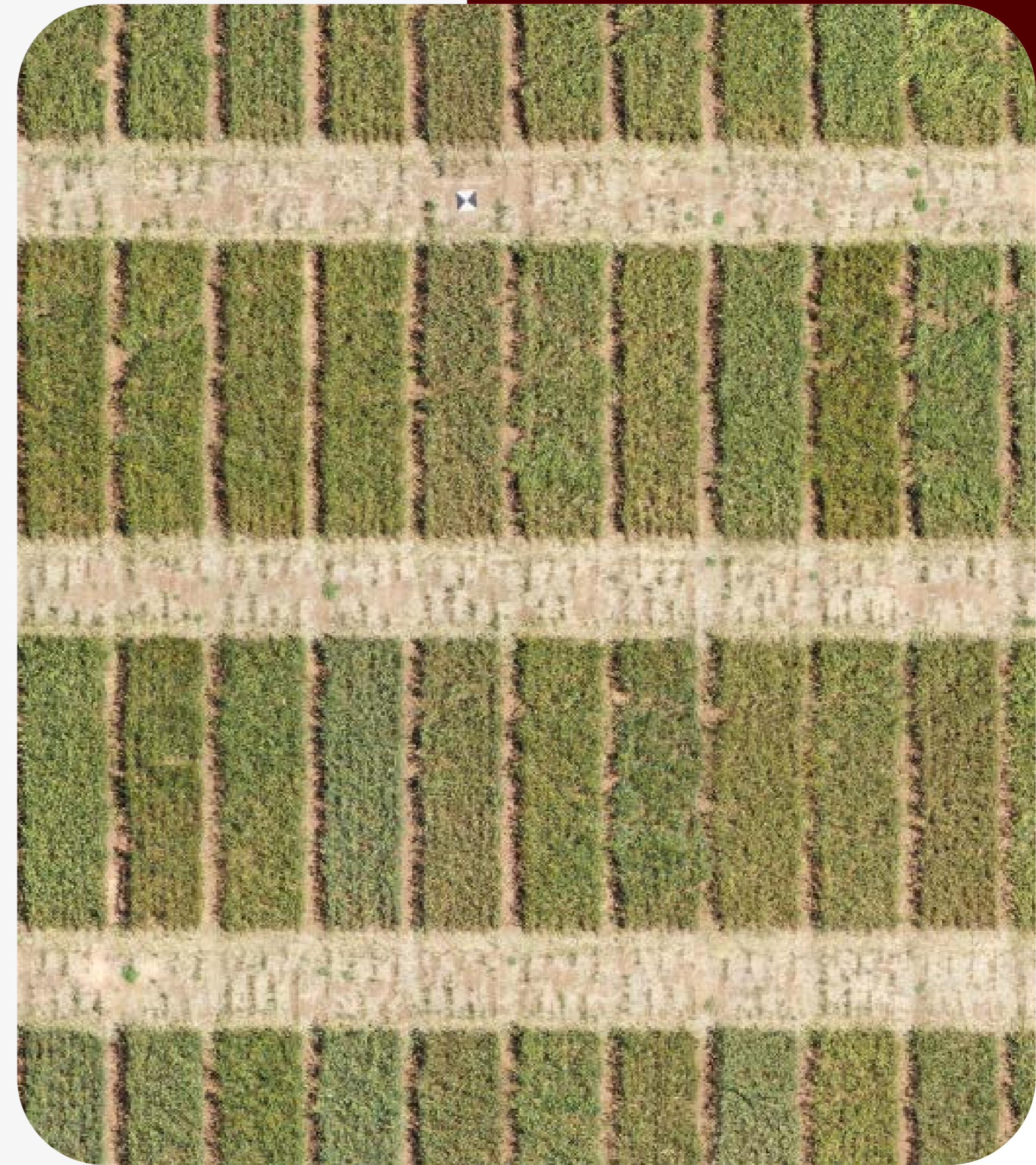


TEXAS A&M AGRILIFE

# Standard Data Collection

→ Shannon Baker  
Jinha Jung  
Nolan Bell



## Unmanned Aircraft Systems

[UAS en Español](#)[Getting Started](#)[Recreational Flyers & Modeler Community-Based Organizations](#)[Certificated Remote Pilots including Commercial Operators](#)[Public Safety and Government](#)[Education Users](#)[Critical Infrastructure & Public Venues](#)[Advanced Operations](#)[Programs, Partnerships & Opportunities](#)[Research & Development](#)[Resources & Other Topics](#)[Contact Us](#)[FAA Home](#) • [Unmanned Aircraft Systems](#)

## Unmanned Aircraft Systems (UAS)

**i** The Operations Over People rule became effective on April 21, 2021. Drone pilots operating under Part 107 may fly at night, over people and moving vehicles without a waiver as long as they meet the requirements defined in the rule. Airspace authorizations are still required for night operations in controlled airspace under 400 feet.

