The First Colorado CubeSat launches!

The first CubeSat designed and built by students at a Colorado institution of higher education was launched on March 4, 2011. The Hermes CubeSat was part of NASA’s inaugural ELaNa (Educational Launch of Nanosatellites) Program launch.

Students delivered the completed Hermes payload on November 14, 2010 for integration into the P-POD (integrated flight unit). A team of 10 students, both past and present students of the Hermes mission, traveled to Vandenberg Air Force Base for launch.

The Taurus XL launch vehicle carrying Hermes, two other university nanosatellites and NASA’s Glory satellite failed to reach orbit due to a malfunction in the payload fairing separation system. Despite the physical loss of Hermes, a vast amount of knowledge and experience was gained over the course of its development.

Throughout the life of the Hermes mission, the project engaged over 80 students from a variety of disciplines including mechanical, aerospace, and electrical engineering, computer science and applied math. It was a student-led mission, comprised of mainly undergraduates. Mission operations preparation helped develop COSGC’s mission operations capabilities, including the designing and creation of a new S-band station. Another important benefit of the Hermes mission was developing the capability to do future CubeSat missions. COSGC students are currently working toward a 2012 launch of the second Colorado CubeSat mission called ALL STAR (full details may be found on page 10) and preliminary design work is underway on the third Colorado CubeSat.
Director’s Corner

It is always astounding how quickly a year goes by. Looking back at the events of the past year is one of my favorite things. Each year I never fail to be amazed at the talent, perseverance, and accomplishments of the students who create the heart and soul of the Colorado Space Grant family. Colorado students repeatedly show their intelligence and capabilities as they participate in COSGC space hardware missions, and courses. They demonstrate innovative thinking, curiosity and diligence in research projects and professionalism beyond their years as they work with industry mentors and engineers at NASA centers. Of course, none of the projects and programs would be possible without the dedication and leadership provided by the Affiliate Directors at all 17 COSGC institutions - who provide an exciting NASA presence on their campuses. Every one of the people previously mentioned have produced the outcomes highlighted in this year’s COSGC Newsletter.

The launch of the Hermes CubeSat was one of the most exciting events of the year. At the same time, it was heart-wrenching to experience the loss of the Hermes payload alongside the students who had put countless hours into the mission. It is inspiring to see these same students leading follow-on CubeSat efforts to keep the Colorado CubeSat program moving forward. Continued success with statewide programs, including BalloonSat and the Colorado Robot Challenge provide the bedrock of COSGC student programs. Our collaboration with NASA’s Wallops Flight Facility (through the RockSat-C and RockSat-X programs) has provided an exciting opportunity to challenge students - and CSU, CU and UNC students more than answered that challenge in 2011 (see page 8 for all the juicy details)! Long duration balloon payloads and experiments on microgravity flights provided Colorado students with exciting testbeds for innovative ideas this year. Great strides have been made toward completion and launch of our low-Earth orbiting spacecraft, DANDE. Finally, exciting things are happening at the Space Foundation - as their education team works with K-12 teachers and students to keep Colorado students pointed toward disciplines that will bring them into the COSGC projects at Colorado institutions of higher education.
2011 Undergraduate Space Research Symposium

COSGC’s annual Undergraduate Space Research Symposium was held April 9, 2011. Students from consortium institutions across the state presented research papers to panels of industry engineers and scientists. Industry partners also volunteered their time to read and judge student papers prior to the presentations. Students competed for cash prizes sponsored by local aerospace companies. The Grand Prize winner was “RocketSat VII: Construction of an Attitude Determination System for a Sounding Rocket” by Kirstyn Johnson, Lea Harris, Alex Kim, Leonard Komow & Isaac Hayden (University of Colorado, Boulder). Session winners were Travis Histed, Sean Throckmorton, Luke Slominski (Colorado State University) with “Autonomous Rover and Lander System”; Tim Myers (University of Colorado) with “Payload Configuration Graphical User Interface (GUI): Simplifying Customer Software Integration”; and Jordan Rath, Abigail Wilbourn & Michael Yeager (Colorado State University) with “Optical Mass Gauging System for Use in Microgravity.” The winners of the hardware demonstration were Trinidad State Junior College students, Onorio Franco, Jr. & Edgar Meraz for “CASPER: Clear Autonomous Sensory Perceiving Environment Robot” and Colorado State University - Pueblo students, Mike Bender, Ivan Aragona, Paul Rael, Rick Chaparro & Josh Medina with “Table Top Demonstration Unit for Return Fuel Production on Mars.”

