KelPy User Manual

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8/17/23

Note: this guide is aimed towards Windows users. The steps may not be the same for installing on Mac/Linux.
It is recommended you have at least 16GB of memory installed on your system to run this program.

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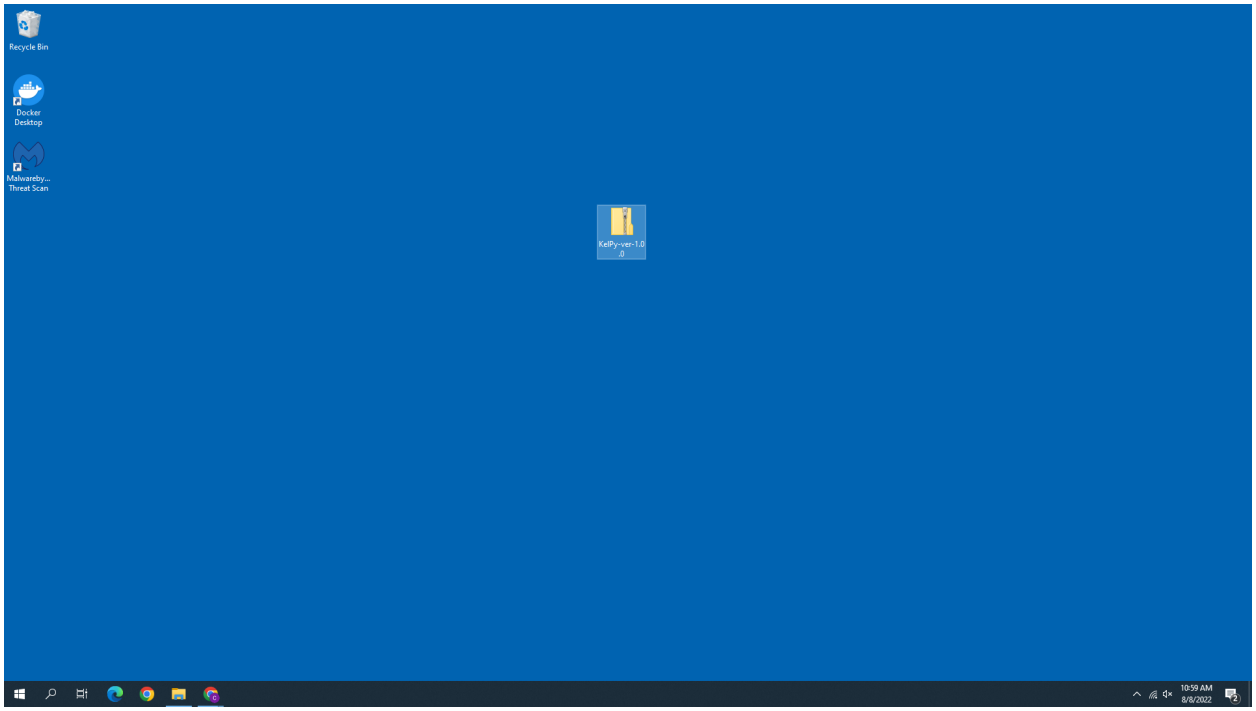
KelPy Installation

Before you install KelPy, you must install OpenDroneMaps:
https://github.com/OpenDroneMap/ODM/releases/tag/v3.1.7

