Wyoming NASA Space Grant Consortium
Lead Institution: University of Wyoming
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Consortium URL: http://wyomingspacegrant.uwyo.edu/
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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 **Wyoming** NASA Space Grant Consortium is a **Capability Enhancement** Consortium funded at a level of $**430,000** for fiscal year 2012.

PROGRAM GOALS

Outcome 1a: Diversity

1. **Goal:** Achieve a level of diversity in WY NASA Space Grant Consortium (WSGC) that represents the demographics regarding diversity in Wyoming. **Objectives:** Maintain higher diversity levels than those of the State (12%) or college level (8%).
2. **Goal:** Further develop relationships with underrepresented minority groups and Minority Serving Institutions in WY and outside of the State. **Objectives:** Work with the University's Multicultural Affairs Office to create outreach opportunities. Develop a relationship with Wind River Tribal College through collaboration and communication to provide funding opportunities for Native American students and teachers. Promote WSGC programs and space science awareness through local Hispanic radio station. Develop a relationship with Winston-Salem State University (WSSU), a HBCU; this would benefit both organizations and increase research opportunities for students and faculty.

Outcome 1b: Fellowship/Scholarship

1. **Goal:** Increase and improve opportunities for research experience and internships for graduate and undergraduate students. **Objectives:** Provide internships and student research opportunities to WY students. Explore internship opportunities with additional aerospace, technology, and STEM-related industries in WY.
2. **Goal:** Encourage and retain college students in STEM majors. **Objectives:** Establish an annual symposium for faculty, fellows, interns, and scholarship recipients to connect, network, and discuss opportunities within STEM majors, graduate programs, fellowships, and careers.
3. **Goal:** Maintain the diversity in fellowship/scholarship programs to greater than or equal to the demographics of enrolled higher education students in the State of WY. **Objectives:** Encourage diversity within programs by instituting seminars in collaboration with the Multicultural Affairs Office and by establishing relationships with Minority Serving Institutions.
4. **Goal:** Recruit community college students to get involved in Undergraduate Research Fellowships and WSGC programs. **Objectives:** Provide access to fellowship and scholarship information for all students in WY by increasing the affiliates to include each institution of higher education. Advertise

opportunities for students at the CC's, such as the CC STEM and CC Transfer Scholarships and Undergraduate Research Fellowships.

5. **Goal:** Support STEM workforce development in WY through real-life, hands-on experiences. **Objectives:** Provide internships and student research opportunities to WY students.

Outcome 1c: Research Infrastructure

1. **Goals:** Increase awareness of and continue to develop Research Infrastructure programs. **Objectives:** Provide infrastructure funding, especially seed grants, to faculty that have the potential to develop into larger funded research projects. Fund faculty research that will be likely to develop substantial projects of NASA interest. Inform researchers of available WSGC and external NASA opportunities by providing updates on NASA solicitations and other funding opportunities through e-blasts to students, faculty, and affiliates. Support Undergraduate Research Day in Laramie. Provide travel funding for faculty or students to present at NASA or other scientific conferences.
2. **Goals:** Build partnerships between industry, government, and academia. **Objectives:** Develop new and stronger partnerships with industry, government, and academia to create internships and hands-on research opportunities.
3. **Goals:** Develop the interdisciplinary nature of the Research Infrastructure program. **Objectives:** Bring speakers to WY to talk about their research in NASA supported areas. Emphasize focus on interdisciplinary proposals.

Outcome 1d: Higher Education

1. **Goals:** Increase opportunities in STEM education at the college level. **Objectives:** Increase the number of Faculty Education Enhancement Grants.
2. **Goals:** Expose students to scientific research and hands-on experiences to engage their interest and encourage workforce development. **Objectives:** Encourage development of new college-level courses and provide support for courses that provide hands-on student experiences, such as RockOn or BalloonSat courses.
3. **Goals:** Create additional opportunities for STEM teacher training and in-service professional development. **Objectives:** Provide funding for in-service teacher professional development related to RockOn or Balloon Sat programs. Encourage pre-service teacher training at the Casper Planetarium summer Astronomy Workshop and after-school teacher training program.
4. **Goals:** Further develop relationships with underrepresented students and Minority Serving Institutions. **Objectives:** Partner with the Multicultural Affairs Office to institute seminars and develop relationships with Minority Serving Institutions.

