

mapping w/ drones + open source in a humanitarian context

Dan Joseph
@danbjoseph



calimapnerd 11:47 PM

uploaded this image: [Slack for Android Upload](#)



giblet 11:48 PM

jokes on them, ours is fixed wing



International Federation of Red Cross and Red Crescent Societies



ICRC



**American
Red Cross**



**South Sudan
Red Cross**



**Deutsches
Rotes
Kreuz**



日本赤十字社
Japanese Red Cross Society



Mapping
89%



Monitoring
68%



Search &
Rescue
49%



Delivery
36%



Public
information
30%



Other
14%

Are **HUMANITARIANS** interested in drones?



Let's **MAP** with drones!



Satellite imagery - DigitalGlobe-Standard



Drone imagery, 2017-05-23 - CC-BY 4.0 Open Imagery Network (danbjoseph)

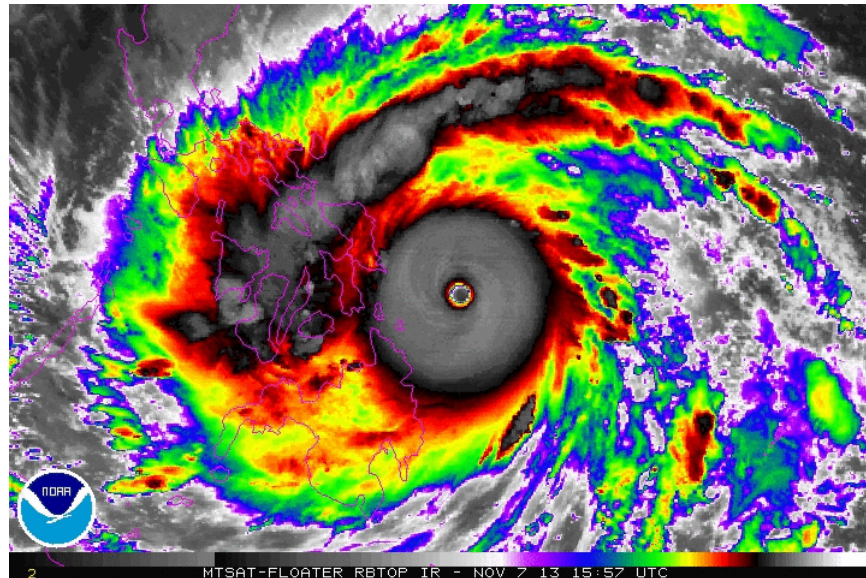
Why drone **IMAGERY**?



American
Red Cross

Tindog Tabang Leyteño

Stand Up, Help Leyteños





100_DJI_0302.JPG



100_DJI_0303.JPG



100_DJI_0304.JPG



100_DJI_0305.JPG



100_DJI_0306.JPG



100_DJI_0307.JPG



100_DJI_0308.JPG



100_DJI_0309.JPG



100_DJI_0310.JPG



100_DJI_0311.JPG



100_DJI_0312.JPG



100_DJI_0313.JPG



100_DJI_0314.JPG



100_DJI_0315.JPG



100_DJI_0316.JPG



100_DJI_0317.JPG



100_DJI_0318.JPG



100_DJI_0319.JPG



100_DJI_0320.JPG



100_DJI_0321.JPG



100_DJI_0322.JPG



100_DJI_0323.JPG



100_DJI_0324.JPG



100_DJI_0325.JPG



100_DJI_0326.JPG



100_DJI_0327.JPG

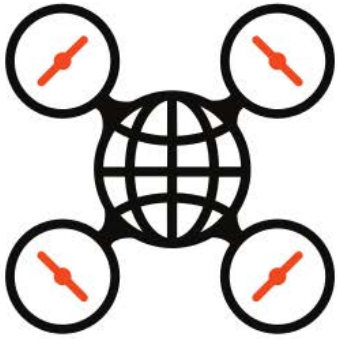


100_DJI_0328.JPG

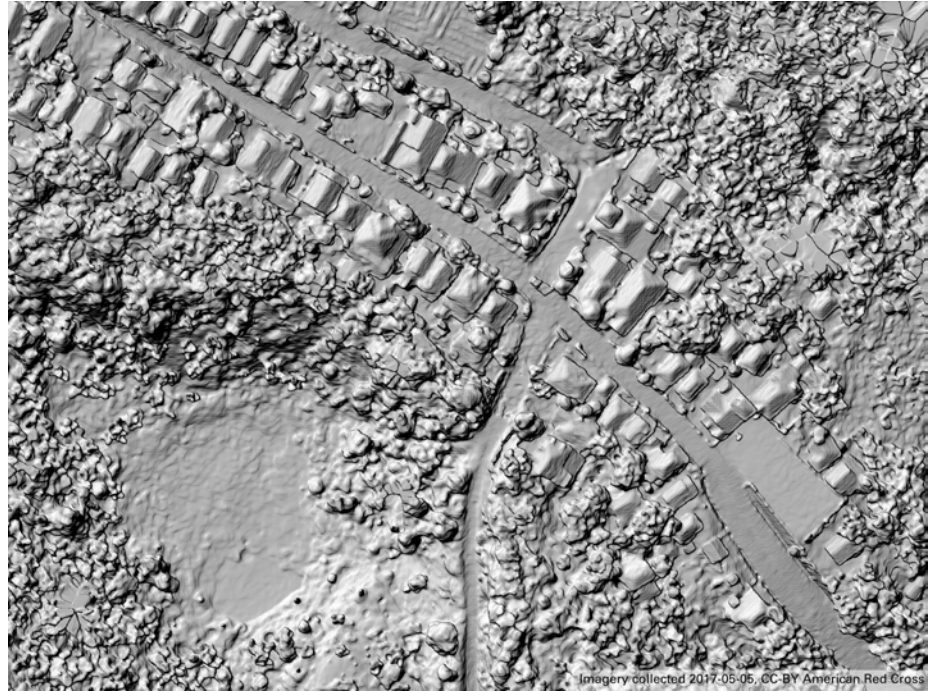


100_DJI_0329.JPG

take **A LOT** of pictures



OpenDroneMap





OpenAerialMap

The screenshot shows the OpenAerialMap web browser interface. The main map displays a 3D aerial view of a village with red-roofed houses and green hills. A search bar at the top left contains the text "Search location". The browser address bar shows the URL: <https://map.openaerialmap.org/#/124.95520770549773,11.25408986978359,17/132312223323101/594ab645b0eae7f...>

A metadata panel is open on the right side of the map, displaying the following information:

- Barangay Palanog 37A, Tacloba...**
- 1 of 1 results
- PREVIEW **Thumbnail** TMS None
- <https://tiles.openaerial> **Download**
- DATE: 2017-05-14
- RESOLUTION: 3 cm
- TYPE: Image + Map Layer
- IMAGE SIZE: 78.28 MB
- PLATFORM: uav
- SENSOR: DJI Mavic Pro
- PROVIDER: American Red Cross

At the bottom of the browser window, the footer text reads: Leaflet | © Mapbox © OpenStreetMap | Report an issue with this map

OpenStreetMap, yeah!