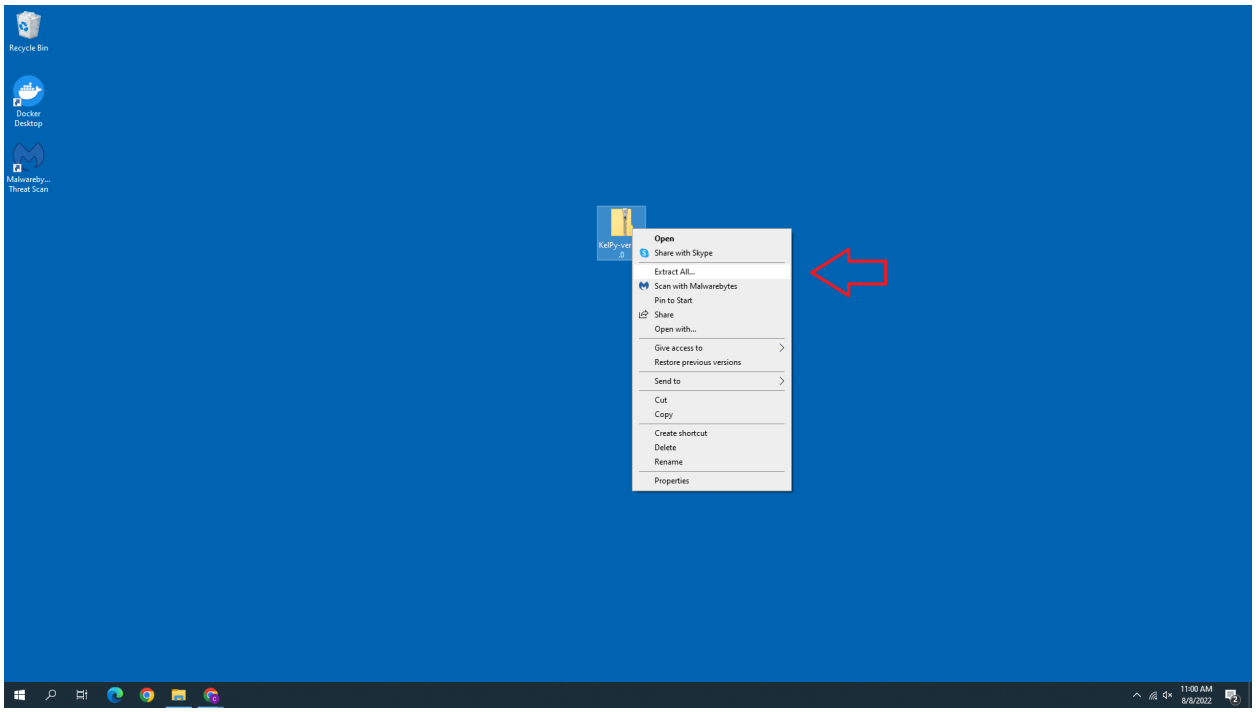
Keep the installation values to their defaults.

Now we can install KelPy: https://github.com/Barnacle-Foods/KelPy/releases/tag/v2.1.0

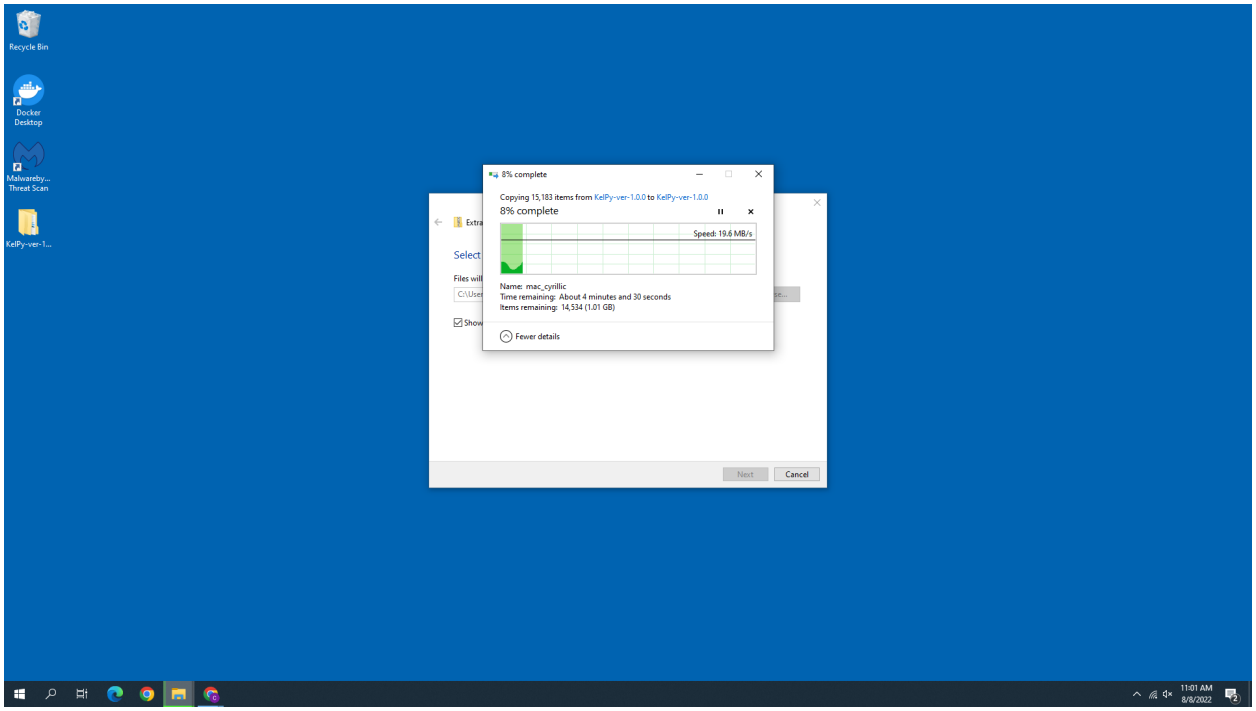
KelPy will be located in a zip file:



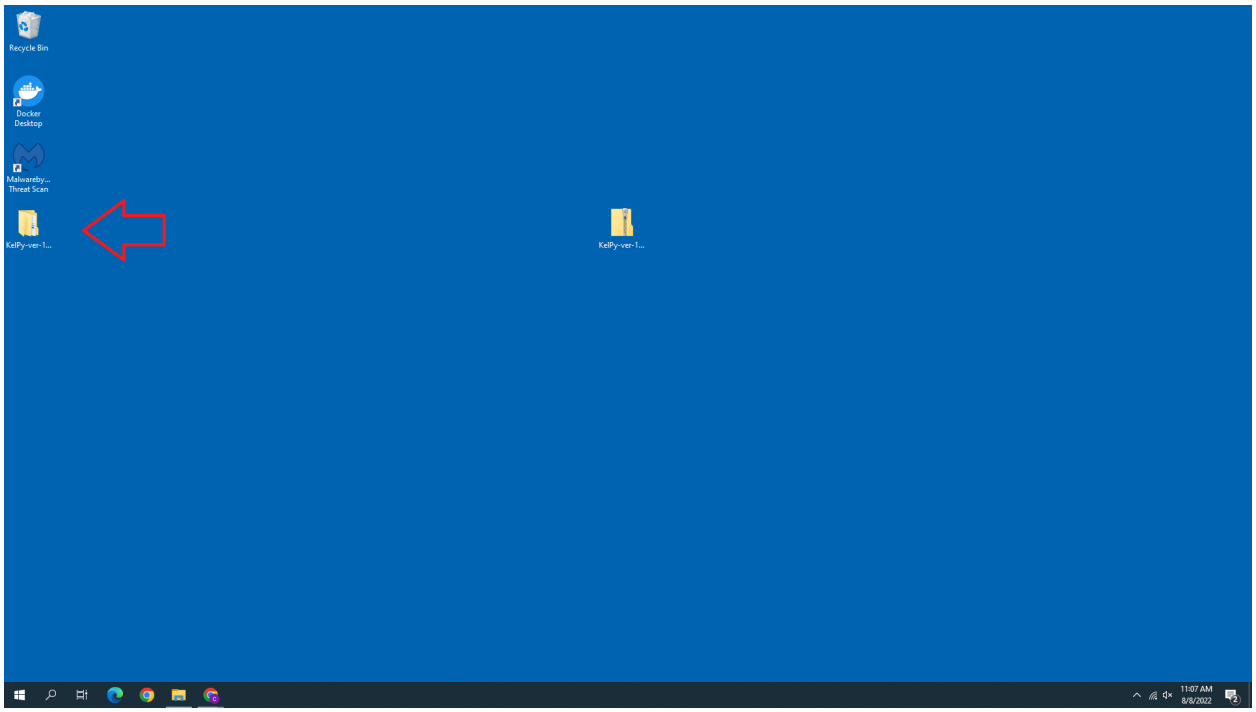
You will want to extract this zip file to use KelPy. Right click KelPy and click the “Extract All” button:



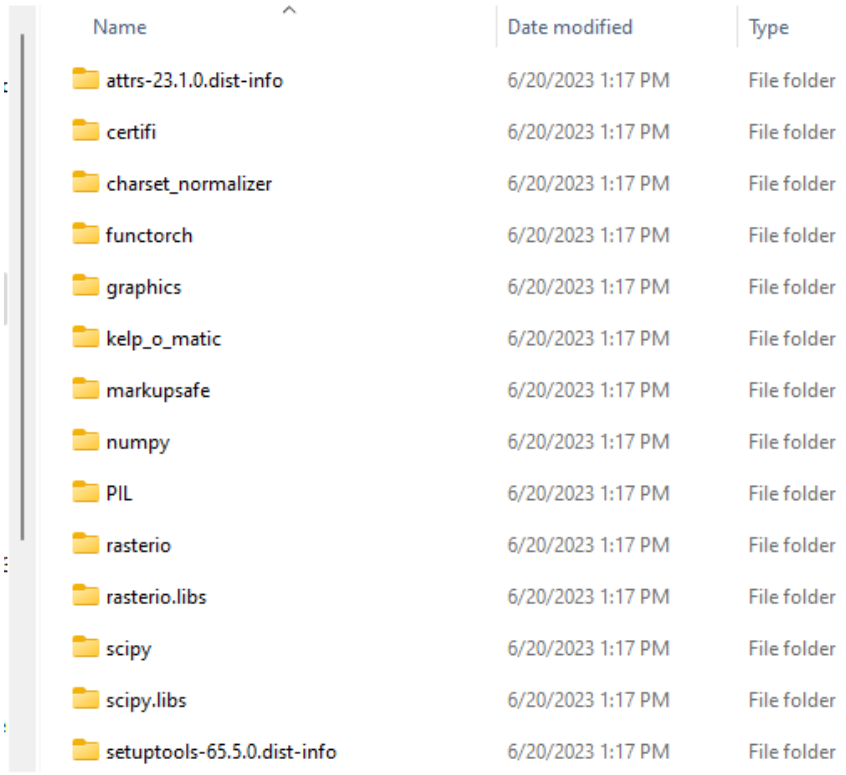
This should take a bit of time because KelPy is fairly large.



You should now see an extracted KelPy on your computer. Double click this folder to open it:

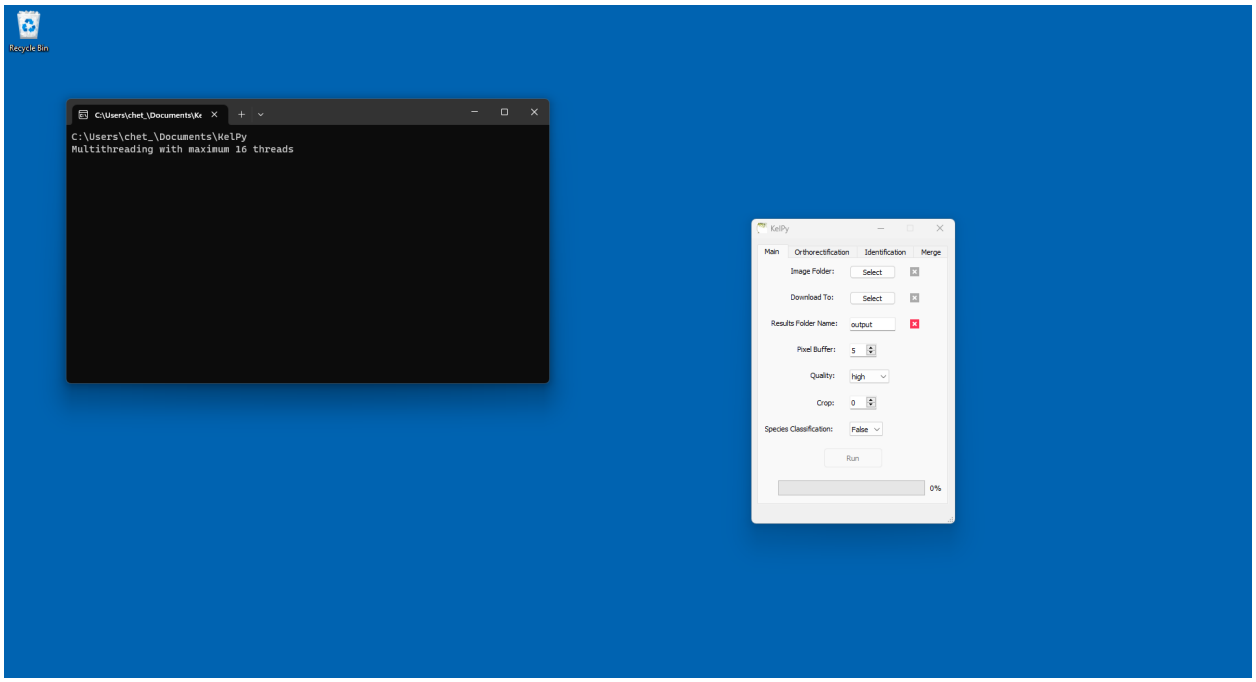


You should now see this:



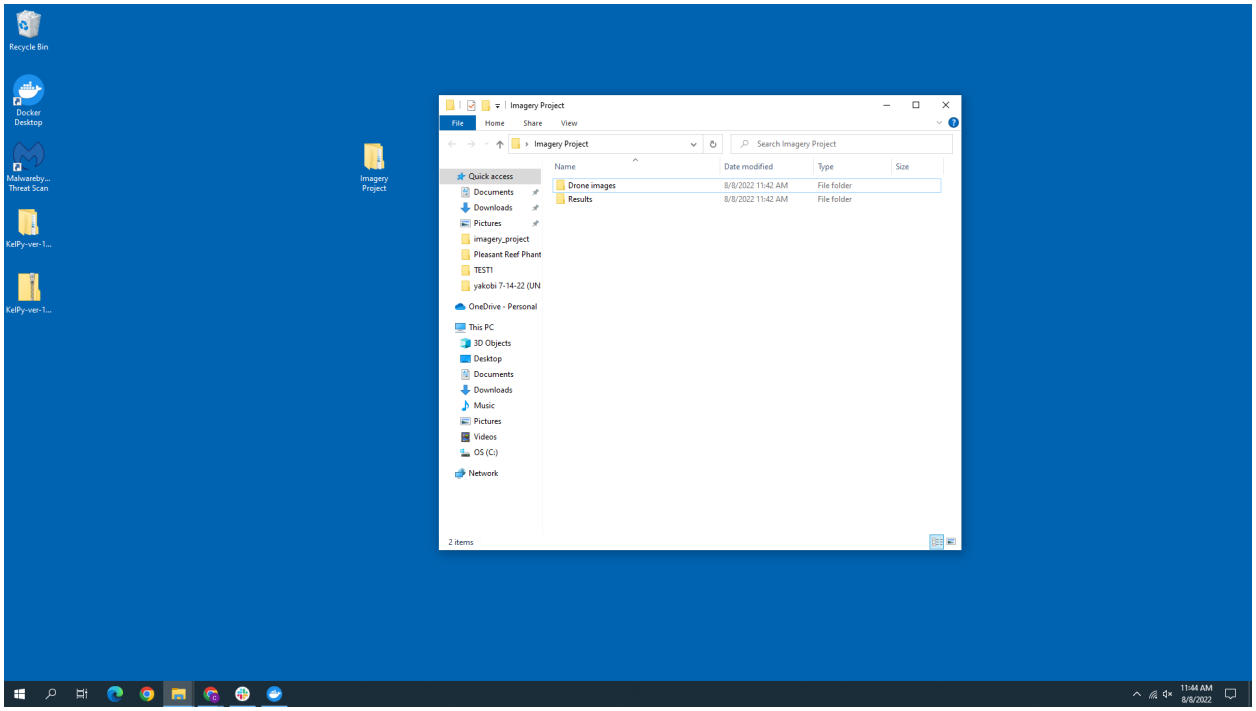
Name	Date modified	Type
attrs-23.1.0.dist-info	6/20/2023 1:17 PM	File folder
certifi	6/20/2023 1:17 PM	File folder
charset_normalizer	6/20/2023 1:17 PM	File folder
functorch	6/20/2023 1:17 PM	File folder
graphics	6/20/2023 1:17 PM	File folder
kelp_o_matic	6/20/2023 1:17 PM	File folder
markupsafe	6/20/2023 1:17 PM	File folder
numpy	6/20/2023 1:17 PM	File folder
PIL	6/20/2023 1:17 PM	File folder
rasterio	6/20/2023 1:17 PM	File folder
rasterio.libs	6/20/2023 1:17 PM	File folder
scipy	6/20/2023 1:17 PM	File folder
scipy.libs	6/20/2023 1:17 PM	File folder
setuptools-65.5.0.dist-info	6/20/2023 1:17 PM	File folder

Scroll down and double click on the executable. KelPy will start and look like this:

