

The National Space Grant Office requires two annual reports, the Annual Performance Data Report (APD – this document) and the Office of Education Performance Measurement System (OEPM) report. The former is primarily narrative and the latter data intensive. Because the reporting timeline cycles are different, data in the two reports may not necessarily agree at the time of report submission. OEPM data are used for official reporting.

Missouri Space Grant Consortium
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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 Missouri Space Grant Consortium is a Program Grant Consortium funded at a level of \$430,000 for fiscal year 2014.

PROGRAM GOALS

The mission of the Consortium is being accomplished through the following goals and objectives:

1. Maintain and expand a network of Missouri universities and corporate partners with interests and capabilities in aerospace and space related science, engineering, and technology.
2. Inspire, motivate, recruit, educate, and train students, especially women, underrepresented minorities, and persons with disabilities, for professional careers in all disciplines of interest to NASA.
3. Promote and enhance a strong science, technology, engineering, and mathematics (STEM) education base from elementary through university levels.

4. Support interdisciplinary education, research, and public service programs involving the STEM fields.
5. Encourage cooperative education and training programs in aerospace and space related science, engineering, and technology among universities, aerospace industry, and other federal, state, and local entities.

Metrics for Measuring Goal Achievement

The proposed efforts of mentoring, teaching, advising, nurturing, and associated scholarly activities will be assessed by the following set of outcomes as can be quantitatively related to NASA's Strategic Education Outcomes 1, 2, and 3:

- Number of Directly Supported Participants
- Number of Graduate and Undergraduate Degrees
- Diversity of Directly Supported Participants
- Number of NASA Field Research Center and Corporate Internships
- Number of Journal Articles and Conference Papers Published
- Number of Student Research Groups and Engineering Design Teams
- Number of Teachers and Students Participating in Pre-College Programs
- Number of Persons Served in Informal Education Programs

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

Outcome 1: Employ and Educate

The Missouri Consortium's Fellowship & Scholarship, Higher Education, and Research Infrastructure programs specifically address the objectives of NASA's Education Outcome 1. In FY 2015 there were 85 directly supported students participating in independent research, course development, and laboratory development. There were an additional 191 indirectly supported students that participated in engineering design team and scientific research group Higher Education projects funded by the MOSGC.

Higher Education Engineering Design Teams

The M-SAT Satellite Research Team from Missouri S&T was awarded 1st place at the Air Force Laboratory's Nanosat 8 Competition at Kirtland Air Force Base on January 18-19, 2015. By winning the competition, the Air Force will work with the team to integrate the two spacecraft into their final flight configurations, ground-test them, and then arrange for them to be launched to low Earth orbit.

Outcome 2: Educate and Engage

Of the nine Pre-College Education programs supported by the MOSGC in FY 2015, there were a total of 58 event with 22 K-12 teachers, 36 informal educators, and 1398 students directly participating. Many of these programs are

minority student focused with an average of ~40% of the participants being from NASA-targeted under-represented minorities and ~50% female.

STEM Booster Program

The Challenger Learning Center of St. Louis in Ferguson, MO, implemented a program that consisted of activities designed to inspire the future generation of skilled, knowledgeable, diverse, and high-performing professional scientists, engineers, technologists and educators. The program included hands-on activities was delivered to 260 elementary and middle school girls on a total of eight days who were a part of the 'Girls, Incorporated' summer program, as well as to 15 informal science educators at a professional development workshop, which was held on May 17, 2014.

Outcome 3: Engage and Inspire

Of the 12 Informal Education programs supported in FY 2015, there were a total of 2130 direct participants and 9680 indirect participants. Projects meant to bring inspiration and informal education to the general public include telescope observation and night sky viewing programs, public lectures, and public information services.

Library Telescope Program

Sturdy 4.5" reflecting telescopes were modified by members of the Saint Louis Astronomical Society to improve durability and ease of use. The telescopes are issued to participating public libraries, who manage the circulation of the instruments to their library patrons. While each telescope is owned and managed by the library system according to that system's policies and procedures, patrons may use the telescope for one week and then it must be returned. Society members and Space Grant staff provide training sessions for library staff at the library branches. Society members provide telescope observing sessions at the libraries upon request, resources permitting. Over 1500 library patrons, with the assistance of 25 amateur astronomers and 60 library staff, have taken advantage of this program in FY2015

PROGRAM ACCOMPLISHMENTS

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

The Missouri Space Grant Consortium has been conducting highly successful Fellowship and Scholarship, Higher Education Internship, and Research Infrastructure Assistantship programs. The competitive selection of participants is primarily based upon academic achievement and research project merit. This year, 31% the annual program participants were graduate students and 69% were undergraduate students. These students are supported to perform independent mentored research throughout the academic year and summer,

including summer internships and academy student placement at NASA Field Research Centers. Students are requested to report the results of their work and present their research at an annual statewide conference. The goal is to provide graduate and undergraduate research training and contribute to the national workforce in the aerospace industry and in space science related fields as needed to achieve NASA's strategic goals to educate and employ.

