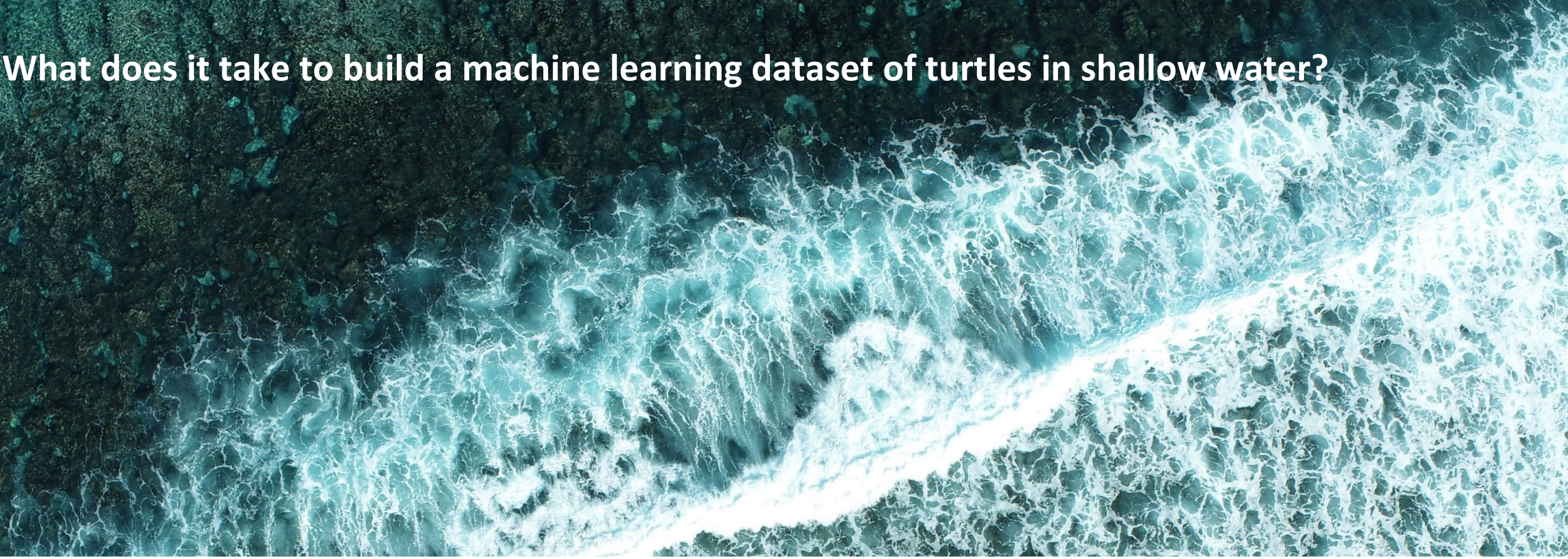
What does it take to build a machine learning dataset of turtles in shallow water?



Nick Mortimer| 1-Feb-2024

ningaloo outlook

CSIRO

Woodside Energy

Flight time
30 MINS [1]

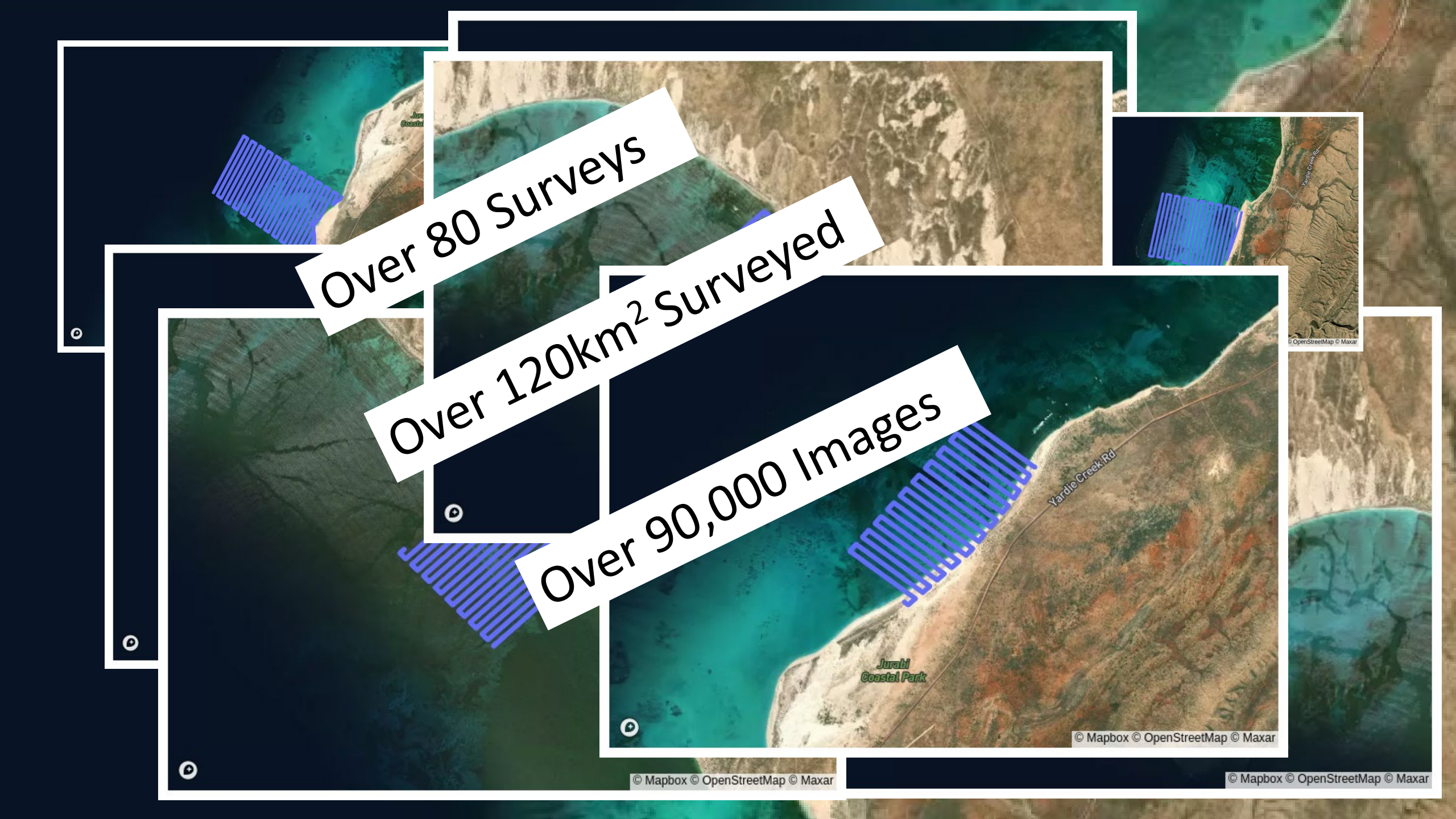
Control range
7 KM [2]