The screenshot displays the OpenStreetMap web interface. At the top, the 'OpenStreetMap' logo is on the left, and navigation links for 'Edit', 'History', and 'Export' are in the center. On the right, there are links for 'GPS Traces', 'User Diaries', 'Copyright', 'Help', and 'About', along with a user profile for 'danbjoseph'. The main map area shows an aerial view of a residential area with a basketball court highlighted in green and outlined in orange. A toolbar at the top of the map includes 'Point', 'Line', 'Area', and 'Save' buttons. On the right side of the map, there are zoom and navigation controls. The left sidebar is titled 'Edit feature' and contains a form for editing the 'Basketball Court' feature. The form includes a 'Name' field, a 'Surface' dropdown menu, a 'Hoops' field, a 'Lit' dropdown menu, and an 'Allowed Access' dropdown menu. An 'Add field' section is at the bottom of the form. At the bottom of the page, there is a scale bar for 50 feet and a version number '2.2.1'.

OpenStreetMap Edit History Export

GPS Traces User Diaries Copyright Help About danbjoseph

Edit feature

Basketball Court i

▼ All fields

Name i

Common name (if any) +

Surface i

asphalt, unpaved, paved... ▼

Hoops i

1, 2, 4... ▼ ▲

Lit i

Unknown

Allowed Access i

permissive, private, customers... ▼

Add field: Address, Description, Elevation... ▼

[View on openstreetmap.org](#)

50 ft 2.2.1

#3236 - Barangay Palanog 37A, Tacloban, Leyte - Missing Maps



Description

Instructions

Contribute

Activity

Stats



Changeset Comment

#hotosm-project-3236 #missingmaps #redcross

When saving your work, please leave the default comment but add what you actually mapped, for example "added buildings and a residential road".