Fellowships and Scholarships: The Missouri Space Grant Consortium's undergraduate scholarships and graduate fellowships are competitively awarded to students pursuing independent faculty-mentored research in aerospace and space related science and engineering. Programs of study must relate to one or more of the NASA Mission Directorates. These awards are normally provided for an entire academic year (Fall and Winter semesters) and are reported annually as part of each Affiliate's Fellowship and Scholarship Program. There were 15 undergraduate and 16 graduate F&S students supported in FY 2015.

Scholarships: "A Bridge to the Stars: Astro 101" at the University of Missouri – Kansas City is an inner city high school student scholarship program that provides low-income and under-represented minority students full scholarships (tuition, fees, course materials, and transportation) to enroll in an interactive Introduction to Astronomy course. This unique opportunity offers real-life college experience, university credit for a freshman science course, and a support system of dedicated undergraduate Bridge Mentors to ensure success.

Research Infrastructure Assistantships: Both undergraduate and graduate students are competitively selected to assist in the support of Research Infrastructure projects at the Affiliate Institutions. Students work directly with faculty to develop, maintain, and enhance the capability to perform cutting-edge research at the Consortium's affiliate institutions. There were 11 research assistantships awarded this year.

Robotic Autonomous Telescope: Astronomy researchers at Missouri State University are in the process of commissioning a telescope to be used for remote and automated operations, chiefly for a sky survey project, but also for enhancing astronomy laboratories. This project includes the installation of a telescope, dome, weather station, and various webcams for remote and automated operation. There would also be Polish students working with the data (particularly for the Polish project) and there is some hope of initiating an exchange of students between the two programs.

Higher Education Research Internships: Summer and academic year Higher Education internships are competitively awarded to students to pursue faculty-mentored programs of study that relate to one or more of the NASA Mission Directorates at the Affiliate Institutions. There were 34 undergraduate and 9

graduate students hired by the Consortium's Affiliates and Associates to perform independent hands-on research projects in FY2015.

NASA Field Research Center and Corporate Summer Programs: Both undergraduate and graduate students are competitively selected by NASA Centers and corporate partners to participate in these programs. These students travel to NASA Centers and corporate facilities to perform independent research under the guidance and mentorship of professional engineers and scientists. The Consortium supported five NASA Center summer interns in FY2015.

The students who have been selected by the Consortium, NASA Centers, and Corporate partners have generally been outstanding in their academic capabilities and impressive in their accomplishments. They have authored and co-authored many published papers and have presented their work at a multitude of professional meetings. In FY2013, Missouri Space Grant's directly supported students produced a total of 3 journal and 63 conference publications. Furthermore, two students will earn Doctoral degrees, eight students will be awarded Master of Science degrees, and 17 Bachelor students will graduate this fiscal year.

Higher Education Engineering Design Teams and Scientific Research Groups: The Affiliates of the Missouri Space Grant Consortium are involved in a wide range of activities that are designed to promote a strong science, mathematics, and technology base at the university level. To greatly enhance the MOSGC's contribution to Outcome 1, indirect support was provided to eight design team and scientific research groups on the Affiliate and Associate campuses; thereby opening opportunities for 191 of post-secondary students to engage in authentic NASA-related mission-based R&D activities. These projects also have a significant potential to attract and retain students in STEM disciplines through a progression of educational and hands-on research and development opportunities for students, teachers, and faculty as desired in Outcome 2. The Consortium also invested in the curriculum development of NASA-related course resources for integration into STEM disciplines at the university level as indicated by Outcome 1. This section briefly describes the Consortium's higher education team and group activities in FY2015:

- *Society of Automotive Engineers (SAE) AeroDesign West Competition* – A team of students from the Missouri S&T Advanced Aero Vehicle Group will compete in the SAE Aero West competition in Van Nuys, California, on April 24-26, 2015. The goal of the competition is to fly an airplane weighing less than 8lbs, powered by a 0.24 cubic inch motor, and carrying 15lbs of static payload to 150ft where it will drop another 3lbs of payload on a target. The teams will be scored on flight performance, a design report, and a technical presentation at competition.

- *Intercollegiate Rocketry and Engineering Competition (IREC)* – The High Power Engineered Rocket (HPER) team from the Missouri S&T Advanced Aero Vehicle Group will design and build a reusable, two stage rocket, which will carry vehicle to 25,000 feet, the highest altitude ever attempted by the team. The rocket will carry two on-board experiments to conduct while in flight.

Experiment-One will open a vacuum chamber at 25,000 feet. The area of low pressure will fill with the air outside the rocket, after which the chamber will close. This experiment is designed to analyze particulates and pollutants at aircraft cruising altitudes.

Experiment-Two utilizes thermocouple temperature recorders to record heating effects on the rocket's airframe as it passes through subsonic and supersonic velocities. This experiment will aid the team in heat-resistant material selection for future competitions.

The 10th Intercollegiate Rocket Engineering Competition (IREC) will be held June 24-27 (with the 28th as a weather backup day) 2015. Green River, UT.

- *University Rover Challenge* – The Mars Rover team from Missouri S&T will join the competition at the Mars Desert Research Station in Hanksville, Utah on May 28-30, 2015. The current rover, Phoenix, also competed in URC 2014. It features components designed entirely by members of the team such as a water-jetted aluminum chassis, 3D-printed differential gears for the robotic arm, 21 lithium-polymer battery cells, and Custom Printed Circuit Boards (PCBs) for communication, battery management, and power distribution.

- Student-Built Satellites

The *M-SAT Satellite Research Team* from Missouri S&T was awarded 1st place at the Air Force Laboratory's Nanosat 8 Competition at Kirtland Air Force Base on January 18-19, 2015. By winning the competition, the Air Force will work with the team to integrate the two spacecraft into their final flight configurations, ground-test them, and then arrange for them to be launched to low Earth orbit. One possible opportunity discussed at the competition for the launching MR and MRS SAT would involve astronauts aboard the International Space Station deploying the spacecraft into orbit using the robotic arm attached to the space station, after first being delivered to the space station by SpaceX's Dragon capsule launched by its Falcon 9 rocket.

Saint Louis University's *Space Systems Research Laboratory* presently has two active student-built satellite projects:

Argus, a 2U CubeSat developed in partnership with Vanderbilt University to improve modeling of the effects of radiation on modern space electronics. It is SSRL's entry in the AFRL University Nanosat-7 competition, and was selected by NASA to launch in Winter 2015 as part of the ORS-4/ELaNa-VII mission

Rascal is a 6U mission to demonstrate key technologies for proximity operations and space situational awareness. Rascal has been selected by NASA to fly in 2016.

- The *SLU Drone Club* has made several attempts to start a parallel program in UAVs, with minimal success. For 2014-15, they will start a new program using a helicopter-based platform (rather than the fixed-wing design-build-fly teams). Students will be tasked with finding non-paying SLU clients who could benefit from their UAV service. The students will work with their clients to develop the vehicle and mission to meet their needs. Potential clients include the SLU facilities department (environmental monitoring of the building and grounds), the SLU archaeology department (mapping of dig sites) and the PI of this proposal (creating a UAV to mimic the behavior of a satellites attempting to dock on-orbit
- The "Pathfinder" Collegiate Undergraduate Program – The *Pathfinder Program for Environmental Sustainability* at Washington University in St. Louis involves the use of remote sensing data sets and analysis techniques applied for both environmental sustainability and for the study of terrestrial terrains as analogs for other planetary surfaces. This program is a four-year experience involving a small group of highly motivated students of exceptional academic caliber, a senior faculty member, and a research team that is actively involved with environmental studies. The program utilizes case studies and field-oriented approaches at research sites in Hawaii, Spain, or the Mojave Desert to introduce students to issues surrounding environmental sustainability and the duty to preserve the environment for future generations.
- The *Multidisciplinary Astrobiology Research Community at Truman State University* – will capitalize on the momentum created by the prior funding and the creation of the *Center for Astrobiology* to continue the activities of the multidisciplinary astrobiology research community. Following the highly successful model from previous years, teams will pursue astrobiology research projects, participate in weekly community-building events, and take a field trip to an astrobiology-related research site. This

project will support the activities of the vigorous and productive astrobiology research program at Truman, strengthen the new Center for Astrobiology, and inspire students from a range of science disciplines to consider careers in astrobiology.