Outcome 2a: Precollege Education

1. **Goals:** Increase interest in STEM majors and careers. **Objectives:** Continue to support and grow Women in Science (WIS). Provide support to AstroCamp in Laramie, WY—a 10-day science and astronomy camp for middle-school students and teachers by providing teacher professional development. Encourage teacher involvement in robotics programs through funding opportunities. Provide support and funding for State Science Fair. If appropriate, WSGC will partner with various state entities to develop a NASA Aerospace Scholars program for WY.
2. **Goals:** Inform students and families about opportunities in STEM education and research. **Objectives:** Provide information about WSGC programs and activities to libraries, museums, science centers, WY Science Teacher Association, and online.
3. **Goals:** Distribute NASA and STEM resources to WY teachers and students. **Objectives:** Refurbish, update and create new Space Trunks. Increase awareness and support for the WY NASA Educator Resource Center (ERC) through funding & advertisement. Support teacher involvement in STEM-related events or workshops, and provide funding for classroom materials.

Outcome 3a: Informal Education

1. **Goals:** Increase museum outreach and partnerships. **Objectives:** Develop a portable Space Shuttle display for traveling exhibits. Provide funding for institutions to develop STEM-related displays. Encourage affiliates to create one program a year onsite for regional activities.
2. **Goals:** Establish new relationships with informal science education institutions in WY. **Objectives:** Establish relationships with Astronomy Clubs to offer support for events. Partner more closely with informal education facilities to offer hands-on space science activities.

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

OUTCOME 1

Graduate Research Fellowships – In 2012, six graduate fellowships were awarded.

Undergraduate Research Fellowships – Space Grant funded a total of 17 undergraduate research fellowships in 2012 (Spring and Fall; 28 total students – 5 awards went to engineering teams). One of the awards went to Annette Hein, a student at Casper College, one of the community colleges in Wyoming.

Community College STEM Scholarships – The number of community college student awardees in 2012 is 60 to date: 25 women (42%), four underrepresented minorities (7%). Eastern Wyoming College has not submitted scholarship data yet.

Community College Transfer Scholarships – Four scholarships were awarded to STEM students transferring to the University of Wyoming (the only 4-year university in the state) from Wyoming community colleges.

Student Internships – In 2012, five students were placed in internships at NASA Centers. Four students went to JSC and one went to NASA Ames. Several students in 2013 applied for internships as a result of speaking with the 2012 students about their experiences at NASA.

Student Moonbuggy Competition - Eight students from UW participated in the Moonbuggy competition this year. This year, the Moonbuggy team was broken into two teams – one to work on the Moonbuggy itself and one to work on developing new non-pneumatic wheels. This was a new experience for the students, integrating the work of two design teams into the project and figuring out how to budget for both team's expenses. This simulated a real-life scenario, incorporating multiple aspects into a design.

Faculty Research Initiation Grants - Three grants were awarded to faculty at the University of Wyoming.

Speaker Series – In 2012, WSGC helped sponsor several speakers at the University of Wyoming for UW Department of Physics & Astronomy Colloquia.

Undergraduate Research Day - WSGC co-sponsors this campus-wide event, which was held on April 27th, 2013 to showcase undergraduate research done at UW and Wyoming community colleges. Most WSGC Undergraduate Research Fellows presented their research at the event. Attendance was close to 300 students.

Travel Grants for Scientific Conferences – WSGC awarded 31 travel grants this year to students traveling to scientific conferences, science competitions, or engaged in research. This is great experience for students to present their work at national conferences or event.

Faculty Education Enhancement Grants - Four grants were provided to support faculty members at UW and Wyoming community colleges to develop new college courses in STEM fields. Particular interest was given to interdisciplinary courses. One award went to a community college faculty.

Student Satellite Building – Rocket Class - In 2012, Space Grant hosted a balloon satellite program for 52 students and six teachers from four middle and high schools in Wyoming. Students designed a balloon payload that was launched outside of Laramie on May 4, 2013. During the program teachers participated in a teacher workshop and students participated in lab tours at the UW campus.

