

Values to use:

Parachute Descent Rate Calculator

1) Choose Parachute:

(Chute "Coefficient of Drag x Area":)

2) Enter weight to be carried in Kg:

3) Click to descent rate.

Estimated descent rate at sea level in m/sec:

Balloon options - HY800:

Meteorological Balloon Burst Estimator

1) Choose Balloon: (Burst Diameter: m Weight: g Cd:)

2) Choose Lifting Gas (Gas Density: Kg/cu m)

3) Enter weight to be lifted: g (include weight of Payload + Parachute and Line etc.)

4) Enter desired average ascent rate: m/s (4.0 to 6.0m/sec is typical)

5) Click to

Estimated burst altitude: m (ft)

Gas volume required: cu m (cu ft)

Neck lift: Kg (lb)

Time to burst: min (hrs)

Burst Calculator

Payload Mass (g) AND Balloon Mass (g)

THEN

Target Burst Altitude (m) OR Target Ascent Rate (m/s)

Burst Altitude: 30169 m Ascent Rate: 5.00 m/s

Time to Burst: 101 min Neck Lift: 1816 g

Launch Volume: 2.55 m³ 2549 L 90.0 ft³

HY-350 option:

Meteorological Balloon Burst Estimator

1) Choose Balloon: (Burst Diameter: m Weight: g Cd:)

2) Choose Lifting Gas (Gas Density: Kg/cu m)

3) Enter weight to be lifted: g (include weight of Payload + Parachute and Line etc.)

4) Enter desired average ascent rate: m/s (4.0 to 6.0m/sec is typical)

5) Click to

Estimated burst altitude: m (ft)

Gas volume required: cu m (cu ft)

Neck lift: Kg (lb)

Time to burst: min (hrs)

Direct Links:

Franklin:

- [HY350](#)
- [HY800](#) - 776g
- [HY350 838g](#)
- [HY800 838g](#)
- [windy.com](#)

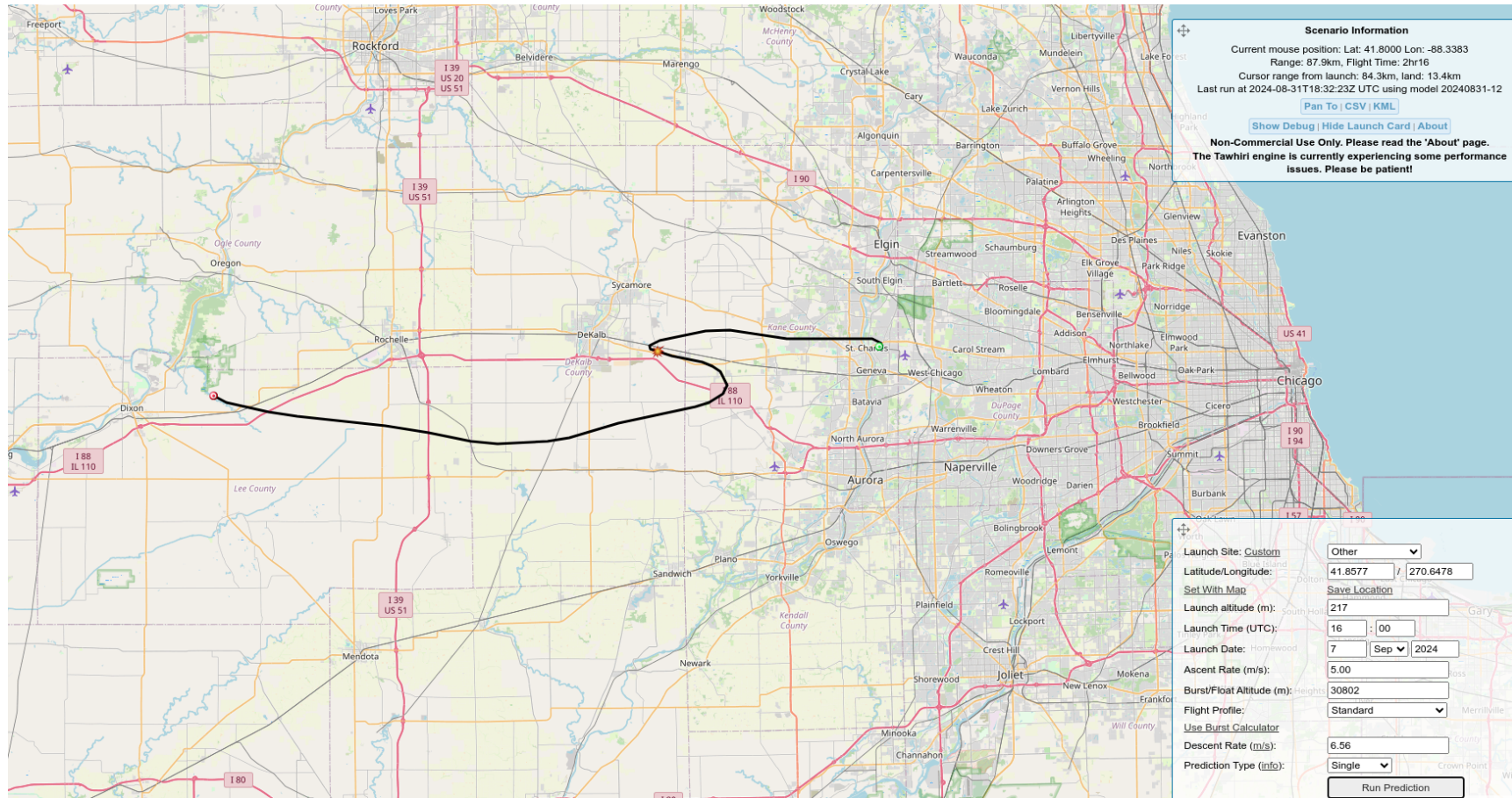
Dixon:

- [HY800](#)

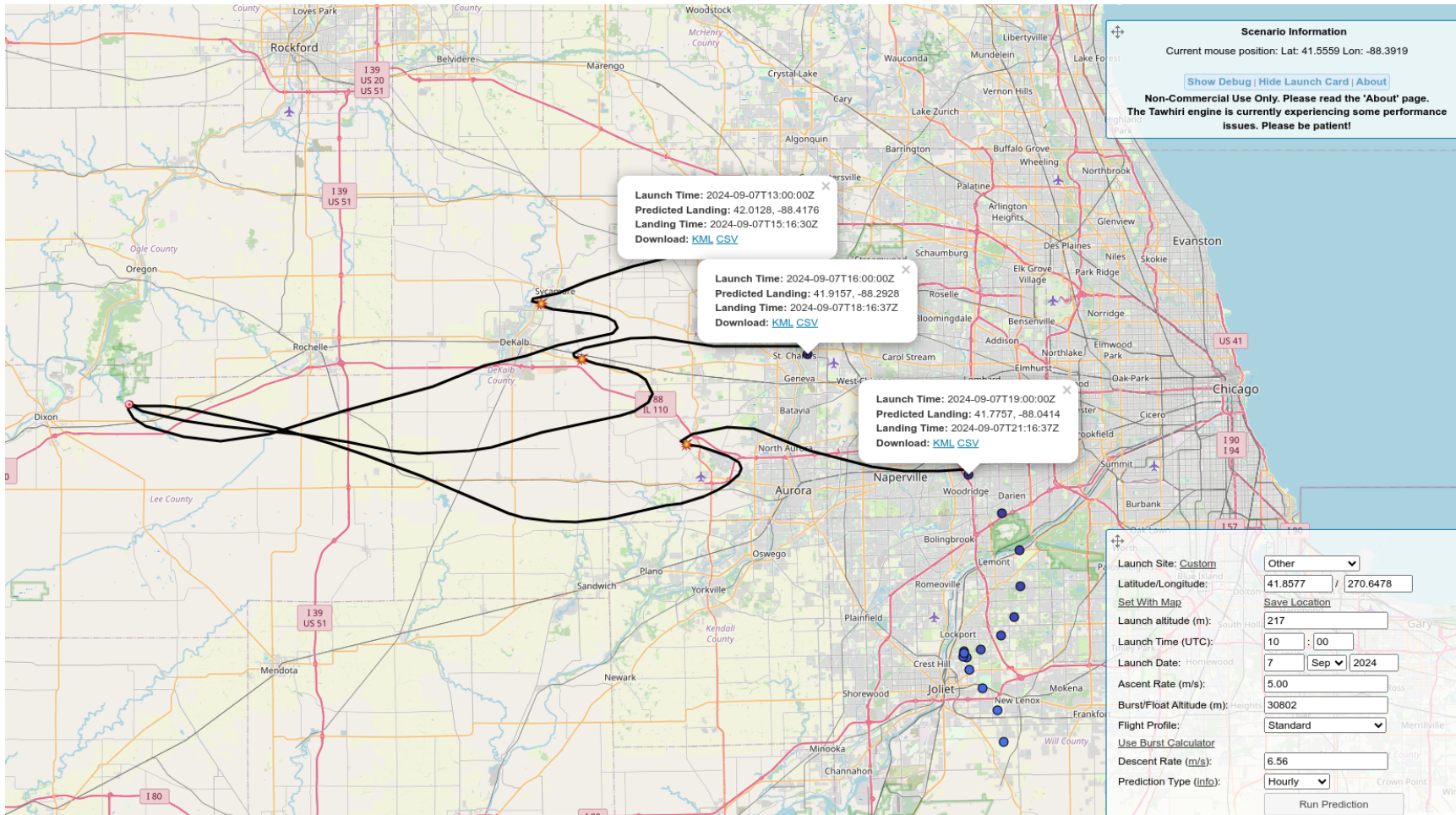
Aug 31, 2024

Weather Model: 20240831-12

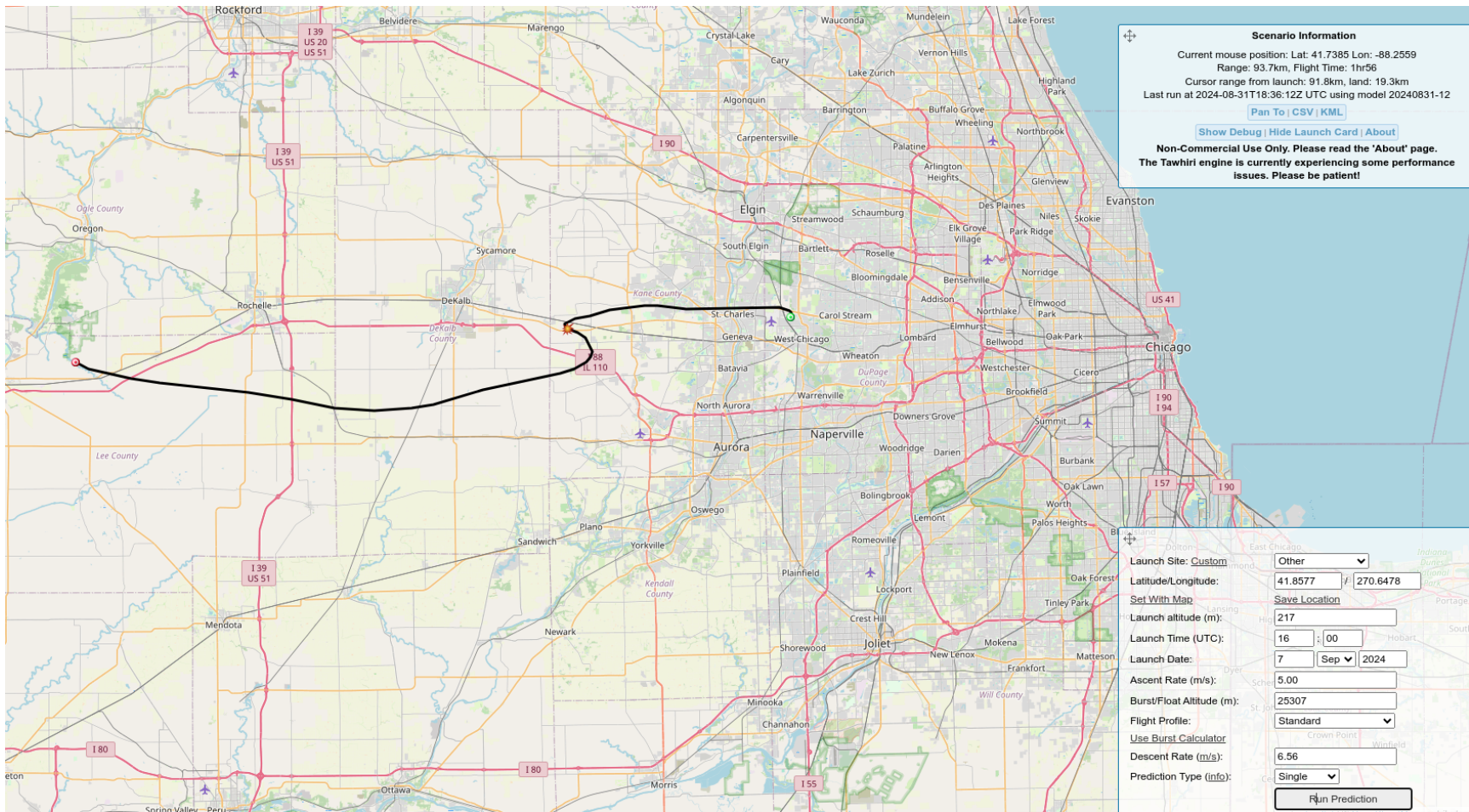
Not great:



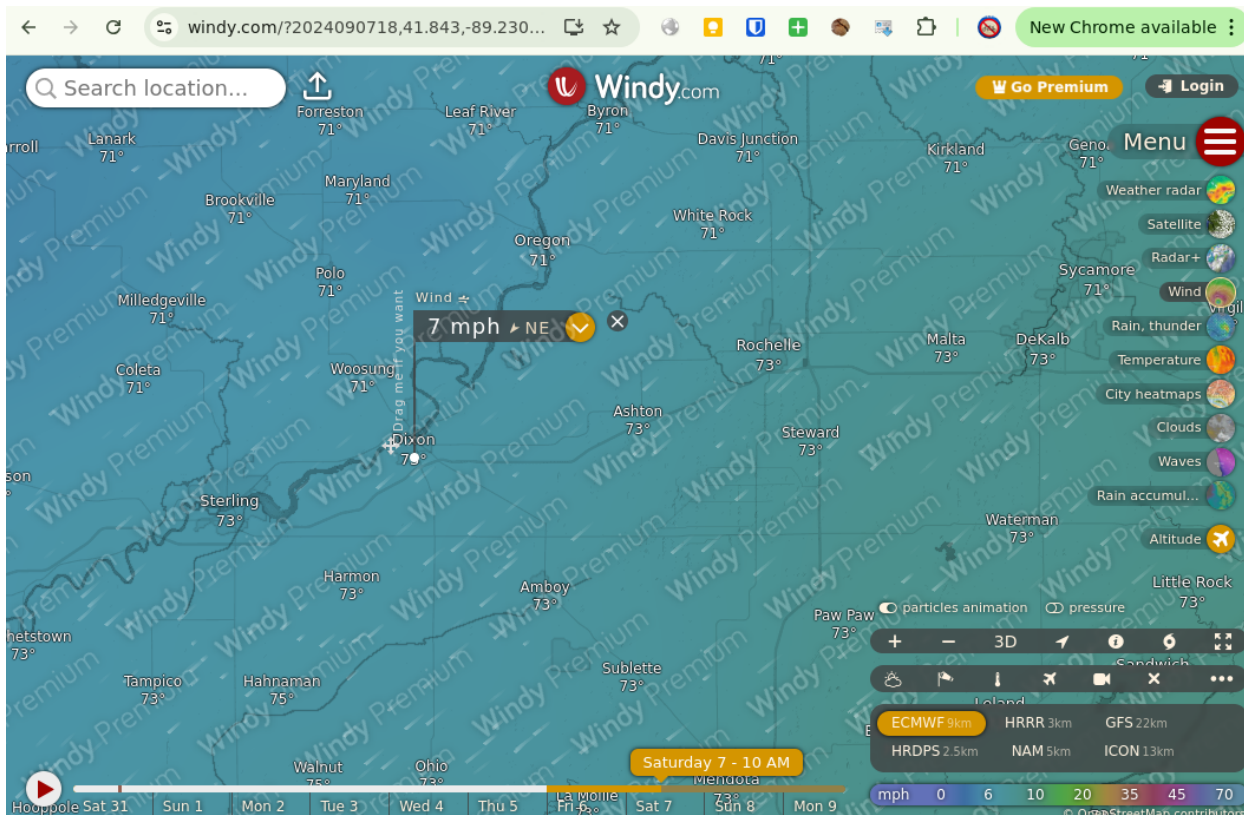
But hourly variation is pretty big - just a few hours earlier is better:



Could fly the HY350? Nope - this gets less of the upper atmosphere blowing east so actually goes all the way to West Chicago:



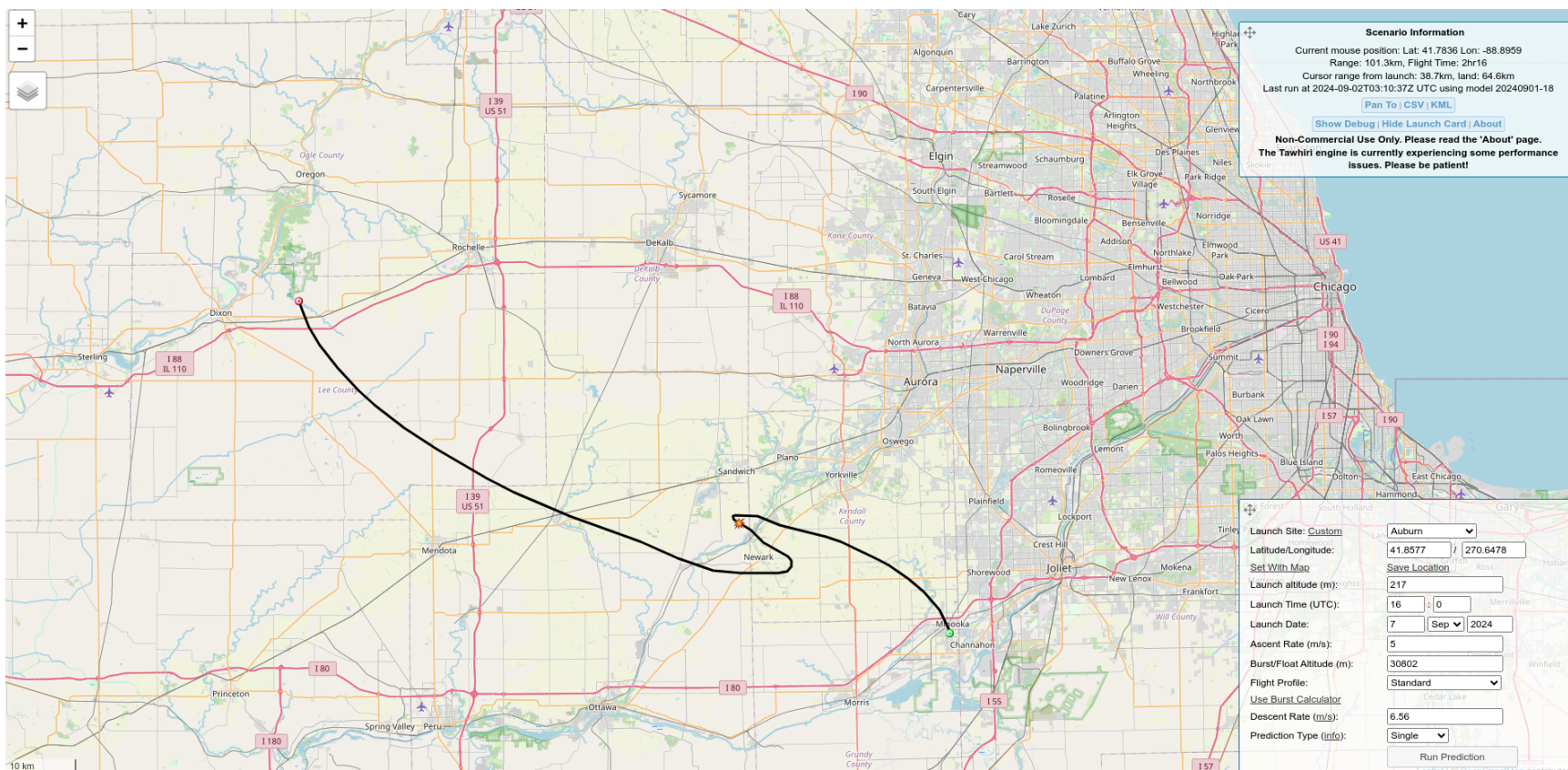
Keep watching. This might be trouble.
Ground wind is iffy - not bad 7mph but not perfect:



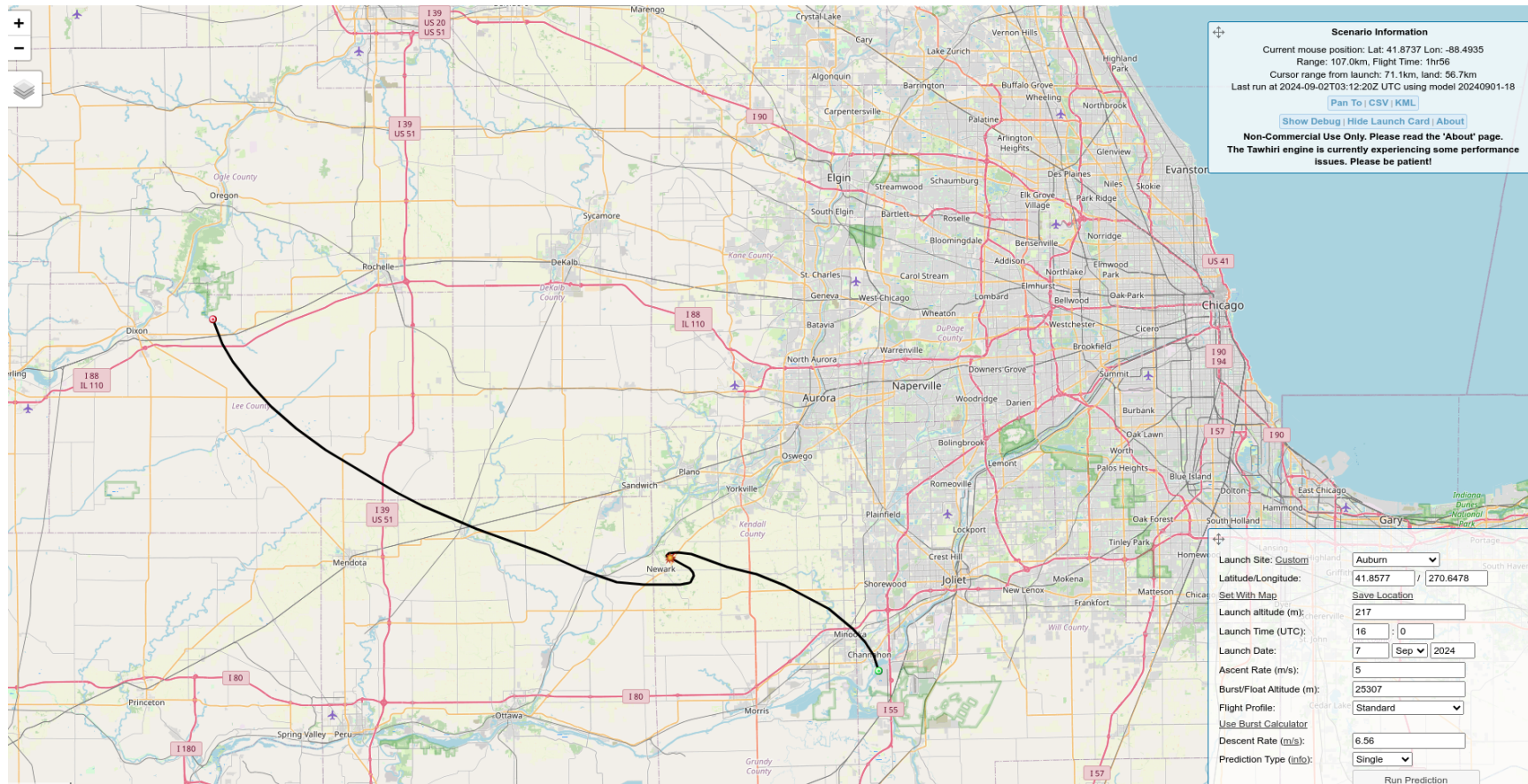
Sep 1, 2024

Weather model: 20240901-18

HY800 - now near Joliet - hmm...

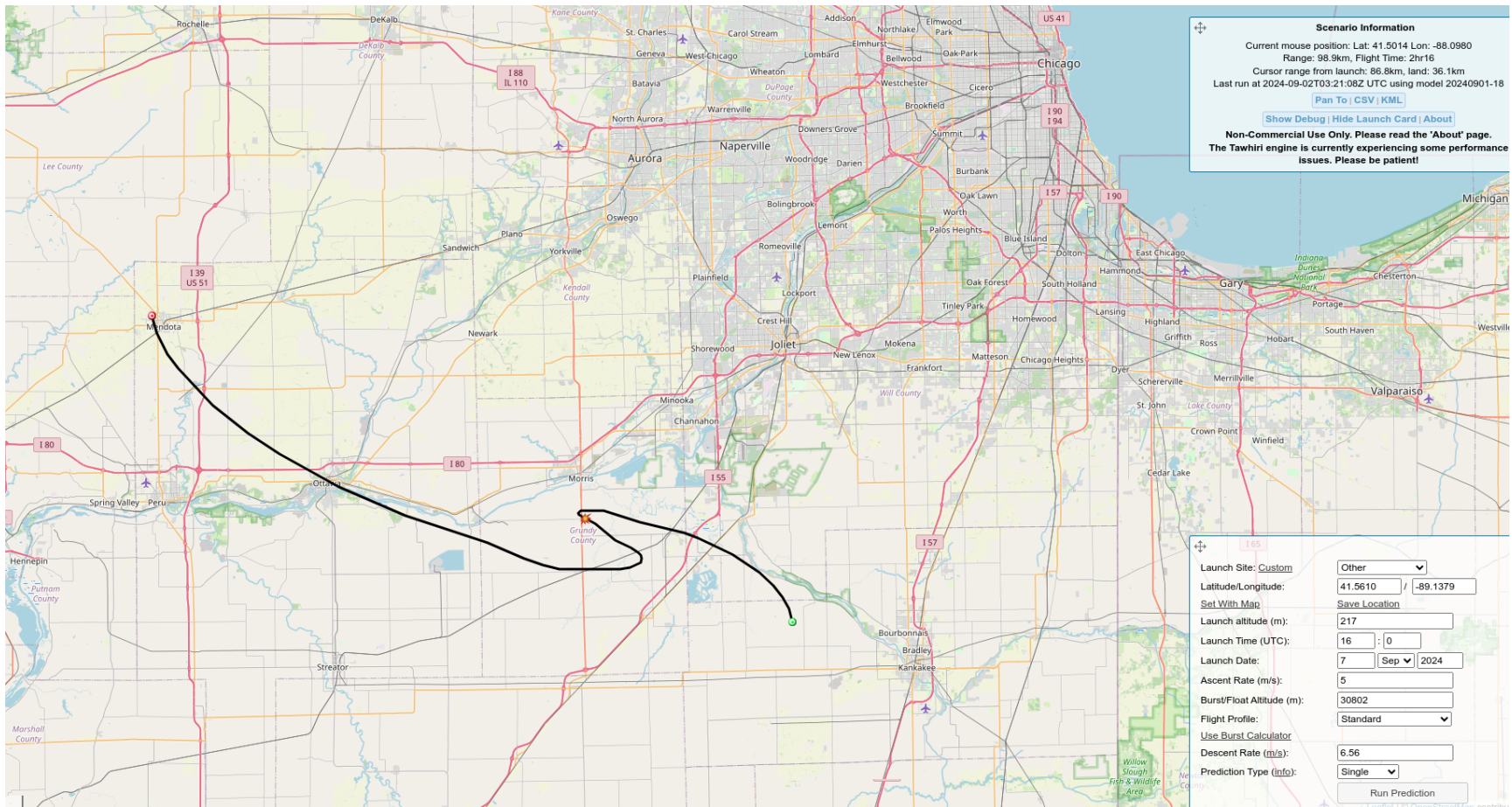


HY350 not great either

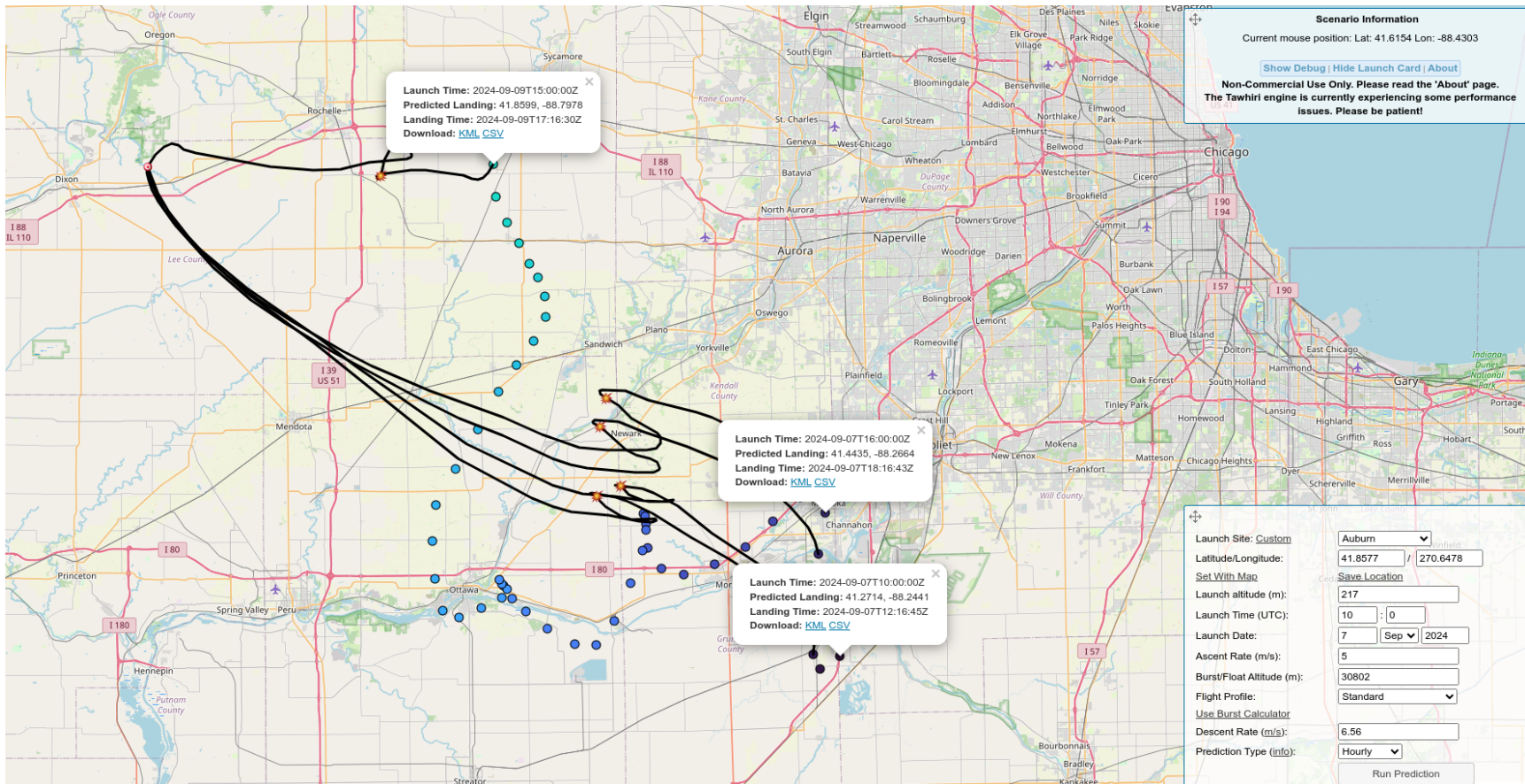


But vary the launch site to Mendota and its beautiful:

https://predict.sondehub.org/?launch_datetime=2024-09-07T16%3A00%3A00Z&launch_latitude=41.561&launch_longitude=270.8621&launch_altitude=217&ascent_rate=5&profile=standard_profile&prediction_type=single&burst_altitude=30802&descent_rate=6.56&float_altitude=30800

