

User Manual

Cloud and Shadow Mask Generation for RS2 AWIFS and L3 Data

National Remote Sensing Centre

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CLOUD AND SHADOW MASK OF RS2 AWIFS AND LISS-III Software Module

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1. Introduction

Clouds in remote sensing images are a source of information in different ways. Clouds play a critical role in the climate system and have importance in the energy balance of the atmosphere. Cloud cover can also provide information related to weather conditions and predictions.

In Optical remote sensing the data acquired is affected by the presence of cloud. For studying land resources, the clouds block the features beneath it. In such cases, information on cloud pixels is a necessity for feature extraction. Delineation of clouds and cloud shadows is an important pre-processing step.

Any reliable cloud delineation algorithm makes use of thermal band in addition to visible bands. In the absence of thermal band for Resourcesat-2 AWiFS images, an algorithm based on unsupervised classification exploiting spectral attributes is developed for automatic cloud and cloud shadow detection.

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 More
- b. **Hardware Requirements:**
 - Hard Disk** : 4GB and Above
 - RAM** : 4GB and Above

3. Input and Output File format : GeoTiff

4. 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](http://www.nrsc.gov.in/Satellite%20Data%20Products%20Overview?q=Download%20Softwares%201)

5. Salient features of the software:

- ❖ Generates Cloud and Shadow mask file for Resourcesat2 AWiFS and LISS-III
- ❖ It can delineate Snow and Moisture Cloud which have same spectral signature.
- ❖ It can delineate Salt pans and Moisture Cloud which have same spectral signature.

- ❖ It converts input DN into its corresponding TOA files, which is the requirement for cloud, shadow mask for both AWiFS and LISS-III. In this option corresponding META file should exist in the same folder.
- ❖ For each input file corresponding output with `_CldMsk.tif` file is generated
- ❖ Progress Bar is provided to know the status of the processing files
- ❖ 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 `run.bat` or through command mode.

6. Steps in Running the Program:

Invoke program by double clicking on "`cldMsk.bat`" in windows system or type the following command in the terminal window of your operating system "`cldMsk.bat`" the GUI appears (Give full path of Java command and full path of `cldMsk.bat` in case if above command does not work)

If your system is having more memory try allocating more memory to JVM using `-Xmx` argument in command mode.

(Example: to allocate 4GB of memory: "`-Xmx4096m`")

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

7. Procedure to process the module:

After clicking on '`cldMsk.bat`', the Cloud and Shadow Mask of Resourcesat-2 AWiFS and LISS-III frame is shown



Standard input data of AWiFS or LISS-III are to be selected (tif files) using Browse button. But corresponding Meta files should exist in the same directory.

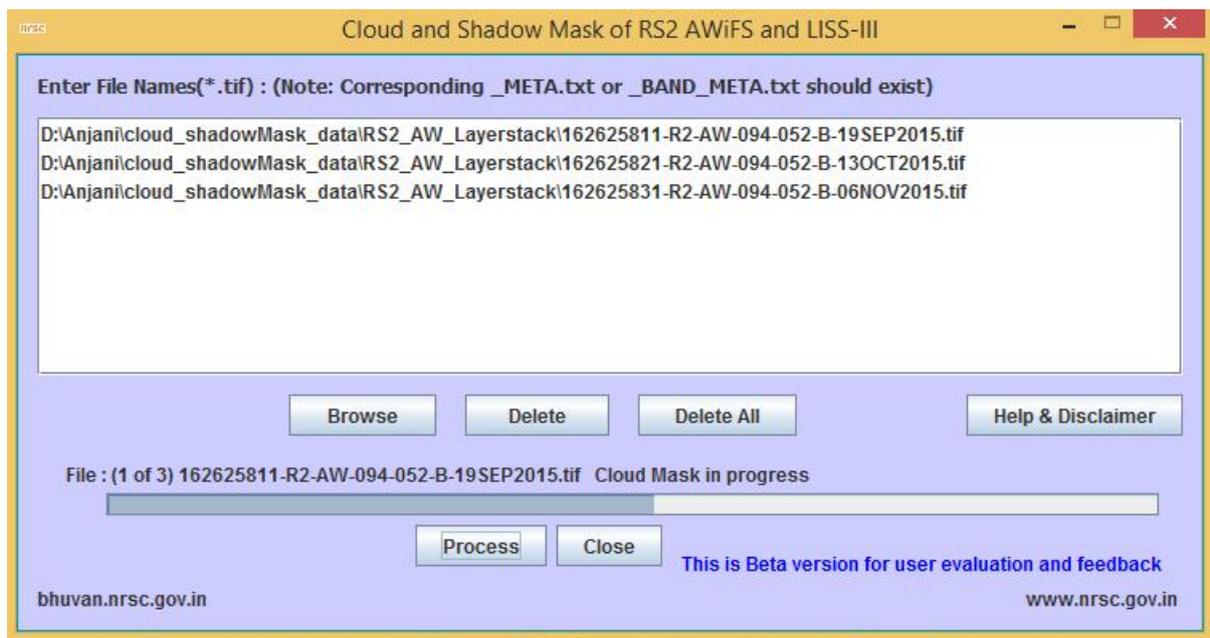
If any file selected from the browse, is required to delete, then select the file in the List and click on 'Delete' button.

