

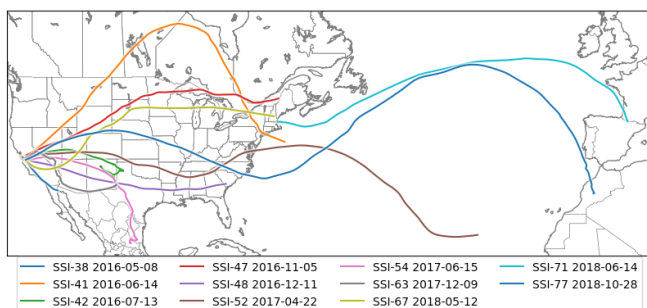


ValBal

Altitude controlled latex high altitude balloon system

ValBal¹ is a high altitude latex balloon platform that controls its altitude by venting lifting gas and dropping ballast mass. This extends the life of a low-cost latex balloon from a few hours to a record-breaking 5 days. It's designed to facilitate a broad range of high altitude research thanks to its unique ability to maintain and dynamically transition between altitudes.

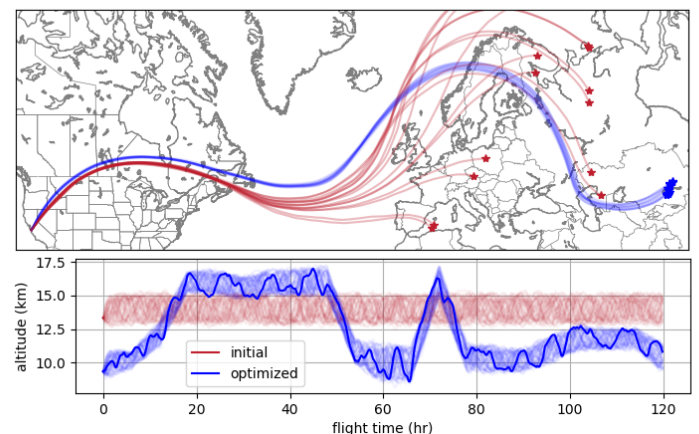
Altitude range	<i>Standard: 12.25–17 km Extended: 0–23 km</i>
Endurance²	<i>No payload: 5 days 1 kg payload: 3 days 5 kg payload: 1 day</i>
Communications	<i>Iridium, 8/50 byte. Custom 433 MHz radio, 5 kbps line-of-sight.</i>
Cost³	<i>Consumables: \$400 Reusables: \$1000</i>



Flight heritage: The system has been developed through more than 20 test flights, 10 of which are shown above.



Ease of assembly: ValBal requires only six custom components and can be assembled in under 2 hours. No manual machining, cutting, gluing, or soldering is required.⁴



Control capabilities: Plot of possible 5-day flightpaths for a given launch time through monte carlo simulation with NOAA data. Red: altitude-bounded flight plans with no objective. Blue: flight plans optimized for distance.

¹The name is a contraction of “Valve” and “Ballast”

²This reflects our current best mission, but we believe that longer missions are feasible with the system.

³System can be reflown many times if recovered.

⁴Above image shows a slightly older version than the current design.