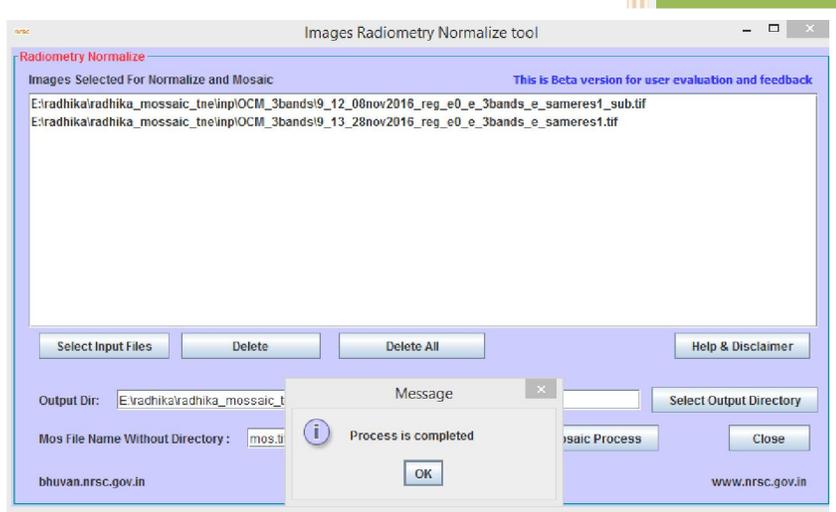


Radiometry Normalisation and Mosaic Generation tool



Radiometry Normalisation and Mosaic Generation tool

1. Introduction

Image mosaicing is an important step in generation of large area radiometrically balanced images for mapping applications as well as in visualisation of large areas in a single view. Mosaicing is the process of joining overlapped georeferenced images together to form a larger image.

Mosaic of multiple images involves two major steps color balancing and stitching. Many color matching techniques are available, but no single color matching technique is suitable for a given set of images.

In this tool, Mosaic Normalization is achieved using statistical based automated tool to color match 'N' number of images and to get seamless mosaic with 'cut line feathering technique' in overlap areas. It assumes both images (to be mosaiced) are geometrically registered and have certain overlap and they are at the same spatial resolution.

2. Hardware and software requirements:

Desktop computer system with minimum 4 GB RAM and any operating system with preinstalled Java SE JRE 7 (Build 1.7.0 or higher).

Update Environment Variable Settings:

Add Java Installation directory at the end of 'path' variable inside Environment Variable settings of your system.

- a. **Software Requirements:** Java 1.7 or
- b. **Hardware Requirements:**

Hard Disk	:	4GB and Above
RAM	:	4GB and Above

3. Input and Output File format: GeoTiff

Input requirements:

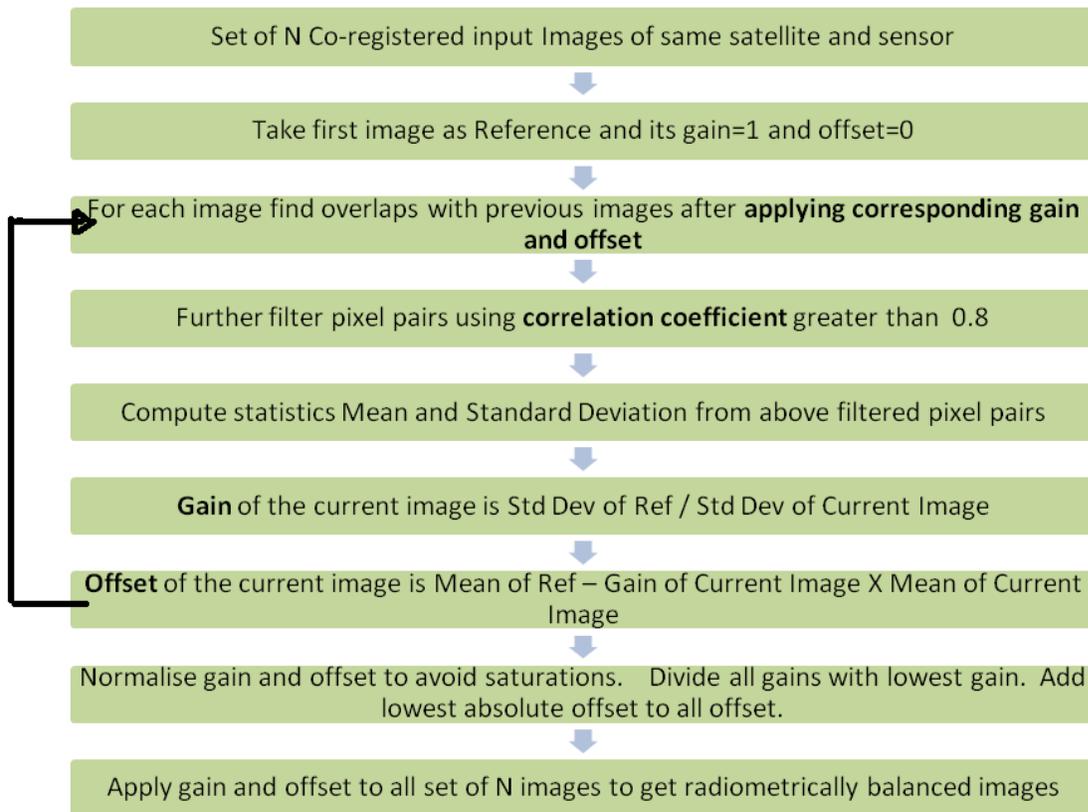
- All images with same x and y resolution, bands and projection.
- Minimum of 10% overlap to get better radiometry balanced and mosaic.
- First image in the input list is taken as reference.
- Successive images that are adding to the list must have overlap with any one of the previous images that are added to the list.
- It is recommended to use TOA corrected images for better results.

