

Remote Sensing Laboratory

Lab Assignment # 1

Introduction of Basic Tool and Color Composite Images

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1. OBJECTIVE

To familiarize ourselves with image processing software (ENVI) and multi-spectral data by;

- Creating True Color Composite, False Color Composite and Pseudo color images
- Saving part of the file as another image in Tiff format
- Viewing the X, Y & Z profiles
- To differentiate between water, bare land, paddy field and buildup area through “X profile“, “Y profile“& “Z profile“

2. METHODOLOGY

2.1 Color Composite: True color,False color and Pseudo color.

2.1.1 True color:

- Open the image file named *pathum_edm*.
- Select RGB Color and then assign spectral

Region of Red, Green and Blue by select band3, 2 and 1 following.

2.1.2 False color:

- Select RGB Color and then assign spectral

Region of Red, Green and Blue by select Band4, 3 ,and 2 following.

2.1.3 Pseudo color:

- Select Gray scale and then click the Band for showing such as Band5
- Click “Load Band” for display.
- From menu “Tool” select “Color Mapping”
- select “ENVI color Tables” and then select “Rainbow” in color Tables list.

For appropriate image, should to design range of Blue region by sliding “stretch Bottom” bar and slide “Stretch Top” bar for assign range of Red region.

2.2 Subsection a dataset

- Load True color image.
- From main window in menu “File” select menu bar on “image window”, select “Save Image as”
- click on “Spatial subset” and enter X0,X1 in samples and Y0,Y1 in lines to subsection a dataset.Click “OK” button.
- select output file type to “TIFF/GeoTiff”
- Specific output filename and location of out put file. And then click “OK”

2.3 Checking Pixel value/Location and Profiles.

2.3.1 Load true color image of subsection image.

2.3.2 Go to “Tools” in the menu bar on “image window” and select “Cursor location/value...” or double click some point in “main window”

2.3.4 Try to move mouse to another point and check the value of location, data color value and screen color value.

2.3.5 Go to menu “Tools”, select “Profiles” and then Select “X profile”

2.3.6 Pick some objects and try to move mouse along horizontal direction (X) and then check the red line value (the line of the profile for which the DN number are plotted”, or check the value from “cursor location/value..” in R color.

2.3.7 Selecting “Y profile” that same methods in step 2.3.5 to 2.3.6 but change select “Y profile” instead of “X profile”. Move mouse cursor along vertical direction (Y) and then check the value from “cursor location/value..” in R color.

2.3.8 Selecting “Y profile” that same methods in step 2.3.5 to 2.3.6 but change select “Z profile” instead of “X profile”. Move mouse cursor along vertical or horizontal direction and then check the value from “cursor location/value..” in R color.

3. DATA

Sample datasets of Landsat7

4. RESULT

5. DISCUSSION AND CONCLUSION:

Remote Sensing Laboratory
Lab Assignment # 2
High Resolution Remote Sensing

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6 January 2008

1. OBJECTIVE

The main objective of this exercise is to be acquainted with the high-resolution remote sensing data and compare characteristics types of each data set

2. DATA PROVIDED

The data sources used are from following satellites/sensors;

2.1. Landsat 7:

Data provide is that of Pathumthani province of Thailand with its upper left corner Long./Lat. of 100° 26' 13.88" E, 14° 03' 14.38" N. Although ETM+ sensor provides data in 8 bands but the data provided is of 6 bands. The Panchromatic (Band 8) and Thermal (Band 6) is not provided.

2.2. ASTER:

The location of image is not specified in header file. The Spatial resolution is 15m. Out of 14 Bands of ASTER, only 3 are provided i.e. NIR, Red & G while 6 bands of SWIR & 5 bands of TIR are not provided. Long./Lat. are also not mentioned.

2.3. IRS 1D LISS III and IRS 1D Panchromatic:

LISS-III sensor data for band 2, 3 & 4 are provided and Band 5 (SWIR) is not provided. Also Band 1 (Panchromatic) data is provided. Long./Lat. of upper left corner are 98° 45' 19.54" E, 7° 41' 40.35" N. The location of image is not known.

2.4. IKONOS:

The data provided is that of Edward Airbase, USA with its Long./Lat. of upper left corner 98° 06' 38.15" E, 34° 57' 17.47" N, The 1m spatial resolution data is provided in Red, Green & Blue, while NIR band is missing.

2.5. Quickbird:

The image provided is recorded on 07/11/2002. It contains a band of Panchromatic and four bands of MSS i.e. NIR(4) Red (3) Green (2) & Blue(1). The Long./Lat. of upper left corner is 100° 33' 32.72" E, 13° 43' 36.27" N.

3. METHODOLOGY

The Envi-4.2 of Research Systems, Inc. USA is utilized to view and differentiate various types of high resolution remote sensing images. Also Topographical features like 3D surface and topographical modeling have been utilized in this exercise.

4. RESULT

5. DISCUSSION AND CONCLUSION:

**Remote Sensing Laboratory
Lab Assignment # 3**

Moderate Resolution Remote Sensing

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6 January 2008

1. OBJECTIVE

The main objective of this exercise is to be acquainted with the moderate-resolution remote sensing data and compare characteristics of each data set.

2. DATA PROVIDED

The data sources used are from following satellites/sensors;

1. NOAA NDVI 30 days composite
2. SPOT VI dataset
3. RADARSAT dataset

3. METHODOLOGY

1. Start image processing software ENVI 4.2
2. Open moderate resolution remote sensing data set image file
3. Compare characteristic type of each dataset.
 - Examine the change of vegetation value from dataset by Z- profiles tools.
(For NOAA NDVI 30 days composite dataset and SPOT VI dataset)
 - Examine the quality of the image and explain how dose it look like.
(For RADARSAT dataset)

4. RESULT

5. DISCUSSION AND CONCLUSION: