Mission planning

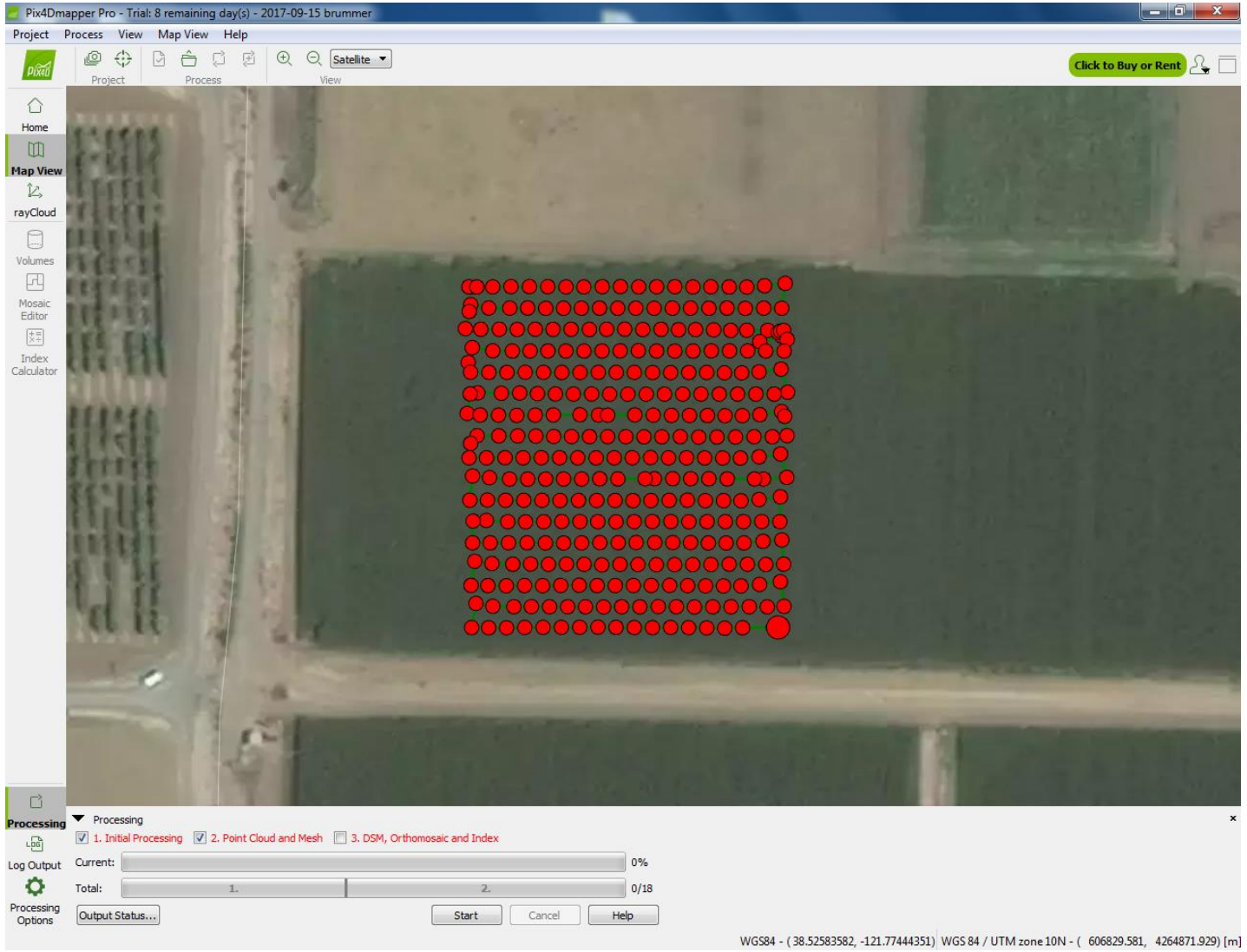
Part I: Theory and background

Part II: Example walkthrough (DJI GS Pro)

Mission planning

- Using a mission planning app is essential to get uniform/desired image spacing

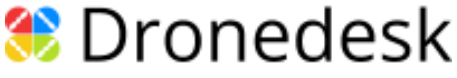
- If you ever try getting imagery without a mission planning app… it will look like the pilot was 🥴🥴🥴



Mission planning

- Several options are available, consider which is best for your needs

Pix4Dcapture



DroneDeploy

Mission planning

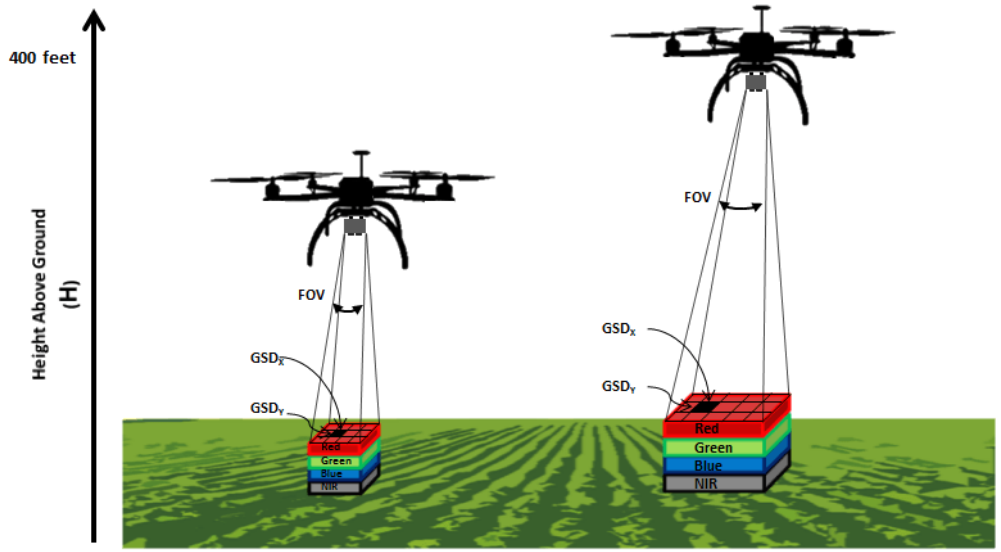
- Considerations before choosing an app
  - Compatibility with device, UAS, cameras
  - Mission resume, repeatability
  - Flexibility vs. ease of use
  - Probability of error

