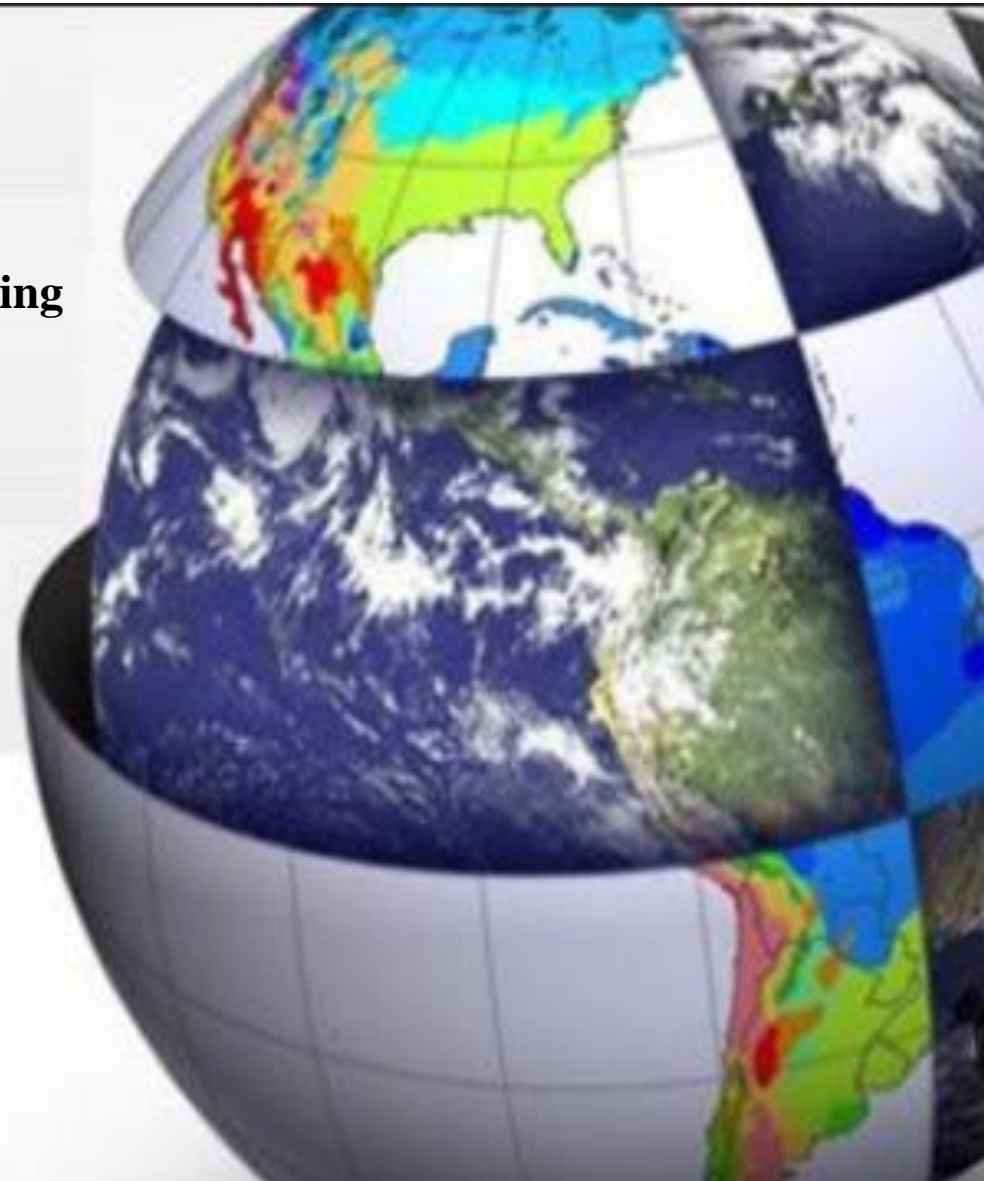


Lecture 5

NDVI, NDBI AND NDWI Calculation using Landsat 8





Normalized Difference Vegetation Index (NDVI):

$$\text{NDVI} = (\text{NIR} - \text{Red}) / (\text{NIR} + \text{Red})$$

For Landsat 8 data, $\text{NDVI} = (\text{Band 5} - \text{Band 4}) / (\text{Band 5} + \text{Band 4})$

Normalized Difference Built-up Index (NDBI):

