



NSF EPSCoR WORK-FORCE DEVELOPMENT HIGHLIGHTS



Meet Daniel Chavez

Daniel is an undergraduate student at the University of

Nevada, Reno who is part of the Nexus project's cyberinfrastructure team. He is currently working on web interfaces and user interaction for large data display/usage. Being a first-generation college student and scheduled to graduate in May, Daniel will continue on to pursue his graduate studies in the fall.

Workforce Development and the Nexus project

Over 80 applications were received for the Undergraduate Research Opportunity Program, and 14 of the applicants were chosen. These students will present their research findings at the Nevada Undergraduate Research Symposium in April.



The STEM Career Investigative Program has completed its first semester. Over a 6-week

period, 41 high school students met and heard about the research of 6 faculty from UNR, 3 of whom are involved in the Nexus project.

NSF EPSCoR RESEARCH & EDUCATION HIGHLIGHTS

The Solar-Energy-Water-Environment Nexus in Nevada Project Launch

In 2013, the Nexus project, which will research solar energy development and its impact on water supply and the environment, was launched in Nevada. The cornerstone of the project, the Nevada Environment, Water and Solar-Testing and Research Facility (NEW-STAR), will be located in Boulder City, Nevada. The project will increase intellectual assets and innovations for academia and industry in Nevada to improve the development and reliability of renewable and solar energy supply. The research initiatives involve the University of Nevada, Las Vegas, University of Nevada, Reno and Desert Research Institute. There are more than 80 participants statewide working on this project to include research faculty, graduate and undergraduate students and program administrators.

OUR MISSION

Our mission is to advance knowledge and discovery through research on solar energy generation technology, its environmental impacts and associated water issues, and accelerate this research by developing new capabilities in cyber-infrastructure. Benefits include diversifying Nevada's economy, building its workforce, and developing innovative approaches to STEM education.

Participation and Diversity

More than 1,600 students participated in campus meetings and informational workshops – 1,580 of these students were from Nevada GEAR UP. Through a collaborative partnership with the Nexus Science Team and the school districts, solar laboratory kits are being developed to be introduced into Title 1 high schools throughout Nevada. Additional support has been provided by industry partner Nevada Power to increase the development and implementation of more solar laboratory kits.

Increasing undergraduate research participation from predominantly undergraduate institutions (PUIs), including state and community colleges, is currently underway. Collaboration with the Council on Undergraduate Research will provide additional opportunities and resources to increase PUIs' involvement in research. NSHE, through NSF funding, will host a CUR workshop in September 2014.

Undergraduate Visualization & Modeling Network (UVMN) Program

UVMN provides professional development for instructors and students interested in introducing modeling and visualization into their earth and environmental science courses. A summer workshop will be conducted for instructors this May and introduced to students in the fall. This project is funded through the Track 2 The Western Consortium for Watershed Analysis, Visualization, and Exploration.



NASA EPSCoR EDUCATION & WORKFORCE HIGHLIGHTS

There are four undergraduate students who are funded on the Planetary Exploration program will have the opportunity to work and gain hands-on experience at NASA Ames Research Center this summer.

The research program focusing on Aerospace Robotics will provide graduate and undergraduate students courses which will target industry and academia needs in active materials technology related to science and engineering.

Three graduate students and eight undergraduate students participated in a NASA EPSCoR project focusing on Aerosol Properties research. Six of these students bridged their education from Truckee Meadows Community College to continue into a baccalaureate program at the University of Nevada, Reno.

As a result of a collaborative partnership with the Washoe County School District's Gifted & Talented Program and the Aerosol Properties research team provided a high school student the opportunity to intern in the teams' laboratory to develop an "iron lung" for the storage and delivery of fine aerosols. He also co-authored a manuscript describing and characterizing the "iron lung" that has been submitted to a peer-reviewed journal.



The web-based educational platform centered on global climate change has been used to educate middle and high school students in Nevada through a partnership with the Desert Research Institute's Green Power Initiative.



NASA EPSCoR RESEARCH PROJECTS HIGHLIGHTS

Nevada NASA EPSCoR has received \$2,625,000 to fund four research infrastructure grants which are focused on specific NASA directives.

Advanced Computer Vision, Robotics, and Visualization Algorithms for Improving Planetary Exploration and Understanding

The team developed a new approach for detecting and extracting horizon lines from 2D images using machine learning and local features for the planetary rover. The project has allowed the team to collaborate more closely with IRG researchers at NASA Ames. Various components of the software that has been developed at University of Nevada, Reno, Desert Research Institute, and University of Nevada, Las Vegas have already been submitted to IRG.

Advanced Electroactive Polymer Sensors and Actuators for Aerospace Robotic

The interdisciplinary research team includes faculty from University of Nevada, Las Vegas, University of Nevada, Reno and Truckee Meadows Community College. The project began last year and will focus on advancing the development and understanding of materials that are used for sensing and applications in emerging robotic and space vehicles and systems. Working in harsh environments in space (low pressure, cold and high temperatures, microgravity, and cosmic radiation) is quite challenging. This project focuses on the research of materials and design used within these environments.



Characterization of Aerosol Optical Properties for Remote Sensing and Radiative Forcing

The experimental part of this project has been completed. A patent has been submitted on the technology developed through the research and experimentation process. The development of a University of Nevada, Reno special topics graduate class ATMS 792, titled "Special Problems: Satellite Remote Sensing of the Atmosphere," may lead to this course becoming a regular class

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TOTAL EPSCoR PROJECT FUNDING FROM 1993-2013

National Science Foundation

Current Projects
2013 - 2018 | \$22,749,000
Past Projects
1993 - 2013 | \$43,613,671

National Aeronautics and Space Administration

Current Projects
2013 - 2018 | \$3,350,000
Past Projects
2001 - 2013 | \$5,125,000

Department of Defense

Past Projects
2002 - 2011 | \$4,177,659

Department Of Energy

Past Projects
2000 - 2010 | \$3,550,000

National Institutes of Health

Past Projects - Biomedical Research Infrastructure Network
2002 - 2005 | \$7,163,425

RETURN ON INVESTMENT FROM EPSCoR

\$143,518,340

Through follow on funding, since EPSCoR inception