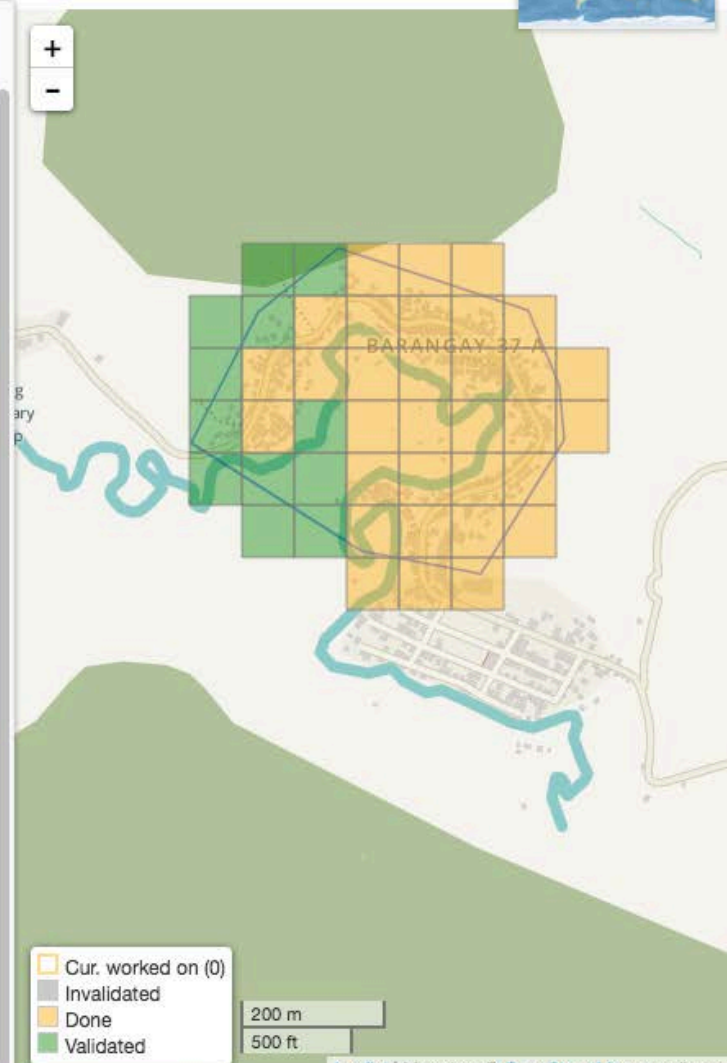
Imagery

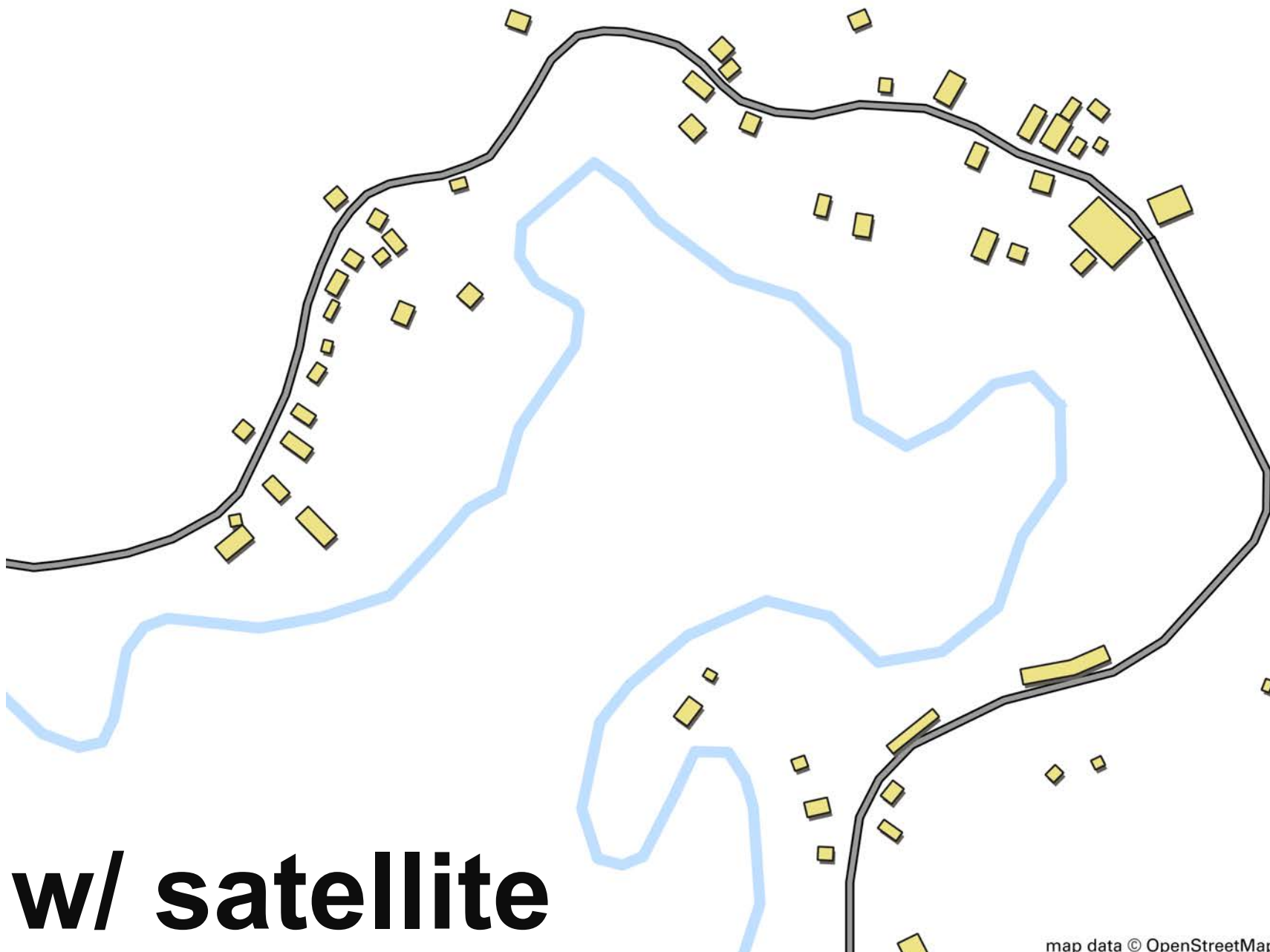
```
tms[22]:https://tiles.openaerialmap.org/594ab0651b114600111194a1/0/36a6eda3-3754-4f70-9006-230b8c024569/{z}/{x}/{y}.png
```

Please use the provided drone imagery.

Buildings

- Please accurately outline all the buildings you can find. The outline should be for the full size of the building even if it is partly covered by trees in the imagery.
- Most buildings are rectangular, after drawing the outline, use the 's' key in the iD web editor to "square" the corners.
- For circular buildings there is the 'o' key in the iD editor to create a circular structure.
- Many buildings are very close, but do not actually touch each other, try to map them close to each other without letting them connect or share nodes with each other, roads or residential area outlines. In the iD web editor, holding down the "alt" key will keep nodes of "snapping" to each other and accidentally connecting.
- In the iD web editor, the first time you map a building you will use the "Building Features" category and then at the top of the list select "Building" again, this is the most generic building tag we can use as we almost never can tell the more specific use of any building from imagery alone.