Astronomy Workshop for Pre-service Teachers – The astronomy workshop held at Casper College is a collaboration between the college and Casper Planetarium. The workshop provides professional development opportunities for pre-service middle and high school STEM teachers. During the school year, pre-service teachers continue their training by participating in an afterschool science club. In 2012, two pre-service teachers were funded.

Student Organizations – No funding was given to student organizations in 2012.

Minority Serving Institutions - During FY2012, WSGC partnered with WSSU, a HBCU to provide summer research fellowships for four WSSU students at UW.

OUTCOME 2

Teacher Educational Resources – In 2012, the Space Trunks were shipped out 10 times to schools throughout the State. Space Grant has developed a new Telescope Trunk, Wind Energy Trunk, and GPS/GIS Trunk. Five STEM-related events were sponsored for teachers in WY. Space Grant also participated in the Wyoming Science Teacher Association meeting held in Casper, WY and participates in the Wyoming Afterschool Alliance programs. In addition, Space Grant provided a summer professional development workshop for 30 in-service teachers, led by NASA AESP Tony Leavitt in partnership with the UW Science Posse, an NSF GK-12 funded program.

Wyoming Astrocamp for Teachers – Space Grant supports the Exxon Mobile Bernard Harris Summer Science Camp (Wyoming Astrocamp) by providing administrative help and teacher stipends for middle and

high school STEM teachers instructing at the camp. Teachers work with UW faculty to develop curriculum and learn about astronomy research during the camp. Two teachers were supported in FY2012.

Robotics Competition Support – In FY2012, WSGC supported seven robotics programs from across the state; teams in Casper, Big Piney, Carpenter, Lander, Ranchester, and Jackson Hole, WY. This support provided funding for the FIRST LEGO League State Competition, travel, and supplies for teams.

NASA Educator Resource Center Support – In FY2012, WSGC did not provide funding to the NASA ERC. All of the NASA materials available at the ERC are now available to teachers throughout WY through the UW Library system.

Women in Science - In May 2013, WSGC hosted the 14th annual Women in Science Conference at the UW campus. The conference is designed to increase interest in science and technology careers and promote a positive image of science careers for youth. It also provides role models for young women and gives them information about college. Close to 500 students and 55 presenters participated in this year's event.

State Science Fair - WSGC supports science fair and provides awards to NASA related projects. This year, close to 400 students attended State Science Fair and 15 NASA special awards were given out.

NASA Aerospace Scholars Program – WSGC has decided not to pursue a NASA Aerospace Scholars Program at this time. The Space Grant contact and partner at the WY Department of Education left his position, making organization and funding of the program more difficult.

OUTCOME 3

Museum/Library/Planetarium Support – In FY2012, WSGC did not provide funding for museum, library, or planetarium support in Wyoming, although we are working to develop new partnerships.

PROGRAM ACCOMPLISHMENTS

Outcome 1: *Contribute to the development of the STEM workforce in disciplines needed to achieve NASA's strategic goals: Employ and Educate*

Goal: Increase and improve opportunities for research experience and internships for graduate and undergraduate students.

- Seventeen undergraduates or undergraduate teams were funded to work on research projects through Undergraduate Research Fellowships (Spring and Fall). Six graduate students were given graduate assistantships to work on research projects through Graduate Research Fellowships.
- Five students spent the summer at a NASA Center for an internship: four at JSC, one at Ames.
- Eight students received fellowships to design and fabricate this year's Moonbuggy.

Goal: Encourage and retain college students in STEM majors.

- Information was distributed to encourage students to apply for fellowships and scholarships through e-mails, the website, public radio announcements, posters, and career fairs. Longitudinal tracking of student awardees continues.
- Regular correspondence was maintained with all CC affiliates in addition to two consortium meetings this year. This year, three affiliates attended National Space Grant meetings. Affiliates advertise programs at their colleges.
- Several networking lunches were held with undergraduate and graduate fellows, transfer scholarship recipients, Moonbuggy teams, and student interns.

Goal: Maintain the diversity in fellowship/scholarship programs to greater than or equal to the demographics of enrolled higher education students in the State of WY.

- The Multicultural Affairs Office publicizes our opportunities in their newsletter.
- Out of 115 fellowship and scholarship recipients awarded (104 awards, 115 students – some engineering teams) thus far 36% were female and 8% were from underrepresented groups.
- Of the seven Faculty Education and Research grant proposals funded, 30% of the awardees were female.

