Oregon Space Grant Consortium
Lead Institution: Oregon State University
Director: Jack Higginbotham
Telephone Number: 541-737-2414
Consortium URL: http://spacegrant.oregonstate.edu
Grant Number: NNX15AJ14H
Lines of Business (LOBs): NASA Internships, Fellowships, and Scholarships; Stem Engagement; Institutional Engagement; Educator Professional Development

A. 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 Oregon Space Grant Consortium is a Program Grant Consortium funded at a level of $570,000 for fiscal year 2017.

B. PROGRAM GOALS

The Oregon Space Grant Consortium (OSGC) develops and implements programs, projects, and activities that contribute to the development of a diverse and qualified STEM national workforce in disciplines needed to support and achieve NASA's strategic goals. OSGC provides students with quality, hands-on experiences and opportunities through authentic science inquiry using NASA aligned material and resources. OSGC focuses on interdisciplinary and inter-institutional collaborations among member institutions to strengthen the statewide STEM-based educational infrastructure. OSGC relies on the strength of its community college, university, and informal education partners to provide a diverse pool of students, educators, researchers, and administrators to sustain a consortium that continually and effectively contributes to the National Space Grant Program.

OSGC Goals: 1) Contribute to development of capable and prepared human capital in the STEM disciplines by providing access to unique hands-on research and educational opportunities to Oregon students, with an emphasis on involvement of women and underrepresented minorities in STEM fields. **2)** Utilize the state and national network of partners to strategically disseminate NASA information and resources to students, educators, and faculty to increase awareness of and participation in NASA-related research and educational

opportunities. **3)** Invest in a balanced suite of interdisciplinary research, education, and public service programs that reflect the priorities of the National Space Grant Program and NASA Office of Education with a primary focus on NIFS, Higher Education, and Research Infrastructure and a secondary focus on Informal Education and Public Service.

Internship Goal: Effectively and broadly disseminate NASA Center Internship opportunities using the NASA OSSI via the OSGC affiliate network and social media avenues. **SMART Objectives:** 1) Provide NASA Center Internships to a diverse student group congruent with the state demographics of 15.9% underrepresented minorities and to the NASA Office of Education requirement of 40% female. 2) Provide NASA Center Internships to students representing a diverse range of affiliate institutions.

Fellowship/Scholarship Goal: Effectively and broadly disseminate OSGC Fellowship and Scholarship opportunities via the OSGC affiliate network and social media avenues. **SMART Objectives:** 1) Utilize the OSGC online scholarship application system to achieve efficient and secure data collection, information transfer and payment processing in a timely manner. 2) Competitively award OSGC fellowships and scholarships to a diverse undergraduate student group congruent with the state demographics of 15.9% underrepresented minorities and to the NASA Office of Education requirement of 40% female. 3) Provide OSGC fellowships and scholarships to students representing a diverse range of affiliate institutions.

Fellowship/Scholarship Goal: Build collaboration between undergraduate students and faculty mentors working within a STEM discipline relating to NASA's Vision and one or more of the Mission Directorates. **SMART Objectives:** 1) Competitively award up to two OSGC Fellowships in the FY2017-18 to students conducting research at an OSGC research based 4-year affiliate institution.

Fellowship/Scholarship Goal: Promote and retain undergraduate student enrollment in STEM programs. **SMART Objectives:** 1) Award up to six OSGC Community College Scholarships and up to 10 Undergraduate Scholarships to students enrolled in STEM programs including physical sciences, life sciences, planetary sciences, mathematics, computer science, technology, or engineering at OSGC affiliate institutions.

Higher Education Goal: Support higher education programs that align with NASA's Education Priorities and Lines of Business by providing direct student support for authentic hands-on experiences in the STEM disciplines, providing experiential learning opportunities, increasing STEM engagement through unique NASA-related experiences, and fostering course enhancement and development based on the strengths of the OSGC affiliates and OSGC NASA-related research. **SMART Objectives:** 1) Efficiently and broadly disseminate the call for the Undergraduate Team Experience Award Program via the affiliate network and social media avenues to support up to 7 teams participating in a NASA-related hands-on STEM based project in the FY2017-18 funding cycle. 2) Collaborate with NASA Center Education Affairs Officers to competitively place students in NASA Center internships.

