

QGIS instructions for classification of Planet imagery for SAV mapping.

- 1. Load images in project**
- 2. Mosaic tiles**
- 3. Composite with DEM raster**
- 4. Make a new schema**
- 5. Generate training patches**
- 6. Classify image.**

Before you come to the workshop.

Download QGIS, activate the semi-automated classification plugin and the dzetsaka plugin.

To do this go to plugins,\manage and install plugins\all

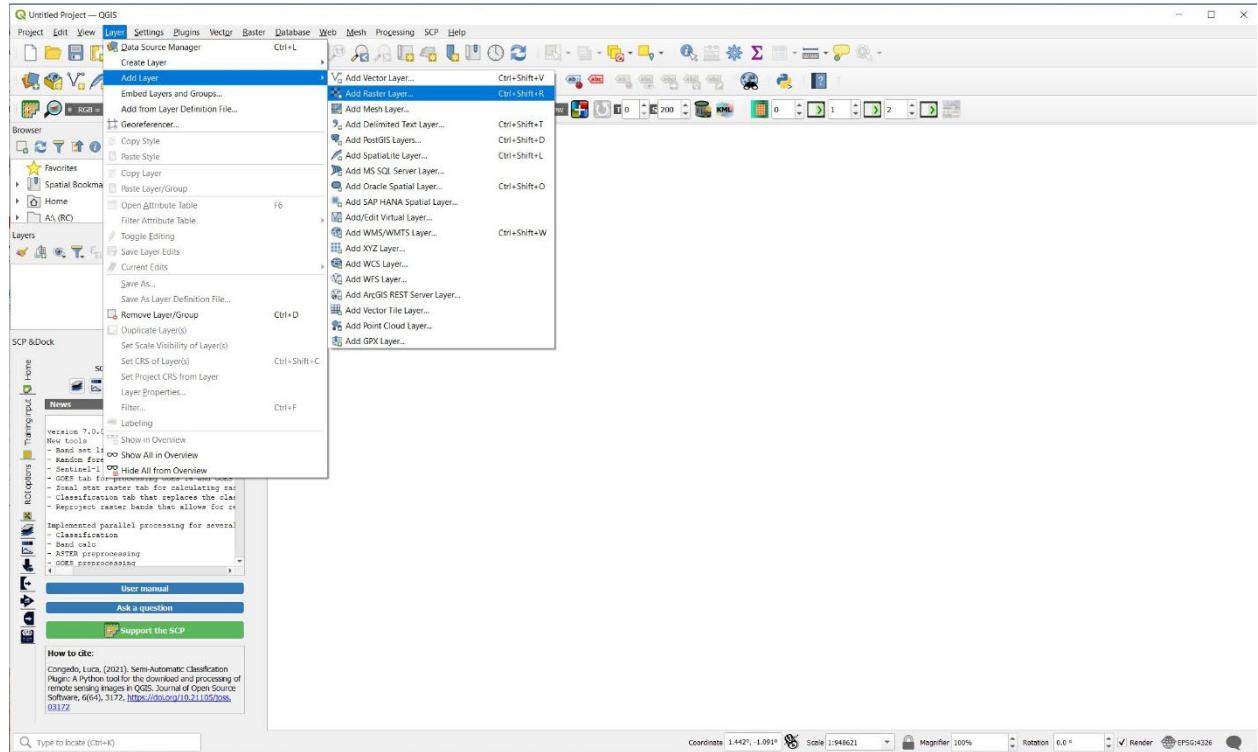
Scroll down and select dzetsaka

After you install dzetsaka you will also need to install a python library, scikit-learn. Follow instructions here. <https://rawgit.com/lennepkade/dzetsaka/doxygen/index.html>

