Spring / Summer 2013

DISCOVERIES

Science, Research & Technology News from the Nevada System of Higher Education

EPSCoR NEVADA

Nevada System of Higher Education System Sponsored Programs Office

DISCOVERIES

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(NSHE) System Sponsored Programs Office provides infrastructure support to federal and state programs advancing the development of Science, Technology, Engineering & Mathematics (STEM) in Nevada.

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Front Cover Illustration by Dianne Star

Researchers from Nevada NSF EPSCoR and the Long Now Foundation working together to establish two sets of monitoring stations across the elevational gradient in two separate Nevada mountain ranges.

NSHE mission statement:

"The mission of the Nevada System of Higher Education is to provide higher education to the citizens of the state at an excellent level of quality consistent with the state's resources. It accomplishes this mission by acquiring, transmitting, and preserving knowledge throughout the region, nation, and world. The System provides an educated and technically skilled citizenry for public service, economic growth and the general welfare, contributes to an educated and trained workforce for industry and commerce, facilitates the individual quest for personal fulfillment, and engages in research that advances both theory and practice."

System Sponsored Programs and EPSCoR Vision Statement:

"To promote the opportunities and collaborations within science, research, education, and technology for NSHE institutions in Nevada."

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Director of System Sponsored Programs & EPSCoR Office: Lori Brazfield

Applications are everywhere today, from phone apps, computer apps, to applications for medical science. Our world is significantly impacted by science and technology advancements that engage us into more news, more gadgets, and more contact with global communities. Our scientists and engineers are the pioneers of this new world of technology, which exemplifies the importance of science, technology, engineering and mathematics.

Through NSF EPSCoR funding, our researchers are developing an online network to access real-time data through the Nevada Climate Change Data Portal, a compilation of resources available to the scientific community and general public about climate change in our state. This resource will boost Nevada's cyberinfrastructure connectivity between our research institutions.

Providing tools for students and teachers to engage in science is a fundamental goal of Nevada EPSCoR. Through projects such as the Climate Change Cyberlearning Curriculum Development Program (C4D) and NeCoTIP, our faculty has developed cutting-edge applications for science curriculum on climate change and mathematics, providing students with technological presentations to science and math problems that can be easily applied to real-world analysis.

Supporting student development is emphasized throughout our institutions. Programs such as the highly successful Nevada Gear Up program has allowed students to stay in college and finish their education; and the NSF Graduate Fellowship Program, which funds graduate level research work. The stories of student success are within these pages, and their stories are just beginning…

NSF EPSCoR Project Director: Dr. Gayle Dana

The Nevada Climate Change project, funded by the National Science Foundation, provides infrastructure support to the Nevada System of Higher Education for the development of science, education, and outreach. This project is creating a statewide interdisciplinary program that stimulates transformative research, education, and outreach on the effects of regional climate change on ecosystem services (especially water resources) and supports use of this knowledge by policymakers and stakeholders.

The advancements of this project are evident in the pages of *Discoveries*, from the progress of the Nevada Climate Change Portal for scientific research and communication between research institutions, to the development of applications for student teaching and teacher development. Our talented researchers are the core drivers of science research in Nevada. Through NSF EPSCoR funding, two outstanding researchers – Dr. John Mejia, from the Desert Research Institute; and Dr. Haroon Stephen, from the University of Nevada, Las Vegas – were hired as faculty as the result of a national competition. Their success as EPSCoR post docs and new faculty members is a testament to the importance of EPSCoR funding in the state.

Retaining faculty and researchers is another goal of Nevada EPSCoR, within the pages of *Discoveries*, you will read about talented scientists, including Dr. Lynn Fenstermaker from the Desert Research Institute, who provides experience, knowledge, and guidance to our current NSF Climate Change project. Our EPSCoR community understands the significance of science communication and utilizing applications to this endeavor. We continue to strive forward with new opportunities to communicate our understanding of science and technology, while delivering this knowledge via applications that allow scientists, faculty, students, and the public to access comprehensive information on climate change to gain a better understanding of our environment.

NASA EPSCoR Project Director: Dr. Christian Fritsen

NASA EPSCoR and the Space Grant Consortium continue to strengthen the curricula of higher education, build research capacities and motivate students to pursue aerospace technology careers. The program helps the workforce development for the state, and training of continuous pool of talented young scientists and engineers for the NASA Space Agency.

The Nevada NASA EPSCoR program strengthens the research capabilities of Nevada to achieve a competitive advantage in aerospace engineering and space and earth science research, while supporting areas of strategic importance to NASA's missions and the State of Nevada. Current research projects include: research on aerosols that have implications for air pollution and determining their role in climate change and research to advance computer and robotics support of long-term missions with the use of rovers and high-quality 3D maps for sophisticated path planning algorithm.

Through the NASA Space Grant Consortium program, Nevada continues to support the expansion of workforce training activities and thus increase the capacity for STEM education in the state. Our students thrive as young scientists, participating in hands-on training events, such as balloon launches and recoveries, the NASA Moonbuggy competition, as well as the lighter than air vehicle competitions.

Nevada Receives National Science Foundation Research Award for $20 Million To Study Solar Energy Impacts and Develop Strategies for Renewable Energy Industry

NSF has awarded the Nevada System of Higher Education - EPSCoR Program $20 million over a period of five years to study the impacts of large-scale solar power generation and develop environmental mitigation strategies for renewable energy projects.

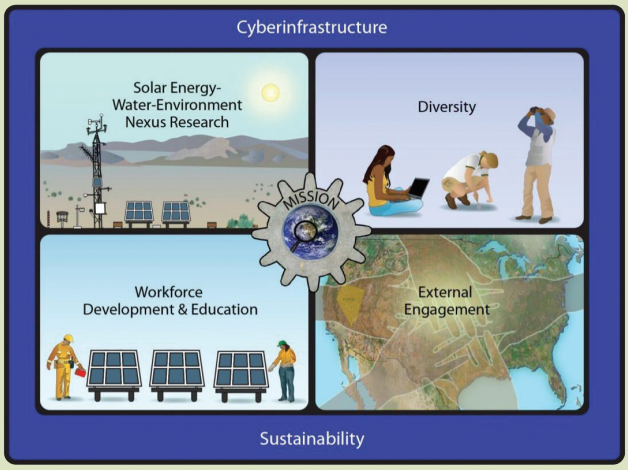
Innovation and discovery are at the forefront of this research, in particular developing conservation tactics associated with water issues in desert regions. The funding will increase the opportunity for Nevada's higher education institutions to be competitive through research conducted on solar energy generations, its environmental impacts, and associated water issues.

The Nevada Environment, Water, and Solar Testing and Research Facility (NEW-STAR) will be established through this funding. Research at the facility will focus on engineering/technological solutions to repel arid dust and minimize water usage, while examining the desert ecosystem responses, and developing mitigation tactics to preserve the environment.

This system-wide partnership involves the research institutions of the University of Nevada, Las Vegas; the University of Nevada, Reno; and the Desert Research Institute. Further involvement includes faculty and students from NSHE undergraduate institutions.