Goal: Recruit CC students to get involved in Undergraduate Research Fellowships and WSGC programs.

- In 2012, WSGC had a student from Casper College receive an Undergraduate Research Fellowship. Four CC Transfer Scholarships were given to students transferring from a CC to UW.
- CC affiliates advertise all WSGC programs and run their own CC STEM Scholarship programs. All CC's in WY are members of the consortium.

Goal: Support STEM workforce development in WY through real-life, hands-on experiences.

- As mentioned above, 17 undergraduates or teams received Undergraduate Research Fellowships, six graduate students received Graduate Research Fellowships, five students did an internship at a NASA Centers, eight students were part of the Moonbuggy Team, and four HBCU students participated in summer research fellowships. All of these students were involved in hands-on research and/or real-life engineering experiences.

Goals: Increase awareness of and continue to develop Research Infrastructure programs.

- Research grant opportunities were publicized through a variety of means, including: e-mail, webpage, posters, and public radio announcements. A total of 14 proposals were received in FY2012 and three awards were made. Information on resulting publications and new proposals submitted is not available at this time.
- NASA Research Opportunities were publicized as they were received.
- 31 travel awards have been made to date in FY2012 to students presenting at scientific conferences, engaged in research, or attending student engineering competitions.

Goals: Build partnerships between industry, government, and academia.

- Space Grant continues to work with Firehole Composites, a local software engineering company based in Laramie, WY. WSGC continues to work with WSSU, a HBCU, to provide summer research fellowships for students underrepresented in science. UW and WSGC are also pursuing partnerships with Jackson State University and Morehouse University, also HBCUs. During the 2010 Summer of Innovation, Space Grant partnered with the WY Department of Education and continued that partnership for programs in 2011 and 2012. All of these partnerships have resulted in hands-on research and educational experiences for students and teachers.

Goals: Develop the interdisciplinary nature of the Research Infrastructure program.

- WSGC helped bring several speakers to Wyoming in FY2012.
- Research proposal reviewers were encouraged to rate projects that were highly interdisciplinary in nature as highest in the review process, and awards were made on that basis.

Goals: Increase opportunities in STEM education at the college level.

- Four Faculty Education Enhancement grants were made in 2012, which resulted in four new or updated courses.

Goals: Expose students to scientific research and hands-on experiences to engage their interest and encourage workforce development.

- Four new/updated courses were developed from Faculty Education Grants.

Goals: Create additional opportunities for STEM teacher training and in-service professional development.

- WSGC hosted a balloon satellite launch and workshop in May 2013with StratoStar, a company that provides training to start balloon satellite programs. There has been great interest in starting a balloon satellite program in Wyoming, and in FY2012 we started a new balloon satellite program for middle and high school students and teachers, with our first launch on May 4, 2013.
- In FY2012, two pre-service teachers participated in the Astronomy Workshop at Casper College, which provides professional development opportunities for pre-service middle and high school STEM teachers. During the school year, the pre-service teachers continued their training by participating in an afterschool science club.

Goals: Further develop relationships with underrepresented students and Minority Serving Institutions.

- Space Grant has started a partnership with WSSU, a historically black college in North Carolina. In summer 2010, five WSSU students participated in a summer research fellowship at the University of Wyoming under the mentorship of UW graduate students; 3 in summer 2011, 4 in summer 2012, and 2 will participate in summer 2013.
- WSGC continues to work with the Multicultural Affairs Office on campus and advertises all fellowship, scholarship, and grant opportunities in their weekly newsletter.
- WSGC continues to look for opportunities to partner with the Wind River Tribal College.
- Associate Director, Dr. Shawna McBride now serves on the Strategic Diversity Initiatives Committee at UW, which promotes the goals listed above.

Outcome 2: *Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty: Educate and Engage*

Goals: Increase interest in STEM majors and careers.

- Attendance at the UW Women in Science Conference in May was close to 500 students and 35 teachers. A Men in Science event will be held in Riverton, WY with approximately 300 students and teachers (estimated 25% underrepresented from Wind River Reservation).
- WSGC also supports the Exxon Mobile Bernard Harris Summer Science Camp (Wyoming Astrocamp). The camp has grown from around 20 students to 50 students. WSGC supports teacher stipends for the camp.
- WSGC supported seven robotics programs in 2012, providing teachers funding for supplies and travel.
- WSGC supported State Science Fair, giving out 15 NASA special awards.