- *Curriculum Development* – Acquisition of materials and software, for use in undergraduate and graduate level courses and for student research, that develop, extend or enhance the curriculum. The primary task was to upgrade The Geochemist's Workbench software and to renew the site license for multiple users. The Workbench is installed and available on ten units in the EPSc Computing Lab. The Geochemist's Workbench 10.0 Standard edition features spreadsheets, diagrams, and multicomponent reaction modeling. These are used to in a variety of geochemical applications, enabling students to plot how species distributions change, model water-rock interaction, and simulate fluid mixing. GWB Standard integrates kinetic rate laws of any form and simulates microbial metabolism and growth. The GWB is used in several advanced Geochemistry courses, such as EPSc 444 Environmental Geochemistry and EPSc 413, Introduction to Soil Science. It is also used by some students in the course of their research. An undergraduate student will assist a faculty member in the department of Earth and Planetary Sciences at Washington University in St. Louis as a Teaching Assistant for the development and implementation of an Introduction to Structural Geology course.
- *The 24th MOSGC Annual Spring Meeting* will be held on April 24-25, 2015, on the Missouri S&T campus. This meeting will feature oral and poster presentations from the Consortium's Fellowship & Scholarship, Research Infrastructure, Higher Education, and Pre-College students.

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

Pre-college Education Programs

The primary goal of the Consortium's Pre-college Education Program is to expose aerospace and space related science, technology, and engineering topics to young students in such a way as to be an enjoyable learning experience; leaving students, parents, and teachers with a better appreciation for and understanding of these disciplines. The Consortium's approach to many of these activities is to assist pre-college educators with developing and presenting programs and activities. The assistance may include use of technical/scientific staff and facilities, logistical support, and modest amounts of funding for program materials. Projects supported in FY 2015 include:

- *Classroom Visits* - Missouri State University supported visits by faculty, researchers, and/or advanced students to K-12 school classes in the

Southwest Missouri area to present illustrated talks on astronomy, space research and other NASA related activities. MSU also sponsored a Science Explorer Club at Willard Intermediate School for 5th grade students. The club served 12-15 students who were interested in science. During this year, the PhysBiz outreach project provided interactive science activities for 2nd and 4th grade students at several schools within the Springfield Public School District.

- *Columbia Aeronautics and Space Association (CASA)* is a hands-on in-class after-school science club that runs a 6 day 5 night space simulation each year in a student built lab at Hickman High School in Columbia, MO. By using communication skills, group work, and problem solving skills; students in grades 6-12 command the mission from lift off to landing. Students learn NASA systems in order to staff mission control, video production, public affairs office, astronauts, and 'ninjas' (who interject problems to solve). CASA also offers a weekend SCUBA experience where students can learn how to use the SCUBA equipment and then repair a satellite underwater for 4 hours as well as an opportunity to fly Cessna airplanes at Skyhaven Airport. This year's Mission 2715 culminates with a simulation in which students from sixth grade on up converge upon the CASA facility and participate in a true experience in education. Student astronauts ranging from kindergarten to college are on the space station as medical officers, scientists, and pilots. Mission Control is manned from 9:00 a.m. until 5:00 p.m. each day and behind the scenes are the ninjas, production and public affairs. Besides broadcasting over the local school channel on Mediacom to about 70,000 people in Columbia, we also have streaming video capabilities over the internet thanks to help from Morenet.
- *Unisphere Traveling Planetarium Program for Underserved Minorities - The Saint Louis Science Center* delivered planetarium programs to schools utilizing a Unisphere portable planetarium. A staff member presents the program with content covers Missouri education standards involving the relationship of Earth and sky, solar system objects, and constellations.
- *The St. Louis Gifted Resource Council* offers *Space Academy* as part of its summer program. Space Academy is a three-week, full-day program for about 150 elementary and middle school gifted children. Its activities are centered on topics relating to the solar system and to space travel.
- *The Challenger Learning Center in St. Louis* held a *STEM Booster Program* that consisted of activities designed to inspire the future generation of skilled, knowledgeable, diverse, and high-performing professional scientists, engineers, technologists and educators. The program included

hands-on activities was delivered to 260 elementary and middle school girls on a total of eight days who were a part of the Girls, Incorporated summer program, as well as to 15 informal science educators at a professional development workshop, which was held on May 17, 2014. Activities on the topics of constellations, solar system, moon phases, rockets, the body on space, and crew patches all engage participants in activities directly related to science and engineering disciplines. Teamwork, problem-solving, and communication, which are critical to success in STEM-related fields are also key components of all our programs.

