Depth\_profile.py

To import to a jupyter notebook in the same directory – import Pixel\_transformation as pt

If you are using the jupyter notebook the above step is not required.

Any function in Pixel\_transformation can be called with the following syntax – pt.function\_name(parameters)

Preparation to use pixel transformation–

1. Geojson of the reef – format reef\_name.geojson.

Get geojson from <http://geojson.io/#map=2/20.0/0.0>

Switch to OSM model in bottom left corner.

Mark boundary of reef. Save geojson – top left corner save->GeoJSON

1. Rename the geojson file to reef\_name.geojson and place the geojson in the reef\_name folder.

Functions in depth profile –

1. Get\_metadata(fp) – method to help extract the metadata for a given sentinel safe file
2. Read\_gjson(meta) – method to read in the geojson file that contains information about the shape of the reef.
3. Get\_out\_files(reef\_name) – method to get the output files from the ICESAT 2 depth profile
4. Prep\_df(fp,meta) – method to prep the ICESAT 2 depth profile for use in this algorithm
5. Get\_bbox(cords,crs) – get a smaller region of interest in the entire sentinel image
6. Get\_regressor(base\_fp) – method that trains a regression model
7. Predict\_reef(reg,meta) – method to predict the depth of the reef at all other points
8. Get\_images(base\_fp,meta) – method to extract pixel values from the images
9. Plot\_reefs(df,data)- method to plot the depth of the entire reef. Df is the reef predictions, while data is the ICESAT training data.
10. Band\_plots(data) – helper function that generates a joint plot of the log bands and the height.

Methods that run the entire pipeline

* reg, meta, data = get\_regressor(base\_fp1)
* predict\_reef(reg,meta)
* plot\_reefs(csv from predict\_reef, data)