Goals: Inform students and families about opportunities in STEM education and research.

- WSGC has a presence at many public events, including: State Science Fair, career fairs, teacher conferences/workshops, and Women in Science conferences. All information about programs is available online. Through continued networking, several new partnerships have been developed (WY Afterschool Alliance, Tate Museum, and Challenger Learning Center in CO) that will help to promote WSGC programs.

Goals: Distribute NASA and STEM resources to WY teachers and students.

- Use of the Space Trunks continues to be popular. WSGC has added an additional Telescope Trunk, Wind Energy Trunk, and GPS/GIS Trunk to be sent around the State.
- In summer of 2012, WSGC hosted a teacher professional development workshop for 30 in-service teachers led by NASA AESP Tony Leavitt.
- WSGC continues to support the NASA ERC on the UW campus. The collection of NASA materials is now cataloged, so people can search for items on the UW Library system. This resource is advertised at the Wyoming Science Teacher Association meeting.
- In FY2012, WSGC supported teacher involvement in 5 STEM-related events: 1) Support for Mills Spring Ranch Residential Field Experience on Casper Mountain; 2) Casper Regional Science Fair; 3) Support for the NASA HUNCH team from Jackson, WY, 4) Support for Women's History Month events at UW – STEM K-12 programs (Marie Curie performance for over 400 students and teachers), and 5) Wildlife meeting attendance.
- NASA and STEM resources are also delivered through participation in the Wyoming Science Teacher Association Meeting and through the WY Afterschool Alliance.
- Associate Director, Dr. Shawna McBride is also now on the WYSTEM/UW P-16 STEM Advisory Committee, whose focus is to promote and coordinate all UW P-16 science outreach activities in Wyoming.

Outcome 3: *Build strategic partnerships and linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA's mission: Engage and Inspire*

Goals: Increase museum outreach and partnerships.

- WSGC is working with the UW Geology Museum to incorporate Space Science displays into their collection. Currently there is a meteorite display, which we plan to update/expand.
- We have acquired a Space Shuttle tile and pockets from clothing worn in space. We would like to get more memorabilia to put together a Space Shuttle traveling display that can be sent around the State.

Goals: Establish new relationships with informal science education institutions in WY.

- WSGC Associate Director, Dr. Shawna McBride is on the Board of the Wyoming Afterschool Alliance. Through this partnership WSGC has direct access to afterschool programs in WY.
- We continue to work with the Casper Planetarium to support K-12 educational opportunities.
- The Tate Museum at Casper College participated in Women in Science this year and would like to become more involved in the future.

PROGRAM CONTRIBUTIONS TO NASA EDUCATION PERFORMANCE MEASURES

- **Student Data and Longitudinal Tracking:** Total awards = 254 (FY2006-2012); Fellowship/Scholarship = 222, Higher Education/Research Infrastructure = 32; 11% of total awards represent underrepresented minority or disabled students. Nine students have accepted STEM positions in an aerospace industry, 72 students have accepted STEM positions in non-aerospace fields (including academic fields), while 50 have graduated and are pursuing advanced STEM degrees.

- **Minority-Serving Institution Collaborations:** WSGC has started a partnership with WSSU, a historically black college in North Carolina. In summer 2010, five WSSU students participated in a summer research fellowship at the University of Wyoming under the mentorship of UW graduate students. In summer 2011 three WSSU students came to WY, in summer 2012 four WSSU students came, and in summer 2013 two HBCU students will participate in summer research fellowships. In March 2013, Space Grant met with visitors from Jackson State University (JSU), including Dr. Pamala Heard, Director of the NASA Educators Resource Center at JSU. This has expanded our HBCU partnerships, and we are now receiving summer fellowship applications from both WSSU and JSU students. Funding for this program comes from WY NASA Space Grant, the UW School of Energy Resources, the UW Diversity Office, and an NSF GK12 grant – it has been a great collaboration.

