

Mississippi Space Grant Consortium
University of Mississippi
Dr. Peter C. Sukanek
(662) 915-1187
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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 Mississippi Space Grant Consortium is a Designated Consortium funded at a level of \$575,000 (base) for fiscal year 2011.

PROGRAM GOALS

The Mississippi Space Grant Consortium (MSSGC) has three major goals for FY2011-2012 as part of the 5-year Strategic Plan developed to support NASA in pursuit of their education goals and also to detail the Mississippi Space Grant Consortium vision: The Mississippi Space Grant Consortium is a statewide network of sixteen MS Universities and Community Colleges; aerospace-related industries and public service institutions providing opportunities for Mississippians, especially those from underrepresented groups, to understand and participate in NASA's aeronautics and space program by supporting and enhancing science, technology, engineering and mathematics education, research and outreach programs. The three goals for MSSGC are:

1. **Encourage:** The Mississippi Space Grant Consortium Program will provide educational support for STEM students as well as support STEM faculty to provide hands-on activities in their classroom. Program areas: Student support (scholarships, mentoring), Teacher training (Affiliate Workshops, Teacher Conference, Mini-Grants, K-12 Outreach (Fellowships, Hardware programs).
2. **Enhance:** The Mississippi Space Grant Consortium Program will support students in their STEM education and help provide them with the knowledge and skills needed for a world-class workforce. This support includes scholarships, fellowships, and internships with aerospace and aerospace-related industries and NASA Centers, as well as hands-on research experiences, and student rocket and balloon hardware programs. Program areas: Student support (scholarships, fellowships, student research opportunities), Internships (NASA, industry for student and community

college faculty), Research & Engineering (Hardware programs, Research Infrastructure).

3. **Enlighten:** The Mississippi Space Grant Consortium Program will nurture a scientific literate Mississippi population through minigrants for general public STEM programs and through dissemination of NASA opportunities for the informal education entities and K-12 and higher education teachers. Program areas: Community outreach (Mini-grants, Affiliate Programs); Public Relations (information dissemination, publicity, networking).

MSSGC Objectives:

Specific, Measurable, Appropriate, Realistic, Timely

In support of Goal A “Encourage”:

At K-12 level:

A1. Seventy five percent of teachers participating in a MSSGC-sponsored event, such as the Teacher Workshop, will agree with the statement, “The material presented in the workshop will make me a more effective math/science teacher.”

A2. Seven out of eight teachers working with MSSGC Fellows will agree with the statement, “The fellow’s presence in my classroom has inspired some of my students to pursue further study in the STEM fields who may otherwise have not.”

A3. On average, three new math/science teachers will graduate from MSSGC affiliate schools with MSSGC support and will accept a teaching position in Mississippi.

At the community college/undergraduate level:

A4. Eighty percent of undergraduate students participating in a MSSGC-sponsored program will agree with the statement, “This program has reinforced my desire to obtain a degree in math, science or engineering.”

A5. On average, 12 individuals will graduate with a STEM degree from MSSGC affiliates each year with the assistance of an MSSGC program and will either enter the aerospace-related workforce or will enter a graduate program in a STEM field.

A6. Two community college faculty will incorporate new material in their course work based on their MSSGC-supported summer MSSGC workforce development experience.

A7. Seventy five percent of students participating in MSSGC-sponsored mentoring programs will agree with the statement, “Participation in this program has helped me complete my STEM degree.”

In support of Goal B “Enhance”:

B1. On average, at least two MSSGC interns will be offered full-time positions in Mississippi at a NASA-related company.

B2. Each year, eighty percent of students participating in the MSSGC intern programs will agree with the statement, “My participation in this internship position has reinforced my desire to work for NASA or a NASA-related company.”

B3. At least one new significant (~ \$100K/yr) contract or grant will be awarded each year to a MSSGC affiliate investigator based on work initiated with MSSGC funding.

B4. Each year, seventy five percent of the students participating in a MSSGC funded Research and Engineering program will report they are more likely to pursue or to continue to pursue a STEM career.

In support of Goal C “Enlighten”:

C1. Seventy five percent of participants at MSSGC-sponsored educational program will agree with the statement, “The material presented in this program has increased my awareness of current science or math issues.”

General Objectives:

D.1 Eighty percent of MSSGC affiliates will agree with the statement, “The MSSGC office has kept my campus abreast of relevant NASA and Space Grant opportunities and announcements.”

D.2 All MSSGC-sponsored student awardees will reflect the demographic make-up of the State.