Speed
72 KM/H

Video resolution
4K 60fps

Sensor range
30 M [3]

Obstacle sensing
5 DIRECTION


Over 80 Surveys
Over 120km² Surveyed
Over 90,000 Images
Yardie Creek Rd
Jurabi Coastal Park
© Mapbox © OpenStreetMap © Maxar

turtles / Ningaloo / TR2020-01 / raw / [illegible]d1 / SURVEY / 100_0001

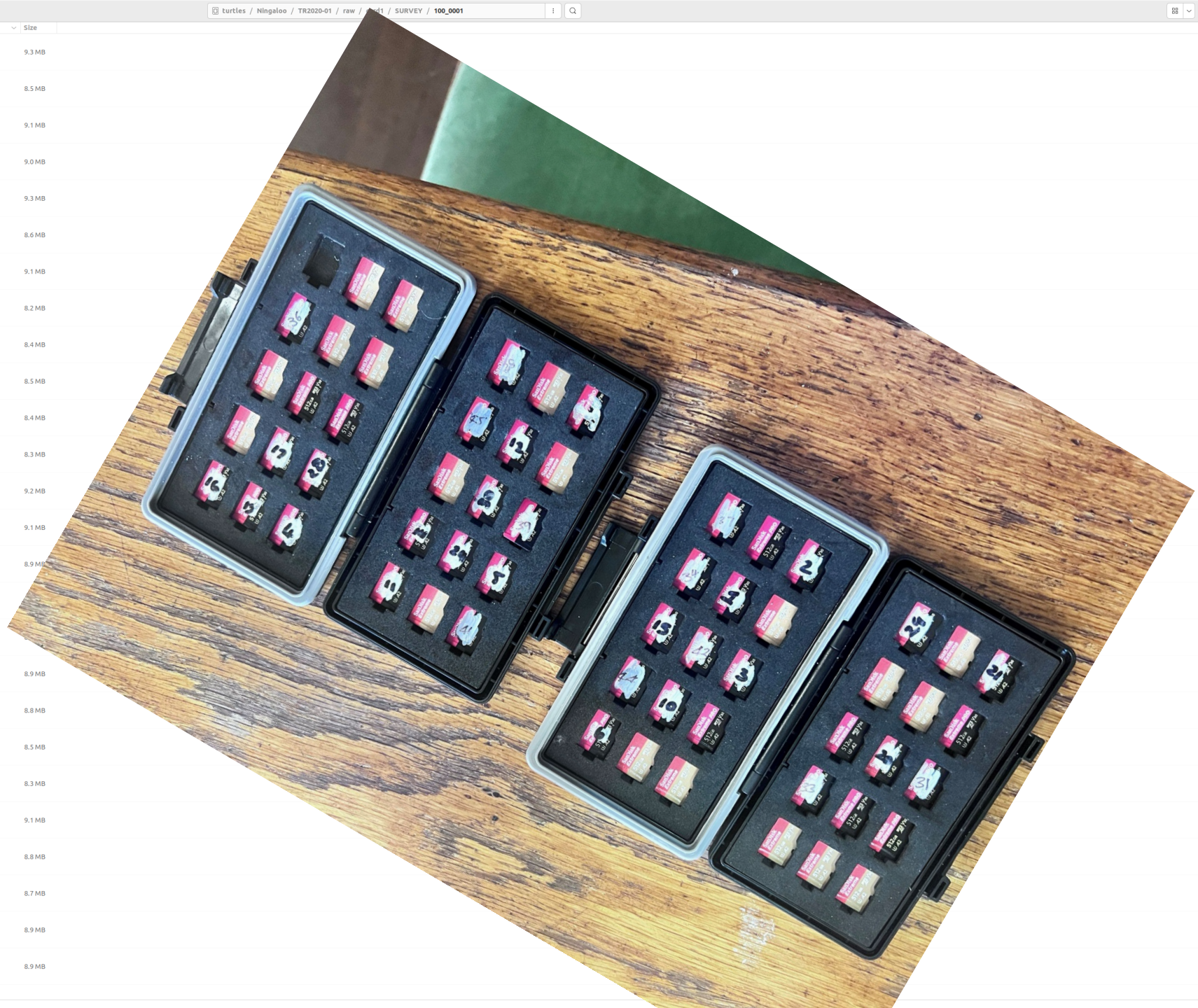
Recent
Starred
Home
Documents
Downloads
Pictures
Videos
Trash

turtles

MANGB_20210425T1216
work
thailand_2023_11
DR2023-01
indonesia_sulawesi_2023_06
field_trips
20230423T175208
Music
fielddata
Drone_footage
NO2_Field_Data
AS2022-01
fielddata0
2023-11-18
turtles

