

NASA Idaho Space Grant Consortium
Lead Institution – University of Idaho
Aaron Thomas, Director
(208)885-7652
URL: <http://id.spacegrant.org/>

PROGRAM DESCRIPTION

The National Space Grant College and Fellowship Program consists of 52 state-based, university-led Space Grant Consortia in each of the 50 states plus the District of Columbia and the Commonwealth of Puerto Rico. Annually, each consortium receives funds to develop and implement student fellowships and scholarships programs; interdisciplinary space-related research infrastructure, education, and public service programs; and cooperative initiatives with industry, research laboratories, and state, local, and other governments. Space Grant operates at the intersection of NASA's interest as implemented by alignment with the Mission Directorates and the state's interests. Although it is primarily a higher education program, Space Grant programs encompass the entire length of the education pipeline, including elementary/secondary and informal education. The NASA Idaho Space Grant Consortium is a Designated Consortium funded at a level of **\$785,000** for fiscal year 2009.

PROGRAM GOALS

In order to consistently evaluate the Idaho Space Grant Consortium annually, the vision, mission, goals and issues of the strategic plan are used as a guide for all programs developed and facilitated through the ISGC. The ISGC Strategic Plan is updated as necessary to reflect the vision, mission and goals of NASA and to incorporate new focus areas of NASA.

The vision of the Idaho Space Grant Consortium is to be the voice of NASA in the state of Idaho. To achieve this vision, the mission of the ISGC is to use a strong and active constituent base to provide easily accessible, highly flexible programs that focus on current and ongoing NASA initiatives that will benefit researchers, K-12 teachers, K-20 students, industry, the general public, the state of Idaho and ultimately, NASA.

To achieve the ISGC vision and mission, the ISGC identified the following goals: (1) promotion and expansion of world-class space and aerospace research expertise in the state's universities and industries, and development of internationally competitive research programs in related disciplines within the state of interest to NASA, the state, and nation. (2) encouragement of highly-capable students, especially women, underrepresented individuals, persons with disabilities, and economically disadvantaged students, to pursue studies and careers in STEM fields. (3) increased exposure to STEM learning opportunities for the general population of Idaho.

PROGRAM/PROJECT BENEFIT TO OUTCOME (1,2, OR 3)

Outcome #1 (Employ and Educate)

- 51 students significantly supported from FY09 funds through scholarships and fellowships
- 8 students took next step in FY09 (SG participation supported from FY06-FY09 funds)
 - 2 graduated and are pursuing advanced STEM degrees
 - 1 accepted a position at a NASA contractor
 - 5 accepted STEM positions in industry

The following are quotes from students who are involved in the ISGC Scholarship, Fellowship, and Internship programs:

- It allowed me to experience what it's like to work for NASA. I have used this experience to narrow down which fields and job types I will be looking at when I graduate. (Brandy Holmes - on 01/13/10, 2008 Idaho Space Grant Fellowship Program, 2009 Idaho Space Grant Fellowship Program, 2009 NASA Center Internships)
- The NASA fellowship has allowed me to continue my education and provided me with the opportunity to interact with Science, Technology, Engineering and Mathematics (STEM) professors at the University of Idaho. I have worked as a graduate research assistant on numerous grant proposals relating to STEM education. With a bachelor's degree in science and having taught elementary science for twelve years, this has been a wonderful experience helping me to expand my proficiency in space science and related fields. While working in the NASA Educator Resource Center (ERC) I have also been able to share my expertise and promote NASA materials to the College of Education students. (Linda Ryder - on 04/22/09, 2007 Idaho Space Grant Fellowship Program, 2008 Idaho Space Grant Fellowship Program, 2009 Idaho Space Grant Fellowship Program, University of Idaho - NASA ERC Coordinator)
- It has helped further my awareness of what NASA has done and has granted me opportunities on campus. Also, this program has given me the chance to hear from some people that work for NASA. This allows me networking capabilities and a great way to gain new information. (Bridget Wimer - on 05/21/09, 2007 Idaho Space Grant Scholarship Program, 2008 Idaho Space Grant Scholarship Program, 2009 Idaho Space Grant Scholarship Program)
- The Space Grant program has allowed for me to potentially form collaborations with scientists involved in NASA projects which may be quite helpful for my future career. Additionally, the Grant has helped to fund my education and has allowed me to meet other professionals within NASA. I have only been in the program for 4 months now but I am sure that the program will have a greater impact once time progresses. (Stephanie Smith - on 01/04/10, 2009 Idaho Space Grant Fellowship Program, Bayer Pharmaceutical - Associate QA Scientist)