Whether you're a new drone pilot or have years of experience, rules and safety tips exist to help you fly safely in the national airspace. To get started, be sure to select which type of drone user you are and find out what rules and regulations apply to your specific situation. You can then begin researching where it is safe to fly and when you need approval to fly.

## What type of drone flyer are you?

[Recreational Flyer and Modeler Community-Based Organization](#)[Certificated Remote Pilot or Commercial Operator](#)

## Top Tasks

[Register your drone](#)[Download the B4UFLY Mobile App](#)[UAS en Español](#)[Keep your Remote Pilot Certificate Current](#)[Check out Hot Topics in UAS](#)

# FAA 14 CFR Part 107

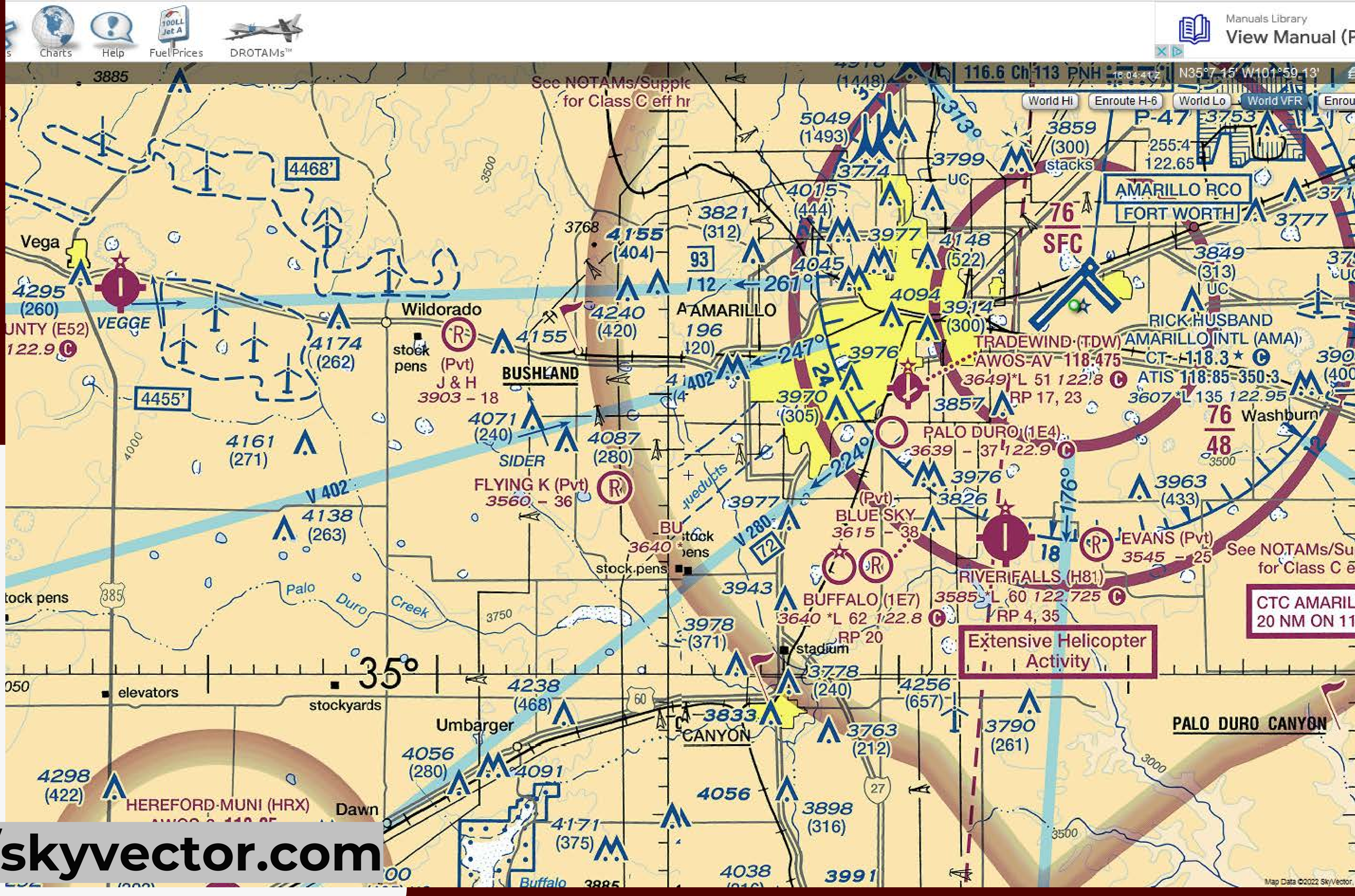
- Visual line-of-sight
- Remain below 400 feet AGL
- Operate during the day
- Operate below 100 mph
- Always yield the right of way to manned aircraft
- Do not operate over people
- Pilot must not operate the UAS from a moving vehicle
- 3 mile visibility
- No flying 3 miles from airport
- 1 pilot per drone