The Colorado Space Grant Consortium (COSGC) uses the excitement of our nation’s aeronautics and space programs to inspire, educate, and develop America’s future technological workforce by enabling a diverse community of college and university students.

COSGC consists of 16 institutions of higher education and 1 non-profit foundation in Colorado. COSGC students have access to resources including faculty and industry mentors, a clean room, assembly and integration labs, faculty research labs, a mission operations and control center, ground satellite tracking stations, observatories, as well as numerous partnerships with NASA Centers and industry.
Community College of Aurora Student Projects Excel

The Community College of Aurora (CCA) has been a full Colorado Space Grant affiliate for just over one year. The program, under the direction of Dr. Victor Andersen (science department faculty), has expanded well beyond the short-duration balloon payload that was the jumping off point for the CCA Space Grant program.

In 2010, Community College of Aurora students won a HASP launch. HASP (High Altitude Student Platform) is a flight opportunity for student payloads organized by Louisiana State University (LSU) and supported by the NASA Balloon Program Office and the Louisiana Space Grant Consortium. The platform provides students the opportunity to build and launch a payload that reaches 120,000 feet on a zero-pressure NASA balloon at the Columbia Scientific Balloon Facility in Ft. Sumner, New Mexico. Although the students designed and built a payload continuing the project through final testing and integration, their payload was not launched in 2010. Launch was postponed pending a NASA investigation following an accident during the launch of a similar platform in Australia. The CCA team launched their HASP payload in August 2011. The payload held an experiment that investigated genetic mutations of E.coli exposed to various near-space extremes. The experiment was a follow-on to a successful short-duration flight that was part of the Colorado DemoSat balloon payload program (see page 11 for details about DemoSat).

Students excited by their experiences with the HASP payload in 2010, decided to try for a microgravity flight in 2011. The CCA team won a reduced-gravity flight through NASA’s Minority Innovations Challenge Institute opportunity. Their experiment was designed to explore the vascular response to exposure to negative pressure in order to counteract the human biological response to microgravity (in terms of blood flow and the cardiovascular system overall). Students designed and constructed an artificial system that closely replicated the human cardiovascular system. Using it they attempted to define the negative pressure necessary to maintain blood flow to the lower extremities. Dr. Andersen is impressed at how the Colorado Space Grant projects have effected the lives of CCA students. He explains, “Our college’s involvement with COSGC is a tremendous experience for our students. The opportunity to work on student initiated and led projects helps them gain experience and develop skills well beyond what they are able to in their courses alone. Students who did not see NASA as a possibility for someone coming from a community college are now planning the steps it will take to get them into NASA as a career. COSGC hands-on projects provide students the confidence that they can do anything students at research institutions can do.”

During the team’s second flight. The large structure (center-right) is the CCA team’s experiment. Pictured in green flight suits are Shellene Suemori, Cary Caruthers (top) and the team’s Johnson Space Center mentor Wes Tarkington (right).
New Internship Collaboration

For six years Colorado Space Grant has been connecting students with cutting edge research and development efforts at Colorado aerospace companies through the EduSourcing program. Students from three COSGC institutions have participated in EduSourcing internships year-round at Lockheed Martin, MicroSat Systems, ExoTerra, Advanced Solutions, Inc., Redefine Technologies, Composite Technology Development, Design_Net Engineering, and Southwest Research Institute. Students work with industry mentors at industry facilities and/or on COSGC campuses.

