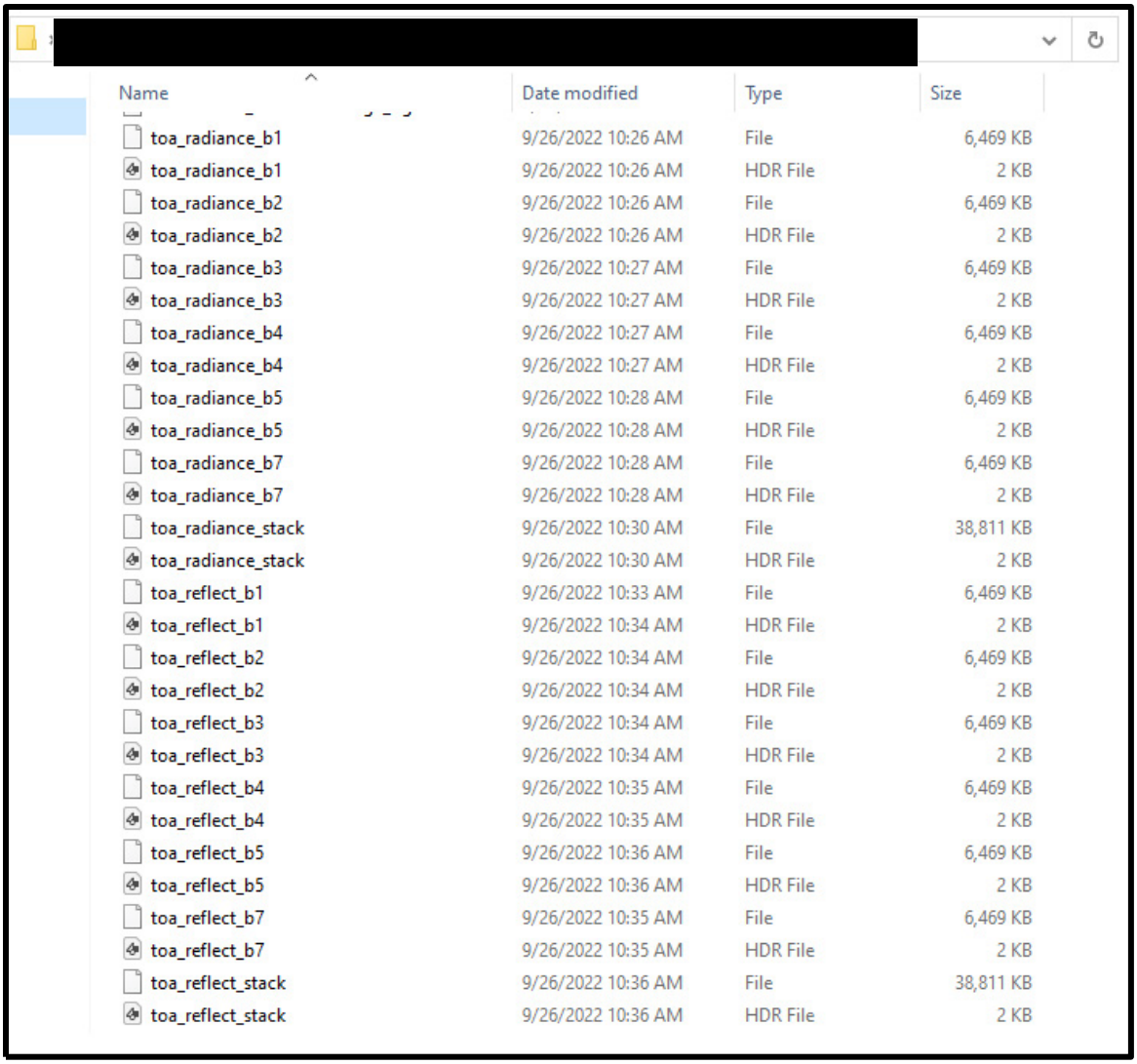
[redacted] [redacted]