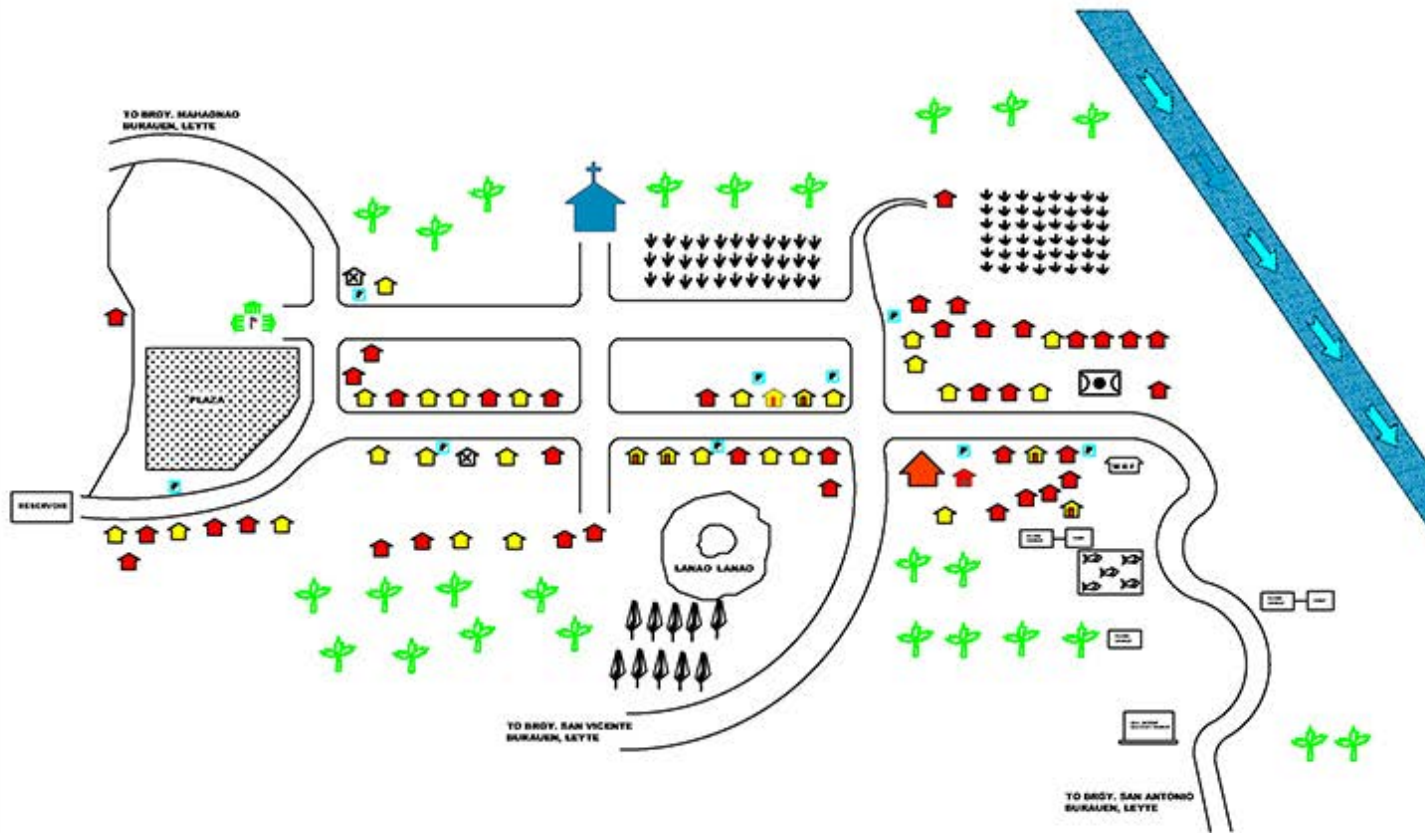


w/ satellite



w/ drone

BRGY. LANAWAN MAC ARTHUR, LEYTE



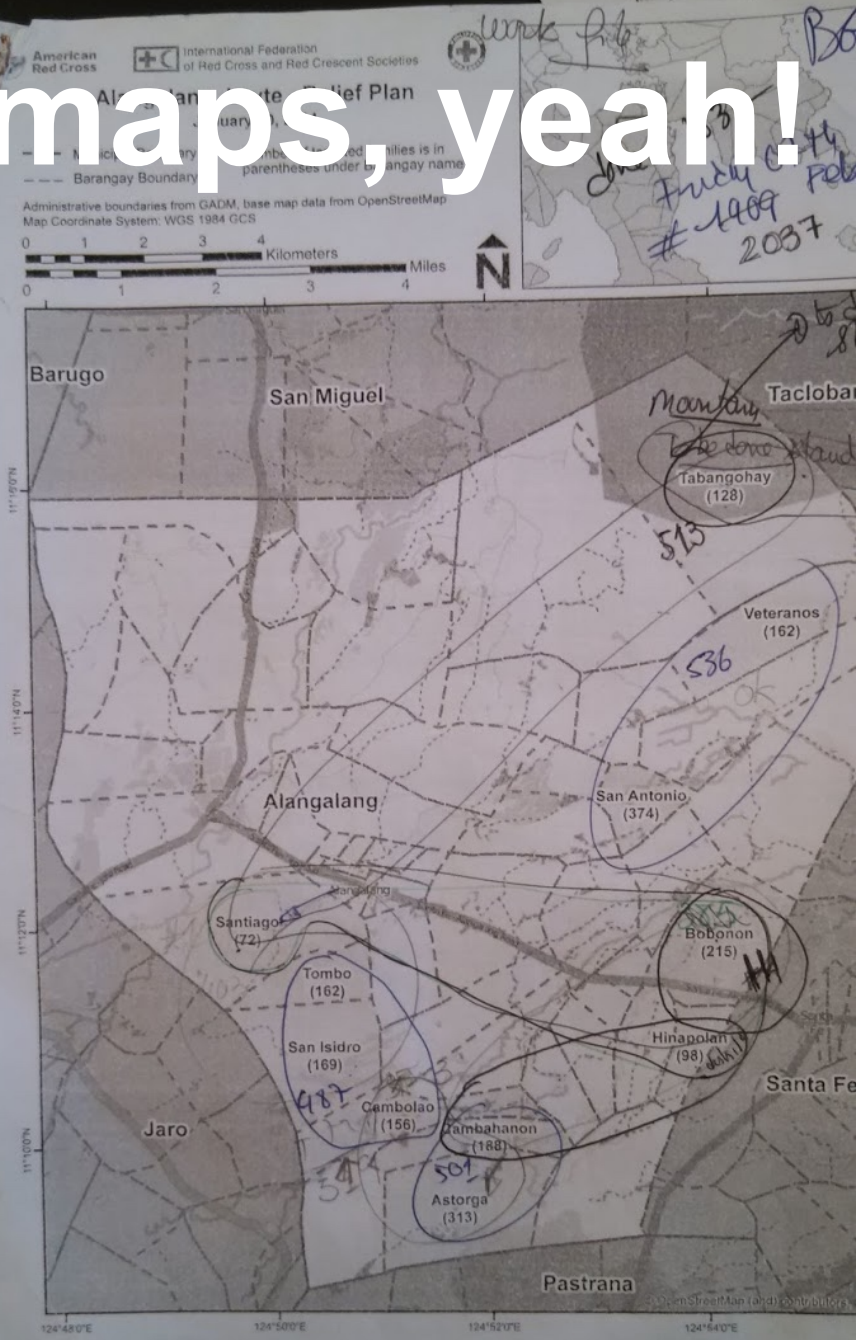
LEGEND:

-  HOUSEHOLD WITH C.R.
-  HOUSEHOLD WITHOUT C.R.
-  CHURCH
-  SCHOOL
-  BRGY. HALL
-  BASKETBALL COURT
-  FAUCET
-  BRIDGE
-  COCONUT PLANTATION AREA
-  PINEAPPLE PLANTATION
-  CORN PLANTATION
-  FISH POND
-  ISAWON RIVER

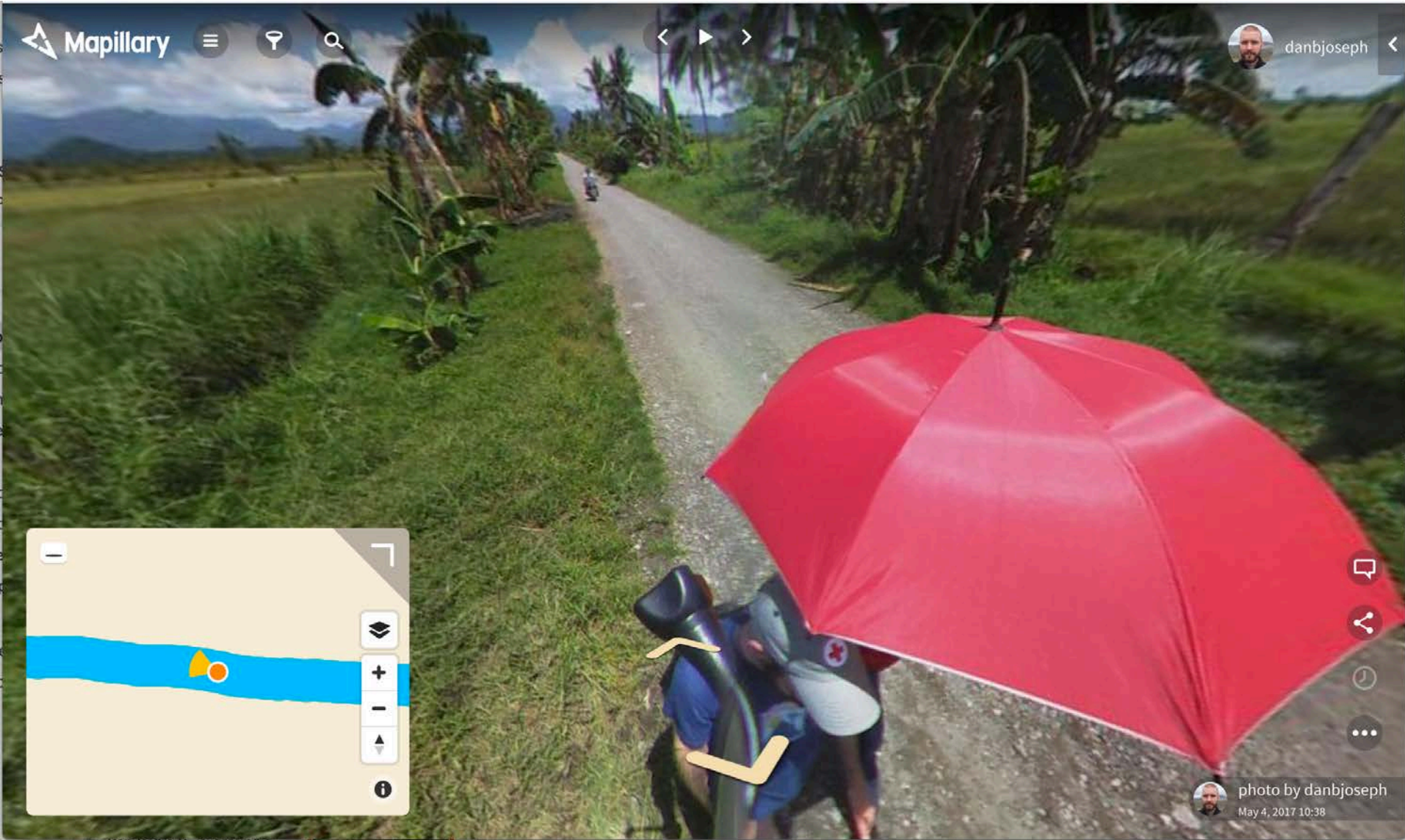
maps, yeah!