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

- MSSGC FY11 (Base) funded a total of 72 students: 36 scholarships and fellowships, and 16 RI students and 20 HE students. All students are currently still enrolled at their institutions. During the summer of 2012, and with augmentation funds- an additional 18 students will be funded: 10 Industry interns and 8 NASA Centers’ interns. (Selections are being made at this time.) Of these 72 awards, 35 were made to underrepresented minority students (48.6%) and 27 awards to female students (37.5%). This is above the MSSGC benchmark of 43.0% for underrepresented and under the 40% benchmark for females. These percentages will be revised once the augmentation funded programs, MSSGC industry and NASA Center interns have been selected. (IES/US Dept of Education stats: MS minority enrollment average of 43.0%: (Outcome 1)
- The MSSGC Fellowship awardees must complete a K-12 outreach component. MSSGC Fellowship program continues with excellent evaluations from K-12 teachers with the thirteen MSSGC Fellows and their K-12 outreach activities as part of the Fellowship requirement. Teachers’ evaluations were complimentary of the Fellows and their added expertise aiding their curriculum in their classroom. (Outcomes 1 & 2)
- Percentage of students whom have taken their next step and have been successfully tracked though their next step vs. last year of MSSSG support.
 - 81% for 2006
 - 100% for 2007
 - 100% for 2008
 - 100% for 2009
 - 100% for 2010
 - 89% for 2006-2011
- Student Data and Longitudinal Tracking: During the FY11 program year, tracking information shows that 9 are pursuing advanced degrees in STEM disciplines, 3 accepted STEM positions at NASA contractors, 13 accepted STEM positions in industry, 1 accepted a STEM position in K-12 academia, 3 accepted STEM positions in academia, and 2 went on to positions in non-STEM disciplines. The remaining students have not yet received the degree that they were pursuing while the received their Space Grant award.
 - “The NASA Space Grant program promoted by growth in workplace experience and helped me to evolve into a more productive student. I am currently in a STEM graduate program that helps minority achieve a PH.D. in STEM fields.

This summer I will participate in an internship at UC Santa Barbara; my thesis field is computer networks and AI.” (Tisha Brown - 2006 MSSGC Workforce Development Internship, 2009 MSSGC Fellowship, 2010 MSSGC Fellowship, 2011 NASA Center Internship/JPL, 2011 MSSGC Fellowship)

- “I cannot begin to explain the impact of the Space Grant program on my life. If I had never been chosen as a participant in the SHARP program the summer after high school graduation, I may have never been introduced to the field of engineering. Now I have found my passion in mechanical engineering and materials science. With each internship, I have learned more about my field as well as the advancements in space exploration. These opportunities also opened up numerous other doors which I feel have made me a more educated and well-rounded individual. Any student that has the opportunity to participate in any Space Grant-related activity is truly in for a life changing experience.” (Ratessiea Lett - 2005 NASA Undergraduate Student Research Program, 2006 NASA Undergraduate Student Research Program, 2008 MSSGC Fellowship, 2009 MSSGC Fellowship, 2011 MSSGC Workforce Development Internship, Mississippi State University - Graduate Student Researcher)
- “Participating in the MSSGC fellowship has helped me to become a better communicator and instructor, and it has also helped me to see the importance of introducing students to science and mathematics at an early age. Preparing instruction for the MSSGC fellowship has helped me to become better-rounded in science, and the fellowship has helped me to continue my education in engineering.” (Alta Knizley - on 03/21/12, 2011 MSSGC Fellowship, Mississippi State University - Graduate Research Assistant)
- “The Space Grant Program is allowing me to work under a professor in the field of Material Science and Engineering. My concentration in my degree program is Materials, so the opportunity to work in a lab that does what I hope to do in the future is a wonderful learning experience. I feel like I really have a head start on my life.” (Taylor Waters, 2011 MSSGC/RI Program-Mississippi State)

This is an excellent example of internships, fellowships, MSSGC research opportunities retaining students into the NASA “next step” and pipeline.

- MSSGC continues to fund the student-led rocket and balloon programs at MSU. High Altitude Balloon Project: MSU/Aerospace Dept. utilizes MSSGC funds for an on-going high altitude balloon project as a research platform. FY11 funds were used in the development of a high altitude sailplane to study flight mechanics in the near space environment. MSSGC funds and MSU Space Grant scholars are also supporting high altitude balloon flights by two MS middle schools. MSU/Rocket Program: MSU also uses MSSGC FY11 funds for the University Student Launch Initiative. The “Space Cowboys” are a student rocket team that has designed and built rockets and participated in the competitive launch at NASA/Marshall and the AIAA Southeastern Region Student Conference yearly. The “Space Cowboys” K-12 outreach component: This rocket team has reached over 1,000 middle school students by a variety of programs: the rocket team conducts a middle school rocket launch challenge that engaged over 40 MS middle school students this year; the team also produced a pre-engineering career video that included NASA careers that was

viewed by over than 500 MS middle school students; and other rocket team outreach activities included speaking to over 18 middle school schools.

