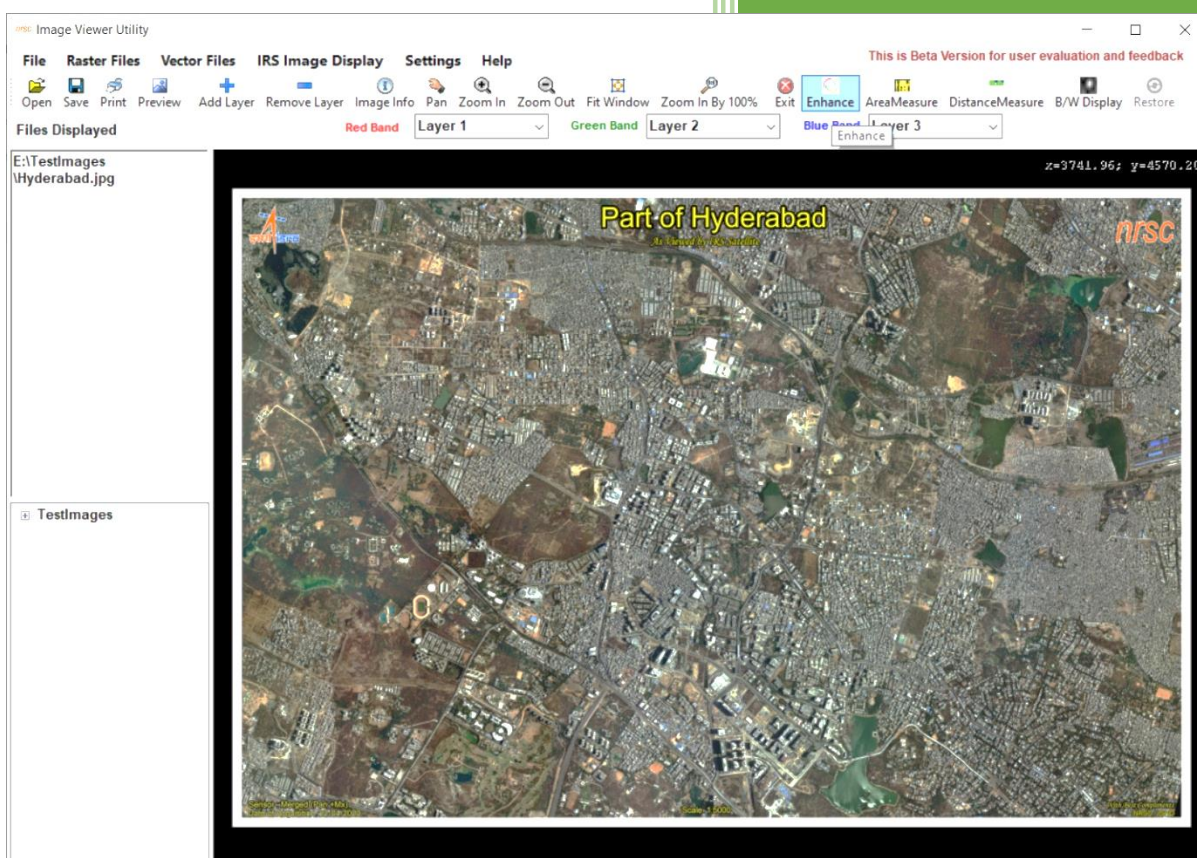


# User Manual

## Image Viewer Utility



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## 1. Introduction

Remote sensing satellites view the earth in different spectral bands, viz. near infrared (NIR), red, green, and blue bands and provides images at various spatial, radiometric and temporal resolutions. For visualizing these images an image viewer with capability of minimum radiometric enhancements is required.

The Image viewer S/W module has been developed using the Open-source Map windows software using Visual C# on windows platform to display the images, shape files and ASCII and Binary GRID files. Additionally, it supports distance and area measurement on image.

This software utility supports several file formats and various spatial and radiometric resolutions of Remote sensing Image data. It uses Mapwindows Active X control for image display.

## 2. Hardware and software requirements:

Desktop computer system with minimum 1 GB RAM with Windows 7 or higher operating systems with .net framework 4.5 preinstalled and Mapwindows ActiveX control ver 4.9.4.2(Win32 version) or higher installed using executable “MapWinGIS-only-v4.9.4.2Win32” downloadable from the web site:

<https://github.com/MapWindow/MapWinGIS/releases/download/v4.9.4.2/MapWinGIS-only-v4.9.4.2-Win32.exe>

### Input and Output requirement:

Input file should be in JPG, BMP, PNG, GIF, GeoTIFF, ERDAS Imagine format, PCI pix format, shape files, ASCII and binary grid files. The raster files can be individual band files or layer stacked. Software utility has the capability to display both color and BW images at 8/16-Bit depths.