The project will work in tandem developing new capabilities in cyberinfratructure, essential to interdisciplinary collaboration among scientists and engineers. The funding will be used to establish the Nevada Research Data Center (NRDC) for innovative data management, high speed communication, new web servers, scientific software, visualization tools, and high connectivity equipment.

In addition, NSHE researchers will study potential new areas of economic development for Nevada, emphasizing new opportunities for workforce development, diversity, hiring new faculty, and providing more scholarship opportunities for undergraduate and graduate students in STEM fields.



Four goals will support the mission of Nexus for long-term sustainability and project integration:

Goal 1

Solar Energy-Water-Environment Nexus Research: Advance new knowledge and discoveries in solar energy, water, and the environment.

Goal 2

Diversity: Develop a comprehensive approach that leads to an increase in the number of underrepresented students who graduate with STEM degrees.

Goal 3

Workforce: Develop a sustainable STEM workforce by creating a pipeline of STEM-trained students, educators, and workers while increasing public understanding of solar energy, water, and the environment.

Goal 4

External engagement: Enable Nevada scientists to collaborate and develop relationships with industry, institutions, and the public to strengthen research that will support the economic development of Nevada.

"This green energy project presents an outstanding opportunity for our students, faculty and all Nevadans as this facility comes on-line in Boulder City. Our researchers will play a critical role in advancing the knowledge base of this emerging technology, but also provide an incredible resource to our underrepresented students in the areas of STEM."

Dan Klaich, Chancellor of the Nevada System of Higher Education

NevCAN

NevCAN provides scientists and students with full access to climate variability and its impact along elevation gradients within the most arid regions of the US. This data will allow greater understanding of variables that affect temperature, precipitation, and water availability in dry regions.

Using Technology for Humanitarian Aid

Students are working on a "smart parachute" that can be deployed from unmanned aerial vehicle and drones. The applications have several uses beyond military applications; these can be used as first responders and humanitarian aid relief for precision drop of aid packages.

Wireless Power Transmission in Space

Creating a wireless power transmission (WPT) in space that could charge or remotely power multiple systems would be of great value for civilian or military applications. A team of scientists from Nevada are working to design a control system on a chip for a two dimensional liquid crystal beam steering system for WPT applications in space. As part of the effort, the team was able to meet with two NASA centers, submit eight proposals to local, regional and national agencies, and present two conference papers. UNLV meet with Dryden Flight Research Center and the Jet Propulsion Laboratory concerning the potential of wireless power transmission for space and terrestrial applications. Lab testing to characterize the liquid crystal beam steering system will begin this year. Based on this work, the investigators plan to demonstrate an electrically steered WPT system in a lab setting by the end of 2013.

FEATURE - Dr. Lynn Fenstermaker NV Climate Change

Nevada Climate Change is a timely project that requires the participation of exceptional people, with specific skills and backgrounds; people who possess a wealth of technical expertise in tandem with a lifelong love of the environment. One such person is Dr. Lynn Fenstermaker, Associate Research Professor, Division of Earth and Ecosystem Sciences, Desert Research Institute.

Dr. Fenstermaker acquired her love for earth sciences and ecology early on in her life, while playing in the woods and rural back roads near her home in Pennsylvania. Her love of nature led her to join the local 4-H club, where she found joy studying rocks, fossils, minerals, and going on field trips. She was also fascinated, as were so many millions of people, with Jacque Cousteau - the oceanographer who was able to successfully combine science and entertainment. After a field trip on a boat in the Atlantic Ocean where she became a bit seasick, Dr. Fenstermaker made a decision not to pursue oceanography and decided on the earth sciences for her career path.

During the course of gathering information on different university programs to apply for entrance, Lynn learned about Penn State University, especially that she could try out for the soil judging team and enter a competition that awarded the winner a free trip to Montana. Thus, began her undergraduate studies at Penn State, studying agronomy, environmental resources, and remote sensing, culminating with a Masters in Agronomy. Reflecting back on this Lynn said, "I didn't win the trip to Montana, although I was told I scored really high, I lost out to a student who had been in the program a bit longer." More importantly, she did receive the education that would become the foundation for her life's work.

One of the skills needed in studying climate change is remote sensing. It was just that skill set that brought Lynn to Las Vegas, in 1984, to work at Lockheed Martin, a subcontractor for the Environmental Protection Agency, and later at the Harry Reid Center. She joined the Desert Research Institute in 1990 and decided to pursue a PhD at the University of Nevada, Las Vegas in 1993. At first, the young woman from a rural region was not terribly excited by the idea of moving to "sin city," but a trip west exposed her to the beautiful landscape, the proximity to undisturbed areas and a number of national parks that define Nevada and the region.

Dr. Fenstermaker's background and training in plant physiological ecology gives her a unique perspective on climate change, in that she is concerned with the effect of climate change on plant life. These changes can be measured through remote sensing data from satellites, an area that she has contributed to as a result of her participation in projects made possible by the current National Science Foundation Experimental Program to Stimulate Competitive Research (EPSCoR) award.

On September 1, 2008, the Nevada System of Higher Education (NSHE) received an award of $15 million from NSF EPSCoR. The five-year award funded science, education, and outreach infrastructure at the University of Nevada, Reno; the University of Nevada, Las Vegas; the Desert Research Institute; Nevada State College; and NSHE's community colleges for the study of climate change and its effects on Nevada. This project has created a statewide interdisciplinary program that stimulates transformative research, education, and outreach on the effects of regional climate change on ecosystem services (especially water resources) and supports use of this knowledge by policy makers and stakeholders.

Dr. Fenstermaker is currently involved in the water research component of the NSF EPSCoR project, which includes the construction and operation of two transects of monitoring stations called the Nevada Climate Echohydrological Assessment Network (NevCAN).

NevCAN's primary purpose is to collect data for long-term assessment of climate variability and change and its impact on ecological and hydrological processes and function in Nevada. NevCAN consists of 12 monitoring stations; 4 in the Sheep Range north of Las Vegas, and 8 in the Snake Range along the east central border of Nevada where the Great Basin National Park is located. Although both transects have monitoring stations in key vegetation zones that vary with elevation, the Snake Range Transect has stations that extend from valley to mountain top, from west to east. No other state has built a similar infrastructure to assess climate change impacts on ecosystem and hydrological function.

One of the project's initiatives is a partnership with the local schools, including a summer institute where teachers receive training on how to teach climate change, and The Learning Lab located at Green Valley High School which

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Dr. Lynn Fenstermaker continued from page 3

transforms science classrooms by providing full, wireless access to cyberlearning materials that have been developed under the Nevada EPSCoR project, Climate Change Cyberlearning Curriculum Development (C4D). Lynn wants to see more children grow up enjoying science as much as she does. She encourages parents to regularly provide their children with experiences in the great outdoors, with visits to places like the national parks and the Springs Preserve, which is located in Las Vegas. Laptop computers and the new tablets offer unique opportunities for children to take advantage of online learning with free programs such as Google Earth, a NASA learning site that provides live TV, and a plethora of other interesting websites and apps from which to choose.

NV Climate Change is already having an enormous impact on the state of Nevada. The outreach extends to federal agencies such as the Bureau of Land Management, Fish and Wildlife Service, Southern Nevada Water Authority, and the Truckee Meadows Water Authority. Members of the Native American tribes are also actively involved and engaged in the project.