- MSSGC continues with a robust RI Program with augmentation funds: funding two new projects for \$25K each and one new satellite project at \$20,000. (Outcome 1)
- MSSGC hosted a middle school STEM workshop for in-service teachers in collaboration with the UM Center for Mathematics and Science Education. This 2-day workshop had 65 MS middle school teachers and included sessions with the NASA Outreach Educators (3) from NASA/Stennis. (Outcome 2)
- MSSGC funded scholarship/fellowship, higher education, K-12, General Public programs at the sixteen MSSGC affiliates. These various programs are conducted by the Campus Coordinator at the MSSGC Affiliate and are all pre-approved by the MSSGC Director. Detailed descriptions are included in the next section. (Outcome 1, 2, & 3)

PROGRAM ACCOMPLISHMENTS

The majority of Mississippi Space Grant's educational programs include scholarships and fellowships, mentored research, Higher Education projects (Outcome 1), K-12 Teacher workshops, and mini-grants (Outcome 2) related to Space Grant program objectives. Our public service programs (Outcome 3) are performed in conjunction with our affiliates' public programs at Meridian Community College, Itawamba Community College and Pearl River Community College. All of the affiliates' educational programs, K-12 through higher education, are in alignment with state educational standards.

The distribution of NASA funds (base funds only) within the Mississippi Space Grant Consortium for May 4, 2011- May 5, 2012:

Total: \$575,000

Scholarships/Fellowships	35.1%		
Higher Education:	25.0%		
Research Infrastructure:	19.3%	Informal Education:	1.2%
K-12:	7.1%	Consortium Admin:	12.4%

Outcome 1: Contribute to the development of the STEM workforce in disciplines needed to achieve NASA's strategic goals. (Employ and Educate) MSSGC FY11 (Base) funded a total of 72 students: 36 scholarships and fellowships, and 16 RI students and 20 HE students. All students are currently still enrolled at their institutions. During the summer of 2012, and with augmentation funds- an additional 18 students will be funded: 10 Industry interns and 8 NASA Centers' interns. (Selections are being made at this time.) Of these 72 awards, 35 were made to underrepresented minority students (48.6%) and 27 awards to female students (37.5%). This is above the MSSGC benchmark of 43.0% for underrepresented and under the 40% benchmark for females. These percentages will be revised once the augmentation funded programs, MSSGC industry and NASA Center interns have been selected. (IES/US Dept of Education stats: MS minority enrollment average of 43.0%: 31 students took next step in FY11 (SG participation supported from FY06-FY11 funds)

- 9 are pursuing advanced degrees in STEM disciplines
- 3 accepted STEM positions at NASA contractors

- 13 accepted STEM positions in industry
- 1 accepted a STEM position in K-12 academia
- 3 accepted STEM positions in academia
- 2 went on to positions in non-STEM disciplines

*FY 2011 MSSGC goals 1 & 2 met; MSSGC objectives A.1, A.2, A.5, A.7, B.1, B.4 met.
FY 2011 programs included:*

1. MSSGC Workforce Development Program (Higher Education): this program is funded with augmentation funds.
2. Student Internships at NASA Centers: this program is funded with augmentation funds.
3. Scholarship and Fellowship Programs

A. MSSGC Fellowship Program

MSSGC awarded thirteen \$17,000 fellowships for the 2011-12 academic year. These fellowships may be renewed for up to three years, and support graduate students enrolled at a Mississippi university pursuing any field of graduate study (Masters or Doctoral level) relevant to NASA. MSSGC Grant Fellows are also required to be a resource person to a teacher in one of their graduate institution's neighboring K-12 schools for ten hours per week. Rather than develop teaching modules, the Fellows used already developed materials from the wide variety available through NASA and the NSF-sponsored North Mississippi GK-8 program. Each Fellow attended a one day training workshop at UM in August to provide guidance for K-12 instruction. The applicant also had to describe their graduate research project and how it relates to NASA interests.