## 3. Downloading the program

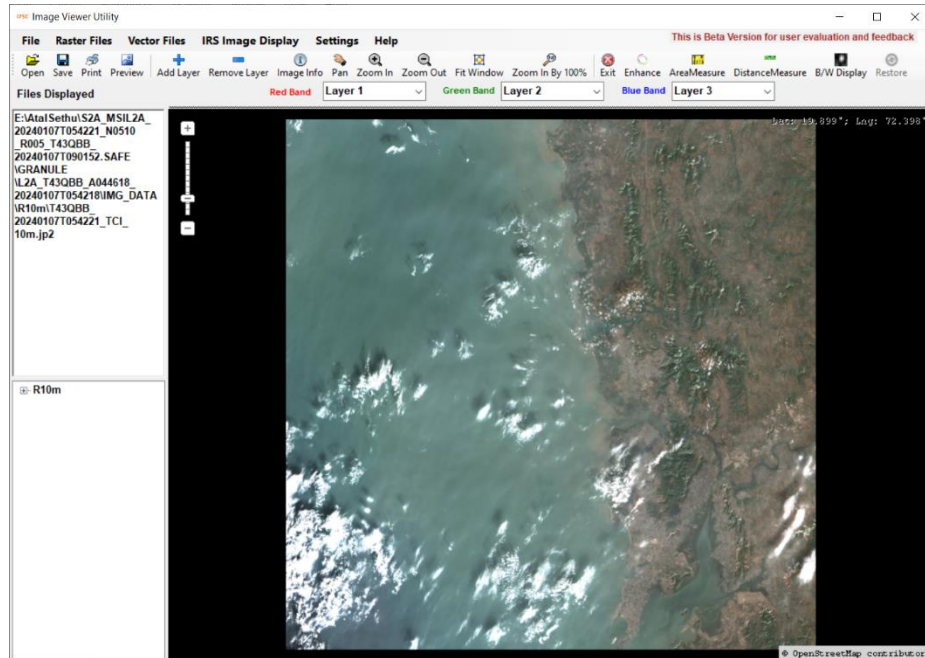
The program and the user manual can be downloaded from the location:

<https://bhoonidhi.nrsc.gov.in/bhoonidhi/help/tools.html>

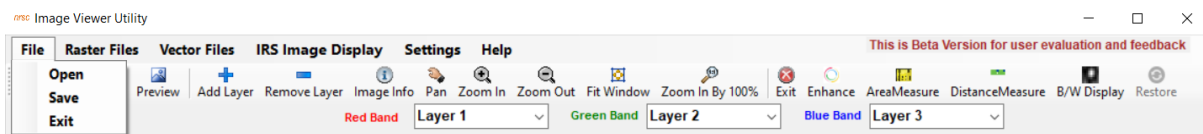
## 4. Salient Features of software

1. Displaying of satellite images at various spatial and radiometric resolutions.
2. Capability to Display B/W or Color Images and shape files to a limited extent.
3. Provisions for Zoom in, Zoom out, Fit Image to Window, full resolution display etc.
4. Provisions for changing the band combinations for display.
5. Distance measurement tool
6. Area Measurement tool
7. Enhancing the raw image for better visualization
8. Taking snap of the view as print.
9. Detailed image meta information consisting projection and statistical parameters like mean, standard deviation etc.

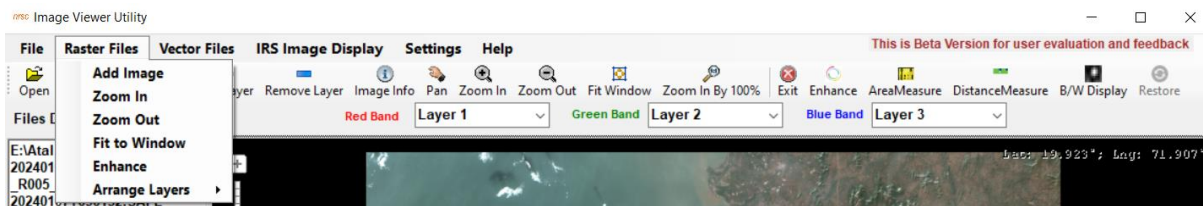
**5. Steps in Running the Program:** Invoke program by double clicking on “*imageviewer.exe*” in windows system or type the following command in the terminal window of your operating system “*imageviewer.exe*” the GUI appears (Give full path of executable incase if above command does not work)