If all selected files are to be deleted, then click on 'Delete All' button.

Click on 'Process' button to start the process.

Cloud Value is given 125 and Shadow value 50 in output file.

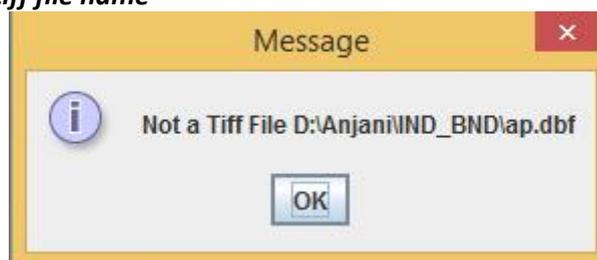
Click on 'Close' button to exit from the module.



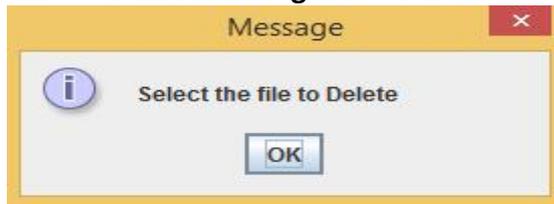
Process is in progress, showing the status in progress bar

8. Following are the frontend validations done:

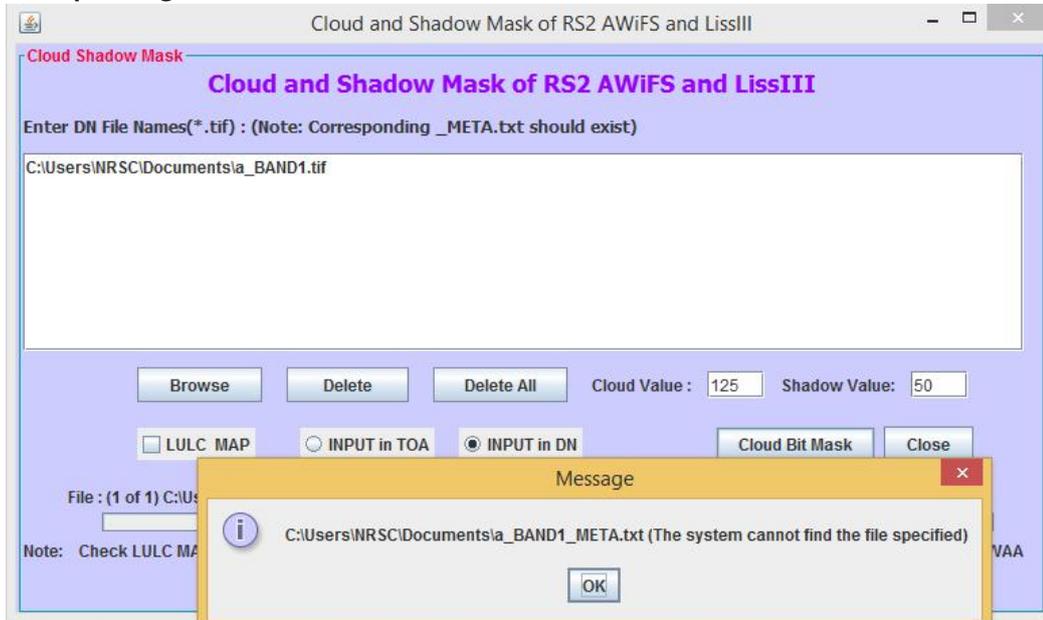
- *Improper input Geotiff file name*