- The Space Grant program has helped me focus much more in my studies and truly immerse myself in the science fields. This program continuously updates me about current and future internships around the country. Communication about science has kept me up to date about events here in Idaho. (Ruben Torres - on 06/16/09, 2006 Idaho Space Grant Scholarship Program, 2007 Idaho Space Grant Scholarship Program, 2008 Idaho Space Grant Scholarship Program, 2009 Idaho Space Grant Scholarship Program, EPA - EPA Intern)
- It reinforced my interest in engineering, and piqued my interest in the aerospace industry. Due to my internship, it is very likely I will pursue a career in aerospace through my engineering degree. (Sean Wagoner - on 01/06/10, 2009 NASA Center Internships)

Outcome #2 (Educate and Engage)

- The scholarship funding process was altered with the intent to increase the retention of students in the STEM fields. As scholars continue within the STEM field and continue to meet the requirement of the scholarship, their funding increases each year. The goal is to reward students who continue to remain in the STEM fields and perhaps provide an added incentive for students to remain in STEM.
- A dual enrollment class with Moscow High School has been established to involve high school students and teachers in the ISGC RISE program. This class averaged 22 undergraduate students and 7 high school students for the fall 2009/spring 2010 semesters.
- Five seniors in Mechanical Engineering and Electrical Engineering along with 2 graduate students participated in the ISGC's Robotic Lunar Exploration Program (RLEP). This program is a senior design capstone project that is linked to NASA Ames Intelligent Robotics Group.
- Idaho TECH is a program for 5th and 6th grade students. In 2009, 70 teams participated from around the state. Idaho TECH is a part of the Idaho ROKS pipeline program. This program is a collaboration between the University of Idaho's Colleges of Engineering, Agriculture and Life Sciences, 4H – Extension, and the NASA ISGC.
- The NASA ISGC in collaboration with the University of Idaho hosted an Idaho Science and Aerospace Scholars capstone event. Eight students from northern Idaho attended this one day event.

Outcome #3 (Engage and Inspire)

- The NASA ISGC collaborated with the Clearwater Valley Upward Bound program for a week-long engineering workshop. Twenty-one students participated in hands-on robotics activities.
- The ISGC hosted a public viewing of BLAST. This aerospace documentary was shown at a community theater in Moscow, ID. Many in attendance were k-12

- teachers who have requested to show the movie in their classes. Bruneau Dunes State Park has also requested to have public viewings of this film at their site.
- The Director attended the National AISES conference in Portland, OR. ISGC brochures, hand-outs and scholarship applications were provided to participants
 - The ISGC attended the Idaho Science Teachers Association yearly conference in Meridian. Information about ISGC programs were provided to attendees.

PROGRAM ACCOMPLISHMENTS

NASA EDUCATION: OUTCOME 1 **FELLOWSHIPS AND SCHOLARSHIPS**

Scholarship and Fellowship Program -Goal 1 — Diversity of Applicants and Participants

- Number and demographics of applicants – 59 total applications; 47% female, 2% underrepresented groups. 22 new awards provided
- Retention rate of scholars compared to non-scholars – in the 2009-2010 program, 100% of our scholars stayed in the same program as the previous year. At the University of Idaho (where 31% of scholars were located in 2009-2010), approximately 82% (freshman to sophomore) of non-scholars remained in an engineering program; numbers are similar across campus and the state. Clearly, the close connection to a scholar's school and program fostered by program requirements serves as a benefit to ISGC scholars for retention purposes.

All students will continue to be tracked until their first employment through the Space Grant Foundation Longitudinal Tracking System.

Goal 2 – Increase Research Component for Scholars/Fellows

- Number of publications, presentations, patent applications and licenses, press releases, or other media efforts related to scholar/fellow activities
 - Publications – 6 (1 journal, 4 conference, 1thesis)
 - Presentations – 16
 - Proposals – 0
 - Patent – 0
 - Press releases – 7 (includes internships, scholar events, presentations, etc.).
- Number of scholars involved in research activities – 6 of 29 total scholars (21%) were directly related with ISGC research activities. Many other scholars have expressed interest, and it is anticipated this number will continue to increase as the faculty mentor program is further developed.
- Number of scholars and fellows involved in NASA internships – in 2009, 3 scholars and 2 fellows served as NASA interns (50% total).

Goal 3 – Communication Between Program Participants, NASA, etc.