maps, yeah!



Mapillary, yeah!



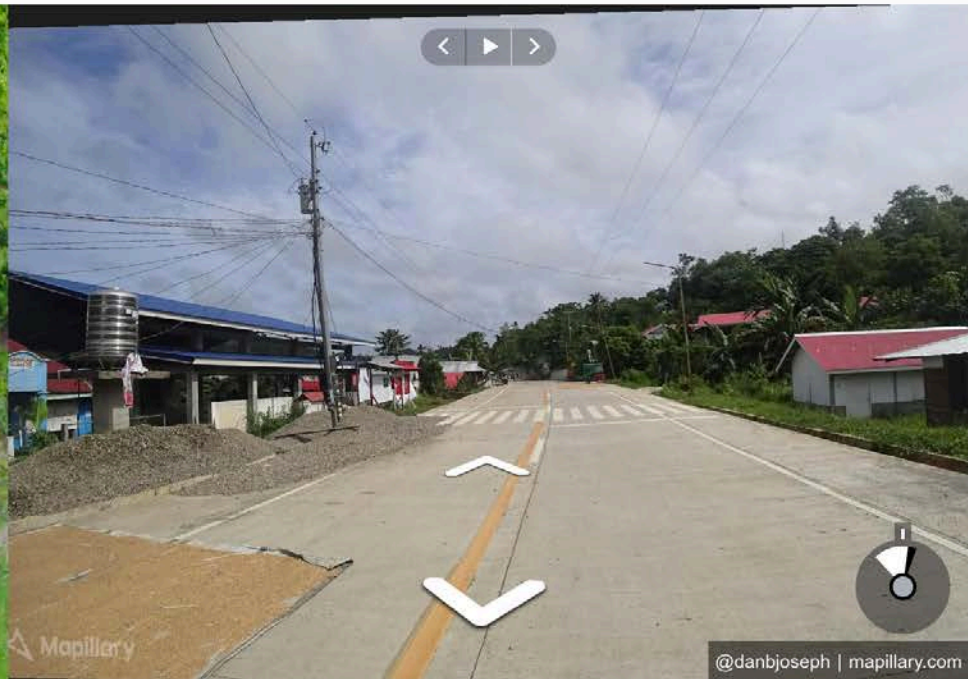
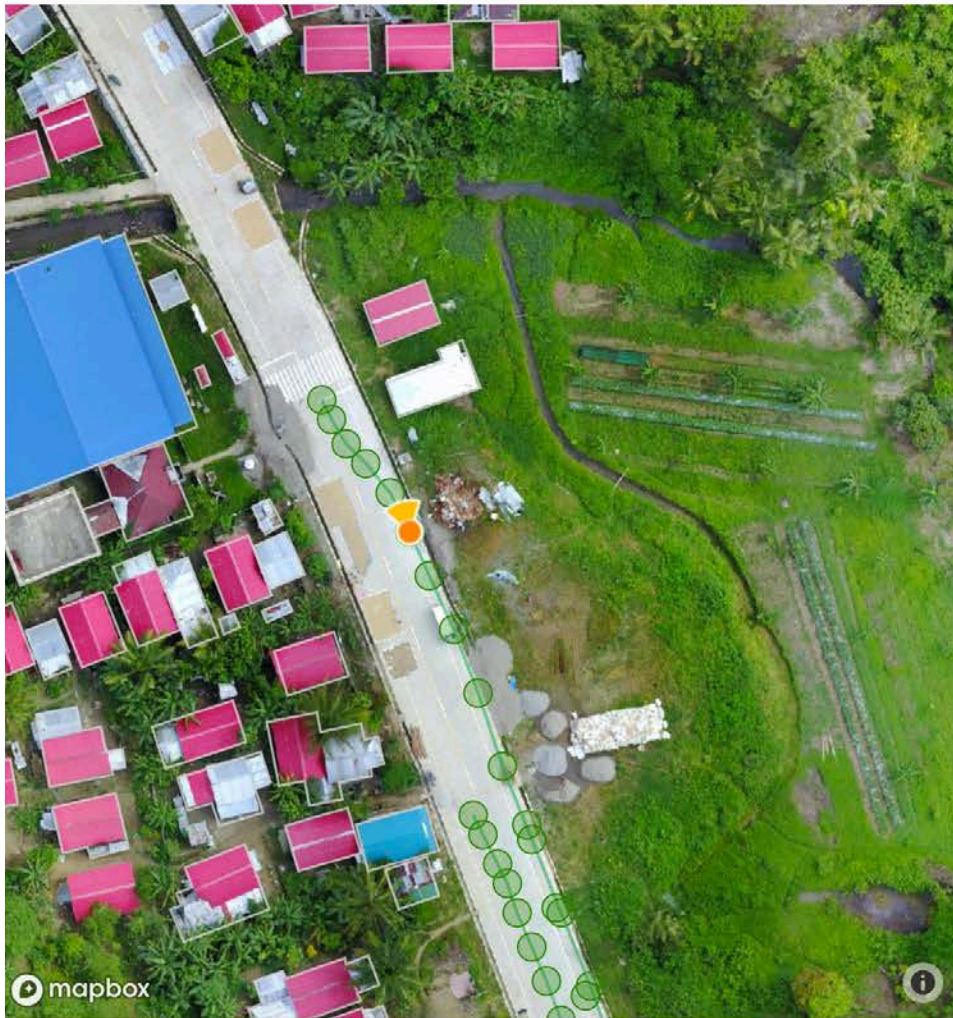
americanredcross.github.io/ttl-imagery