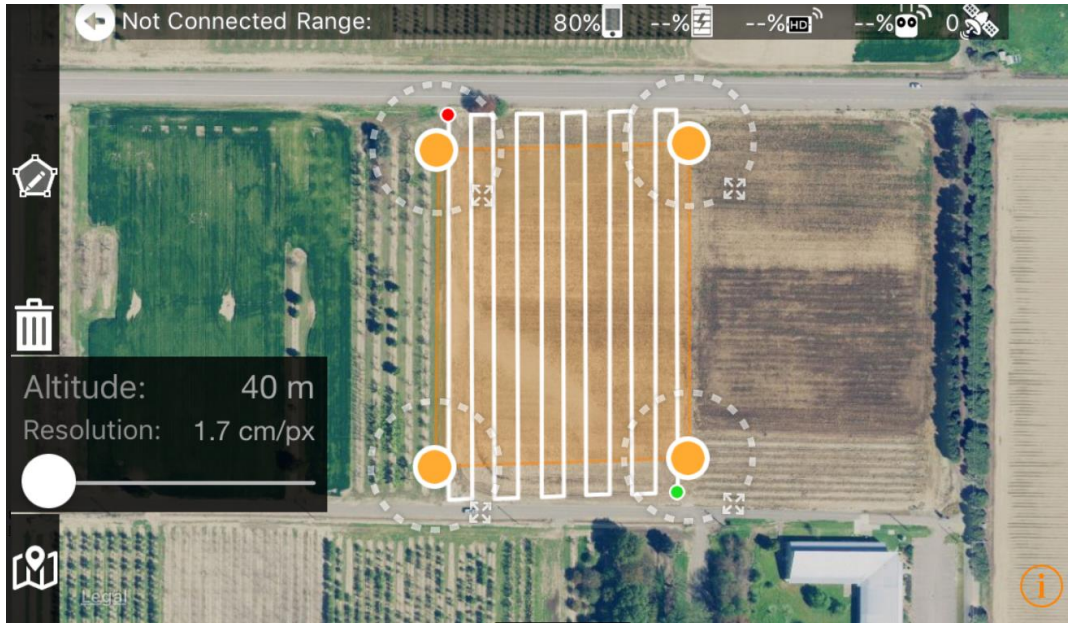
- Most are free or inexpensive… try several!

- When buying equipment, ask the sales representative about recommendations for your combination of aircraft, device, cameras, and project requirements

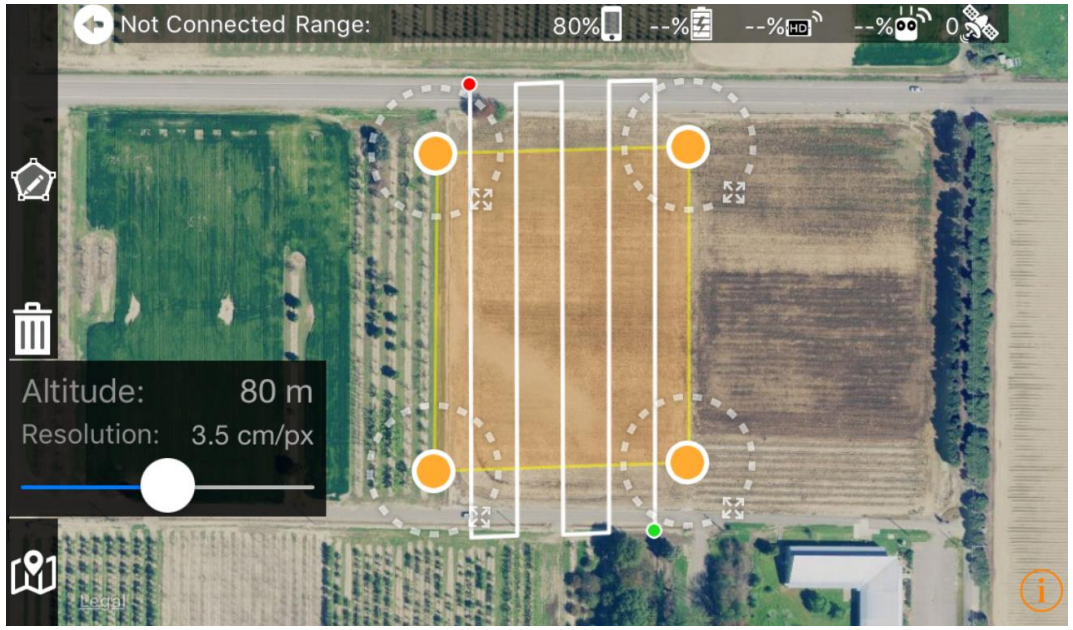
Mission planning

- Trade-offs
  - Higher altitude=more area/time, but lower resolution.





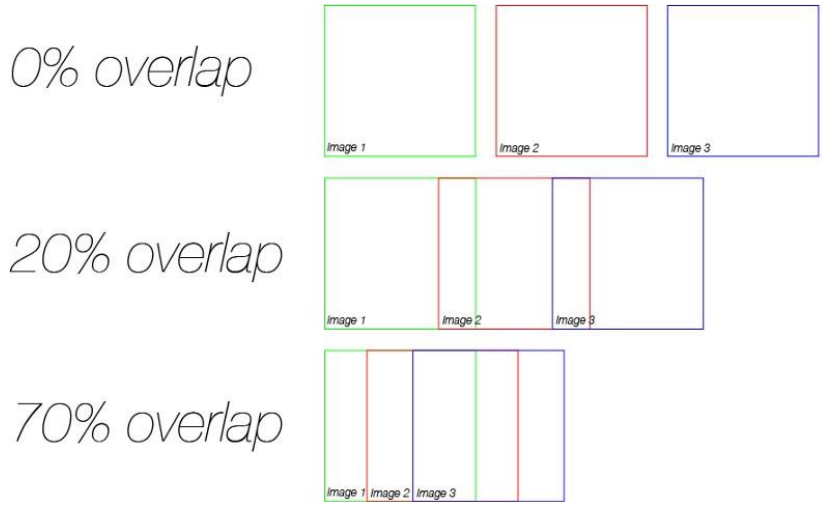
Altitude: 40m; Overlap: 75/85; Time: 9m 21s



