

# **Project PoSSUM: Education and Outreach Initiatives Increase Representation of Underserved and Underrepresented Communities in the Field of Astronautics**

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## **Abstract**

The Polar Suborbital Science in the Upper Mesosphere (PoSSUM) program is a 501(C)(3) International Astronautics Research and Education Program studying our upper atmosphere and its role in our changing global climate. Representing citizen-scientists from 43 different countries, PoSSUM conducts citizen-science research in aeronomy and bioastronautics - fields to be enabled by the introduction of commercial space vehicles - in partnership with various research and education institutions. PoSSUM has recently implemented three new space education and outreach programs focused on increasing representation of underserved and underrepresented populations, including K-12 international students, the Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ) community, and initiatives to include emerging space nations. These programs promote scientific cooperation, by bridging geographic, gender, and generational divides to increase diversity and inclusion within the space sector.

## **The PoSSUM 13**

The PoSSUM 13 was launched to honor the legacy of the Mercury 13. The PoSSUM 13 is a talented group of thirteen female Scientist-Astronaut Candidates who serve as global ambassadors and role models to young students, particularly young women - who have a passion for space science and exploration. This year ushered in the first PoSSUM 13 International Microgravity Flight Challenge, where students competed for a payload experiment aboard the annual PoSSUM microgravity campaign hosted by the Canadian National Research Council.

Three female-led student teams from Latin American countries tested their science payload during a microgravity flight. The female student lead of the top winning team was offered the opportunity to operate her own experiment during the microgravity flight.

## **Out Astronaut**

The Out Astronaut Project is a science outreach program to address the underrepresentation of LGBTQ people in science and in the space industry. The mission of this program is to select a member of this community through a three-phase competition open to individuals who want to serve as role models to LGBTQ youth and seek to become representatives of their community as a pioneer of astronautical science. The 2019 winning contestant was provided a grant to participate in the Advanced PoSSUM Academy at Embry-Riddle Aeronautical University. Out Astronaut intends to train and fly an exceptional student in future suborbital flights to conduct relevant research and serve as an inspiration to the LGBTQ community.

## **Emerging Space Nations**

The current international cooperation dialogue determines the future of space regulation, law, and therefore space activities. Projects encouraging coordination in space science, research, and education activities are critical to engaging emerging space nation (ESN) communities today. The ESN initiative is intended to show the progress of emerging nations in space and facilitate collaborative efforts across these nations within the PoSSUM program.