

SHISHIR K. SARKER

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Education

Ph.D. in Geological Sciences (Conc: Hydrogeology) August 2019 -Present
 University of Kentucky, Lexington, KY GPA 3.83
 Mentor - Dr. Alan Fryar

Master of Science in Environmental Studies July 2018
Graduate Certificate in Water, Environment, and Development Studies GPA 3.52
 Florida International University, Miami, FL
 Mentor - Dr. Rene Price

Master of Science in Physical Geography August 2014
 University of Dhaka, Bangladesh GPA 3.33

Bachelor of Science in Geography and Environment February 2013
Minor in Geology CGPA 3.16
 University of Dhaka, Bangladesh

Publications

- **Sarker, S.K.**, Zhu, J., Fryar, A.E., Jeelani, G. (2023) Hydrological Functioning and Water Availability in a Himalayan Karst Basin under Climate Change. *Sustainability*, 15, 8666. <https://doi.org/10.3390/su15118666>
- Dapkus, R.T., Fryar, A.E., Tobin, B.W., Byrne, D.M., **Sarker, S.K.**, Bettel, L., Fox, J.F. (2023). Utilization of Tryptophan-Like Fluorescence as a Proxy for *E. coli* Contamination in a Mixed-land-use karst Basin. *Hydrology*, 10, 74. <https://doi.org/10.3390/hydrology10040074>
- **Sarker, S.K.**, and Fryar, A.E. (2022). Characterizing Hydrological Functioning of Three Karst Springs in the Salem, Missouri. USA. *Hydrology*, 9, 96. <https://doi.org/10.3390/hydrology9060096>
- **Sarker, S.K.**, Kominoski, J.S., Gaiser, E.E., Scinto L.J., Rudnick, D.T. (2019). Quantifying effects of increased hydroperiod on wetland nutrient concentrations during early phases of freshwater restoration of the Florida Everglades. *Restoration Ecology*, 28(6), pp.1561-1573. <https://doi.org/10.1111/rec.13231>

Master's Thesis

- **Sarker, S.K.** (2018). "Spatial and Temporal Distribution of Total Phosphorus Concentration in Soil and Surface Water in the Everglades Protection Area." *FIU Electronic Theses and Dissertations*. 3742. <https://digitalcommons.fiu.edu/etd/3742>

Technical Report

- Market, K., **Sarker, S.K.**, Paudel, N., Rimal, R.M., Fargana, L., Narenpitak, P. (2013). Utilizing NASA Earth Observations and Remote Sensing techniques to monitor possible threats to protected

areas for decision support in the Chittagong Hill Tract (CHT), Bangladesh, NASA DEVELOP National, ICIMOD, and Nepal. <http://dx.doi.org/10.13140/RG.2.1.1055.9124/1>

National Conference Presentations and Posters

- Dapkus, R., Fryar, A.E., Byrne, D.M., and **Sarker, S.K.** (April 2022). Variability in E. Coli and Tryptophan-like Fluorescence in two karst Basins, Inner Bluegrass Region, Kentucky. Joint 56th Annual North-Central / 71st Annual Southeastern Section Meeting 2022, Oral Presentation at Cincinnati, Ohio. <http://dx.doi.org/10.1130/abs/2022NC-374843>
- **Shishir, S.K.**, Zhu, J., Fryar, A.E., & Jeelani, G. (March 2022). Impact of Climate Change on Hydrological Functioning and Water Availability in a Mountainous Karst Basin. *Research Symposium for Earth and Environmental Sciences (ReSEES) 2022*, Oral Presentation at University of Kentucky, Lexington, KY.
- **Sarker, S.K.**, and Fryar, A.E. (October 2021). Susceptibility of a Mountainous Karst Spring to Climate and Land-use Landcover Change, Liddar Basin, Kashmir, India. *Geological Society of America (GSA) Connects 2021*, Oral Presentation at Portland, Oregon. doi: [10.1130/abs/2021AM-366940](https://doi.org/10.1130/abs/2021AM-366940)
- **Sarker, S.K.**, and Fryar, A.E. (October 2020). Quantifying aquifer responses to recharge in three karst springs in Ozark, Missouri. *Research Symposium for Earth and Environmental Sciences (ReSEES) 2020*, Oral Presentation at University of Kentucky, Lexington, KY.
- **Sarker, S.K.**, and Kominoski, J.S. (May 2019). Quantifying changes in freshwater availability and chemistry during early stages of Everglades restoration. *Florida Coastal Everglades All Scientist Meeting 2019*, Poster Presentation, Fairchild Garden, Miami, FL
- **Shishir, S.K.**, Price, R.M., Scinto, L.J., & Melesse, A.M. (February 2018). Spatial and temporal distribution of total phosphorus concentration in surface water in the Everglades Protection Area. *Earth and Environment Annual Graduate Research Symposium 2018*, Poster Presentation, Florida International University, Miami, FL