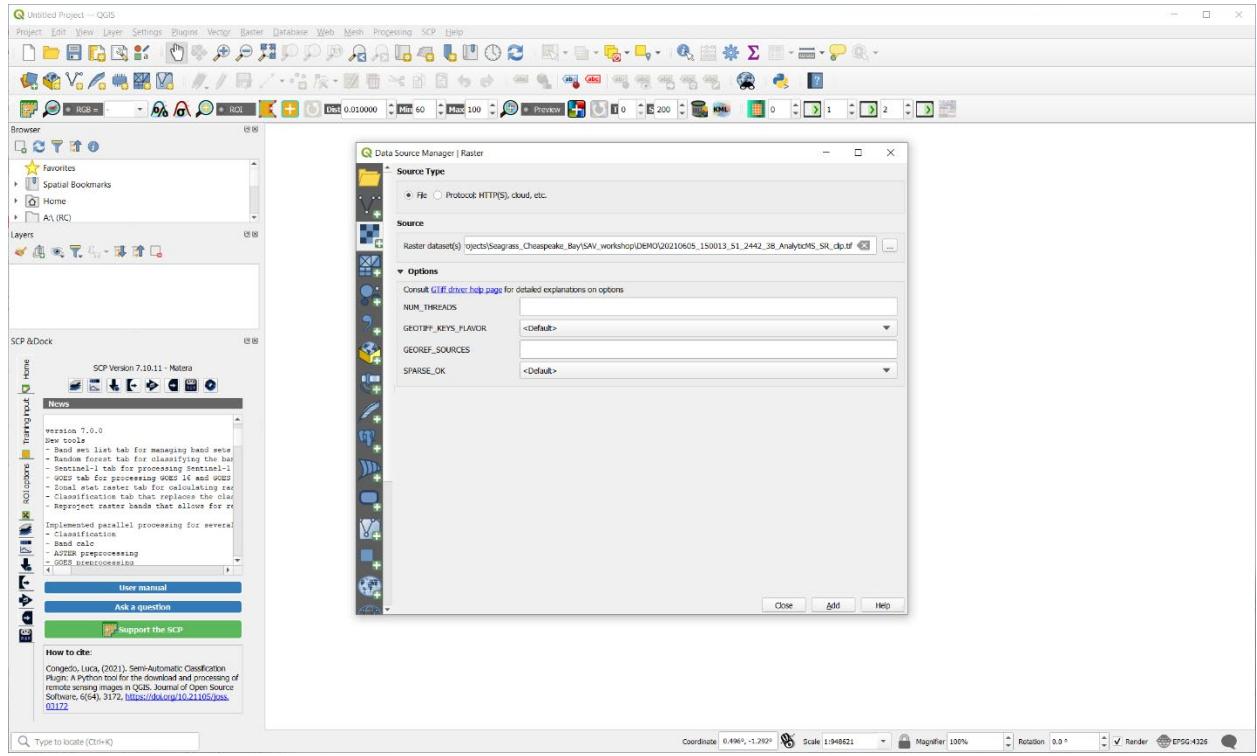
1. Load images in project

Open QGIS, make a new project.

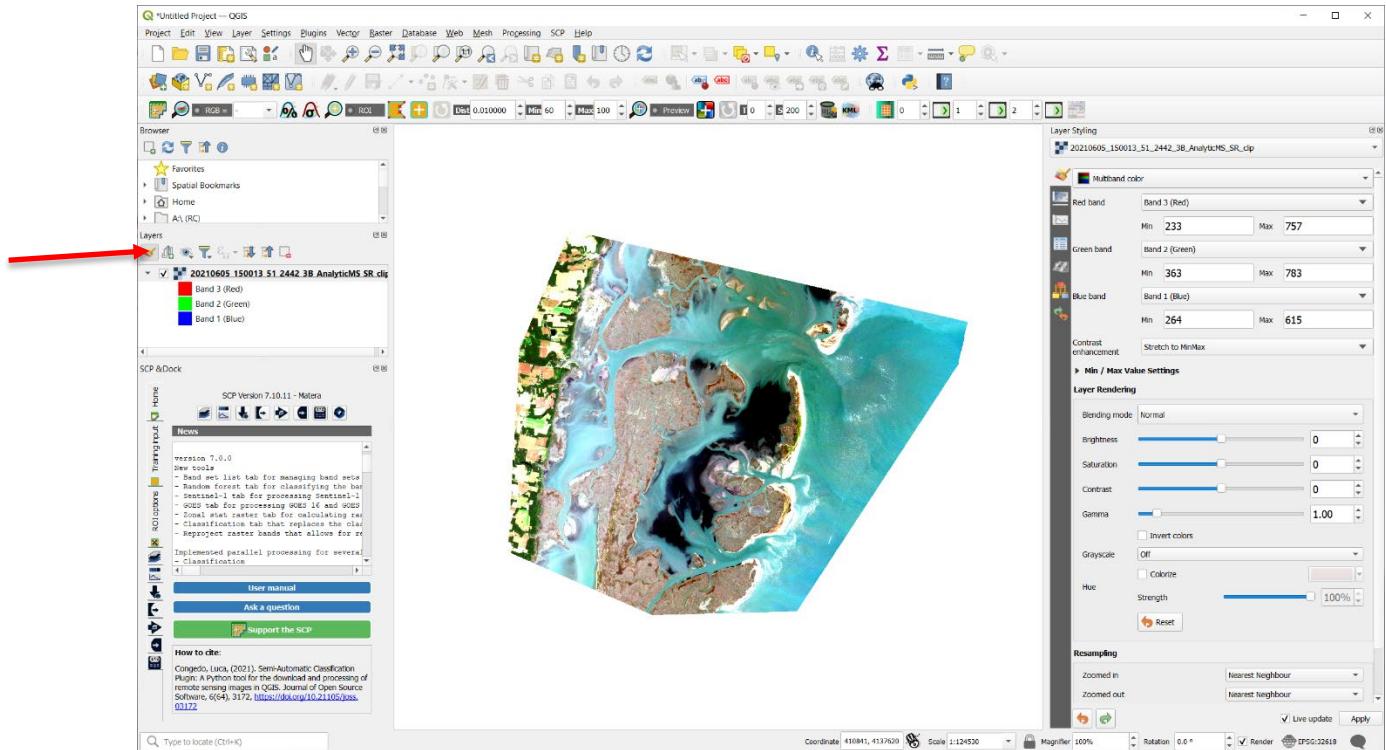
Go to Layer | Add Layer | Add Raster Layer



Navigate to the location of your image and then select add.



