

NASA Glenn Research Center Explorer Post 632

BalloonSat

BalloonSat: *To the Edge of Space*

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Goal:

Build, Test, Launch, Track and Recover
a payload to 100,000 ft
(19 mi, 30.5 km, 0.01 atm)

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BalloonSat

Opportunity

- Send Payload to almost 20mi.
 - “Poor Man's Space Program”.
 - Higher than a model rocket.
- Near Space/Mars Conditions.
 - At 100kft $P=10\text{mb}$.
 - $P_{\text{SEALEVEL}} \sim 1013\text{mb}$.
 - Above 99% of Atmosphere.
- Success Oriented Learning Experience.
 - First [BalloonSat] attempt in Ohio
 - What works in other programs?
 - Planning, Testing.



4 June 2003 Flight BOR0306A

<http://spacegrant.montana.edu/borealis/Missions/BOR0306A/Pictures/IMG0097.JPG>

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BalloonSat



Experience

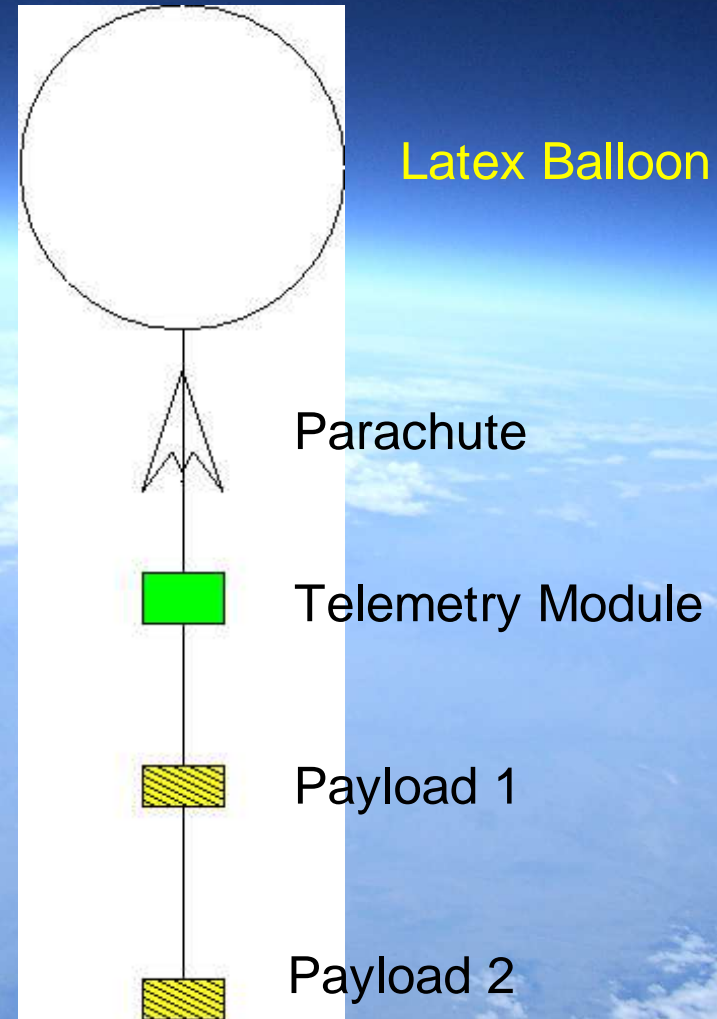
- **Western States have active BalloonSat Programs.**
 - Montana, Colorado, Arizona
 - College-level payload development.
 - Lower-technology payloads (Teachers/High School)
- NASA GRC works with Wayne State University to develop a Solar Cell Calibration Payload
 - Provides experience with Launch, Tracking & Recovery

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BalloonSat

Payloads

- **Telemetry Module**
 - Transmit GPS location/Altitude
- **Cameras**
- **Possible Data, 2 or 3 of**
 - Temperature
 - Pressure
 - Solar Cell output
 - Magnetic Field
 - Accelerometer
 - Other



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BalloonSat

- First Year (demonstration)
 - Keep it Simple.
 - Remote Sensing (Photographs).
 - A few simple measurements
 - Temperature
 - Pressure
 - Solar Cell Output
 - Hands-on Experience
 - Success (flight and recovery) is a very high priority.
 - Planning: Requirements, Specifications, Check Lists.
 - Test to environmental conditions: Pressure, Temperature.
- A Successful year could open opportunities for expanded programs.
 - Sensible Requirements and Specifications.
 - More complicated payloads for future Explorer Posts.
 - Possible Launch Services for College programs.
 - Possible Launch Services for High School Payloads.



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BalloonSat Schedule

- Initial 8 weeks (before Christmas)
 - Background
 - Select Experiments
- Following 10 weeks (start mid-January)
 - Build and test Payloads
- Launch April (Saturday – All Day)
 - Plan for April 2
 - Weather Backups April 8, 16
 - 60 to 70 mi West of NASA
 - Est travel: 40 to 60 mi
 - 2 to 3 hr flight
- 3 weeks to analyze and present results