# Pre-Planning - Licensing

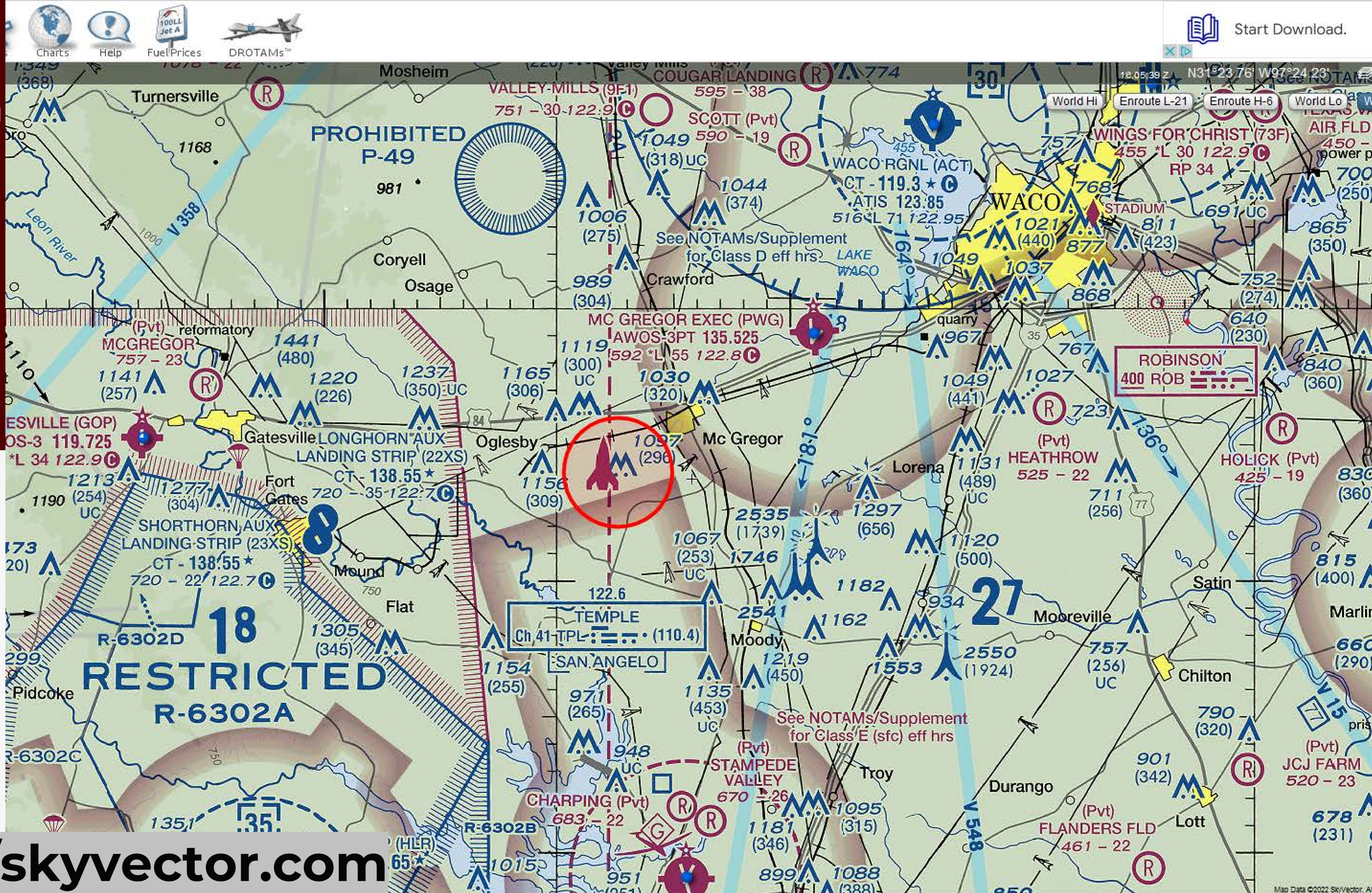
- Obtain FAA 14 CFR Part 107 Remote Pilot license
- FAA Knowledge Test
  - [https://www.faa.gov/uas/resources/policy\\_library/#107](https://www.faa.gov/uas/resources/policy_library/#107)
    - Obtain FAA Tracking Number (FTN)
    - Schedule test at an FAA- approved Knowledge Testing Center
    - Complete FAA Form 8710-13
- More details are available at [https://www.faa.gov/uas/commercial\\_operators/](https://www.faa.gov/uas/commercial_operators/)
- Renew currency every 2 years
- Register drone at <https://faadronezone.faa.gov/#/>