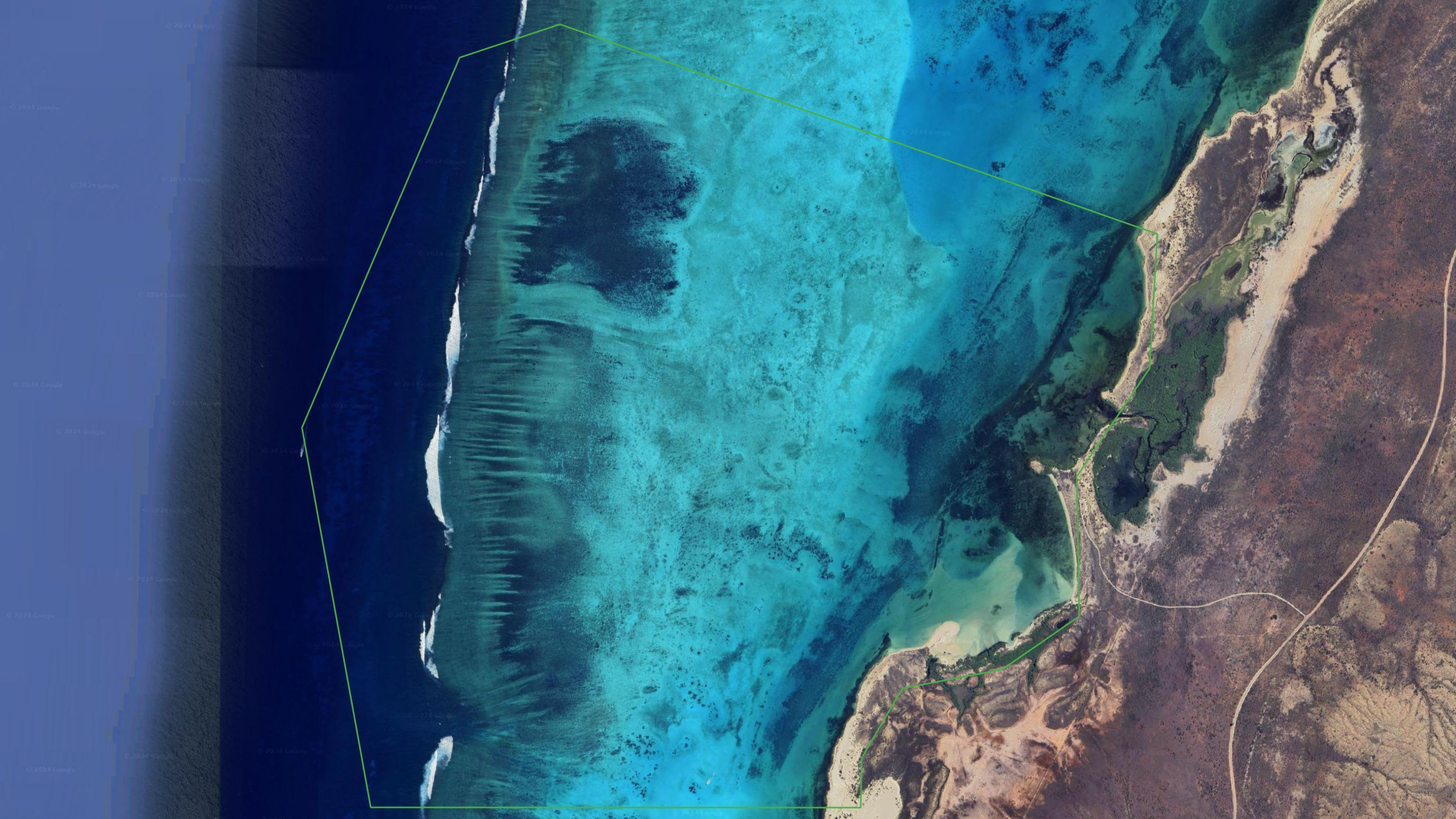
Other Locations

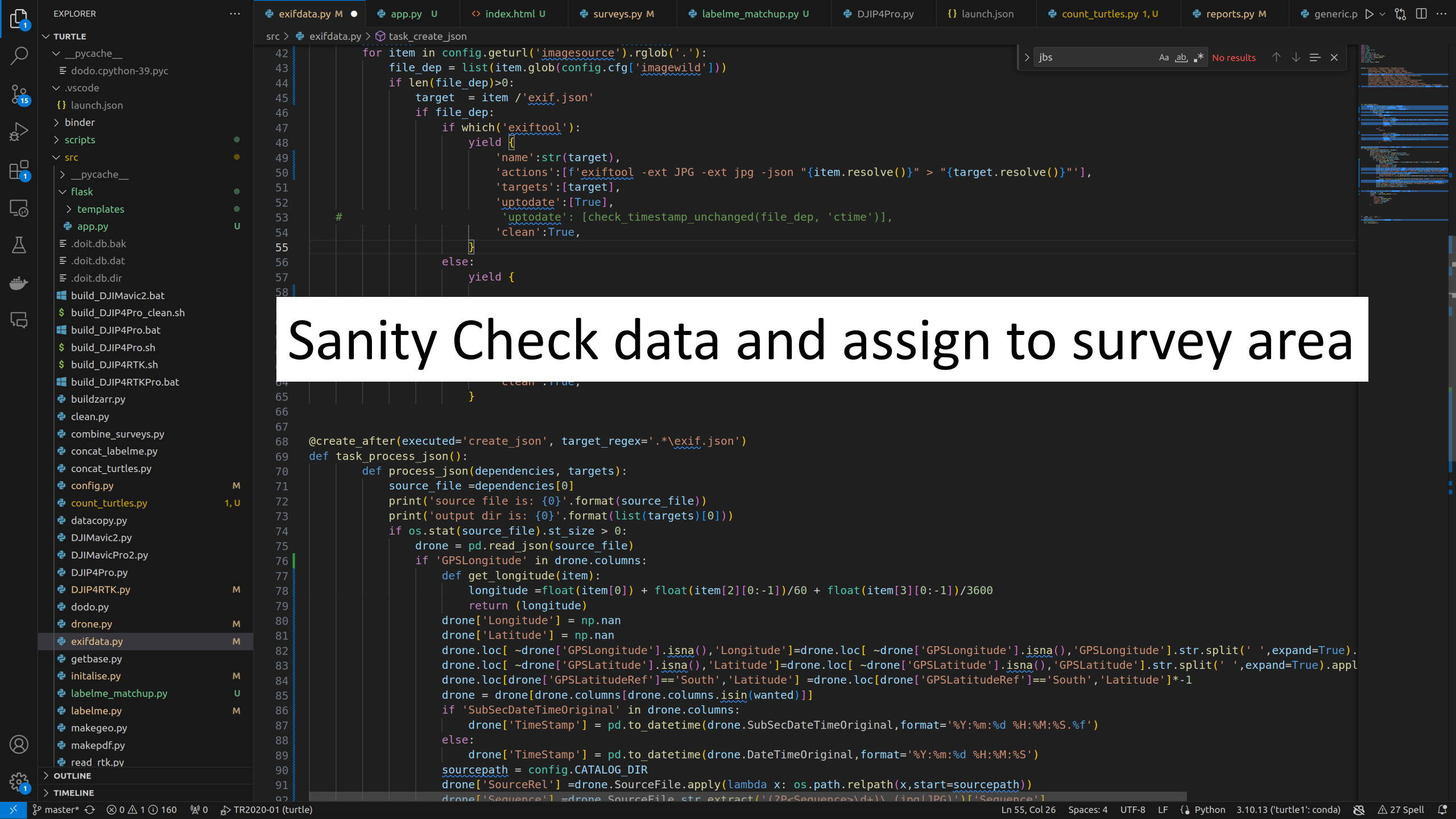
Name	Size	Modified
100_0001_0001.JPG	9.3 MB	29 Oct 2020
100_0001_0002.JPG	8.5 MB	29 Oct 2020
100_0001_0003.JPG	9.1 MB	29 Oct 2020
100_0001_0004.JPG	9.0 MB	29 Oct 2020
100_0001_0005.JPG	9.3 MB	29 Oct 2020
100_0001_0006.JPG	8.6 MB	29 Oct 2020
100_0001_0007.JPG	9.1 MB	29 Oct 2020
100_0001_0008.JPG	8.2 MB	29 Oct 2020
100_0001_0009.JPG	8.4 MB	29 Oct 2020
100_0001_0010.JPG	8.5 MB	29 Oct 2020
100_0001_0011.JPG	8.4 MB	29 Oct 2020
100_0001_0012.JPG	8.3 MB	29 Oct 2020
100_0001_0013.JPG	9.2 MB	29 Oct 2020
100_0001_0014.JPG	9.1 MB	29 Oct 2020
100_0001_0015.JPG	8.9 MB	29 Oct 2020
100_0001_0016.JPG		29 Oct 2020
100_0001_0017.JPG		29 Oct 2020