Graduate Research Fellowship Program: (MSSGC Competition)

(13) Fellowships @ \$17,000 each for 2011-12 awarded to:

- Jairus D. Bernard, MSU/Mechanical Engineering PhD student
- Tisha Brown, UM/Computer Science PhD student
- Eowyn Cenek, USM/Computational Mathematics PhD student
- Michael Hougendobler, UM/Mechanical Engineering PhD student
- Alta Knizley, MSU/Mechanical Engineering PhD student
- David Lavalley, MSU/Aerospace Engineering PhD student
- Lionel Lovett, JSU/Computer Engineering Masters student
- Jose Morfa, MSU/Mechanical Engineering PhD student
- Jefferson Parish, MSU Computer Engineering PhD student
- Joshua Aaron Smith, MSU/Mechanical Engineering PhD student
- Andrew Stamps, MSU/ Computer Science PhD student
- Lauren Vickers, UM Physics Masters student
- Rachel Wheeler, MSU/Mechanical Engineering graduate student

B. Affiliates' Fellowship and Scholarship Programs/Space Grant funds

- Alcorn State University

Scholarship: ASU funded ten scholarships to support graduate and undergraduate science majors by awarding fellowships and scholarships for tuition and school expenses. Students were given the opportunity to gain research experiences: they were placed in the laboratory under the supervision of a faculty mentor. The faculty mentor gave the students basic instruction and guidance in scientific research. Students awarded

scholarships were assigned to a lab that they help manage under the supervision of a professor, and they work directly under a professor as a research assistant.

- Itawamba Community College

Scholarship: ICC funded seven student scholarships. Awardees were assigned to work with ICC faculty, and also serve as mentors for STEM students.

- Jackson State University

Scholarships/Fellowships: JSU funded six scholarships and one fellowship. Awardees were required to meet with their faculty mentor at least 10 hours a week and conduct research as assigned by their mentor.

- Mississippi Delta Community College

Scholarships: Two students were funded to serve as math and science tutors for 2 hours a week for fall and spring semesters in the Center of Learning on campus. Tutoring is free to any MDCC students and is provided in conjunction with the MDCC Center of Learning.

- Mississippi State University

Fellowship: MSU awarded one fellowship and one scholarship in Aerospace Engineering.

- Mississippi University for Women

Scholarship: One scholarship was funded, after being selected by a STEM committee. The Awardee is required to pursue research at MUW or a host institution and submit a final report of their summer work and give oral presentation at appropriate scientific meetings.

- Northwest Mississippi Community College

Scholarship: One scholarship awardee was selected by NMCC STEM faculty. The awardee assists those in need of support outside the classroom in the areas of science and math.

- University of Southern Mississippi

Scholarship: USM funds ten scholarships for physics, mathematics or Computer Science students. The students are selected by faculty from these three areas.

4. Research Infrastructure Programs

A. MSSGC Research Infrastructure Program: this program is funded with augmentation funds.

B. Affiliates' Research Infrastructure Programs

- Delta State University

Research Infrastructure: Funds were provided for students to assist DSU faculty in research activities and for presentation expenses at scientific/scholarly meetings.

- Jackson State University

Research Infrastructure: Funds were provided for the research component of the scholarship/fellowship research projects. Some of this amount was used to partially fund travel to scientific meetings to present project papers.

- Mississippi State University

Research Infrastructure: MSU has funded two research infrastructure projects: Transportation Technologies (including rocket propulsion, ground vehicle design and other transportation technologies) and Biomechanics and Impacts. Each project provides

a stipend for the undergraduate and graduate students working on their research as well as travel funds to present their projects at scientific meetings.

- The University of Mississippi

Research Infrastructure/Higher Education: UM funded one RI project: Dr. Atef Elsherbeni, UM/Electrical Engineering: \$20,000; “Small Satellite Technologies: An Educational Initiative for Ole Miss.”

- Mississippi University for Women

Research Infrastructure: MUW funds two faculty research projects and results of the research projects are presented and/or published at professional conferences.

- University of Southern Mississippi

Research Infrastructure: USM funded 5 undergraduate students to work and train on methods of scientific and engineering modeling, simulation, and visualization. The High Performance Visualization Lab at USM was created through the collaborative efforts and funding of the US Navy, US Army and several academic units from the College of Science and Technology. This project was designed to create and maintain a basic knowledge foundation in the lab. This foundation is realized through training a pipeline of graduate and undergraduate students on the basics of modeling, simulation, and scientific and engineering visualization methods and techniques. Additionally, the program is aimed to motivate the creativity of the students and to encourage them to design, build, implement, and improve visualization tools that would be helpful for all researchers who are using the lab facilities. The research coordinator in the lab holds mandatory weekly meetings. In these meetings, discussions are focused on new research ideas, problems and solutions of current research projects and demonstrations of progress reports and presentations.