- **NASA Education Priorities:**
  - Authentic, hands-on student experiences in science and engineering disciplines – the incorporation of active participation by students in hands-on learning or practice with experiences rooted in NASA-related, STEM-focused questions and issues; the incorporation of real-life problem-solving and needs as the context for activities.
    - At the college level, WSGC provided several hands-on, research and engineering experiences for students in FY2012 related to NASA goals: 6 Graduate Research Fellowship, 17 Undergraduate Research Fellowship (28 students total with teams), 5 NASA Center Internships, 8 student participants on the NASA Great Moonbuggy Race Team, and 4 WSSU Summer Research Fellowships.
    - At the K-12 level, WSGC also supports several activities that get students and teachers involved in hands-on activities including: State Science Fair, funding for robotics programs, Women in Science, AstroCamp, and by providing educational resources to teachers.
  - Diversity of institutions, faculty, and student participants (gender, underrepresented, underserved).
    - The members of our consortium include the University of Wyoming, all of the community colleges in Wyoming, industry partners, government partners, and K-12 educational partners. In addition, we have started a partnership with Winston-Salem State University, an HBCU. In FY 2012, we funded seven faculty awards: 3 Faculty Research grants and 4 Faculty Education grants. 30% of the awardees were female. No awards were given this year to faculty underrepresented in the sciences and this is due in large part to the lack of applicants who would fall into this category. In regards to the students funded in FY 2012, we provided funding for: 6 graduate students, 17 undergraduate research fellowships (Fall and Spring), 5 internship, 8 Moonbuggy participants, 4 community college transfer students, 4 WSSU fellowships, and 60 STEM scholarships to students at community colleges, for a total of 104 awards (115 students – some awards were given to teams). Of the 115 students funded, 36% were female and 8% were students underrepresented in the sciences.
  - Engage middle school teachers in hands-on curriculum enhancement capabilities through exposure to NASA scientific and technical expertise. Capabilities for teachers to provide authentic, hands-on middle school student experiences in science and engineering disciplines (see above).
    - During FY2012, WSGC sent out Telescope and Rocket Space Trunks containing NASA curriculum to K-12 STEM teacher in the state 10 times. WSGC also hosted a teacher professional development workshop in summer 2012 with NASA AESP Tony Leavitt, which

was attended by 30 in-service teachers. In addition, WSGC supported 5 STEM activities for teachers in FY2012 to help teachers provide hands-on activities for students.

- Summer opportunities for secondary students on college campuses with the objective of increased enrollment in STEM disciplines or interest in STEM careers.
  - In May 2013, WSGC hosted the 14th annual Women in Science conference at the University of Wyoming. This year we had close to 500: 7-12th grade students in attendance. This conference provides students the opportunity to visit a college campus and learn about careers in STEM.
  - In June 2013, WSGC will help with the Exxon Mobile Bernard Harris Summer Science Camp for middle school students. The 50 campers will stay in the UW dorms for 10 days and learn about research and careers in space-related areas. WSGC provides administrative help and teacher stipends for the camp.
- Community Colleges – develop new relationships as well as sustain and strengthen existing institutional relationships with community colleges.
  - All of the Wyoming community colleges are now members of the WSGC. Each college has a representative that attends the WSGC Board Meeting in the Fall and Spring. The community colleges help to advertise WSGC programs to their students and faculty.
  - Each college runs their own scholarship program for CC STEM students.
  - In FY2012, 4 community college students received Community College Transfer Scholarships, 60 students thus far have received CC STEM scholarships, 1 CC student received an Undergraduate Research Fellowship, and 1 CC faculty member received a Faculty Education Grant.
- Aeronautics research – research in traditional aeronautics disciplines; research in areas that are appropriate to NASA's unique capabilities; directly address the fundamental research needs of the Next Generation Air Transportation System (NextGen).
  - 5 student interns participated in NASA summer internships where they worked directly on NASA-related projects.
- Environmental Science and Global Climate Change – research and activities to better understand Earth's environments.
  - In FY2012, we supported 8 students and faculty involved in environmental science and/or global climate change science: 3 undergraduate projects, 3 graduate projects, and 2 faculty research projects.
- Enhance the capacity of institutions to support innovative research infrastructure activities to enable early career faculty to focus their research toward NASA priorities.
  - In FY2012, WSGC provided three Faculty Research Initiation grants. These grants are intended as seed funding for early career faculty, faculty at community colleges, and faculty members making a dramatic departure from their current research. All of the research is directed at NASA goals and priorities. The seed funding is given to new faculty members or faculty changing their research direction to help them develop data that can then be used to apply for larger grants: NASA, NSF, NIH, etc.