- Evaluation of the program by all participants – annually, the ISGC hosts two mandatory events for scholars and fellows across the state in order to remain in contact with all scholars/fellows. Scholars and fellows are also required to submit a report each semester commenting on volunteer hour service (scholars) or research progress (fellows). Through both venues, students are asked to comment on the ISGC program, requirements, etc. In 2009, Scholars reported being informed about many ISGC programs, and as such, were able to become more involved (such as with Idaho RISE, Women in Engineering Day, FIRST, etc.). A few quotes include: “It reinforced my interest in engineering and piqued my interest in the aerospace industry. Due to my internship, it is very likely I will pursue a career in aerospace through my engineering degree,” and, “It allowed me to experience with it’s like to work for NASA. I have used this experience to narrow down which fields and job types I will be looking at when I graduate.”
- Number of scholars involved in NASA and/or industry internships and/or the NASA Academy – in 2009, 4 scholars served as NASA interns (27% total).
- For all students that were significantly supported in the period spanning FY06-FY09, 11 students graduated and are pursuing advanced STEM degrees, 2 accepted positions at NASA contractors, 1 accepted a position at NASA, 9 accepted STEM positions in industry, and 2 accepted STEM positions in academia. The remaining students have not yet received the degree that they were pursuing while the received their Space Grant award.

NASA EDUCATION: OUTCOME 1 **RESEARCH INFRASTRUCTURE**

Goal 1 – NASA Funding in Idaho achieved by:

- Number of proposals submitted and funded - 4 proposals were submitted due to research funded by the ISGC. Two proposals to NASA (*one funded – NASA EPSCoR*)
- Number of publications and presentations resulting from the ISGC funding –
 - Papers Published – 4 journal and 5 conference papers published; 5 publications involved current undergraduate or graduate students as co-authors
- Conference Presentations – 3
- Patents – 0 filed
- Number of contacts by NASA researchers with Idaho researchers – 5 (JPL, Goddard, Ames, Langley, and JSC) visits were made by researchers directly supported by ISGC research grants in 2009. Several other researchers have made contact via e-mail and telephone, and have travel planned for the upcoming summer. Multiple contacts with researchers at JPL and NASA Ames have also been made by the ISGC to encourage more student involvement in programs, as well as to encourage senior design projects tied directly with NASA.

Goal 2 – Increasing Student Participation (esp. female, underrep.) in NASA programs

- Number of undergraduate and graduate students involved in NASA projects – 128 were directly involved with NASA-related research supported by the ISGC in 2009. 11 students were involved with ISGC research projects (37% female, 4% underrepresented, 60% graduate, 40% undergraduate). 15 students interned with NASA (20% female), 6 scholars were involved with research programs in their disciplines (29% female), and all 13 fellows were involved in NASA research (54% female). In Idaho RISE, 72 students were involved at ISU, NNU and the UI (32% female, 4% underrepresented). Five students were involved in the Idaho RLEP senior design program at the UI.

Goal 3 – Increase Idaho / NASA Collaborations

- Number of collaborations with industry by Idaho researchers and/or students – At least eight contacts were made with industry in 2009 by Idaho researchers, including with Micron, Boeing, Positron Systems, the INL, and multiple military industries.
- Number of contacts by NASA researchers with Idaho researchers and/or students – researchers directly supported by ISGC research grants in 2008 visited JPL, Goddard Research Center, Johnson Space Center, and NASA Ames. Several other researchers have made contact via e-mail and telephone, and have travel planned to NASA centers for the upcoming summer. Multiple contacts with researchers at JPL and NASA Ames have also been made by the ISGC to encourage more student involvement in programs, as well as to encourage senior design projects tied directly with NASA. Specific NASA researchers that have been in contact with students include:
 - At Ames: Susan Lee, Mike Lundy, Marc Murbach, Dr. Terry Fong, Dr. Tony Colaprete, Dr. David Hash Johnny Fu, Ed Martinez, Dr. Jim Arnold, Dr. Butler Hine
 - At JPL: Dr. Mohammad Mojaradi, Dr. Elizabeth Kolawa, Dr. Tibor Balint, Dr. Tom Spilker, Dr. Linda Spilker

Overall, the accomplishments in this program were positive. Improvement will be made in involving more female students and faculty in the following year. Items not reported above that are relevant to the success of this program include:

In 2009, the ISGC supported six research projects that included:

- In Situ Aerosol Dispersion Monitoring with Reliable Wireless Sensor Networks
- Effect of Dietary Synbiotics on Microbiota Populations and Bone Metabolism in Rats During Simulated Weightlessness
- Electrical Propulsion in Low Temperature Co-Fired Ceramic Materials
- Characterizing Transiting Extrasolar Planets with NASA's Kepler Mission
- Integrated Computing and Visualization for Rapid Aerodynamics Analysis on multi-GPU Clusters
- Chalcongide Glasses as Basic Material for Radiation Sensors

These projects directly address priorities in the Exploration Systems, Aeronautics and Science Mission Directorates.