<http://skyvector.com>









# Pre-Planning – Institutional Requirements

Check with your institution's Risk Management department for regulations

# Pre-Planning – Field Layout

## Uniform Plot Size

GPS guidance  
GPS autotrip

## Group Trials Together

May need to rethink field layout  
Exclude certain trials

## Orientation of Field

Minimize aircraft turns by stacking trials

## Obstacles

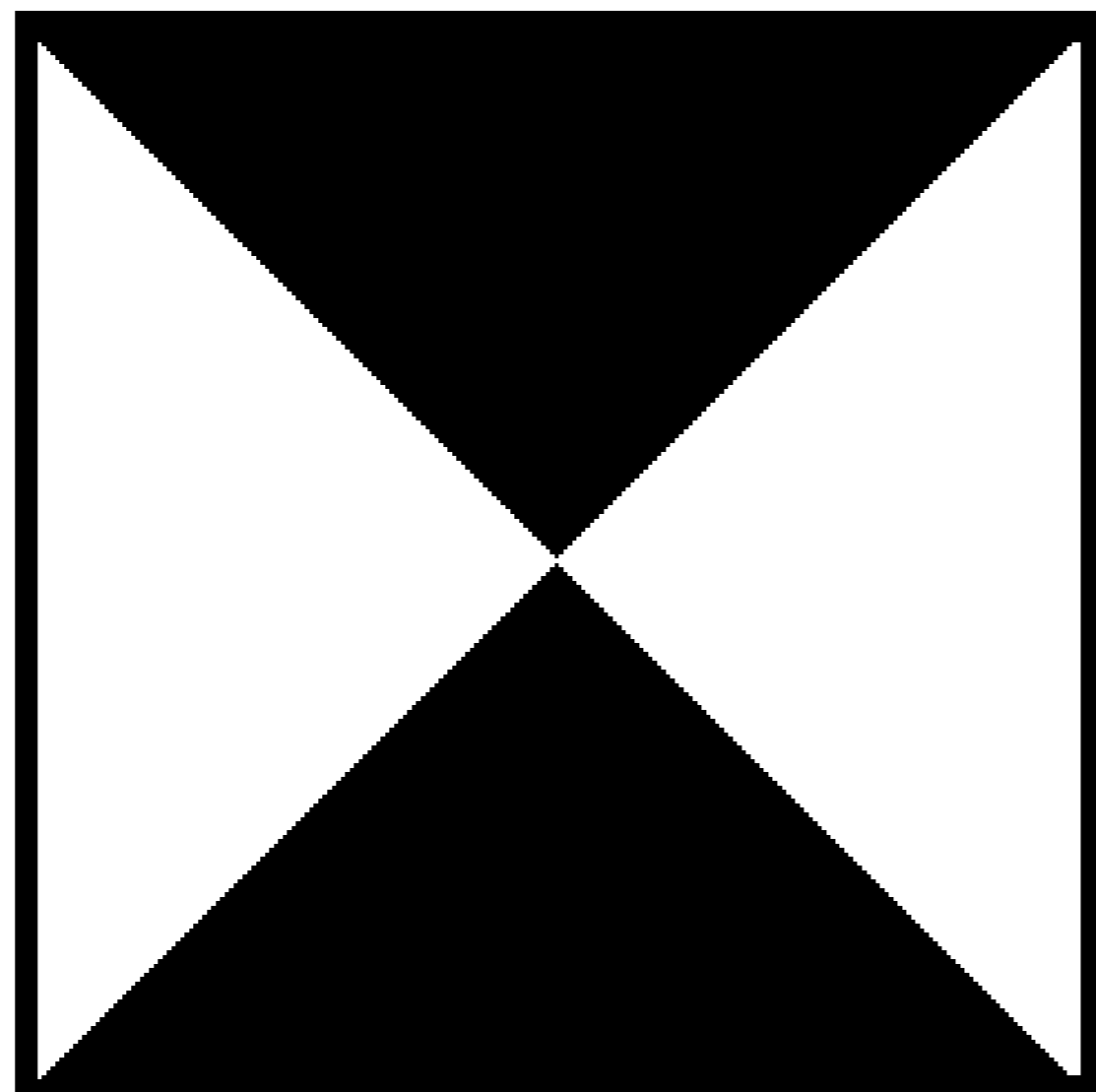
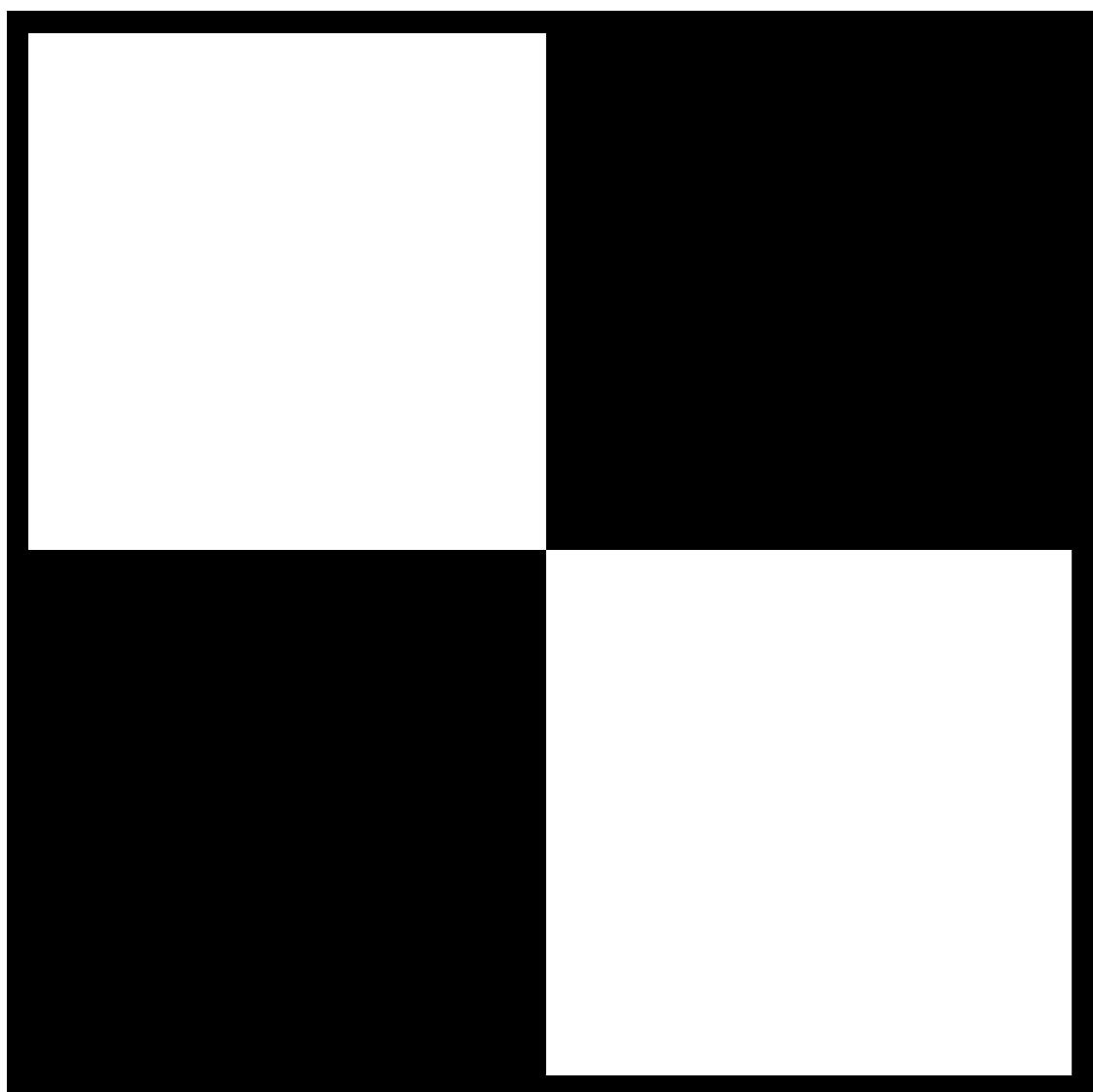
Trees  
Power lines  
Signal interference