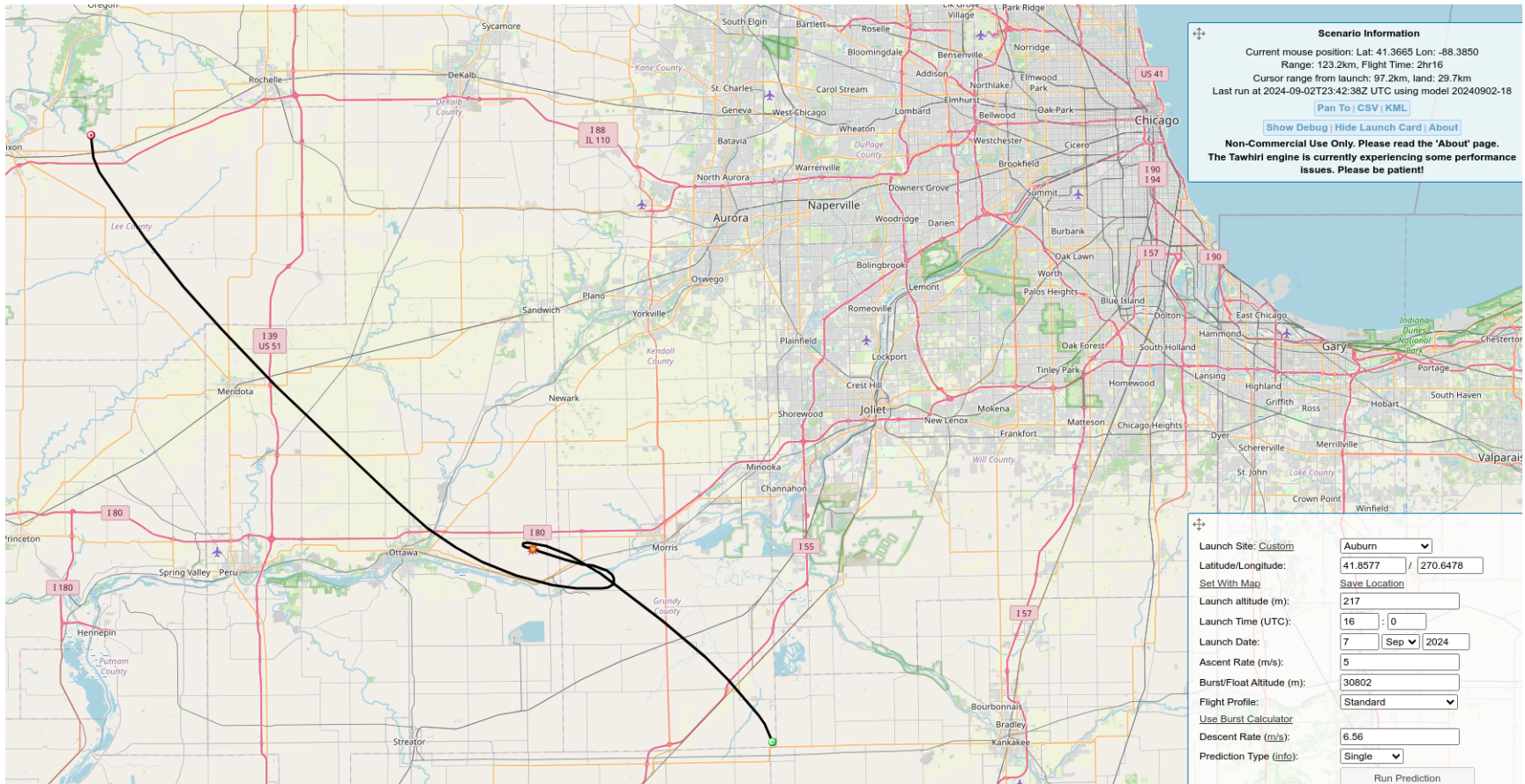


Variation is still big:



Sep 2, 2024

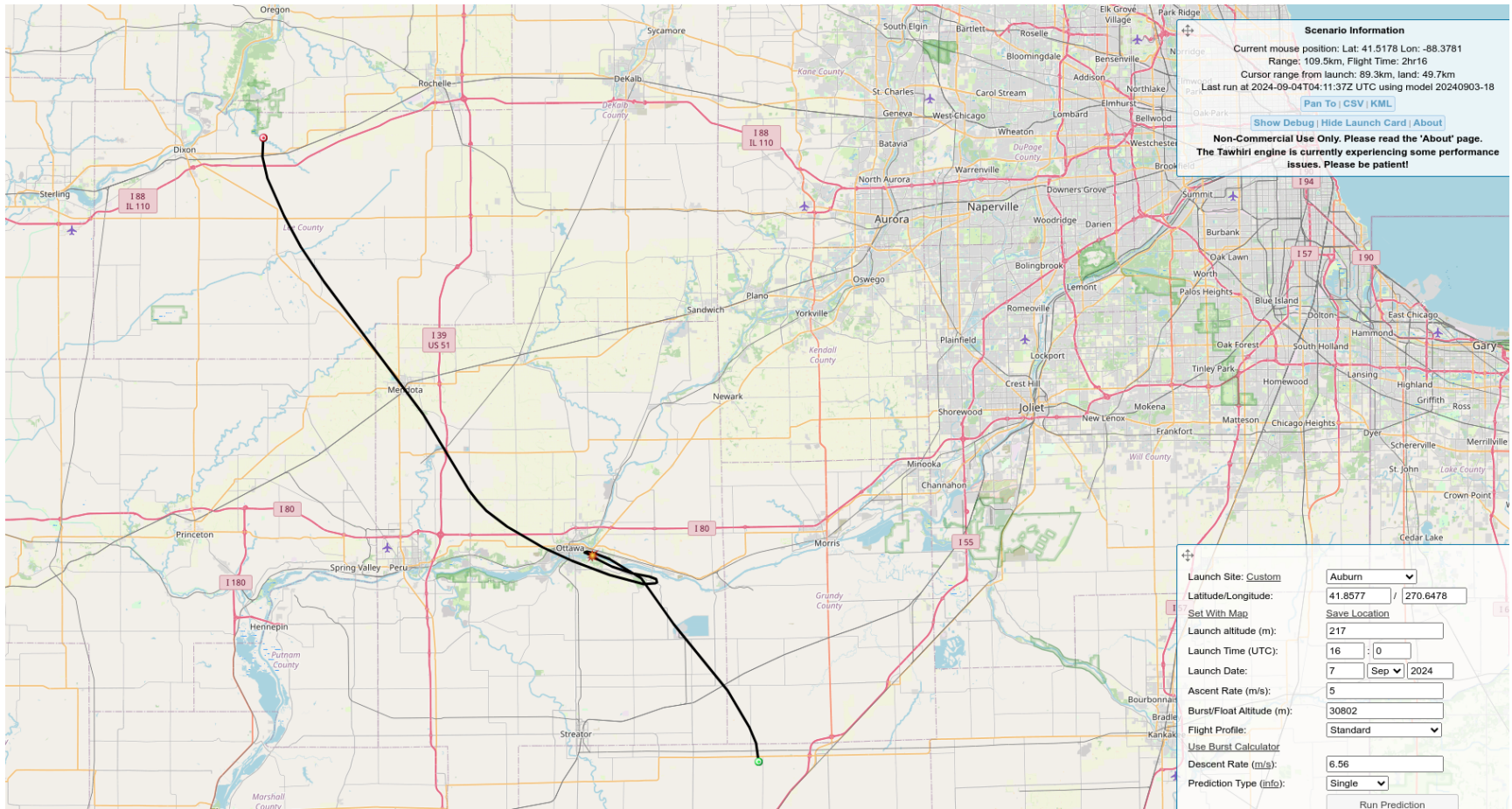
Whoa look how far south - but this HY800 looks safe:



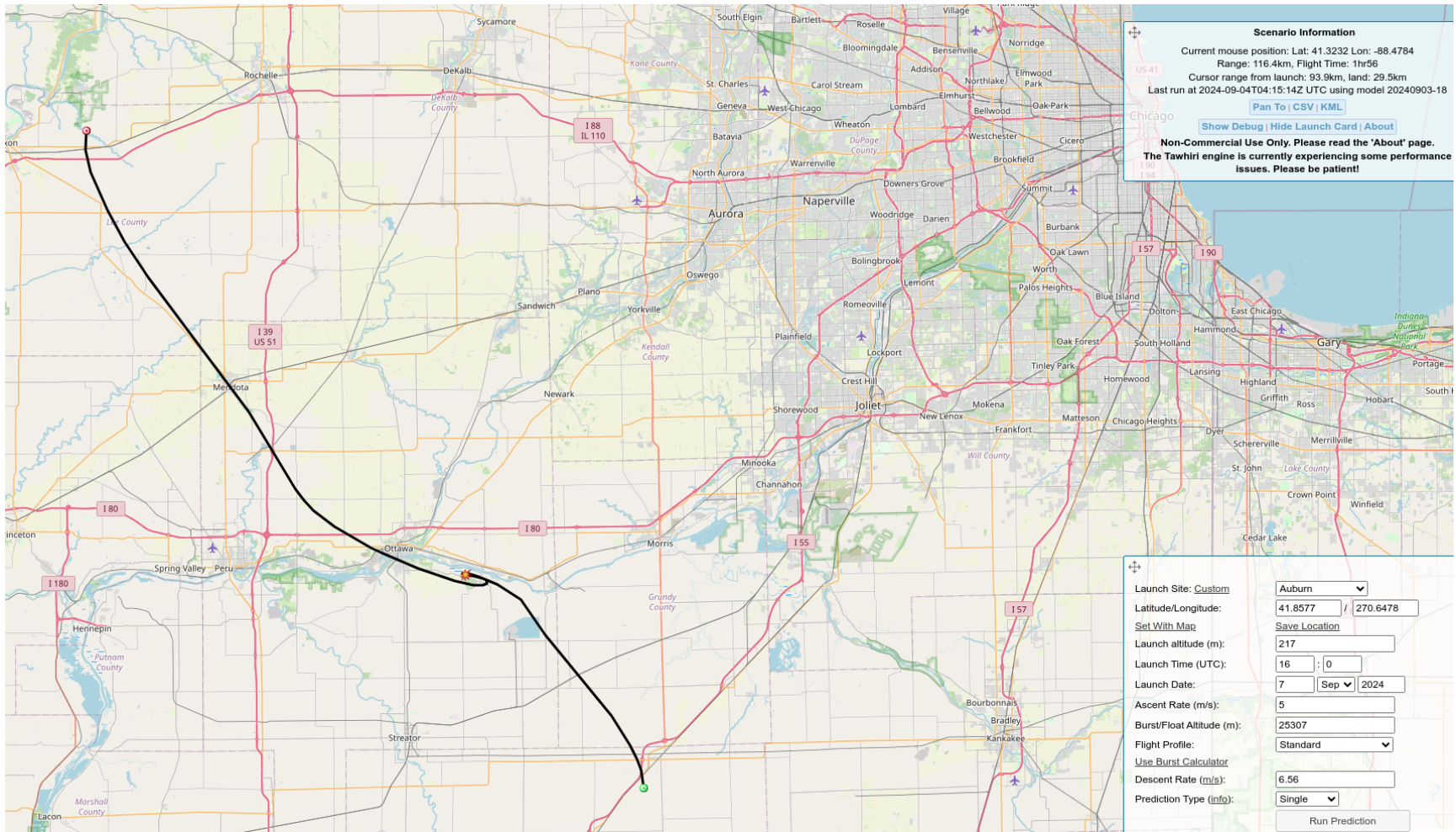
Downside is that drive from launch site to landing is just shy of 2h and flight time is hardly more than that

Sep 3, 2024

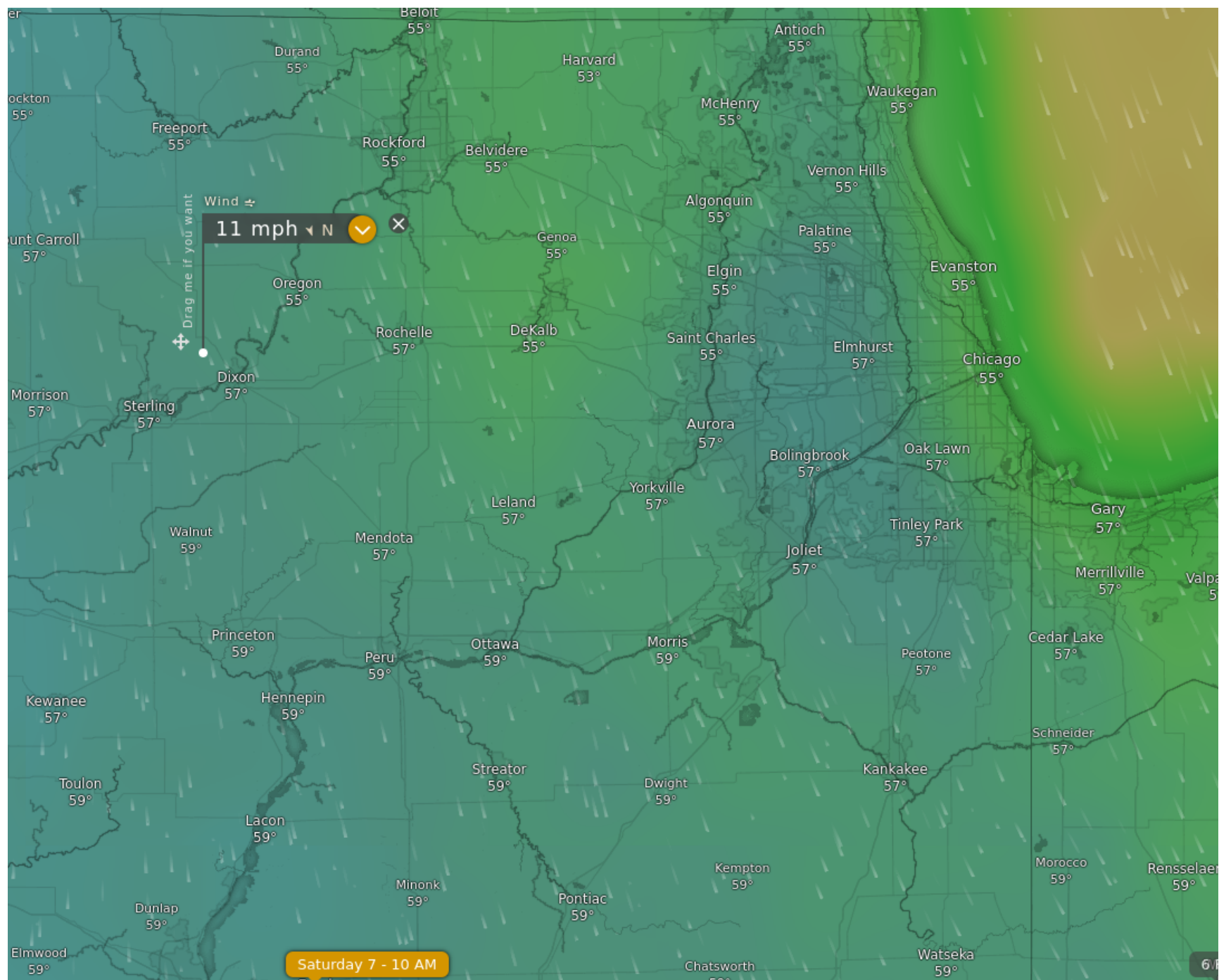
1h42m from launch site to landing spot - not as bad as yesterday
Drive home is nice up I-55, 1h12m



