

## Education

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### **B.S. in Geology**

#### **Minor: Mathematics**

James Madison University, Harrisonburg, VA

Graduation: Fall 2017

### **M.S. in Geoscience**

Virginia Tech, Blacksburg, VA

Graduation: Spring 2020

Thesis: *Temporal Dynamics of Groundwater Flow Direction in a Glaciated, Headwater Catchment*

Adviser: Madeline Schreiber

### **Relevant Coursework:**

Hydrogeology

Adv. Field Methods in Hydrology

Geostatistics

Geochemistry of Natural Waters

Quantitative Analysis of Environmental Data

Vadose Zone Hydrologic Processes

Groundwater Modeling

Contaminant Transport Modeling

Watershed Hydrology

## Technical Skillsets – Programming Languages and Software

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- Statistical analysis and visualization of environmental data - **R Programming & Matlab**
- Processing and analyzing time-series data with **Aquarius**
- Visualizing, managing, and analyzing spatial datasets with **ArcGIS Pro**
- Aquifer testing and well installation
- Applying theory and mechanics of groundwater and surface water flow in developing hydrologic models
- Groundwater and contaminant transport modeling - **MODFLOW & GMS**
- Database management and web design – **PHP & MySQL**
- Geochemical sampling of ground water and surface water
- Elevation surveying

## Work Experience

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### **2020 - Current. Hydrologic Technician** – *United Staged Geological Survey – Savannah, GA*

- Reliably obtaining accurate measurements of river stage and discharge using situationally appropriate methods (ADCPs, wading rods, & bridge boarding).
- Improving office efficiency by developing and introducing new methods for stream-lining computer workflows using R-programming.
- Routinely inspecting and repairing gauge equipment.
- Reviewing and analyzing stage, discharge, and water velocity data.
- Deploying, troubleshooting, and calibrating water quality sondes for the acquisition of water temperature, pH, dissolved oxygen, electrical conductivity, and turbidity data.
- Regularly collecting surface-water grab samples for chemical analysis.
- Routinely collecting groundwater level data.

- Conducting elevation surveys

**2018 - 2021. Graduate Research Assistant – Virginia Tech – Blacksburg, VA**

- Collected, analyzed, and interpreted hydrologic datasets for the characterization of groundwater flow paths, and the relationships between soil hydraulic properties, subsurface topography, and groundwater flow gradients.
- Installed and managed twenty-one project-specific groundwater monitoring wells, with water level data loggers, in mountainous terrain.
- Conducted elevation surveys, identified, and characterized soil horizons, and conducted field tests for the determination of soil hydraulic properties.
- Performed statistical analysis of hydrologic and geomorphic datasets to make inferences on the controls of subsurface flow dynamics.
- Instructed undergraduate courses and physical geology labs on field techniques in geologic mapping, with a focus on Appalachian geology.
- Designed and taught a full-day field course on conducting stream discharge measurements.

**2015-2018. Physical Science Intern - United States Geological Survey – Reston, VA**

- Obtained, analyzed, and interpreted hydrologic datasets in cavern systems in support of a karst studies program.
- Regularly collected water samples, managed hydrologic monitoring equipment, obtained onsite water quality measurements, and analyzed water samples at the USGS Stable Isotope Laboratory.
- Assisted with bedrock geologic mapping within the Valley & Ridge province of northwestern Virginia.
- Managed project databases in ArcGIS, routinely generating figures to assist with data interpretation.
- Digitized geologic maps.

## **Publications**

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**Benton, J.R.**, Doctor, D.H., [Investigating Vadose Zone Hydrology in a Karst Terrain Through Hydrograph and Chemical Time-Series of Cave Drips at Grand Caverns, Virginia](#). National Cave and Karst Research Institute Symposium 7, Proceedings of the 15th Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst; 2018

## **Select Conference Presentations**

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Groce-Wright, N., Schreiber, M., **Benton, J.R.**, Hammond, N., [Analyzing time-series data of cave drips in James Cave, Virginia: implications for storage and recharge in Appalachian karst systems](#) – GSA Southeast Section Meeting, Online Format, 2021

**Benton, J.R.**, Schreiber, M.E., McGuire, K.J., Strahm, B.D., Ross, D. S., Bailey, S.W., Bower, J., Pennino, A., Duston, S., [Dynamics of Groundwater Flow Direction in the Critical Zone of a Forested, Glaciated Catchment](#) – GSA Southeast/Northeast Joint Section Meeting, Reston, VA 2020

**Benton, J.R.**, Colby, J.R., Scott, D., Orndorff, W. [Dissolved Nitrogen Concentration Gradients in Karst Streams at Clover Hollow, VA](#) – GSA Southeast Section Meeting 2019

**Benton, J.R.**, Schreiber, M.E., McGuire, K.J., Strahm, B.D., Ross, D. S., Bailey, S.W., Bower, J., Duston, S., [Characterizing Subsurface Hydrologic Fluxes within a Glaciated Watershed.](#) – AGU, Washington D.C. 2018

**Benton, J.R.**, Doctor, D.H., Hardt, B., [Temporal Variations in Discharge and Chemistry at Cave Drips in Grand Caverns, VA.](#) – GSA Southeast Section Meeting 2016, Virginia Geological Research Symposium 2016, & the CUAHSI (Consortium of Universities for the Advancement of Hydrologic Science) Biennial Symposium – 2016

**Benton, J.R.**, Bentley, C., Rohrback, R., [The “M.A.G.I.C.”al Growth of an Online Gigapan Repository For Geoscience Education.](#) –GSA, Vancouver 2014

## **Volunteer Work**

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**Website Designer** - 2019 National Cave and Karst Management Symposium

- I created and helped manage a website for the symposium.

**Council Member & Website Designer** - Geological Society of Washington

- I reviewed new applicants to verify qualifications for membership, and I developed a new website for the organization.

**Field Instructor** – H.P. Woodlawn High School

- Led interpretive geology tours for high school students at the Chesapeake and Ohio Canal

**NVCC Geology Club** – Founder and former president

- I organized field trips and led monthly meetings. At each meeting we hosted scientists from the DC area to present a talk on their research.

## **Merit-based Recognition**

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**2021 – Peer-to-Peer Award**, United States Geological Survey

**2018 – Barry F. Beck Sinkhole Conference Student Scholarship**

**2017 – Wilbur T. Harnsberger Scholarship**, James Madison University

**2017 – Cullen Sherwood Scholarship**, James Madison University

**2015 – Fred C. Schaefermeyer Scholarship**, Northern Virginia Mineral Club