Higher Education Goal: Provide unique and authentic hands-on higher education opportunities to a diverse population of students, representing the OSGC affiliate institutions. **SMART Objectives:** 1) Support UG Team Experience Awards and Internships congruent with or in excess of state demographics of 15.9% underrepresented minorities in STEM fields and the

NASA Office of Education requirement of 40% female. 2) Support three Oregon High Altitude Balloon (HAB) teams to participate in the National Space Grant Balloon Eclipse Project to stream live images from the edge of space to NASA TV during the total solar eclipse August 21, 2017. 3) Host the OSGC Native Launch Initiative to include workshop and High Power Rocket Certification launch program.

Research Infrastructure Goal: Provide opportunities for students and faculty to present their research to their peers and potential students/faculty. **SMART Objectives:** 1) Host the OSGC Student Symposium to highlight OSGC-supported student research experiences and projects. Engage and recruit potential students to participate in OSGC programs.

Research Infrastructure Goal: Design research infrastructure programs for faculty and students in the STEM fields that align with NASA's Office of Education Lines of Business and current areas of emphasis by providing authentic, hands-on student experiences rooted in NASA-related research and utilizing NASA's unique capabilities. **SMART Objectives:** 1) Administer the OSGC Faculty Research Award Program to engage early career faculty to work with NASA-related research. Funded proposals will emphasize hands-on authentic science inquiry and mentorship.

Pre-College Goal: Support the NASA Education area of emphasis to engage educators in hands-on curriculum enhancement. **SMART Objectives:** 1) OSGC supports the effort of the South Metro-Salem STEM center to provide professional development opportunities for in-service educators to bring NASA material and content to the classroom through exposure to NASA scientific and technical expertise.

Informal Education Goal: Provide information, resources, and networking opportunities to students, educators, and affiliates. **SMART Objectives:** 1) Disseminate NASA material, resources, and professional development opportunities via the OSGC website, educator blog, and via social media avenues.

Informal Education Goal: Utilize informal education and public venues as a means to share faculty research and areas of expertise with students and general public. **SMART Objectives:** 1) Serve as docent/volunteer at OSGC informal education affiliate. 2) Support speakers for events arranged and/or hosted by OSGC affiliates.

Consortium Management Goal: Efficiently and effectively administer and lead the grant, maintain open communication within the Consortium and among affiliates, contribute to the national network, and deliver succinct and timely reporting to NASA's Office of Education. **SMART Objectives:** 1) Host the OSGC Affiliate Meeting. 2) Attend the National Council of Space Grant Directors Meetings. 3) Disseminate info and opportunities from NASA HQ and the National Space Grant Program directly to affiliate reps. 4) Maintain the OSGC website and social media with current OSGC/NASA program information, research and education opportunities, resource for students and educators, and other general OSGC/NASA news and updates. 5) Make annual affiliate visits as permitted. 6) Complete NASA reporting in a timely manner. 7) Provide contact info for OSGC student awardees for longitudinal tracking purposes.

C. PROGRAM/PROJECT BENEFITS TO PROGRAM AREAS

Connor Kelsay, 2016 OSU Experimental Sounding Rocket Association (ESRA) Team, funded as part of the OSGC Student Team Experience Award Program - "Space Grant allowed me to get my current job working as a NASA contractor. I love my career! I have been designing a parachute for the JPL Mars 2020 rover." Aligns with Higher Education projects.

Helena Bales, 2017 OSU RockSat-X Team, funded as part of the OSGC Student Team Experience Award Program - "Oregon Space Grant gave me the opportunity to continue my engagement with the development of space systems and gave me more experience in my chosen field. Since graduation I have started work at Los Alamos National Lab in the Intelligence and Space Research department. I am working on software development for space systems." Aligns with Higher Education projects.

Cole Morgan, 2017 OSU RockSat-X Team, funded as part of the OSGC Student Team Experience Award Program - "The Oregon Space Grant gave me the opportunity to add a very unique experience to my school career. Not many can say they have built an experiment and flown it into space, which gave me both a rewarding and beneficial experience. This opportunity also allowed me to experience a field of work that I have been interested in since childhood." Aligns with Higher Education projects.