Select layer styling to change band selection for true color image



2. Mosaic

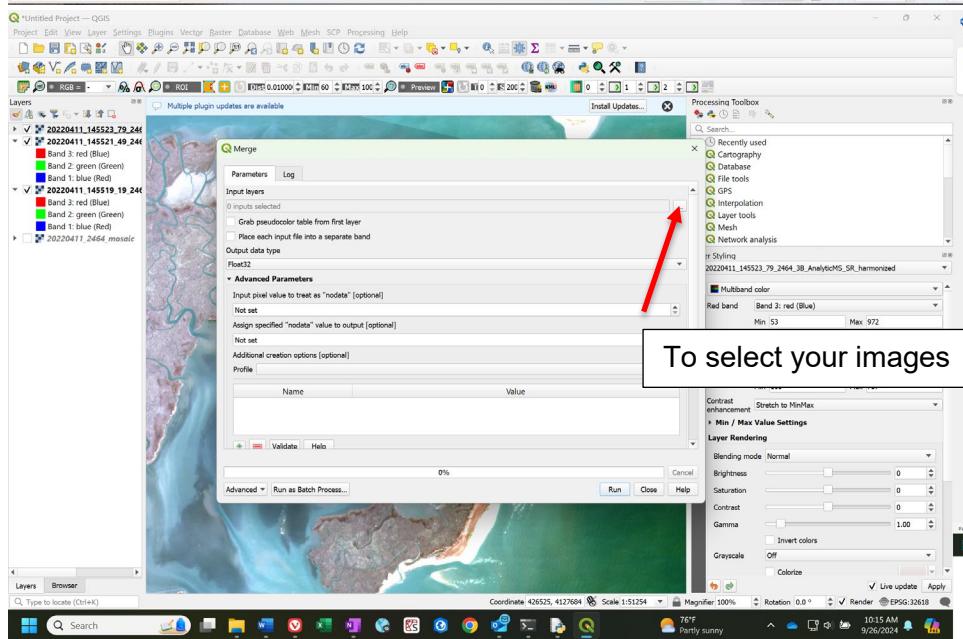
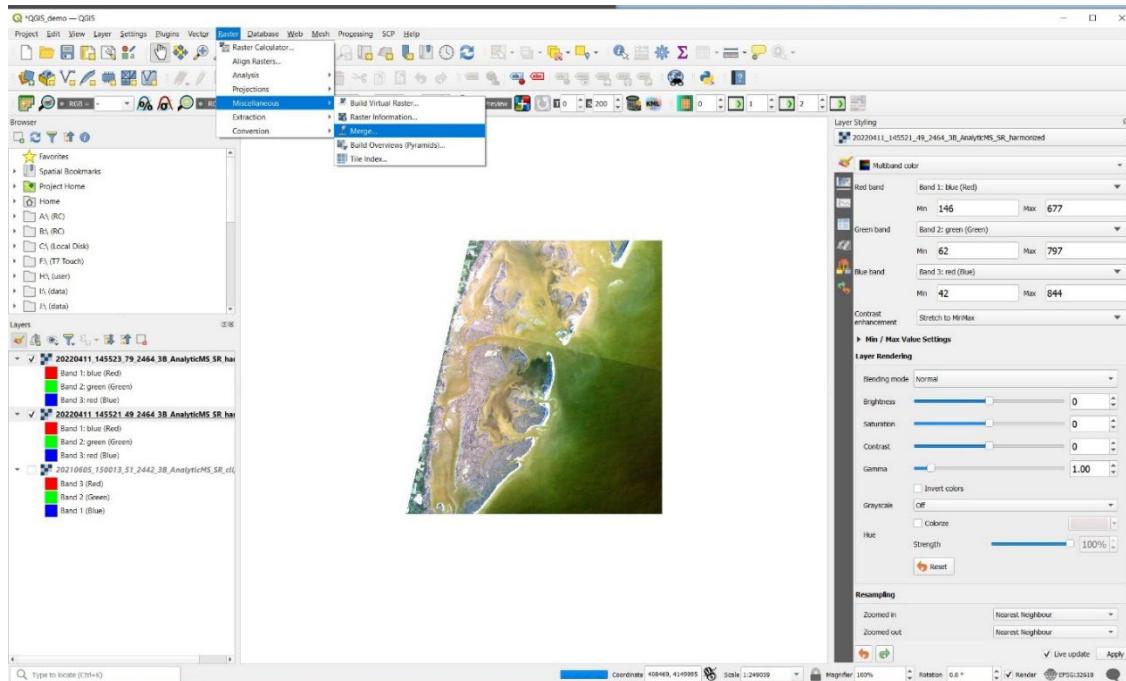
If you have more than 1 tile for the same day from the same sensor, I recommend that you mosaic them into one image. Use

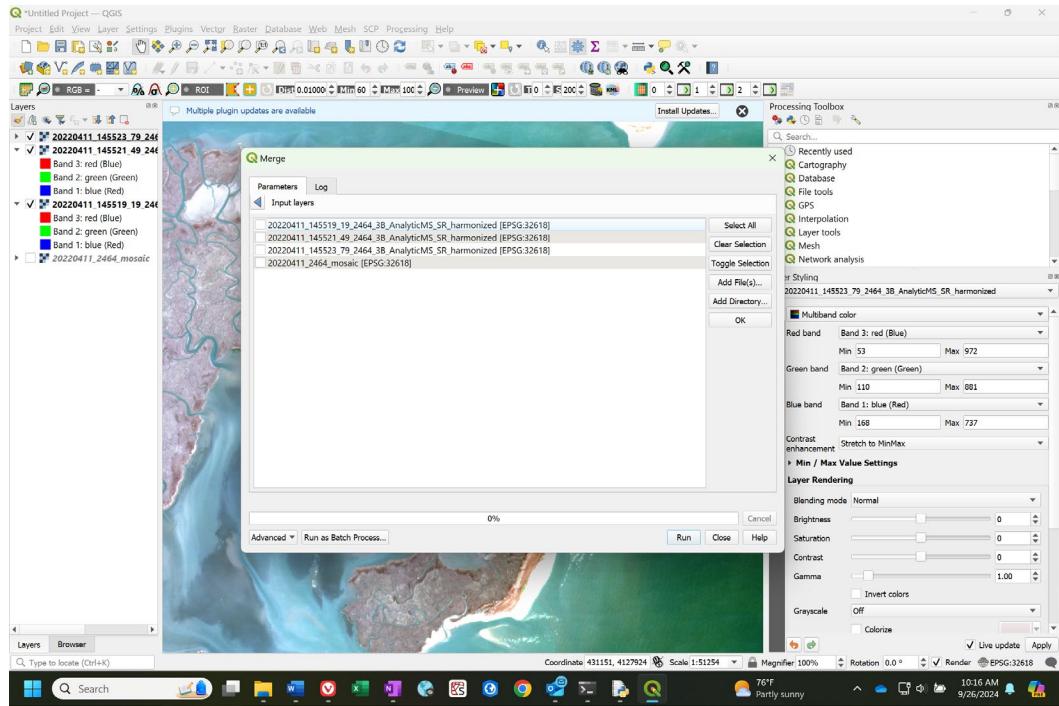
Raster | Miscellaneous | Merge

Select your tiles to mosaic and set an output file. I recommend the following naming style, which preserves the date (20220411) and sensor number (2464):

