

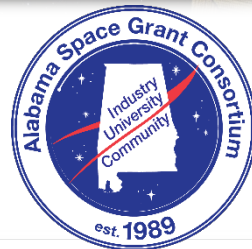


Alabama Space Grant Consortium Presentation to the Alabama Space Authority

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April 11, 2023



What is Space Grant?

Public Law 100-147

NASA Authorization Act of 1988

TITLE II-NATIONAL SPACE GRANT COLLEGE AND FELLOWSHIP PROGRAM

SEC. 201. This title may be cited as the "National Space Grant College and Fellowship Act".

SEC. 202. The Congress finds that -

(1) the vitality of the Nation and the quality of life of the citizens of the Nation depend increasingly on the understanding, assessment, development, and utilization of space resources;

(2) research and development of space science, space technology, and space commercialization will contribute to the quality of life, national security, and the enhancement of commerce;

(3) the understanding and development of the space frontiers require a broad commitment and an intense involvement on the part of the Federal Government in partnership with State and local governments, private industry, universities, organizations, and individuals concerned with the exploration and utilization of space;

(4) the National Aeronautics and Space Administration, through the national space grant college and fellowship program, offers the most suitable means for such commitment and involvement through the promotion of activities that will result in greater understanding, assessment, development, and utilization; and

(5) Federal support of the establishment, development, and operation of programs and projects by space grant colleges, space grant regional consortia, institutions of higher education, institutes, laboratories, and other appropriate public and private entities is the most cost-effective way to promote such activities.

- NASA implemented the National Space Grant College and Fellowship Program under the **NASA Authorization Act of 1988; Public Law 100-147: National Space Grant College and Fellowship Act.**
 - *To increase the understanding, assessment, development, and utilization of space resources by promoting a strong educational base, responsive research and training activities, and broad and prompt dissemination of knowledge and techniques.*
- The **Alabama Space Grant Consortium (ASGC) was formed in 1989**, when ASGC was one of the 16 founding SG Consortia.
 - Currently there are now Space Grant programs active in all 50 states as well as Puerto Rico, Washington, D.C., the U.S. Virgin Islands and Guam.
 - ASGC is administered through the University of Alabama in Huntsville (UAH).



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Alabama Space Grant Mission and Vision

- **Vision:** an increased level of appreciation and leadership by the people of Alabama in our national space and aerospace engineering enterprises.
- **Mission:**
 - *Inspire, enable and educate* a diverse group of Alabama students to take up careers in space science, aerospace technology and allied fields.
 - Play our part in *ensuring U.S. leadership* in space exploration and aerospace technology in the future.
 - *Inspire the next generation* of space explorers.
 - *Bring increased realization of the value* of space science and technology to the people of Alabama.
 - Ensure that our message and programs *reach all constituencies in the population of Alabama*, especially those traditionally underrepresented in the science and engineering professions.



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Alabama Space Grant Programs

- Space Grant Graduate Fellowships and Undergrad Scholarships
- NASA and Industrial Internships / NASA Pathways Programs (co-op)
- NASA Competitions/Projects (Sr. Design Projects) & Student Clubs
- Research Experiences for Undergraduates (REU) Programs
- Other Special Events (i.e., workshops, symposiums, state-wide initiatives)
- Other NASA Programs (e.g. NASA KIDS, Artemis Student Challenges, etc.)



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AAMU's 2021 Scholarship Recipients



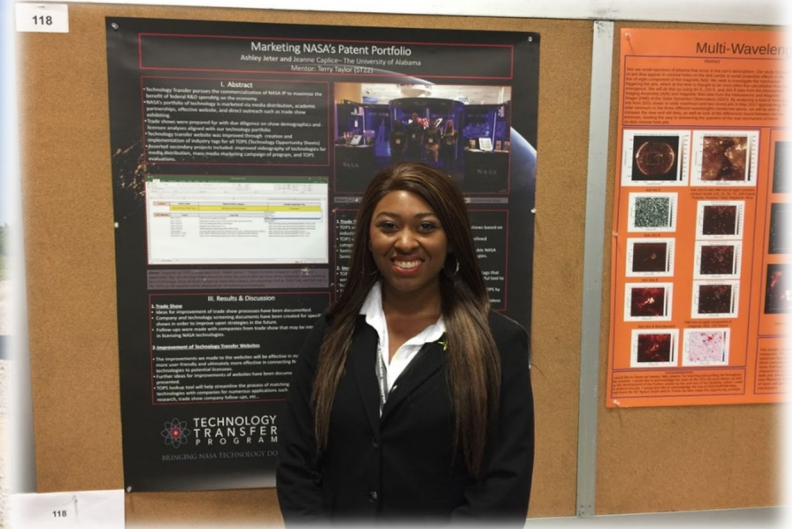
Balloon Launch with UAH's Space Hardware Club