One significant and tangible achievement of NV Climate Change is the data portal, called the Nevada Climate Change Portal (NCCP). NCCP not only provides information about the climate change project, it also provides real time access to the NevCAN data and educational materials. Stakeholders and members of the public are able to access any information and data at no cost. All of this has positive effects on sustainability research, education and training, scholarships, fellowships, climate modeling, and public policy.

Dr. Fenstermaker talks excitedly about the NV Climate Change Project and its implications for the state and the country. "It is seen as a springboard for closer collaborations with land management and policy agencies to address climate change. Currently the National Weather Service is including NevCAN data in their forecasting models. The U.S. Fish and Wildlife Service at the Desert National Wildlife Refuge is quite enthusiastic about the NevCAN monitoring station webcams, which allow them to see what is happening on their land in real time. At a time when the economy is front and center on everyone's mind, this research could open the door to new industry in science and technology which means more jobs for Nevadans."

For information on Dr. Fenstermaker, visit:
http://www.dri.edu/lynn-fenstermaker

To visit NCCP, go to: *http://sensor.nevada.edu/NCCP/*

National Science Foundation Graduate Fellowship Recipient: Carmen Vallin

As a first-generation college student and young mother, Carmen Vallin is determined to stay in college and pursue a doctoral degree in microbiology. She credits her mentors at UNLV for guiding her career choice and motivating her to continue with her studies, while managing her life as a single-parent to a five year old daughter, and working full time. She started college with the desire to pursue a degree in medical science. By the time she finished an undergraduate degree, she realized that she enjoyed research and decided on a degree in Biology with a concentration on cellular molecular structure.

Carmen was awarded the NSF EPSCoR Undergraduate Research Opportunity Program Scholarship in 2011-2012, and received the NSF Graduate Fellowship award recently. The Fellowship award provides funding for outstanding students pursuing master and doctoral degrees in science, technology, engineering and mathematics disciplines. This program encourages students to pursue STEM careers and reinforces capability building in the state. The Fellowship will allow Carmen to pursue a doctoral program this fall. "My daughter is my inspiration to stay in school. I would like to serve as a role model for her and other young girls who look around and don't see themselves represented in the STEM fields," she says.

Aside from her busy schedule, Carmen makes time to volunteer in the community and promote science to younger generations. She is currently the Chair of the Outreach Committee of the American Society for Microbiology Students Chapter at the University of Nevada, Las Vegas. Currently, her group is working with the Natural History Museum of Las Vegas to develop fun experiments that will introduce K-5 students to science. Carmen credits her family for their unwavering support as she pursues her dream of a college education. "I hope to honor my parent's sacrifices by earning a doctorate degree, working as a university professor and researcher, and serving as a role model for the Hispanic community."

Dr. John Mejia

Assistant Research Professor/DRI Division of Atmospheric Sciences

Dr. John Mejia recently participated in EPSCoR's Climate Change Seminar Series at UNLV. Afterward, we sat down to talk for this edition of Discoveries. One thing that struck me throughout our conversation is his dedication and enthusiasm for his work. It became crystal clear to me from the start that Dr. Mejia was meant to do the type of work he now does for the EPSCoR program in Nevada.

I began our conversation with Dr. Mejia by asking him to tell me how he ended up here in Nevada from his native Colombia. He received his Bachelor of Science degree in Civil Engineering/Hydrology from the National University of Colombia, but he always had an interest in Atmospheric Sciences. During his university studies, he completed a master's thesis in precipitation studies, which caught the eye of a faculty member from the University of Oklahoma who happened to be working in Colombia at the same time as Dr. Mejia. Subsequently, this faculty member offered John the opportunity of a lifetime—to pursue a PhD degree in Atmospheric Sciences in the U.S.

Dr. Mejia traveled to the University of Oklahoma, and in 2002, he became a Research Assistant through the Cooperative Institute for Mesoscale Meteorological Studies/NOAA (the National Oceanic and Atmospheric Administration). NOOA which actively provides students with a variety of opportunities to develop academic excellence and scientific rigor in NOAA's areas of expertise (e.g., ocean and atmospheric science/research, fisheries, satellites, weather, etc). Many individuals graduating from these education programs continue their professional careers in the sciences and work for NOAA or partner institutions. The collective efforts of these opportunities are aimed at increasing the size and diversity of the pool of future candidates for STEM-related professional positions.

During this time, John worked at the National Severe Storms Lab in Norman, OK, conducting field work and data analysis in atmospheric sciences taking him to more than twenty countries around the world. He conducted additional field campaigns in additional countries through several federal organizations. These opportunities came about as a result of efforts by U.S. faculty to educate people in South America regarding atmospheric sciences. His multidisciplinary background has enabled him to work across science, technology, engineering, and mathematic disciplines.

In 2009, John won a postdoctoral fellowship from Desert Research Institute in Reno, through the EPSCoR program in Nevada. That led to his current position as an Assistant Research Professor in the Division of Atmospheric Sciences. John is working on the climate modeling component effort as part of the Nevada NSF-EPSCoR Climate Change project. He is focused on the implementation and development of "statistical" and "dynamical" based downscaling techniques using Global Climate Modeling products into space scales relevant for regional and local impact studies.

When I asked John what piece of advice he would share with his students now that he's in a leadership role, he thought carefully and offered this: "Students should choose work that doesn't feel like they're working. They should pursue work that they really like and want to do, but not just because they are getting paid to do it." He was most influenced by his mentors, who treated John and other students as equals while providing opportunities for them to expand their own experiences. It was this experience that inspired John to want to serve in that same mentor role to his own students. John feels very fortunate to have been able to stay in Nevada and involved in the Climate Modeling project once his fellowship ended. Ideally, he'd like to stay and continue his work here for as long as he can. He enjoys working with his colleagues and students and feels very happy to be in this position.

Asked to summarize what Nevada EPSCoR has meant to him, John told me that "EPSCoR has been a stimulus for work in climate modeling here in Nevada, and has been instrumental in creating interdisciplinary connections with other groups also working in climate change research not only in the state, but nationally as well. It provides important tools and resources that scientists like me have access to, such as the data portal developed through the Cyber-infrastructure component. These tools help us to solve the problems we pose in our proposals."

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Dr. John Mejia continued from page 5

It was obvious in talking to Dr. Mejia that through his hard work and dedication, along with the opportunities that have been presented to him, he's found his calling in his work on climate modeling—something few people get the chance to do. He is also a good example of how EPSCoR programs are helping to bring, nurture, and keep a diverse group of scientists involved at the forefront of climate change modeling research in our state.

--By Mirna Mejia, Guest Writer, Nevada State College

For more information about Dr. Mejia, visit:
http://www.dri.edu/john-mejia?showall=1

Nevada Climate Change Portal

Real-time climate data is now easy to access through the Nevada Climate Change Portal. Check out the library - a compilation of resources related to general climate change topics, research, and Climate Change project activities. Now scientists, faculty, students and land managers can have easy access to climate change information in Nevada.

http://sensor.nevada.edu/NCCP/

Developing Apps Through the Extreme Science and Engineering Discovery Environment (XSEDE) Cyberinfrastructure Training

As part of an ongoing project and collaboration between the National Science Foundation and EPSCoR Nevada, a workshop was offered at the College of Southern Nevada (CSN) and at Great Basin College (GBC), in Elko, NV. Entitled "Harnessing XSEDE for CyberInfrastructure and Computational Science on Your Campus," the workshop was hosted in partnership with XSEDE (formerly Teragrid). Subsequently, it was presented at GBC remote campus sites at Ely, Winnemucca and Pahrump.