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

FY2011 MSSGC Goals 1 & 2 met; MSSGC objectives A.1, and A.2 met;

FY2011 Programs included:

1. MSSGC Programs: (K-12)

A. MSSGC Annual MSSGC Teachers Conference The workshop was held January 13 - 14, 2012 at the University of MS. Over 65 middle school teachers (over fifty percent are underrepresented minority teachers) attended, with speakers from the Consortium and its partners presenting topics in mathematics and science. Steve Culivan, NASA Educator, presented two sessions on space science and NASA’s vision for the future. Evaluation of each speaker as well as the entire workshop was conducted. Overall, this workshop was evaluated as excellent by participants.

B. MSSGC Minigrants:

2011-2012 Projects:

- Mississippi State University/Office of Research and Economic Development/Canton, MS: “STEP Near Space Balloon Launch Pilot: Canton Public Schools”

Details: Balloon launch will be by May 4, 2012 (Weather dependant); Location: Canton High School, Canton, MS. Time: 9:15 AM; Launch Team: 10 Students (Juniors & Seniors); Recovery Team: 10 Students (Juniors & Seniors)

This project will cumulate on May 4, 2012 (around 9 AM) with the launch of a weather balloon to near space of 100,000 feet while taking samples of humidity, temperature, speed, longitude and latitude as well as sampling for oxygen concentration while during a pictorial documentation of the journey. Our project supporters: NASA, NASA/MSSGC, NOAA, LSU, MSU, JSU, CAVS Extension, Nissan, MINAC, BankPlus Regions Bank. These institutions are committed to the success of this project as Canton Public Schools is the first to implement this district wide program. Our students will need to experience the conclusion of the project by tracking the balloon to its destination and using GPS equipment to pinpoint the location of the landing.

Here are some of the highlights of the project:

- There are 10 mentoring teams with teachers and parents from Elementary, Middle and High School.
- There are over 200 students involved with the project.
- There has been over 70 hours of professional development for the teachers.
- There have been over 10 activities with students preparing them for the launch and recovery of this project. There have been 5 fundraising activities to include the schools/community and civic organization to include them in the project.

This project is centered on students engaging in scientific exploration, technology driven, computational analysis of data collected and building a launch vehicle for their experiments. This project will encourage all students in the district to get involved. Academic and vocational students will be team members (9th – 12th) grades in this captivating project.

- Provine High School, Jackson, MS: “Provine High School Robotics Team Competition:” this project includes year-long activities and FIRST competitions. Student participants are 98% African American.

2. Affiliate Programs/ Higher Education and K-12/Space Grant funds:

▪ Delta State University

Higher Education: DSU funded two DSU faculty to attend workshops and/or professional development seminars designed to enhance their teaching skills or to gain current information on an emerging science or technology.

▪ Hinds Community College

Higher Ed/K-12: HCC awarded (2) undergraduate students to serve as mentors for former and newly recruited participants in the Minority Science and Engineering Improvement Program. These students work closely with mathematics, science, and/or computer science instructors as project/classroom/laboratory assistants. The student mentors provide career choice information, tutoring and assistance with special assignments including science projects.

▪ Coahoma Community College

Higher Education: CCC funded 3 students who mentor and tutor other CCC students in math, science and/or computer science.

▪ Itawamba Community College

Higher Education: ICC funded a student assistant to support science faculty in the development of videos, software, and on-line instructional materials. The student assistant also serves as a tutor for science students needing assistance.

- Jackson State University

K-12: Funds were provided for a summer workshop for K-12 teachers in the Jackson area. JSU sponsored a three day workshop for K-12 teachers from the Jackson Public School District. K-12 teachers learned how to conduct scientific experiments, collect, gather, and analyze experimental data and write laboratory reports.

- Meridian Community College

Higher Education: MCC funded a mentoring program, providing a stipend for a computer lab assistant. The student is available for MCC students who need tutoring in the areas of biology and chemistry.

- Mississippi Delta Community College

K-12: MDCC funded a summer workshop for area K-12 science and math teachers. Topics covered included: lab safety, science career paths, and student presentations. The seminar also included sessions to discuss “best practices.”

- Mississippi Gulf Coast Community College

Higher Education: MGCCC funded students involved in the cooperative internship with the Gulf Coast Research Laboratory working with an instructor and a student centered project.