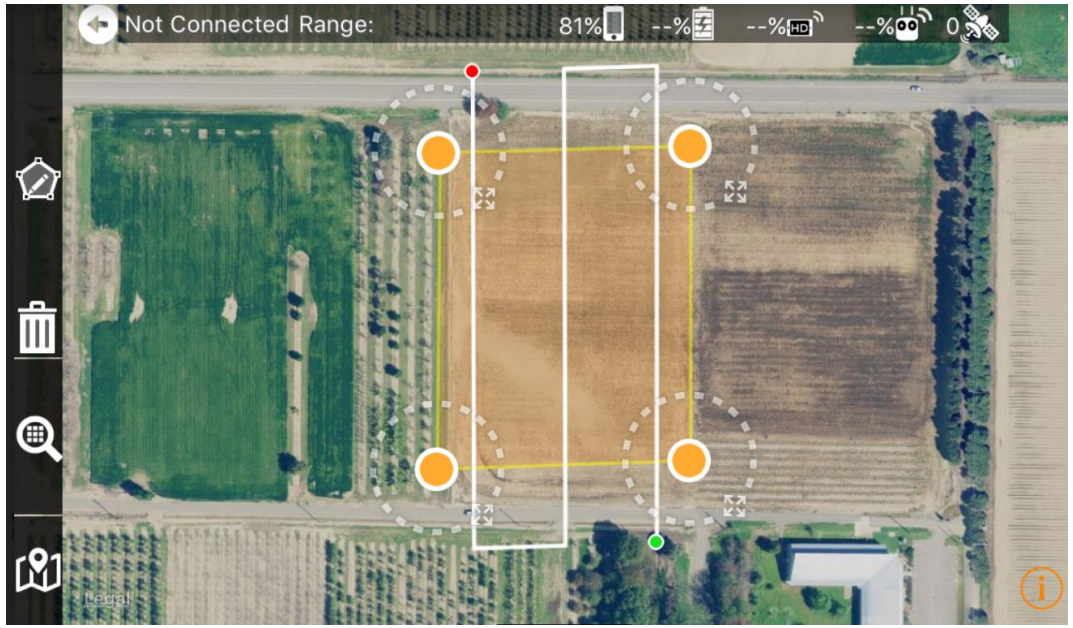
Altitude: 80m; Overlap: 75/85; Time: 4m 12s

Mission planning

- Trade-offs
  - Higher overlap increases stitching quality, but reduces area/time
  - Ideal overlap depends on mapped surface



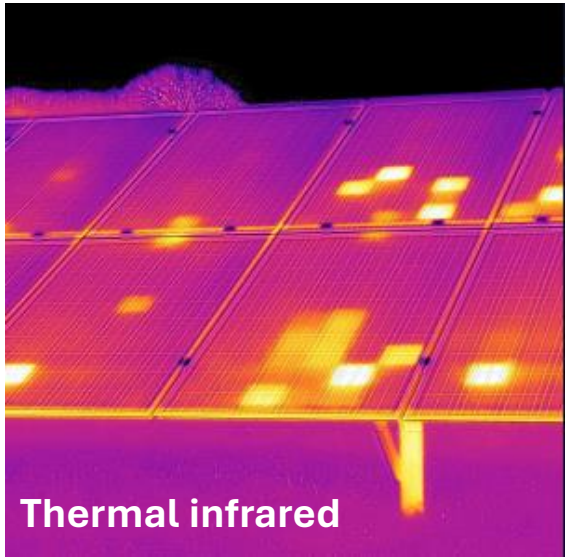
Altitude: 80m; Overlap: 75/85; Time: 4m 12s

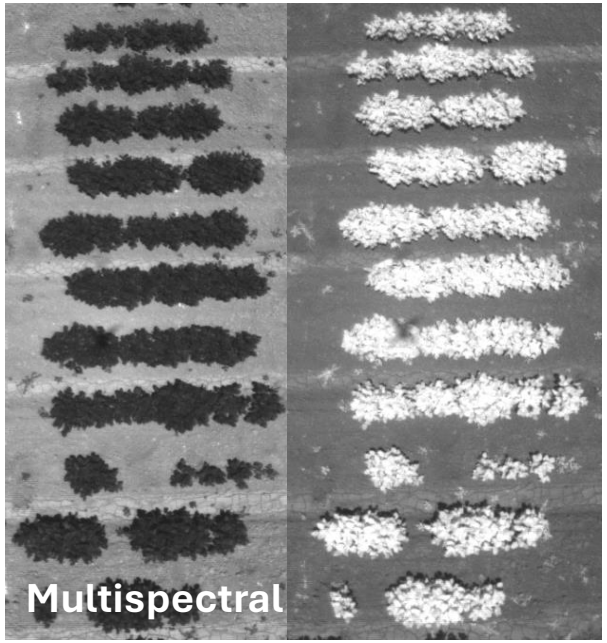


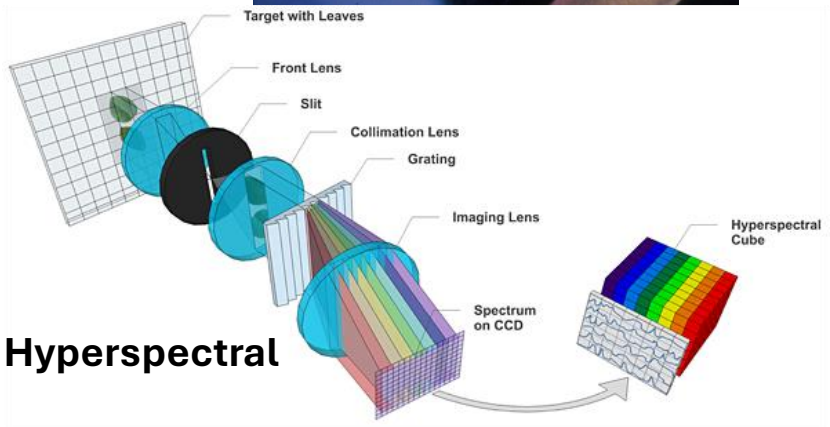
Altitude: 80m; Overlap: 70/70; Time: 3m 11s