Instrumental in organizing the event was Dr. Steve Gordon, Director of the Ohio Supercomputer Center and lead person on the XSEDE Education and Outreach component. Dr. Gordon and his colleague, Dr. Robert Paboff, Executive Director of Shodor and the National Computational Science Institute, created the agenda for the training. The goal was to present valuable resources that community college faculty could use to promote STEM learning in their curriculum. Other faculty involved in the program were Lisa Frazier, Director of Online Curriculum at GBC; Dr. Warren Hioki, Executive Director of Technical Programs and High School Partnerships at CSN; and Dr. Gayle Dana, Nevada NSF EPSCoR Director.

Participants at the various venues attended the workshop which was designed to:

1. Provide hands-on training opportunities and resources for faculty to use to develop their own curriculum.
2. Showcase resources for how computational science transforms the education and research experience.
3. Teach how to use computer models and inquiry-based learning to engage student learning in science, mathematics, and computer science.

The reviews are in on the workshop and its benefits! Here is what some participants had to say!

"It has opened me to an area (cyberinfrastructure) that I was not aware of before and it has motivated me to explore the many resources that were introduced over the summer and to find suitable apps that I can incorporate into my fall classes."

"I wanted to know about the possibility of developing a new degree program in this area, or to at least develop courses in this area."

"I will use the information to implement some of the computer applications."

"I hope to work with the science department to develop and implement curricula appropriate to computational science within the Computer Technologies Department."

"This work used the Extreme Science and Engineering Discovery Environment (XSEDE), which is supported by National Science Foundation grant number OCI-1053575."

Highlight: Assistant Professor Haroon Stephen

Civil and Environmental Engineering, Director of GIS and Remote Sensing Core Lab, UNLV

The success and impact of the EPSCoR program in Nevada can be measured in its capacity to provide funding for researchers that would allow them to further pursue their graduate studies and possibly lead to employment as researchers for NSHE. Dr. Haroon Stephen is using his extensive research and study of Remote Sensing, GIS, and GPS applications to work on real-time projects that will have a significant impact on the Las Vegas Valley in many areas, including the development of a solar web portal for the City of Las Vegas, the effect of heat islands on local urban sprawl, and the modeling of urban flooding.

Because of his postdoctoral research work at the University of Nevada, Las Vegas (UNLV), Dr. Stephen has had the opportunity to work with several faculty and students on the UNLV campus. These opportunities helped him develop synergistic collaborations that resulted in positive and rewarding outcomes. Moreover, UNLV provided him with an opportunity to teach students and also continue his research in the southwestern United States, particularly Nevada. In talking about his research, Haroon is quick to acknowledge, "I like the fact that the projects I am working on will be meaningful to the state of Nevada and its citizens."

Haroon isn't sure whether he chose his profession or it chose him, or maybe it was a good combination of both! "As a child, I would disassemble many of my toys to find out how they worked! Actually, I don't have a single toy from my childhood around today, since I really did take them apart!" The budding scientist's parents continued feeding his curiosity by encouraging him to fix broken items at home and build new things such as electrical appliances, furniture, plumbing, and masonry. "I had a huge interest in how things are made and built, so engineering was the natural progression for me."

Haroon was born in Pakistan. At age twelve, his family moved to Libya where he completed high school. Although he wanted to get into the electrical engineering undergraduate program, he did not make the shortlist that year. Undaunted, he was accepted in the Agricultural Engineering undergraduate program at the University of Agriculture, Faisalabad, Pakistan. After graduation, he joined the Asian Institute of Technology in Bangkok, Thailand, for a Master's degree in Remote Sensing and Geographic Information Systems. Later, he was accepted to Brigham Young University in Provo, Utah; where he received his PhD in Electrical and Computer Engineering.

Keynote Speaker Dr. Haroon Stephen, Associate Professor Civil and Environmental Engineering and Director of the UNLV GIS and Remote Sensing Core Lab, addresses faculty and students during the CI Training at the College of Southern Nevada.

This was followed by a year as a postdoctoral researcher at the Wireless Communications Lab of Brigham Young University and then two years at the Water Resources Lab at UNLV.

Currently, Haroon is leading a project on urban thermal sensing and urban thermodynamic modeling. The project involves development of towers with various sensors to measure the thermal response of common urban materials. This will help in the understanding of how common urban materials, such as concrete, asphalt, and wood, behave thermally and what is their appropriate proportion to prevent our neighborhoods from overheating. Haroon will also use UAVs with thermographic imaging cameras to monitor the spatial temperature fields in selected sites in Las Vegas.

Recent largest project: Visualization Project

Recently, Haroon led a project to build a Visualization Facility in the GIS and Remote Sensing Core lab at UNLV. The UNLV Visualization Facility provides a tiled large-screen wall with 3D projection systems. The facility

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is equipped with software and hardware for 3D visualization, video conferencing, and wide frame display presentation. The Visualization Facility offers an integration of visualization tools and expertise to provide researchers, decision makers, and policy makers with turn-key solutions to everyday visualization needs. This facility, with the added ability to communicate (e.g., webcasting, teleconferencing), also serves the community at large and promotes a collaborative research environment. With the Visualization Facility completed, Haroon is engaging with researchers from UNLV and state and federal agencies to utilize the facility in promoting regional collaboration.

Developing urban heat island dataset for the Las Vegas Urban Canopy Study CityGreen analysis

This project funded, by the Nevada Division of Forestry, involves using ground and space based temperature observations to study the decadal trends of heating and cooling in the Las Vegas area. Techniques to map the urban heat island maps are also developed. This project also uses satellite and aerial imagery to map various land cover classes in the Las Vegas valley. The purpose of this research is to identify areas where the urban canopy can be increased by planting more trees to remediate and prevent summer heat wave.

Urban Flood Modeling and Remediation

This project uses meteorological and surface spatial datasets to improve our understanding of urban flooding. It is evident from recent events, such as the massive flooding in the Thomas and Mack parking lot, that urban environments need better forecast models. It is also important to identify bottlenecks in the urban hydrological cycle to reduce and eradicate flood zones from the city. In this project, Haroon is developing a dynamic model which integrates the storm water drainage flow, sewer flow, and surface flow to provide comprehensive picture of urban water before and during flood events.

Spring Mountains Butterfly Life History and Autecology Studies

This work is conducted for the United States Forest Service. Researchers are mapping the presence of four endemic butterfly species and the physical conditions where they are found, as these species have been identified to have a significantly reduced population over the last ten years. The goal of this work is to identify key autecological adjustments needed to restore these butterfly species.

