

Launch Site Selection Overview

2 Main Objectives

Objective 1 is to find a launch location that will result in your balloon being at an altitude above 65,000 for the duration of the eclipse.

Objective 2 is that the flight results in your payload landing in a suitable recovery area.

Requirement - may not fly within restricted air space or land within any restricted areas

Launch Site Criteria

1. Location

Open area free of overhead obstructions which meets Objectives 1 and 2

2. Permission

Don't assume that public parks or lands are free to use.

3. Cell Phone and Data Coverage

Wireless coverage maps provide some guidance, verification suggested.

4. Access to rest rooms or portable toilets

Selecting a launch location or locations:

We won't know what the weather or upper level winds will be on August 21, 2015. Best we can do is to examine historical data for trends and use this information to make contingency plans.

Use typical balloon flight profiles (ascent and descent rates) with flight prediction software and historical upper level wind forecasts to create flight tracks.

Resources

Flight Prediction Software - Courtesy of Allen Jordan at NOAA

<ftp://aftp.cmdl.noaa.gov/data/ozwv/Programs/jordan/>

Allen's program is versatile and provides flight track forecasting for both burst and float balloons. It also allows one to run flight predictions using historical forecasts. Currently, the program has access to 2014 data and we are working on getting access to older forecasts.

Allen's program requires the user to input ascent and descent rates. His program has default values but these are only for small radiosondes and are not valid for large balloons and heavy payloads that we employ.

His program interfaces with Google Earth. This allows you to examine your predicted

flight path to be overlaid onto other available Google Earth resources such as the eclipse path, aeronautic maps, etc.

Google Earth Resources

Eclipse Path Overlay

http://xjubier.free.fr/en/site_pages/SolarEclipsesGoogleEarth.html

Scroll down to Total On Monday, August 21, 2017

download file TSE_2017_08_21.kmz

Aviation Sectional Chart Overlays

<http://www.chartbundle.com/charts/>

scroll down to KML/KMZ(Google Earth)

select file chartbundle_aero.kml

Restricted/Prohibited Air Space Overlay (Note this does not include military operations areas (MOA) or other restricted areas possessing altitude restrictions)

<https://productforums.google.com/forum/ - !topic/gec-dynamic-data-layers/gZZQWmI4xPQ>

