Aim: - Apply principal component analysis on satellite image

Step 1: Open QGIS
Step 2: Click on and Select Add Layer and then Select Add Raster Layer
Step 3: Select Source Type File and then Click on Browse
Step 4: Select jp2 images and then Click on Open
• Click on Add
Step 5: Click on SCP and Select Band set
• Click on Add bands loaded in QGIS
• Select all images and then Click on OK
• Check Create raster of band set (stack bands) and Click on Run
• After Click on Run Pop-up Open and Select a directory Under Select a directory Create New Folder and Give Name Output and then Click on Select Folder
Step 6: Go to the Add Layer and then Select Raster Layer
• Click on Browse
• Select T33UWS_20230209T100151_AOT_1_stack_raster.tif and then Click on Open
• Click on Add
• After adding the raster image go to layer properties > Symbology and change render type to Multiband color and Select RED BAND to Band 4, GREEN BAND to Band 3, BLUE BAND to Band 2.
Step 7: Now install plugin PCA4CD -PCA for change detection.
• Click on PCA4CD
• Under PCA4CD-Compute or Load the PCA Select Variable A and Click on Browse
• Select T33UWS_20230209T100151_AOT_1_stack_raster.tif and then Click on Open
• Click on Compute Principal Components
• After Computing we will get 7 separate images
• here you can Click on Change detection layer and view the component analysis along with histogram details of particular image
• Click on Save PCA File
• Click on Save
• Again go to Layer > Add layer > Add raster layer, then in raster dataset(s) and this select saved
pca file and click on add.
• After opening the pca image, now you can change the band from layer properties > Symbology > Render Type > Multiband Color here you can set the RGB TO B1,B2,B3 OR RGB TO B5,B6,B7 and Click on Apply.
• Final Output of Principal Component Analysis on Satellite Images.