San Paglaum 103A, Tacloban ▾

 Aerial imagery

 Mapillary

 OSM buildings



Zoom map to viewer image



DIY drones?



flying can be hard



if only...



image CC-BY Matt Gibb, American Red Cross



smathermather 10:32 AM

uploaded this image: [Image uploaded from iOS](#) ▾





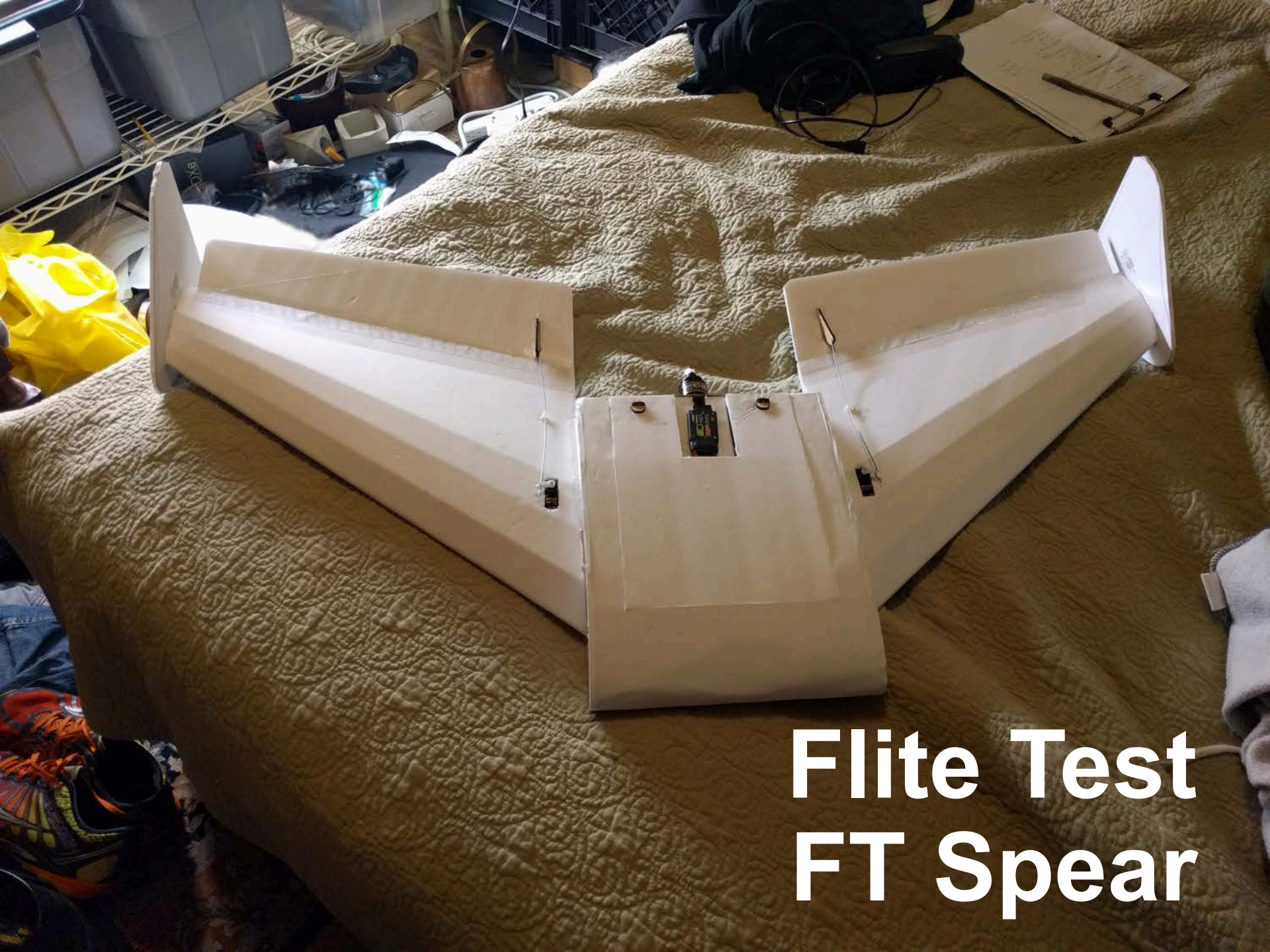
starting out



“foamies”



Flite Test Tiny Trainer



**Flite Test
FT Spear**

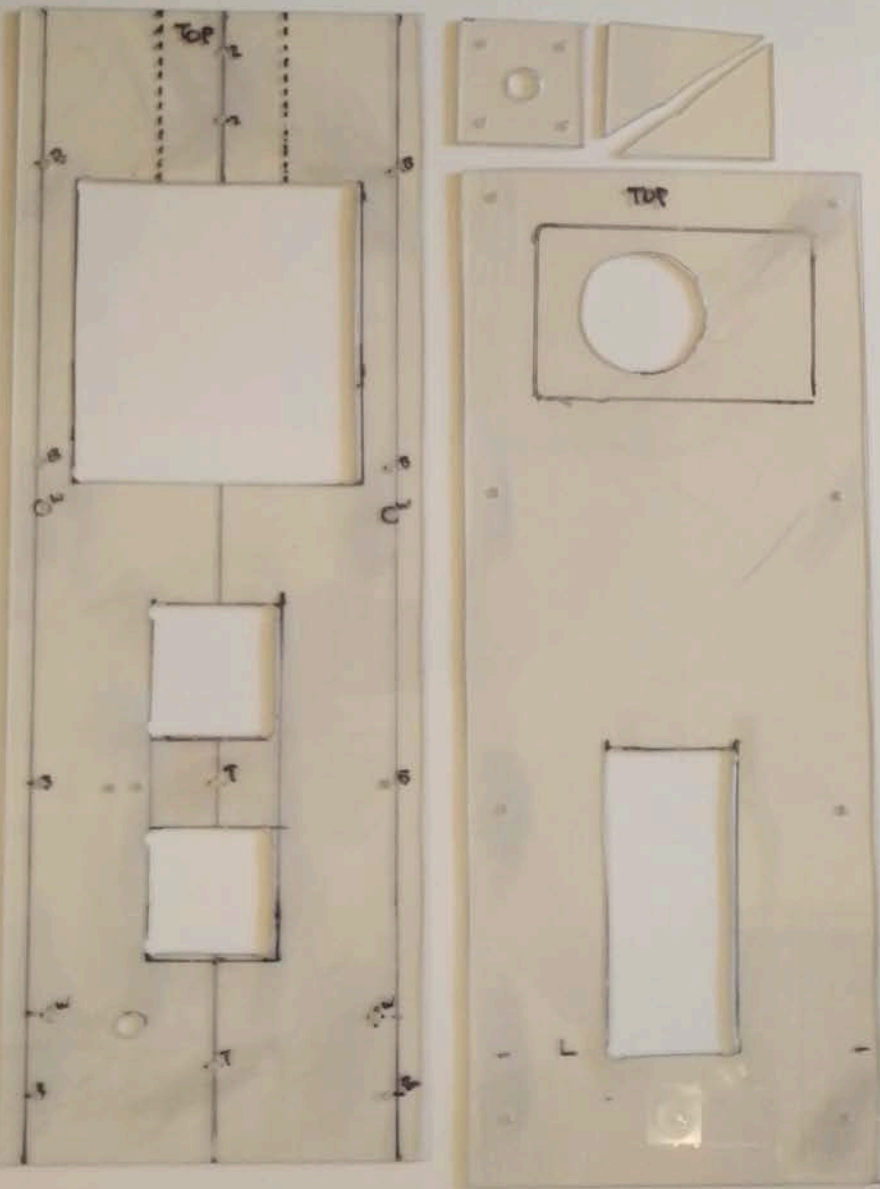
electronics, yeah!