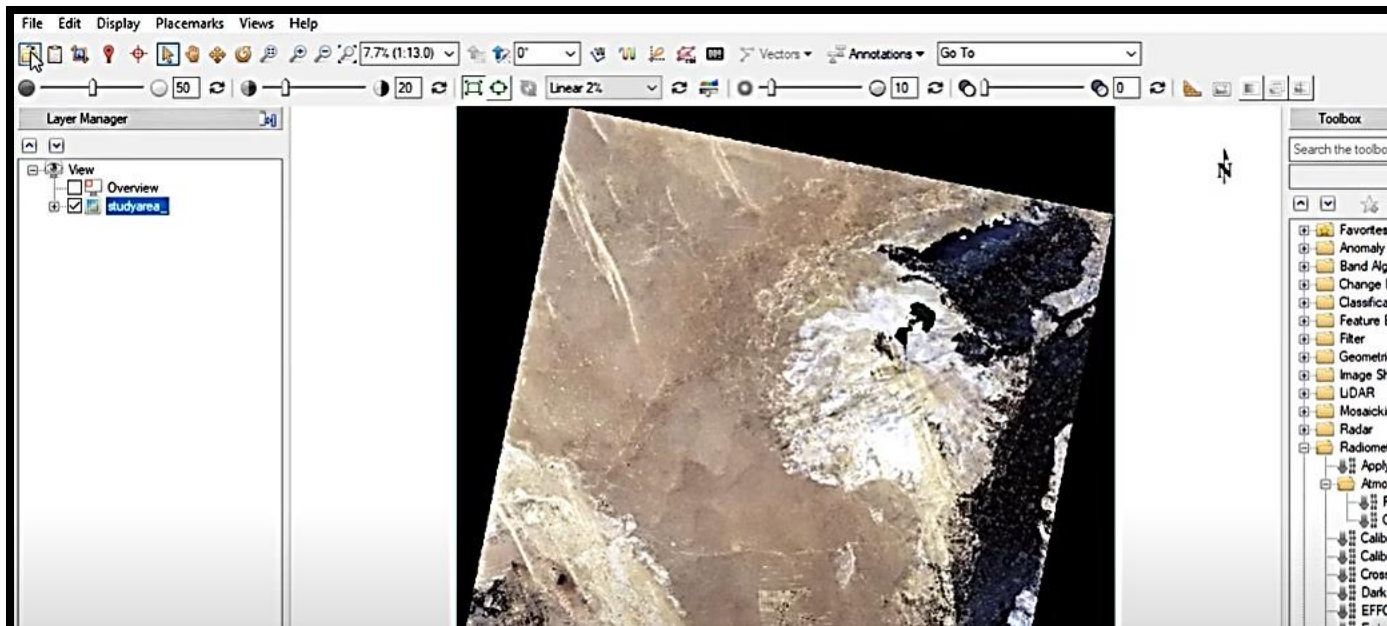
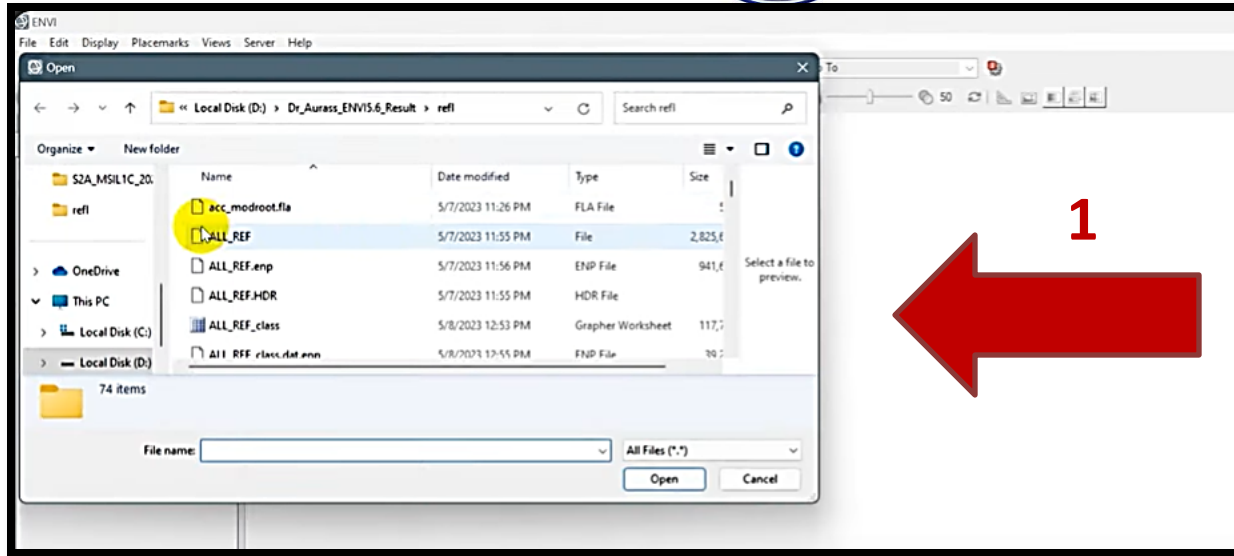
$$\text{NDBI} = (\text{SWIR} - \text{NIR}) / (\text{SWIR} + \text{NIR})$$