In 2009, the ISGC continued to work with the Idaho NASA EPSCoR program which was awarded two large, 3 year research projects in Idaho - for a total of 5 currently funded in the state.

Goal 4 – Increase student internships with NASA

- Number of students involved in NASA internships (both new and returning) – in 2009, 15 students interned with NASA – 10 at JPL, 3 at Ames, and 2 at Langley . One of these interns was as intern with NASA JPL for a third time and one at NASA Ames for a second time.

Number of students involved in ISGC internships who are hired by NASA, a NASA contractor, or related industry (over time) – to date, two students, who served as interns, have been hired by NASA JPL– Matt Braley (2005) and Kent Crossin (2005), and four by NASA Ames – Josh Benton (2007), Garrett Manfull – (2007), Robert Lane (2007), and Austin Howard (2007). Three others have received offers but chose to pursue graduate school first. Four previous interns have been hired by private engineering firms and the others are currently pursuing graduate programs or completing their undergraduate degree.

NASA EDUCATION: OUTCOME 2 **EDUCATION**

Goal 1 – Inspiring Teachers and Students in STEM

- Number of teachers and students involved in ISGC activities – teachers: 1,015 at a minimum (*all levels represented*); students: 9,248 at a minimum (*all levels represented*). Programs range from Idaho TECH, FIRST Robotics, FIRST Lego League, Women in Engineering Day, and E-girls programs to career fairs such as the INL Engineering Expo, to educator science workshops and one-day workshops, etc.
- Number of requests by teachers or students for information about NASA missions – In 2009, the ISGC received over 60 requests from teachers for additional information via telephone, e-mail, or through the ERC.

Goal 2 – Increasing Retention Rates in STEM Through Hands-on Programs

- Number of teachers and students involved in ISGC activities – teachers: approximately 800 at a minimum (*all levels represented*); students: approximately 7,500 at a minimum (*all levels represented*). Programs range from Idaho TECH, FIRST Robotics and Lego League, Women in Engineering Day, and E-girls programs to career fairs such as the INL Engineering Expo, to educator science workshops and one-day workshops, etc.

- Number and percentage increase of higher education students and associated affiliate institutions involved in NASA internships or other ISGC research activities – in 2009, 15 students interned with NASA from the UI, BSU, and College of Idaho. Seven scholars were involved with research programs in their disciplines at the UI, NNU, and BSU. 72 students were involved with Idaho RISE at ISU, NNU and the UI, and eleven students were involved directly with ISGC Research Initiation Grant programs or supported by a research travel grant at UI, BSU, and ISU.
- Number of publications authored/co-authored by students involved in NASA activities – in 2009, 6 publications (*1 journal, 4 presentations, 1 thesis*) were completed by students involved as scholar/fellows, as interns, or as members of a research team.
- Retention rate of scholars compared to non-scholars – in the 2009-2010 program, 100% of our scholars stayed in the same program as the previous year. At the University of Idaho (where 31% of scholars were located in 2009-2010), approximately 82% (freshman to sophomore) of non-scholars remained in an engineering program; numbers are similar across campus and the state. Clearly, the close connection to a scholar's school and program fostered by program requirements serves as a benefit to ISGC scholars for retention purposes.

Overall, the accomplishments in this program were very strong with high participation in programs, internships and research programs, and the majority of metrics met and/or exceeded. Items not reported above that are relevant to the success of this program include:

- In 2010, one Electrical and Mechanical Engineering senior design team was supported by Idaho Space Grant and NASA Ames. The project, Induct-Us, is an Inductive Charging Station for lunar rovers. NASA Engineers and researchers contributing to the work include Dr. Terry Fong and Susan Lee in the NASA Ames Intelligent Robotics Group. The goal of the Induct-Us project was to develop a charging station to enable the K10 lunar reconnaissance and surveillance rover to dock and charge itself without human intervention. The approach was to use inductive charging, which does not require physical contact to transmit power from the charger to the rover, and is a more robust and reliable technique than electric plugs. Using inductive charging, the human crew can operate the rover remotely as it roams the lunar surface and gathers panoramic and microscopic images.
- The Idaho RISE Near Space Engineering team worked on a sounding rocket project sponsored by Marc Murbach, a research engineer at NASA Ames Research Center. The goal of the Ames small entry probe project was to design a very small atmospheric descent probe (mass < 2 kg and ballistic coefficient of approximately 1 kg/m²) for launch from a sounding rocket from Wallops Flight Facility. The capsule is designed to record descent pressures and temperatures from 100 km to the surface and to survive ocean impact, and development is still

in progress. Research engineers from NASA Ames involved in the project include Marc Murbach, Dr. Tony Colaprete, Josh Benton, and Kenny Boronowsky.