Development of a solar portal for the purpose of conducting the community facilities energy education

The City of Las Vegas has been covering many open parking lots with solar cells to increase the renewable energy production in the city. Our work has resulted in developing a solar web portal for these installations. The portal provides educational information about renewable energy and also shows real-time information about energy produced by these parking lot installations.

Vulnerability Assessments and Waivers for Nevada Water Systems

In this recently completed project, Haroon and his team surveyed the state of Nevada to map the potential contaminant sources around the groundwater wells that are part of the public water systems. The work is conducted for the Nevada Division of Environmental Protection to recommend waivers for vulnerability assessment of the groundwater systems.

While Haroon is involved in many projects and studies that will have far reaching regional impact, he is also a teacher in the Civil and Environmental Engineering department at UNLV. When asked about his own teaching style, Haroon replied, "As a teacher, I am passionate about communicating my knowledge to the next generation of scientists and engineers. I believe in an interactive type of teaching, fostering problem solving and competitiveness between the students in a manner that results in greater knowledge for all."

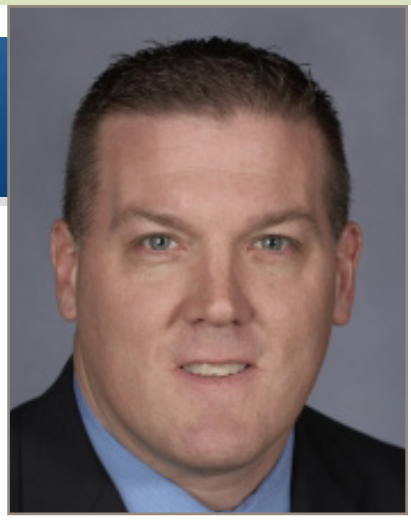
Haroon hopes that the UNLV College of Engineering will attract Nevada's aspiring scientists, as well as out of state prospective students, to pursue their education right here in Nevada. UNLV's undergraduate programs provide a solid foundation to build a successful career in engineering. Additionally, the graduate programs offer students high quality mentorship along with an enriched research experience. And Las Vegas, home of UNLV, has grown exponentially in the last decade and provides a unique opportunity to see state-of-the-art engineering in action.

Looking to the future, Haroon sees himself growing old on a university campus as a faculty member while continuing to explore, learn, publish, and teach. He expects to be deeply engaged with the community at the campus, city, national, and international levels, in efforts to improve and safeguard human life and quality of living. What drives Haroon in his research is his realization that modern cities are growing fast, consuming a lot, and making significant impact on the world, and that these areas are living creatures that can intake resources, produce goods and services, and create waste. As he explains, "Our understanding of the physical behavior and interrelations of cities can help create sustainable urban environments. My lifelong professional goal is advancing the state of the urban science through researching and explaining urban geophysical processes."

For more information about Dr. Stephen and the Visualization Facility, visit:
http://faculty.unlv.edu/wpmu/hstephen/projects/visualization-facility/

Profile: Dr. Kent Crippen

Associate Professor of STEM Education,
University of Florida



Dr. Kent Crippen understands technology and specifically how technology transforms education, improves instruction and maximizes learning. His research involves design, development and administration of computational tools, Internet information systems, and in-house supported applications. Along with his dedication to advancing STEM education with K-20 students, his work focuses on innovative curriculum and instruction in professional development of mathematics and science teachers. "To improve instruction, it is necessary to provide the tools and guidance that teachers need to implement high quality learning using cyberlearning models," he states. "The degree to which an instructional strategy is successful is proportional to the amount of performance related feedback it provides."

Currently, Dr. Crippen is the Associate Professor of STEM Education at the University of Florida, and formerly was the Associate Professor of Science Education and Technology at the University of Nevada, Las Vegas (UNLV). He served as the Co-Principal Investigator (CO-PI) on a three-year project for high school science teachers in Clark County, Nevada (Project PASS) and is the Co-PI on a three-year project for middle school mathematics and science teachers across Nevada called Project MIST. Both projects have improved K-12 student achievement in science and provided scholarships and innovative curriculum materials. Funded by the Department of Education, Project PASS and Project MIST are having a significant impact on STEM education and receiving national attention.

Dr. Crippen developed the C4D project (Climate Change Cyberlearning Curriculum Development), currently used as a learning lab at Green Valley High School in Clark County, Nevada. Funded by the NSF Nevada EPSCoR project, the cyberlearning lab along with cutting-edge science curriculum allows students to use the computer models to predict the impact of climate change on food webs, to research and analyze metadata associated with alternative fuel sources and carbon emissions, and to consider the impact of policy decisions in Nevada. The cyberlearning capability allows science teachers to build climate change curriculum in collaboration with university professors and scientists, while providing an environment for teachers, students and scientists to share information and review science materials. Dr. Crippen describes his work as use-inspired basic research, focused on STEM applications of cyberlearning. He describes the C4D project to us in this interview.

Discoveries: How did the plan for C4D come about, does the model exist and did it evolve from another model?

Dr. Crippen: C4D was the next phase in a longer-term design effort that was focused on improving the teaching and learning of science with high-quality instructional materials and teacher professional development. The model is unique, but is deeply informed by a range of empirical research on learning, instruction, and STEM education.

Discoveries: What inspired you to create this program in Nevada?

Dr. Crippen: Our inspiration is based upon three primary factors: 1) the exciting and innovative new science emerging from across the climate change projects, 2) the deep need to help students understand and address the current and future issues resulting from a changing climate, and 3) the commitment to ensuring that science learning is accessible and engaging for all students, regardless of their backgrounds or socioeconomics.

Interview continued on page 10

Dr. Crippen Interview continued from page 9

Discoveries: Please describe the sustainability and broadening participation this program allows?

Dr. Crippen: The model for C4D is continually fine-tuned to our context through an ongoing commitment to research and development. The output of instructional materials serve as fuel for a long-standing professional partnership among high-level institutions in southern Nevada with a history of commitment to teacher development, as well as accessible and inclusive science instruction and student achievement. We design for sustainability by developing the model in the everyday reality of real classrooms using adopted and open-source technologies, those for which Clark County School District (CCSD) has made a commitment. We design for full participation by basing our design on the interests of underrepresented populations, use a diverse development team to produce these materials and evaluate each of these goals as project outcomes.

Discoveries: How does the collaboration between UNLV, CCSD, and the Nevada System of Higher Education (NSHE) enhance the education and align the curriculum to a broad audience?

Dr. Crippen: The collaboration among UNLV, CCSD, and NSHE supports the use of distributed expertise for addressing a difficult problem that has important implications for each institution. This STEM partnership expects to raise the achievement of all students while reducing any gaps in the achievement of the diverse student population in southern Nevada.

Discoveries: Explain what is the "Science and Sustainability" program by the Lawrence Hall of Science that inspired this program?

Dr. Crippen: I would not say that the science and sustainability program inspired C4D; it offered an important leverage point for maximizing the impact of our efforts. The topic of this curriculum best matches the content and goals of the NSF Western Tri-State Consortium project and is being used by a significantly large and diverse population of students. Our efforts in complimenting Science and Sustainability are about the potential for broad scale adoption and achieving the project goals.

Discoveries: What is the intent of the curricula?

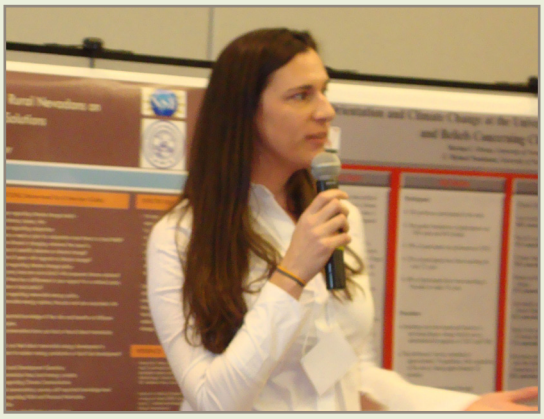
Dr. Crippen: That would be best described by Lawrence Hall. It involves hands-on activities using issue-oriented science investigation using personal and social issues to engage students in the study of science, encourage the use of scientific evidence to make decisions, and educate students as global citizens in the use of science to make everyday decisions. Independent of C4D, CCSD adopted this curriculum in 2005. (*http://sepuplhs.org/high/sands/index.html*)

Discoveries: Thank you Dr. Crippen for sharing your work with us.

For information on Dr. Kent Crippen, Project MIST and Project PASS, go to:
https://crippen.education.ufl.edu/main/index.php/home11

For more information about C4D, visit:
http://epscorspo.nevada.edu/nsf/climate1/learning-portal.html

Congratulations to Patricia "Tricia" Dutcher

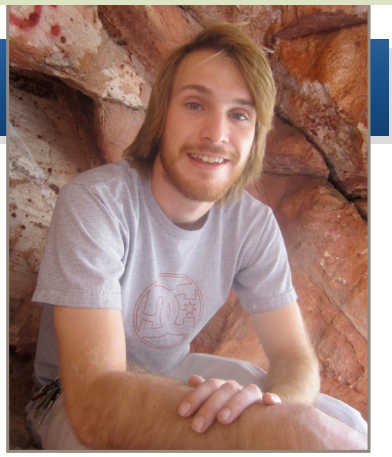


First place winner of the Greenspun College of Urban Affairs Graduate Research Symposium

Tricia has been a student under Professor Robert Futrell, and has worked under the Nevada EPSCoR Climate Change project as a graduate research assistant with the Policy and Outreach component for the past two and a half years. Currently, Tricia is writing her dissertation about conservative perspectives on climate change solutions and adaptation, concentrating on the communication of climate policy to stakeholders in Nevada. As part of her studies, Tricia spent a month in rural Nevada, specifically in Churchill County, communicating with residents and landowners about the prospects of inviting large, utility scale renewable energy projects in their area. "Churchill County residents do not see climate change as a threat. Policies that hope to increase clean energy production that would stabilize the climate are seen as too costly with few benefits. Climate literacy efforts to educate people about climate and proposed solutions are perceived as politically motivated efforts by outsiders," she explains. "Based on my interview results, the best approach should include a pragmatic economic solution that communicates solutions that have benefits beyond climate stabilization. I would suggest the best way to de-politicize the issue would be to communicate through trade magazines to garner support for climate-policies that benefit multiple interests."

Tricia is busy working on finishing her dissertation, writing articles on climate change, and graduating this December. Not only is she a busy student, Tricia and her husband are expecting their first child at the end of August!

Student Highlight: Andrew Reid



Andrew is currently a senior at UNLV and poised to pursue a Master's degree after graduation. Receiving a major in Psychology with a concentration in Biology and Chemistry, Andrew plans to do his graduate work in neuroscience. Along with his own perseverance and hard work, Andrew's educational path was helped by being the recipient of an award from the successful Nevada State GEAR UP program, a college admission program that has helped 4,000 high school graduates successfully pursue their academic goals statewide.

Andrew was granted the GEAR UP award based on his academic achievement and teacher recommendations and because he attended an at-risk school, Von-Tobel Middle School. A native of Las Vegas, Andrew was raised by his grandparents and had little or no prospect of being able to afford college. But he was motivated and aided by the GEAR UP award. GEAR UP stands for Gaining Early Awareness and Education for Undergraduate Programs. Students in GEAR UP receive a variety of college preparatory experiences, including educational enrichment, tutoring, mentoring, field trips to colleges/universities, financial aid training, college entrance assessments, summer college camp and summer school.

Besides his school work, Andrew enjoys music, painting, playing the guitar, piano and drums. He has been playing musical instruments since the age of nine. His creative abilities also extend into his love for science.

Andrew's inspiration comes from his father, who wanted to be a doctor of sports medicine. He has set definite goals for himself: to study learning and cognition through neuroscience, and to help bridge the gap for those who have learning and cognition disorders and require assistance to pursue creative talents.

Currently there are 2,700 GEAR UP students in the seventh grade in selected middle schools across the state of Nevada, with an additional 2,700 estimated for the next academic year. Recently, the program received a $21 million federal grant to fund the program over seven years.

People like Andrew are what GEAR UP is all about. He is an outstanding example of someone who is using the award to improve his opportunities to receive a good education and then giving back.

Is There an App for That?

Apps are everywhere. There is an app for grocery shopping, looking up car repairs, learning to play an instrument, bartending, and just about anything you want to learn or do.

Travis Olson, Ph.D., who joined the University of Nevada, Las Vegas, faculty in 2009 as assistant professor of mathematics education in the Department of Teaching and Learning believes that mathematics is no exception. He uses apps to teach and illustrate mathematics, enabling students to better grasp what is considered a pretty straightforward discipline and to explore it in more substantive ways than ever before. Teaching at UNLV, Dr. Olson utilizes software programs such as TinkerPlots, Fathom, and The Geometer's Sketchpad. Also available, and free, are dynamic web-based environments such as the National Library of Virtual Manipulatives and the National Council of Teachers of Mathematics' (NCTM) Illuminations website both of which help teachers to illustrate and engage students in key mathematical ideas. While paper, pencils, and computational fluency are still emphasized, they are complemented by, and more deeply explored with these newer representations that show the accuracy and underlying structures of computations or models. For example, looking at a set of data from a Box-plot perspective and modifying the data to change the outcome is vastly easier and more meaningful to do electronically than with just paper and pencil.

Dr. Olson has received funding from the Nevada Collaborative Teaching Improvement Program (NeCoTIP) which annually awards federal funding to states for the purposes of strengthening teacher preparation by providing high quality in-service professional development for practicing teachers and other educators. In prior years, he focused mainly on these web-based free dynamic environments that give teachers resources that are also available to students wherever they have access to the web. One notable impact was that from the time of introducing those websites and exploring the possible use of apps, to the next face-to-face meeting

Story continued on Page 12

Is There An App For That? continued from page 11

with the teachers, students were already very excited about integrating the apps to enhance the conceptual, computational, and procedural aspects of learning mathematics. His current NeCoTIP project focuses on blended learning strategies across technology platforms. In particular, this work focuses on middle grade teacher's using iPad apps in various aspects of learning mathematics, including apps such as iMovie to specifically mathematic-focused free apps, developed by NCTM (Pick-a-Path and Concentration), New Mexico State University (Lobster Diver and Ratio Rumble), and MIND Research (KickBox and BigSeed) among many others.