100_0001_0018.JPG	8.9 MB	29 Oct 2020
100_0001_0019.JPG	8.8 MB	29 Oct 2020
100_0001_0020.JPG	8.5 MB	29 Oct 2020
100_0001_0021.JPG	8.3 MB	29 Oct 2020
100_0001_0022.JPG	9.1 MB	29 Oct 2020
100_0001_0023.JPG	8.8 MB	29 Oct 2020
100_0001_0024.JPG	8.7 MB	29 Oct 2020
100_0001_0025.JPG	8.9 MB	29 Oct 2020
100_0001_0026.JPG	8.9 MB	29 Oct 2020




Extract Exif Data

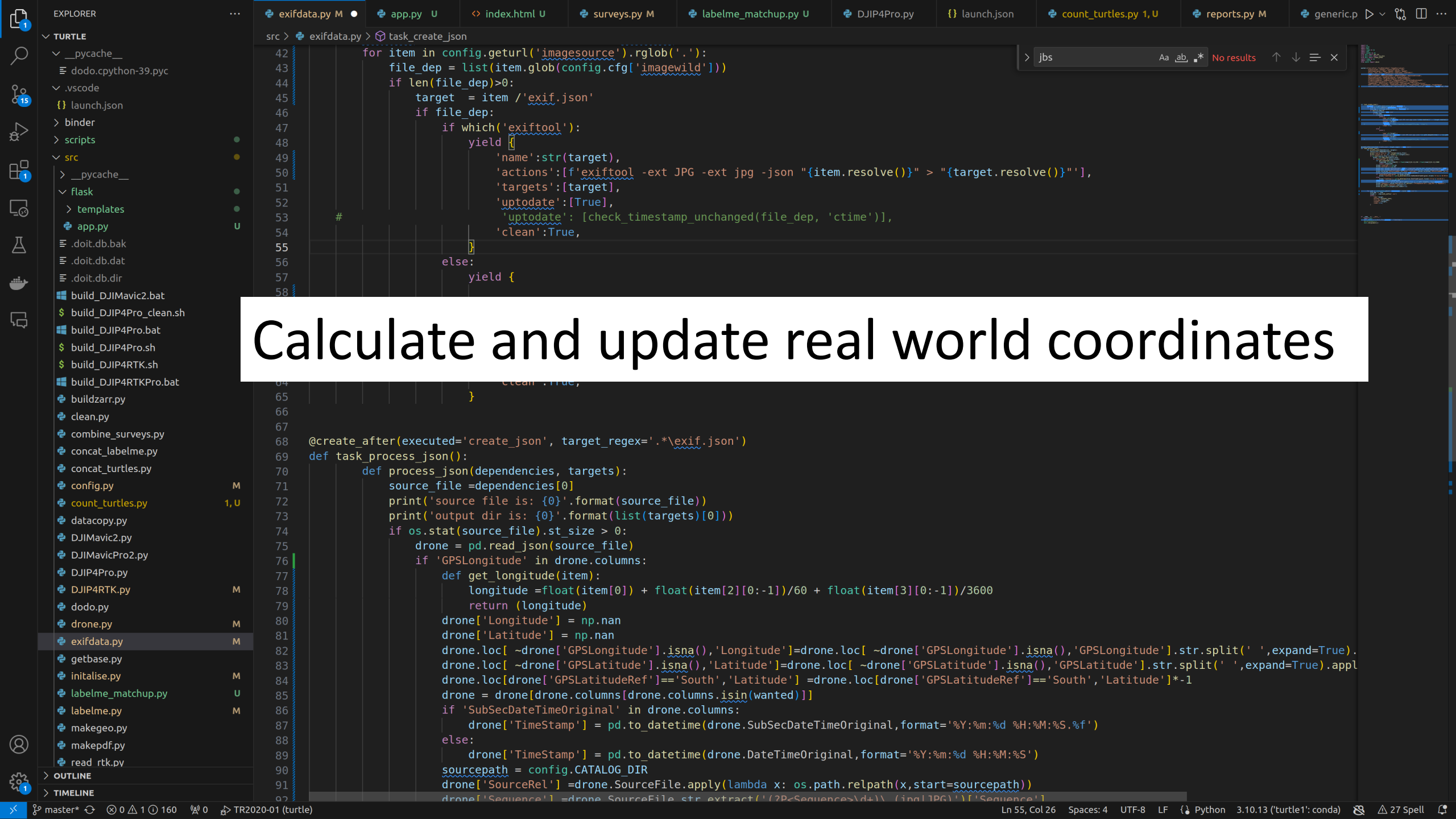
```
"ExposureMode": "Auto",
"WhiteBalance": "Manual",
"DigitalZoomRatio": "undef",
"FocalLengthIn35mmFormat": "24 mm",
"SceneCaptureType": "Standard",
"GainControl": "None",
"Contrast": "Normal",
"Saturation": "Normal",
"Sharpness": "Normal",
"SubjectDistanceRange": "Unknown",
"SerialNumber": "6e753047f0441c55b34839a8777c2765",
"GPSVersionID": "2.3.0.0",
"GPSLatitudeRef": "South",
"GPSLongitudeRef": "East",
"GPSAltitudeRef": "Above Sea Level",
"XPComment": "Type=N, Mode=P, DE=None",
"XPKeywords": "v01.09.1755;1.3.0;v1.0.0",
"Compression": "JPEG (old-style)",
"ThumbnailOffset": 10240,
"ThumbnailLength": 11219,
"About": "DJI Meta Data",
"Format": "image/jpg",
"AbsoluteAltitude": "+59.57",
"RelativeAltitude": "+75.00",
"GPSLongtitude": "113 deg 53' 33.06\" E",
"GimbalRollDegree": "+0.00",
"GimbalYawDegree": -76.70,
"GimbalPitchDegree": -85.00,
"FlightRollDegree": -4.70,
"FlightYawDegree": -72.80,
"FlightPitchDegree": -16.40,
"FlightXSpeed": -0.20,
"FlightYSpeed": -0.20,
"FlightZSpeed": "+0.00",
"CamReverse": 0,
"GimbalReverse": 0,
"SelfData": "Undefined",
"CalibratedFocalLength": 3666.666504,
```