- Data should be cloud free in overlap areas

Input Limitation:

- Cloud mask to be done outside, when there is cloud in the overlap areas
- Mosaic file that exceeds 4GB size, will not generate.

4. Methodology



5. Downloading the program

The program and the user manual can be downloaded from the location:
http://www.nrsc.gov.in/Satellite_Data_Products_Overview?q=Download_Softwares_1

6. Salient features of the software:

- ✓ Handles n number of images at a time
- ✓ Radiometrically balances all images taking first image as reference
- ✓ Generates GainOffset.doc file, gives information about each file, band's gain and offset values.

- ✓ Generates corresponding color balanced images for every scene with `_go` as superscript for each file.
- ✓ Seamless mosaic upto the size of 4GB file can be generated.
- ✓ Feathering is done in overlap areas at the time of mosaic
- ✓ Front End validation and corresponding alert and error messages are provided
- ✓ Platform independent, as it is developed using JAVA
- ✓ Does not require any installation as program can run by invoking it through double clicking the `MosNor.bat` or through command mode.

7. Steps in Running the Program:

Invoke program by double clicking on "**mosNor.bat**" in windows system or type the following command in the terminal window of your operating system "**MosNor.bat**" the GUI appears (Give full path of Java command and full path of `mosNor.bat` in case if above command does not work). If your system is having more memory try allocating more memory to JVM using `-Xms` argument in command mode.

(Example: to allocate 4GB of memory: "`-Xms4096m`")

- ❖ **Download JRE:** Java SE JRE can be downloaded and installed from Oracle website (www.oracle.com).

(or)

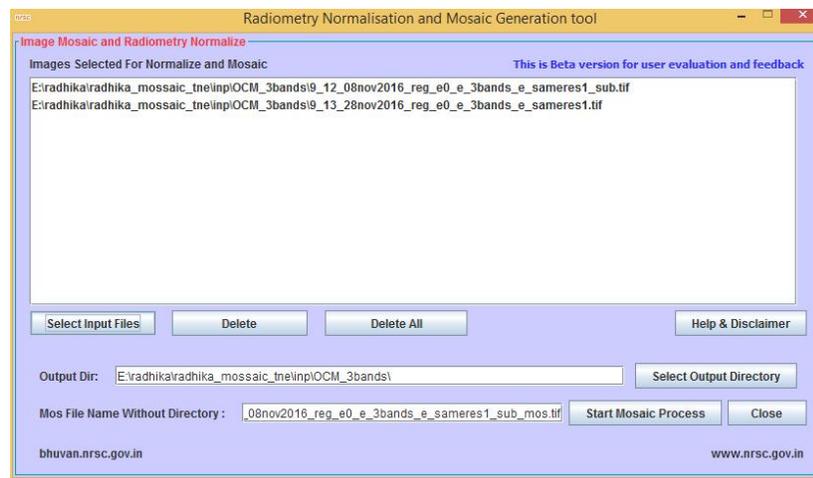
Double click on MosaicNormalization.jar to invoke the program

Download JRE: Java SE JRE can be downloaded and installed from Oracle website (www.oracle.com)

Set JAVA path in Environment Variables.