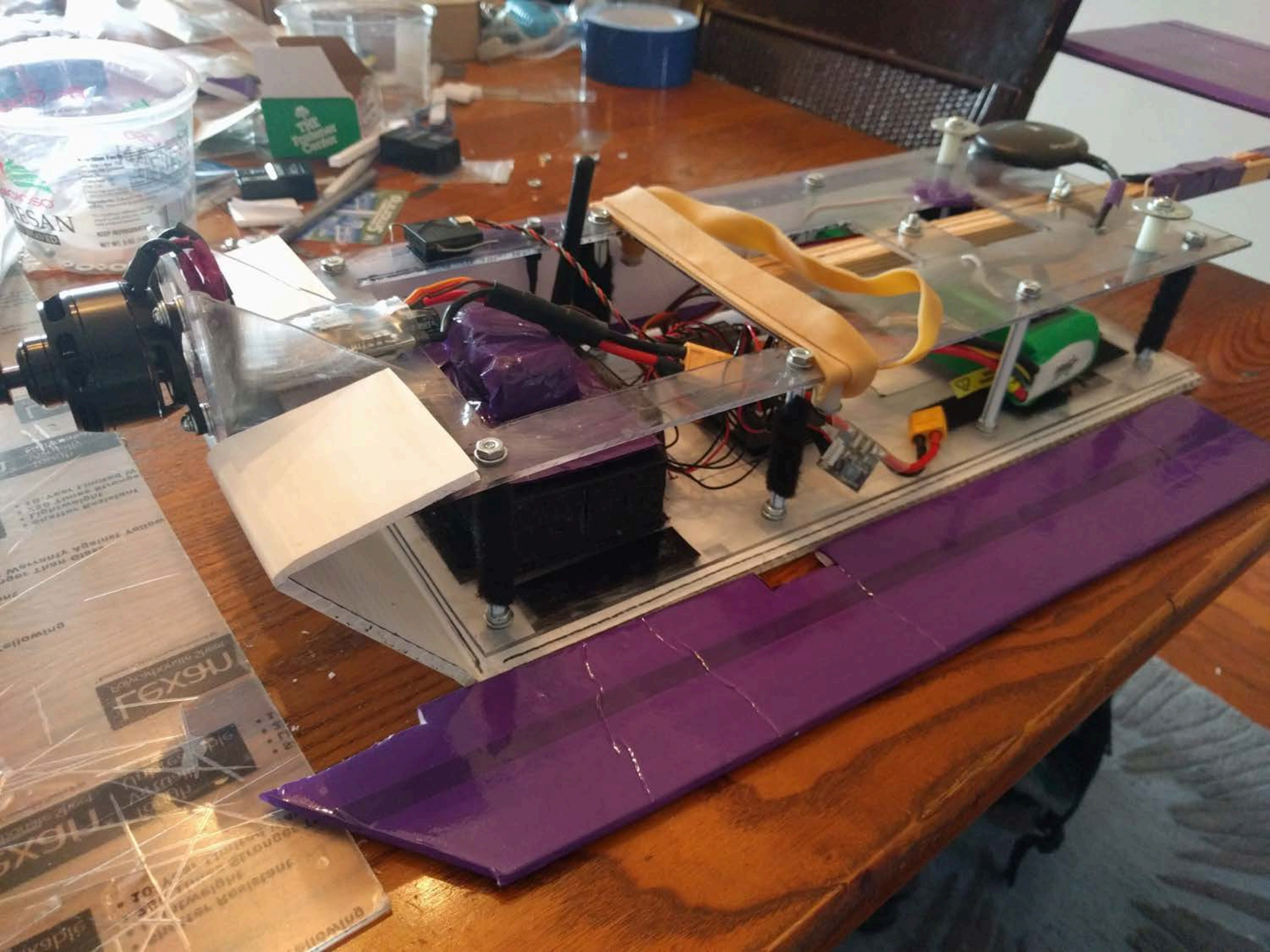


automated flight, yeah!



**trial +
ERROR**













ANSLEY PEACE DRONE - Introduction Video



ExperimentalAirlines

✓ Subscribed 

18,716 views

+ Add to  Share  More

 209  1



what's next?

