

JOE SCHOOLS

NASA POSTDOCTORAL PROGRAM FELLOW

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EDUCATION

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| PhD | University of Maryland, College Park
Geology
Advisor: Laurent G. J. Montési | July 2020 |
| BS | University of California, Santa Cruz
Earth and Planetary Science
with a concentration in Planetary Science | August 2014 |

HONORS AND AWARDS

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| NASA Postdoctoral Program Fellowship | 2020 to Present |
| NASA Earth and Space Science Fellowship | 2017 to 2020 |
| University of Maryland, Department of Geology Merit Award | 2017 |
| University of Maryland Dean's Fellowship | 2014, 2018 |

RESEARCH EXPERIENCE

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| NASA Postdoctoral Program Fellow , Jet Propulsion Laboratory
Advisor: Suzanne E. Smrekar | 2020 to Present |
| <ul style="list-style-type: none">Constraining the structure and dynamics of the Venusian lithosphere through numerical modeling of coronae formation, with applications for global resurfacing | |
| PhD Work , University of Maryland, College Park
Advisor: Laurent G. J. Montési | 2014 to 2020 |
| <ul style="list-style-type: none">Development and instability of melt decompaction layers in the Martian lithosphere and their effect on the spacing of volcanic centers (Advisor grant funded project)Development and instability of melt decompaction layers in the Ionian lithosphere and their effect on the evolution, movement, and spacing of volcanic centers (NESSF Graduate fellowship funded project)Subducted sediment survival into the deep mantle (CIDER 2018 research project) | |
| Undergraduate Researcher Assistant , University of California, Santa Cruz
Supervisor: Prof. Ian Garrick-Bethell | 2013 to 2014 |
| <ul style="list-style-type: none">Demagnetization of Apollo 17 lunar samples | |

TEACHING EXPERIENCE

Undergraduate Students Advised

Cristy Ho, “Conditions of melt ascent leading to compositions of the Martian surface”,
Graduated Spring 2019, University of Maryland, College Park

University of Maryland, College Park

Fall 2015 to Fall 2017

Teaching Assistant, Department of Geology

- Fall 2015 GEOL 200 - Earth's Fury: Earthquakes, Volcanoes, and Tsunami
 - A general education class for non-geology majors
 - Responsible for leading discussion sections, providing in class help, grading, and office hours
- Spring 2016 GEOL 341 - Structural Geology
 - A required upper level class for geology majors
 - Responsible for teaching lab sections, grading, office hours, and field trips
- Fall 2017 GEOL 200 - Earth's Fury: Earthquakes, Volcanoes, and Tsunami
 - Took over TA duties halfway through semester from a graduate student who left the department

PUBLICATIONS

Journal Publications

Schools, J. W., & Montési, L. G. J. (2018). The generation of barriers to melt ascent in the Martian lithosphere. *Journal of Geophysical Research: Planets*, 123, 47–66.
<https://doi.org/10.1002/2017JE005396>

Conference Papers

Oral Presentations

Schools, J. & Montési, L. G. J. (2019) Modeling Melt Migration in the Lithosphere and Asthenosphere of Io, with Applications to Heat Pipe Evolution and Cyclical Volcanism. AGU Fall Meeting 2019, P51A-06.

Chotalia, K.*, Muller, J.*, **Schools, J.***, Weidner, E. C., Adams, J., Billen, M. I., Moresi, L. N., Miller, M. S., Waszek, L., Becker, T. W., Lithgow-Bertelloni, C. R., Stixrude, L. P., Weis, D. (2018). Can a subducted sedimentary layer survive into the deep mantle? Maybe, if it is strong or thin. CIDER 2018 Pre-AGU Workshop. *Presenting authors.

Schools, J. & Montési, L.G.J. (2018). Convective Instability in Horizontal Decompaction Channels Inside Planetary Lithospheres. Lunar and Planetary Science Conference 49, 2083.

Schools, J. & Montési, L. G. J. (2016) Effect of water on the Formation of Barriers to Melt Transport in the Martian Lithosphere. AGU Fall Meeting 2016, D134A-03.

Schools, J. & Montési, L.G.J. (2016). Generation of Barriers to Melt Transport in the Martian Lithosphere. Lunar and Planetary Science Conference 47, 2080.

Poster Presentations

Schools, J., Adams, J., Chotalia, K., Muller, J., Weidner, E. C., Billen, M. I., Moresi, L. N., Miller, M. S. (2019) Slab-wedge Coupling Promotes Deep Subduction of Sediment: Geodynamic Insights to Mantle Geochemical Heterogeneity. AGU Fall Meeting 2019, DI33B-0036.

Schools, J. & Montési, L.G.J. (2019). The Lifespan of Heat Pipes on Io, Modeled with Melt Migration. Lunar and Planetary Science Conference 50, 3182.

Schools, J. & Montési, L. G. J. (2018) Decompaction channel formation and elevation in planetary lithospheres. AGU Fall Meeting 2018, DI43C-0048.