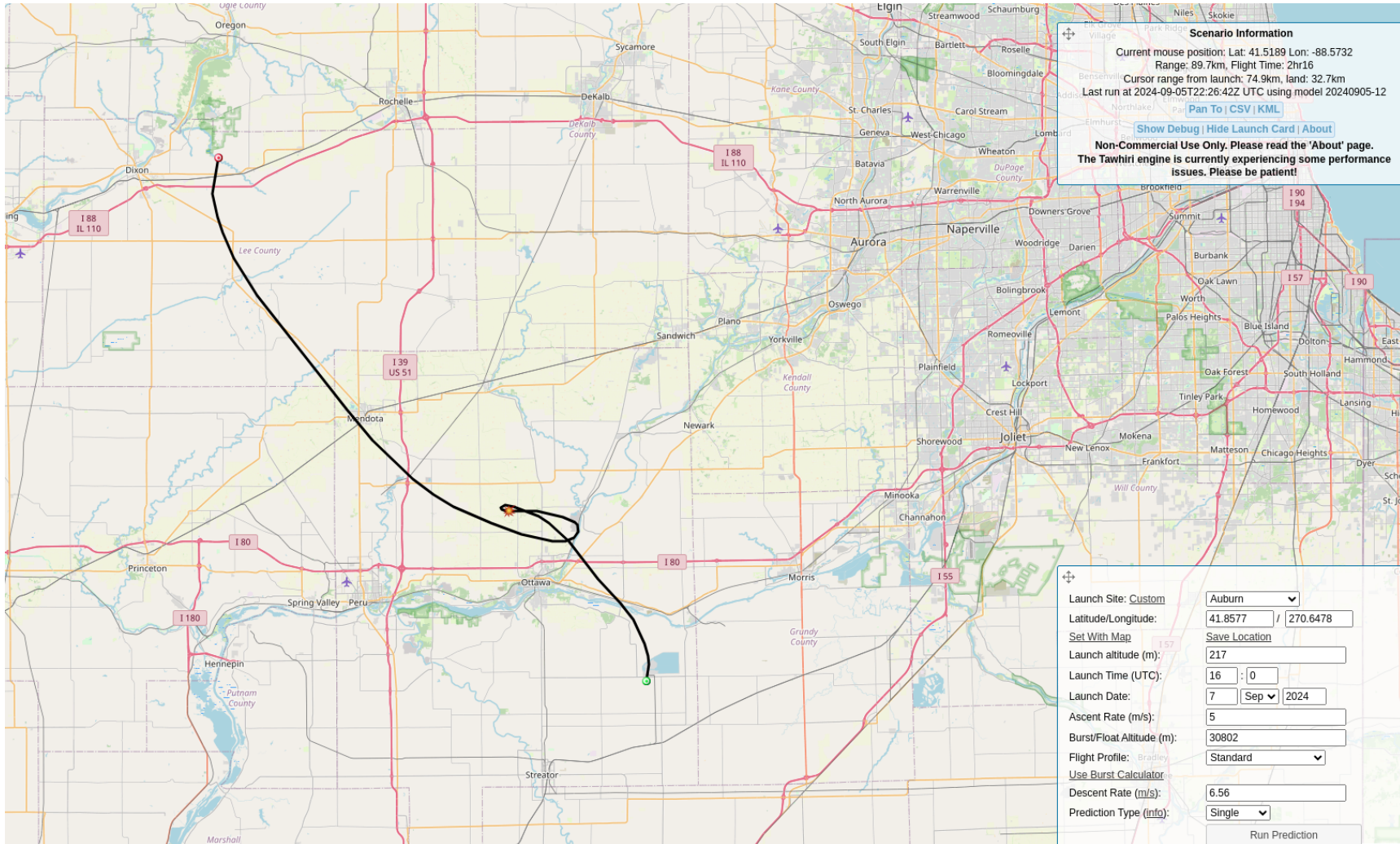
HY350 is even further as we don't get that upper atmosphere reverse:

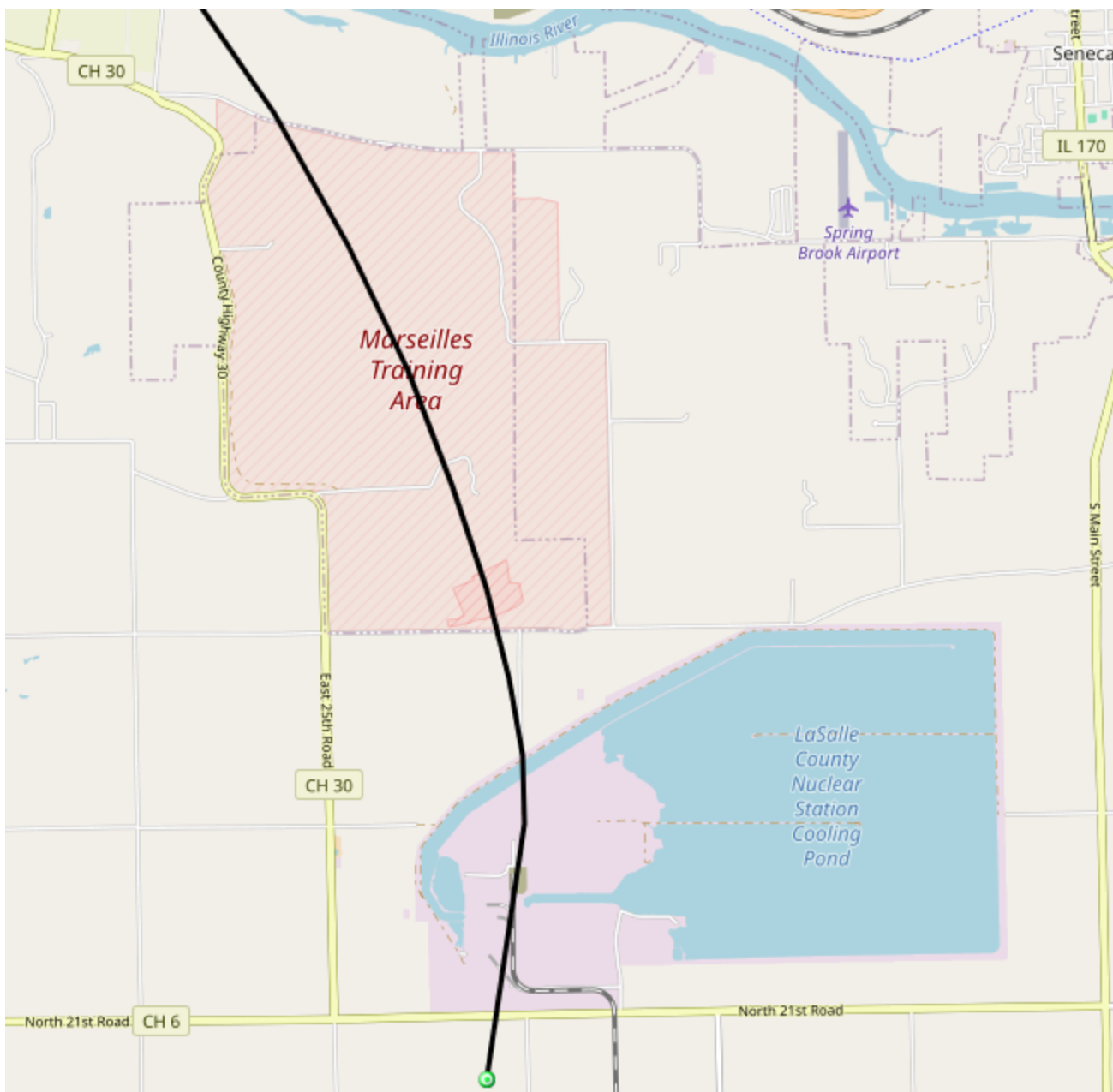


Ground wind is iffy:



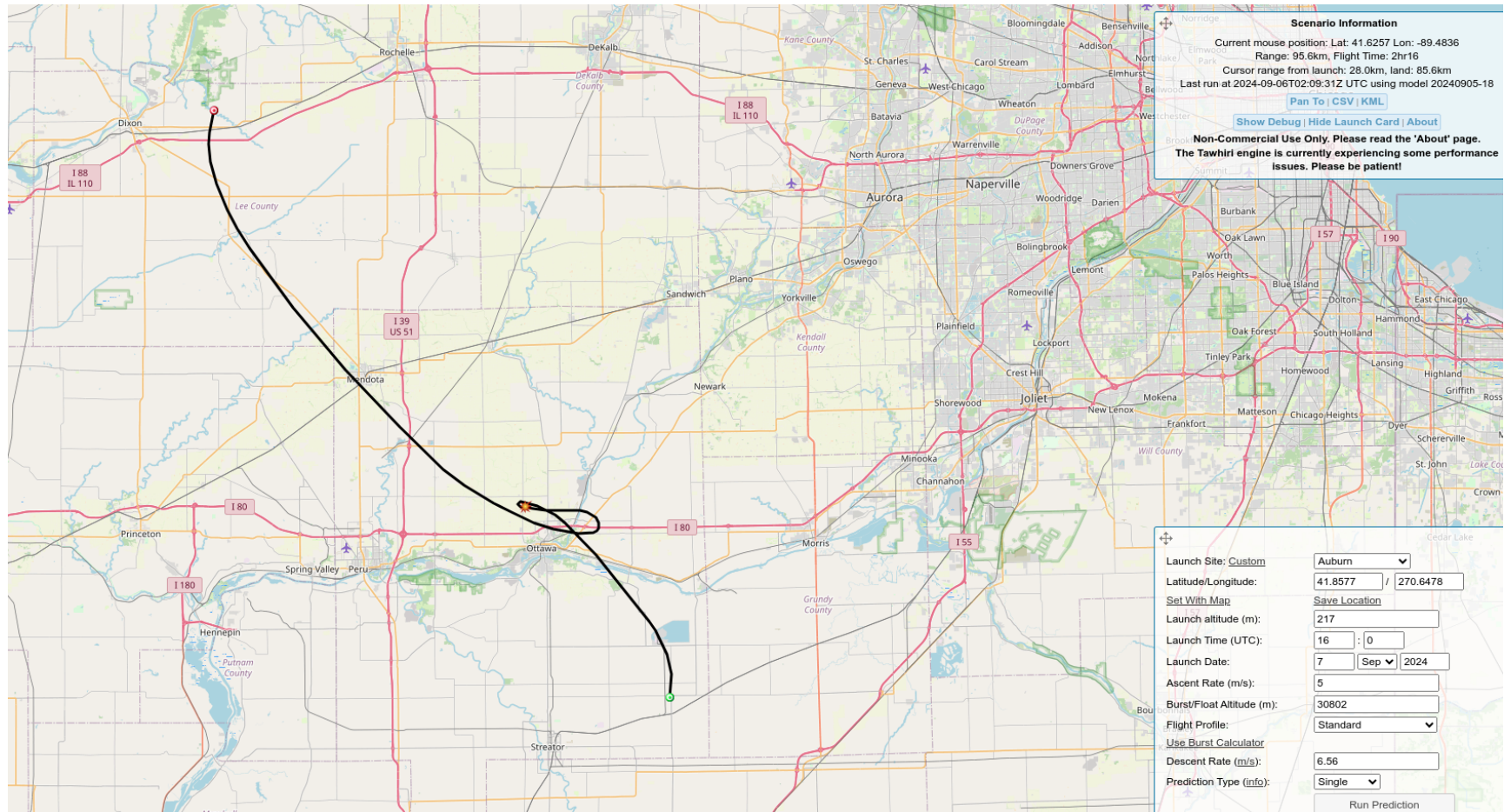
Sep 5, 2024

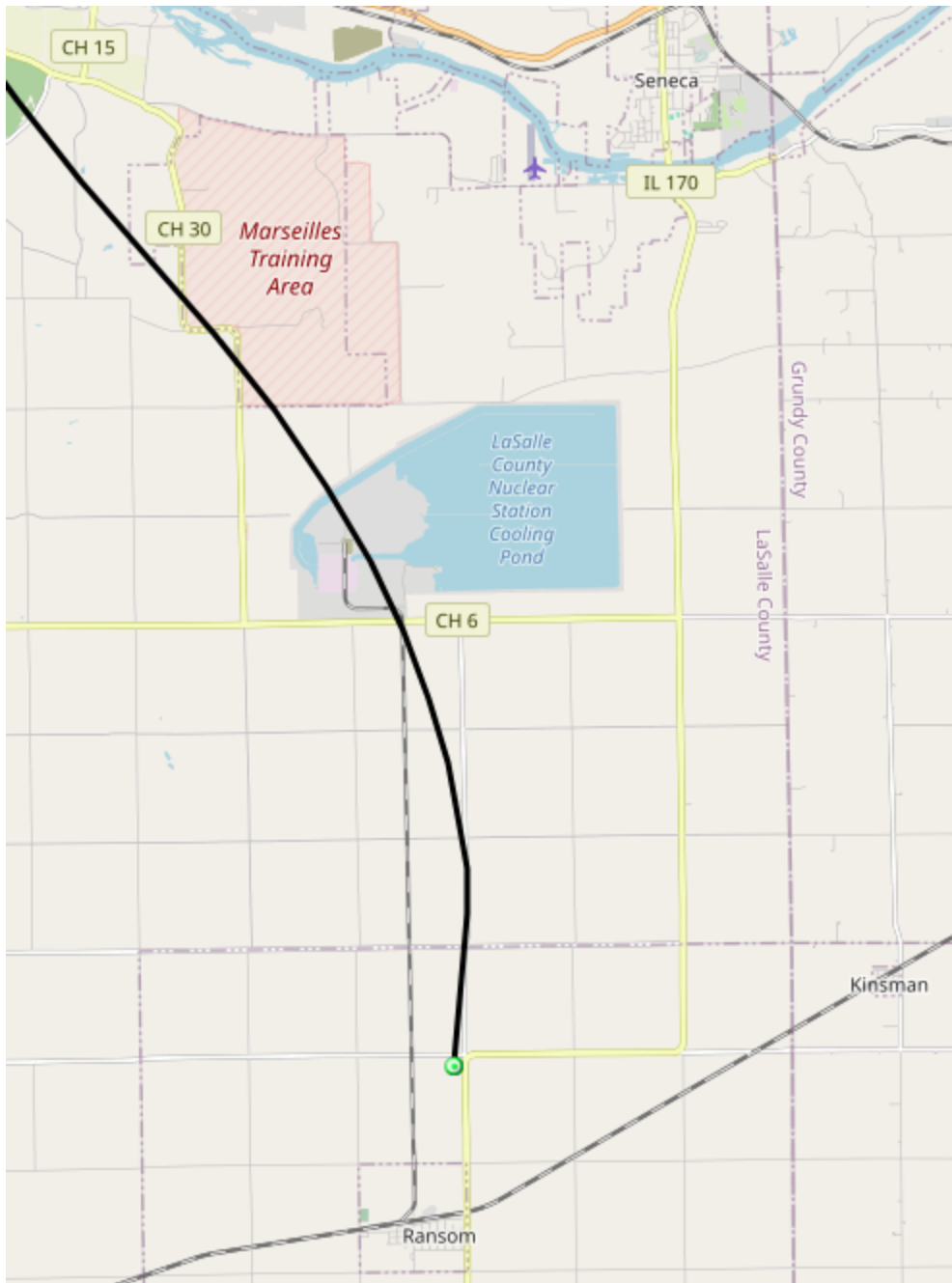


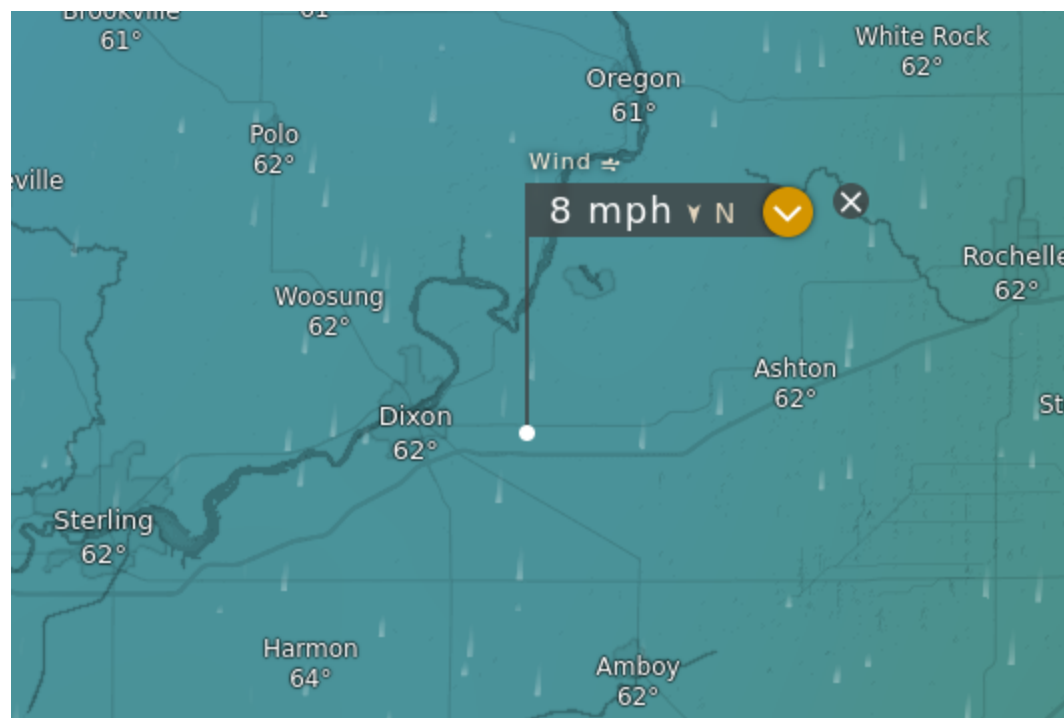


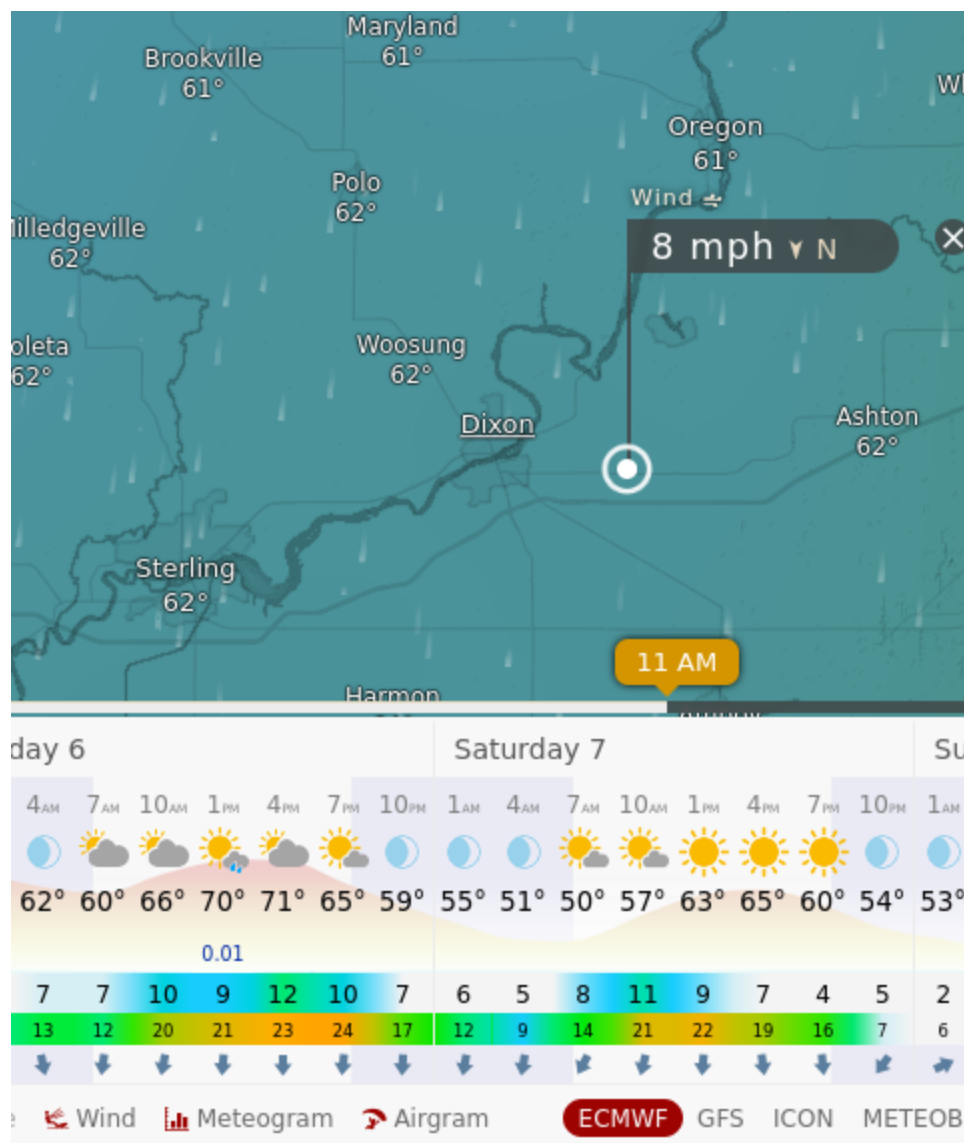
!!!

At the -16 model it goes 5km south which is good:









Revised weight plan: 838 grams

Meteorological Balloon Burst Estimator

1) Choose Balloon: (Burst Diameter: m Weight: g Cd:)

2) Choose Lifting Gas (Gas Density: Kg/cu m)

3) Enter weight to be lifted: g (include weight of Payload + Parachute and Line etc.)

4) Enter desired average ascent rate: m/s (4.0 to 6.0m/sec is typical)

5) Click to

Estimated burst altitude: m (ft)

Gas volume required: cu m (cu ft)

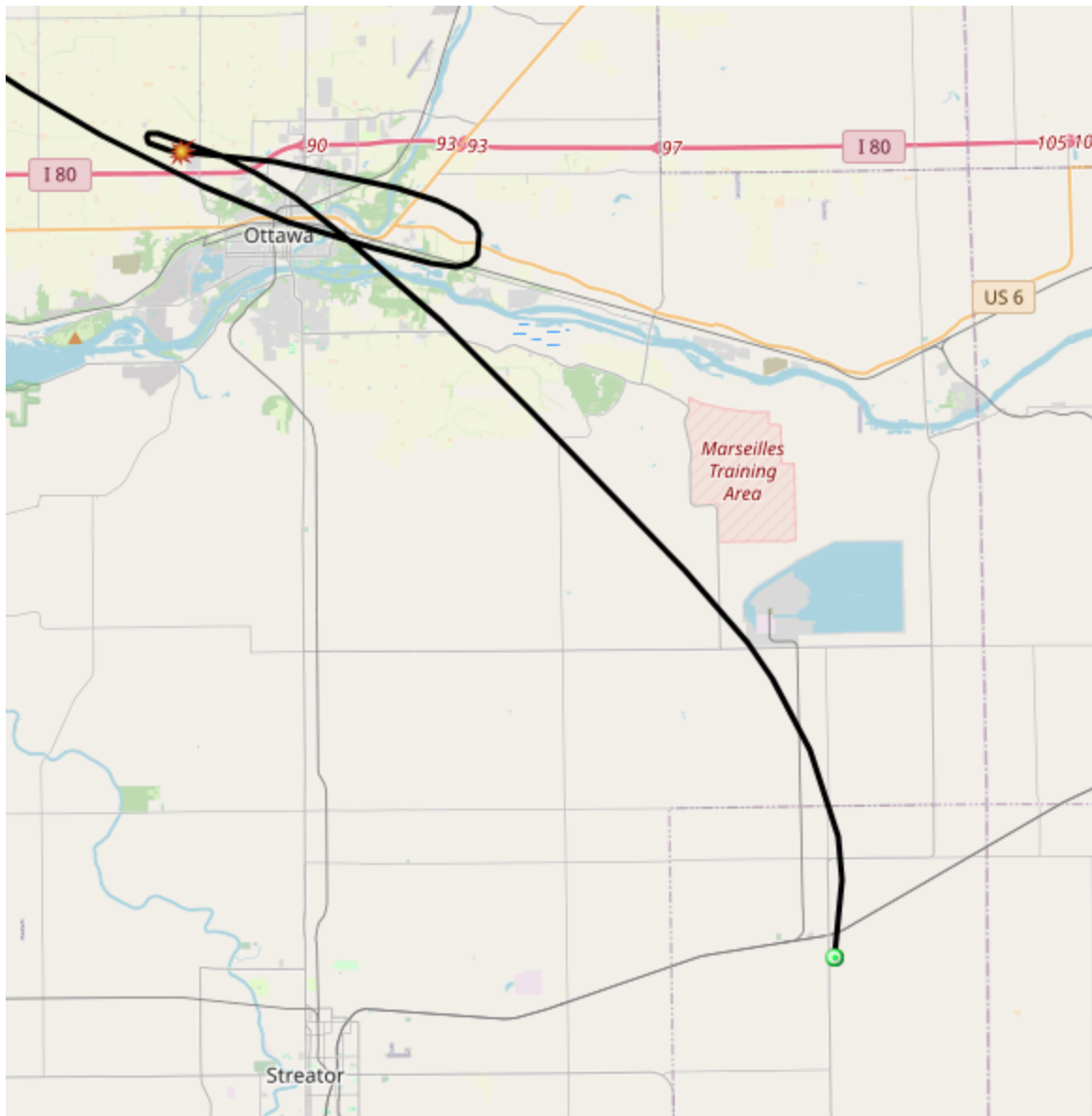
Neck lift: Kg (lb)

Time to burst: min (hrs)

Burst 30573m

93 cu ft of helium...

Latest model update + new burst altitude = winning



Sep 6, 2024

Didn't run any predictions - waiting until the morning of!

Sep 7, 2024

MORNING OF LAUNCH - 6:49 AM before 11AM CDT launch.

Model: 20240907-06

Re-checking calculators with 838 grams:

Parachute Descent Rate Calculator

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(Chute "Coefficient of Drag x Area":)

2) Enter weight to be carried in Kg:

3) Click to descent rate.

Estimated descent rate at sea level in m/sec:

Meteorological Balloon Burst Estimator

1) Choose Balloon: (Burst Diameter: m Weight: g Cd:)

2) Choose Lifting Gas (Gas Density: Kg/cu m)

3) Enter weight to be lifted: g (include weight of Payload + Parachute and Line etc.)

4) Enter desired average ascent rate: m/s (4.0 to 6.0m/sec is typical)

5) Click to

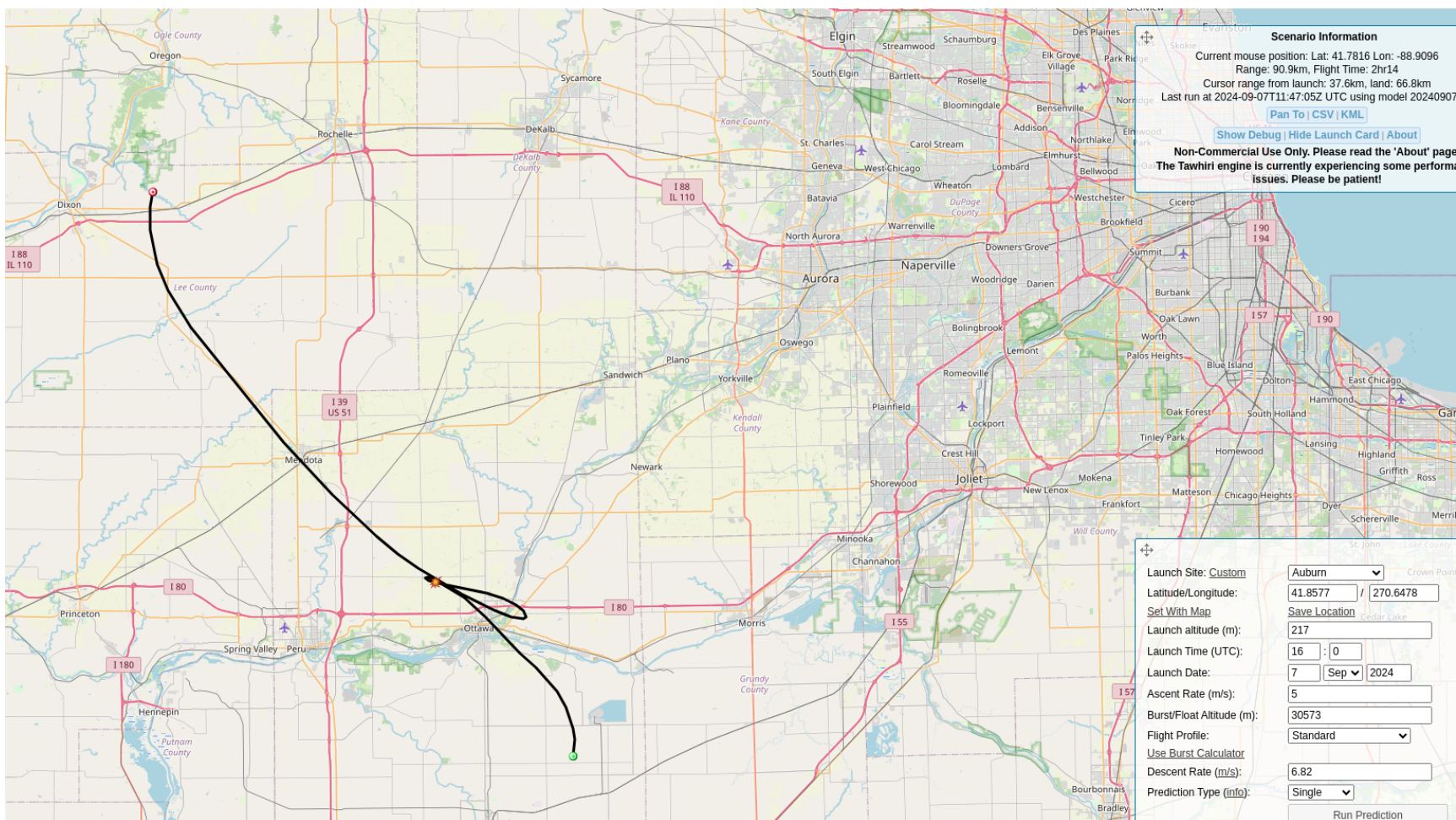
Estimated burst altitude: m (ft)