## Wifi/Cellular Service

Flight app, GPS equipment

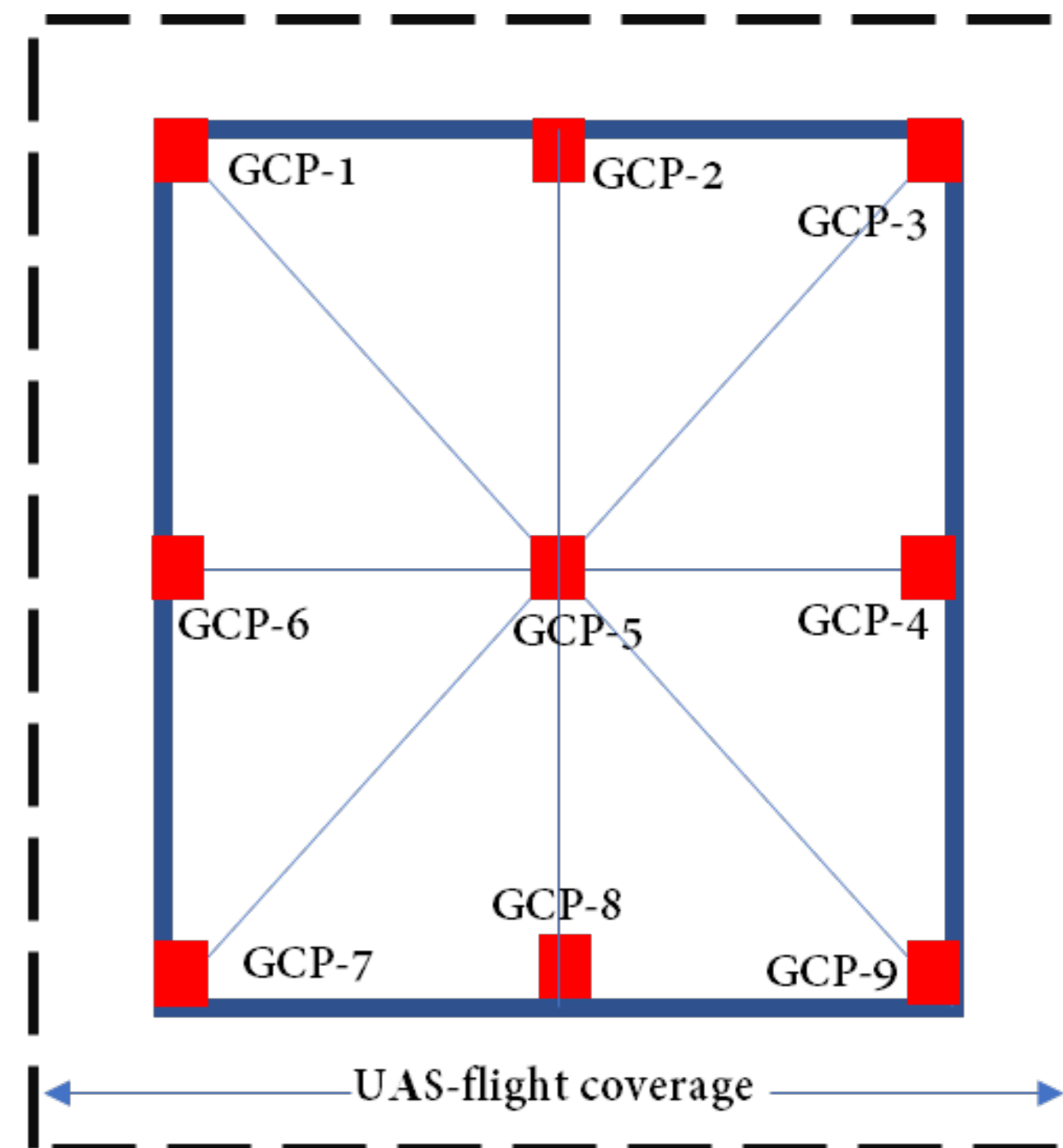
## What Else in Field?

GCPs  
Calibration tile or tarp  
Launch Pad



# Ground Control Points

- Materials
- Placement
- Leave in field?