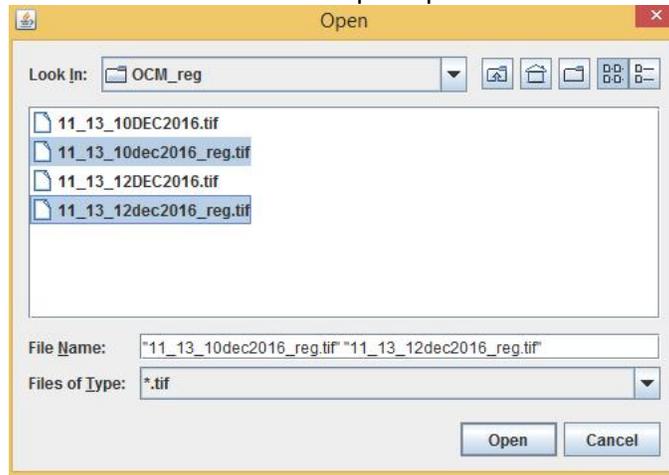
8. Procedure to process the module:

After double clicking on "MosaicNormalization.jar", the Mosaic Normalization frame is shown as below"



Mosaic Normalization Procedure:

- Click on "Select Input Files" button to add multiple input files into the list.



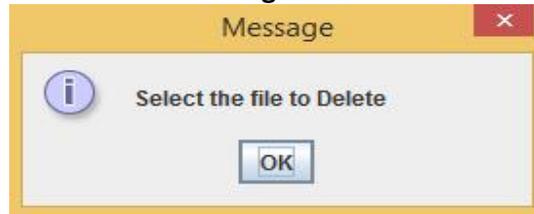
- To delete a file from the list, select the file from the list and press "Delete" button
- To remove all files, click on "Delete All" button.
- Minimum of Two files to be added to the list
- First image in the list is taken as reference and balances all other images according to reference image (First Image)
- By default reference file directory is taken as output directory, which can be changed
- By default reference filename _mos.tif is taken as mosaic filename, which can be changed as per user requirement.
- On click of "Start Mosaic Process" button it normalizes all images and generates individual "_go.tif" files in "Output Dir". It also creates GainOffset.doc file which contains gain and offset of each band for every file.
- Enter mosaic filename with ".tif" as extension. But there is a limitation of the mosaic file size.(upto 4 GB output file can be generated)
- Click on 'Close' button to exit from the module.

9. Following are the frontend validations done:

- Improper input Geotiff file name



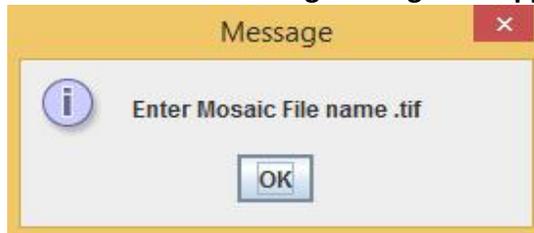
- Clicking on Delete button without selecting file in the list



