

# Racing against the universe: 2024 October Geomagnetic storm user Testimonial

## Greg Ritz Manager, Air race X Patrick Davidson



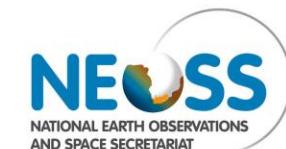
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Touching lives through innovation

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# Introduction to racing

## What is air race

- 8 pilots around the world
- All flying in their own country
- Same race track
- Against each other
- 10 days to practice and fly
- Qualifying
- Quarterfinal
- Semi Final
- Final

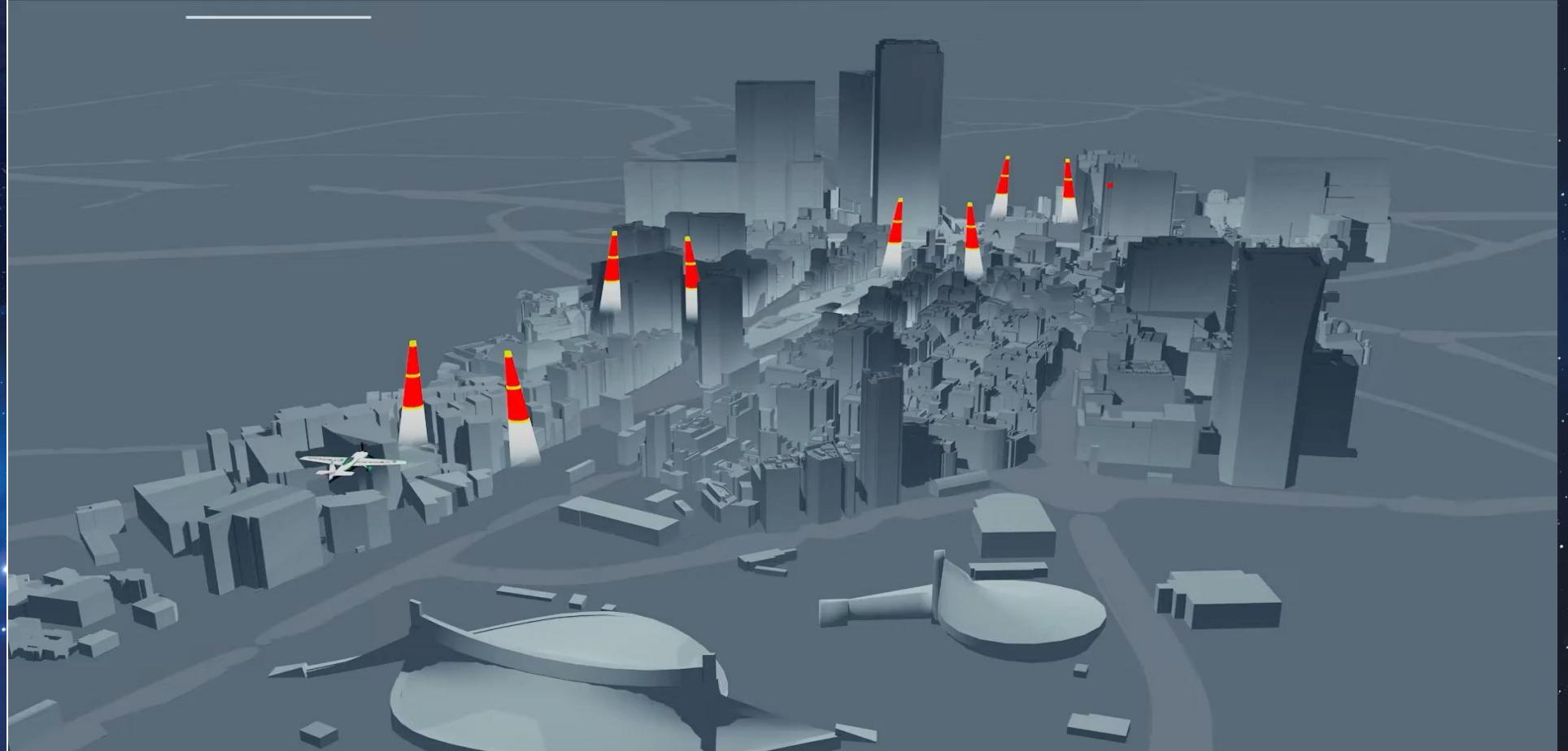




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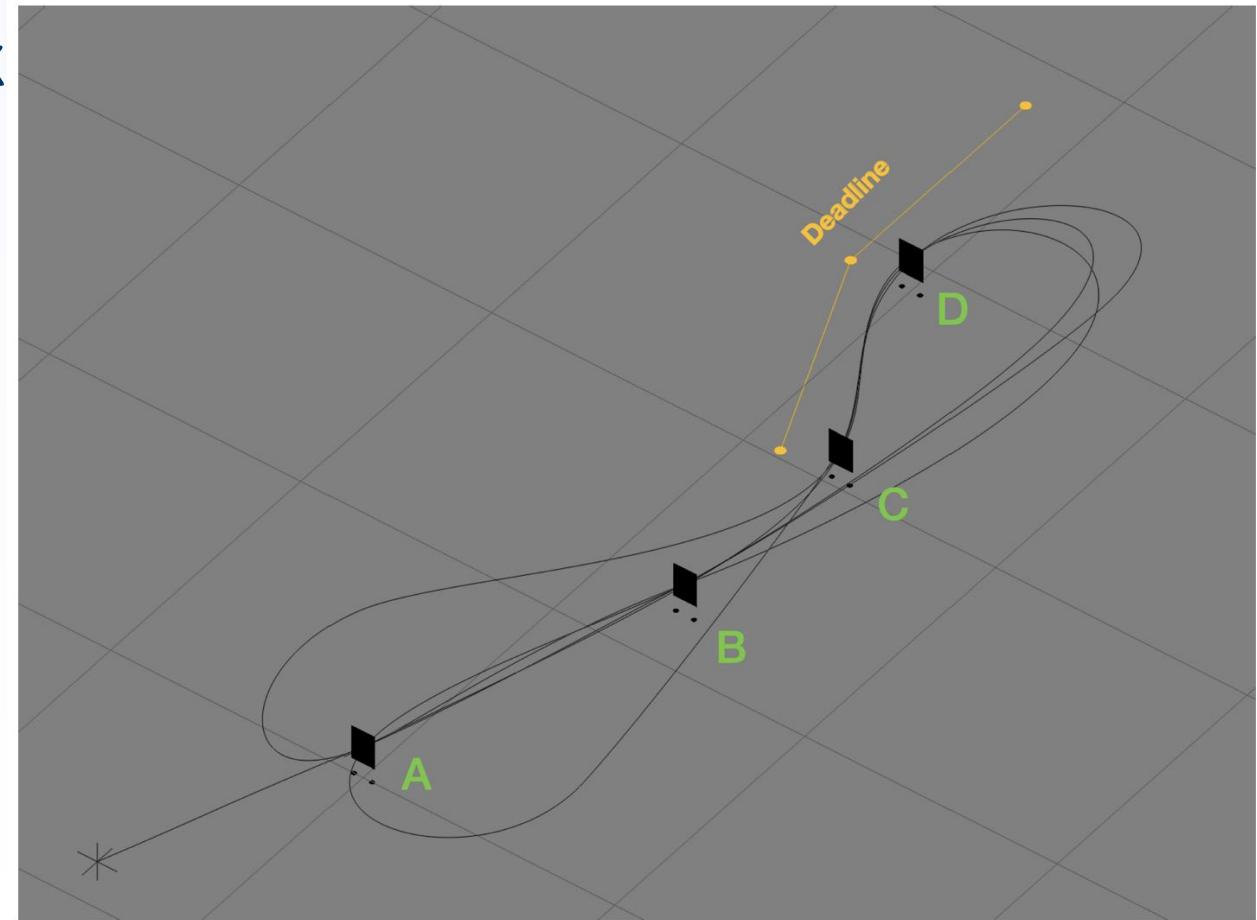
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# Introduction to racing

## How does it work



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# Introduction to racing

## How does it work

### ➤ GPS Co-ordinates

No. of Pylons: 4  
No. of Markers: 8 (all double gates)  
No. of Gates: 14  
\*\*\* All gates use same heading \*\*\*