- Idaho RISE (near-space scientific balloon program) hosted its 5th symposium on October 9-10, 2009. The conference brought together participants from The University of Idaho, Northwest Nazarene, Idaho State University, and Moscow High School. The goals of the RISE Symposium are to raise awareness of RISE activities throughout Idaho, to better understand the available opportunities for high altitude scientific research from balloons, to share ideas and experiences, to encourage interactions and collaborations, and to discuss possible new directions for the Idaho RISE program.
- Two University of Idaho RISE launches occurred in 2010. For the fifth year the University of Idaho offered a two-semester interdisciplinary engineering course, ENGR204/ENGR205. The Spring, 2009 ENGR205 course registered 24 students, and 21 students registered for ENGR204 in Fall, 2010. Two Northwest Nazarene launches occurred and one Idaho State University launch occurred in 2010.
- Working with Moscow High School, Idaho Space Grant continues to offer a dual enrollment “Near Space Engineering” course for the math-based physics class at the high school. Moscow High School students enrolled in the dual enrollment course receive University of Idaho engineering credits for participating in the near-space program. Six high school students enrolled in Spring, 2009, and ten students enrolled in Fall, 2009.
- In 2006, the ISGC initiated the Idaho Robotic Lunar Exploration Program (RLEP), working with the Intelligent Robotics Group (IRG) at NASA Ames Research Center. The RLEP program is led by two ISGC graduate fellows and involves undergraduate teams working with the fellows and mentored by NASA research engineers to design prototype hardware for future robotic exploration of the moon. As advisors and mentors to the senior design team, the RLEP fellows gain experience in project management and leadership, research and development, technical communications, and networking. The hardware developed under the Idaho RLEP program provides Ames researchers with the opportunity to identify engineering design issues and constraints preliminary to the definition, design, and development of actual lunar flight hardware.
- The 2009 University of Idaho RLEP senior design team is Induct-Us comprising five electrical and mechanical engineering students. The goal of the Induct-Us project is to develop a charging station to enable the K10 lunar reconnaissance and surveillance rover to dock and charge itself without human intervention. The approach was to use inductive charging, which does not require physical contact to transmit power from the charger to the rover, and is a more robust and reliable technique than electric plugs. Using inductive charging, the human crew can operate the rover remotely as it roams the lunar surface and gathers panoramic and microscopic images. Members of the University of Idaho Induct-Us Team spent two days at NASA Ames for technical presentations to NASA engineers and project sponsors.
- The two graduate RLEP fellows spent summer, 2010 at NASA Ames Research Center where they continued development of the Induct-Us project, and working

with NASA Engineers to define the 2010 RLEP Senior Design Project. The project chosen is in the field of Tensegrity, a unique class of structures composed of axially loaded compression elements encompassed within a network of tensile elements. These lightweight structures can undergo a controllable shape change by varying the rest lengths of the elements by means of an actuator, similar to many biological systems. The proposed research activity is to build a robotic tensegrity unit built to initial specifications defined by the Intelligent Robotics Group at NASA Ames.

- In 2008, through collaboration with the ISGC, Idaho National Laboratory provided a \$50,000 grant to support FIRST robotics teams and for the creation of Idaho ROKS pipeline program. This program begins with FIRST Junior Lego League for grades 1-4, then Idaho TECH for grades 5-6, FIRST Lego League for grades 6-8, FIRST Tech for grades 9-12 and FIRST Robotics for grades 9-12. Informal education programs, such as 4-H after-school robotics, are also included. Ultimately, the participants would attend an Idaho higher education institution and become involved with Idaho RISE and Idaho RLEP, thus entering the ISGC's higher education workforce pipeline. The UI College of Engineering, through a partnership with the ISGC and the State of Idaho 4H program, has committed to being the FIRST operational partner for Idaho, and recently held the FLL state championship in Idaho. This funding continued to support these efforts in 2009.
- In 2009 one education-related special project grant was supported.
 - Continuous Improvement of Service Learning in Introduction to Engineering;
- Continued the Idaho Teaching Engineering to Children (TECH) research and design competition for teachers and 5th and 6th grade students, with minimal support from ISGC NASA funds. In 2009, participation in the program declined due to the state focus on FIRST programs. The ISGC will continue to update and revise this program to increase interest and participation in the state. In 2009, 70 teams were involved (Approximately 350 students / 32 teachers). 41% of the participants were female, 10% were Hispanic and 1% African American. Encouraged underrepresented and female junior and senior high school students to pursue higher education in the science and engineering fields through in-kind support of the UI Idaho JEMS program, UI Women in Engineering Day, the INL Hispanic Youth Symposium, and INL Engineering Expo and UI Clearwater Valley Upward Bound.
- Provided in-kind support to teacher and student STEM workshops at the Museum of Natural History, Warhawk Air Museum, Discovery Center of Idaho, and Palouse Discovery Science Center. All workshops are listed on the online ISGC calendar.