D. PROGRAM ACCOMPLISHMENTS

- NASA Internships, Fellowships, and Scholarships (NIFS): 1) The 2017-18 OSGC Scholarship and Fellowship program call was disseminated to the OSGC affiliate network, and via the website and social media resources. OSGC utilized the Education Programs Support Services (EPSS) online application and review system to ensure secure data collection, information transfer, and payment processing. 17 out of 18 or 94% of OSGC higher education affiliates were represented in the fellowship/scholarship applicant pool. Awards were announced in August 2017. Payment disbursements were made in October 2017 and March 2018. Six Community College Scholarships at $3K/student, ten Undergraduate Scholarships at $5K/student, and two Undergraduate Research Fellowships at $8K/student for a total of 18 student fellowship/scholarship awards were made during this reporting period. Fellows work directly with a mentor to conduct NASA-related research throughout the academic year and are required to present their projects at the OSGC Student Symposium.

As part of the Fellowship/Scholarship program, OSGC implemented the SCORE Program or STEM Community-College Opportunity for Research Experience Program. This award is designed to provide community college students an opportunity to work together with a faculty mentor on a term-long research project in Science, Technology, Engineering, and Mathematics (STEM) or STEM education that goes beyond what is taught in the classroom. Projects may include individual components of a team or faculty research project. Projects were competitively selected; 8 SCORE awards of $750 each were awarded.

A total of 26 fellowship/scholarship awards were made - 18 F/S, 8 SCORE. Of all F/S awards made, 58% were awarded to females, 23% were awarded to underrepresented minorities in STEM fields, and 8% were awarded to students with disabilities. Percentages are in excess of the state demographics and the NASA Office of Education female demographic requirement. Fellowship/Scholarship recipients will be reported in the FY2018 OEPM. OSGC will open the

call for the 2018-19 Fellowship and Scholarship Program during this reporting cycle; recipients will be tracked and awards will be reported in subsequent reporting cycles.

2) OSGC supported NASA Center internships under the NIFS program area and promoted the NASA One Stop Shopping Initiative (OSSI) portal to students through the OSGC network and via the OSGC website and social media resources. Ten internships totaling $62,500 were funded under NIFS, all of which were NASA internships except for one Higher Education Institution internship. All interns presented their projects at the OSGC 2017 Student Symposium. Of the supported students, 30% are female, 17% are underrepresented minorities in STEM, and 8% are students with disabilities. Demographics for students who participated in 2017 internships will be reported in FY2017 OEPM. Selections for 2018 internships will be made no later than May 2018; selected students will be tracked and awards reported in subsequent reporting cycles.

- Higher Education projects: 1) The Undergraduate Team Experience Award Program call, promoting year-long hands-on STEM based student research projects was disseminated via the OSGC network, website, and via social media resources with $50K funds available through a competitive proposal process. Seven proposals were selected for funding. 29% of the students significantly involved with the projects are female, 7% are underrepresented minorities in STEM, 3% are disabled, 6% are veterans. Awards included a RockOn! project, a NASA Student Launch Initiative USLI team, two CanSat projects associated with NASA's CubeSat Launch Initiative, a liquid rocket engine development project, a rocket engine test stand development project, and a team participation in NASA's Ninth Annual Robotic Mining Competition. Teams will present their projects at the OSGC 2018 Student Symposium. Students who are significantly involved with the teams will be included in subsequent reporting cycles.

2) OSGC supports STEM In-Service Teacher Development via the South Metro-Salem STEM Partnership (SMSP), a regional hub designed to increase access, excitement, and engagement of students in STEM, and experiential learning. OSGC supports the effort of the SMSP to provide opportunities for in-service educators to bring NASA material and unique STEM content to the classroom through exposure to NASA scientific and technical expertise, thus supporting the NASA Education area of emphasis to engage educators in hands-on curriculum enhancement. A core component has been development of the Oregon Connections tool, which matches the expertise of STEM professionals with the K-12 and university educators who seek their experience, participation, and support. Oregon Connections provides or augments embedded professional development opportunities for in-service educators to bring NASA material and content to the classroom through exposure to NASA scientific and technical expertise.

3) Three higher education teams and two K-12 teams from Oregon participated in the Montana Space Grant Eclipse Ballooning Workshop to build a ground station and camera/video payloads to capture the 2017 total solar eclipse when launched from a high-altitude balloon as part of a national Space Grant networking effort. During the year three funding cycle, OSGC continued supporting these teams to complete the project in Oregon and successfully launch and recover their balloons, and provide images during flight that were downlinked and integrated into the national live feed during the eclipse as the path of totality traversed across the continental US starting in Oregon. A total of seven balloons from three teams, including the Alaska Space Grant team, were launched from the OSU campus in Corvallis, OR. The third Oregon team launched

their balloon from the OSU research vessel, the Pacific Storm, off the Oregon Coast. The project attracted a great deal of attention from the press, resulting in many interviews, articles, and photos capturing the event on August 21, 2017. Students who were significantly involved in the project will be included in FY2017 OEPM.

