

GSGC 2021 Annual Report



WHO WE ARE

The Georgia Space Grant Consortium (GSGC) was established in 1989 to develop a statewide network of academic, industry, and non-profit partners dedicated to:

Maximize the number of Georgia students from all backgrounds who are well prepared in science, technology, engineering, and mathematics (STEM) fields and who are motivated to support space and aeronautics programs vital to this nation.

About:

- GSGC conducts research, awards internships, scholarships, fellowships, conducts K-12 student and teacher training programs, and public outreach.
- GSGC is actively engaged in preparing students in STEM to meet critical state and national needs with:
- 21 Affiliate Institutions
- 9 Partner Organizations
- 6 Historically Black Colleges and Universities
- 2 Women Serving Institutions

Higher Ed/Workforce Development:

- Fellowships & Scholarships
- NASA and Industry Internships
- Student & Faculty Research

Hands-On Programs:

- Faculty Research
- Teacher Training
- Hands-On Workshops
- Public Outreach
- Museum & Planetarium Programs
- Camps and Science Programs

Partners:

- Atl. Metropolitan State College
- Center for Sustainable Communities
- Commodore Conyers College and Career Academy
- C-STAR
- GA Center for Innovation for Aerospace
- Hines Family Foundation
- PinkSTEM
- Scout Aerospace
- West Georgia Technical College

Affiliates:

- Agnes Scott College
- Albany State University
- Clark Atlanta University
- Columbus State University
- Fort Valley State University
- Generation Orbit Launch Services, Inc
- Georgia Institute of Technology
- GA Southern Univ.-Armstrong
- GA Southern Univ.-Statesboro
- Georgia State University
- Kennesaw State University
- Mercer University
- Morehouse College
- Museum of Aviation
- Savannah State University
- SpaceWorks Enterprises, Inc.
- Spelman College
- University of Georgia- Athens
- University of Georgia- Griffin
- University of North Georgia
- University of West Georgia



WHAT WE DO



Georgia Southern University

Prof. Wanye Johnson with his student at the Eagle-ROAR competition, a novel engineering design competition that engages high school students using unmanned aerial vehicles (drones), in the application of fundamental mathematics, physics and design engineering.

Albany State University

Prof. Saha collaborating with a student in the "Suppression of Electromagnetic Signal of particular Frequency" project at Albany State University. The goal is to design and fabricate an artificial material that blocks a particular band of microwave frequencies.



Hines Family Foundation

The multi-university Dual Cross-linked Balloon Borne CubeSat (2XL-BBC) team consisting of interns from Axient Corp and HFF/GSGC, are seen here discussing possible methods to troubleshoot issues with their CubeSat's attitude control system.