Auburn's 2019 Rover Team

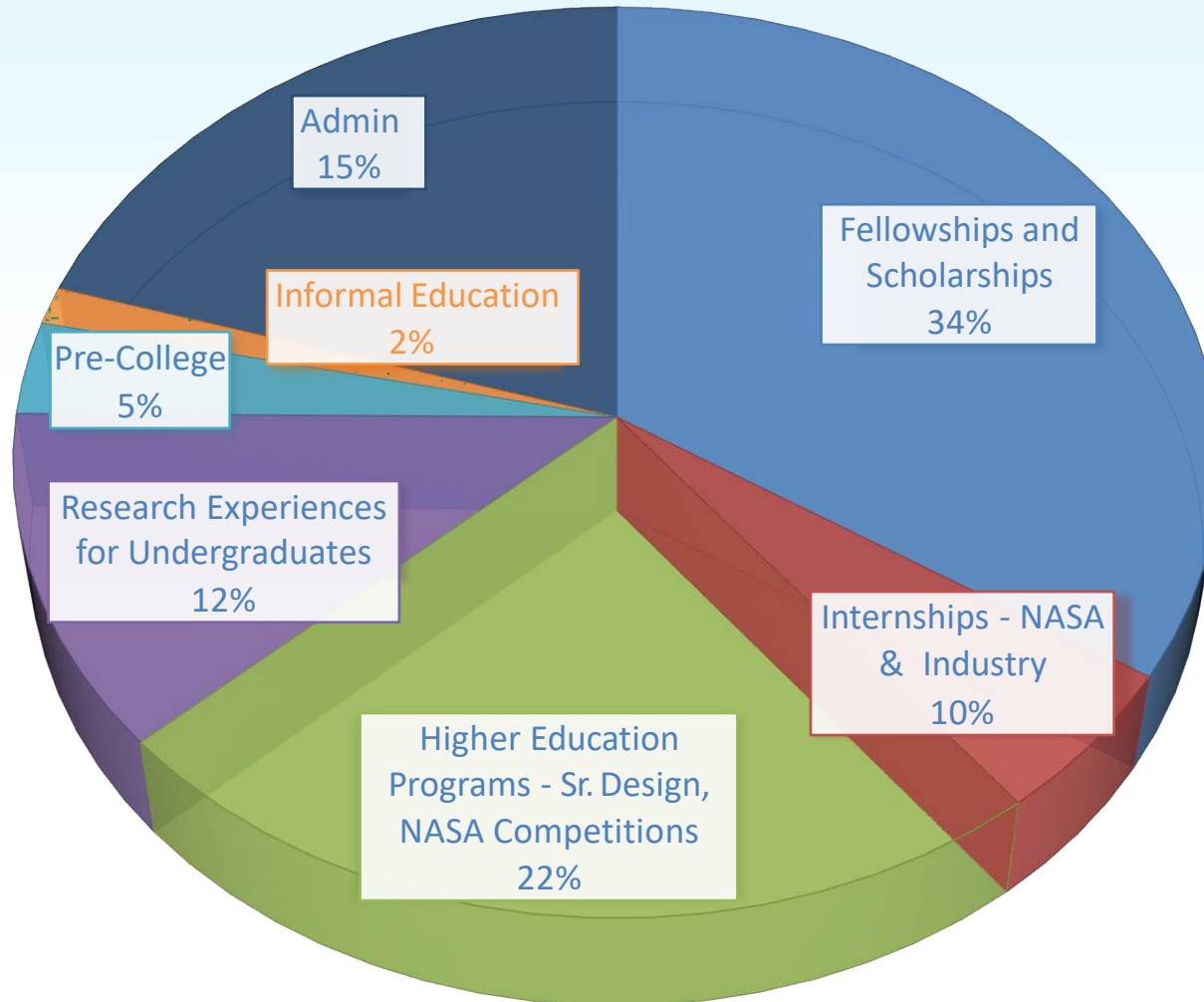


The Alabama Astrobotics Team was invited to Space Grant's 30th Anniversary Celebration on Capitol Hill in 2019.