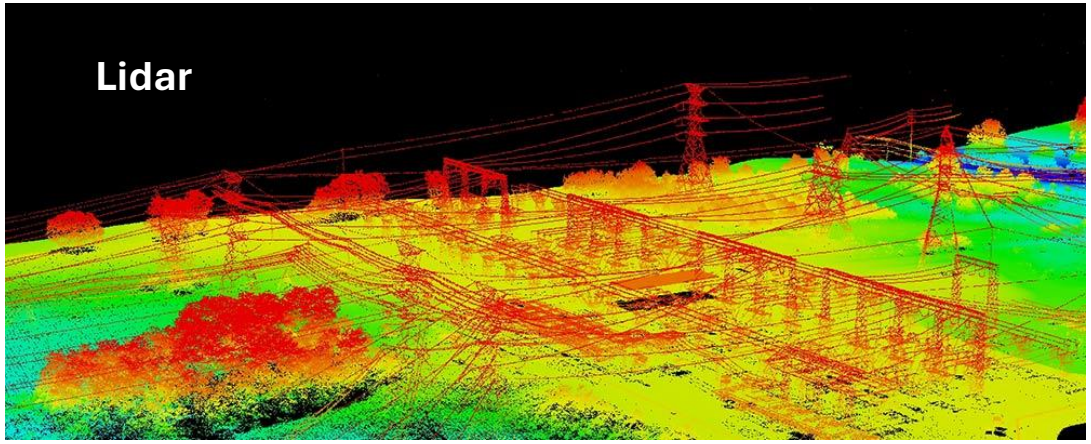
Choosing the right sensor

- RGB
- Thermal
- Multispectral
- Hyperspectral
- Lidar





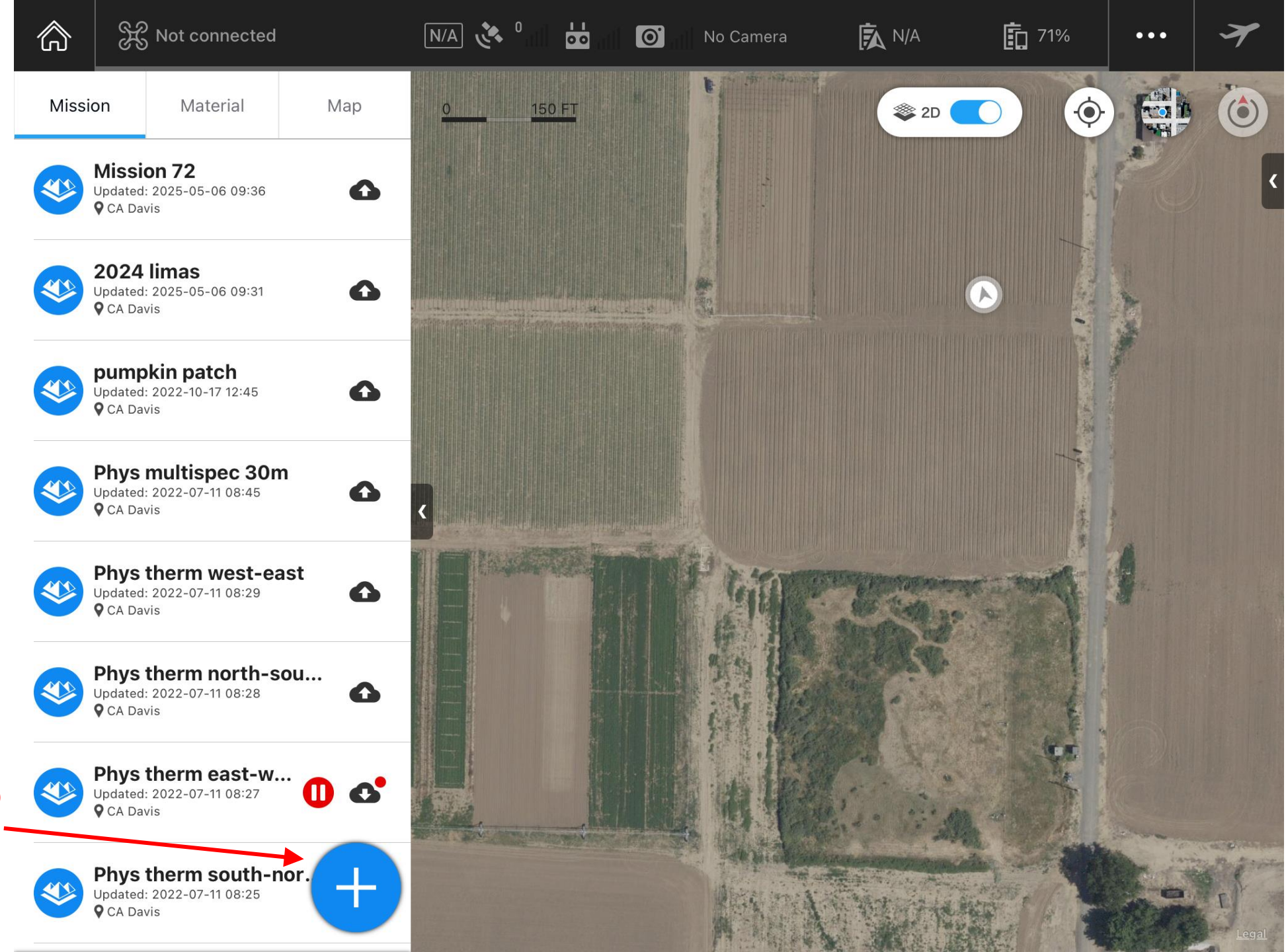