4) Precollege funds from year two were redirected to the Astronomer-in-Residence (AIR) Program, implemented under Higher Education in year three. Two astronomers-in-residence from within the consortium were designated to address requests for information/education surrounding the 2017 Total Solar Eclipse. One AIR is a former K-12 science teacher and a Solar System Ambassador for Jet Propulsion Laboratory; one is a physics/science/honor's college instructor at OSU. Two physics graduate students, also served as student AIRs. Throughout the year, AIRs responded to requests for information about the eclipse across the state of Oregon. The program was advertised on the OSGC website and to the affiliate network. Collectively, the Astronomers-in-Residence gave 24 talks to groups including universities, rotary, schools, museums, media, city clubs, science pubs, churches, wine clubs, girl scouts, and general public, reaching over 4900 individuals across the state. Additional outreach events included nine solar filter workshops with 250 participants, two star parties with approximately 2400 participants, nine television interviews, six radio interviews, fourteen print articles, five podcasts, and serving as participant and juror for eclipse-related art shows. The graduate student AIRs reached over 1600 individuals with astronomy club outreach and pre-eclipse events and reached over 3000 individuals during the eclipse weekend activities. Total program impact 12,000+ individuals.

4) 50% of the director's and associate director's salaries were devoted to implementing and executing higher education programs.

- Research Infrastructure projects: 1) Hosted the 2017 Student Symposium in November 2017; all Undergraduate Research Fellows, Undergraduate Student Research Awardees, NASA and industry interns, and students who are a part of the OSGC Faculty Research Award Program participated. Mr. Torry Johnson, Assistant Deputy Director of Hydrosphere and Biosphere Science at NASA Goddard Space Flight Center, gave the keynote address. 28 students presented, of which 25% are female. The event was well attended by students, faculty, staff, and local public community. Students may include the symposium as an invited talk and a publication as a result of their participation. Student papers will be reported in FY2018 OEPM.

2) The OSGC Faculty Research Award Program is intended to be a competitively awarded workforce development program, designed to develop a diverse, capable, and prepared human capital in aerospace-related STEM disciplines by funding scientific aerospace-related research at OSGC institutions. Projects must have a student/mentor component. Students who are funded as part of the program will be longitudinally tracked and will present their work at the 2018 Student Symposium; student demographics will be reported in FY2018 OEPM. One project titled Investigations into Zebra Fish Cataract Formation Following Exposure to Simulated Cosmic and Galactic Radiation Fields was funded in year three to Dr. Jan Spitzbergen in the Aquatic Animal Health Laboratory at OSU. The project is under the guidance of Dr. Jack Higginbotham.

- Precollege projects: 1) OSGC collaborated with the education staff at Evergreen Aviation & Space Museum to develop and implement the Oregon Native Launch Program. Proposed

under Higher Education, the Oregon Native Launch Program was implemented and reported as a precollege program in year two. In the year three funding cycle, the project had the purpose of continuing to engage K-12 students from the Grand Ronde Native American community in NASA related aerospace activities. In phase two of the project, Evergreen Aviation & Space Museum and the Grand Ronde Education Council and staff proposed a series of activities to engage students with introductory experiences and a progression of experiences to deepen student engagement and understanding of aerospace hardware and space science. Eleven programs with a variety of topics including Mars, Astronauts, Astronomy, Rocketry, UAV/Drones, Robotics, and the Eclipse were presented at the Grand Ronde Youth Education Center in Grand Ronde, OR between May-August 2017. 190 K-5 students and 145 6-12th grade students participated. Of the 335 total students, 100% were Native American. Data will be reported in FY2017 OEPM as a precollege project.

- Informal Education projects: 1) The OSGC Informal Education Award Program provided funding for The Museum at Warm Spring's Seeds of Discovery interactive student engagement program. The program provided students with out-of-classroom learning activities in a museum setting, including robotics and mini-drone flights to engage and excite them about science learning and understanding. Implemented in May 2017, 251 4th grade students participated, of which 24% are Native American, 20% are Latino, 47% are female, and 95% are economically disadvantaged. Data will be reported in FY2017 OEPM as an informal education project.