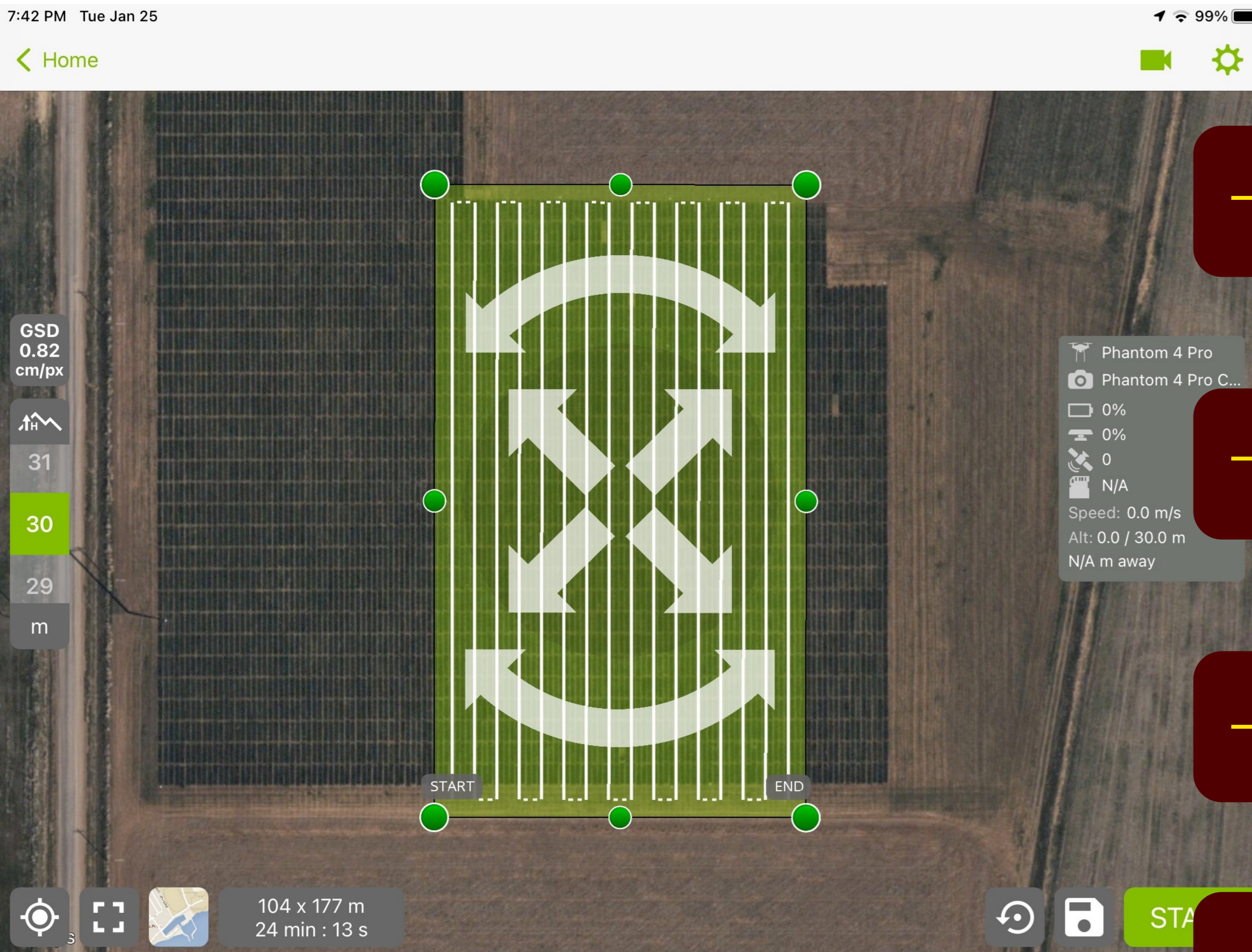








# Mission Planning



## RGB – DJI Phantom 4 Pro

20-m altitude  
85% frontlap & sidelap  
0.5 cm/pixel resolution

## Multispectral – Slanrange 3P

30-m altitude  
70% overlap  
1.5 cm/pixel resolution

## Battery life

< 20 minutes/battery  
Trade resolution for length of mission

## RECOMMENDED SPECIFICATIONS

**20-30-m altitude**  
**80-85% overlap for Phantom, 70% overlap for S3P**



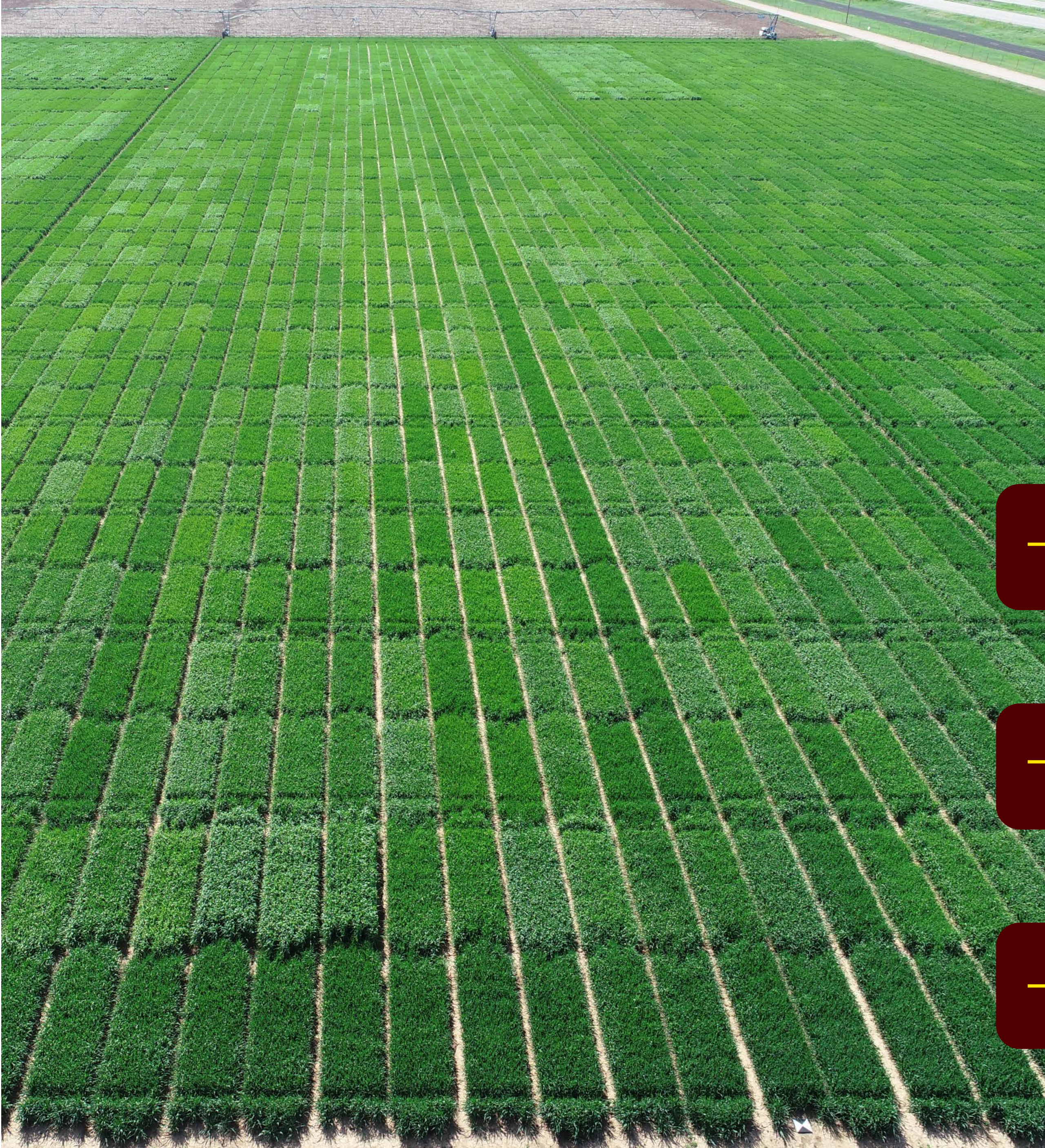


# It's Time to Fly!

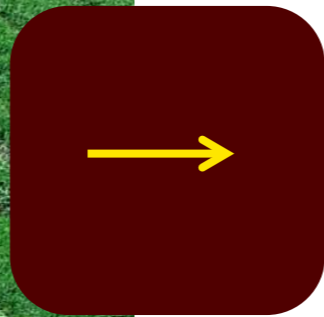
- 4-hr window around Solar Noon
- Clear, unobstructed skies OR uniform overcast sky
- Wind <20 mph, prefer <15 mph
- Create Mission
  - Power on aircraft and walk the boundary to confirm