20220411_145519_19_2464_3B_AnalyticMS_SR_harmonized.tif

to; 20220411_2464_mosaic.tif

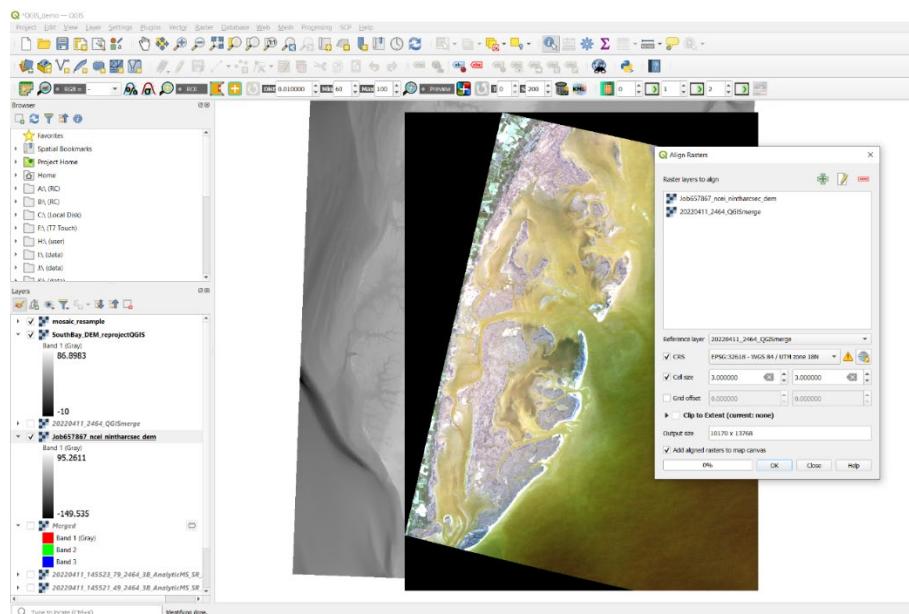




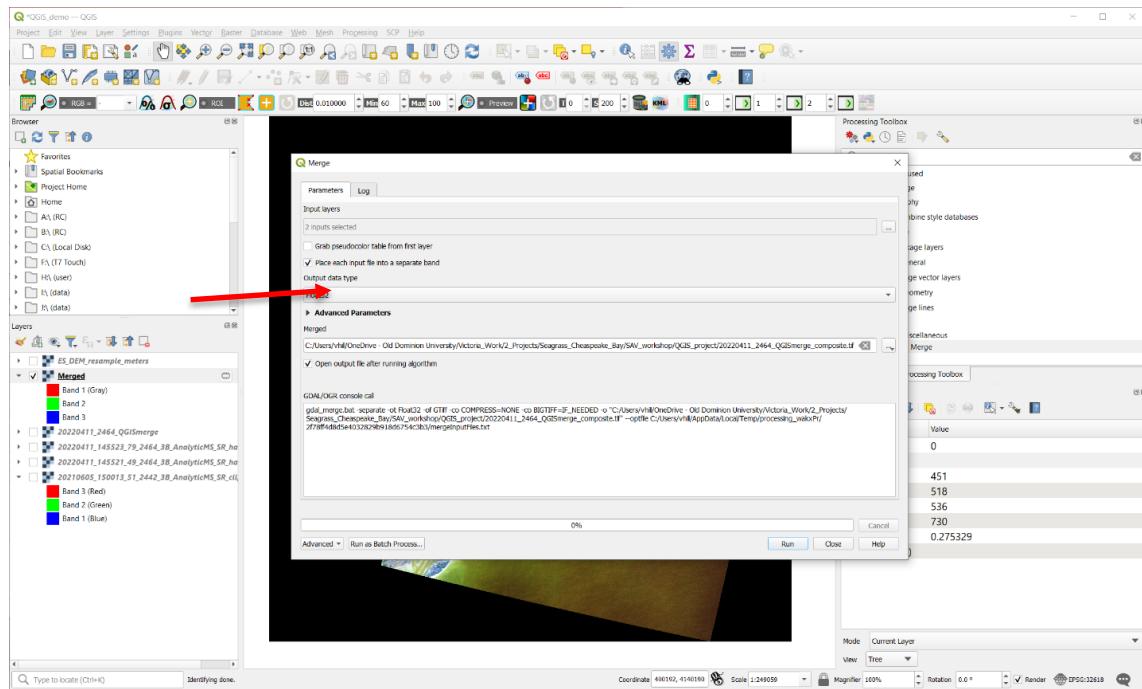
3. Composite (add DEM as a 5th band to your image)

- a. Reproject and resample your downloaded DEM file to the same projection and cell size as the Planet images. Use Raster | Align Raster.

Make sure the Planet image is set as the reference layer, this will generate two new raster's.



- b. “Merge” your DEM and Planet image. Use
Raster | Miscellaneous | Merge
Select your Planet image and your DEM file. **Make sure you check the “place each input file into a separate band” box.**



4. Classification.

You will need to active a couple of plugins. Go to Plugins | Manage and install plugins | search for semi-automated classification plugin and active, do the same for the dzetsaka plugin.

