



# Suborbital Flight Environment Monitor (SFEM)

Flight Opportunities Program  
sRLV

STATUS QUO



## Suborbital Flight Environmental Monitor (SFEM)

Validation testing completed,  
function/fit tested completed,  
ready for flight

### Technology Focus Area: Environmental Sensors

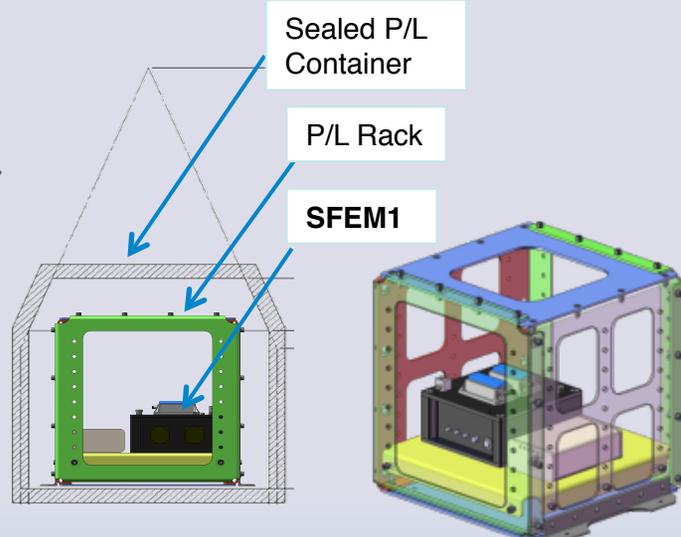
### Specific Benefits of Technology: Environmental characterization

All presently conceivable sRLV scientific experiments will require knowledge of the actual flight environment as a function of time during the flight. This unit will be flown on all NASA sponsored flights to provide that data to all investigators.

NEW INSIGHTS

**MAIN ACHIEVEMENT:** The Suborbital Flight Environment Monitor (SFEM) is a compact, self-contained payload that will monitor and record on-board environmental parameters of interest during a sRLV flight. These include 3-axis accelerations and G-loads, ambient pressure, relative humidity and temperature. The SFEM uses commercially available instruments.

**HOW IT WORKS:** The compact, ~12lb. package is designed for remote, stand-alone shock and vibration, temperature, pressure and relative humidity measurement. The SFEM can record data for up to 4 hours with 1 hour in-flight. The SFEM's mechanical interface is robust, yet simple and requires no modification to any vehicle. The SFEM will be bolted to a rack structure which is bolted to a sealed payload container inside the launch vehicle fairing.



QUANTITATIVE IMPACT

### Flight Measurement Requirements:

*Flight Profile/Acceleration level(s):*  
10<sup>-3</sup> G's to 200Gs (0 to 1000 Hz)

*Relative Humidity:* 0 – 100%; +/- 3% at 25°C

*Pressure:* 0 to 2000 mbar; +/- 5 mbar in reading range of 750 to 1000 mbar

*Temperature:* -10 to 60°C; +/- 1°C

### Vehicle Interfaces:

*Mode of Operations:* Autonomous

*Power requirements:* None

**Experiment specifications:** *Mass/Dimensions:* ~5.5kg / 12in x 12in x 3in

END-OF-PHASE GOAL

### Record launch environmental data for multiple suborbital rockets

- Define the sRLV payload integration process
- Characterize the payload environment for future NASA-sponsored payload applications and the next generation SFEM

The Suborbital Flight Environment Monitor (SFEM) is a compact, self-contained payload that will monitor and record on-board environmental parameters of interest to investigators during a sRLV flight.