- Mississippi State University

Higher Education: High Altitude Balloon Project: MSU/Aerospace Dept. utilizes MSSGC funds for an on-going high altitude balloon project as a research platform. FY11 funds were used in the development of a high altitude sailplane to study flight mechanics in the near space environment. MSSGC funds and MSU Space Grant scholars are also supporting high altitude balloon flight by two MS middle schools. MSU/Rocket Program: MSU also uses MSSGC funds for the University Student Launch Initiative. The “Space Cowboys” are a student rocket team that has designed and built rockets and participated in the competitive launch at NASA/Marshall and the AIAA Southeastern Region Student Conference yearly. The “Space Cowboys” K-12 outreach component: This rocket team has reached over 1,000 middle school students by a variety of programs: the rocket team conducts a middle school rocket launch challenge that engaged over 40 MS middle school students this year; the team also produced a pre-engineering career video that included NASA careers that was viewed by over than 500 MS middle school students; and other rocket team outreach activities included speaking to over 18 middle school schools.

Additional MSU Space Grant/K-12 projects: MSU funds a dedicated science lab for the local public school/3rd grades. This lab serves approximately 300 students and 15 teachers. More than two-thirds of the students and half of the teachers are from underrepresented minorities. MSU also funds tours of the MSU engineering laboratories for approximately 100 local high school students. Hands-on activities are included on these tours. Most of these high school students are underrepresented minorities.

MSU also funded a summer program called “LeaderSTATE.” This workshop was conducted for four full weeks in June 2011, in partnership with the MSU Division of Student Affairs and the U.S. Army. Each week a group of approximately 60 high school students and 4 high school teachers attended a STEM focused residence camp at the MSU. The unifying theme for the STEM activities was space flight. Space Grant funds were used for teaching supplies and student assistant stipends. Space Grant stipend

recipients taught classes, directed lab work and gave high-power rocketry demonstrations.

- Mississippi University for Women

Higher Education: MUW funded STEM faculty to accompany selected sophomores, juniors, and seniors (based on GPA) to the Mississippi Academy of Science annual meeting and the Mathematical Association of America Louisiana/Mississippi sectional meeting. The intention is to encourage MUW's stronger students to consider graduate and research careers as well as present research papers.

- Mississippi Valley State University

Higher Education: MVSU provided funds for four students and two faculty member to conduct research on student achievement in the local schools in Leflore County (95% underrepresented minorities) and to establish baseline data for placement of MVSU students in college mathematics courses.

- Pearl River Community College

Higher Education: PRCC funded a collaborative project with the Alpha Omega Science Club and for all students at PRCC, speakers for science lectures and conference presentations. K-12: PRCC/SG provided funds for the MCTM/PRCC Mathematics Competition held annually on campus. Also, PRCC/SG funded two area high school science teachers to attend NASA workshops.

- University of Southern Mississippi

Higher Education: USM funded a spring "Innovative Computing Solution Competition." Students are encouraged to contact local businesses, medical and industrial communities for projects. This goal is to encourage students and motivate their innovation in developing computer solutions and programs in the working environment. Presentations are judged by the School of Computing Faculty.

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)

FY 2010 MSSGC goal 3 met; MSSGC objectives C.1 & D.1 met. FY 2010 programs included:

- MSSGC Administrative Office:

Increasing the dissemination of NASA and Space Grant activities and information is a continuing focus for the consortium's central office. Eric Day, on contract with the National Space Grant Foundation, serves as the MSSGC Webmaster. The task of dissemination is currently achieved through a variety of mechanisms including email distribution lists, a World Wide Web page, and mailings. NASA announcements and opportunities, as well as other announcements applicable to our shared NASA/consortium goals, are routinely distributed via our email lists and Web page. The consortium's Web site at <http://www.ms.spacegrant.org> is updated bi-monthly with consortium information, funding opportunities, conference and workshop announcements, and educational links, as well as numerous other links to science, math, and engineering information.

- Itawamba Community College and Meridian Community College

General Public: ICC and MCC each funded a "Backyard Astronomy Program" presented by the Rainwater Observatory and Planetarium scheduled for the ICC and MCC campus

April, 2012. The programs are opened to the public and included advertising, and evaluating the event.

- Pearl River Community College

General Public/ Higher Education: PRCC/SG in collaboration with the Alpha Omega Science Club provided speaker stipends for guest scientific lecturers. The collaboration hosts several lectures by scientists in different areas whose expertise capture the interest of the student population and expand their horizons. It gives science majors the opportunity to hear from current, informed leaders in their own fields of study; non-science majors are able to relate developments in science and technology to their own disciplines. The general public is also invited to the lecture series.