The latest company to collaborate with COSGC on an EduSourcing endeavor is Black Sun Solar. Since June 2011, students from University of Colorado and Colorado School of Mines have been working with COSGC alumnus, Terrance Yee, on a new project exploring solar energy concentration. As with all of Space Grant’s projects, EduSourcing projects most often engage multidisciplinary teams. The BlackSun student team includes undergraduate and graduate electrical, mechanical, and aerospace engineering students.

Colorado School of Mines Lunabotics

Colorado School of Mines (CSM) students on the Mile-High Team under supervision from professor Dr. Paul van Susante finished 5th in the NASA Lunar Mining competition. Out of 72 registered teams, 46 qualified to participate, 36 showed up at NASA Kennedy Space Center and 14 teams managed to deposit regolith simulant in the collection bin during the 15 minute competition runs. The CSM team finished 5th in the overall competition despite having an equipment failure about 5 or 6 minutes in the match that did not allow deposition of more material. Students built a robot that was well designed and performed beyond expectations. The Mile-High Team included students David McQuade, David Melton, Abe Ng, Cameron Schappel, Theresa Sung, Dane Swanson, Mallory Tayson-Frederick and MiMi (the robot).

Left: The Mile-High Team poses for a picture with MiMi at the Lunabotics competition. Right: Post-competition cleaning of MiMi. The robots get completely covered in dust that must be removed for health reasons, hence the suits and masks worn by students who complete the cleaning.
A simulated Martian terrain and robotics laboratory is the newest addition to the Space Foundation Discovery Institute in Colorado Springs. The Space Foundation launched the Mars Yard on May 18, 2011 in a ceremony with Colorado Springs School District 11 (D-11) and the Colorado Springs Regional Economic Development Corporation. The Mars Yard, along with the Space Foundation education programs, are all a critical part of the Space Foundation’s mission to build a better, stronger workforce to support future space exploration and utilization. The Space Foundation Discovery institute, which opened in 2009, provides space-themed professional development and support for teachers and students. It serves as the base location for the Space Foundation’s education programs and houses classrooms, an educator resource center, the AGI Space Missions Simulator and now a Mars Yard. Work began on the lab in 2010 with the donation of the “Honeywell Mars Robotic Experience,” providing robots for the simulated Martian mission laboratory.

Students at the adjacent Jack Swigert Aerospace Academy were the first to use the lab this spring; the entire sixth grade participated in sessions while the Mars Yard was being completed. This aerospace-themed middle school was created in 2009 through a partnership between the Space Foundation and D-11. Its curriculum, which is collaboratively developed by the Space Foundation and D-11, uses space and aerospace themes and principles to teach a broad range of subjects, with focus on improving students’ proficiency in science, technology, engineering, the arts, and mathematics (STEAM). This school year the Mars Yard will be available exclusively to D-11 students as part of their partnership with the Space Foundation. After that, the Mars Yard will be open to other school districts along the Colorado Front Range.

Teachers enrolled in the Space Foundation Space Across the Curriculum course “Space Technologies in the Classroom” were the first group of educators to use the Mars Yard. The course was one of five offered at the Space Foundation Discovery Institute this summer to help teachers learn how to use space themes and concepts to improve science, technology, engineering and mathematics proficiency. The courses are open to PreK - 12 teachers.

The Mars Yard, similar to training facilities at NASA’s Jet Propulsion Laboratory, is the only such facility in the world that is open to schools and teachers. Students -- primarily in the 6th, 7th and 8th grades -- use the Honeywell-provided robots for maneuvers similar to those performed by real scientists operating rovers exploring the Martian surface, including searching for water beneath the surface. Information about education opportunities may be found at www.spacefoundation.org/education.
CU Students Search for Exoplanets

Undergraduate students at the University of Colorado (CU) launched their 4th HASP payload on September 8, 2011 (HASP program details on page 4). The CU payload built upon the previous CU HASP efforts that helped quantify variables in upper atmosphere astronomical observing. The SPARTAN-V payload was designed to determine the feasibility of detecting transiting exoplanets from a balloon platform. Currently, the team is analyzing the large quantity of data collected by SPARTAN-V. Data includes many pictures taken during flight.