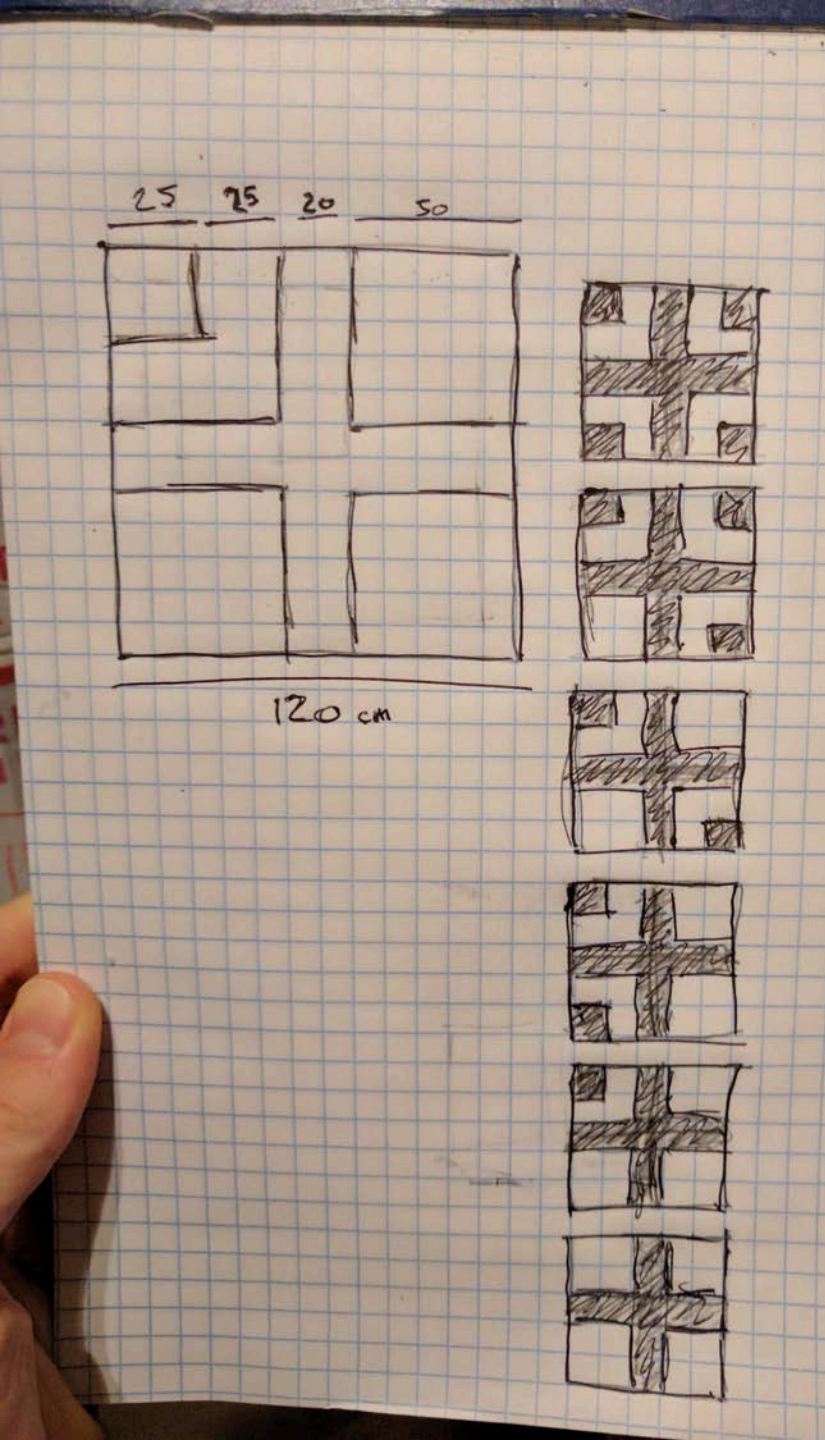


Do NOT
turn off!

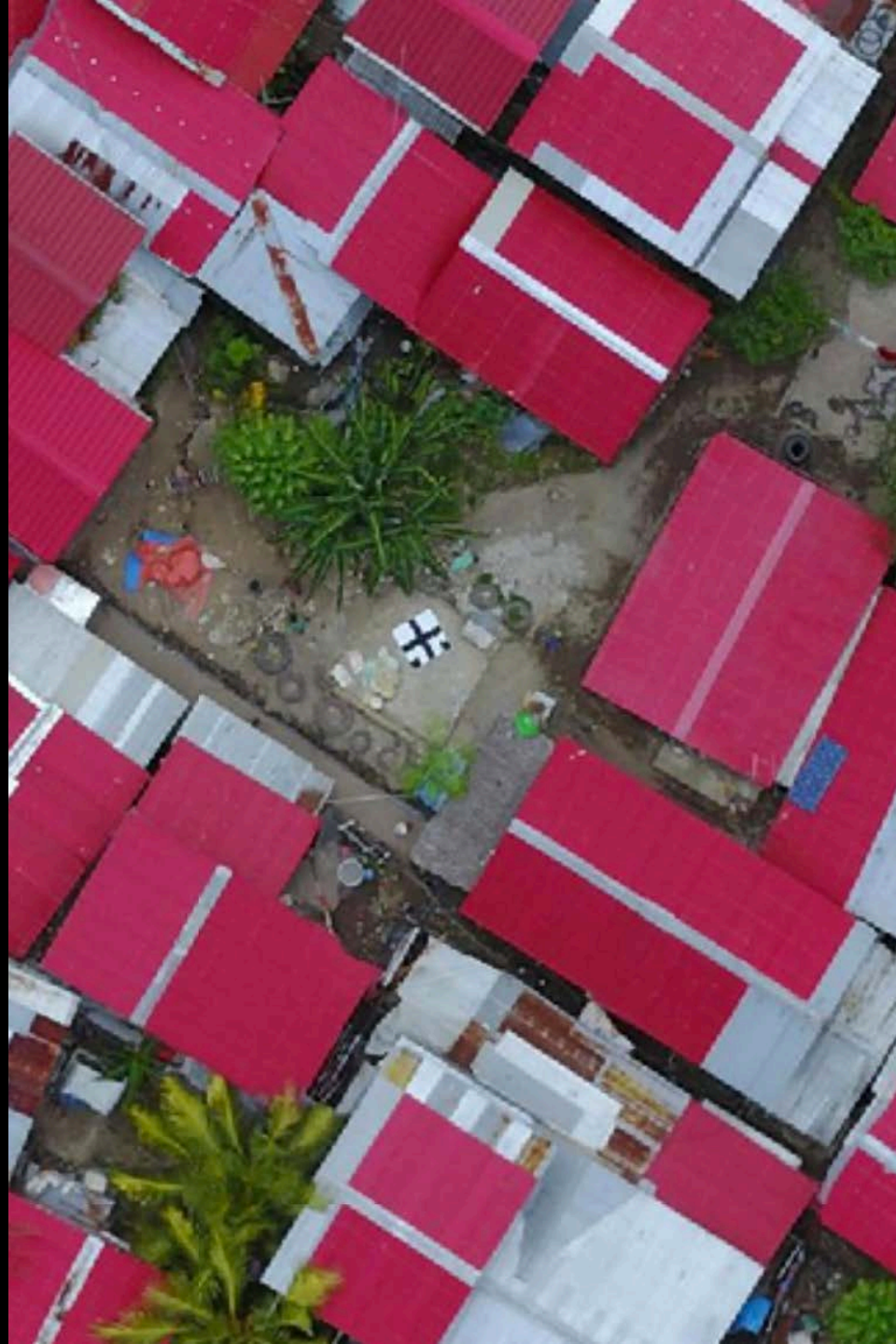
MISSING
MAPS



**PROCESSING
IN THE FIELD**



**GROUND
CONTROL
POINTS**





Questions?

@danbjoseph
danbjoseph.github.io/drones