According to Travis, the NeCoTIP grants make many helpful technological resources available to students and teachers, as well as provides teachers with guidance in their use. One resource is Dan Meyer's blog in which he presents "three-act math" activities that use technology to re-present traditional word problems via technology presentation, and have real-world applications such as gathering data, dealing with a situation where you need to analyze data, or utilize graphical representations to model situations in order to solve a problem. These resources, along with the development of digital and iPad-based textbook apps are redefining the way students are able to access mathematical information. Furthermore, there are curricular materials available for 4th year, STEM-focused high school courses, as well as other materials known as modeling-eliciting activities that present interesting opportunities to further examine ways that technology allows for infusing mathematical concepts into science and engineering fields. Through the newly funded NeCoTIP grant, Travis anticipates working with teachers to develop meaningful lessons for students by integrating Mr. Meyer's ideas, STEM concepts, and apps such as Video Physics that allow for students to leverage technology to explore the STEM connections to situations specific to their lives.

Dr. Olson earned his B.S. in mathematics and political science and his M.S. in mathematics from Western Illinois University. His dissertation under the direction of Dr. Douglas A. Grouws at the University of Missouri focused on examining middle grades mathematics textbooks related to the mathematical development of patterning concepts and algebraic thinking. At the University of Missouri, Dr. Olson is an alumni fellow of the Center for the Study of Mathematics Curriculum (CSMC), an NSF-funded Center for Learning and Teaching. Through this center he concentrates on mathematics curriculum studies (e.g., design, implementation, policy). He currently is actively engaged in research groups funded through the CSMC to examine issues related to the release of the Common Core State Standards for Mathematics (CCSSM). His recent chapter in the NCTM book on curricular issues in the era of the CCSSM highlights his interest in understanding the impact of the recent standards documents on the expectations teachers will face.

Dr. Olson's research continues to focus on curriculum analysis studies, particularly with respect to the development of mathematical concepts in mathematics textbooks published after the release of the CCSSM, and implications of students' opportunities to learn and teachers' opportunities to teach particular mathematics concepts. Currently he is also working on understanding secondary teachers' conceptions, their abilities to model mathematical problems related to fraction concepts, and other key mathematical topics encountered in their daily professional life. A recent article published in the National Council of Supervisors of Mathematics Journal of Mathematics Education Leadership highlights implications of this recent research for mathematics teachers and mathematics teacher leaders.

NeCoTIP will continue to have impact on Nevada's schools and students. The program allows for teachers to work within their school districts to build important relationships with not only the district teachers, but also university faculty. Dr. Olson's work with the NeCoTIP grant has led to other grant proposals with CCSD, teachers from previous grants, and colleagues from the Southern Nevada Mathematics Council. He hopes that the combination of technology and enhanced teaching practices means greater student achievement and success for students affected by the program.

For information on Dr. Olsen, visit:
http://tl.unlv.edu/faculty/olson

To learn more about NeCoTIP, visit:
http://epscorspo.nevada.edu/nevada-teaching-improvement-program/

Aleisha Wellman

Aleisha Wellman, a first-year nursing student at the College of Southern Nevada (CSN), has been volunteering her time sharing her experience as a college student with high school principals, administrators, teachers, and thousands of Clark County School District (CCSD) high school students as a result of the GoToCollegeNevada grant award. Funded by the U.S. Department of Education and overseen by the Nevada System of Higher Education, the initiative has enabled CSN to partner with the Nevada Public Education Foundation in making college preparation a top priority for students currently attending 12 CCSD high schools.

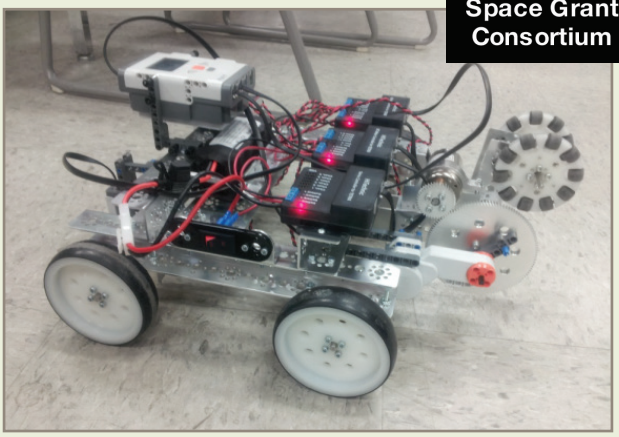
Aleisha, a native of Las Vegas and first-generation college student, intends to complete her A.S. degree in Nursing at CSN and then pursue a Bachelor's and Master's degree in Nursing. When asked what inspired her to participate in CSN's GoToCollegeNevada project, she answered, "I gained lots of insight from interfacing with CSN's faculty and my fellow students and I want to share this with high school students who may have the same curiosities about going to college as I did while in high school." Aleisha found out about the project through her sociology class with Professor Linda Foreman, who encouraged her to make the inquiry as part of a service learning component of her class. Not only was she allowed to participate, but she gave a poster board presentation to CSN and CCSD faculty and staff, deans, and principals at the GoToCollegeNevada kickoff meeting. Aleisha now serves as the President of CSN's Trio Experience Club. She also volunteers her time with Shade Tree and Valley Hospital.

The GoToCollegeNevada project at CSN, has served over 15,000 high school students and parents. Aleisha joins over 40 CSN faculty and staff in their four-hour visits with students to promote their respective programs and emphasize the importance of college and career readiness. Five major CSN Schools are included in the GoToCollegeNevada project: (1) the School of Advanced and Applied Technologies, (2) Business, Hospitality, and Public Services, (3) Health Sciences, (4) Science and Mathematics, and (5) Arts and Letters, with the latter two schools addressing the integration of math, science, and English into CTE programs of study.

SPACE GRANT CONSORTIUM

Engaging STEM Education with Robotics

Nevada NASA Space Grant Consortium



Imagine an engineering class that combines 3D CAD modeling software to design and simulate the performance of a robotic vehicle, and the capabilities of servo and DC motors; for master control theory to write efficient proportional integral derivate controller (PID) using feedback data from multiple sensors. This dynamic class was created through the NASA Space Grant Hands on Training award at the University of Nevada, Las Vegas. The students along with STEM educators, worked together to build a model robot to compete during inline following competitions. Three-hour modules were developed from this project which provided workshops for K-12 STEM educators and students, leading to hands-on workshops for over 150 middle and high school students. Through the collaboration received from the NASA Space Grant program, the Mendenhall Innovation Program and the Center for Math, Science and Engineering Education, this project continues to provide hands-on workshops and demonstrations that engages students to become excited about STEM education.

Desert Research Scientists Receive Regents' Honors

Dr. Hans Moosmüller received the 2013 Nevada Regents' Researcher award, the top honor given to an NSHE researcher. Hans' research is based on measurements of aerosol physical and optical properties, utilized to understand aerosol characteristics in relation to air pollution and climate change. This research provides a greater understanding of the climate system, which can be used in future scenarios and for developing mitigation measures. This research was funded by the NASA EPSCoR program.