For Landsat 8 data, $\text{NDBI} = (\text{Band 6} - \text{Band 5}) / (\text{Band 6} + \text{Band 5})$

Normalized Difference Water Index (NDWI):

$$\text{NDWI} = (\text{Green} - \text{NIR}) / (\text{Green} + \text{NIR})$$

For Landsat 8 data, $\text{NDWI} = (\text{Band 3} - \text{Band 5}) / (\text{Band 3} + \text{Band 5})$





1

2

3

4

5

$$\frac{\text{float}(b1) - \text{float}(b2)}{\text{float}(b1) + \text{float}(b2)}$$

Previous Band Math Expressions:

$$\frac{\text{float}(b1) - \text{float}(b2)}{\text{float}(b1) + \text{float}(b2)}$$

Save Restore Clear Delete

Enter an expression:

Add to List

OK Cancel Help

Previous Band Math Expressions:

$$\frac{\text{float}(b1) - \text{float}(b2)}{\text{float}(b1) + \text{float}(b2)}$$

Save Restore Clear Delete

Enter an expression:

$$\frac{\text{float}(b1) - \text{float}(b2)}{\text{float}(b1) + \text{float}(b2)}$$

Add to List

OK Cancel Help

Previous Band Math Expressions:

$$\frac{\text{float}(b1) - \text{float}(b2)}{\text{float}(b1) + \text{float}(b2)}$$

Save Restore Clear Delete

Enter an expression:

$$\frac{\text{float}(b1) - \text{float}(b2)}{\text{float}(b1) + \text{float}(b2)}$$

Add to List

OK Cancel Help



Exp: $\text{float}(b1)-\text{float}(b2)/\text{float}(b1)+\text{float}(b2)$

Variables used in expression:

B1 - [undefined]
B2 - [undefined]

Available Bands List

- Math (FLAASH (Coastal aerosol radio_2 dat) Flaash_1) (0.44)
- Math (FLAASH (Blue radio_2 dat) Flaash_1) (0.4826)
- Math (FLAASH (Green radio_2 dat) Flaash_1) (0.5613)
- Math (FLAASH (Red radio_2 dat) Flaash_1) (0.6546)
- Math (FLAASH (Near Infrared (NIR) radio_2 dat) Flaash_1) (1.6090)
- Math (FLAASH (SWIR 1 radio_2 dat) Flaash_1) (1.6090)
- Math (FLAASH (SWIR 2 radio_2 dat) Flaash_1) (2.2010)

Map Variable to Input File

OK Cancel Help Clear

6

Exp: $\text{float}(b1)-\text{float}(b2)/\text{float}(b1)+\text{float}(b2)$

Variables used in expression:

B1 - Band Math (FLAASH (Near Infrared (NIR) radio_2 dat) Flaash_1) (0.6546)
B2 - Band Math (FLAASH (Red radio_2 dat) Flaash_1) (0.6546)

Available Bands List

- Math (FLAASH (Coastal aerosol radio_2 dat) Flaash_1) (0.44)
- Math (FLAASH (Blue radio_2 dat) Flaash_1) (0.4826)
- Math (FLAASH (Green radio_2 dat) Flaash_1) (0.5613)
- Math (FLAASH (Red radio_2 dat) Flaash_1) (0.6546)
- Math (FLAASH (Near Infrared (NIR) radio_2 dat) Flaash_1) (1.6090)
- Math (FLAASH (SWIR 1 radio_2 dat) Flaash_1) (1.6090)
- Math (FLAASH (SWIR 2 radio_2 dat) Flaash_1) (2.2010)