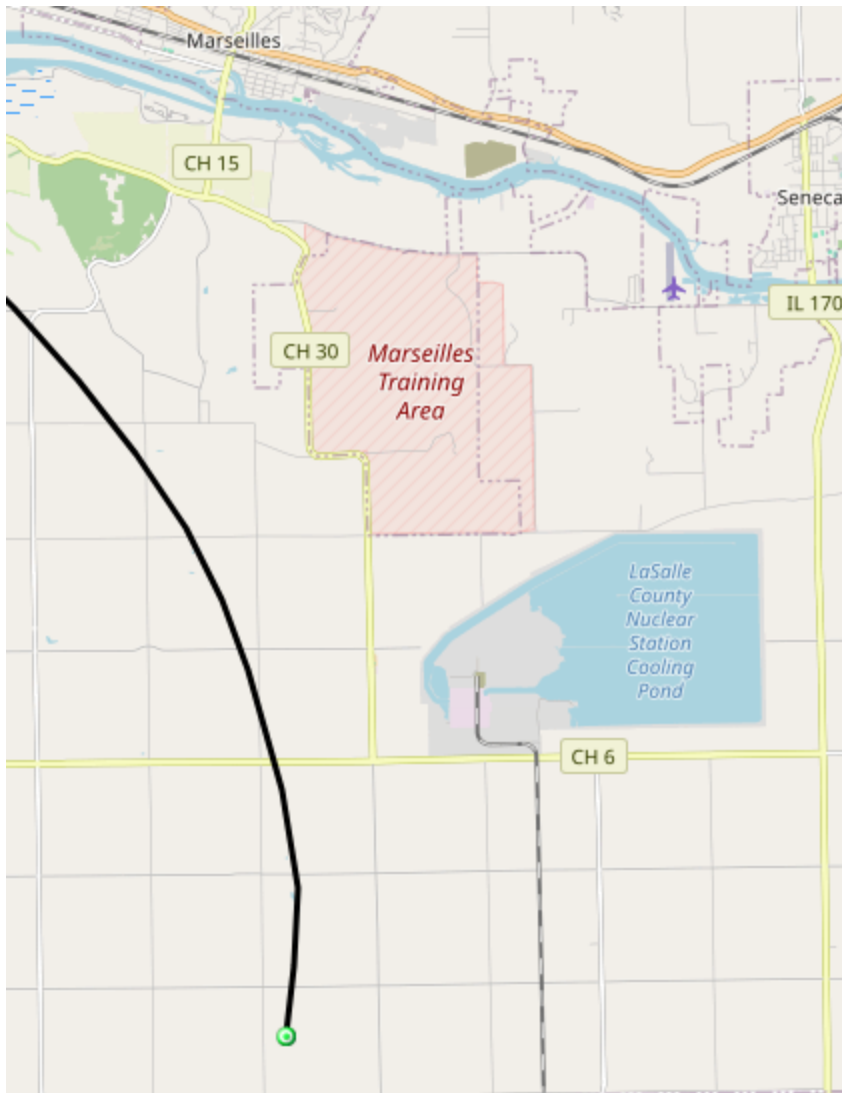
Gas volume required: cu m (cu ft)

Neck lift: Kg (lb)

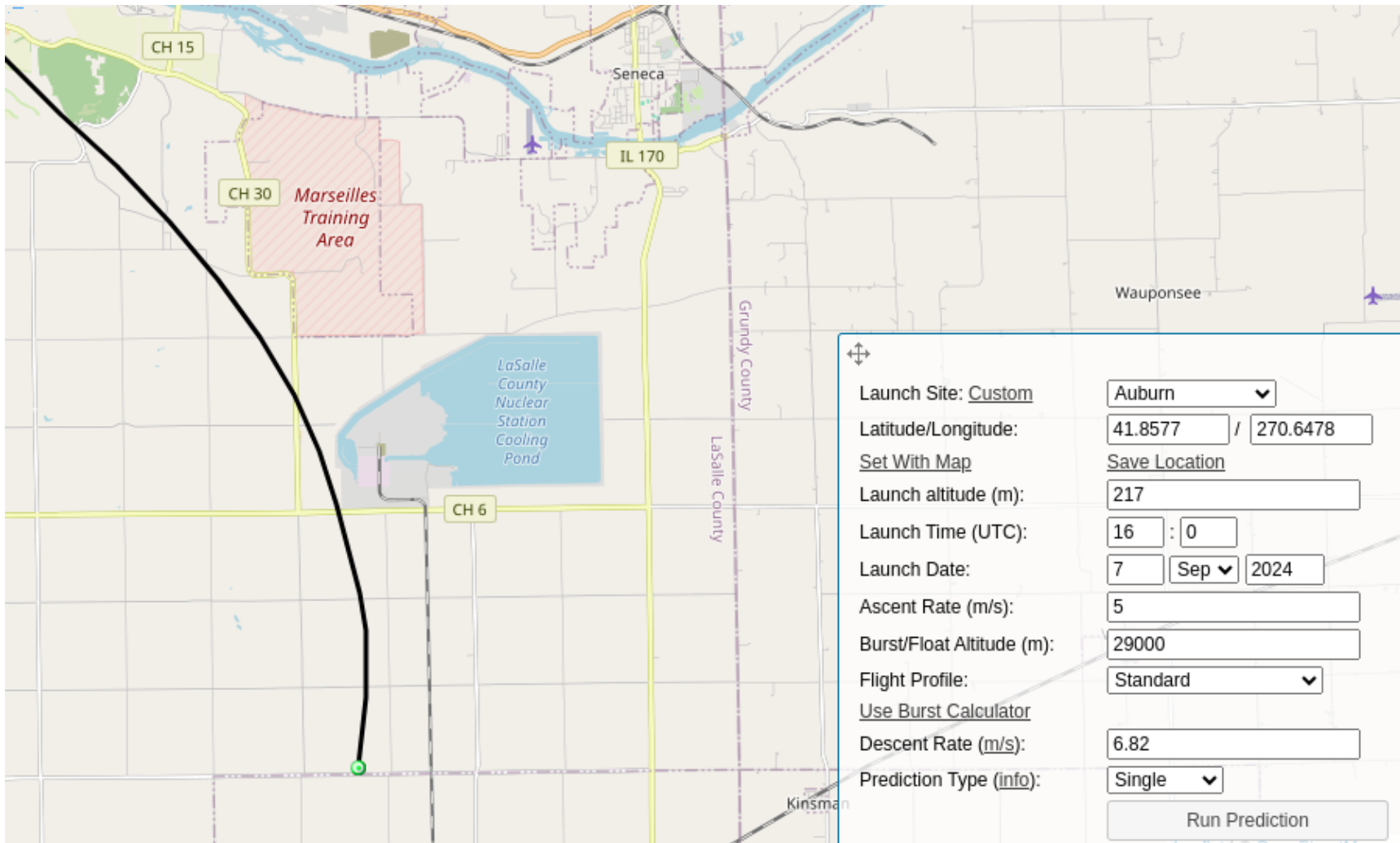
Time to burst: min (hrs)

Hasn't moved much:

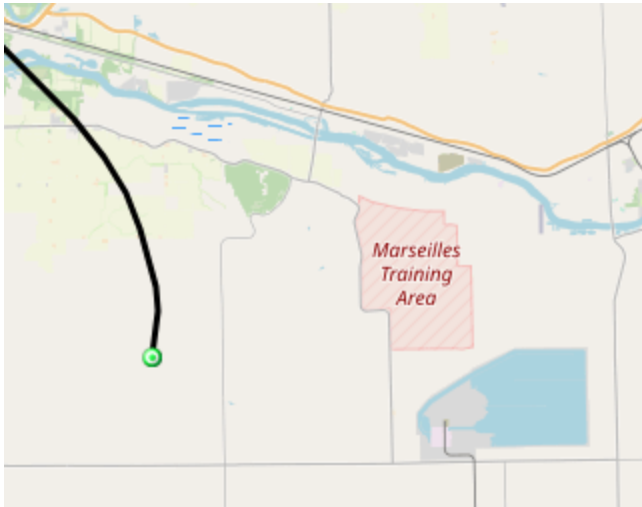




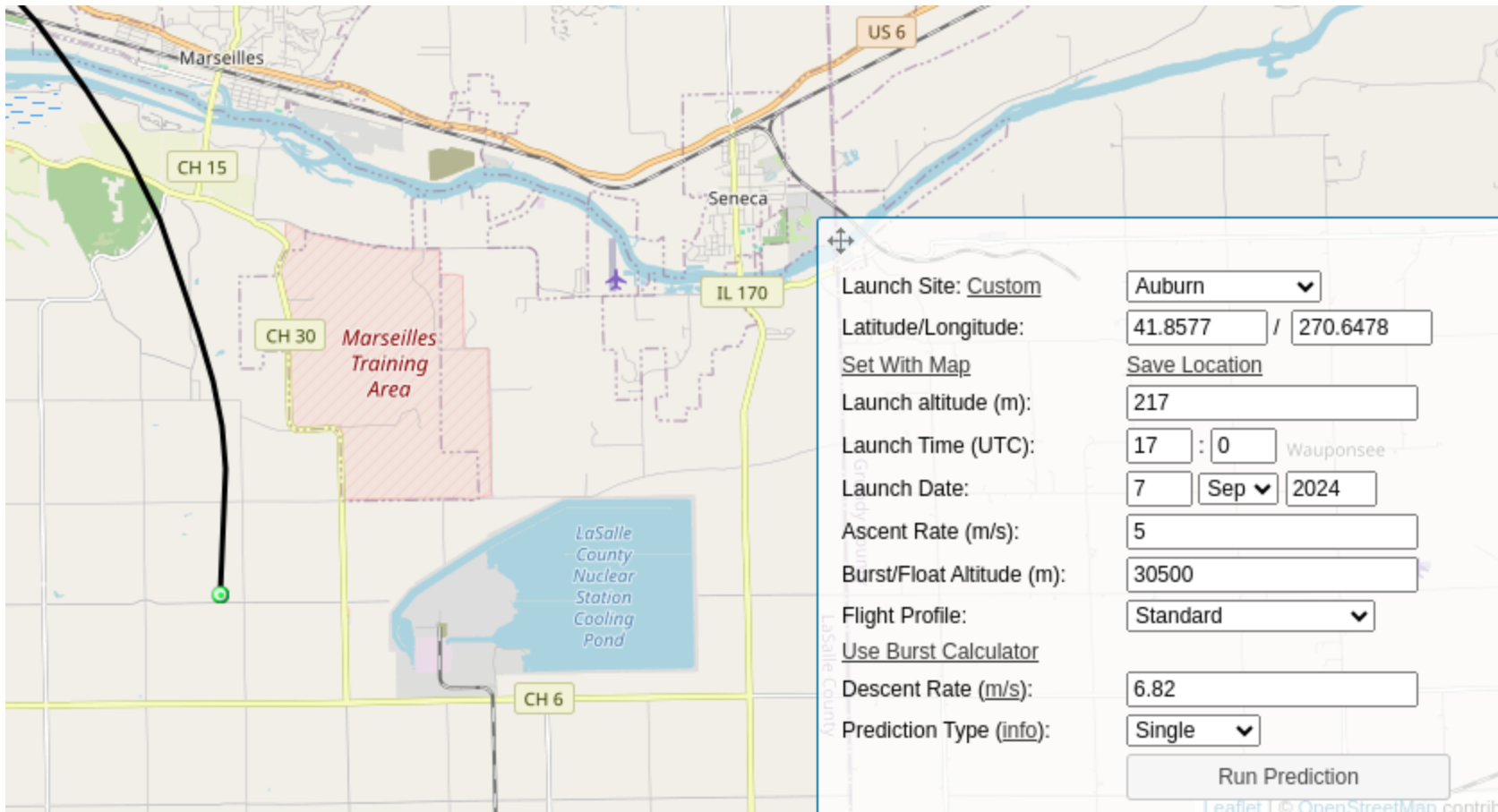
Early burst of 29k gets us a bit further away but still trouble:

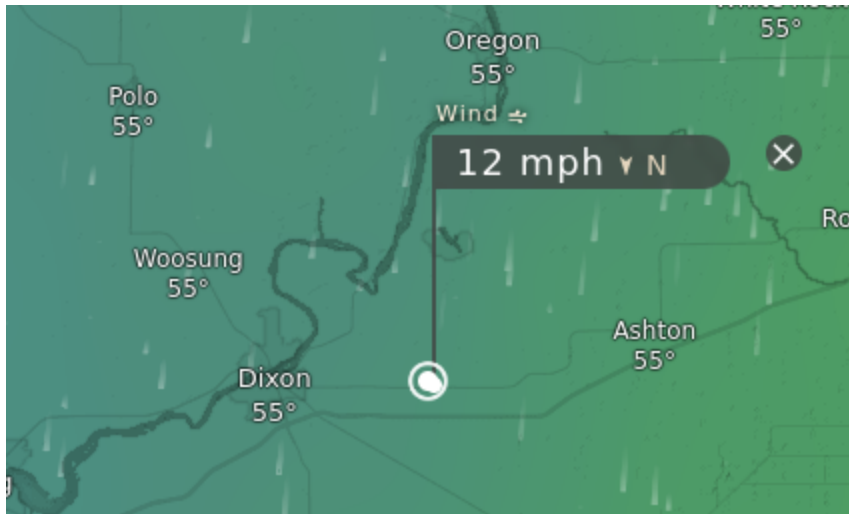


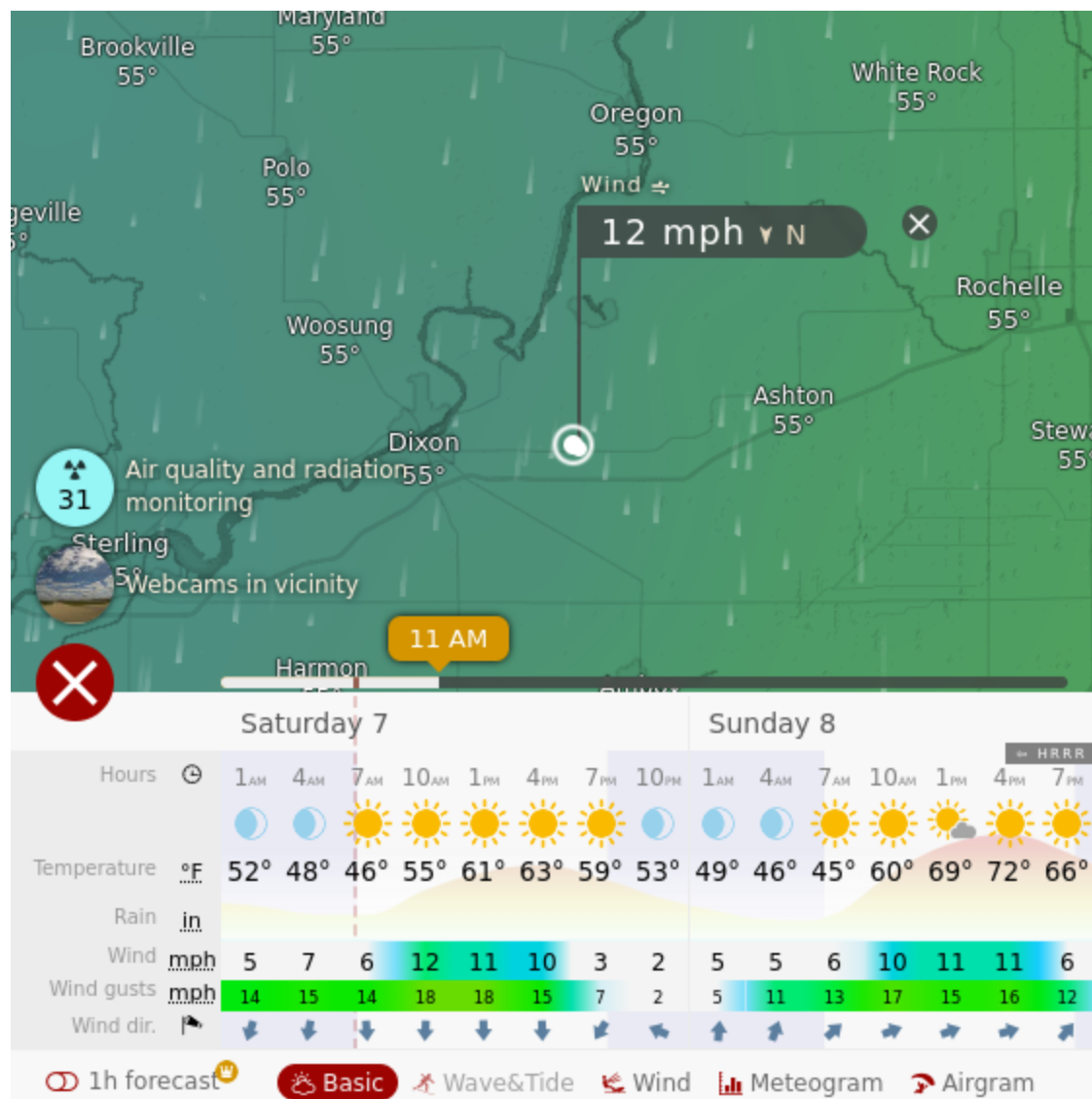
Fast chute gets it a bit safer / further away:



Launch an hour late and you're in trouble:

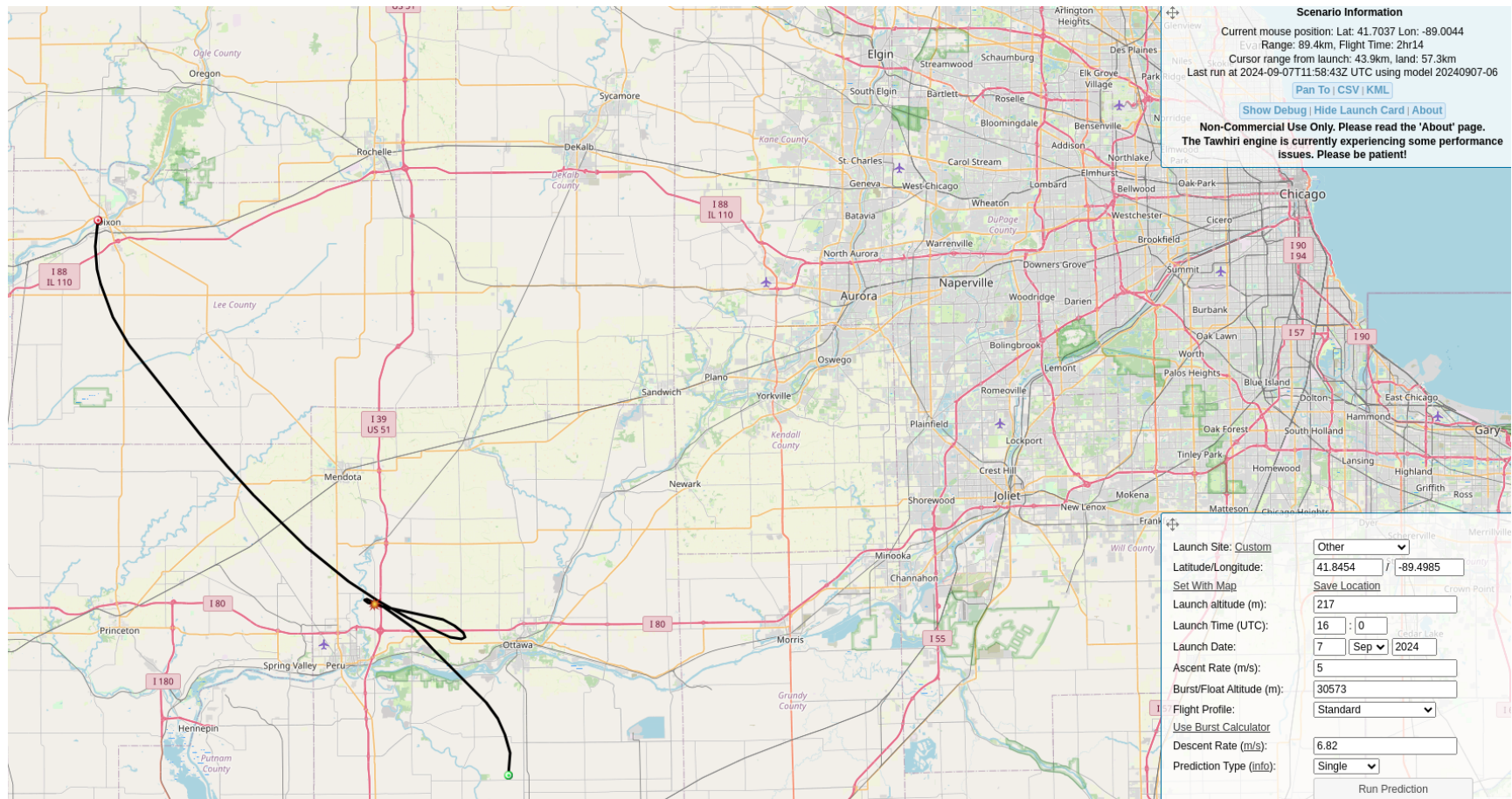


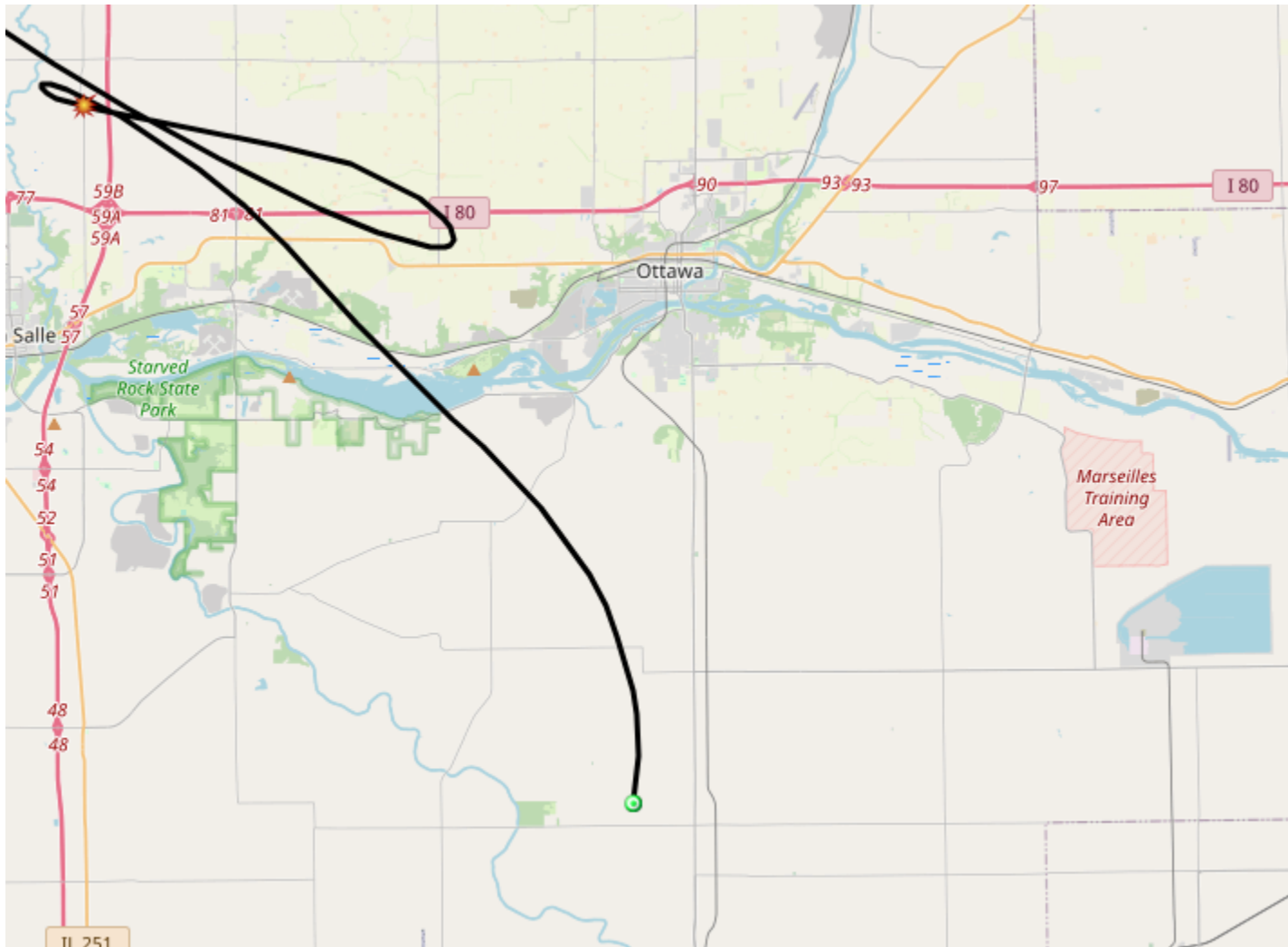




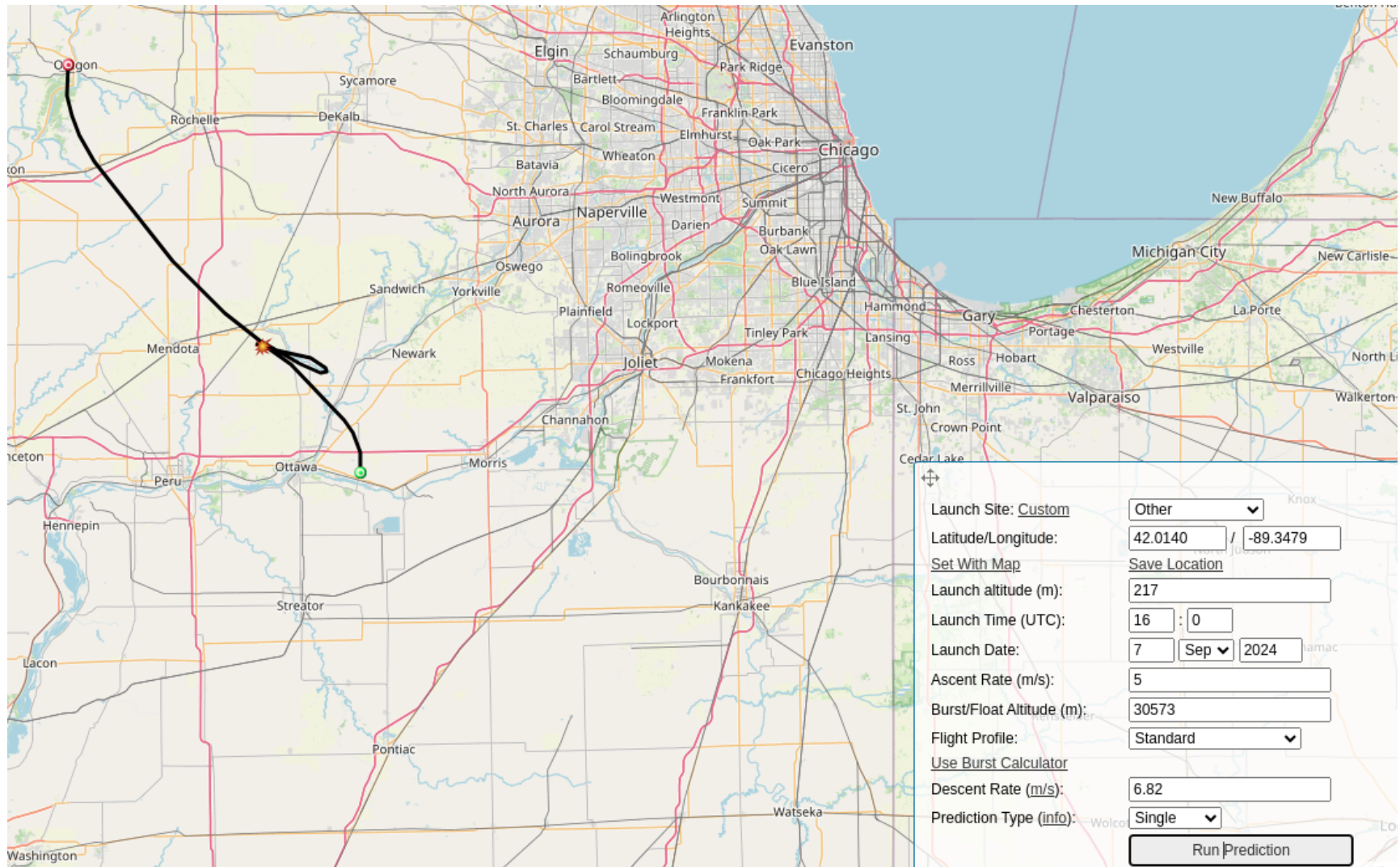
If we fly from park in Dixon it's safe enough:

https://predict.sondehub.org/?launch_datetime=2024-09-07T16%3A00%3A00Z&launch_latitude=41.8454&launch_longitude=270.50149999999996&launch_altitude=217&ascent_rate=5&profile=standard_profile&prediction_type=single&burst_altitude=30573&descent_rate=6.82

