



Where I work Jessica Frantz

It might look like someone made it in their garage, but this instrument is a really powerful directional antenna. Fellow students and I at Phoenix College in Arizona designed and built it for ASCEND, a NASA programme that funds science-education projects. In ASCEND, student teams from across the state build scientific instruments to attach to a high-altitude balloon.

Our team's idea was to live-stream the balloon's flight. To transmit video from the balloon – which can rise more than 30 kilometres into the air – we chose a 5-gigahertz radio, the kind used to supply Wi-Fi to a hotel. To get such a small, lightweight radio to transmit over long distances, we needed a really strong antenna to pick up the signal. The steel dish is so heavy that we had to attach dumbbell weights as a counterbalance.

In this photograph, taken on the morning of the launch in November 2019, we are trying to get the ground system and instruments talking to one another. But we had trouble and didn't get our live stream.

It was nerve-racking, but it was a useful learning experience.

ASCEND is great because it is so hands-on – and it encourages women to speak up, which builds confidence. In August, I started at Arizona State University for the final two years of my undergraduate degree in mechanical engineering, and have joined the university's ASCEND team. Our project uses near-infrared and visible-light cameras to evaluate the health of the vegetation in Arizona's deserts.

I am quite interested in working for NASA, especially because of the Artemis mission to send people to the Moon again by 2024. And with public-private partnerships such as the SpaceX *Crew Dragon*, which carried astronauts to the International Space Station in May, there are tons of opportunities to work in aerospace and still be a part of a mission.

Jessica Frantz is an undergraduate student in mechanical engineering at Arizona State University in Tempe. **Interview by James Mitchell Crow.**

Photographed by
Arsh Nadkarni.