After you install dzetsaka you will also need to install a python librar, scikit-learn. Follow instructions here. <https://rawgit.com/lennepkade/dzetsaka/doxygen/index.html>

Two options for classification

- a. Using Semi-automated classification plugin

(SCP)<https://opensourceoptions.com/blog/supervised-image-classification-with-qgis/>;

<https://readthedocs.org/projects/semautomaticclassificationmanual/downloads/pdf/latest/>

- b. Using dzetsaka plugin

<https://www.youtube.com/watch?v=DLeG0Z3al9I>;

<https://www.youtube.com/watch?v=8b5fPxN6qQ4>;

<https://rawgit.com/lennepkade/dzetsaka/doxygen/index.html>

I recommend using option b it's easier to make the training patches

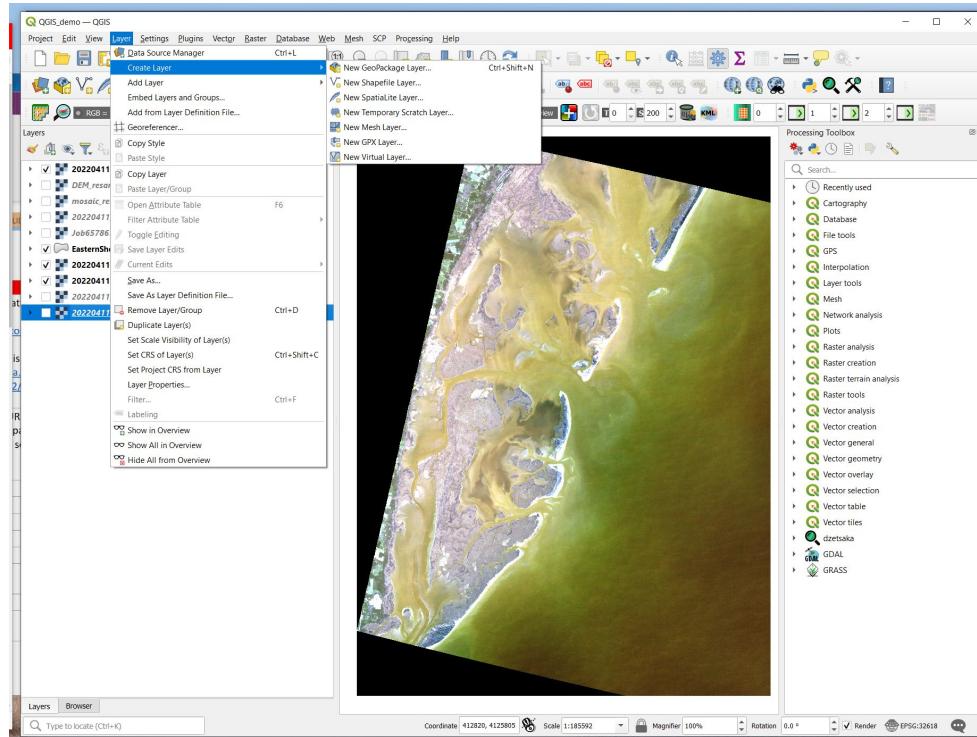
Decide on your classification schema, I am using the schema below. You can make your own, however, always make SAV subclass with values of 10 to 19, this is important in running the batch codes. You do not need to use all the classes on your schema, but having a master schema that you use instead of a new one for each site is useful for the future. I have several depths of SAV within some sites and they have different spectral characteristics, that is why I have three SAV subclasses.

Master class	subclass	Class value
Submerged vegetation		10
	DeepSAV	11
	SubmergedSAV	12
	EmergentSAV	13
	BenthicAlgae	14
Submerged Unvegetated		20
	Sand	21
	Mud	22
Optically deep		30
	Deepwater	31
	ShallowTurbid	32
	SuspendedSediment	33
	BlackWater	34

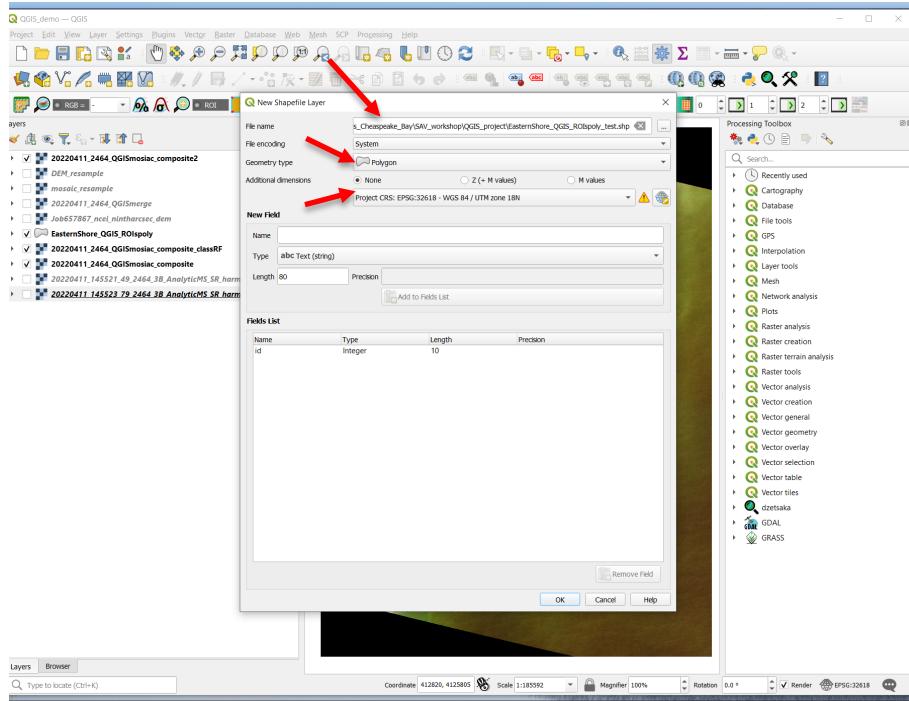
Terrestrial		40
	Marsh	41
	Beach	42
	TerrestrialVegetation	43
	Urban	44
Other		50
	Glint	51
	Cloud	52