NASA EDUCATION: OUTCOME 3

Informal Education

Goal 1 – Inspiring the Next STEM Workforce and Goal 2 – Stimulating Public Interest and Understanding in STEM achieved by

- Number of participants in ISGC public service activities, and where possible to measure, number of participants from underrepresented groups – at a minimum, approximately 8,000 individuals participated in informal education programs across Idaho in 2009 that were directly supported by the ISGC, either financially or through in-kind support. This number includes parents and general public individuals who interacted in workshops and through hands-on activities at the INL Engineering Expo, BSU Discover Engineering Day, and the UI Engineering Expo. Anecdotally, affiliates report that their programs attracted individuals of all ages, approximately 48% were female, and at least 7%, if not more, were underrepresented.
- Number of media reports about ISGC activities – in 2009, the ISGC is aware of 76 media reports that were released in newspapers, online, on television, or on the radio about its programs. These reports ranged from coverage on specific programs (such as Idaho RISE, internships, research symposium, etc.) to general releases about the ISGC. The ISGC continues to receive multiple contacts from the media independent of releases generated by the ISGC. Clearly, a strong relationship with Idaho media venues has been developed through the addition of a communications assistant in the office who is dedicated to media relations.
- Number of requests for further information about the ISGC, activities, topics presented – in 2009, the ISGC received over 50 requests for additional information about its programs via telephone, email, or through the ERC. These requests were received from industry, researchers, students, teachers and the general public who were interested in learning more about the ISGC, about NASA, and/or about how to become involved in programs. The ISGC website, the hub of available information from the ISGC, received over 6,500 visits last year. Often, requests from across the country are received through the website, and the ISGC is able to connect these inquiries to the appropriate state consortium. Other NASA-related entities in Idaho, such as the NASA Explorer School and the NASA ERC, have pages on the ISGC website due to the popularity of this site.
- Feedback provided by participants through survey and other post-program evaluation means – any program supported by the ISGC financially is required to have an evaluation plan, and most programs supported in-kind by the ISGC employ some means of evaluating the success of their programs. In 2009 no general public program was financially supported – however, feedback from those supported in-kind (through evaluation) indicates a positive experience, and enhanced connections to STEM resources available in the state.

Overall, the accomplishments in this program were strong with high participation numbers. Items not reported above that are relevant to the success of this program include:

Continued to support the Educational Resource Center (ERC) and further connect educators to NASA and its missions/research.

PROGRAM CONTRIBUTIONS TO PART MEASURES

- Longitudinal Tracking:

Total awards = 51; Fellowship/Scholarship = 51, Higher Education/Research Infrastructure = 0; 2 of the total awards represent underrepresented minority F/S funding. During the FY09 program year 2 graduated and are pursuing advanced STEM degrees, 1 accepted a position at a NASA contractor, and 5 accepted STEM positions in industry.

For all students that were significantly supported in the period spanning FY06-FY09, 11 students graduated and are pursuing advanced STEM degrees, 2 accepted positions at NASA contractors, 1 accepted a position at NASA, 9 accepted STEM positions in industry, and 2 accepted STEM positions in academia. The remaining students have not yet received the degree that they were pursuing while they received their Space Grant award.

- Course Development:

The ISGC is working with the College of Engineering at the University of Idaho to explore expanding the Idaho RISE class to a broader audience. At present, most of the students are from the College of Engineering, however, offering an adjacent UI CORE course for students in other disciplines, will enhance the awareness of RISE, NASA, and the ISGC. The course would target the general student population and would recruit from disciplines such as education, business, social sciences, communication, etc. Discussions are at a very early stage.

For the fourth year the University of Idaho offered an interdisciplinary engineering course, ENGR204. The Fall, 2009 ENGR204 course registered 21 students, and 24 students registered for ENGR204 in Spring, 2009.

Working with Moscow High School, Idaho Space Grant continues to offer a dual enrollment “Near Space Engineering” course for the math-based physics class at the high school. Moscow High School students enrolled in the dual enrollment course receive University of Idaho engineering credits for participating in the near-space program. Eight high school students enrolled in Fall, 2009, and six students enrolled in Spring, 2010.

- Matching Funds:

The NASA ISGC has met 98% of its matching requirement. Of the \$585,049 listed in the proposal to be cost shared, \$559,465 has been reported. The remainder of this obligation will be met by the end of the one year extension (March 2011).