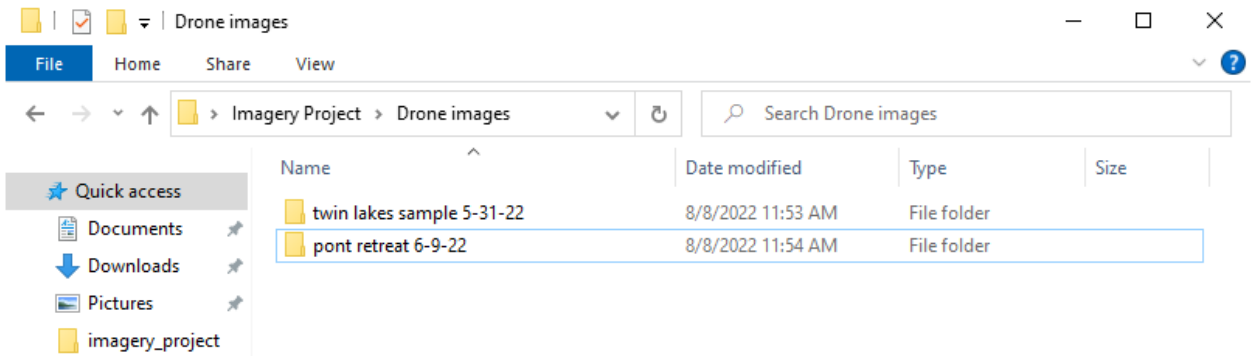


On launch, KelPy may have a console window accompanying it. This is a good way to check in on the progress of KelPy.

Before processing, I recommend that you create a folder layout similar to this:

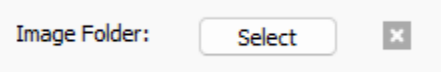


As you can see, I have my Imagery Project folder on my Desktop, and within it I have two folders: Drone images and Results. The drone images folder holds the drone images and the results folder contains the results of KelPy. This is what my drone images folder looks like after I have placed 2 datasets in it:



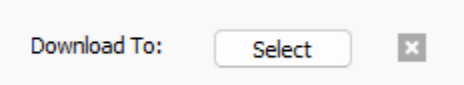
KelPy Options

Image Folder



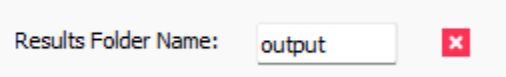
This is how you select your drone images. Make sure that the only images in the folder are the drone images from the bed you want to process. Do not put in any other files in this folder besides images. The X button on the right clears the currently selected image folder.

Download To



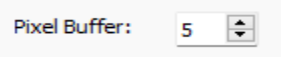
This is how you designate a folder to hold your results to. The X button on the right clears the currently selected download folder.

Results Folder Name



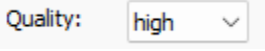
This is what the results folder is called. KelPy will use this name for the download folder, inside the results folder specified with the “Download To” option.

Pixel buffer



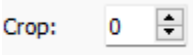
This is the pixel buffer selector. The default is 5. The higher the pixel buffer, the longer the processing.

Quality



This is the quality selector. Higher quality orthomosaics will take more time to process. The default is high.

Crop

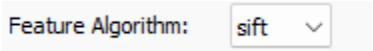


This is the crop option. Ideally, it will crop the orthomosaic to make it look nice and clean. Unfortunately, it tries to crop out all the water in a photo, including the kelp. Use at your own risk. The default is 0.

Species Classification

This determines whether KelPy differentiates between bull kelp (nereocystis) and giant kelp (macrocystis).

Feature-type algorithm



This determines which algorithm is used when processing orthomosaics. Default is sift.

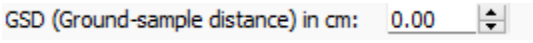
Orthomosaic File

The orthomosaic file selector. Use this when you want to run kelp identification on an orthomosaic.

Results Folder

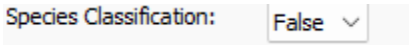
The results folder selector. Use this as the place to store the data generated.

GSD



The GSD selector. GSD stands for ground sampling distance. This is the metric used when calculating surface area. If flying at 120 meters, GSD will be around 3.3 cm.

Species Classification



The selector to determine whether the species classification should run during kelp identification. Red = Bull Kelp, Green = Giant Kelp.

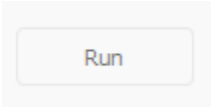
Orthomosaic 1

The 1st orthomosaic you are merging with the 2nd

Orthomosaic 2

The 2nd orthomosaic you are merging with the 1st

Run



This button will run each respective process it is associated with. It will be grayed-out until the required options are selected.

Addendum

Error-Checking

If any errors occur, guarantee you are doing everything correctly:

1. Have you installed OpenDroneMaps?
2. Does your image folder only contain drone images and nothing else?
3. Have you selected the correct processing options in KelPy?

If you experience errors in processing, you have three options:

1. Restart KelPy and try again. This can fix many problems encountered.
2. Reinstall KelPy using the installation steps listed above
3. Check if your error is logged at: https://github.com/Barnacle-Foods/barnacle-imagery/issues. If it is not, create a new issue. You can copy/paste the errors logged in the console to this issue tracker.