Create a new layer

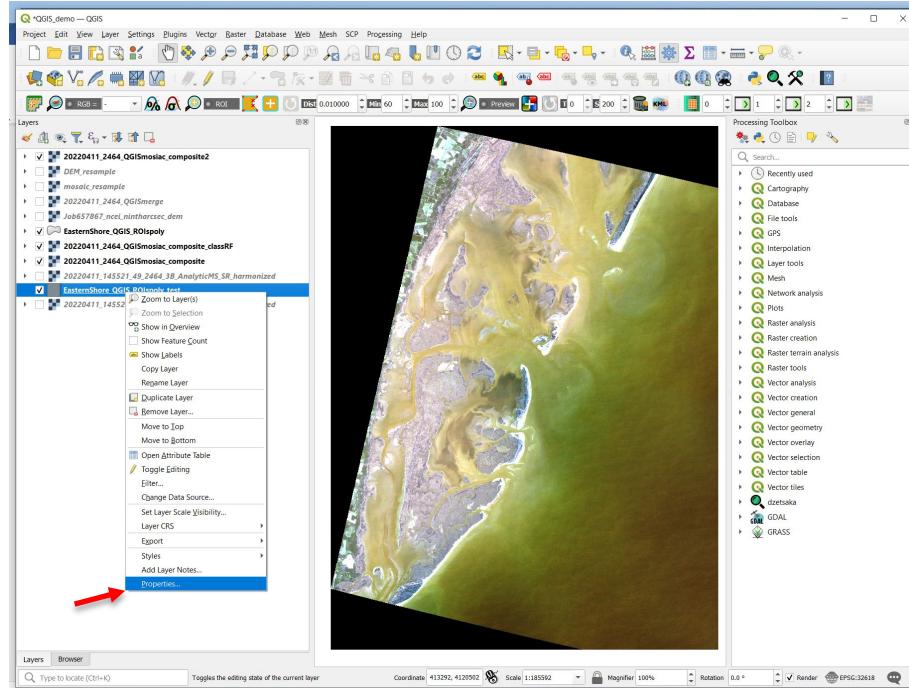
Layer | Create Layer | New shapefile layer



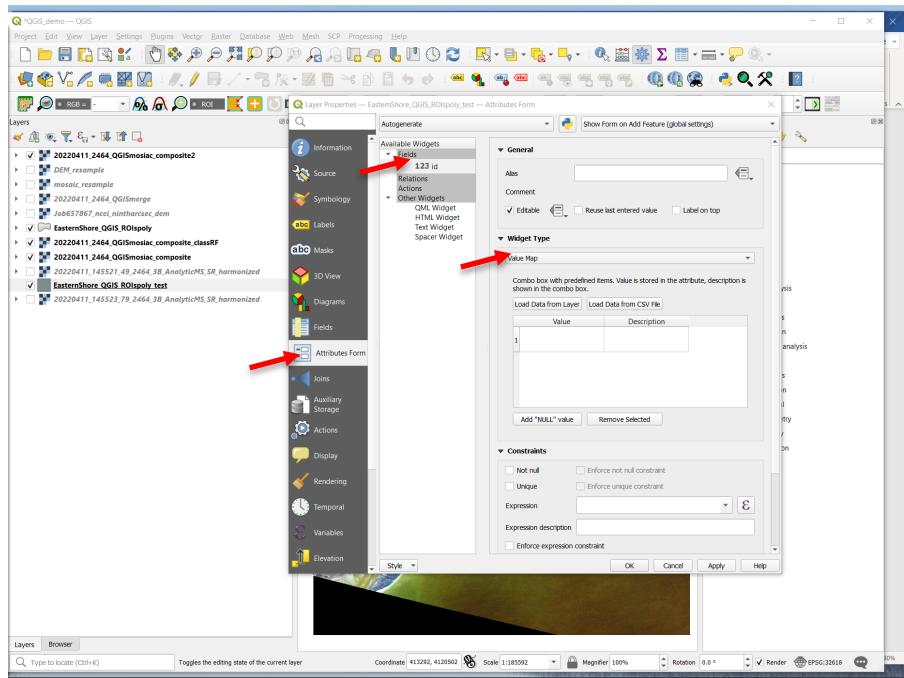
Give your new layer file a name. Select Polygon under geometry type. Select projection. Click ok.



Right click on your new layer file in the layer panel. Choose properties.

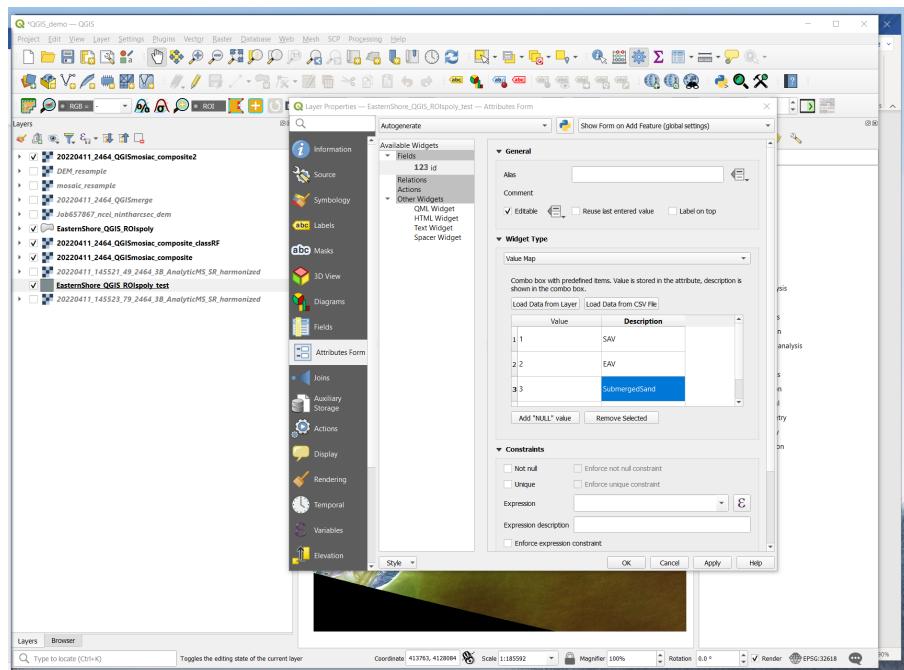


Select Attributes form, click on Fields | id, then under widget type select value map.

