

## A Rocket Launch for International Student Satellites



ARLISS began in 1999 as a cooperative program between Professor Bob Twiggs of Stanford, his colleagues at other universities worldwide and members of the non-profit Northern California high power rocket club AeroPac. In ten years it has been an extraordinary learning experience for over a thousand aerospace engineering students.

The ARLISS mission is the collaborative design, fabrication, launch and operation of sophisticated autonomous robotic payloads designed for near space-like deployment. ARLISS airframes, provided by AeroPac members, reliably deliver standard student payloads (CanSat, CubeSat and Open) to a consistent altitude (12000' AGL/15,000' MSL) with uniform deployment to subsequently accomplish a challenging mission - autonomously return to an agreed location on the playa. The ARLISS team takes extraordinary pride in never having lost a student payload to flight failure.

It is a mutual learning experience. For the students - they learn the complete collaborative design process to design a complex electronic and computer payload (an autonomous robot satellite) that will have to operate in the standard, but harsh environment of Nevada's Black Rock desert. For the fliers, they learn to hone their skills of designing highly reliable and repeatable flight operations.

The ARLISS program provides two annual launches (June and September) and a state-of-the-art satellite Internet and radio infrastructure that supports multimedia participation for worldwide student participation and advanced experimentation with radio telemetry and high performance WiFi communications both on the ground and in flight.

### ARLISS Facts

- Fifteen years of successful projects.
  - Over 2000 students
  - 11 satellites in orbit from alumni
- Open to domestic and international student high school and college teams
- Three multiday launches a year
  - June, August, September
- Proven launch and project delivery system
  - Over 600 flights with 99% launch success
- World class launch site
  - Black Rock Desert, Nevada USA
  - Multimedia Internet satellite Virtual Classroom
  - WiFi and APRS telemetry and flight communications

### Contact

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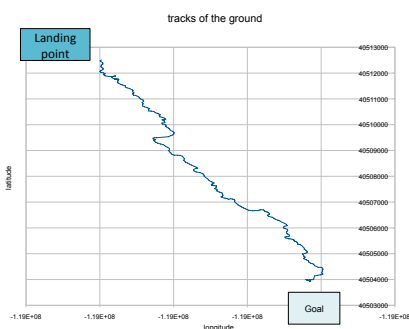
## A Systems Challenge

An ARLISS satellite is a collaborative project to create a complex autonomous coffee can sized robot that:

- survives an 8G launch
- survives 15 G deployment at 11,000' AGL
- survives returning to the ground
- fastest to navigate back to the agreed destination on the ground: by crawling, flying or gliding and
- all in a physically extreme remote location far from the calm contemplation of the laboratory.



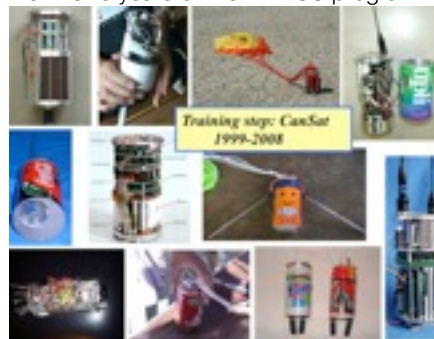
The ARLISS 2008 **Comeback** winner was a crawler that not only survived the flight, a parachute drop from 11,000' ... but navigated itself back over 2 km across rough desert playa in less than 15 minutes!



ARLISS includes not only classic **Comeback** projects but also **Bringback** projects in which larger, ground based robots can go out and retrieve the flight payloads and return them to the destination. Classic **CanSat** and **CubeSat** projects are always welcome.

## A History of Success

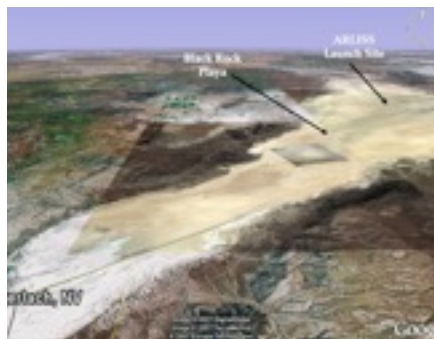
The twelve years of the ARLISS program



have seen more than 250 flights from projects of over 1200 students from over 10 countries.

These students have helped put up more than eleven LEO satellites before graduating to careers in science and engineering.

## The Perfect Location



ARLISS events are staged at one of the premier locations for aerospace exploration and rocketry - Nevada's Black Rock Desert. Flights to over 100,000' are possible with 20 miles of flat dry lake bed recovery and experiment area.

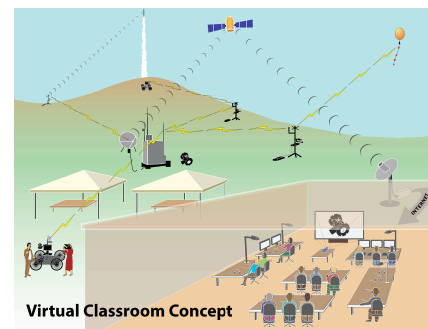
Local motels or camping on the playa provide logistical support.

## World Class Facilities

### AeroPac

One of the oldest amateur rocket clubs in the world, AeroPac has hosted ARLISS since its inception. Its members contribute their skill and the airframes to carry student satellites through an ARLISS mission. ARLISS fliers have a greater than 99% launch success rate.

### Virtual Classroom



The Virtual Classroom brings satellite Internet real time video, audio and data conferencing to extend the learning experience from the playa back to the classroom and students around the world.

## The Program

Participation is open all college and secondary school teams.

Sign up by reviewing the information on the web site, contacting the ARLISS team for more information and questions, and beginning planning for your project. Generous donations have made modest grants available to participating teams to help offset travel and equipment costs.