Pueblo Community College Students Provide Consortium-wide Machining Support

Pueblo Community College (PCC) is one of the newest members of the COSGC family. The PCC facility provides modern, state-of-the-art equipment and comprehensive technical and transfer programs that prepare students to enter the job market or transfer to a four-year school. PCC is a technologically advanced school that aims to provide an educated workforce to industry through its Gorsich Advanced Technology Center. Partnerships with business and industry help provide state-of-the-art equipment that enables students to acquire the highly technical skills needed to step right into the workforce upon graduating. Since joining the Consortium, PCC students have designed and built a balloon payload and two robots for the Colorado Robot Challenge.

The state-of-the-art equipment and labs at PCC have provided a unique collaboration between PCC students and students at several Colorado Space Grant institutions across the state. Previously, PCC students learned to use the advance technology in their labs by creating “widgets” - items that had no practical purpose and most often landed in the scrap pile after being graded. Over the past year, PCC students have been learning by creating parts needed for robots, balloon payloads and CubeSat payloads. In addition, PCC students designed and machined the base station beacon stand used for the Colorado Robot Challenge. The collaboration is ideal for institutions where machine shop access is limited or not available for students - providing machining needed for student projects, and machining experience for PCC students who are now creating components that will crawl among the sand dunes, fly to near space on balloon payloads, into space on sounding rocket payloads and orbit the Earth aboard CubeSat payloads.
Colorado Space Grant students at University of Northern Colorado (UNC) and University of Colorado, Boulder (CU) designed and built payloads that flew on the inaugural RockSat-X launch in 2011. The RockSat-X program is a collaboration between Colorado Space Grant and NASA’s Wallops Flight Facility (WFF) - providing college students across the country low cost access to space. The RockSat-X payload deck is a modular system based around decks designed for suborbital flights with WFF’s sub-SEM ring assembly. RockSat-X flights reach an altitude of 76 miles, provide full access to space (skin and nose cone eject), and include power and telemetry provided by WFF. The first RockSat-X launch included student-designed and built payloads from Wyoming, Puerto Rico and Colorado Space Grant institutions.

The UNC payload was designed to jettison a capsule that would collect atmospheric density data and transmit it to a radio receiver that remained in the rocket. Their design included a specially designed antenna that fit snuggly around the contours of the capsule - donated to the project by First RF. The capsule successfully completed its mission before burning up during reentry, as expected.

The CU payload was designed to record the deployment of participating university payloads and capture footage of the sounding rocket in flight. In addition, it measured acceleration, temperature and pressure. The payload included six camcorders to capture flight from various vantage points and successfully recorded skin and nose cone separations, in addition to payload deployments.

The second RockSat-X launch is scheduled for August 2012. More information plus videos of the 2011 flight may be found at spacegrant.colorado.edu/rockon.
The fifth annual Colorado Robot Challenge took place on April 2, 2011. Students from institutions of higher education across the state traveled to the Great Sand Dunes National Park in Alamosa, Colorado. In the crisp temperatures of early morning, student teams challenged their robots to autonomously traverse courses of increasing complexity and danger, as they traveled toward a beacon.

Any robots of the Lego variety were rendered inoperable in the first course - succumbing to the fine sand that blows across the Dunes. Many robots made it to second and third courses successfully maneuvering over rocks and holes of various sizes, up hills and around barriers made of wood and even gallon jugs filled with water. Challenges are created real-time. If a robot makes it through a course successfully, organizers come up with more difficult terrain.

Dr. Randy Emmons first presented the idea of a statewide robot challenge in 2006 at the COSGC annual meeting. The Dunes were ideal - having been the testing site for NASA's Viking Landers. An important feature of the robots is that they must be autonomous and be able to travel toward a beacon. Students are discouraged from using remote control or GPS to help their robots along.