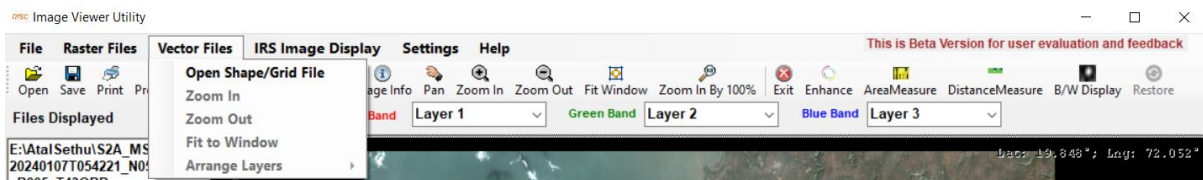
### File Menu options



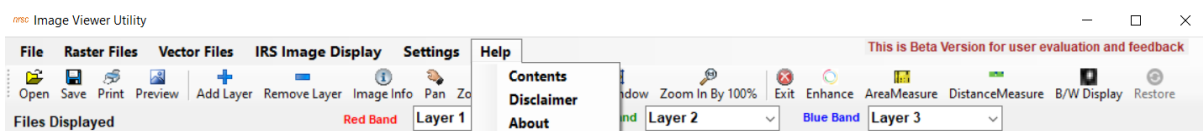
### Raster Files Menu options



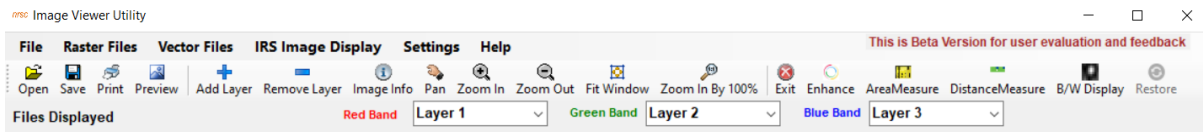
### Vector Files Menu options















### Help Menu options









## Tool Bar Buttons



## Tool Bar Icons and Their Functionality

	<b>File Open</b>	To open Raster Image files Individually
	<b>File Save</b>	Saves the already opened file to another format
	<b>Print</b>	For printing the snap of the image displayed
	<b>Preview</b>	For previewing the snap to be printed
	<b>Add Image</b>	For displaying the multiple images, all the images should have the same projection parameters
	<b>Remove Image</b>	Remove all the images displayed in the viewer
	<b>Image Info</b>	Provides image info like bands in the image, no.of scans and pixels, min, max of R,G,B bands of the image projection information etc,.
	<b>PAN Image</b>	Changes the cursor mode to PAN mode for panning across the image area.
	<b>Zoom In</b>	Zoom in functionality
	<b>Zoom Out</b>	Zoom out functionality
	<b>Fit Image to window</b>	To display the entire image by fitting into the screen display
	<b>Zoom in by 100%</b>	For displaying 1:1 on the screen

	<b>Exit</b>	Exits from the application
	<b>Enhance</b>	Enhances the Raw images for better visualization
	<b>Area Measurement</b>	For performing area measurement on the image
	<b>Distance Measurement</b>	For measuring the length of various features in the image
	<b>B/W Display</b>	Displays a color image in Black and White mode
	<b>Restore</b>	To restore the original Image display after the usage of Enhance and B/W Display options

### Menu Bar items and their functionality

Corresponding to the Tool bar icons equivalent menu items are also provided.

#### 1) File

- Open
- Save
- Exit

#### 2) Raster Files

- Add Image
- Zoom In
- Zoom out
- Fit to window
- Enhance
- Arrange Layers
  - ✓ Move Top layer to bottom
  - ✓ Move Bottom Layer to top

#### 3) Vector Files

- Add Image
- Zoom In
- Zoom out
- Fit to window
- Enhance
- Arrange Layers
  - ✓ Move Top layer to bottom
  - ✓ Move Bottom Layer to top

4) **IRS Image Display:** Displays the files downloaded from Bhoonidhi in zip format.

**Optical**

- Overview display
- Full Resolution display

**SAR**

- Overview display
- Full Resolution display

The IRS Image display from the zip file is based on the **WINRAR** utility for zip archive extraction. Hence make sure the availability of **winrar** by installing which is a free software. The settings with respect to the path of winrar and directory for files extraction can be set from the settings menu option.