click on LLcooL 8/22/05 post

download file 9310-conus.kmz

Verizon Coverage Map

<http://vzwmap.verizonwireless.com/dotcom/coveragelocator/default.aspx?zip=>

AT&T Coverage Map

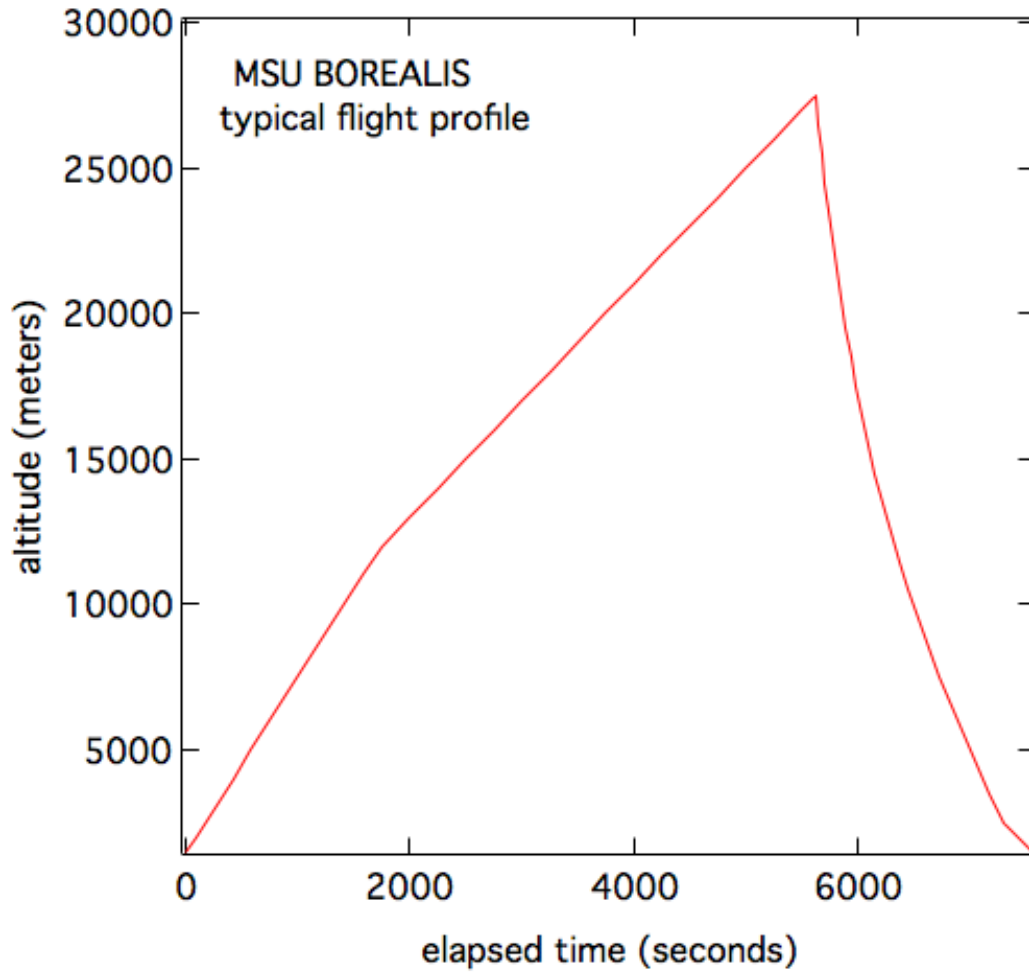
<http://www.att.com/maps/wireless-coverage.html>

Sprint - very limited coverage

http://www.sensorly.com/map/4G/US/USA/Sprint/lte_310sprint#|coverage

Montana State University Site Selection Example

Typical MSU Flight Profile (12 pound payload, 2000 gram balloon, nozzle lift of 14.5 pounds)



MSU flight profile data used with Allen Jordan's flight prediction software

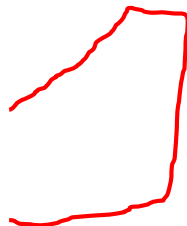
Altitude (m)	Ascent Rate (m/s)	Altitude (m)	Descent Rate (m/s)
2000	6	2500	-7.8
3000	6	3500	-8.0
4000	6	4500	-8.3
5000	6	5500	-8.6
6000	6	6500	-9.0
7000	6	7500	-9.5
8000	6	8500	-10.0
9000	6	9500	-10.7
10000	6	10500	-11.4
11000	6	11500	-12.2

12000	6	12500	-13.1
13000	4	13500	-14.2
14000	4	14500	-15.3
15000	4	15500	-16.5
16000	4	16500	-17.8
17000	4	17500	-19.1
18000	4	18500	-20.6
19000	4	19500	-22.2
20000	4	20500	-23.9
21000	4	21500	-25.7
22000	4	22500	-27.6
23000	4	23500	-29.5
24000	4	24500	-31.6
25000	4	25500	-33.7
26000	4	26500	-36.0
27000	4	27500	-38.3
28000	4	28500	-40.7
29000	4	29500	-43.1

Initial Launch Site Selection – Rexburg Madison County Airport (KRXE)

I tend to use airports for our launches as most are public facilities and the airport manager or flight service contact information is readily available on the internet at <http://www.airnav.com>

Pin drops showing predicted location of the balloon at maximum altitude for +/- 5 days around August 21, 2014. Several pins are located outside of the area of total eclipse indicating the need to select an alternative site.



Restricted air space below 6000 ft