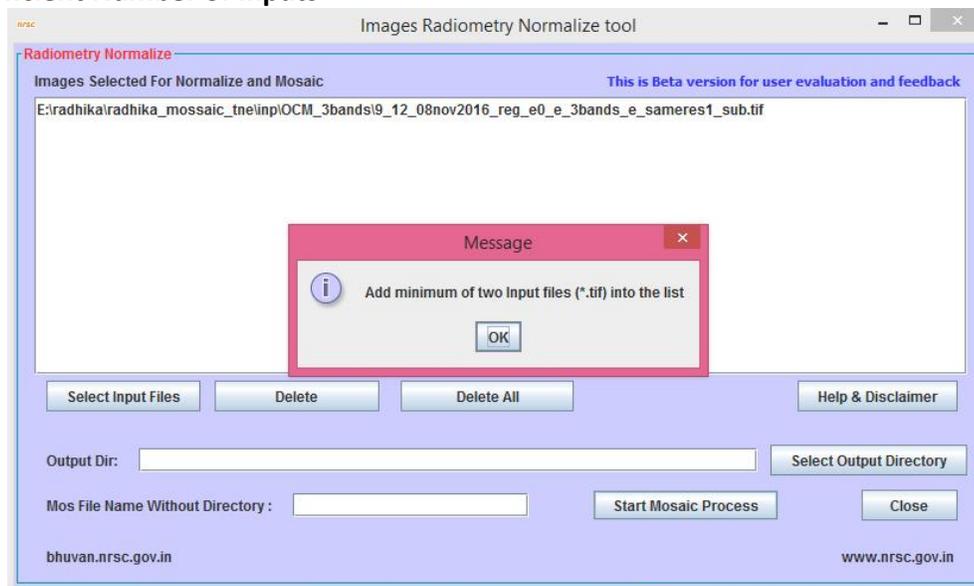
- Entered Wrong Output Directory



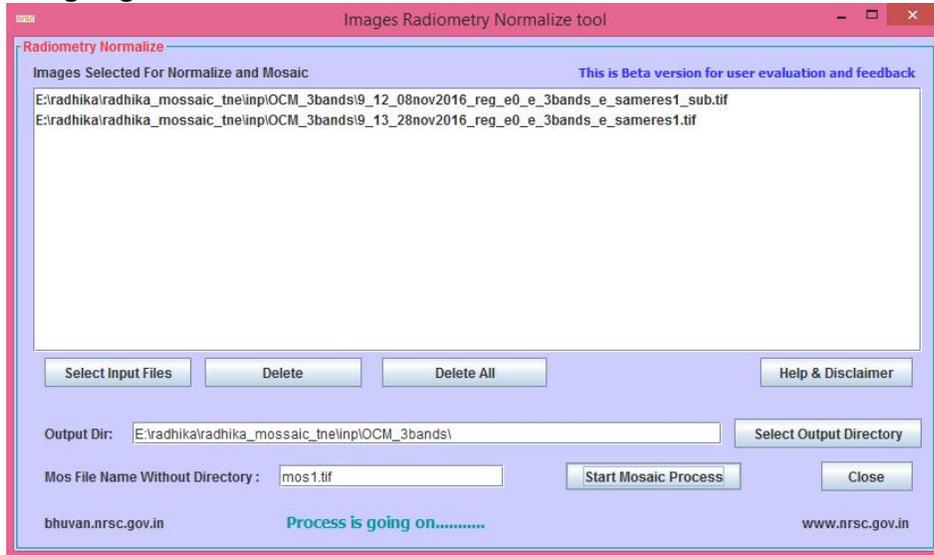
- Mosaic filename is not entered – the following message will appear



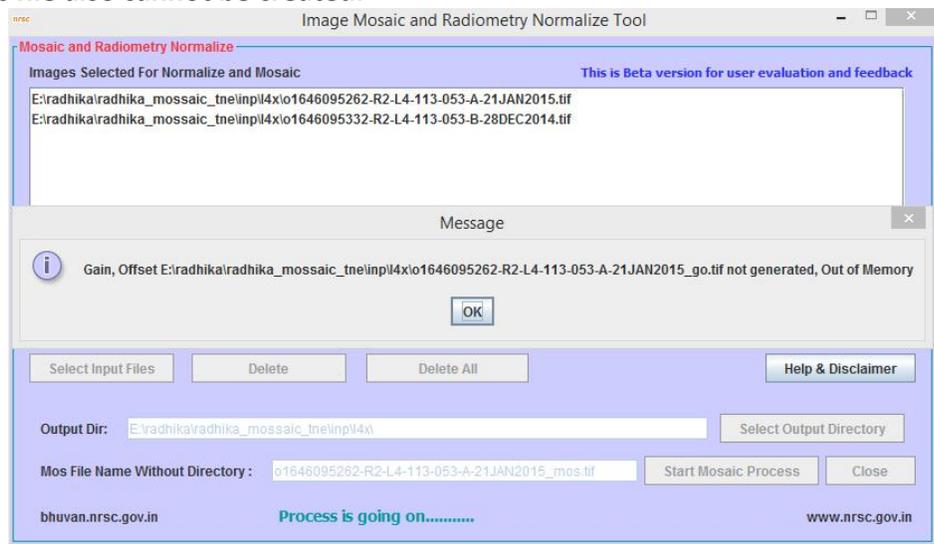
- Insufficient Number of Inputs



- On pressing Start Mosaic Process, it displays process status by displaying the message "Process is going on....." as shown below:



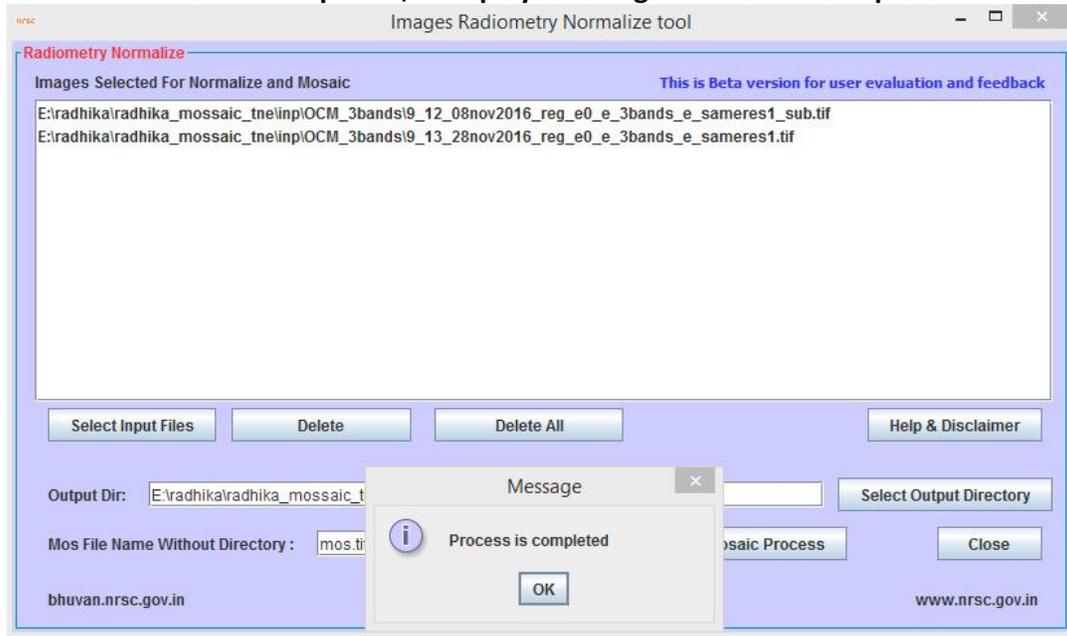
- When there is not sufficient memory available, then `_go.tif` files cannot be created, mosaic file also cannot be created.



- Mosaic cannot be created, when corresponding `_go.tif` files not generated or not available in the specified directory.

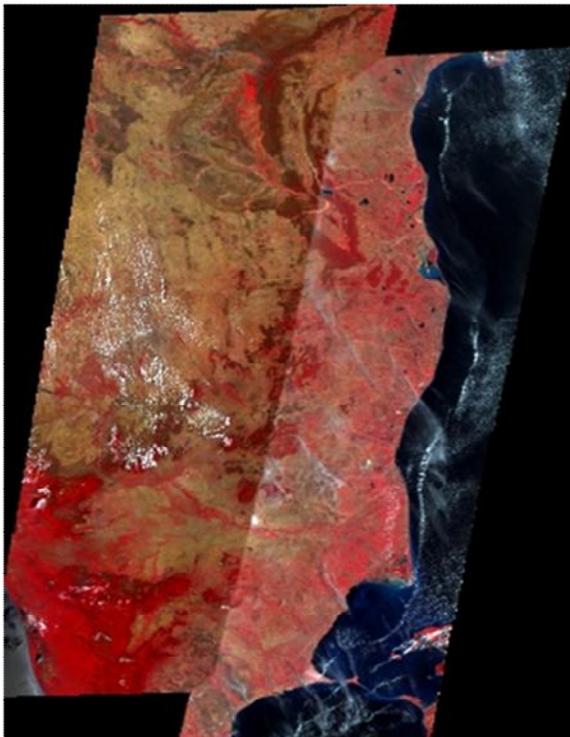


- After the Process is Completed, it displays message "Process is Completed"

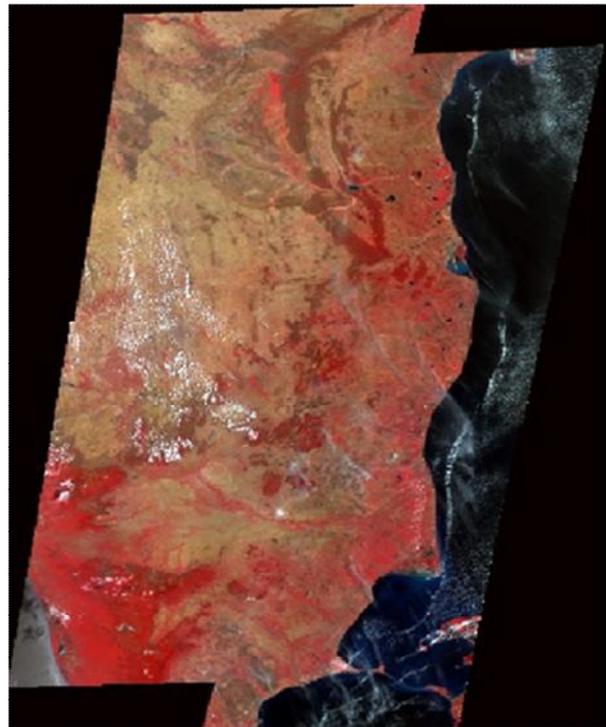


9. Output Images: (Normalized and Mosaiced Images)

Mosaic without Normalization



Mosaic with Normalization



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