Satellites and data science to build climate change resilience in Sub-Saharan Africa
Bren Environmental Leadership Program Summer Fellowship

Project Background
Climate change is altering rainfall and temperature across Sub-Saharan Africa, posing significant challenges to food security and the livelihoods reliant on rainfed agriculture. Despite these challenges, the region harbors vast underutilized water resources, presenting a unique opportunity to enhance irrigation practices and improve agricultural resilience.

This project investigates the potential of irrigation to offer a sustainable and scalable approach for agriculture and to adapt to climate variability. While large-scale irrigation investments have historically underperformed, emerging forms of grass-roots irrigation investment show significant promise. This project will leverage data science and satellite data to assess the effectiveness of such systems, understand the factors driving their adoption, and evaluate their potential for continued success.

We are looking for an undergraduate student who is eager to contribute to meaningful research that could help inform policy and investment for agricultural practices in Sub-Saharan Africa. You will gain hands-on experience with data analysis, learn about the intersection of climate change and agriculture, and contribute to work that can make a difference in the lives of many.

Responsibilities
This summer, the chosen candidate will work alongside a Bren PhD student mentor to:
- Conduct a short literature review to familiarize themselves with the state of the literature on irrigation in Sub-Saharan Africa
- Gather and process data, including climate, market, and migration data.
- Conduct preliminary analyses
- Interpret these results and submit them to be presented at the American Geophysical Union (AGU) fall meeting, which they will have an opportunity to attend (happening in Washington, DC this year)

Qualifications
- Interest and enthusiasm in the project
- Proficiency in programming in Python or R, particularly data processing and manipulation.
- A basic understanding of statistics (p-values, linear regression)
- Proficiency using GitHub

Details
The position is 10 weeks, 35 hours per week, with exact dates flexible between mid-June to mid-September. The work can be conducted remotely or in person. Payment is $18.57/hour. This position is part of the Bren Environmental Leadership Program – the student will participate in professional development training during the summer and a poster session at the Mantell Symposium on Environmental Justice and Conservation Innovation in Fall 2024. Applicants must be full-time UCSB continuing undergraduate students (not graduating within the 2024 calendar year).
How to Apply

Please submit applications to this form by March 24 at 11:59pm. Applications should include:

- A brief statement describing why you are interested in the project (1 paragraph) and how your experience and qualifications make you a good fit for the position (1 paragraph). If applicable, include links to your previous projects on Github.
- We are committed to fostering an inclusive environment and supporting diverse students in Environmental Science, including those from underrepresented, low-income, and first-generation college backgrounds, and those active in DEI, environmental justice, or social justice. Please include insights (~ 1 short paragraph) into how your experiences or perspective might shape your contribution to the BEL community.
- A resume or CV, including GPA, relevant coursework (programming, statistics, environmental science, geography, economics, etc.), any relevant field or lab experience, and anticipated quarter and year of graduation
- Unofficial transcript (append to the same document as your resume or CV)

Interview and Selection Process: Approximately two weeks after the submission deadline, applicants selected for interviews will be notified by email. Though only some students will be selected for interviews, all applicants will be notified of the status of their application when the interview/selection process is complete (approximately 3-4 weeks after application deadline).