The Challenge has been an overwhelming success, with students from more schools participating each year. In 2011, there was a team of high school students who accepted the challenge. The 2012 event will be expanded to two days instead of one. Students will participate in a pre-Challenge review - where they will present their designs to their peers and have the opportunity to ask questions and make suggestions to their fellow teams. In addition, a post-Challenge debriefing will be a part of the new format. The 2012 Colorado Robot Challenge will take place on April 7, 2012.

Find Colorado Space Grant on Facebook for up-to-date information about student programs, important news and exciting events!
ALL-STAR CubeSat Update

Undergraduate students on the ALL-STAR mission had the opportunity to test their spacecraft bus in microgravity in July 2011. Students traveled to Houston and participated in a reduced-gravity flight. During the flight, they tested the ALL-STAR deployment system and the active attitude control system. The team was challenged to make design changes between tests in order ensure payload and solar panel deployment. Students working on ALL-STAR are now in the process of working toward a 2012 launch with NASA’s ELaNa program.

The ALL-STAR (Agile Low-cost Laboratory for Space Technology Acceleration and Research) mission began in January 2010 and is a collaboration with Lockheed Martin. The ALL-STAR spacecraft bus is designed to be reproduced and evolved to support future student missions. A spin-off of the mission is in preliminary design through a collaboration between COSGC and the CU College of Engineering and Applied Science Electrical Engineering Department.

DANDE Satellite Update

On October 5, 2011 Colorado Space Grant students participated in a launch manifest review with representatives from SpaceX, the Department of Defense Space Test Program and the Air Force Research Laboratory. The DANDE spacecraft – a spherical, low Earth orbiting satellite designed to measure drag in the upper atmosphere – was designed and built by Colorado Space Grant students at the University of Colorado at Boulder. At the review the 20 undergraduate students who currently comprise the DANDE satellite team represented the DANDE project. The October 5th review marks the first milestone toward launch. The DANDE satellite is currently manifested to launch in March 2012 on a SpaceX Falcon 9.
Colorado Balloon Payloads

Colorado Space Grant has had a thriving balloon payload (BalloonSat) program in place since 2000. What started as a small program providing a launch opportunity to ~60 students in a projects class has grown into a statewide program. The current program provides 10 launches per year which add up to over 70 BalloonSats and nearly 300 students (including university students from Colorado and across the country, as well as high school students). BalloonSats provide a complex challenge, as students must design structures and experiments that can survive the extreme environment of near space.

COSGC is fortunate to collaborate with launch provider, Edge of Space Sciences (EOSS). EOSS provides launch logistics, payload tracking, and liaises with the FAA. EOSS has been flying balloon payloads since 1990. Student teams participate in reviews leading up to launch and present analyzed data in final reports. Students from all 16 COSGC higher education institutions have flown balloon payloads. In addition to flying student designed experiments, Colorado BalloonSats provide ideal test beds for subsystems of rocket payloads and nanosatellites - providing the opportunity to test hardware and software in the near-space environment.

Colorado State University Students Design a Hovercraft

Each year a team of undergraduate students at Colorado State University is presented with the opportunity to figure out an exciting project and then see it through design, build, and test during the summer term. In 2011 the team decided it would be interesting to build a hovercraft. The basis for the project was the idea that a hovercraft might be a good vehicle with which to explore the environment of a distant planet or moon - specifically Titan, Saturn's largest moon. Students designed and built the craft and then tested it on concrete, sand, and water surfaces. Their project caught the attention of the Discovery Channel. The team and the Titan Hovercraft were featured in a Discovery Channel short that may be viewed at http://watch.discoverychannel.ca/clip536956#clip536956
Student Focus

Colorado Space Grant engages over 500 Colorado students each year in space hardware missions and research projects, of which you have read about a few in the preceding pages. Introducing them all to our readers would take a newsletter all its own (an extremely thick one). Instead, we present a random sampling to give our readers an idea of the high caliber of students that are a part of the Colorado Space Grant family, the projects they are working on, and their plans for the future.