PROGRAM CONTRIBUTIONS TO PART MEASURES

- Student Data and Longitudinal Tracking:

MSSGC FY11 (Base) funded a total of 72 students: 36 scholarships and fellowships, and 16 RI students and 20 HE students. All students are currently still enrolled at their institutions. During the summer of 2012, and with augmentation funds- an additional 18 students will be funded: 10 Industry interns and 8 NASA Centers' interns. (Selections are being made at this time.) Of these 74 awards, 35 were made to underrepresented minority students (48.6%) and 27 awards to female students (37.5%). This is above the MSSGC benchmark of 43.0% for underrepresented and under the 40% benchmark for females. These percentages will be revised once the augmentation funded programs, MSSGC industry and NASA Center interns have been selected. For all students that were significantly supported in the period spanning FY06-FY10: 22 are pursuing advanced degrees in STEM disciplines, 3 accepted STEM positions at NASA contractors, 24 accepted STEM positions in industry, 2 accepted STEM positions in K-12 academia, 1 accepted a STEM position in academia, and 1 went on to a position in a non-STEM discipline. The remaining students have not yet received the degree that they were pursuing while the received their Space Grant award.

- Diversity:

(For Diversity discussion of institutions, faculty, and student participants; see below NASA Education priorities section below.) Diversity is a priority of the MSSGC and a topic on agendas for the Campus Coordinators Meetings. MSSGC reviews yearly stats for funded students, RI Faculty awarded and participation of the state's HBCUs. All student diversity percentages are discussed in this report in an earlier section and once complete will be reviewed at our semi-annual meeting.

- Minority-Serving Institutions:

All five public Mississippi HBCU's are an active part of the MSSGC. (See Outcomes 1, 2, 3 for descriptions of HBCU's activities.) MSSGC has also partnered with the two private Mississippi HBCU's in the state, Rust College and Tougaloo College. (Both have been recipients of RI awards in prior years.)

- NASA Education Priorities:

- Authentic, hands-on student experiences: MSU Rocket Program and the High Altitude Balloon Project. Both projects are described in detail in the Outcome 2 section, under Mississippi State University. In addition, students involved with the Research Infrastructure projects are all involved in hands-on research in a variety of STEM areas. Also, FY11 funds have been allocated to Dr. Atef

Elsherbeni, UM/Electrical Engineering for the project; “Small Satellite Technologies: An Educational Initiative for Ole Miss.”

- Engage Middle School teachers in hands-on curriculum enhancement capabilities through exposure to NASA scientific and technical expertise: The MSSGC Teacher Conference is held each year in January for 2 days, for math and science middle school teachers. Steve Culivan, Joshua Finch, and John Boffenmyer, all Aerospace Education Specialists from NASA/Stennis were presenters for the science sessions for the first day. Over 65 MS science and math middle school teachers attended this year. MSSGC partnered with UM/Center for Math and Science Education to host this Conference. MSSGC also has funded 2 MS middle school high altitude balloon projects are described in the Outcome sections.)
- Summer opportunities: MSU funded a summer program called “LeaderSTATE.” This workshop was conducted for four full weeks in June 2011, in partnership with the MSU Division of Student Affairs and the U.S. Army. Each week a group of approximately 60 high school students and 4 high school teachers attended a STEM focused residence camp at the MSU. The unifying theme for the STEM activities was space flight. Space Grant funds were used for teaching supplies and student assistant stipends. Space Grant stipend recipients taught classes, directed lab work and gave high-power rocketry demonstrations.
- Community Colleges: MS Community Colleges are an integral part of the MSSGC. They represent eight of the sixteen affiliates and are an active component of the Consortium. Dr. Angie Carraway, the MSSGC Campus Coordinator at Meridian Community College (MCC) attended the National Space Grant Directors Meeting in Washington, DC this March.
- Aeronautics research: RI projects are funded by augmentation funds.
- Diversity of institutions, faculty, and student participants: The MSSGC consists of 16 affiliates; each campus has a MSSGC Campus Coordinator. The diversity breakdown of the MSSGC Campus Coordinators is 8 males, 8 females; 5 African American, 9 Caucasian and 2 Other. (This represents 50% female and 43.7% underrepresented.) All public and private HBCUs and the one public university in the state historically for women are affiliates or education partners of the MSSGC. Benchmarks for diversity for students’ awards have historically been met by the MSSGC and continue to remain a priority. For student participants’ diversity: See FY11 diversity percentages in the Program/Project Benefit to Outcomes section.
- Enhance the capacity of institutions to support innovative RI activities to enable early career faculty to focus their research toward NASA priorities: The MSSGC Research Infrastructure competition/call for proposals states-“preference is given to projects that are related to NASA, have a strong interdisciplinary team, include new faculty, directly involve students and involve a NASA Center or Enterprise or an aerospace-related company.” RI awards are funded by augmentation funds.