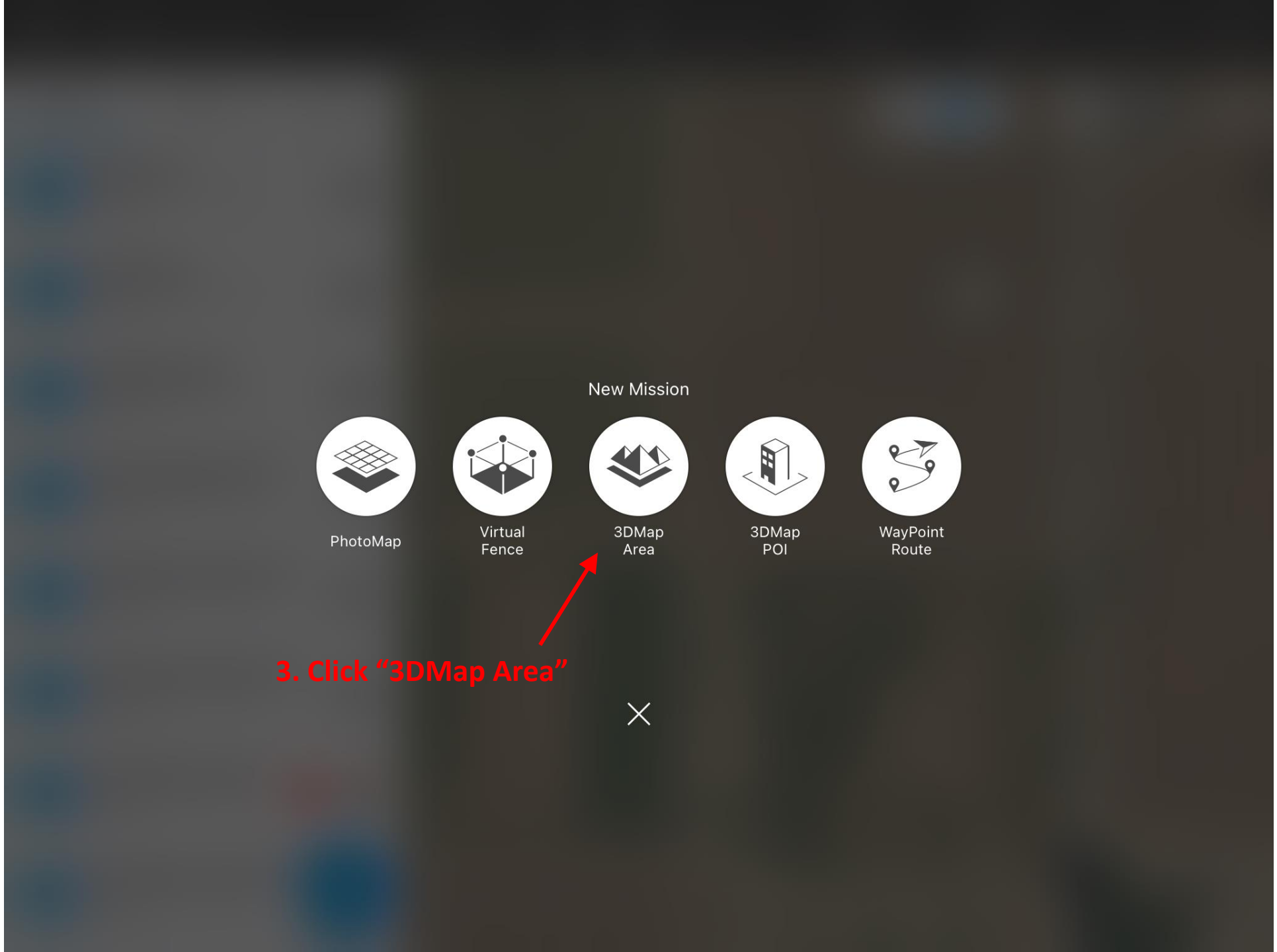


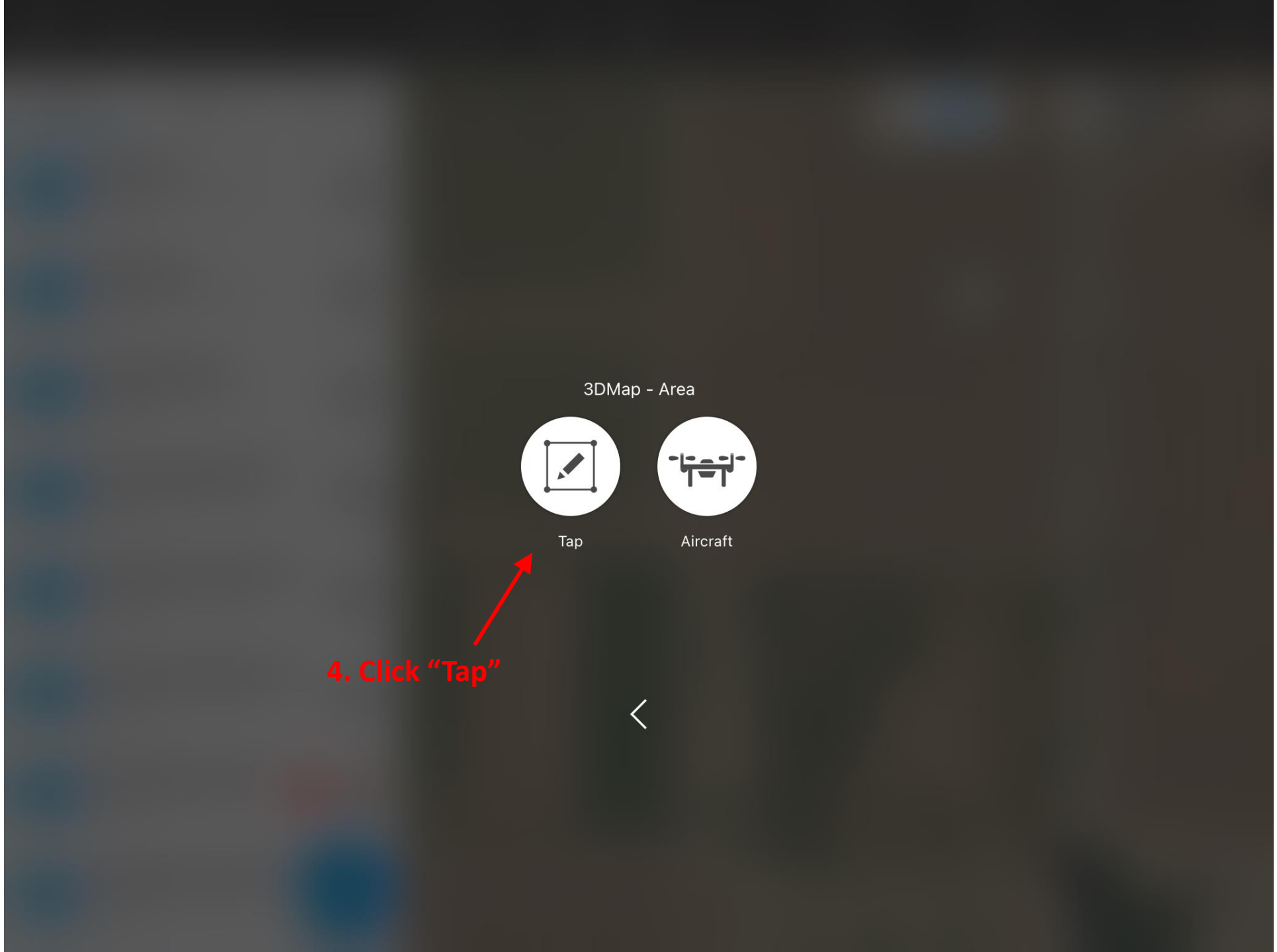
Part II: Example walkthrough with DJI GS Pro