University of Colorado, Colorado Springs: Meral Sarper is an undergraduate student studying Mechanical and Aerospace Engineering with a minor in Aerospace Engineering Leadership and Sustainable Development. Meral served as the NASA Space Science Student Ambassador from 2010-2011, increasing space science awareness in Colorado communities. She was the winner of the 2011 Elaine Hansen NASA Internship Competition and earned a place at the summer 2011 NASA Propulsion Academy. The Academy was Meral’s third NASA internship. While there she conducted propulsion related research at Marshall Space Flight Center. Following graduation, Meral plans on pursuing a career to combine her love of people and space sciences.

Colorado State University: Brian Lee is a doctoral student in Mechanical Engineering at CSU where he manages the undergraduate space hardware projects at CSU Space Grant. Brian is one of 81 students nationwide selected for NASA’s inaugural class of Space Technology Research Fellows. His research focuses on laser diagnostics for Hall thruster erosion. “This research interests me, because it requires a nice mixture of challenging physics concepts with specific engineering applications. I didn't want to be purely an engineer or purely a physicist,” he explains. Brian received his master’s in physics from CSU in 2010 along with a bachelor’s in engineering science and physics. He has been managing undergraduate projects for CSU’s Space Grant program since 2009.

Community College of Aurora: Ian Jones just finished his program at the Community College of Aurora, majoring in computer science. He first became involved with Space Grant as the junior engineer and microgravity flight team member for Team Pioneer. Team Pioneer designed and built a machine that simulated the human circulatory system in order to test the effects of microgravity on the human cardiovascular system (see page 4). Ian and Team Pioneer completed their experiment on a reduced gravity flight in May 2011. Ian is currently applying to 4-year institutions, planning to earn his bachelor’s degree. Following graduation, Ian plans on pursuing a career within the private space industry.
**University of Colorado at Boulder:** Caleb Ogg is a junior in chemical engineering. During his first year at Space Grant, Caleb worked as the project manager and structural design lead for the CU DemoSat-X sounding rocket payload - a payload that flew on board the inaugural RocketSat-X flight (launched at NASA Wallops Flight Facility - see page 8) and visually recorded the flight with six digital video cameras. In his capacity as project manager, Caleb helped with integration and testing of the DemoSat X payload at Wallops. Caleb currently is part of the attitude control system team for the ALL STAR CubeSat mission. Following graduation, Caleb plans on pursuing a master’s degree in either aerospace or mechanical engineering.

**Trinidad State Junior College:** Onorio Franco Jr. is currently enrolled in the Associate of Science degree program where he is also the Vice President of the Phi Theta Kappa Honor Society on the TSJC campus. Onorio is engaged at TSJC Space Grant on the Robotics Challenge Team. He and his team won hardware display prize for their robot, CASPER, at the 2011 Colorado Undergraduate Space Research Symposium. On the CASPER robotics team, Onorio managed design, construction, and mechanics. In addition, he co-managed the software team. Upon finishing his degree program at TSJC, Onorio plans to attend a four year institution and earn a bachelor’s degree in either mechanical or electrical engineering.

**University of Colorado at Boulder:** Kirstyn Johnson is a junior in aerospace engineering at CU Boulder. She first became involved with Space Grant at CU as the mission specialist for RocketSat VI before eventually becoming the project manager for RocketSats VI and VII. Following the launch of the RocketSat VII payload, Kirstyn moved the to THEIA cubesat mission where she worked on the optics team. Kirstyn currently works for BioServe Space Technologies on the mission operations and hardware development teams. She helps monitor BioServe payloads on the International Space Station (ISS) and supports activities between NASA and the astronauts aboard the ISS. Kirstyn plans on obtaining her master’s degree in either aerospace or biomedical engineering and pursuing a career in bioastronautics.

