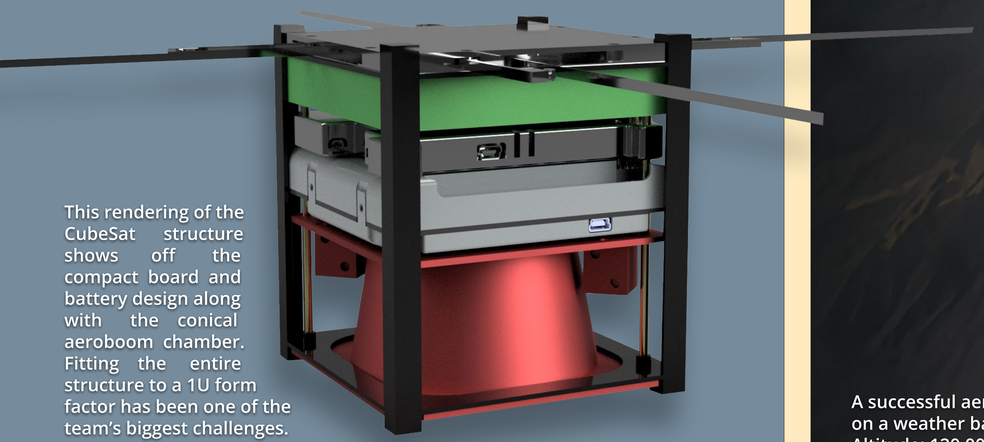
Deployable, Rigid Inflatable For a 1U CubeSat

GAS
GET AWAY SPECIAL

Utah State University



This rendering of the CubeSat structure shows off the compact board and battery design along with the conical aeroboom chamber. Fitting the entire structure to a 1U form factor has been one of the team's biggest challenges.

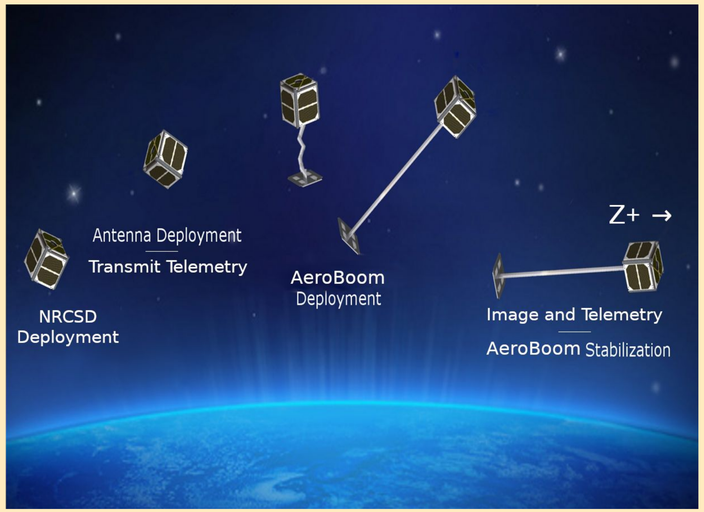
A successful aeroboom deployment on a weather balloon test flight.
Altitude: 120,000 ft

THE GAS TEAM

The Utah State University (USU) Get Away Special (GAS) team is a primarily undergraduate microgravity research team funded by the generosity of the Utah NASA Space Grant Consortium. Still bearing the name of the now-discontinued NASA program for sending student experiments to space via space shuttle, the GAS team continues a legacy of hands-on engineering and research for students at USU.
Our current primary project is centered around an experimental deployable known as an "aeroboom."

THE AEROBOOM

The aeroboom is the primary experiment aboard the GAS Passive Attitude Control System (GASPACS) CubeSat. Designed for a 1U form factor, the aeroboom is an inflatable tube of teflon and carbon fibre coated with a resin that cures and hardens when exposed to sunlight. In theory, it provides a stabilization effect via a drag plate at the end of the boom which catches stray particles of gas in low-earth orbit.



PROJECT STATE

- **Successful PDR completion**
- Wire-cutting circuit completed
- Initial structure design completed
- Successful ground station image reception from the International Space Station
- Development on extending aeroboom shelf life
- Development on communication protocols
- Development on electrical schematics, cable diagrams, and PCB layout
- Development on modeling heat distribution
- Development on embedded software