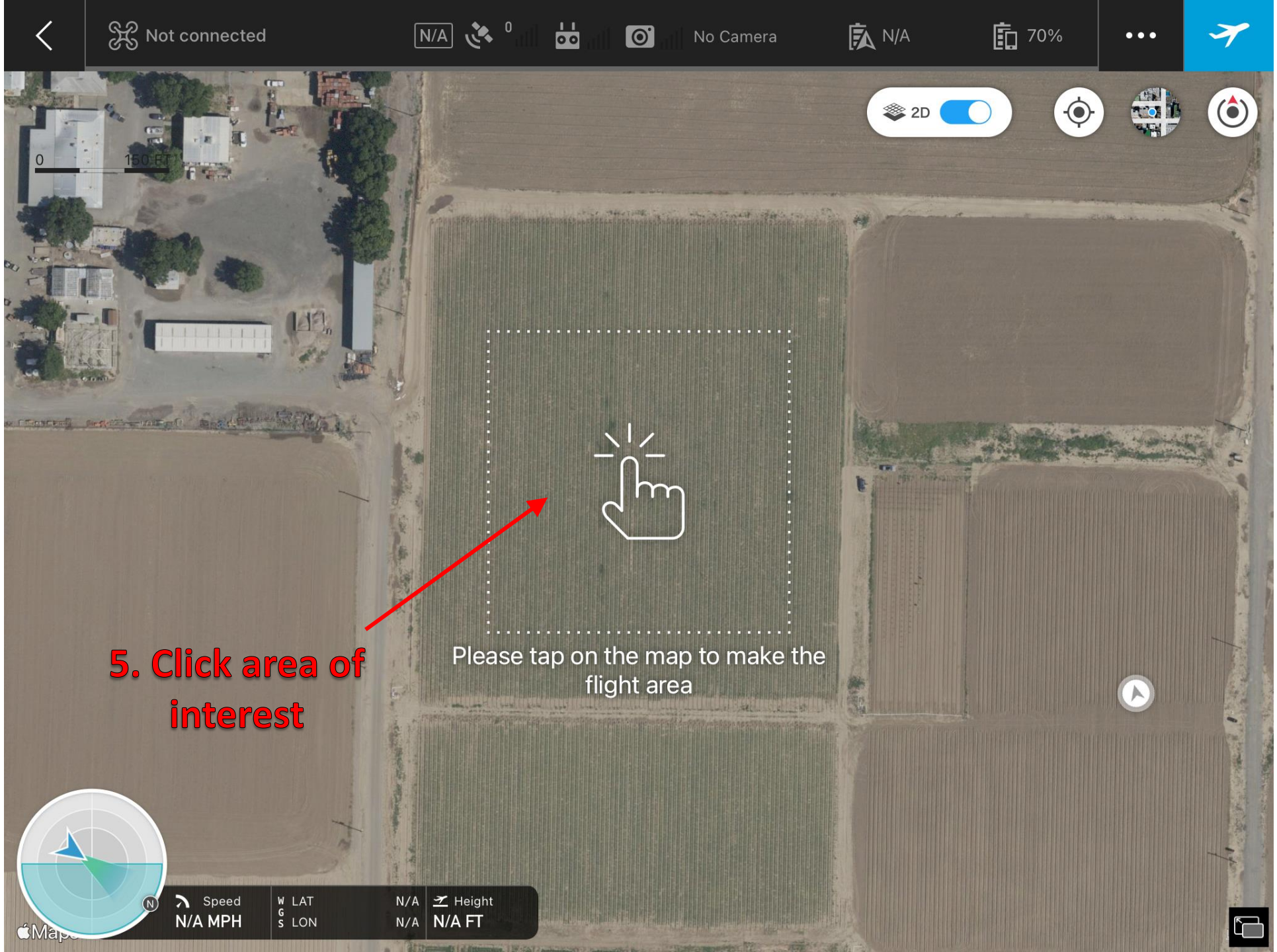
1. Install app from preferred store, open by clicking icon

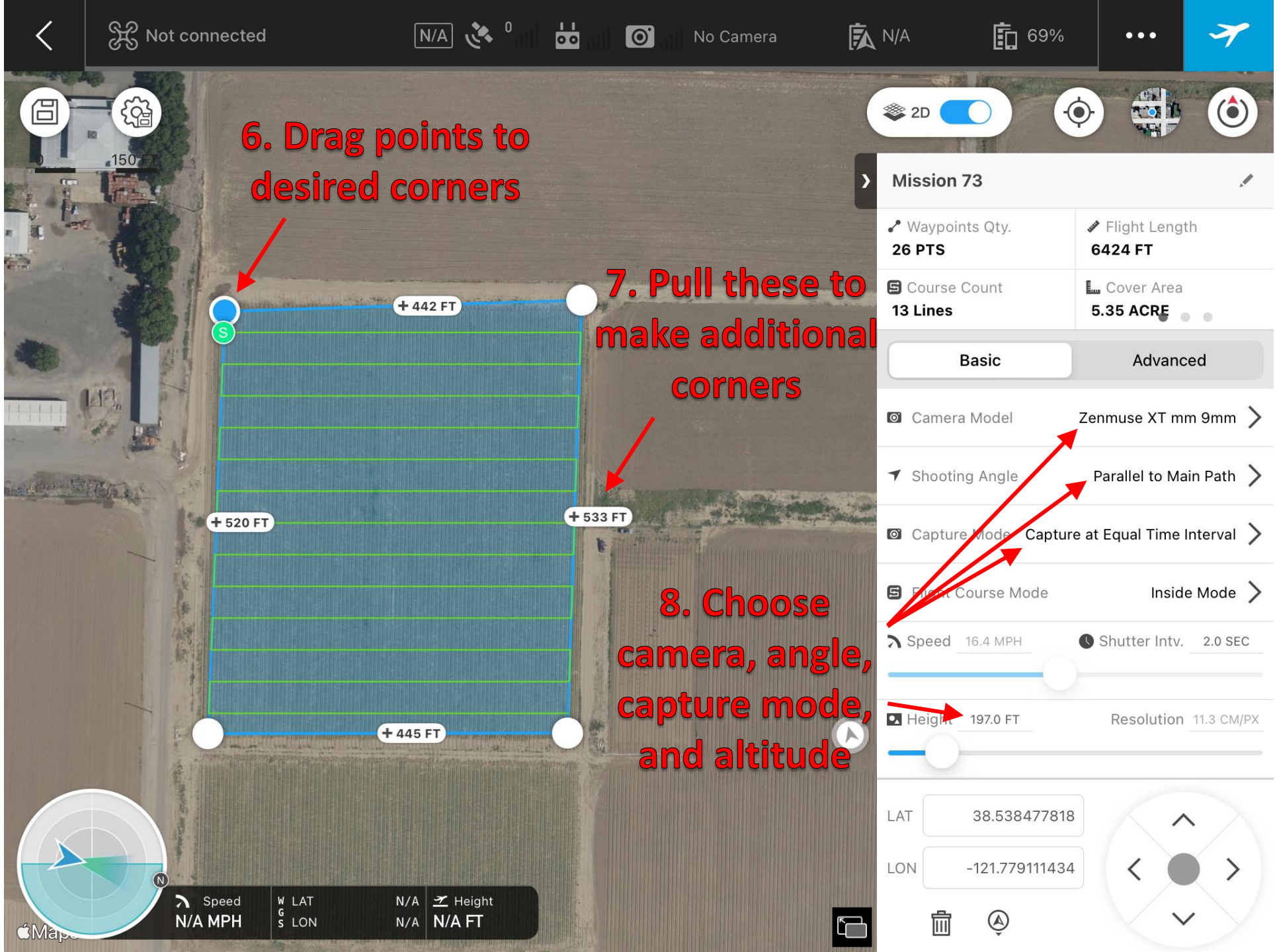
2. Click the + symbol to create a new mission