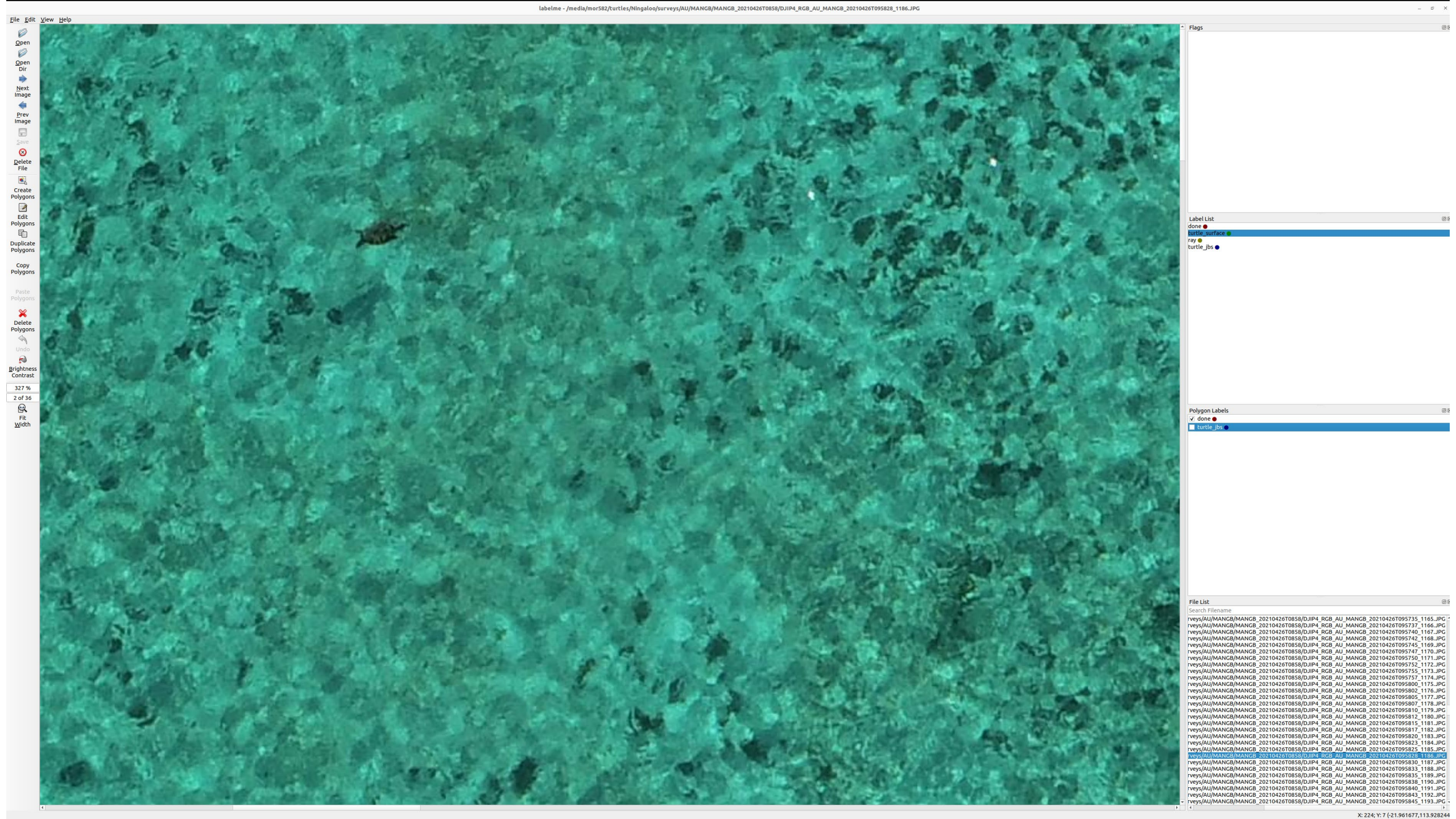



Sanity Check data and assign to survey area

DJIP4_RGB_AU_MANGB_20210426T085923_0031.JPG	8.7 MB
DJIP4_RGB_AU_MANGB_20210426T085920_0030.JPG	8.7 MB
DJIP4_RGB_AU_MANGB_20210426T085917_0029.JPG	8.6 MB
DJIP4_RGB_AU_MANGB_20210426T085914_0028.JPG	8.5 MB
DJIP4_RGB_AU_MANGB_20210426T085912_0027.JPG	8.5 MB
DJIP4_RGB_AU_MANGB_20210426T085909_0026.JPG	8.7 MB
DJIP4_RGB_AU_MANGB_20210426T085907_0025.JPG	8.7 MB
DJIP4_RGB_AU_MANGB_20210426T085904_0024.JPG	8.7 MB
DJIP4_RGB_AU_MANGB_20210426T085902_0023.JPG	8.5 MB
DJIP4_RGB_AU_MANGB_20210426T085859_0022.JPG	8.5 MB
DJIP4_RGB_AU_MANGB_20210426T085858_0021.JPG	8.6 MB
DJIP4_RGB_AU_MANGB_20210426T085855_0020.JPG	8.6 MB

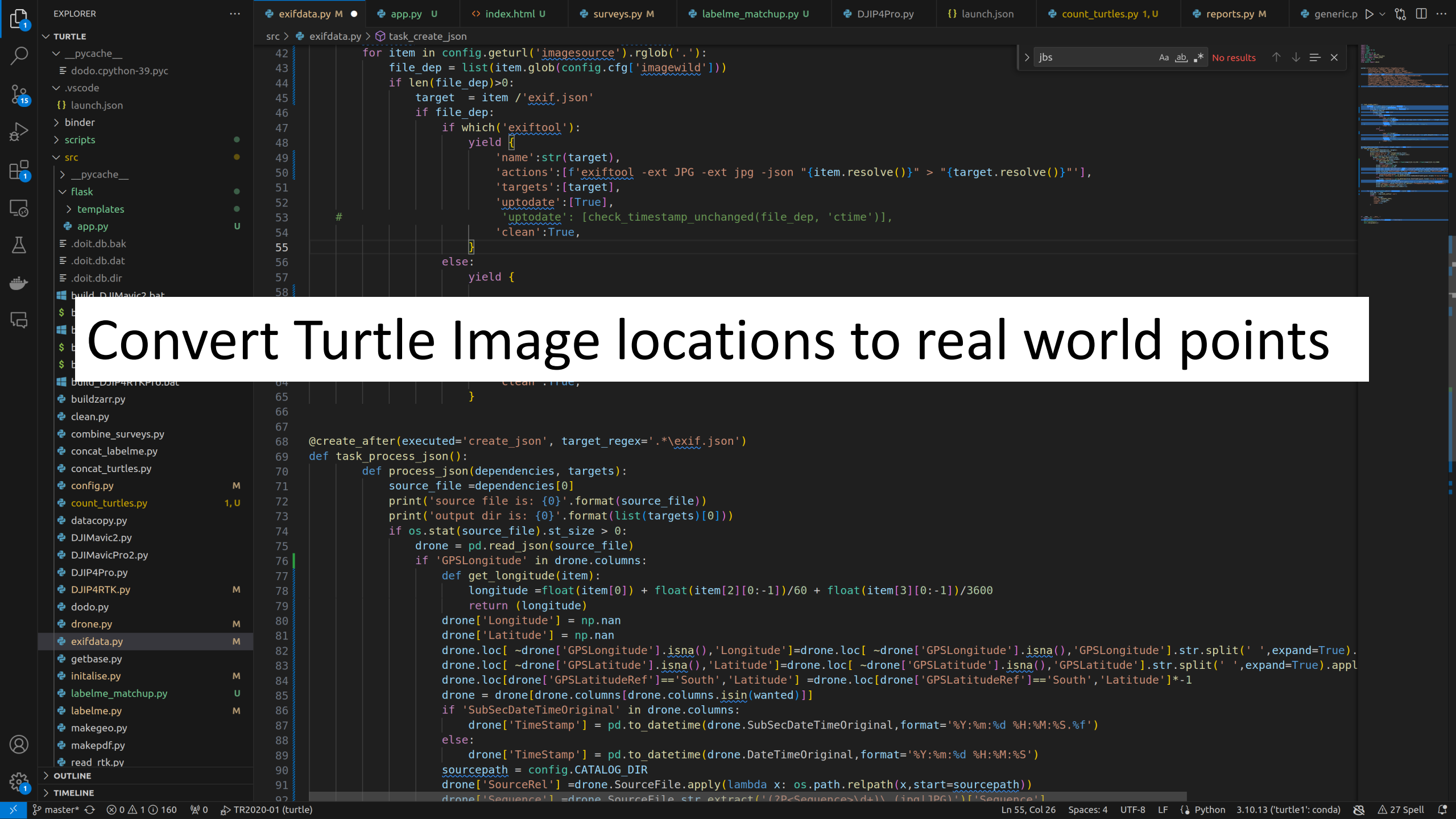
Calculate and update real world coordinates