Dr. Rajan Chakrabarty received the 2013 Regents' Rising Researcher award for his academic leadership, record of publications, patents, and funding sources accomplished as a DRI postdoctoral fellow, and now Assistant Professor. Rajan's research focuses on single-particle microphysical characterization of non-spherical aerosols and hydrometeors using novel experimental and analytical methods.

Guwahati, India
A regional climate change hotspot, 2011.

Congratulations to Dr. Hans Moosmüller and Dr. Rajan Chakrabarty!

Space Grant Consortium

Moonbuggy Program Engages High School Students

Nevada NASA Space Grant Consortium

Above: The 2013 Moonbuggy Team: Jason Christensen, left, Phil Nowack, Danny Aguirre, Morgan Strohschein, John Sandusky and Silvia Quiroz-Perez.

The Nevada Moonbuggy team has won awards and placed in the top ten of national competitions. The program is funded through the Nevada Space Grant Consortium Pre-College Educator and Curriculum Development Hands-On-Training awards. This year, the team won the Neil Armstrong Award for best engineering design. The program brings together local school districts and industrial sponsors to support the team's activities during competitions.

Climate101 — Climate Change, Is It Real?

climate change education

Find out what changes climate and why we should care. The Climate101 website is an in-depth, easy to understand resource about global climate change for use by the general public, students, and teachers. This site was built to act as a supplement to current in-class environmental education for K-12 students, and the general public.

Visit: http://www.climate101.org

National Science Foundation Undergraduate

Congratulations to the current Undergraduate Research Opportunity Program (UROP) recipients and the UROP Summer Program recipients. UROP is sponsored by NSF EPSCoR to provides science and field research experiences through scholarship and annual fellowship opportunities to full-time Nevada undergraduate students. Through the summer UROP program, students have the opportunity to cultivate and support research partnerships with faculty while working on cutting-edge research. Participants gain practical skills and knowledge which they can apply to graduate studies and into the workforce.

Academic Year Scholarship Recipients

Anthony Bass, University of Nevada, Reno
Molecular mechanisms underlying the regulation of the relaxation contraction cycles of striated muscles

Rosendo Borjas, University of Nevada, Las Vegas
Interaction of liquid water with Mars dust analogs

Zoe Call, University of Nevada, Reno
Preparing for Climate Change: Engineering crops for increased heat and drought tolerance

Sarah Carl, University of Nevada, Reno
Production of glycolic acid from hemicellulose over modified zirconia catalysts

Sravya Challa, University of Nevada, Reno
Analysis of the SIR/CRTC pathway in fat storage regulation of c. elegans

Arielle DeMarco, University of Nevada, Reno
Protein guidance molecules shape bilateral symmetry of the central nervous system

Justin Donat, University of Nevada, Reno
Conversion of lignin into vanillin over bi-functional heterogeneous catalysts

Horacio Guerra, University of Nevada, Las Vegas
Designing TALENs for treatment of genetic diseases

Simin Jiang, University of Nevada, Reno
Creation of a novel vitamin B12 binding protein complex for the fortification of rice

Memona Khan, University of Nevada, Las Vegas
Characterization of metal-reducing microorganisms in Walker Lake, Nevada

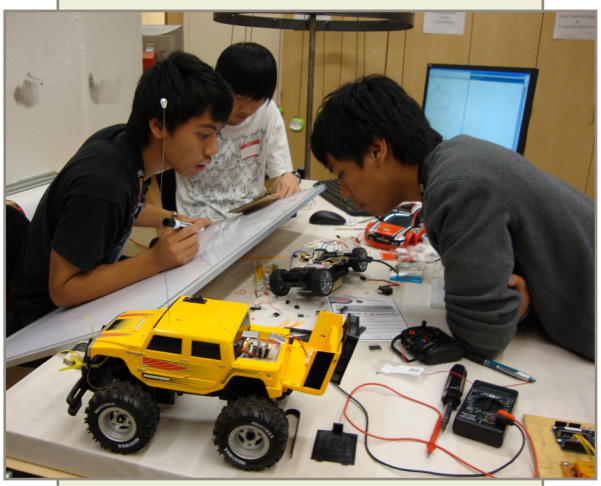
Joel Langford, University of Nevada, Reno
Hydrochar from HTC: A suitable substitute for coal?

Namritha Manoharan, University of Nevada, Las Vegas
Distribution, thermal limit and biogeography of nitrite oxidizing thermophiles

Priscilla Minogue, University of Nevada, Reno
Lamin therapy for treatment of Muscular Dystrophy

Sarah Padilla, University of Nevada, Reno
Feeding behavior in drosophilia melanogaster selected for starvation resistance

Kevin Tamadonfar, University of Nevada, Las Vegas
Determining carbon metabolic efficiency in the thermophile thermoflexus hugenholtzii



2013 Summer Scholarship Awardees

Arvin Akoopie, University of Nevada, Las Vegas
Study of ubiquitin-mediated protein recycling systems

Leeda Barikzi, University of Nevada, Las Vegas
Genetic investigation of fly wing variability at different temperatures

Vickie Castro, University of Nevada, Reno
Does inorganic carbon contribute to the carbon budgets in arid ecosystems?

Carla Cortez, University of Nevada, Las Vegas
The effects of growth manipulations on fruit fly wings

Nathan Gelman, University of Nevada, Reno
Sustainable chemistry through catalysis

Wailea Johnston, University of Nevada, Reno
Examining salt tolerance of halophylic plants

Melissa Kelley, University of Nevada, Reno
Identifying enhancer regions unique to the medial longitudinal fasciculus neuronal population in the embryonic brain

Elana Ketchian, Western Nevada College
Evaluating utility of pressure transducer observations at wildlife water developments

Kaitlin Kimbrough, University of Nevada, Reno
Anaerobic degradation of steroids found in cattle feedlots

Melissa Mahlberg, Great Basin College
Long-term vegetation trends of grazed and ungrazed rangelands in Nevada

Julienne Paraiso, University of Nevada, Las Vegas
Is complete denitrification pathways a common trait in termus species from geothermal springs in China?

Josue Portillo, University of Nevada, Las Vegas
Characterizing PHLDA1 as a tubby-binding protein: Implications in eyesight health

Georgina Puentedura, University of Nevada, Las Vegas
DNA methylation in pupfish

Bryan Rainwater, University of Nevada, Reno
Remote sensing of aerosol climate impacts using an automated spectrophotometer

Brittany Radke, University of Nevada, Las Vegas
Alkali-activated pozzolans as sustainable replacements of ordinary Portland cement

Jonathan Whipple, University of Nevada, Reno
Decaboxylation of grindetic acid by electrolysis

Kurtresha Worden, University of Nevada, Reno
Identifying sleep-suppressing dopamine neurons in Drosophila

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NASA EPSCoR and Space Grant Director

Dr. Stephen Lepp
Space Grant Associate Director

Oliver Hemmers
Project Director, Dept. of Energy, EPSCoR

NSF EPSCoR Project Directors

Dr. Gayle Dana
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Nevada State EPSCoR Director

Dr. Nicholas Lancaster
NSF EPSCoR Co-Principal Investigator, DRI

Dr. Thomas Piechota
NSF EPSCoR Co-Principal Investigator, UNLV

Dr. Scott Mensing
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