IMPROVEMENTS MADE IN THE PAST YEAR

Space Grant has continued to develop its management strategy and network. All community colleges in the state are now part of the Space Grant Consortium. Over the past year, Space Grant has strengthened and expanded its partnerships with HBCUs, to include both WSSU and JSU, to help increase program diversity and diversity within the WY educational system. Associate Director, Dr. Shawna McBride now serves as Interim Chair of the Strategic Diversity Initiatives Committee at UW and is helping to develop strategies for partnering with HBCUs. Partnerships with other UW programs, including the UW Diversity Office, the

Science Posse (an NSF GK12 funded program), and the School of Energy Resources are helping to defer costs for this program. WSGC is partnering with the Science Posse, an NSF GK12 funded program, and the NASA AESP to provide teacher professional development workshops. Space Grant has started a new balloon satellite program for middle and high schools in the state and we will have our first launch on May 3-4, 2013. Dr. Shawna McBride is also on the UW P-16 STEM Advisory Committee and is helping to connect STEM and CTE programs throughout WY through a virtual portal/website. Additionally, Space Grant partnered with several organizations this year to start WiMSE at UW, which supports undergraduate women in STEM majors. Finally, we are meeting on a regular basis with other programs at UW who have similar goals, so we can partner on marketing and other opportunities. These programs include: NSF EPSCoR, NIH INBRE, the McNair Scholars Program, and MultiCultural Affairs.

PROGRAM PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

- **University of Wyoming**: 4-year university. Location of the WSGC offices. Involved in Undergraduate and Graduate Fellowships, Faculty Research and Education Grants, NASA internships, and community college transfer scholarships;
- **Casper College**: 2-year community college. Involved in Undergraduate Fellowships, Faculty Research and Education Grants, community college transfer scholarships, and offer locally-run community college STEM scholarships.
- **Central Wyoming College**: 2-year community college. Involved in Undergraduate Fellowships, Faculty Research and Education Grants, community college transfer scholarships, and offer locally-run community college STEM scholarships.
- **Eastern Wyoming College**: 2-year community college. Involved in Undergraduate Fellowships, Faculty Research and Education Grants, community college transfer scholarships, and offer locally-run community college STEM scholarships.
- **Laramie County Community College – Laramie County Campus**: 2-year community college. Involved in Undergraduate Fellowships, Faculty Research and Education Grants, community college transfer scholarships, and offer locally-run community college STEM scholarships.
- **Laramie County Community College – Albany County Campus**: 2-year community college. Involved in Undergraduate Fellowships, Faculty Research and Education Grants, community college transfer scholarships, and offer locally-run community college STEM scholarships.
- **Northern Wyoming Community College District – Sheridan College**: 2-year community college. Involved in Undergraduate Fellowships, Faculty Research and Education Grants, community college transfer scholarships, and offer locally-run community college STEM scholarships.
- **Northern Wyoming Community College District – Gillette College**: 2-year community college. Involved in Undergraduate Fellowships, Faculty Research and Education Grants, community college transfer scholarships, and offer locally-run community college STEM scholarships.
- **Northwest College**: 2-year community college. Involved in Undergraduate Fellowships, Faculty Research and Education Grants, community college transfer scholarships, and offer locally-run community college STEM scholarships.
- **Western Wyoming Community College**: 2-year community college. Involved in Undergraduate Fellowships, Faculty Research and Education Grants, community college transfer scholarships, and offer locally-run community college STEM scholarships.
- **Embry-Riddle Aeronautical University**: military college, offers some undergraduate classes and some master's level classes. Involved in Faculty Research and Education Grants.
- **90th Space Wing, F.E. Warren Air Force Base**: air force command located in Wyoming, includes the Inter-Continental Ballistic Missile Museum and interest in rocketry informal education programs.
- **Wickman Spacecraft and Propulsion, Co.**: industry affiliate, they design and produce small solid rocket motors used in some defense missiles and other satellite programs.
- **Casper Planetarium**: informal education affiliate, associated with the K-12 school district in Casper, WY, hold astronomy events for the general public, workshops for teachers and students.