- Minority-Serving Institutions:

Although there are no minority serving institutions in the state of Idaho, the ISGC has continued to develop its relationship with Salish-Kootenai College in Montana. Through the work of the Director (Navajo) and Associate Director, Ed Galindo (Yaqui), connections between this Tribal College and the ISGC have been established. Salish-Kootenai College is also a partner on the ISGC Summer of Innovation proposal that was recently funded.

IMPROVEMENTS MADE IN THE PAST YEAR

A major programmatic improvement made in the past year is the transformation of the Executive Committee to a more involved Advisory Committee. The responsibilities of the newly formed advisory committee are to provide additional advisory support to the ISGC Director in the areas of program goals and management, and project definition and funding, and will participate in scholarship, fellowship, and ISGC research initiation grant proposal reviews. The non-voting Chair of the Executive Committee will be the ISGC Director, and membership was to seven affiliate representatives that represent a representative sample of the entire consortium. Representatives were included from the University of Idaho, Boise State University, and Idaho State University, two representatives from the other Idaho higher education institutions (North Idaho College and Northwest Nazarene University), a representative from an Informal Education affiliate (Discovery Center of Idaho), and a representative from a Space Grant Associates affiliate (Idaho Science Teachers Association). The Advisory Committee met approximately once per month via e-mail to ensure efficient consortium communications. This opportunity provided our affiliates more ownership in the selection of proposals and guidance within the ISGC.

The director also took time last summer to personally meet as many of our affiliates as possible. This was done to better assess the needs of all the affiliates within the state as many had not participated in our annual meetings or other ISGC functions in some time. It was also a chance to introduce the new director to the affiliates. Small changes in our Special Projects Grant and the timing of our annual meeting were made in order to better accommodate our affiliates.

Finally, the scholarship funding process was altered with the intent to increase the retention of students in the STEM fields. As scholars continue within the STEM field and continue to meet the requirement of the scholarship, their funding increases each year. The goal is to reward students who continue to remain in the STEM fields and perhaps provide an added incentive for students to remain in STEM.

PROGRAM PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

Academic Affiliates

University of Idaho – Lead Institution – Founded in 1889, the University of Idaho is the state's flagship higher-education institution and its principal graduate education and research university, bringing insight and innovation to the state, the nation and the world. University researchers attract nearly \$100 million in research grants and contracts each year; the University of Idaho is the only institution in the state to earn

the prestigious Carnegie Foundation ranking for high research activity. The university's student population includes first-generation college students and ethnically diverse scholars. Offering more than 150 degree options in 10 colleges, the university combines the strengths of a large university with the intimacy of small learning communities.

Boise State University – BSU is an emerging metropolitan research university of distinction achieving its vision through academic excellence, public engagement, a vibrant culture and exceptional research. Reflecting the character of Idaho's capital city – a center of business, government, technology, health care and the arts, BSU is the largest university in Idaho with 19,667 students.

Idaho State University – ISU is a public, higher education institution in Southeast Idaho, with academic programs in business, pharmacy, and the health professions, teach education, engineering, arts and sciences, and applied technology training through the College of Technology. ISU provides undergraduate and graduate educational services to approximately 13,000 students annually.

Lewis Clark State College – Founded in 1893, LCSC is a public, undergraduate college with a history born of vision and commitment to people. The college serves a highly diverse population, providing educational opportunities to over 3000 students from more than thirty states and twenty countries. LCSC offers instruction in the liberal arts and sciences, professional areas tailored to the educational needs of Idaho, and applied technical programs that support the state and local economy.

North Idaho College – Founded in 1933, NIC is a comprehensive community college located on the spectacular shores of Lake Coeur d'Alene and the Spokane River. This public, higher education institution provides quality educational opportunities through offering associate degrees in more than 35 transferable academic majors and technical certificates or associate of applied science degrees in 26 professional-technical programs. NIC serves approximately 4,400 students annually.

College of Idaho – Founded in 1891, The College of Idaho provides a curriculum that is grounded in the liberal arts in a challenging, intimate academic setting. C of I is a private, liberal arts institution that provides an undergraduate education for more than 800 students in Caldwell.

College of Southern Idaho – CSI, a public, comprehensive community college, provides educational, social and cultural opportunities for a diverse population of South Central Idaho. In this rapidly changing world, CSI encourages students to lead enriched productive and responsible lives. The College of Southern Idaho is one of the fastest growing institutions of higher education in the state. CSI serves approximately 7,000 students annually.

Northwest Nazarene University – Founded in 1913, NNU is a private, Christian liberal arts university fully committed to an educational process that pursues both

intellectual and spiritual development. NNU is committed to providing its students, both undergraduate and graduate, with an acquaintance with the major fields of knowledge through a study in the liberal arts. NNU serves approximately 1,400 students annually.

