

Faculty Member Contact Information

Name	Sanoar Rahman, PhD
Contact Info	
SIUE Email	mrahmaa@siue.edu
Campus Box	1459
Department	Geography and GIS and Environmental Sciences

1 Funded, 0 Unfunded URCA Assistant(s)

Are you willing to work with students from outside of your discipline? If yes, which other disciplines?

- Yes

How many hours per week will your student(s) be required to work in this position?
(Minimum is 6 hours per week; typical is 9)

- 8

Will it be possible for your student(s) to earn course credit?

- Yes, in ENSC 499 for 1 credit hours.

Location of research/creative activities:

- Alumni Hall and Science West at SIUE

Brief description of the nature of the research/creative activity?

- In the United States, more than 90,000 dams have been constructed for purposes such as flood control, hydroelectric power generation, and water storage. While these structures provide significant societal benefits, they have fundamentally altered natural river systems, making it difficult to determine what streamflow conditions would have been in the absence of human intervention. As a result, the effects of climate change and land management on streamflow are often masked by dam operations. This project aims to evaluate the impact of dams on streamflow and to estimate natural river flow conditions using the drainage area ratio method. By reconstructing streamflow records that are not influenced by dam regulation, the study will generate long-term datasets that better reflect natural hydrologic variability. These data will support improved flood prediction

and enhance understanding of how climate and environmental changes influence streamflow dynamics.

- In addition, this project will introduce students to key techniques for streamflow naturalization, equipping them with practical skills in hydrologic analysis. Students will apply these methods through a detailed case study of a local or regional watershed, allowing them to evaluate and interpret streamflow changes in the context of both environmental factors and human activities.

Brief description of student responsibilities?

- The student involved in the project will undertake a variety of tasks designed to provide a holistic research experience. Their duties will include performing literature reviews, gathering, organizing, and analyzing publicly available hydrological data, and utilizing the techniques learned throughout the course of the project. Additionally, the student will generate visual aids such as plots, maps, and other graphical representations to enhance and support their findings. Clear and thorough documentation of methodologies and processes is also expected. Active engagement during lab meetings, prompt completion of assigned readings and exercises, and maintaining professionalism throughout the duration of the project are fundamental to their role.

URCA Assistant positions are designed to provide students with *research or creative activities* experience. As such, there should be measurable, appropriate outcome goals.

What exactly should your student(s) have learned by the end of this experience?

- By the conclusion of this URCA Assistant experience, the student will have established a solid foundation in statistical modeling techniques, data integration, and analytical reasoning. They will gain hands-on experience in applying environmental data to modeling frameworks, effectively presenting results using tables, graphs, and maps, and rigorously validating both data and outcomes. Furthermore, the student will enhance their abilities to identify current gaps and future directions in research, compose scientific reports, and may even have the chance to showcase their work at local or regional events, such as the Illinois State Academy of Sciences. This project will provide the student with essential knowledge, practical skills, and the ability to think critically about complex challenges.

Requirements of Students

If the position(s) require students to be available at certain times each week (as opposed to them being able to set their own hours) please indicate all required days and times:

- The work schedule is flexible, and remote work options are available.

If the location of the research/creative activities involves off campus work, must students provide their own transportation?

- N/A

Must students have taken any prerequisite classes? Please list classes and preferred grades:

- The student should have a good understanding of computational skills.

Other requirements or notes to applicants:

- None