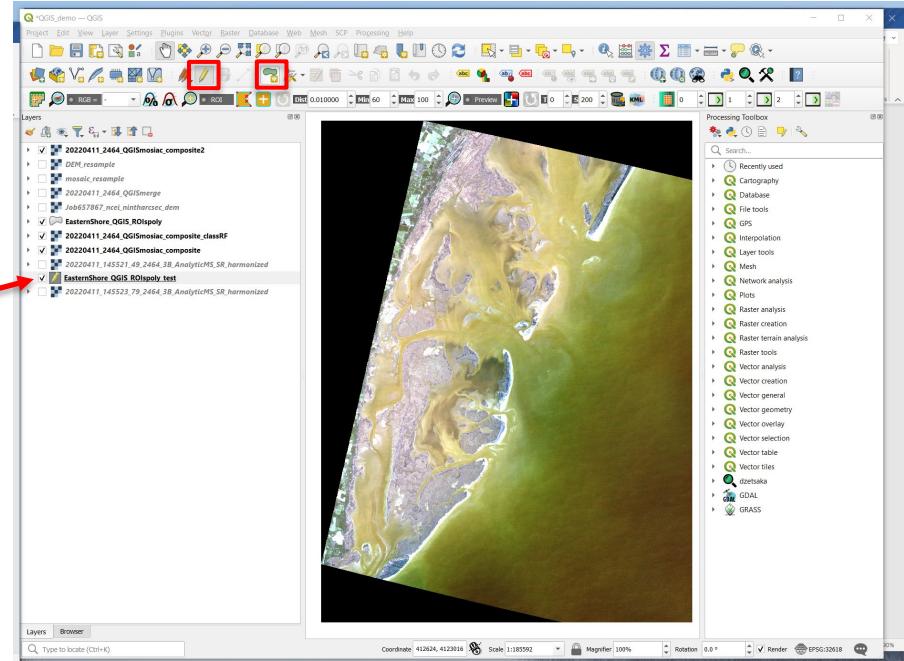


You are now going to make your classification schema, you can follow the one I made in the above table, or make your own.

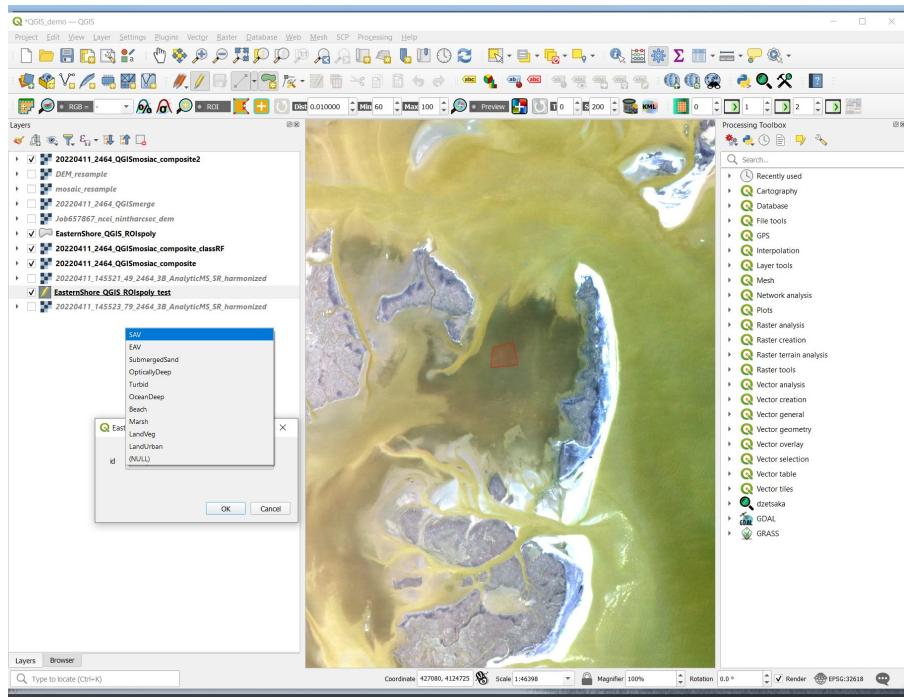
*****In QGIS there are no subclasses, so you do not need to use the classes, highlighted in yellow in the table, you can start with 11 = submerged SAV
Follow this until you have entered all your targets.



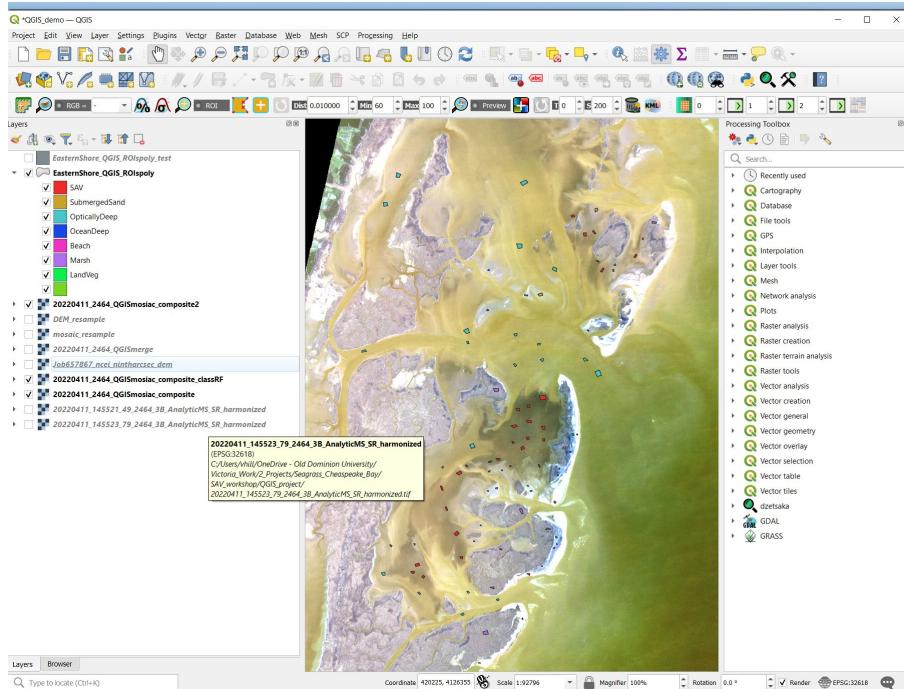
Now you will start making your training patches. Select your new shapefile layer, enter editing mode by clicking on the toggle edit tool (it looks like a pencil), then click on the add polygon tool (green polygon shape).