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

Informal Education Programs

Of the nine MOSGC supported Informal Education programs in FY 2013, there was a total of 6,000 participants. With the matching funds provided by the Consortium's Affiliates, industry, and local communities, it was possible to provide excellent service to the general public. Of particular value is the extensive outreach to underrepresented minorities through these outstanding programs. The successfulness of these programs is measured primarily by the high number of participants for a relatively low investment cost. The following Space Grant supported activities are currently being conducted:

- *Telescope Observing Sessions* at MSU, UMKC, UMSL and SLSC.
- *Monthly Aerospace Lectures at Washington University*
- *Space Science Information Service*
- *Celebrating the 40th Anniversary of the UMKC Warkoczewski Public Observatory* is a free public lecture featuring Dr. David H. Levy to celebrate the 40th Anniversary of the Warkoczewski Public Observatory (WPO) conducted by the Astronomical Society of Kansas City at the University of Missouri-Kansas City (UMKC). Program will include solar viewing, astrophotography displays, meteorite displays, hands-on activities for children and telescope viewing following the program. The goal was to introduce and inspire students and the public about life as an amateur astronomer to get them active in astronomy.

PROGRAM CONTRIBUTIONS TO NASA EDUCATION PERFORMANCE MEASURES

- **Diversity**

- The Affiliates, Associates, and other partners are geographically distributed relatively uniformly throughout the state, yielding a wide range of demographic diversity. The female and NASA-targeted minority student distribution at the Affiliate academic institutions, as provided by the NCES College Navigator for 2014 < <http://nces.ed.gov/collegenavigator/> > is:

Affiliate Institution	Female	NASA-Targeted Minority
•Lincoln University (HBCU)	57.0%	38%
• Missouri State University	57.0%	8%
• Missouri University of Science & Technology	23.0%	8%
• University of Missouri-Columbia	52.0%	11%
• University of Missouri-Kansas City	58.0%	24%
• University of Missouri-St Louis	58.0%	17%
• Washington University in St Louis	51.0%	11%

- The directly supported students were comprised of 48% female and 20% NASA-targeted minorities.

- **Minority-Serving Institution Collaborations:**

The Missouri Consortium continues to support activities at Lincoln University of Missouri in Jefferson City. This year's undergraduate independent research topics included an investigation into the 'Carbon Composite for Space Crafts', Effect of Space on Food Contaminates, and the development of a process for the 'Use of Algae Bio-fuel in Space Vehicles'.

- **NASA Education Priorities:**

As indicated by the above program accomplishments, the Missouri Consortium's efforts are aligned with NASA's education priorities, which include STEM workforce development, student-led projects, intensive summer learning opportunities for middle school teachers/students, and opportunities to develop and strengthen ties to NASA Centers and/or Mission Directorates.

Each of the specific NASA Education Priority related projects supported by the Consortium are given below:

- All MOSGC supported Fellowship and Scholarship, Higher Education, and Research Infrastructure projects provide authentic, hands-on experiences for students in science and engineering disciplines.
 - F/S: Nine projects Affiliate/Associate Institutions.
 - HE Internships: Eight projects at Affiliate/Associate Institutions plus one project for NASA Field Research Center summer internships.
 - RI Assistantships: Eight projects at Affiliate/Associate Institutions.

HE Indirect support for five engineering design teams at two Affiliate/Associate Institutions (MS&T and SLU). Two scientific research groups at two Affiliate/Associate Institutions (TSU and WashU-EPSci).