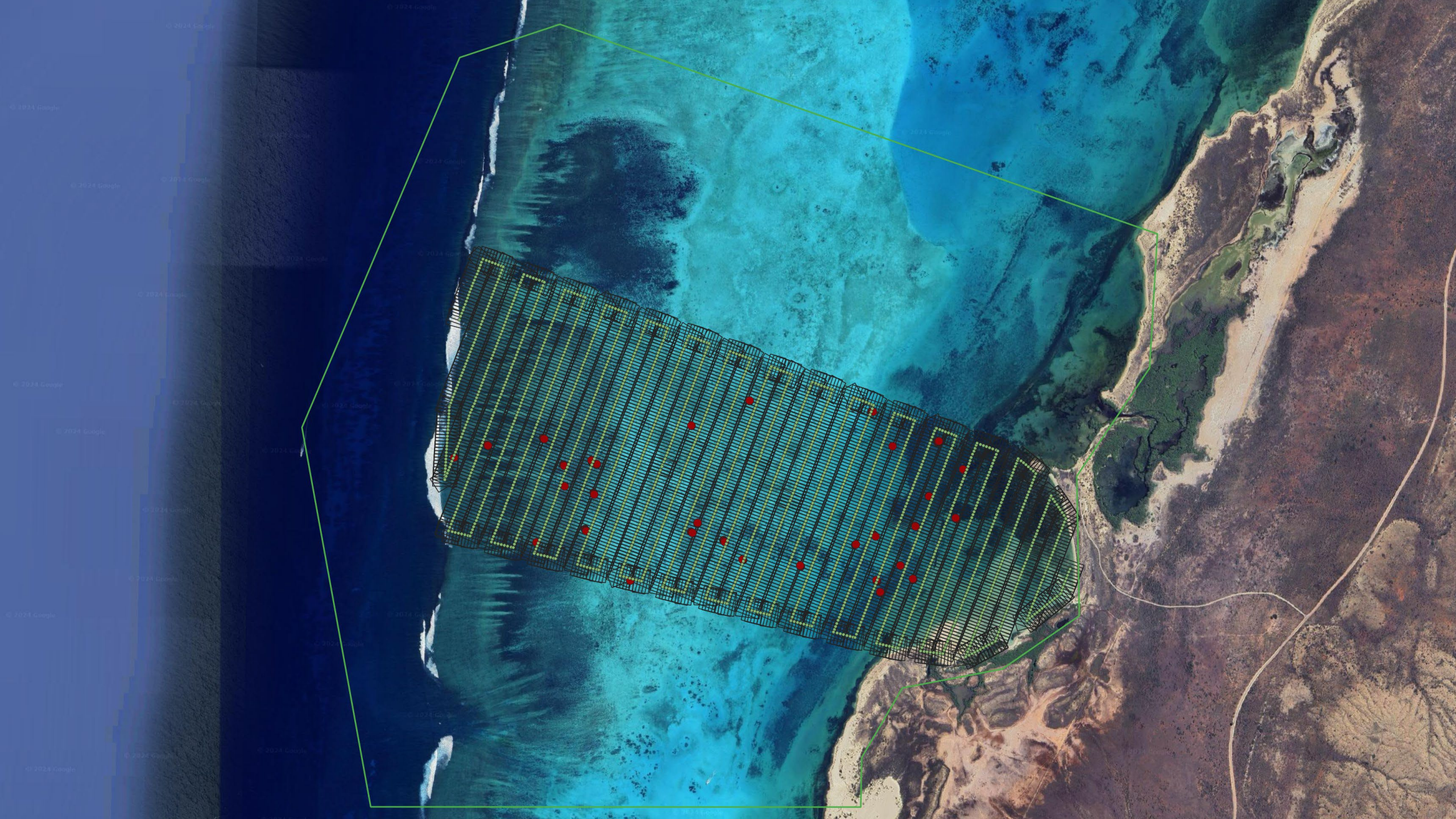



labelme - /media/mor582/turtles/Ningaloo/surveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095828_1186.JPG
File Edit View Help
Open
Open Dir
Next Image
Prev Image
Save
Delete File
Create Polygons
Edit Polygons
Duplicate Polygons
Copy Polygons
Paste Polygons
Delete Polygons
Undo
Brightness Contrast
327 %
2 of 36
Fit Width
Flags
Label List
done
turtle_surface
ray
turtle_jbs
Polygon Labels
done
turtle_jbs
File List
Search Filename
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095735_1165.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095737_1166.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095740_1167.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095742_1168.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095745_1169.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095747_1170.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095750_1171.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095752_1172.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095755_1173.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095757_1174.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095800_1175.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095802_1176.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095805_1177.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095807_1178.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095810_1179.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095812_1180.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095815_1181.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095817_1182.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095820_1183.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095823_1184.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095825_1185.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095828_1186.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095830_1187.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095833_1188.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095835_1189.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095838_1190.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095840_1191.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095843_1192.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095845_1193.JPG
X: 224; Y: 7 (-21.961677,113.928244

