

## SCOTT D. HULL

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### EDUCATION

*The Ohio State University, Columbus, OH, USA*

#### **M.S. Earth Sciences**

**Exp. Spring 2019**

Graduate Research Assistant

Advisors: Dr. Wendy R. Panero (The Ohio State University), Dr. John W. Hernlund (Earth-Life Science Institute)

Thesis: *3D Computational Modeling of Iron Rain in a Terrestrial Planetary Magma Ocean*

3.53 GPA (as of Summer 2018)

*The Ohio State University, Columbus, OH, USA*

#### **B.S. Earth Sciences**

**2017**

Thesis: *The Prevalence of Exoplanetary Plate Tectonics*

Graduation with Research Distinction, 3.32 GPA

OSU Geology Field Camp (Summer 2016, Ephraim, UT, USA)

Men's Novice Rowing Team (2014)

*Canfield High School, Canfield, OH, USA*

#### **Graduation with Honors**

**2013**

Boy's Lacrosse Team Co-Captain (2013)

### AWARDS

Google Foobar Coding Challenge Invitee (currently level 4)

2018

Denman Undergraduate Research Forum, 3<sup>rd</sup> Place Physical & Mathematical Sciences Category

2017

Denman Undergraduate Research Forum, 4<sup>th</sup> Place Physical & Mathematical Sciences Category

2016

OSU Geology Field Camp Academic Scholarship

2016

OSU College of Arts & Sciences Research Scholarship Winner

2016

OSU College of Arts & Sciences Research Scholarship Winner

2015

### EMPLOYMENT

*Storm Impact Prediction Model (stormimpact.net), Columbus, OH, USA*

#### **Senior Web & Database Developer**

**2016—Present**

Developing a web platform to provide data solutions to major foreign and domestic power companies. Implemented on the Django Web Framework. REST API based on the Django REST Framework. Data models based on SQLite and PostgreSQL. Automatic daily asynchronous tasks executed with Redis and Celery. Deploys custom JavaScript/CSS/HTML code to the front-end, combined with Jinja2 templating. Data visualization with D3.js. Formerly the lead developer of the Storm Impact Prediction Model GUI based on Tkinter.

*OSU Mineral Physics Research Group, Columbus, OH, USA*

#### **Research Assistant**

**2015—Present**

Creating and implementing custom software to provide solutions to problems in geosciences. Lead developer of *Exoplanet Pocketknife* and *Chimera*. Research interests in terrestrial magma oceans, exoplanetary habitability, planetary compositional differentiation, planetary thermal and chemical evolution through time. Using *Exoplanet Pocketknife* to model silicate mantles and basalts from an initial stellar composition and quantify the likelihood of slab subduction. Using *Chimera* to model the evolution of  $\mu^{182}\text{W}$  during metal segregation in Earth's former magma ocean and in asteroids.

*Battelle Memorial Institute, Columbus, OH, USA*

#### **Intern**

**2016—2017**

Creating and implementing custom software to provide solutions to problems in geosciences. Lead developer of *Exoplanet Pocketknife* and *Chimera*. Research interests in terrestrial magma oceans, exoplanetary habitability, planetary compositional differentiation, planetary thermal and chemical evolution through time.

*Shell Undergraduate Research Experience, Columbus, OH, USA*

#### Intern

2015

Summer internship with Dr. Wendy Panero (The Ohio State University) learning about the basics of scientific research. Laid the groundwork for *Exoplanet Pocketknife* and my undergraduate thesis by programming a software wrapper for the MELTS algorithm (Ghiorso et al. 1995).

#### PUBLICATIONS AND PAPERS

*Unterborn, Cayman T., et al. "Stellar Chemical Clues As To The Rarity of Exoplanetary Tectonics." arXiv preprint arXiv:1706.10282 (2017).*

#### CODE HIGHLIGHTS

*\* For the most up-to-date developments, refer to my GitHub: <https://github.com/ScottHull>.*

*Chimera (2017-Present) (<https://github.com/ScottHull/Chimera>)*

A Python-based 3D two-phase flow modeling library, with support for multiprocessing on supercomputer environments. Models local thermal and chemical equilibrium in a multi-component binary-phase system over defined intervals of time and user-defined spatial dimensions.

*StormImpact Web Platform (2017-Present) (code confidential)*

A Django-based web platform designed to meet the data needs of major foreign and domestic power companies. Implements the Django REST Framework, asynchronous tasks with Redis and Celery, data models based on SQLite and PostgreSQL, data and text visualization with custom JavaScript/CSS/HTML and Jinja2 templating. Wide use of D3.js for front-end data visualization.

*Exoplanet Pocketknife (2015-2016) (<https://github.com/ScottHull/Exoplanet-Pocketknife>)*

A Python software wrapper for the MELTS (Ghiorso et al. 1995) and HeFESTo (Stixrude & Lithgow-Bertelloni, 2005) algorithms. Includes support for density-vs.-depth integration, compositional conversions and renormalization, and data compilation/visualization. Built to facilitate the calculations of Unterborn et al. 2017.

#### CONFERENCES & PRESENTATIONS

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|---|------|
| Deep-Time Data Driven Discovery (4D) Workshop, <i>Washington, D.C., USA</i>     | 2018 |
| Earth-Life Science Institute Origins of Life Winter School, <i>Tokyo, Japan</i> | 2018 |
| Earth-Life Science Institute Colloquium, <i>Tokyo, Japan</i>                    | 2017 |
| American Geophysical Union Fall Meeting, <i>San Francisco, CA, USA</i>          | 2016 |
| Denman Undergraduate Research Forum, <i>Columbus, OH, USA</i>                   | 2016 |
| Denman Undergraduate Research Forum, <i>Columbus, OH, USA</i>                   | 2015 |
| Ohio State Fall Undergraduate Research Forum, <i>Columbus, OH, USA</i>          | 2015 |