**5) Settings**

- For setting up “**Winrar**” executable for unzipping
- Directory for extraction

**6) Help**

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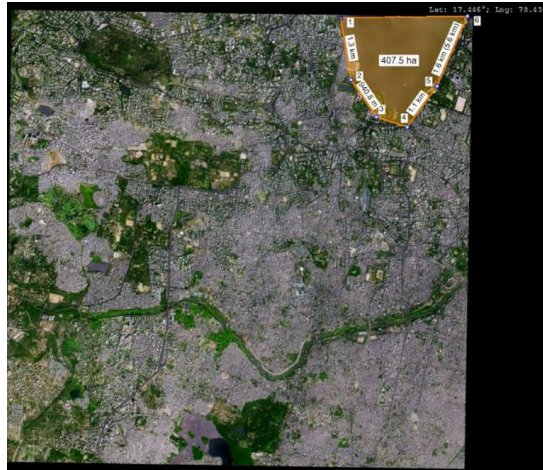
Tool Bar open icon and File menu open will perform the same functionality of displaying one image at a time. If multiple images need to be displayed Tool Bar add Image icon or Raster file menu add image can be used to display multiple images at a time by opening one image after the other, it is expected that all the images are in same projection. Add images can also be used after usage of the open image.

Add Image can also be used to overlay the raster files over the shape files opened using Vector files → Add Image. The vector files add image is used to add shape files, whereas the Add Image icon bar is used to add raster or shape files into the map area.

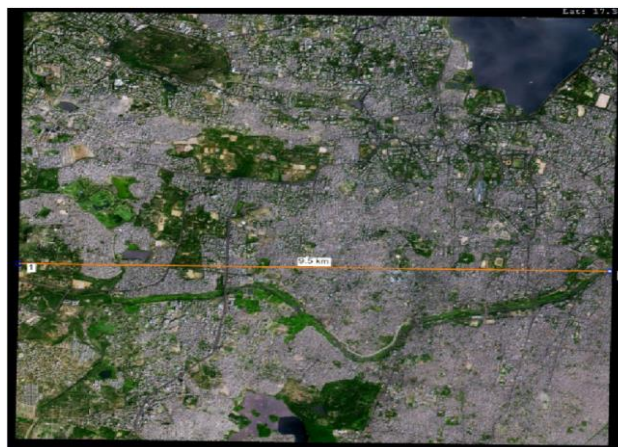
The Enhance icon will be used to enhance the RAW images by using histogram min, max stretch for better visualization.

The distance measurement and Area measurement tools can be used to measure the distance on the image.

**Area Measurement Tool:** Area on the Image can be measured by the area measurement Tool as shown below:



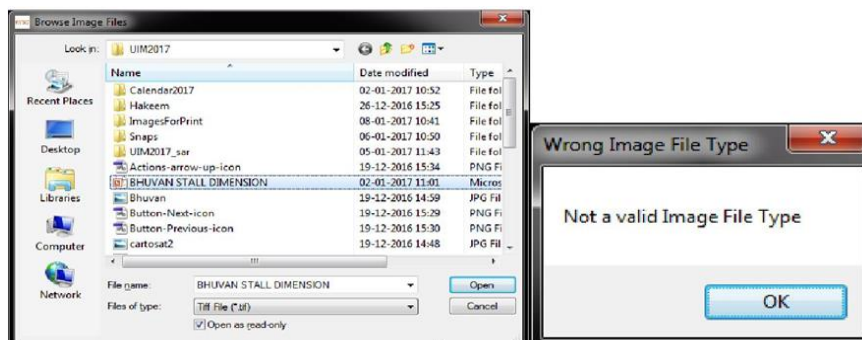
**Distance Measurement Tool:** Distance/Length of any feature on the Image can be measured by the distance measurement Tool as shown below:



## 6. Error conditions and messages

Most of the possible error conditions are handled by the software.

- 1) The Following Message shows the error condition when a file other than the supported file format is selected, the utility gives an error message.



- 2) The print and Preview commands will be enabled only when the image is loaded into the viewer.
- 3) The distance and area measurement tools will be enabled for raster images only, when



loaded into the viewer.

- 4) The Band combination is enabled when a single image is loaded into the viewer.
- 5) Similarly, the image info icon and Enhance, B/W display icons will work for raster images only when loaded into the viewer.
- 6) The corresponding menu items will also be enabled when the image is loaded into the viewer.

## 7. Disclaimer

1. This software product is provided by NRSC "as is" and conveys no license or title under any patent, copyright, or mask work right to the product. NRSC reserves the right to make changes in the software without notification. NRSC also make no representation or warranty that such application will be suitable for the specified use without further testing or modification. There are inherent risks in the use of any software, and you are solely responsible for determining whether this software product is compatible with your computer and other software installed on your computer. You are also solely responsible for the protection of your system and backup of your data, and NRSC will not be liable for any damages you may suffer in connection with using, modifying, or distributing this software.
2. This software utility is implemented based on Mapwindows .NET controls.
3. This software can be used for displaying Raster and to a limited extent Vector Layers.
4. The software is a Beta version for user evaluation and feedback.