

Continuum Stratospheric

A Canadian-based turnkey mission service for stratospheric payloads

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View from 100k ft altitude



Types of missions:

- Physics & astronomy
- Atmospheric & climate measurements
- Imaging (multiple wavelengths)
- Satellite instrumentation test

History:

- Large payloads (with large balloons)
- Pooled payloads
- Recovery: uncertain
 - Latex balloon burst OR
 - Cut-down from float, long drop with parachute landing

Pain of current situation I: Limited Access

- Minimal Canadian supply
- Vanscoy support
- Foreign opportunities limited and uncertain

Pain of current situation II: Not Turnkey

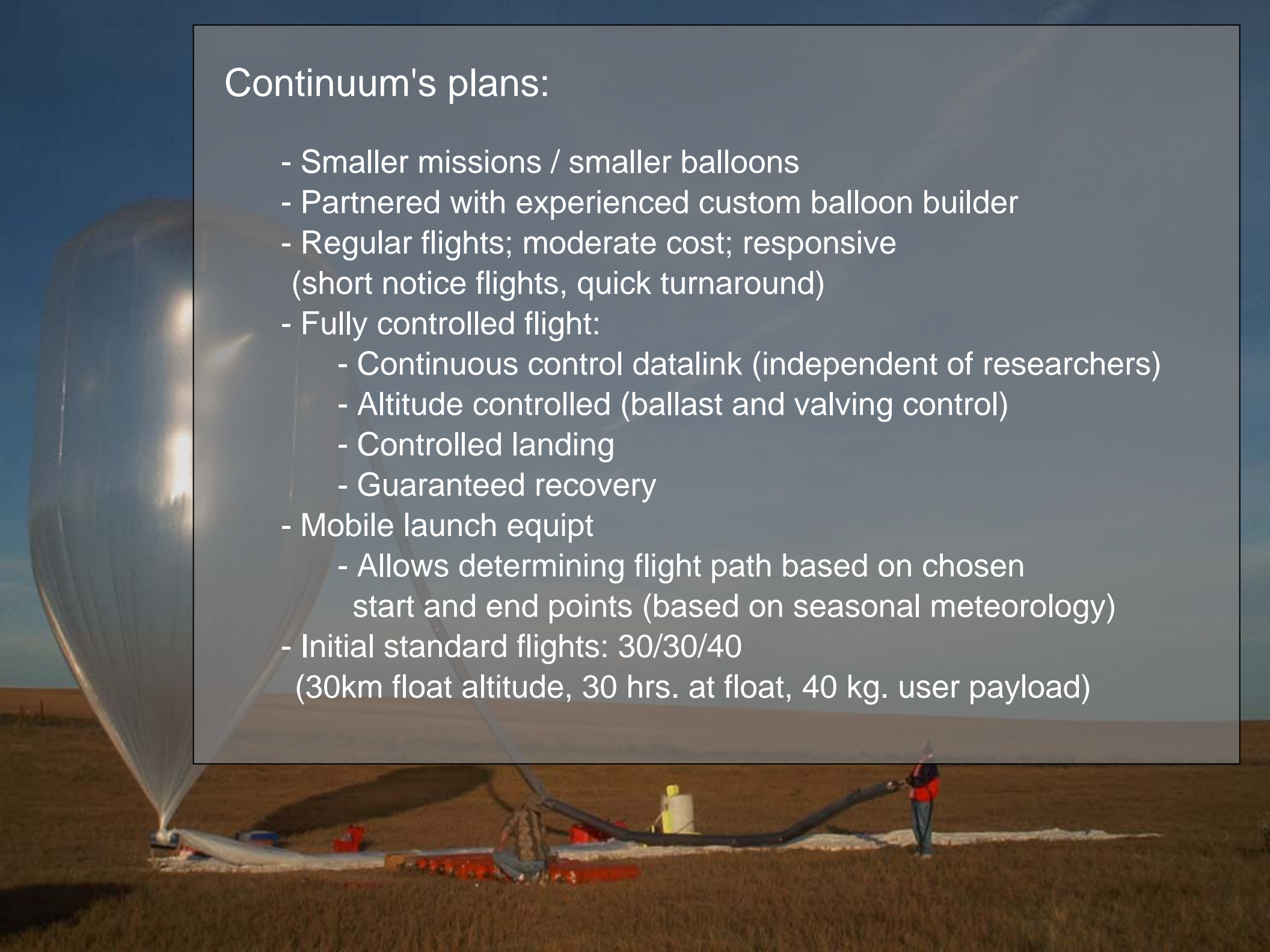
- Researchers must design ballooning mission, not just their own experiments
 - All logistics (launch, recovery, personnel)
 - Electrical, mechanical, communications custom for each mission
- Costs not fixed for researchers
- Costs not amortized over many missions
- Mission operations learning may leave with personnel (e.g. grad students)

Pain of current situation III: Available missions unsuitable

- Launch sites limited
- Recovery uncertain
- Typical solution of consolidating many missions into one flight has many drawbacks:
 - Priority disputes
 - Primary mission can hurt secondary payloads
 - Flight timing
 - Possible RF conflicts
 - Flight characteristics: duration, altitude, location are dictated by others

