



USGS NSF GRIP Opportunity

USGS Center: Western Geographic Science Center

Project Title: Understanding Vegetation Response to Climate: Exploiting New Research Opportunities with USGS Near-Surface Remote Sensing

Project Hypothesis or Objectives: The USGS, through its Land Remote Sensing and Land Change Science programs, is dedicated to fostering the development, operation and application of remote sensing technologies for observing and analyzing the global land environment and its changes over time. In recent years, our research team at USGS-WGSC has contributed to this mission by developing state-of-the-art, multispectral imaging systems that provide improved capabilities for near-surface, landscape-scale observations and monitoring of vegetation.

Our USGS instruments are part of an expanding, international observational network that currently includes study sites in the Southwestern U.S., the Amazon region of Brazil, and the subarctic region of northern Europe. In FY 2016, additional sites are proposed for public and tribal lands in Arizona, as well as the arctic region of Russia. This growing network provides exciting and challenging research opportunities. The overarching objective of the proposed project is to exploit the observations from these new sensors, in combination with satellite-based observations from Landsat, to improve understanding of how vegetation responds to seasonal, interannual and longer-term changes in environmental conditions, including land management, disturbance, drought and climate change.

As a member of our research team, the GRIP Intern will support this objective through one or more potential avenues, each aimed at advancing USGS science goals while achieving an optimal match to the Intern's particular interests, experience, skills and career objectives in Earth system science and/or related remote sensing and computer technologies.

Duration: 12 months

Internship Location: Flagstaff, AZ

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| <p>Area of Discipline:</p> | <p>Computer Science, Ecology, Climatology, Physical Geography, Statistics</p> |
| <p>Expected Outcome:</p> | <p>The project will achieve improved mechanisms for timely processing and analysis of the image data from our expanding USGS in situ remote sensing observation network. As an integral member of our project team, the intern will be involved in the full scope of our research and associated U.S. and international collaborations. He/she will benefit from unique, inter-disciplinary experience and insights at the interface of computer science, remote sensing and land change science. In turn, the USGS will benefit from scientific advancements by facilitating effective utilization of its recent investments in improved, near-surface remote sensing capabilities, which complement and reinforce an ongoing commitment to satellite-based Earth observations with Landsat.</p> |
| <p>Special skills/training Required:</p> | <p>Skill/training in two or more of the following are required: computer science, scientific programming, optical remote sensing, digital image processing, geospatial statistics and data analysis, terrestrial ecology, climatology.</p> |
| <p>Duties/Responsibilities:</p> | <p>The intern's primary role will be matched to their particular interests, experience, skills and career objectives in remote sensing, land change science and/or related applications of computer technology for geospatial data processing and analysis. For an Intern with a background in computer science and scientific programming, the role will emphasize development and application of innovative software tools for processing and quantitative analysis of the time-series, digital images acquired by our USGS near-surface remote sensing systems. For an Intern with a background in land remote sensing, geospatial data analysis, terrestrial ecology and/or climatology, the role will emphasize the application of such tools to investigate selected research questions concerning vegetation-climate interactions that benefit from integrated analysis of time-series observations from Landsat and field-based remote sensing.</p> |
| <p>Point of Contact or Mentor:</p> | <p>Dennis G. Dye</p> |
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