"Marketing NASA's Patent Portfolio" poster session

ASGC Program Funding Allocation

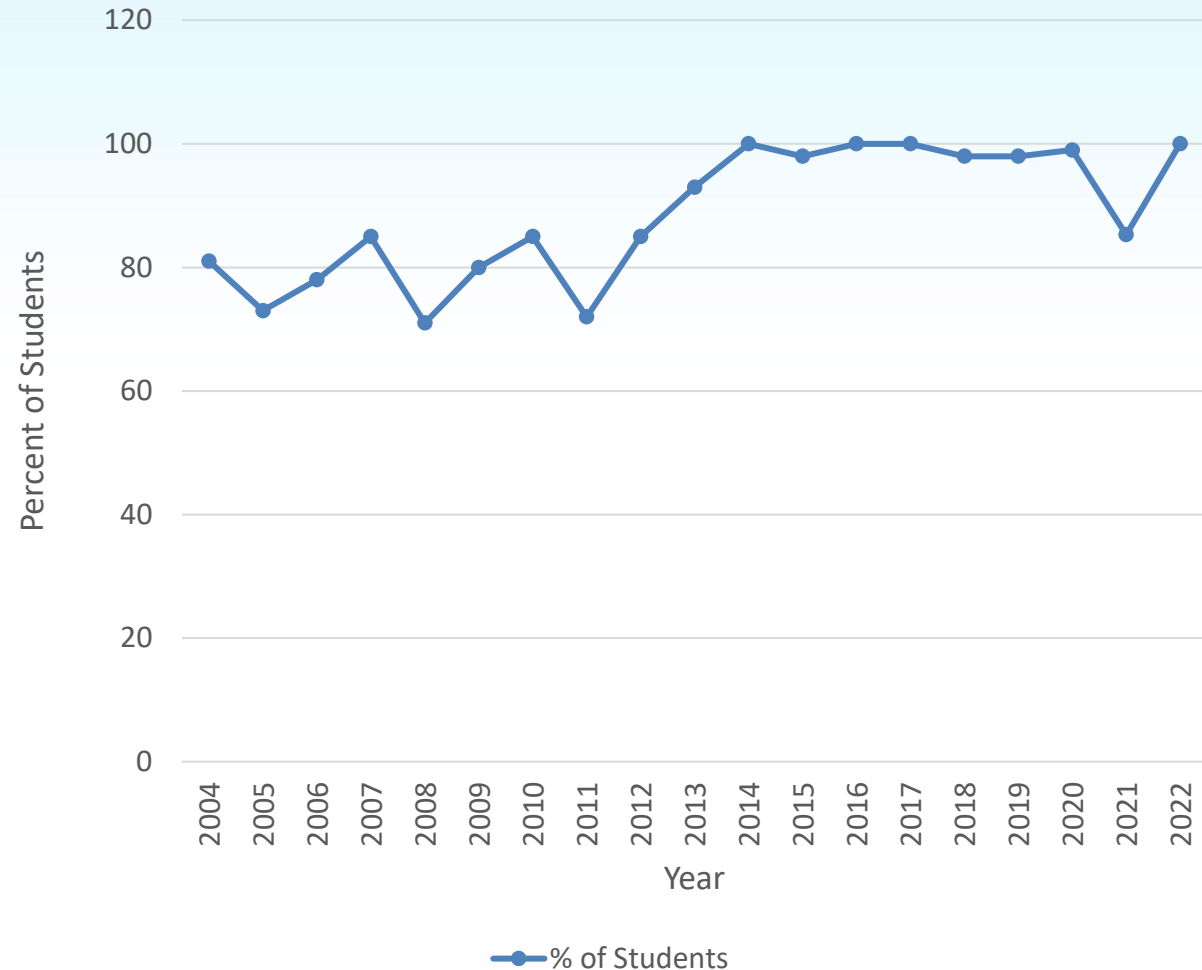


- Pie chart includes net ASGC budget – NASA funding plus Alabama cost share
- Slices correspond to ASGC Programs listed on a previous page plus administrative costs.