Continuum's plans:

- Smaller missions / smaller balloons
- Partnered with experienced custom balloon builder
- Regular flights; moderate cost; responsive (short notice flights, quick turnaround)
- Fully controlled flight:
 - Continuous control datalink (independent of researchers)
 - Altitude controlled (ballast and valving control)
 - Controlled landing
 - Guaranteed recovery
- Mobile launch equipt
 - Allows determining flight path based on chosen start and end points (based on seasonal meteorology)
- Initial standard flights: 30/30/40 (30km float altitude, 30 hrs. at float, 40 kg. user payload)



Base Configuration:

- Initial standard flights: 30/30/40
(30 km float alt, 30 hrs at float, 40 kg user payload)
- Includes:
 - Turnkey service
 - Recovery guarantee
 - Meteorology
- Options:
 - Control & Communications to payload
 - Controlled environmental enclosure
 - Azimuth control
- Scheduling:
 - Target is 60 days lead time on a standard mission

Customization

Payload Mass:

- Flexible: partnered with custom balloon fabricator
- Large mass / large balloon:
 - limit launch location
 - increase weather-based uncertainty
 - increase costs

Duration:

- Flexible: tradeoffs in balloon size, payload weight.

Altitude:

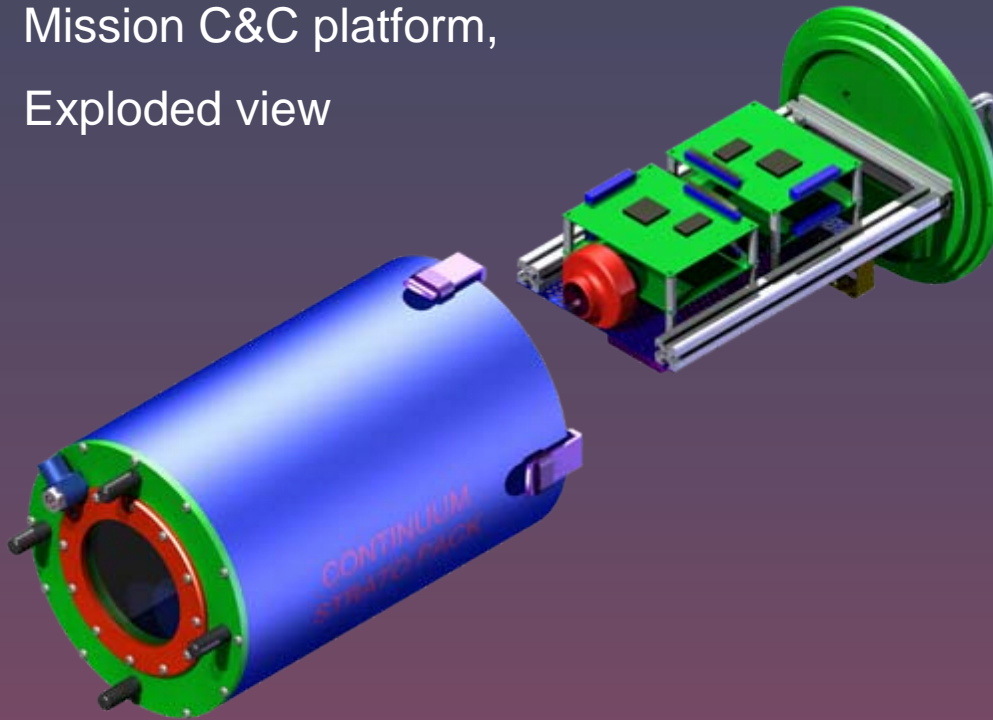
- Flexible: 40 km balloon is about 6x size of 30km balloon.

Launch locations:

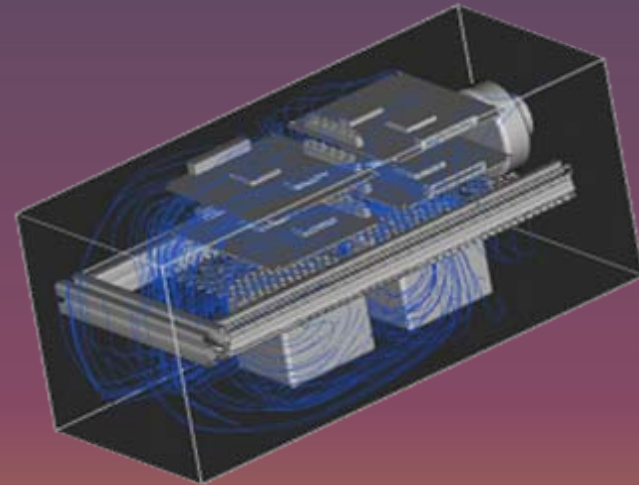
- Fully mobile for standard 30/30/40 flights
- Overflight and recovery locations determine launch point
- Very large balloons have more limited launch locations

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Mission C&C platform,
Exploded view



Simulation, enclosure
thermal management



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Continuum Stratospheric is a division of **Continuum Aerospace, Inc.**

A Toronto-based aerospace company.

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View from 100k ft. altitude