IMPROVEMENTS MADE IN THE PAST YEAR

- Increased number of MSSGC Fellowships applications and updated application process to an on-line application.

- Developed a closer partnership with the MS Center for Mathematics and Science Education; the partnership includes the training of the MSSGC Fellows and their K-12 component requirement and providing presenters for the MSSGC Teachers Conference.
- Continue to fund the first student Satellite project in the state at the University of Mississippi.
- Partnered with another STEM company, LogLinear Group, LLC at Waveland, MS to participate in the MSSGC Industry Internship Program.

PROGRAM PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION*

*(Role of affiliates and partners as described in the section “Program Accomplishments.”)

Academic Affiliates

The University of Mississippi (UM): Public PhD degree-granting research university and lead institution for the NASA Space Grant Program. Dr. Peter Sukanek is a Professor of Chemical Engineering and serves as the Director of the MSSGC and UM/MSSGC Campus Coordinator.

The University of Southern Mississippi (USM): Public PhD degree-granting research university. Dr. Joe Whitehead is the Dean and Associate Professor of the College of Science and Technology and is the MSSGC Campus Coordinator.

Mississippi State University (MSU): Public PhD degree-granting research university. Dr. Keith Koenig is a Professor of Aerospace Engineering and the MSSGC Campus Coordinator.

Jackson State University (JSU/HBCU): Public PhD degree-granting research university. Dr. Maria Begonia is a Professor of Biology and the MSSGC Campus Coordinator.

Alcorn State University (ASU/HBCU): Public degree-granting university. Dr. Noland Boyd, Chemistry Professor is the MSSGC Campus Coordinator.

Delta State University (DSU): Public PhD degree-granting university. Dr. Charles Smithhart is a Professor in the Dept. of Biological and Physical Sciences and is the MSSGC Campus Coordinator.

Mississippi University for Women (MUW): Public degree-grant university. Dr. Shaochen Yang is a Mathematics Professor and is the MSSGC Campus Coordinator.

Mississippi Valley State University (MVSU/HBCU): Public degree-grant university. Dr. Raymond Williams is a Mathematics Professor and is the MSSGC Campus Coordinator.

Coahoma Community College (CCC/HBCU): Associate degree-granting community college. Mr. Amick Youngblood is an Instructor in the Dept of Math, Science and Computer Science and is the MSSGC Campus Coordinator. As of 1/2012: Angela Reynolds became the Campus Coordinator at CCC due to the untimely death of Amick Youngblood. Dr. Reynolds is a Biology Instructor at CCC.

Hinds Community College (HCC/HBCU): Associate degree-granting community college. Dr. M. Cathryne Jackson is the Chair for the Mathematics & Natural Science Division and is the MSSGC Campus Coordinator.

Itawamba Community College (ICC): Associate degree-granting community college. Dr. Betsy Chesnutt is a Physics and Engineering Instructor and the MSSGC Campus Coordinator.

Meridian Community College (MCC): Associate degree-granting community college. Dr. Angela Carraway is a Chemistry Instructor and the MSSGC Campus Coordinator.

Mississippi Delta Community College (MDCC): Associate degree-granting community college. Amy Biles is a Physical Science Instructor and the MSSGC Campus Coordinator.

Mississippi Gulf Coast Community College (MGCCC): Associate degree-granting community college. Mr. Steve Manis is a Science Instructor and the MSSGC Campus Coordinator.

Northeast Mississippi Community College (NEMCC): Associate degree-granting community college. Mr. Patrick Eaton is the Development Officer and is the MSSGC Campus Coordinator.

Pearl River Community College (PRCC): Associate degree-granting community college. Dr. Aleta Sullivan is a Science Instructor and the MSSGC Campus Coordinator.

Industrial Partners

Alliant (ATK) TechSystems
NVision Solutions, Inc.
Lockheed Martin Space Systems Company
LogLinear Group, LLC
Radiance, Inc.
Innovative Imaging and Research (I2R)

Government Partners

NASA/Stennis Space Center	NASA/Johnson Space Center
NASA/Marshall Flight Space Center	NASA/Langley
NASA/Glenn	NASA/Ames
Jet Propulsion Laboratory	
NASA/ Kennedy Space Center	

Educational Partners

Rainwater Astronomy and Planetarium
UM/Center for Math and Science Education
Enterprise for Innovative Geospatial Solutions (EIGS)
Mississippi Science Teachers Association
Mississippi Educational Broadcasting
Millsaps College
Rust College (private HBCU)
Tougaloo College (private HBCU)