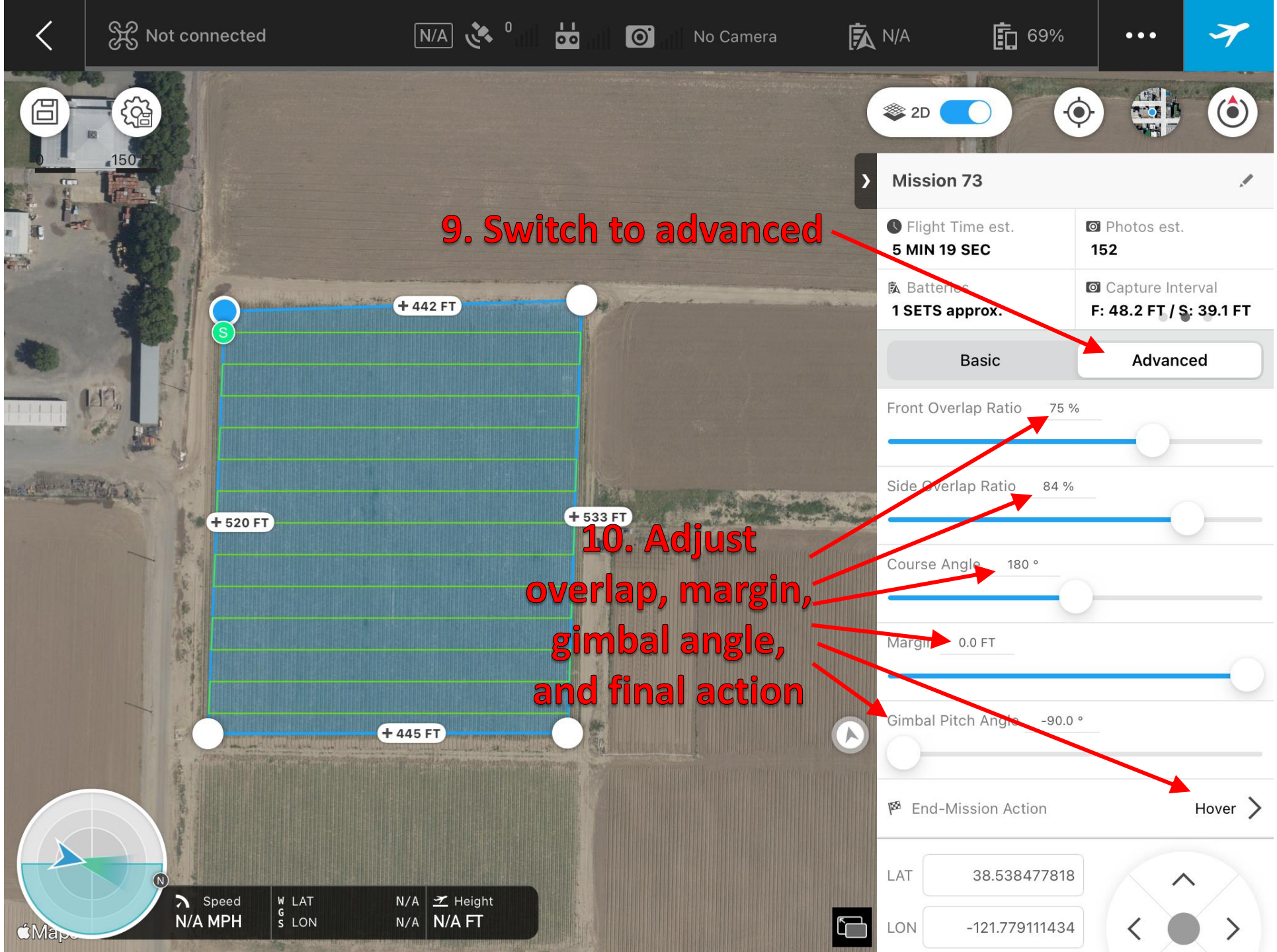


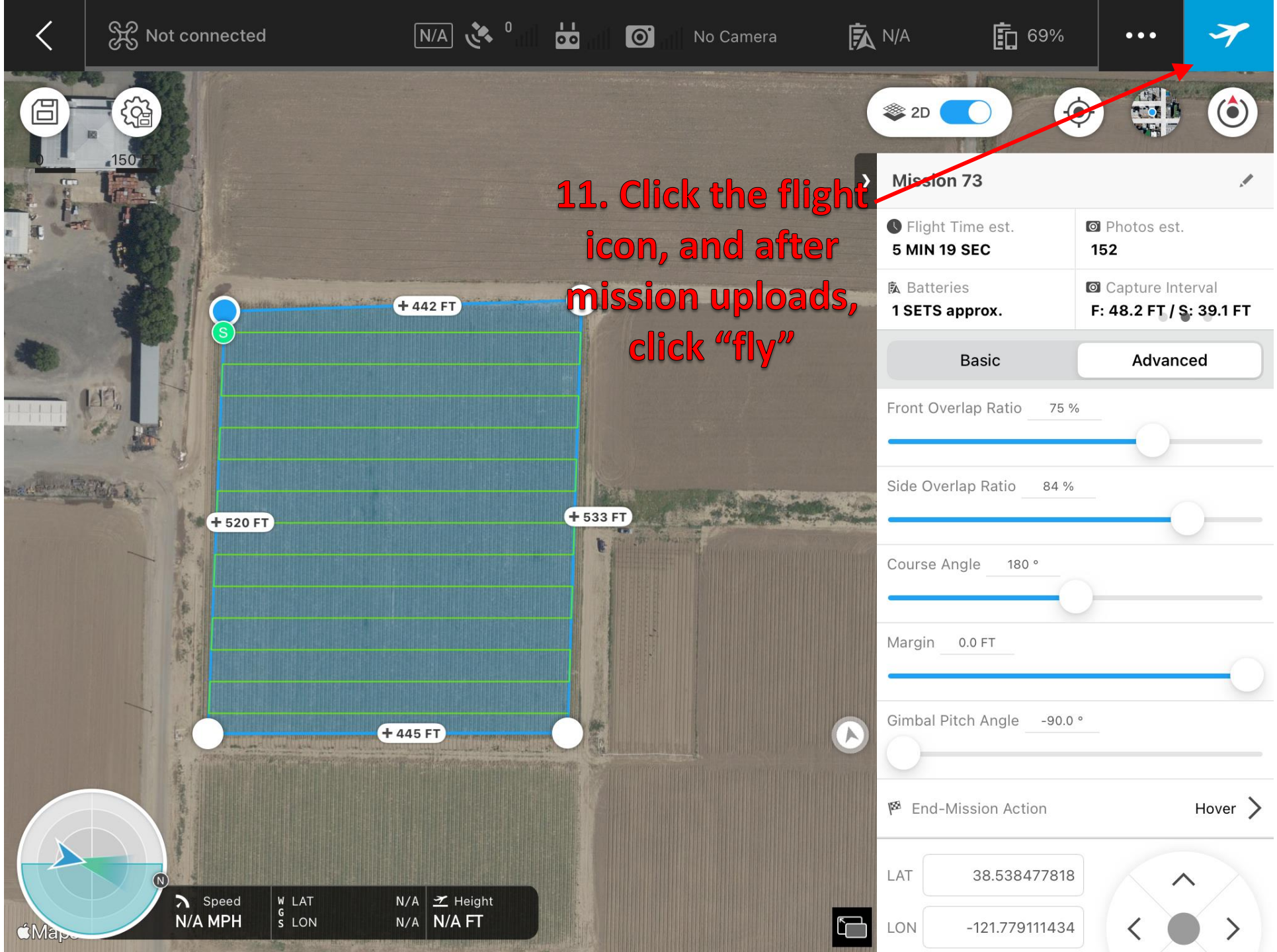

New Mission
PhotoMap
Virtual Fence
3DMap Area
3DMap POI
WayPoint Route
3. Click “3DMap Area”


3DMap - Area
Tap
Aircraft
4. Click “Tap”


Not connected
N/A
0
No Camera
N/A
70%
2D
0
150 FT
Please tap on the map to make the flight area
5. Click area of interest
Speed
N/A MPH
W LAT
G
S LON
N/A
N/A
Height
N/A FT


Not connected
N/A
No Camera
N/A
69%
2D
6. Drag points to desired corners
7. Pull these to make additional corners
8. Choose camera, angle, capture mode, and altitude
+ 442 FT
+ 520 FT
+ 533 FT
+ 445 FT
150 FT
Mission 73
Waypoints Qty.
26 PTS
Flight Length
6424 FT
Course Count
13 Lines
Cover Area
5.35 ACRE
Basic
Advanced
Camera Model
Zenmuse XT mm 9mm
Shooting Angle
Parallel to Main Path
Capture Mode
Capture at Equal Time Interval
Flight Course Mode
Inside Mode
Speed
16.4 MPH
Shutter Intv.
2.0 SEC
Height
197.0 FT
Resolution
11.3 CM/PX
LAT
38.538477818
LON
-121.779111434
Speed
N/A MPH
LAT
LON
N/A
N/A
Height
N/A FT