Start Speed: 200 knots (GPS groundspeed)  
Simulated Time: 64 seconds

Dimensions:

Pylons	X (meters)	Y (meters)	Heading (track relative)
A	0	0	0
B	88	307	0
C	91	508	0
D	0	721	0

Deadline	X (meters)	Y (meters)	
1	31	508	
2	-60	21	
3	-60	950	

SHB Coordinates:

Pylons	Latitude	Longitude	Heading (degrees)
A	35.662305	139.701445	166.8
B	35.6594363115681	139.70127264179078	166.8
C	35.657670274051696	139.70174836377	166.8
D	35.65599220848915	139.70326741420322	166.8

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# Introduction to racing

## How does it work

### ➤ GPS Co-ordinates

Track Description:

Gate	Pylon	Heading	Type
1	A	0	Start
2	B	0	
3	C	0	
4	D	0	Low Turn

5	B	180	
6	A	180	High Turn

7	C	0	
8	D	0	Low Turn

9	B	180	
10	A	180	Low Turn

11	C	0	
12	D	0	Low Turn
13	B	180	
14	A	180	Finish

Low Turn = Minimum Altitude 250 feet AGL

High Turn = Minimum Altitude 500 feet AGL



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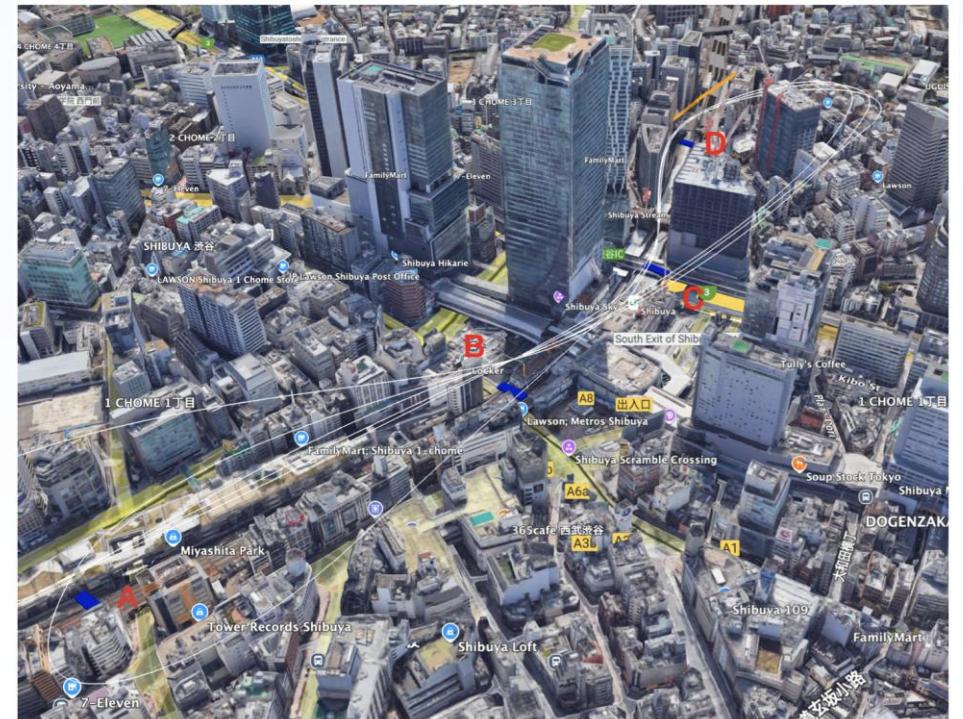
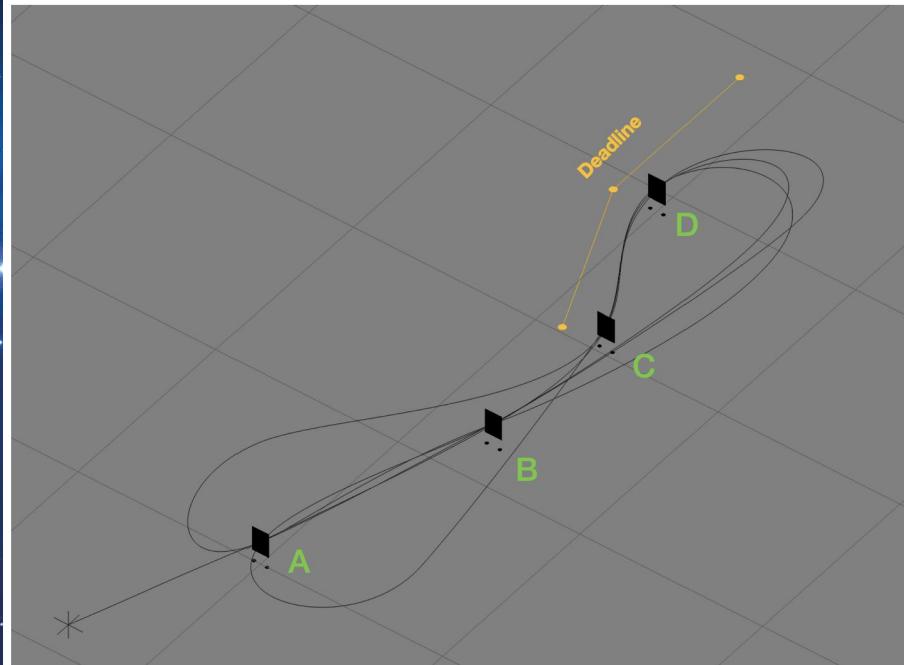
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# Introduction to racing

