



Urban Resilience to Extremes Sustainability Research Network Research Experiences for Undergraduates (REU) SUMMER 2017

Opportunity 3: Phoenix, AZ

Does vacant land in UREx SRN cities contribute to resilience or vulnerability?

Under the guidance of Drs. Nancy Grimm and Lauren McPhillips at Arizona State University- Tempe, the student will characterize land cover and properties for a subset of vacant lots in several of the UREx SRN cities where data are available (e.g. Phoenix, Portland, New York) to determine what ecosystem services or disservices are being provided by vacant land in these cities.

Vacant land in cities can comprise a substantial fraction of the total land area. This land can vary widely in its land cover or use- e.g. bare soil to community garden. This wide range in cover or use can lead to a correspondingly wide range in potential ecosystem services or disservices, such as stormwater absorption or exacerbation of the urban heat island effect. The REU project will focus on characterizing land cover and properties for a subset of vacant lots in several of the UREx SRN cities. The overarching question to be addressed is, *what ecosystem services or disservices are being provided by vacant land in these cities?* This characterization will leverage remote sensing data for all of our network cities, as well as some direct sampling of soil from a subset of sites in Phoenix.

More information about the Grimm Lab group (the home for this project) can be found here (<http://www.grimm.lab.asu.edu/>). Our group includes researchers working on projects from urban to desert stream ecosystems, but the student would also get to interface with the greater UREx SRN community based at ASU and other institutions.

REU Activities:

- Using Google Earth and ArcGIS software to assess the land cover of vacant lots in several SRN cities
- Visiting some vacant properties in Phoenix to evaluate soil properties such as infiltration rate
- Processing soil samples in the lab for certain characteristics
- Maintaining careful records of all field, laboratory, and computer analyses
- Keeping data and digital files organized
- Analyzing data using statistical and graphing software
- Producing a final summary of the project (paper and/or poster)
- Potential for contributing to future peer-reviewed paper on vacant lots

Desired Qualifications, Interests and Skills:

- Enthusiastic and well organized
- Able to work independently, with guidance from mentors
- Interest in lab and field work and GIS (geographic information systems)
- Interest in sustainability, climate change & environmental science
- Experience with ArcGIS software is a bonus, but not required