Not connected
N/A
No Camera
N/A
69%
2D
150 FT
9. Switch to advanced
+ 442 FT
+ 520 FT
+ 533 FT
+ 445 FT
10. Adjust overlap, margin, gimbal angle, and final action
Mission 73
Flight Time est.
5 MIN 19 SEC
Photos est.
152
Batteries
1 SETS approx.
Capture Interval
F: 48.2 FT / S: 39.1 FT
Basic
Advanced
Front Overlap Ratio 75 %
Side Overlap Ratio 84 %
Course Angle 180 °
Margin 0.0 FT
Gimbal Pitch Angle -90.0 °
End-Mission Action
Hover
LAT 38.538477818
LON -121.779111434
Speed
N/A MPH
W LAT N/A
G
S LON N/A
Height
N/A FT


Not connected
N/A
0
No Camera
N/A
69%
2D
11. Click the flight icon, and after mission uploads, click “fly”
Mission 73
Flight Time est.
5 MIN 19 SEC
Photos est.
152
Batteries
1 SETS approx.
Capture Interval
F: 48.2 FT / S: 39.1 FT
Basic
Advanced
Front Overlap Ratio 75 %
Side Overlap Ratio 84 %
Course Angle 180 °
Margin 0.0 FT
Gimbal Pitch Angle -90.0 °
End-Mission Action
Hover
LAT 38.538477818
LON -121.779111434
+ 442 FT
+ 520 FT
+ 533 FT
+ 445 FT
150 FT
Speed
N/A MPH
W LAT
G N/A
S LON
N/A
Height
N/A FT