    - Re-using mission at new altitude, check boundaries again!
- Regulatory approval if needed
- Aircrafts, sensors, batteries, GPS equipment, GCPs, Calibration tile, launchpad
- Laptop to check images, clear SD Cards
- Survey GCPs
- Launch position depends on mission size







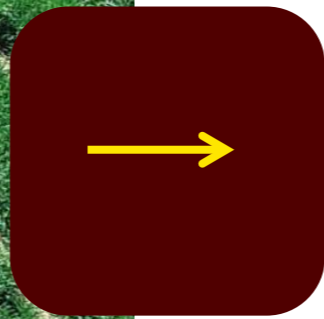
# Mission Monitoring



## App Diagnostics

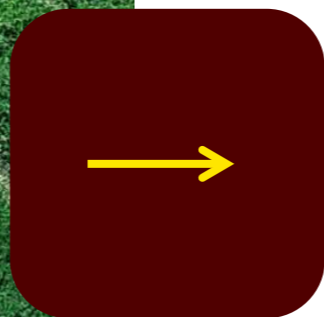
Battery  
Speed

Altitude  
SD card memory



## Sensors Diagnostics

Warning lights



## Incursion

sUAS must always cede airspace to manned aircraft

Phantom 4 Pro  
Phantom 4 Pro C...  
83%  
84%  
17  
106.03 GB  
Speed: 0.0 m/s  
Alt: 0.0 / 15.0 m  
N/A m away





# Contact Us

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