Skills

- **Programming:** R (Advanced), MATLAB (Basic), Python ArcPy (Basic)
- **GIS and R.S.:** ArcGIS Desktop 10.8, QGIS 3.10, ArcGIS Pro 3.0, ArcGIS Online, Google Earth Engine
- **Laboratory Equipment:** IDEXX, Microbalance, Electronic Microscope
- **Field Equipment:** YSI, Water pump, Handheld data logger, Pressure Transducer, Garmin GPS, pH meter
- **Others:** Sigma Plot 14, M.S. Excel, MS Access

Media Coverage on Research

- **Has Everglades restoration been effective? The College of Arts, Sciences, & Education (CASE) News**, August 23, 2018. Florida International University, Miami, FL
- **A wetter Everglades on a path to restoration. Live Florida Update | Mirage News**, October 12, 2020, Miami, FL
- **A wetter Everglades on the path to restoration. FIU News, October 13, 2020**, Florida International University, Miami, FL

Professional Experiences

Graduate Teaching Assistant

Department of Earth and Environmental Sciences
The University of Kentucky, Lexington, KY

August 2019 – Present

- **Lecture and Grading Teaching Assistant** — Oceanography: The Blue Planet (Fall 2022, Spring 2022), Environmental Geology (Spring 2022), Earthquake and Volcano (Fall 2021), Geology for Teachers (Spring 2021, Fall 2020, Spring 2020), Environmental Geology (Fall 2019)
- **Lab Instructor** – Principle of Physical Geology (Spring 2021)

Research Assistant

Summer 2021 and Summer 2022

Kentucky Research Consortium for Energy and Environment (KRCEE),
Center for Applied Energy Research (CAER), University of Kentucky, Lexington, KY

- Modified a long-term hydro-stratigraphic database to create a groundwater flow map.
- Compiled newly surveyed lithological logs to the modified database.

Research Technician (Ecosystem Ecology Lab)

October 2018 – August 2019

Institute of Environment, Florida International University, Miami, FL

- Led field sampling on surface water, soil, sediment, floc, and Plants in the Northeast Shark River Slough (NESRS) at the Everglades National Park (ENP)
- Processed soil and water samples and performed laboratory analysis to assess the impact of seasonal variability on ecosystem metabolism and biogeochemical properties of surface water, soil, floc, and plants in the NESRS at ENP
- Developed a long-term database and conducted GIS analysis to support annual reports, charts, graphs, and customized maps.

Graduate Research Assistant (Hydrogeology Lab)

August 2017 – July 2018

Department of Earth and Environment

Florida International University, Miami, FL

- Utilized Geographic information system (GIS) to create detailed contaminant (e.g., T.P.) distribution maps for analyzing water quality and soil chemistry trends in the Everglades ecosystem.
- Collected surface water and groundwater samples to measure chemical constituents (major cations and anions) and isotopic composition to trace groundwater movement.
- Recorded water quality data by YSI and Sonde, transferred data to the spreadsheet and produced charts, graphs, and hydrologic maps.

Graduate Teaching Assistant (Instructor, Environmental Science)

August 2016 – July 2017

Department of Earth and Environment

Florida International University, Miami, FL

- Taught measurement of ocean acidification, uses of colorimeter to measure tannin level, water hardness, total phosphate, ammonia-nitrogen, etc., uses of air quality meter, uses of pH meter, etc.
- Provided lectures on biological pollution, air pollution, energy and environment, environmental shopping, etc.
- Mentored students' final research projects and graded weekly lab reports.