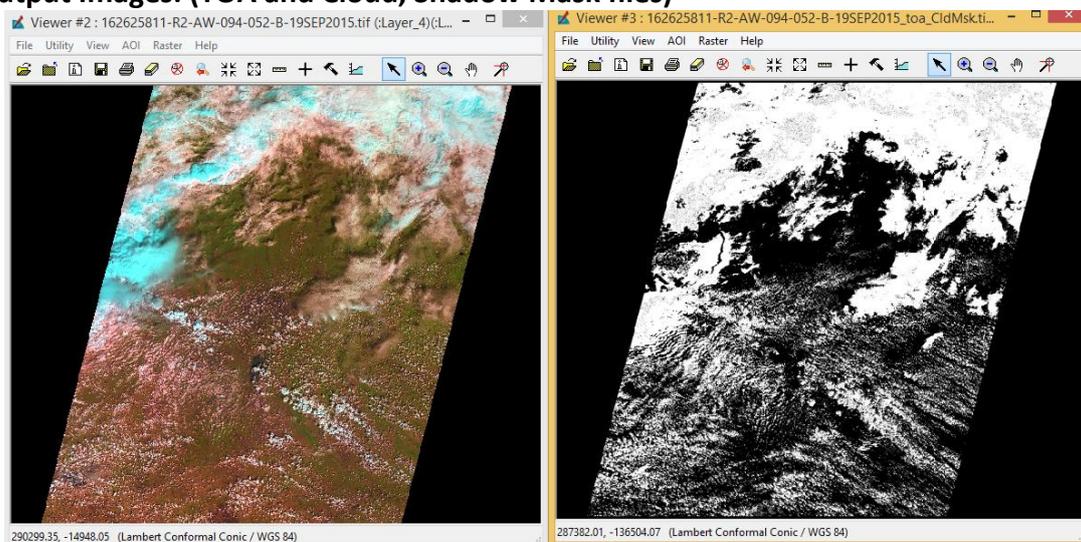
- Clicking on Delete button without selecting file in the list

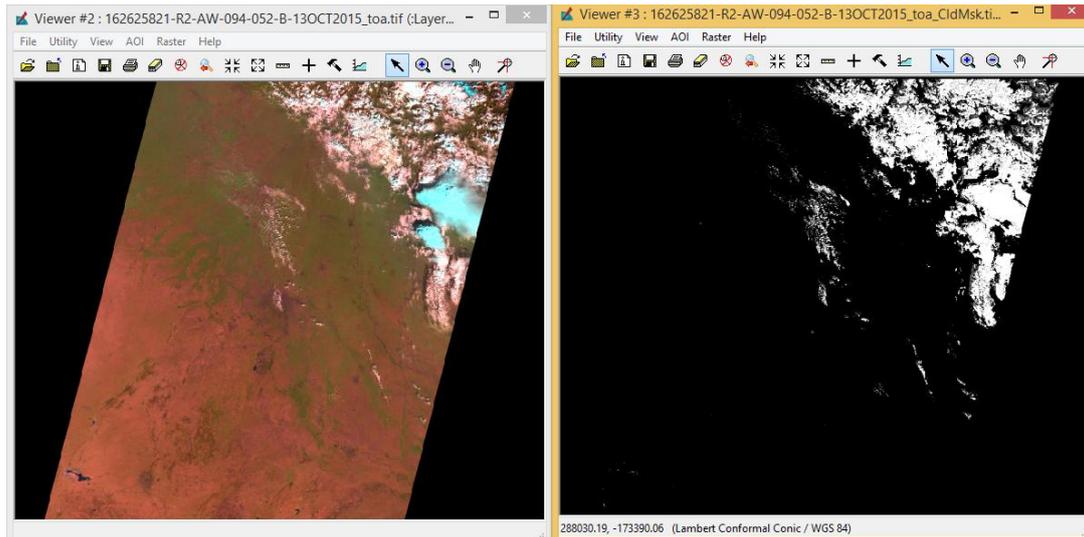


- If corresponding META file is not available



9. Output Images: (TOA and Cloud, Shadow Mask files)





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2. This software utility is one of the module implemented based upon the Resourcesat-2 AWIFS and LISS-III files. Developer does not claim that this utility will be fool proof and replace any other existing module or sensor.