various large datasets (e.g. subsets of NASA's IMERG)

**Undergraduate Researcher** — Fall 2022 - Summer 2023
*UCSC Astrophysics* — *Santa Cruz, CA*

- Thesis title: "Impact of Diffusivity Profiles in Water Clouds for Jupiter"
- Extended an existing microphysical model written in FORTRAN
- Performed data analysis with Python using the "matplotlib", "numpy", and "pandas" packages

**Undergraduate Researcher** — Spring 2023 - Summer 2023
*UCSC Earth and Planetary Sciences* — *Santa Cruz, CA*

- Improved and updated the climlab climate modelling software
- Developed working implementations of climate processes
- Solved complex bugs in both Python and FORTRAN
- Tracked versions, progress, and issues and submitted bug reports and pull requests using Github

**Teaching Assistant** — Jan 2023 - Apr 2023
*UC Santa Cruz, EART124: Modelling Earth's Climate* — *Santa Cruz, CA*

- Complete assessments of student work at the direction of Professor Feldl
- Host discussion sections, and write and present lectures
- Host office hours for 1-on-1s with students

**Student Assistant** — Sept 2021 - Nov 2022
*California Air Resources Board* — *Remote*

- Produce and update Python scripts to handle aggregation and de-aggregation of data
- Contributed to multiple internal tools for processing and visualizing environmental data

**Intern, Development and Data Visualization** — Summer 2019
*A Department of Water Resources Bay Delta Office, Modelling Support Branch* — *Sacramento, CA*

- Produced Python scripts to visualize data with the use of common place graphing libraries
- Contributed to internal software packages pertaining to data visualization
- Contributed to and tested publicly available software package used for reading of HEC-DSS data files (pyhecdss)

**Intern, Data analysis and Visualization** — Summer 2018
*CA Department of Water Resources Bay Delta Office, Modelling Support Branch* — *Sacramento, CA*

- Produced demonstration materials for data visualization with Tableau.
- Processed data for research purposes using a custom data processing tool written in C++ that I developed.
- Presented our research during the poster session of the 2018 Bay Delta Science Conference.

**Intern, Water Data Visualization Trainer** — Summer 2017
*CA Department of Water Resources Bay Delta Office, Modelling Support Branch* — *Sacramento, CA*

- Produced training materials (PDFs, sample Excel, Tableau, and Word files) for using Tableau for specific water data visualizations with Tableau.
- Presented weekly training to senior engineers on using Tableau for water-specific visualizations.
- Successfully presented department-wide demonstration of Tableau's possible uses.

## Projects

**Climlab** | *Github, CI, Python, numpy, FORTRAN* Jan 2023 – Present

- Contributed new features and bug fixes to an existing codebase.
- Collaborated with experts to replicate and build upon existing modelling techniques.
- Wrote Python modules, new unit tests, and debugged FORTRAN.

**Custom Multiplayer Game Engine** | *C++, OpenGL, ASIO, GLFW3, BulletPhysics* Nov 2020 – Present

- Actively developing a functioning multiplayer game engine in C++ using OpenGL.
- Working integration with BulletPhysics for in-game physics simulation
- Uses ASIO as a compatibility layer for networking and libsodium for secure end-to-end encryption.
- Uses a custom-made deferred renderer for 3D assets alongside a custom-made 2D renderer for GUIs and sprites.

**8-bit Zilog Z80 Computer** | *Kicad* May 2018 – May 2020

- Designed a custom 8-bit computer using 7400 series logic
- Built circuitry using a mixture of wire-wrapping and soldering
- Wrote and hand-assembled a test program

## Technical Skills

**Languages**: C/C++, Python, FORTRAN, Java, HTML/CSS, GLSL
**Developer Tools**: Git, Eclipse, MPLABX, ChipKit Development Tools, Make, CodeBlocks, bash
**Libraries**: pandas, NumPy, Matplotlib, OpenGL, ASIO, FFTW

## References

References availiable upon request