chavlin@illinois.edu

Education

Ph.D. (2015) and **M.Sc.** (2011) in Geological Sciences, *Brown University*, Providence RI **B.A.** (2009) in Geophysics and Planetary Science, *Boston University*, Boston MA

Employment History

Research Scientist, School of Information Sciences, University of Illinois at 2020 - present Urbana-Champaign

Adjunct Officer of Research, Columbia University, Lamont-Doherty Earth Obs.	2016 – 2020
Data Science Consultant, University of Maryland	2018-2020
Data Science Consultant, PlanetEcosystems Inc., Boulder CO	2017-2019
Postdoc, Columbia University, Lamont-Doherty Earth Observatory	2015-Aug. 2016
Sponsored Scientist, Department of Geological Sciences, Brown University	2014-2015
Research Assistant, Department of Geological Sciences, Brown University	2009-2014
Teaching Assistant, Department of Geological Sciences, Brown University	2010, 2012
Undergraduate Research Assistant, Center for Space Physics, Boston University	2007-2009
Undergraduate Research Assistant, Dept. of Earth Sciences, Boston University	2008-2009

Employment Highlights

Adjunct Officer of Research, Columbia University (Lamont-Doherty Earth Obs.) Visualizing seismological datasets with yt

- Used the yt platform for volume rendering of seismological datasets
- Wrote 3D interpolation of spherical data to cartesian coordinates
- Added georeferencing to 3D renderings through projection of shapefile data to 3D cartesian coordinates and rendering domain boundaries of a spherical chunk.

Adjunct & Postdoctoral Researcher, Columbia University (Lamont-Doherty Earth Obs.) The Very Broadband Rheology Calculator

- Wrote and optimized methods for calculating material properties of rocks in MATLAB for the open source Very Broadband Rheology Calculator (https://vbr-calc.github.io/vbr/).
- Managed the open source git repository and trained new users and developers.
- Conducted statistical analyses using Bayesian Inference to understand tradeoffs in calculation methodology and interpretations of observations.
- Authored conference abstracts, journal articles and grant proposals.

Data Science Consultant, Department of Geology at University of Maryland Seismic Model Visualization and Analysis

- Designed an interactive python web-application and command line API for visualization and analysis of seismological data sets.
- Used pydata packages for data IO and analysis (pandas, numpy, xarray, netcdf4)
- Constructed a Mongo database and wrote Wordpress plugins for user interactions.
- Contributed to conference abstracts and presentations.

• Used conda virtual environments for python package management

Employment Highlights Continued

Data Science Consultant, Planet Ecosystems, Inc.

Statistical analysis of home energy use efficiency programs

- Conducted statistical analyses related to home energy use efficiency programs and provided full stack support.
- Built new software in python for analysis of hourly electrical use for millions of customers using batch processing in a HPC environment on Amazon servers.
- Trained team members and wrote documentation on using the new analysis software.
- Maintained data pipelines from web APIs and Mysql, Cassandra databases.
- Addressed bugs and managed projects through JIRA ticket tracking and git.

Research Assistant, Department of Geological Sciences, Brown University

Ph.D. and M.Sc. research in numerical geodynamics

- Implemented computational fluid dynamics algorithms in MATLAB and Fortran to conduct novel research in geodynamics.
- Used open source PETSc linear algebra libraries for Fortran in solving systems of partial differential equations.
- Tutored an undergraduate researcher in geodynamics and code development.
- Authored conference abstracts and journal articles.

Undergraduate Research Assistant, Department of Earth Sciences, Boston University Research in numerical geodynamics

- Installed and maintained Citcom, a finite element code for simulating mantle flow written in C and parallelized via MPI, on a local computer cluster.
- Used ParaView for visualization of 3D model output.

Selected Publications & Abstracts

- **Havlin,** Holtzman, & Hopper (2020, *in review*), "Inference of thermodynamic state in the asthenosphere from anelastic properties, with applications to North American upper mantle," *Physics of the Earth and Planetary Interiors*.
- Accardo, Gaherty, Shillington, Hopper, Nyblade, Ebinger, Scholz, Chindandali, Wambura-Ferdinand, Mbogoni, Russell, Holtzman, **Havlin** and Class (2020, *in review*), "Thermo-chemical modification of the Upper Mantle beneath the Northern Malawi Rift Constrained from Shear Velocity Imaging," *Geochemistry, Geophysics, Geosystems*.
- Hopper, Gaherty, Shillington, Accardo, Nyblade, Scholz, Chindindali, Ferdinand, Mgboni, Mulibo, Holtzman and **Havlin** (2020, *in review*), "Preferential localised thinning of lithospheric mantle in the melt-poor Malawi Rift," *Nature Geoscience*.
- Moulik, Maguire, **Havlin**, Gao and Lekic (2019), "Rapid prototyping, interactive visualization and data validation methods for models of planetary interiors," AGU Fall Meeting
- **Havlin** and Parmentier, (2014), "Implications for melt transport and source heterogeneity in upwelling mantle from the magnitude of Sp converted phases generated at the onset of melting," *Geophysical Research Letters*.
- Havlin, Parmentier and Hirth (2013), "Dike propagation driven by melt accumulation at the lithosphere-asthenosphere boundary," *Earth and Planetary Science Letters*.

Federal Grants

B. Holtzman (PI) and C. Havlin (Co-PI), "Mapping variability in the thermo-mechanical structure of the North American Plate and upper mantle", NSF EAR Award 1736165, *2017-2019*