2) Disseminated NASA material, information, resources, and professional development opportunities via the OSGC website and social media avenues. The director served as a docent for Evergreen Aviation & Space Museum, contributed articles for the Museum newsletter, and served as advisor to the Museum's Education Advisory Board.

- Consortium Management: 1) OSGC hosted the 2017 annual affiliate meeting at the University of Oregon in Eugene, OR. All affiliates save one attended the meeting.

2) The OSGC director served as reviewer for other state space grant proposal programs; the OSGC associate director served on the National Space Grant Distinguished Service Award Selection Committee. Leadership attended the National Space Grant Meeting in Grand Forks, ND in September 2017.

3) Disseminated info and opportunities from NASA HQ and the National SG program to the affiliate network via email, the OSGC website, and social media avenues.

4) Maintained the OSGC website and social media with current OSGC/NASA program information, research and education opportunities, resources for students and educators, and other relevant news and updates.

5) Utilized the EPSS automated longitudinal tracking system to track OSGC direct funded and direct student participants and measure the percentages of students entering the STEM aerospace workforce. The system collects student demographic data and information that is reported to NASA via Annual Performance Documents and OEPM.

E. PROGRAM CONTRIBUTIONS TO NASA EDUCATION PERFORMANCE GOALS

Include summary data for the bulleted list below:

- **Diversity**: OSGC maintains diverse management, faculty, institutions, student participants, and projects. The 22 consortium members include seven state higher education institutions, three private higher education institutions, eight community colleges, three informal education institutions, and one industry partner representing all geographic locations of the state. The majority are active in the consortium. OSGC strives to make all awards congruent with or in excess of diversity demographics. Of the 26 direct funded Fellowship/Scholarship students and 10 interns for FY2017, 50% are female, 17% are underrepresented minorities in STEM, and 8% are disabled. Of the 70 direct student participants, 29% are female, 7% are underrepresented minorities in STEM, 3% are disabled, and 6% are veterans. The combined percentage of both direct funded and direct participants is 36% female, 10% underrepresented minorities in STEM, 4% disabled, and 4% veterans.

- **Minority Serving Institution Collaborations**: In FY2017, four Oregon institutions of higher education received the MSI designation including Lane Community College, Portland Community College, Portland State University and Pacific University. OSGC continues to provide significant funding via scholarships, fellowships, internships, student experience team support, and faculty research to support MSI students and faculty. 50% of scholarship and fellowship awards, 10% of internships, and 29% of other higher education program funds went to MSI institutions during this reporting period.

- **Office of Education Annual Performance Indicators**:

    - API 2.4.1: ED-16-1 ___54_____

    - API 2.4.2: ED-16-2 ___99_____

    - API 2.4.4: ED-16-4 ____1____ The Seeds of Discovery interactive science event hosted by The Museum at Warm Springs on the Confederated Tribes of Warm Springs. 9 educators and 13 assistants were involved in leading the event for 251 - K-12 students from the tribal community.

    - API 2.4.5: ED-16-5 ____986_____

F. IMPROVEMENTS MADE IN THE PAST YEAR

Affiliates voted to designate a portion of fellowship/scholarship funds to provide a hands-on, mini research opportunity for community college students. OSGC implemented the STEM Community-College Opportunity for Research Experience Program or SCORE as the vehicle to provide this opportunity. The award is designed to provide community college students an opportunity to work together with a faculty mentor on a term-long research project in Science, Technology, Engineering, and Mathematics (STEM) or STEM education that goes beyond what is taught in the classroom. Projects may include individual components of a team or faculty

research project. The program was modeled after a similar opportunity provided by Montana Space Grant. Although fewer awards were given than planned, OSGC will continue to promote the program and increase interest by listing dedicated research projects to simplify the process.

Southwestern Oregon Community College was added as a new community college affiliate in April 2017. Dr. Aaron Coyner, physics faculty, serves as the affiliate representative. Southern Cross Aviation joined the consortium in April 2017 as an industry affiliate partner. Ms. Hilda Pereyo serves as the affiliate representative. No further improvements or adjustments were made to management, project design, or project evaluation during this reporting period.

G. CURRENT AND PROJECTED CHALLENGES

OSGC makes direct student funded awards that meet and/or exceed the state demographics without issue. However, meeting these demographics in regard to direct student participants, e.g., Student Team Experience Awards Program, remains a challenge despite the emphasis on diversity stated within program calls. OSGC will continue the effort to engage more females and underrepresented minorities in STEM in student-led team projects.