Map Variable to Input File

Spatial Subset: Full Scene

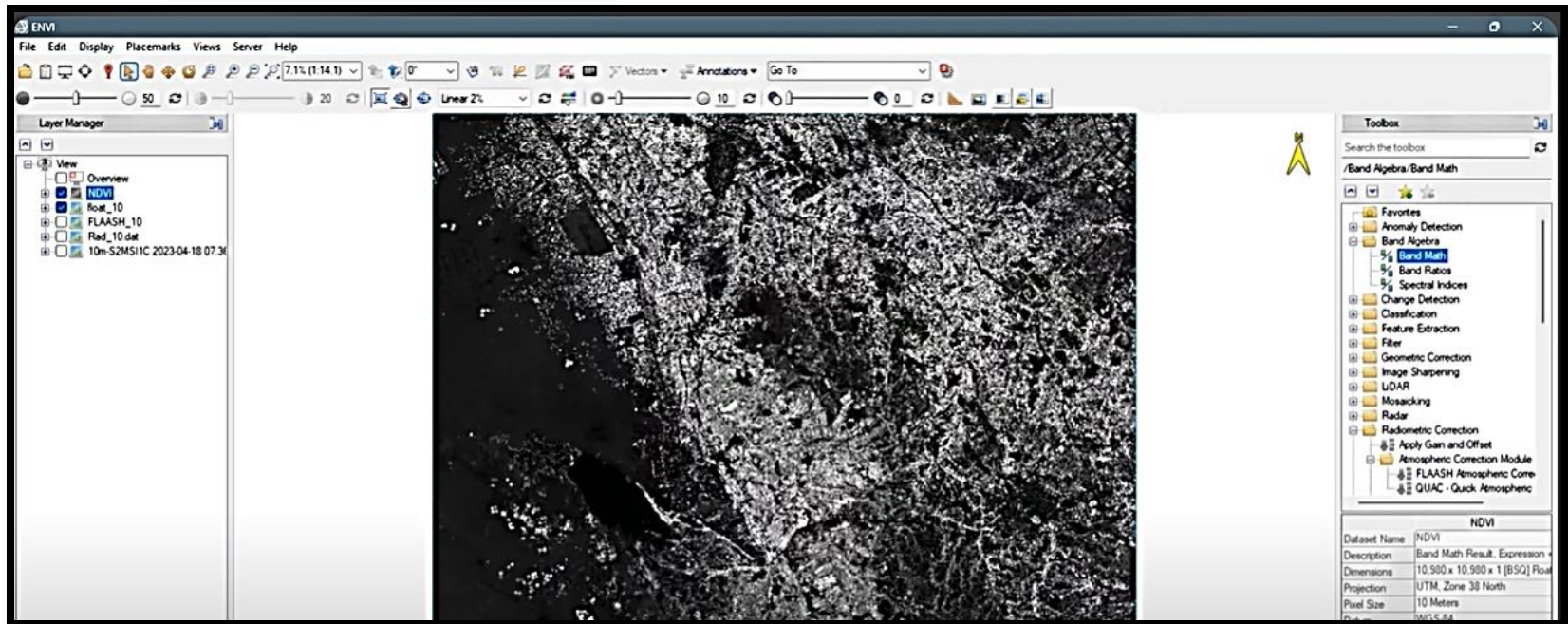
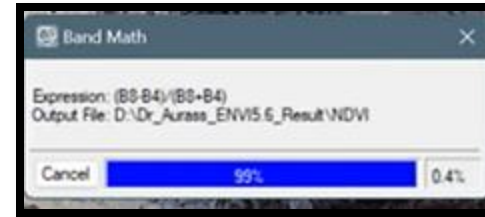
Output Result to: File Memory

Enter Output Filename: Choose Compress

C:\Users\User\Desktop\index\ndvi

OK Cancel Help Clear

7





Basic Stats	Min	Max	Mean	StdDev
Band 1	-0.439210	0.715615	0.142688	0.113957

Histogram	DN	Count	Total	Percent
Band 1	-0.439210	1	1	0.000001
Binsize=0.004529	-0.434681	0	1	0.000000
	-0.430152	0	1	0.000000
	-0.425624	0	1	0.000000
	-0.421095	0	1	0.000000
	-0.416566	0	1	0.000000
	-0.412037	0	1	0.000000
	-0.407509	0	1	0.000000
	-0.402980	0	1	0.000000