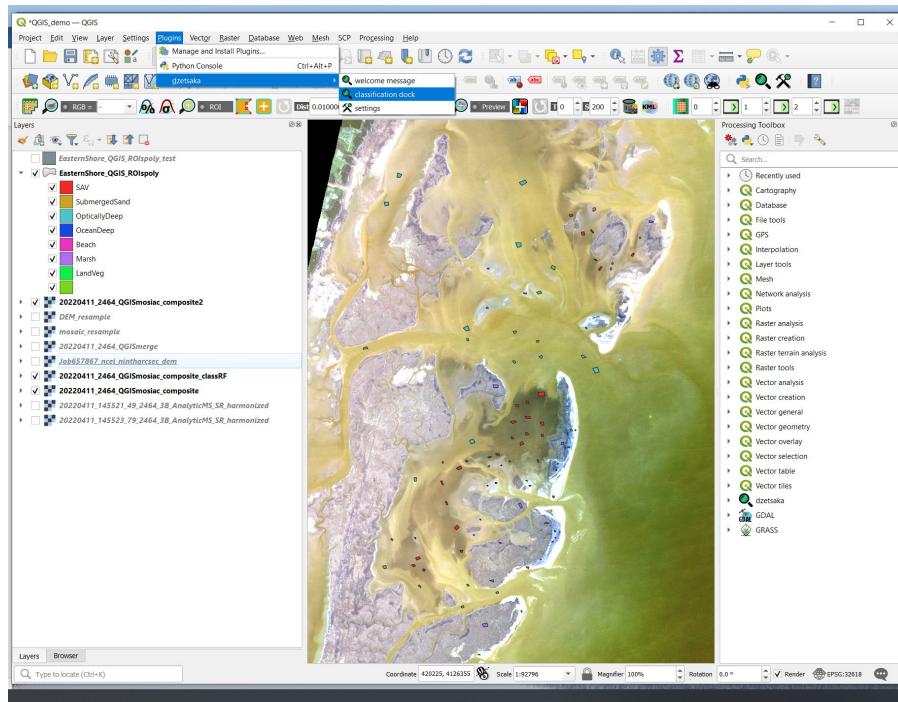
Once you click on the add polygon tool you can click and make a shape on your image where you want a training patch to be. Once you finish your shape, either right click or double click and it will close the polygon. It will then ask you to select what target this training patch is to be identified as. You will want to make sure you save your layer edits every few polygons (click on the disk icon next to the edit toggle)



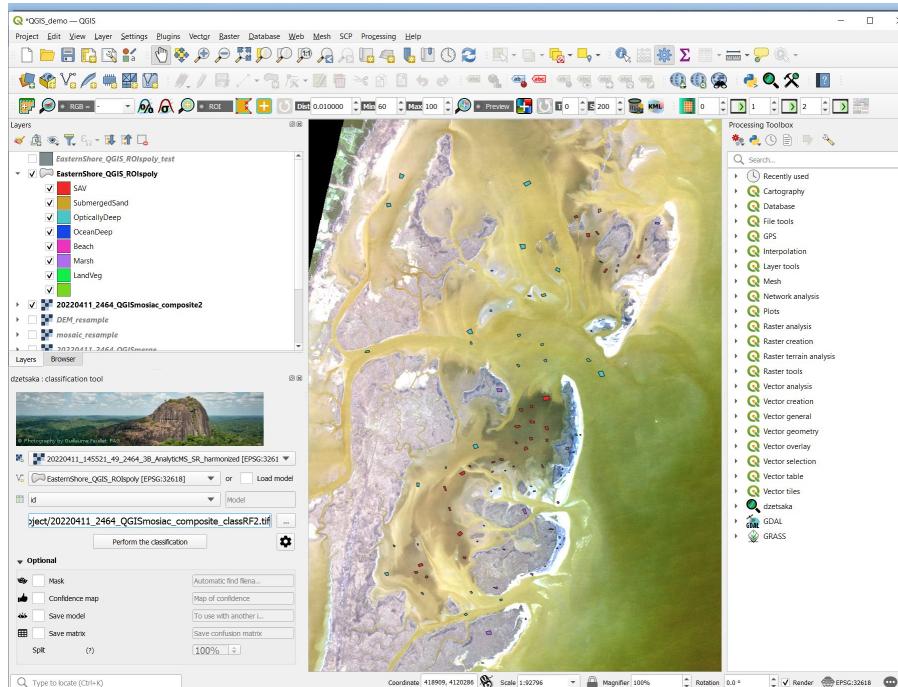
Once you have all your patches identified, you will be ready to classify the image.



Go to plugins, select dzetsaka and then classification dock.



In the classification dock, select the image to classify (your composite image), select the training patches. Add name of classified file output, click on the wheel shape and select the classification model. SVM is not working at the moment. Use Random Forest. Should take ~ 5 mins.



Now you have a classified image.