**Pikes Peak Community College / University of Colorado, Colorado Springs:** Brandon Driver is currently a student at both Pikes Peak Community College (PPCC) and University of Colorado, Colorado Springs (UCCS) through a concurrent degree program in engineering in which he is pursuing an electrical engineering degree. In 2011, Brandon served as the team lead and nuclear emulsions lead for PPCC’s new balloon payload program. He now helps mentor a new PPCC balloon payload team. Following graduation, he plans on pursuing a career within the space technology design industry.
Where are they now?

Colette Lohr (Wilklow) earned a bachelor degree from the University of Colorado at Boulder (CU) in aerospace engineering. While at CU Space Grant Colette worked on many projects in various capacities. She worked on DATA-CHASER (Space Shuttle Payload, STS-85) as a member of the thermal team, power team lead, integration and test team, and mission operations system team. Her second project while at Space Grant was the Citizen Explorer satellite as missions operations system team lead and software team lead. Finally, Colette worked on the Three Corner Satellite mission as operations system team member/advisor. Colette graduated from CU in 1999 and started working at the Jet Propulsion Laboratory. At JPL, she began working on the Mars Exploration Rover (MER) as a software developer for the MER Ground Data System. Colette transitioned to MER flight operations serving as a ground data system analyst, sequence integration engineer, tactical uplink lead, weekend flight director, Spirit extrication test lead and mission manager. She joined the Mars Science Laboratory project in October 2010 and is the Integrated Planning and Execution Team’s Surface Operations Lead.

Brandon Gilles earned bachelor’s and master’s degrees in electrical engineering at the University of Colorado Boulder (CU). Brandon started out at CU Space Grant on a BalloonSat team. He then joined the team that was developing COSGC’s first RocketSat payload (sounding rocket payload). Following his work on RocketSat, Brandon joined a team of students from 8 Space Grant consortia around the country at JPL working on the design of a Mars science laboratory. He finished his years at CU Space Grant on the DANDE satellite mission - working on command and data handling software, subsystem electronics design, and initial design and testing of the Neutral Mass Spectrometer system. It was on the DANDE mission that Brandon became interested in First RF, where he is currently employed. First RF donated a tremendous amount of time to the DANDE mission, mentoring students who were designing, testing, and analyzing the satellite’s communication antennas. Brandon enjoyed his work with First RF engineers so much, he approached them as a potential employer as he was preparing to graduate. Brandon now works at First RF designing antenna systems and supporting electronics (primarily the designing of RF direction finding systems). Brandon credits Space Grant as an integral part of his education. He explains, “Space Grant taught me a lot of project-based lessons that would have taken me years to learn on the job. At Space Grant, I learned valuable lessons in electronics design, systems engineering, and project management - that I would have otherwise never learned in school. Space Grant was key in both finding out about this career-path, having enough experience to get hired, and preparing me to be able to tackle projects quickly and effectively.” Brandon currently continues to advise the DANDE team as they work toward launch.
Support Tomorrow’s Workforce Through a Gift to Space Grant

Support from our former students who are now successful engineers and scientist is integral to the COSGC’s success. So is the support from our industry partners. We would like to support an additional 10 students each year through this fund-raising effort. A typical student working the entire year at Space Grant receives about $13,000 in paid wages. Every monetary gift, no matter the amount, contributes toward this goal and is tax deductible in most cases. To leverage your contribution even further, consider matching donations from your employer.

Our nation needs good engineers and scientist with degrees from great colleges and universities to fill the vacancies being created by the “graying of the workforce.” Through our student hands-on programs and partnerships with Colorado colleges and universities, NASA, and aerospace companies, COSGC can help give our nation the best. Please join us in making this happen.

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2012 UPCOMING EVENTS

APRIL
7  Colorado Robot Challenge
14  BalloonSat Payloads Launch
21  Colorado Undergraduate Space Research Symposium

JUNE
16-21  RockOn! Workshop
21  RockSat C Launch
29-30  AFRL SHOT Workshop

JULY
28  BalloonSat Payloads Launch

AUGUST
9  RockSat-X Launch

SEPTEMBER
7-8  COSGC Annual Meeting

NOVEMBER
10  BalloonSat Payloads Launch

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