

NEVADA SPACE GRANT CONSORTIUM LAUNCHES FAR-REACHING PROGRAM BENEFITING NEVADA TEACHERS AND STUDENTS



Teacher Jamie DeSoto (CCSD) accepts an award for her physics lesson incorporating UAS. With her are Dr. Sarah Bryans-Bongey, Principle Investigator and Assistant Professor from NSC, and Craig Rosen, Co-Principle Investigator and Professional Development Administrator from DRI.

Nevada teachers took part in a program to promote interest in STEM fields using drones. The project partners included Nevada State College (NSC), the Desert Research Institute (DRI), and Clark County School District (CCSD).

25 in-service teachers received Unmanned Aircraft System (UAS) training



The winning teacher received a funded field trip to NSC for her AP physics class to receive hands-on practice with UAS.

The 21 pre-service teachers participated in a separate inclass UAS workshop. They used the programmable UAS as part of "EDU 214: Preparing Teachers to Use Technology." They programmed and flew UAS, and discussed ways to incorporate UAS in their future classrooms.

Four middle school lesson plans using UAS and materials to implement them will also be shared across Nevada through a circulating Green Box kit designed and managed by DRI.



UNDERGRADUATE RESEARCH



"The NASA funding allowed me to solidify an academic passion and I hope to do similar work in meteorology in the future" .-- Zoey Rosen, University of Nevada, Reno -----

RAIN SHADOWS 101 Lift. Fall. Move.

racting processes cr dryland landscapes



HOW DO RAIN SHADOWS FORM?

FALL MOVE









For my undergraduate thesis in atmospheric sciences at University of Nevada Reno, I worked on the project "Developing and Communicating **Rain Shadow** Science" with Dr. Ben Hatchett and Meghan Collins at the Desert Research Institute. We curated a blog and social media posts to communicate the effects of rain shadows from the Sierra Nevada, and tracked the dissemination of this information. Weather events affect our communities, so effectively communicating scientific findings for STEM audiences and the broader public is crucial. This project cultivated my science writing skills and taught me how to make an infographic, a medium not often included social media materials.

NASA EPSCoR NEW CAN AWARD A multi-disciplinary mul

NEVADA NASA

EPSCoR

3 CAN & 1 RID AWARDS



ADVANCED TRANSPORT TECHNOLOGIES FOR NASA THERMAL MANAGEMENT/CONTROL SYSTEMS

Science PI: Miles Greiner (University of Nevada, Reno); Co-PIs: Kwang Kim (University of Nevada,Las Vegas), Ted Plaggemeyer (Truckee Meadows Community College), and Jackson Crews (Desert Research Institute); NASA Technical Monitor: Eric Sunada (Jet Propulsion Laboratory)

Goal: To develop reliable, light-weight, low-power thermal management systems to precisely control the temperatures of critical NASA electronic systems.



This research is developing a highperformance, two-phase mechanically pumped fluid loop (to maintain the temperatures of several components within precise limits, even if their heat generations vary greatly.

This technology will enable NASA to meet its science objectives by

achieving a precise spatial and temporal temperature stability. An example system requiring advanced thermal control is the Surface Water Ocean Topography (SWOT) project, which is designed to acquire precise measurements of land hydrology and ocean circulation. The resulting data will help generate a global assessment of surface water resources and detailed ocean process mapping that can be used for climate modeling.

RETURN ON INVESTMENT (ROI) TO DATE

Peer-reviewed publications: 2 submitted Students impacted, research experience and expertise: 4



IMPROVING SNOW COVER ESTIMATES IN FORESTED TERRAIN

Science PI: Alison Murray (University of Nevada, Reno); Co-PI: Dr. Adrian Harpold (University of Nevada, Reno)

Goal: To correct current overestimates of snow cover in the western United States by accounting for the effect of forest canopy.

Seasonal snow cover is a key component of the hydrologic regime in many regions of the world. Quantifying snow cover accurately is particularly important in the semiarid western United States, which depends on



mountain snowpack to support rapidly growing populations. However, the region's mountainous, forested terrain presents challenges because trees and topography hamper accurate data acquisition.

Currently, the snow cover algorithms applied to the satellite data assume that the fractional snow-covered area under the canopy is the same as that in the canopy openings. However, in-situ observations indicate otherwise. Through strategic collaborations with NASA's Airborne Snow Observatory and the Airborne Visible/ Infrared Imaging Spectrometer platforms, Dr. Adrian Harpold (Co-I from UNR) is leading the coordination of overflights with on-theground observations to compare snow cover both under and out of the forest canopy at Sagehen Experimental Forest in the northern Sierra Nevada in California.

RETURN ON INVESTMENT (ROI) TO DATE

New proposals funded: 13 for total of \$3,312,270 (3:1 return) Peer-reviewed publications: 38 Presentations: 250 Students impacted, research experience and expertise: 24



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NATIONAL ACADEMY OF INVENTORS

Dr. Kwang Kim, UNLV, NASA EPSCoR CAN recipient with > 7:1 return on investment for new funding, will be inducted as a fellow April 2018 in Washington, DC.