WHERE WE ARE GOING



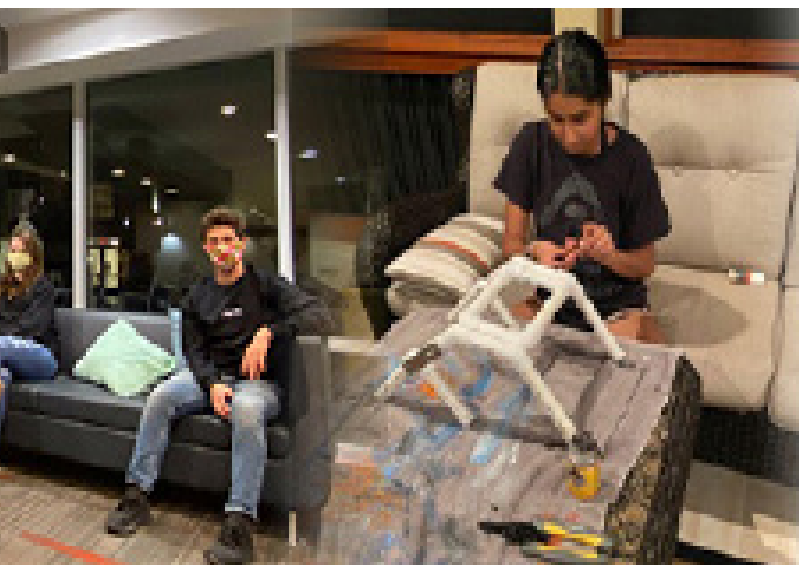
Skye Shultz,
PinkSTEM

I initially worked with Pink STEM and the GSGC in 2016 through the NASA Solar System Ambassador program. I retired from the NASA Solar System Ambassador program, and through our successful partnership, I created my own company, Anchors to Infinity, LLC, which aimed to focus on serving the space and STEM industries through educational programs, mentorships, research and development, and outreach. Through Anchors to Infinity, LLC, I once again collaborated with Pink STEM and GSGC, co-hosting virtual events during the pandemic that brought light onto STEM topics and careers in STEM. Through this partnership and the creation of my company, I have been able to pursue my dreams of becoming an astronaut. While completing my undergraduate degree in Biological Sciences, I was able to participate in various programs including NASA's Extreme Environment Mission Operations (NEEMO) 20, Embry Riddle Aeronautical University Mobile Extreme Environment Research (ERAU MEERs), and conduct research with NASA leading to a published paper. I also completed the NASA L'SPACE NPWEE Academy and am currently in the NASA L'SPACE Mission Concept Academy. Following my undergraduate degree, I was accepted into the Space Studies program at the University of North Dakota where I am currently working on my masters and thesis.

I am a physics major at Kennesaw State University. My undergraduate research has been helping to develop compact detectors designed to measure the presence of charged sub-atomic particles. Despite the challenges of doing research because of COVID-19, the tremendous support and help from Kennesaw State University's faculty and the Georgia Space Grant Consortium allowed me to continue my work throughout the year through extensive use of simulation programs. I have been developing a particle simulation program using CERN's Geant4 C++ libraries to fully model a parallel-plate muon detector that is being physically developed in the lab by other students in our group. This detector has the possibility to act as an imaging device that can detect elementary particles called muons, which are generated in our atmosphere and can penetrate structures such as mountains and buildings. In August, I presented the initial findings from the simulation run at the 2021 Birla Carbon Scholars program at Kennesaw State University in front of a panel of judges from the Aditya Birla company, as well as nearly 100 Kennesaw State University Students. This research has also been recognized by members of the EMPHATIC collaboration at Fermi National Laboratory who have invited me and other members of our KSU student team to aid in the setup of their detector for their January 2022 data run.



Christian Perez,
Kennesaw State



WHERE WE ARE GOING



Jesdunsin Awodele,
Georgia Tech

I am a 3rd-year Aerospace Engineering Student, Air Force ROTC cadet, an undergraduate researcher in the Aerothermodynamics lab, and an EDGE mentor. I have been involved with GSGC for a year and a half and it had been a transformative experience. The greatest aspect of my life GSGC has impacted is my ability to talk to non-technical people about STEM and get them excited about the field. Being able to inspire people about Engineering has made what I do in school so much more important. This experience has helped me in attaining the Patti Grace Smith Fellowship, where I talked about my experiences with STEM outreach, and acquiring my summer internship at Boeing working as a System Engineering Intern, working Model-Based Systems Engineering on the MQ-25. Through GSGC, I have been able to be part of STEM camps, do lessons on balsa wood gliders, learn how to interface with modular chips, and work with some of the local teachers. As a Black engineering student, I can see the Aerospace Industry is lacking in representation. It was very motivating to see so many minorities show up to the event with an interest in space because the change to

industry starts with them. Personally, GSGC has shown me how important STEM outreach is not just in K12 but the greater populous. Since learning is a lifelong journey, GSGC has inspired me to stay involved in my professional life, educating the next generation in addition to whatever I am doing. professional life, educating the next generation in addition to whatever I am doing.

I am a Junior Civil Engineering student at Georgia Southern University. I began working with the Georgia Southern Engineering Design Challenge (EDC) as a student coach for the Savannah High School team in the Spring 2020. As a coach, I helped these students design and 3D print a hook that would attach to a drone and allow it to carry a payload through an obstacle course. Unfortunately, due to COVID19, the school I was working with dropped out of the competition, and in Fall of 2020, EDC transitioned to online competition. The rules for the competition changed so that students designed the hook, however, they would make a video discussing their design instead of meeting in-person to race the drones. At this point, the competition ran into another problem; due to COVID19, public schools that were still meeting online, there were only two schools interested in competing, so I recruited other homeschooled students to form a homeschool team. Although this team had a month to do what the other schools accomplished in three months, they designed, and 3D printed a hook that allowed a drone to carry the supplied payload. Before Spring 2021 EDC was announced, I worked over winter break in December to test various ideas that were considered for the next EDC competition. For the Spring 2021 competition, teams were required to design a scoop that could be 3D printed and used by a drone to pick up simulated Martian soil, or in this case, beans. I once again coached the homeschool team as they prepared for the competition while he also assisted with 3D printing the designs for testing.