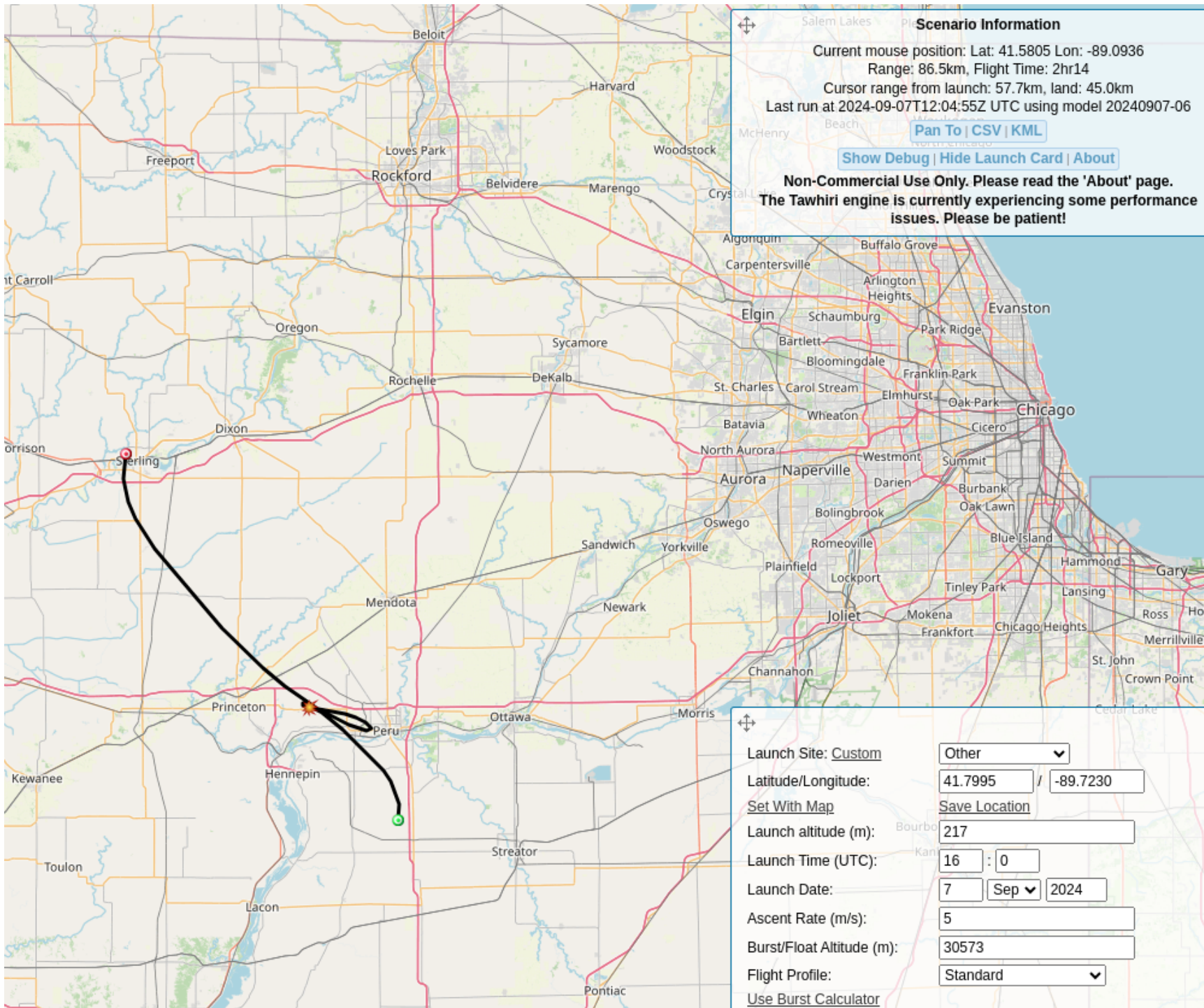




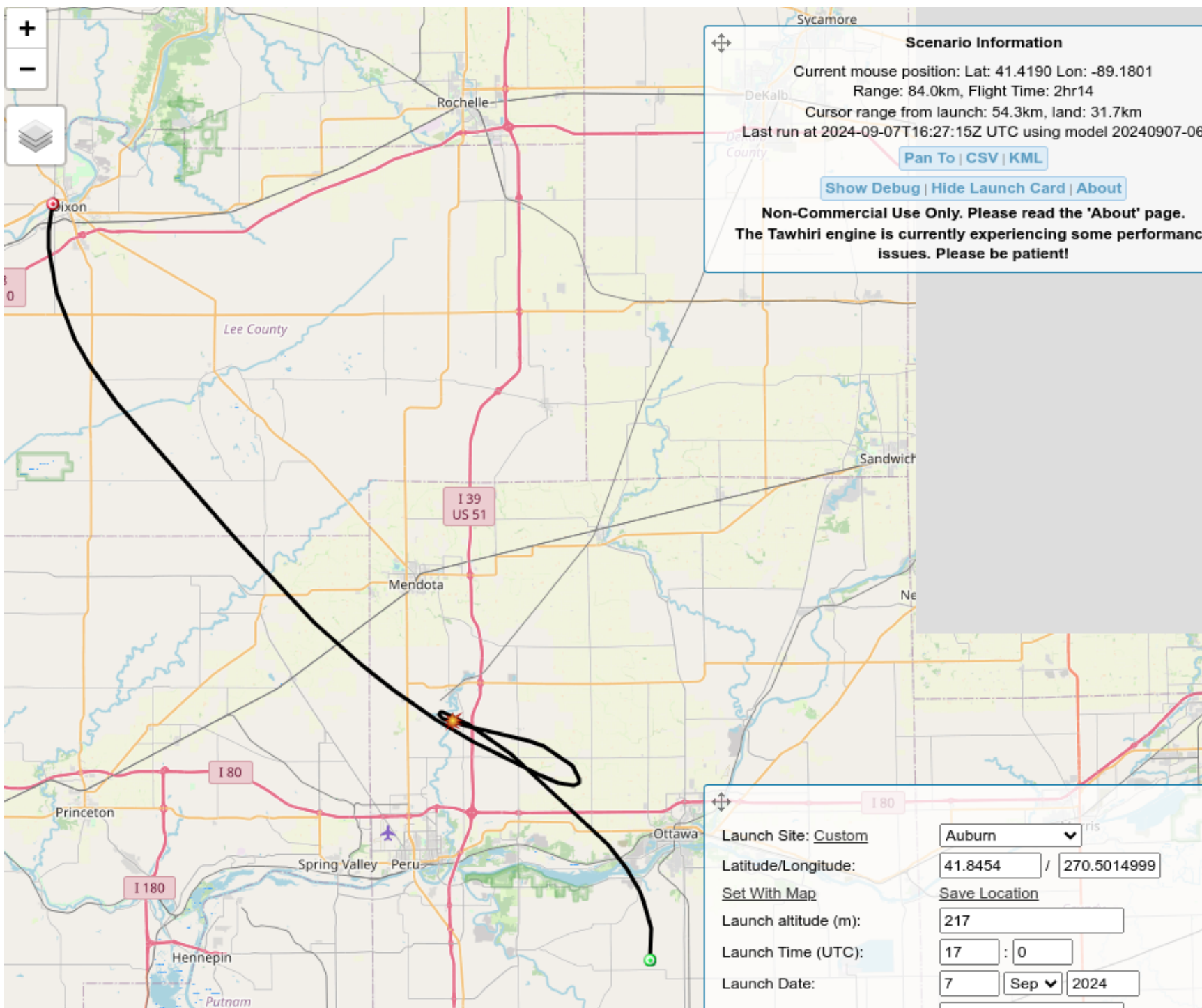
If [fly from Oregon Park](#) NW of Franklin Creen - it's back to trouble in many ways:



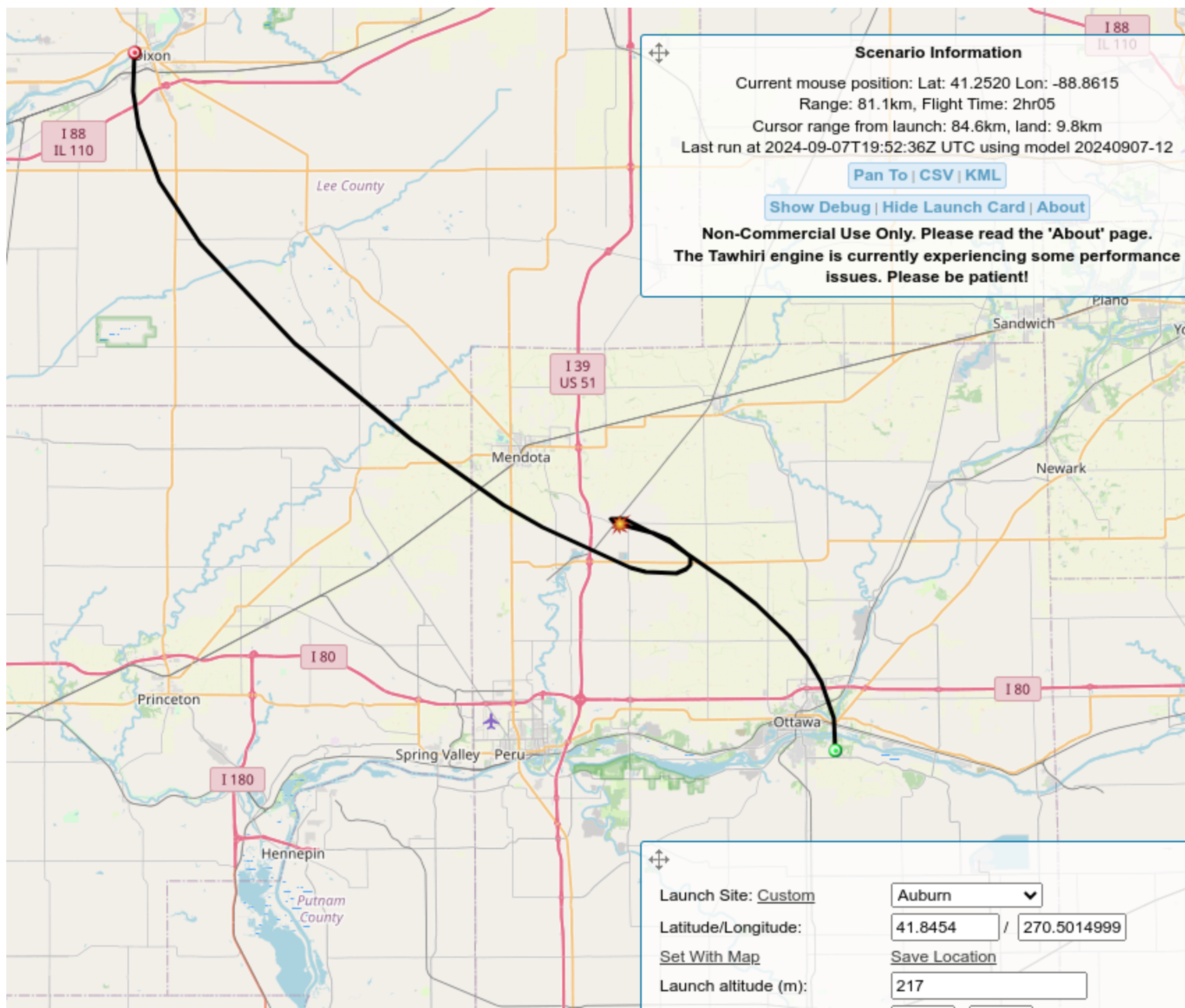
[Fly from Sterling](#) is OK too



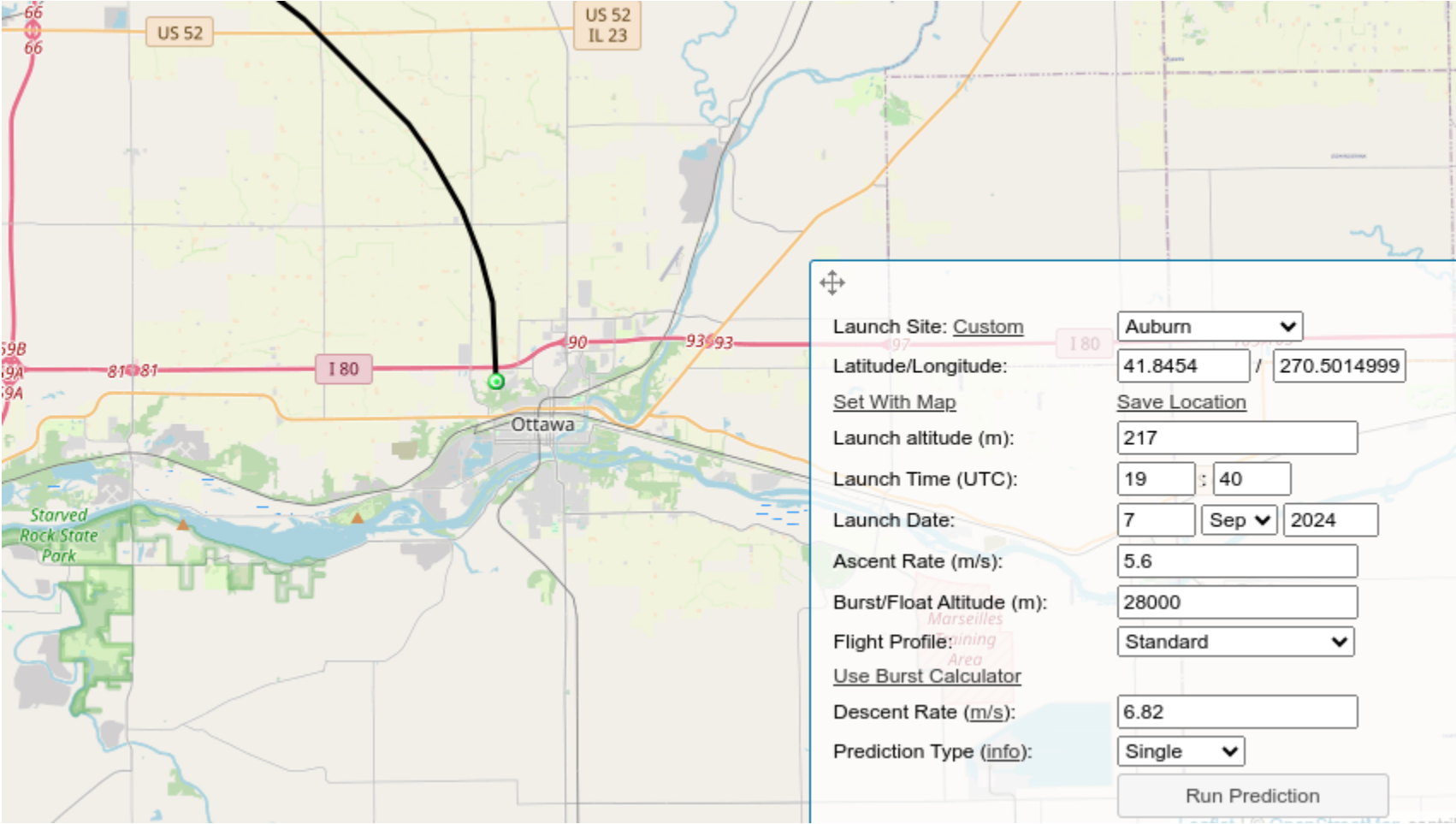
FLight at noon:



Revised with lots of air instead of helium early burst and actual launch time



5.6m/s ascent looks like:



Launch Site: Custom

Latitude/Longitude: 41.8454 / 270.5014999

[Set With Map](#)

Launch altitude (m): 217

Launch Time (UTC): 19 : 40

Launch Date: 7 Sep 2024

Ascent Rate (m/s): 5.6

Burst/Float Altitude (m): 28000

Flight Profile: [Training Area](#)

[Use Burst Calculator](#)

Descent Rate (m/s): 6.82

Prediction Type ([info](#)): Single

[Run Prediction](#)