## How does it work

- GPS Co-ordinates



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# Introduction to racing

## How does it work

- GPS Co-ordinates
- Layout the race track



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# Introduction to racing

## How does it work

- GPS Co-ordinates
- Layout the race track
- Do practice flights



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# Introduction to racing

## How does it work

- GPS Co-ordinates
- Layout the race track
- Do practice flights
- Fly as fast as you can





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**Team 77**

**VS**

**The world**

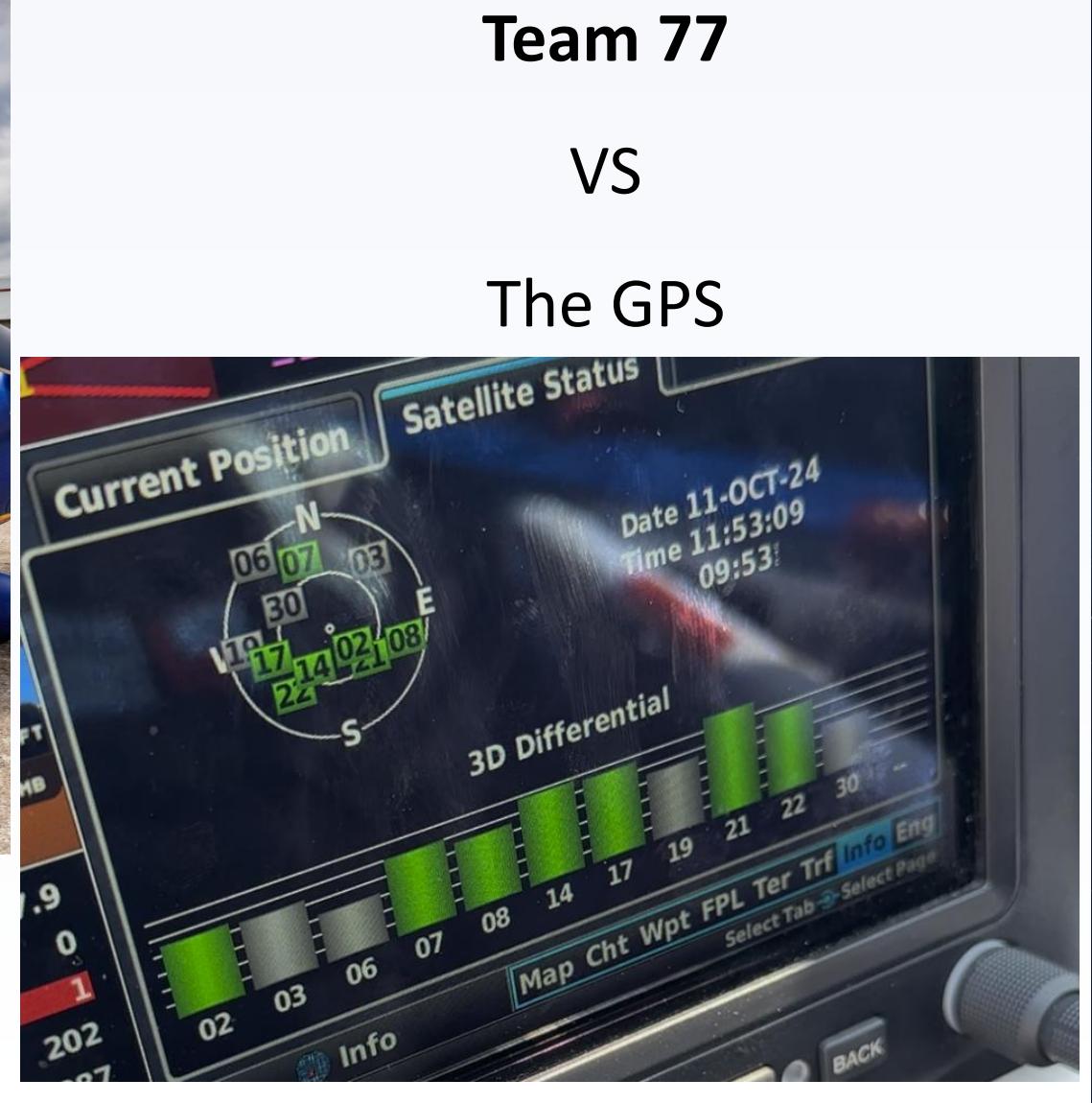




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**Team 77**