GIS Analyst

September 2014 – June 2016

Sheltech Consultants (Pvt.) Ltd.

Dhaka, Bangladesh

- Created, edited, and managed the GIS data layer.

- Digitized cadastral maps, transferred, and imported data between graphic file formats (geo-referencing)
- Coordinated land use and environmental surveys based on geo-rectified maps (e.g., Cell Locations)
- Analyzed surveyed data and designed and created maps and reports through GIS analysis.
- Provided training and support to department personnel on the use of GIS applications.

Intern

June 2013 – August 2013

NASA DEVELOP National Program

International Center for Mountain Development Organization

Katmandu, Nepal

- Obtained and analyzed GIS and Remote Sensing data and produced land use maps for decision support in monitoring threats to CHT, Bangladesh.
- Coordinated team members remotely from three different locations such as Bangladesh, Nepal, and the USA

Awards and Travel Grants (~ \$3500)

- **2022 Outstanding TA Awards**, Department of Earth and Environmental Sciences, April 29, 2022, University of Kentucky, Lexington, KY. **(\$500)**
- **Graduate Student Congress (GSC) Pillar Award: Academic Success 2021-2022**, April 22, 2022, Graduate Student Congress, University of Kentucky, Lexington, KY. **(\$500)**
- **National Science Foundation funded Critical Zone Research Coordination Network (CZ RCN) Florida workshop travel grant**, April 4-6, 2022, in Gainesville, Florida. **(\$439)**
- **GSC Professional Development Workshop Travel Grant**, April 4-6, 2022, Gainesville, FL. **(\$250)**
- **Travel Grant to attend the Geological Society of America (GSA) annual meeting 2021** and present at the Carbonate CZ RCN sponsored session T59 "Effects of Carbonate Minerals on Critical Zone Characteristics and Processes," October 9-13, 2021, Portland, Oregon. **(\$750)**
- **Travel Grant to attend the Geological Society of America (GSA) annual meeting 2021**, Dept. of Earth and Environmental Science, University of Kentucky, Lexington, KY. **(\$800)**
- **GSA Southeastern Section Student Travel grant, GSA Connect 2021**, Portland, Oregon. **(\$199)**
- **Second Prize, Outstanding Poster Presentation**, Dept. of Earth & Environment, February 2018 Florida International University, Miami, FL **(\$50)**

Research Grant (\$3000)

- **Dissertation Research FERM grant**, Dept. of Earth and Environmental Science, University of Kentucky, Lexington, KY. August 2021 -Present. **(\$3000)**

Leadership Experiences

- **Founding Secretary**, Student Parent Organization (SPO), University of Kentucky August 2022- Present
- **Co-Chair**, Professional Development and Networking Committee, GSC, University of Kentucky August 2021 – May 2022.
- **President**, Bangladesh Student Association (BSA), University of Kentucky, August 2021 – July 2022.
- **President**, Sigma Gamma Epsilon, Chi Chapter, University of Kentucky. May 2021 – Present

- **Graduate Student Representative, Planning Committee**, Graduate Career Consortium (GCC) Southeast Region 2022, Hosted by the University of Kentucky, March 7-8, 2022, Gatton Student Center, Lexington, KY.
 - **Geoscience Graduate Group Representative**, GSC, University of Kentucky
August 2020 – Present
 - **Treasurer**, FCE LTER Student Organization, Florida International University, Miami, FL
May 2017 – May 2018
 - **Founding Secretary**, Environment Club, University of Dhaka, Bangladesh.
May 2012 – July 2013
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Professional Membership

- International Association for Hydrogeologist (IAH) United States National Chapter
August 2019 — Present
- National Ground Water Association (NGWA)
August 2020 — Present
- Geological Society of America (GSA)
August 2020 — Present
- American Geophysical Union (AGU)
August 2021 — Present
- Kentucky Climate Consortium (KYCC)
September 2022 — Present
- National Cave and Karst Research Institute (NCKRI)
November 2022 — Present