Brigham Young University – Idaho – BYU-Idaho’s mission is to build testimonies of the restored gospel of Jesus Christ, provide a quality education, prepare students for lifelong learning, and maintain a wholesome academic, cultural, social and spiritual environment. This four-year private university, which is affiliated with The Church of Jesus Christ of Latter-day Saints, attracts students from all 50 states and more than 30 foreign countries. It currently serves approximately 11,000 students annually.

Informal Education Affiliates

Discovery Center of Idaho - DCI is an interactive science center providing exhibits and educational programs that offer authentic, sensory experiences making the sciences, math and technology tangible.

Palouse Discovery Science Center - The Palouse Discovery Science Center brings hands-on science and learning experiences to people of all ages. PDSC is a non-profit organization whose purpose is to further the public's understanding of science and technology through the use of educational programs, exhibits, teaching collections, and activities which emphasize the physical participation of individuals. The Center's offerings support and enhance science in both formal (such as school systems) and informal situations involved with life-long learning.

Warhawk Air Museum & NASA Space Place - The WAM Education Center, including the NASA Space Place Club, is a place where students of all ages can come to learn about World War II History from the warfront to the home-front and how the advancement in technology has had an impact on our society. Students will have an opportunity to learn about the changes that have occurred in America since the advent of man’s first flight through the current aerospace developments.

Idaho Mobile Space Station – The IMSS was created in collaboration with the Idaho Dairy Council, ISGC, and former astronaut Tom Jones, among others. A converted semi-truck trailer was used to construct a portable Station that resembles components of the Shuttle, including a robotic arm, exercise bike, and an aviation flight computer program. The Station was designed for grades 5-8, and includes activities both in and out of the Station, such as “Toys in Space,” access to astronaut food, etc.

Idaho Science Teachers Association – ISTA serves as the Idaho Chapter of the National Science Teachers Association. ISTA’s membership includes science teachers, administrators, and scientists from across the state of Idaho. ISTA focuses on continually enhancing science education in Idaho, awarding outstanding science teachers in the state, and serving as a clearinghouse for resources through use of workshops, conferences, a newsletter, and a website.

Idaho Museum of Natural History - It is the mission of the Idaho Museum of Natural History to actively nurture an understanding of and delight in Idaho's natural and cultural heritage. As the official state museum of natural history, it acquires, preserves, studies, interprets, and displays natural and cultural objects for Idaho residents, visitors, and the world's community of students and scholars. The Museum also supports and encourages Idaho's other natural history museums through mentoring and training in sound museological practices.

Idaho Academy of Science – The IAS was organized in 1958 to further the cause of science and science education in Idaho. The IAS seeks to improve the effectiveness of science education in Idaho, and to promote public understanding and appreciation of the sciences and applied technology in the modern world. It is the only statewide organization in Idaho that embraces all scientific disciplines.

Governmental and Industrial Associates

Bruneau Dunes State Park – The dunes at Bruneau Dunes State Park are unique in the Western Hemisphere. The Park is home to the largest single-structured sand dune in North America, with a peak 470 feet above the lakes. The Park is also home to the Bruneau Dunes Observatory, which houses several telescopes of various sizes that are available for use by the public.

Idaho Division of Aeronautics – The Division of Aeronautics serves to provide the highest quality, effective, efficient, and safe aviation system for all users of services, visiting or residing in Idaho. To this end, the division plans and implements necessary and desired products, programs, and services to develop, encourage and foster an outstanding aviation system that meets the current and future requirements of a growing and diverse Idaho aviation public.

Idaho Department of Education – Idaho's Department of Education was organized in 1891. Today, the Department is organized into an administrative section and six bureaus, and holds responsibility in a variety of areas. The department works in collaboration with the Idaho Board of Education in order to provide general supervision of Idaho's educational institutions and public school system.

Craters of the Moon National Monument & Preserve – Craters of the Moon is one of the best places in the world to see the awesome effects of volcanism. Established by Presidential proclamation in 1924, the Monument and Preserve encompass three major lava fields and 250,000 acres of sagebrush steppe grasslands. The rugged landscape remains remote and undeveloped with only one paved road across the northern end.

Idaho National Laboratory – In operation since 1949, the Idaho National Laboratory is a science-based, applied engineering national laboratory dedicated to supporting the U.S. Department of Energy's missions in environment, energy, science and national defense. Its mission is to deliver science-based; engineered solutions;

complete environmental cleanup responsibly and cost effectively; provide leadership and support to optimize the value of EM investments and strategic partnerships; and enhance scientific and technical talent, facilities, and equipment. The INL works with higher education institutions, researchers, industry, and with students of all levels in a variety of capacities.