**VS**

**The GPS**





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# Our GPS is Faulty





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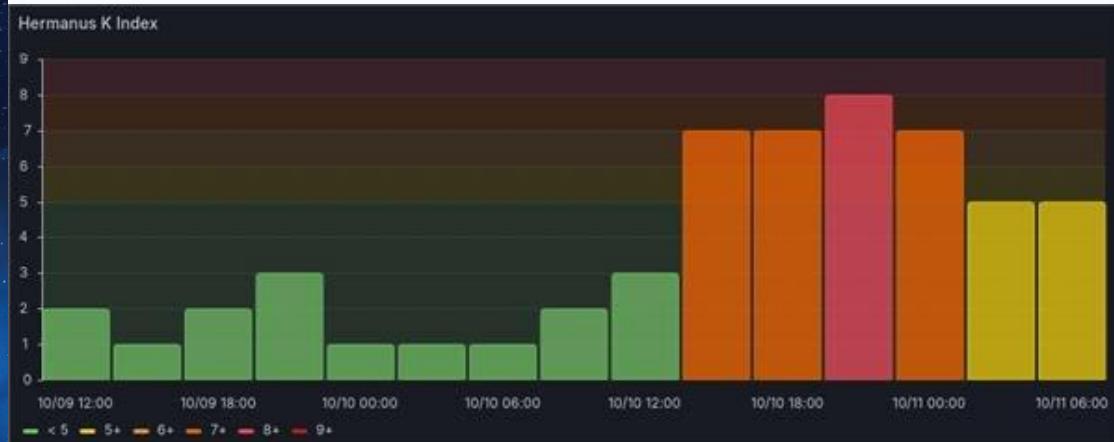




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## 3-DAY FORECAST

NOAA Kp index breakdown Oct 11-Oct 13 2024

	Oct 11	Oct 12
Oct 13		
00-03UT	8.67 (G4)	5.33 (G1)
3.33		
03-06UT	8.33 (G4)	5.00 (G1)
2.67		
06-09UT	8.00 (G4)	4.67 (G1)
2.67		
09-12UT	7.33 (G3)	4.33
2.33		
12-15UT	6.67 (G3)	4.33
1.67		
15-18UT	6.33 (G2)	5.33 (G1)
2.00		
18-21UT	6.00 (G2)	4.67 (G1)
2.67		
21-00UT	5.33 (G1)	4.33
3.33		

Rationale: The geomagnetic field is likely to maintain G3-G4 (Strong to Severe) conditions into 11 Oct if the Bz

# Thank You



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