- The diversity of institutions supported by the Consortium varies widely in both economic and ethnic population bases. The state's only HBCU offering STEM degrees, Lincoln University of Missouri, supports undergraduate scholarships and internships under the supervision of three faculty members. The diversity of the Consortium's faculty is generally consistent with the faculty diversity within the participating institution's departments.
- Middle school teacher engagement in hands-on curriculum enhancement capabilities through exposure to NASA-related scientific and technical expertise at three institutions (MSU, UMSL, CLCSL).
- Summer opportunities for secondary students on college campuses with the objective of increased enrollment in STEM disciplines or interest in STEM careers are provided at four institutions (MST, MSU, UMC, UMSL).
- Community College engagement is under development at Washington University in St. Louis. Other opportunities are being explored at MST, UMKC and UMC.
- Aeronautics Research, in traditional aeronautics disciplines, is primarily being performed by F/S and HE students under faculty mentorship at MST, UMC, and Wash-MEMS. One on-going HE/RI project that is being pursued at WashU-MEMS is geared to directly address a fundamental research need of the Next Generation Air Transportation System (NextGen).
- One HE Internship project at MSU and one HE Scientific Research Group project at WashU-EPSci pursue Environmental Science and Global Climate Change research and activities to better understand Earth's environments.
- The enhancement of the capacity of the Consortium's institutions to support innovative research infrastructure activities is being pursued at four of the participating universities (MST, MSU, UMSL, and WashU). One project specifically intended to enable early career faculty to focus their research toward NASA-related priorities are being supported at WashU-EPSci.

IMPROVEMENTS MADE IN THE PAST YEAR

Lincoln University in Jefferson City, a HBCU minority-serving institution and now a full affiliate partner in the MOSGC, was brought to full funding status in 2014. This culminated a two year period in which Lincoln University moved from

associated institution to regular affiliate status. In addition, through interaction originally at the NASA Missouri Space Grant affiliates level, Lincoln University teamed with Washington University in Saint Louis and the Missouri University of Science & Technology in Rolla; this Space Grant-initiated collaboration then subsequently resulted in this team obtaining a successful NASA EPSCoR Research Award in 2014. Other improvements within the past year include targeting for improvement coordination and communication between the lead institution Space Grant office and various affiliated institutions, with specific intent to improve timeliness and responsiveness. In a parallel effort, an internal review of lead institution budgeting/sub-contracting processes and performance was begun in 2014, with intent to provide more efficient and complete information on status of projects within the overall Space Grant state consortium in 2015. Additionally, the review process for proposals obtained in response to the various state-wide competitive Space Grant solicitations has been enhanced in terms of ensuring consistency of review timeframes with the availability of funds, as well in the generation and utilization of subject-matter reviewer pools.

PROGRAM PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

The Missouri Space Grant Consortium is composed of the Lead Institution, six Affiliates, and four Associates with an even balance of science and engineering disciplines that have specialization in research areas of interest to NASA. Each member institution pursues projects that best suit their unique capability and contribute the overall success of the Consortium, as summarized in the Outcomes section above. The Affiliates have been highly effective in promoting and executing NASA related opportunities on their campuses and in their local communities, which is considered one of the Consortium's greatest strengths. Some of the Affiliates collaborate in Space Grant activities with Associate Members of the Consortium. Furthermore, the Affiliates are being encouraged to seek out and join with organizations of common interest to increase the number of Associates and thereby extend the scope and reach of the Consortium. The list of current MOSGC Affiliate and Associate Members along with their core departments is as follows:

Affiliate Members:

- Missouri University of Science & Technology (MS&T - Lead Institution)
Department of Mechanical and Aerospace Engineering
- Missouri State University (MSU)
Department of Physics, Astronomy, and Materials Science
- University of Missouri – Columbia (UMC)
Department of Mechanical and Aerospace Engineering
Nuclear Science and Engineering Institute
- University of Missouri – Kansas City (UMKC)
Department of Physics and Astronomy

- University of Missouri - St. Louis (UMSL)
Department of Physics and Astronomy
- Washington University in St. Louis (WashU)
Department of Earth and Planetary Sciences
Department of Energy, Environmental, and Chemical Engineering
Department of Mechanical Engineering and Materials Science
- St. Louis Science Center (SLSC)
James S. McDonnell Planetarium
- Lincoln University of Missouri (HBCU)
Department of Life and Physical Sciences

Consortium Associate Members:

- Challenger Learning Center of St. Louis
- St. Louis University
College of Engineering, Aviation and Technology
- Truman State University
Department of Physics
Department of Chemistry
Department of Biology
- Astronomical Society of Kansas City

Affiliate Associate Members:

- St. Louis Astronomical Society (WashU-EPSci)
- St. Louis Gifted Resource Council (WashU-EPSci)
- Spaceweek-St. Louis (WashU-EPSci)
- The Space Museum of Missouri (WashU-EPSci)
- Columbia Aeronautics and Space Association (UMC)