Continuing efforts will be made to engage consortium affiliates to promote STEM education throughout Oregon. The majority of affiliates are active and engaged; however, there are a few institutions that struggle to maintain involvement including student participation in programs, service to the consortium network, and/or attending required affiliate meetings. In an effort to strengthen the consortium, OSGC will assess each individual case over the next year to determine the best course of action for affiliates who are peripherally performing/participating.

H. PROGRAM PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

Higher Education Affiliate Institutions: All OSGC higher education institutions have the opportunity to participate in the OSGC Scholarship/Fellowship Program and all OSGC funded programs including the STEM Course Development Program, NASA Center Internships, the UG Team Experience Program, the Student Symposium, and the Faculty Research Award Program.

Eastern Oregon University (EOU) – Teacher education; Affiliate Rep: Chemistry.

George Fox University (GFU) - Liberal arts and science education; partner in the South Metro-Salem STEM Partnership (SMSP); Affiliate Rep: Mathematics and Physics.

Lane Community College (LCC) - MSI - Technology, continuing education, math and science; LCC Aviation Academy Offers Flight Technology and Aviation Maintenance Technology programs and a pilot certification program; Affiliate Rep: Physics/astronomy.

Linn-Benton Community College (LBCC) - Robotics, mechatronics, and pre-engineering; Affiliate Rep: Engineering.

Oregon Coast Community College (OCCC) - Science, general studies; Affiliate Rep: Biology.

Oregon Institute of Technology (OIT) - Pro technical and health related fields; partner in the SMSP collaboration. Affiliate Rep: Computer Systems Engineering.

Oregon State University (OSU) - Lead institution - Engineering, earth, oceanic, and atmospheric science, radiation biology, ecology, biochemistry, and pharmacy; Affiliate Rep: Mechanical Engineering.

Pacific University (PU) – MSI - Liberal arts, health professions, and math and science education; Affiliate Rep: Physics.

Portland Community College Cascade Campus (PCC) – MSI - Adult education; Affiliate Rep: Portland Teachers Program

Portland Community College Rock Creek Campus (PCC) – MSI - Adult education including biology, veterinary, green energy, and aviation maintenance technology; Affiliate Rep: Science and geology.

Portland Community College Southeast Campus (PCC) – MSI – Aviation science, computer applications and office systems, and English for speakers of other languages; Affiliate Rep: General Science.

Portland Community College Sylvania Campus (PCC) – MSI - Performing arts center, nationally recognized nursing and dental programs, and machine manufacturing technology program; Affiliate Rep: Physics.

Portland State University (PSU) – MSI - Internationally recognized for its urban planning, social work, environmental studies programs, and microgravity drop tower research and collaborations with NASA and the International Space Station; Affiliate Rep: Geology.

Southern Oregon University (SOU) – Criminology, natural sciences, and environmental science; Affiliate Rep: Physics.

Southwestern Oregon Community College (SOCC) - Serves the Oregon south coast. Supports student achievement by providing access to lifelong learning and community engagement in a sustainable manner; Affiliate Rep: Physics.

University of Oregon (UO) - Teaching and research university with over 200 academic programs; manages Pine Mountain Observatory in Bend, OR; Affiliate Rep: Physics.

University of Portland (UP) – Education and engineering; Affiliate Rep: Mechanical Engineering.

Western Oregon University (WOU) –Teaching Research Institute engaged in community-based projects; focuses on science and math education; partner in the SMSP collaboration; Affiliate rep: Physics.

Informal Education Affiliates:

Evergreen Aviation & Space Museum – Home of the Spruce Goose; its mission is to inspire, educate, promote, and preserve aviation and space history; participates in Higher Education Programs; partner in the SMSP collaboration.

Oregon Museum of Science and Industry (OMSI) – Hands-on science and technology museum; planetarium and exhibit halls with focus on natural science, industry, and technology; houses the state's largest Science on a Sphere as well as smaller, mobile scale models. OSGC supports OMSI by providing letters of support to leverage the NASA network and obtain additional funding opportunities for the museum.

The Museum at Warm Springs – Tribal museum in central Oregon that brings three tribal communities together; partners with the local school district to offer hands-on science education utilizing expertise from within the community and around the state.

Industry Partner Affiliates:

Southern Cross Aviation – Leading provider of worldwide ferry flight services across a broad range of aircraft types. Committed to community education as a way to inspire and engage youth and encourage careers in the aviation industry; Affiliate rep: aerospace education.