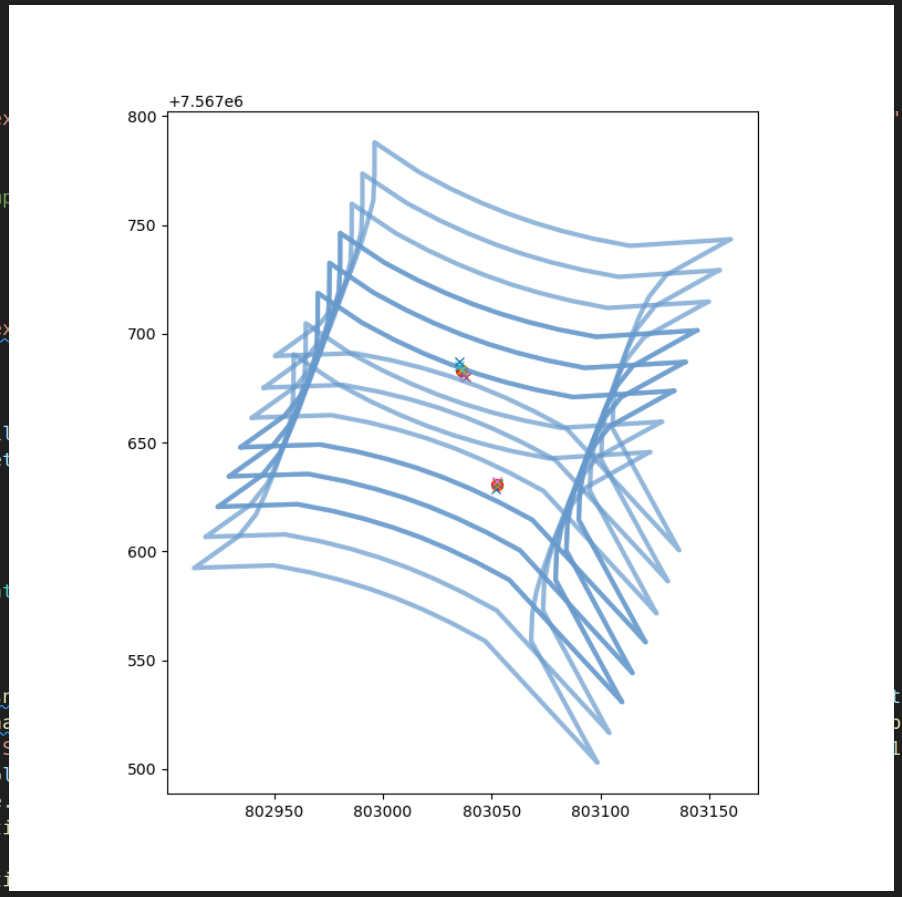

labelme - /media/mor582/turtles/Ningaloo/surveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095828_1186.JPG
File
Edit
View
Help
Open
Open Dir
Next Image
Prev Image
Save
Delete File
Create Polygons
Edit Polygons
Duplicate Polygons
Copy Polygons
Paste Polygons
Delete Polygons
Undo
Brightness Contrast
327 %
2 of 36
Fit Width
Flags
Label List
done
turtle_surface
ray
turtle_jbs
Polygon Labels
done
turtle_jbs
File List
Search Filename
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095735_1165.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095737_1166.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095740_1167.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095742_1168.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095745_1169.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095747_1170.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095750_1171.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095752_1172.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095755_1173.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095757_1174.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095800_1175.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095802_1176.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095805_1177.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095807_1178.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095810_1179.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095812_1180.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095815_1181.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095817_1182.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095820_1183.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095823_1184.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095825_1185.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095828_1186.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095830_1187.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095833_1188.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095835_1189.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095838_1190.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095840_1191.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095843_1192.JPG
rveys/AU/MANGB/MANGB_20210426T0858/DJIP4_RGB_AU_MANGB_20210426T095845_1193.JPG

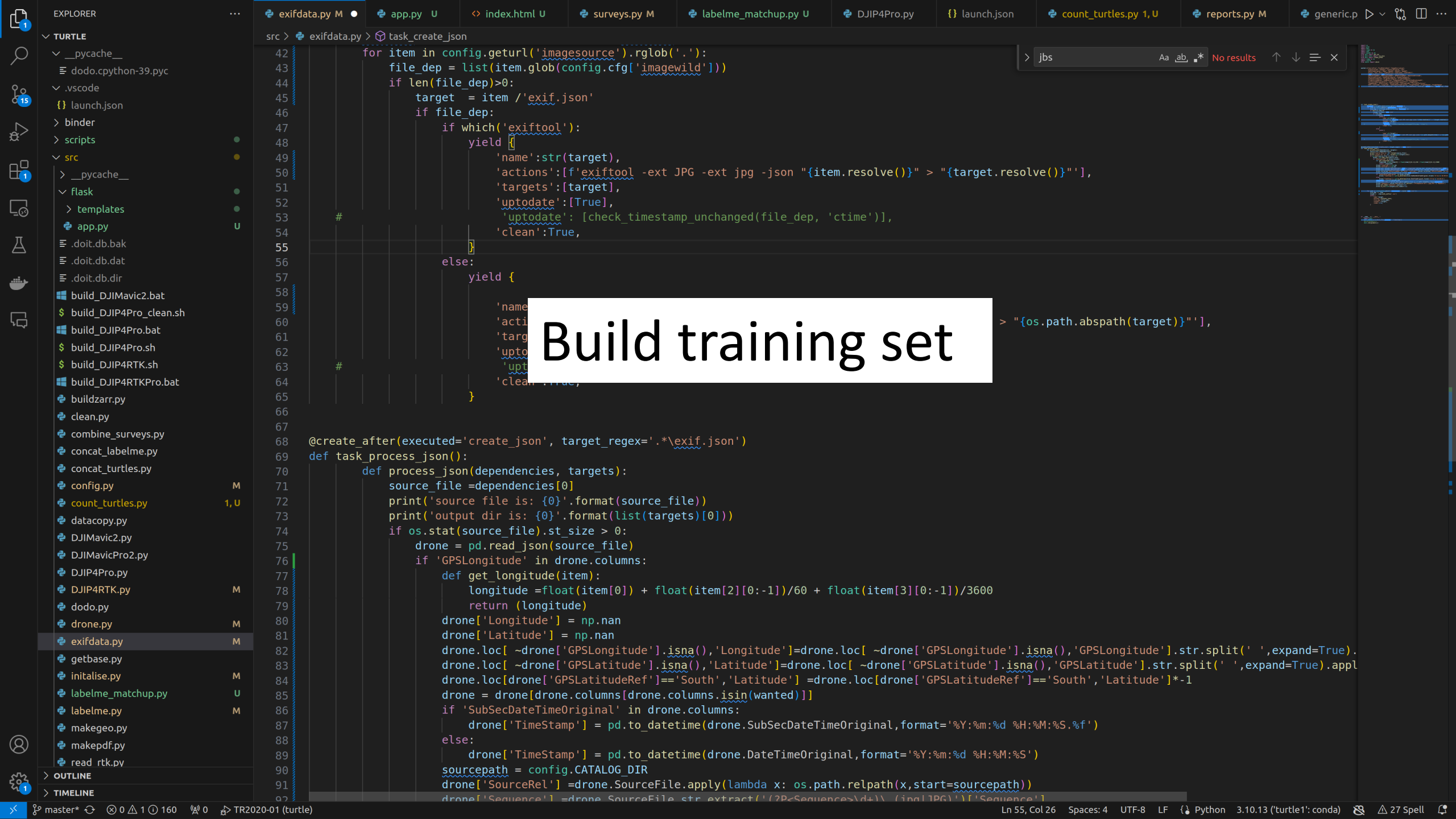
Convert Turtle Image locations to real world points





Group turtle points together




Build training set

Thank you

Plus applause for Ocean Attlan (turtle finder!)

https://github.com/NickMortimer/turtle