Josiah Hacker,
Georgia Southern



BY THE NUMBERS

The following numbers represent the direct student and community engagement throughout the state for the 2020-2021 academic year. All of the students, educators, and community members participated in a GSGC funded program.

7,071 K-12 Students

573 K-12 Educators

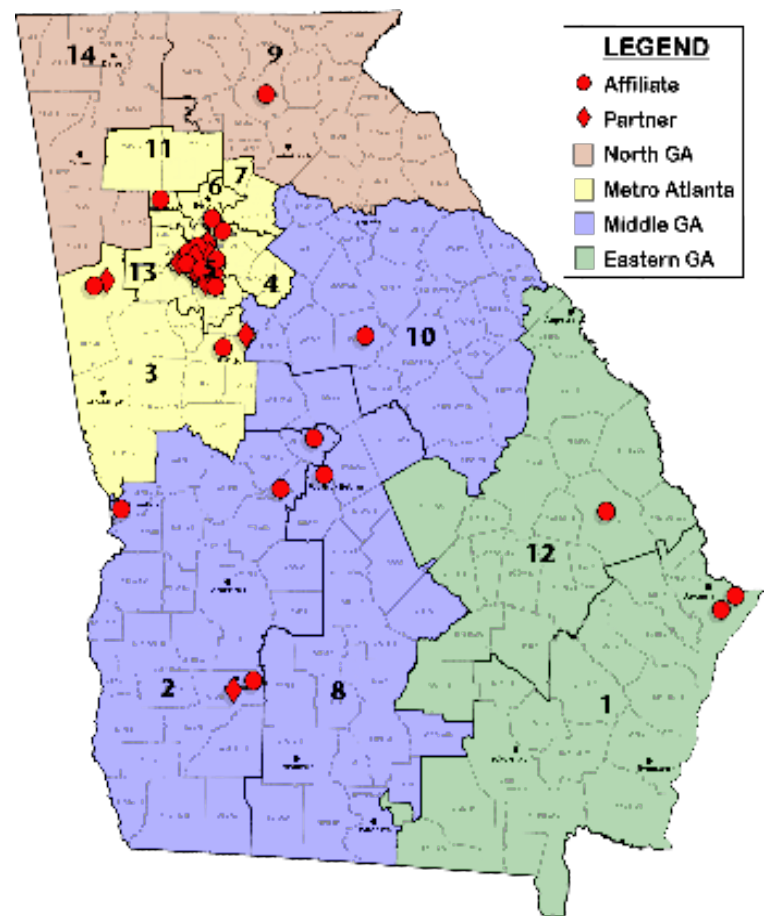
2404 Undergraduate Students

85 Graduate Students

6,085 People Reached via
Community Events

54 Fellowships, Scholarships,
& Internships Awarded

BY THE NETWORK



GSGC has a robust statewide network, that continues to expand.

16,272

Georgia Residents
Impacted

48%

Female
Student Participants

42%

Under-Represented
Minority Student
Participants

The sky is no longer the limit.
Reach for the moon, Mars, and beyond!

Contact Us

Georgia Space Grant Consortium
Georgia Institute of Technology
Daniel Guggenheim School of Aerospace Engineering
270 Ferst Drive • Atlanta GA 30332-0150
Phone: 404-894-0521
Stay Connected

 gasgc.org

 [@GeorgiaSpaceGrantConsortium](https://www.facebook.com/GeorgiaSpaceGrantConsortium)

 [@gaspacegrant](https://twitter.com/gaspacegrant)

 [@gaspacegrant](https://www.instagram.com/gaspacegrant)

 gsgc@gatech.edu