**PhD Research Assistantship in Geography**

The Department of Geography at the University of Alabama is seeking outstanding candidates for a fully-funded Ph.D. research assistantship with a focus on agent-based modeling of farmers’ adaptive water resource decisions in the context of the food-energy-water (FEW) nexus. **Deadline for applications is August 1, 2019.**

In this project, we will investigate the FEW systems impacts of transitioning from rain-fed to irrigation-fed (RFtoIF) agriculture in Alabama. The Deep South states, including Alabama, Georgia, and Mississippi, continue to experience one of the highest poverty rates in the nation. As agriculture plays a significant role in the economies of these states, one potential option for their economic resurgence is through a drastic increase in agricultural productivity. The National Science Foundation (NSF) recently awarded The University of Alabama an NSF: Innovations at the Nexus of Food, Energy and Water Systems (INFEWS) four-year research grant that considers a scenario of transition from RFtoIF agriculture. The study will be conducted in the Mobile River Basin encompassing portions of Alabama, Georgia and Mississippi. Given that FEW resources are intricately linked within the basin, the study will evaluate the impacts of RFtoIF agriculture transition on the distribution-of and interactions-between these three resources. The overarching goal of this proposal is to develop a refined assessment of the feasibility of transition from rain-fed to irrigation-fed agriculture and the potential ensuing impacts on food-water-energy nexus in regions of the Deep South.

**About the position**

The successful candidate will join the Laboratory for [Human-Environment Interactions Modeling and Analysis](https://heima.ua.edu/) (HEIMA) led by Dr. Nicholas Magliocca, and will collaborate with the project’s other researchers and Ph.D. students in the Department of Civil, Construction & Environmental Engineering. The successful candidate’s primary responsibilities will include: agent-based modeling of farmer crop choice and irrigation decision-making, and the development, testing, and implementation of farmer interview questions and a cognitive mapping exercise. The application will also work with Dr. Magliocca to coordinate with the rest of the project team to develop RFtoIF transition scenarios to inform hydrological and crop modeling.

The position carries a full tuition waiver, a stipend, and health insurance. Additional funding for conference presentations will also be provided. The opportunity to gain teaching experience is also available, in which case the period of funding support can be extended. **Expected start date will be January 2nd, 2020**, or as otherwise agreed.

**Qualifications**

Qualified students will have expertise in some or all of the following: GIS and spatial analysis, agent-based modeling, spatial statistical modeling, network analysis, or similar computational approaches. Previous experience and proficiency with programming with NetLogo, Matlab, Python, or R is desirable.

**Application**

A complete application should contain the following documents:

* A cover letter including a description of how you will address the research topic, your reasons to apply for the position, and your contact information
* A curriculum vitae
* If applicable, copy of completed BSc and/or MSc thesis and other original research publications
* Copies of degree certificates, including documentation of completed academic courses and obtained grades
* Contact information for two persons willing to act as references

**Additional Information**

The student will join the growing Human-Environment Interactions and Simulation Lab where our research interest span an impressive array of topics and interdisciplinary approaches. Also, take a virtual tour of UA’s beautiful campus via drone here: <https://vimeo.com/104625184>. More information is available from the following links: Department of Geography: <http://geography.ua.edu>; Graduate School: <http://graduate.ua.edu>; University of Alabama: <www.ua.edu>.

The University of Alabama is an Affirmative Action/Equal Opportunity Employer and the University especially encourages applications from women and minorities.