One Outcome Measure

- Percentage of students tracked through their next step vs. last year of ASGC support who went on to STEM disciplines.
 - Participation in Fellowships, Scholarships, Interns, and REU programs (*short decline during COVID years*)



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Industry Advisory Board



- **Dr. Daniel Schumacher (chair)**

- **Dr. Kenneth Sartor**



- **Mark Becnel**

- **Charles Scales**



- **Miranda Frost**

- **Robert Lightfoot**



- **Steve Cash**

- **Dr. Joey Shelton**



- **Dr. Justin O'Neal James**

- **Michael Johns**

- **David Trent**



- **Todd May**



March 24, 2023 IAB Review

- Clean bill of health; **good programs, effectively and efficiently administered.**

AND

- Need **more STEM graduates** coming out of Alabama colleges and universities
 - Better **K-12 engagement**
- Graduates need better preparation for the real world; **shorten employee development time**
- Grow engagement in **artificial intelligence and machine learning**



Alabama CubeSat Initiative Program

- **Program Objective: Develop and fly technologically and scientifically significant missions which are collaboratively designed and built by students at ASGC member universities and community colleges.**

- Mentored by university faculty, NASA and Industry experts

- **Program Coordinator: Dr. Patrick Kung (UA)**

- **ACSI Projects**

- **Space Transporter by ACSI (Space TACSI)**
- **MoonBEAM-SC**
- **ABEX Astrophysics Payload**
- **AEGIS Lunar Science Payload**

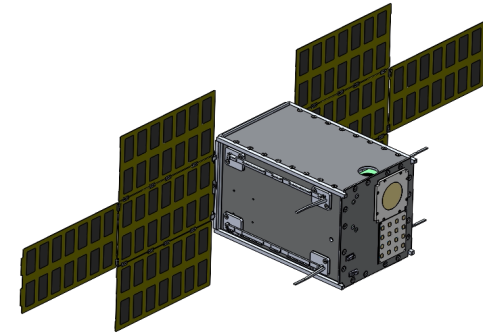


The Space TACSI

Goal: Demonstrate flight-ready CubeSat bus as a **Qualified Hosted Platform (QHP)**

QHP Features:

- ✓ Modular design capable of 12U, 6U or 3U formats
- ✓ Easily customizable to meet diverse payloads
- ✓ Assembled in the U.S.
- ✓ Designed, fabricated, assembled, and integrated by Alabama-trained students
- ✓ Provides affordable opportunities for commercial, scientific, and educational payloads



Customers Already Interested:

- University of South Alabama, Dr. Edmund Spencer
- Jet Propulsion Lab after Demonstration Success
- Lawrence Livermore National Lab after Demonstration Success



Alabama CubeSat Initiative Sponsors



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► Experience ► Performance ► Value

ASGC K-12 Engagement Study

Goal: Identify the **unique potentials** for ASGC to effectively engage with Alabama K-12 Education.