Muller, J., **Schools, J.**, Chotalia, K., Weidner, E. C., Adams, J., Billen, M. I., Moresi, L. N., Miller, M. S., Waszek, L., Becker, T. W., Lithgow-Bertelloni, C. R., Stixrude, L. P., Weis, D. (2018) Can a subducted sedimentary layer survive into the deep mantle? Maybe, if it is strong or thin. AGU Fall Meeting 2018, DI23B-0040.

Schools, J. & Montési, L. G. J. (2018) Convective instability in horizontal decompaction channels in planetary lithospheres. 2018 Joint Meeting of the Canadian Geophysical Union (CGU), Canadian Soil Science Society (CSSS), Computational Infrastructure in Geodynamics (CIG), Eastern Section of the Seismological Society of America (ES-SSA) and the Canadian Society for Agricultural and Forest Meteorology (CSAFM), CIG_03 #13.

Schools, J. & Montési, L. G. J. (2017) Convection in horizontal decompaction channels at the base of the lithosphere. AGU Fall Meeting 2017, DI51A-0285.

Schools, J. & Montési, L.G.J. (2017). Formation of Barriers to Melt Ascent at the Base of the Ionian Lithosphere. Lunar and Planetary Science Conference 48, 1964.

PROFESSIONAL TRAINING

CIDER 2018 Summer Program

Cooperative Institute for Dynamic Earth Research (CIDER), Santa Barbara, California, July 9 – August 3, 2018

Description: The summer program is structured as two weeks of seminar focusing on subdiscipline specific issues in the geosciences, with the theme of heterogeneity in the deep mantle, followed by two weeks of collaboration between junior and senior scientists from the different subdisciplines to start a research project devoted to solving one of the raised issues. My research group focused on sediment survival during subduction into the deep mantle as an explanation for certain isotopic signatures in ocean island basalts. My research group chose to continue working on this project after CIDER, with the goal of publishing the work.

2018 ASPECT Hackathon

Computational Infrastructure for Geodynamics, Petaluma, California, June 18-28, 2018

Description: Developers and users of the finite element modeling software ASPECT work side-by-side to improve and develop both the software itself and user models. My work this year focused on writing a new post-processor to calculate the seismic velocities and velocity anomalies of models with melting involved.

2017 ASPECT Hackathon

Computational Infrastructure for Geodynamics, Blue Ridge, Georgia, May 6-17,, 2017

Description: Developers and users of the finite element modeling software ASPECT work side-by-side to improve and develop both the software itself and user models. My work this year focused on improving the tracer particles in ASPECT, specifically having them follow the melt velocity as well as the solid.

NASA Planetary Volcanology Workshop

University of Hawaii at Manoa, Kilauea Volcano, Hawai'i, July 12-19 2016

Description: Field mapping workshop based on studying volcanic features analogous to those on Mars that have been imaged by orbiting satellites and rovers and comparing their field appearance to their appearance in remotely-sensed images.

Thermodynamic modeling with alphaMELTS and other MELTS software

Caltech MAGMA Group, College Park, Maryland, January 12-14, 2015

Description: Software workshop and tutorial on using the alphaMELTS thermodynamic calculator.

Summer Field Geology

University of California Santa Cruz Earth and Planetary Science Department, Near Bishop, California, June 20-July 25, 2014

Description: Mapped geological features in the Eastern Sierra mountains, Long Valley caldera, and the White-Inyo mountains, specifically the Poleta fold belt. Work incorporated field activities with ArcGIS mapping.

PROFESSIONAL AFFILIATIONS

- American Geophysical Union Member, 2014-Present
- Canadian Geophysical Union Member, 2018-Present
- Geological Society of Washington Member, 2015-2020

PROFESSIONAL SERVICE

Reviewer

Journal of Geophysical Research: Planets

Session Convener

2018 AGU Fall Meeting. DI42A and DI43C: Geophysical Signals of Volatiles, Melting, and Thermochemical Heterogeneity.

COMMUNITY SERVICE

University of Maryland, Department of Geology

- Undergraduate Presentation Workshop, 2015-2020
 - I run a workshop through the University of Maryland Geology club designed to practice and streamline undergraduate theses presentations twice a semester.

- Undergraduate Field Camp Prep Course, 2016-2020
 - I contribute to the design and teaching of a graduate student run evening and weekend prep course for undergraduate students who will soon attend their required field camp.
- Maryland Day, 2015-2020
 - A campus wide community event at the University of Maryland where families with children visit to see the work and research done at the University. Volunteer since 2015, and since 2017 I have been responsible for organizing and staffing the department demonstrations.
- Elementary and Middle School Outreach, 2015-2020
 - Interact with local public school students (Washington DC and Prince George's County MD), both in classroom visits and as a host to field trips to the department.

LANGUAGES

English: Native Language

Spanish: Intermediate Listener, Novice Speaker, Intermediate Reading and Writing

COMPUTER SKILLS

Programming: C++, MATLAB

Platforms: Window, Mac, Linux (Red Hat, Ubuntu, Beowulf)

Specialized software: ASPECT, deal.II, COMSOL Multiphysics, MELTS, ArcGIS, GMT