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
Continuum Stratospheric

Mission C&C platform,
Exploded view

Simulation, enclosure
thermal management
Continuum Stratospheric is a division of Continuum Aerospace, Inc. A Toronto-based aerospace company. To find out more, e-mail stratospheric@continuumaerospace.com Or call 416-885-7790