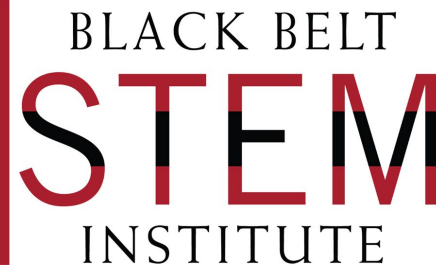
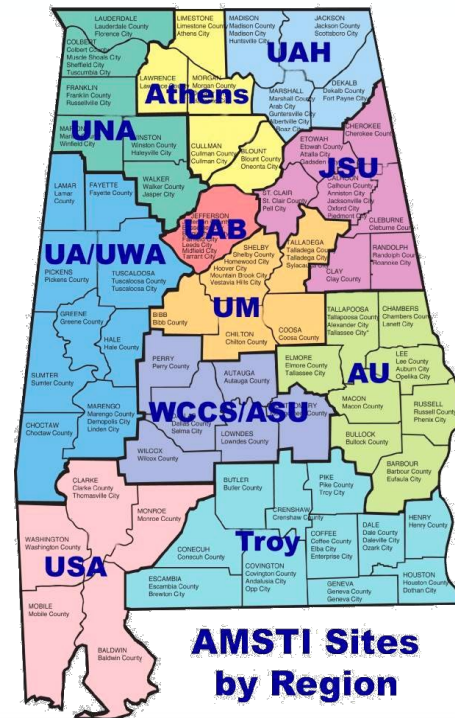
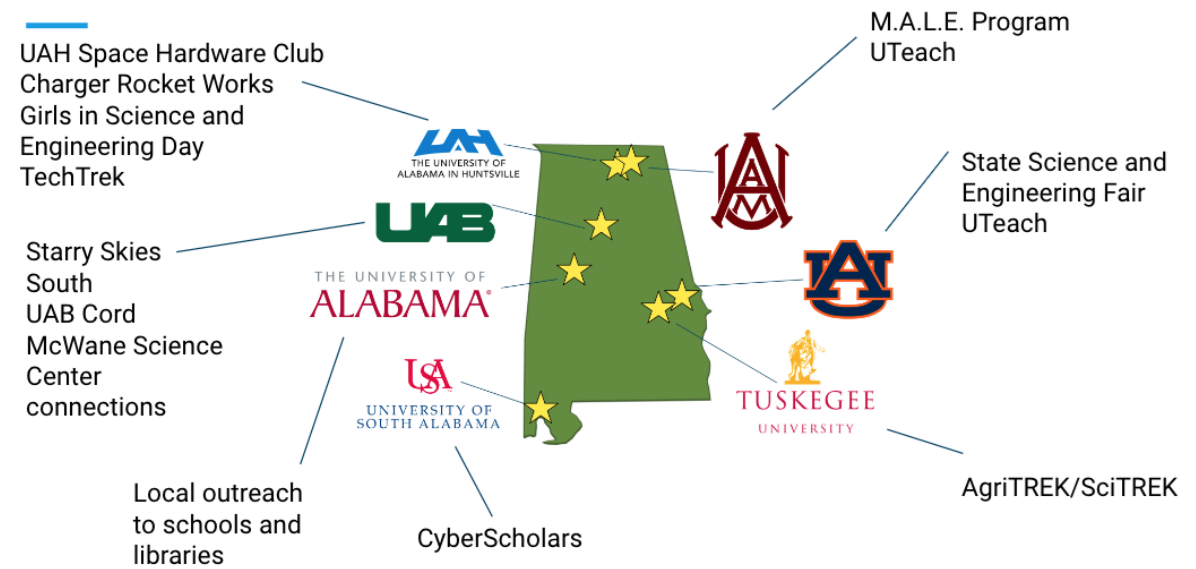


- Study performed October 2022 - January 2023
- 40+ interviews were conducted with 50+ contacts
- Survey to K-12 teachers: N=219 respondents from 38 counties.
- Executive Summary with findings and recommendations checked and verified with 10 interviewees



Findings

1. Through its existing partnerships, ASGC has access to a variety of K-12 connected activities and expertise.
2. The State of Alabama invests in several large-scale educational efforts to improve student achievement and teacher preparation.
3. Continued effort is needed to reach schools that are most under-resourced and students who are the most underrepresented in STEM
4. Each component of STEM should be considered, and going beyond STEM is needed for a holistic education.



Recommendations

1. Leverage Higher Education Partnerships and Build New Partnerships
2. Support Diverse Students and Create Inclusive Environments
3. Promote Timely Content Areas

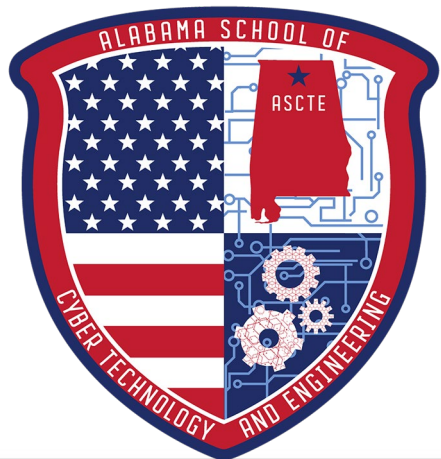
Computer Science,
Coding, Digital
Literacy
(GA Space Grant
collaboration on
Artificial Intelligence
and Machine Learning
Educational Modules)

Earth Science and
Climate Change
(NASA GLOBE
Citizen Science,
MyNASA Data)

Solar Eclipses (Oct 14
2023 & Apr 8th 2024,
last ones for 20
years!) - working with
AMSTI to equitably
distribute 50,000
glasses



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Remarks

- **Dynamic programs** engage students across Alabama in myriad ways in furtherance of STEM education.
- Programs are **effective and efficiently administered.**
- Looking to **improve K-12 engagement.**
- Looking to **grow skills in complex system design, digital engineering, AI/ML and collaboration.**
 - Develop sustainable basis for Alabama CubeSat Initiative