RADIOMETRIC CALIBRATION

TASK ONE: DN → TOA RADIANCE & REFLECTANCE

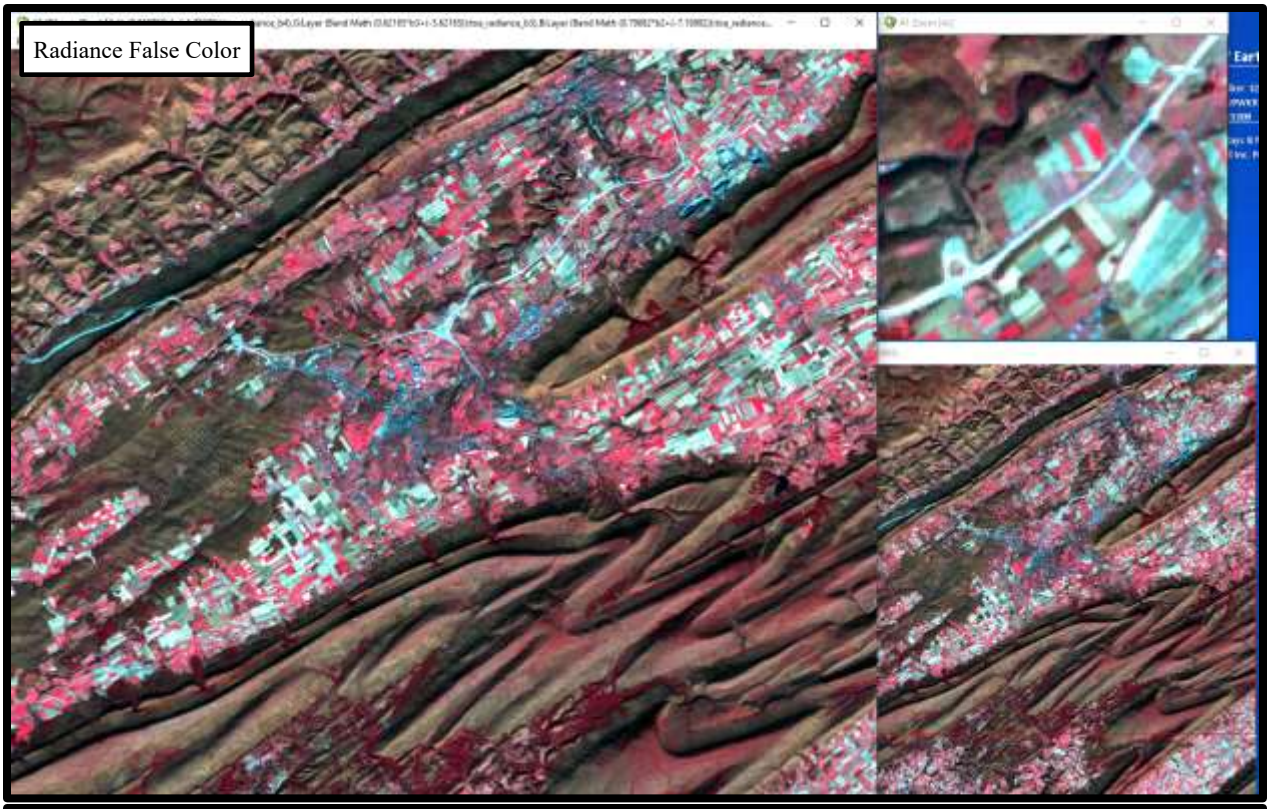
	[redacted] (*Lλ*)		[redacted] (*ρλ'*)		
Band	*ML*	*AL*	*Mp*	*Ap*	*θSE*
1	0.7[redacted]	-6.[redacted]	0.0011[redacted]	-0.01[redacted]	28[redacted]°
2	0.7[redacted]	-7.[redacted]	0.0013[redacted]	-0.01[redacted]	
3	0.6[redacted]	-5.[redacted]	0.0012[redacted]	-0.01[redacted]	
4	0.6[redacted]	-5.[redacted]	0.0018[redacted]	-0.01[redacted]	
5	0.1[redacted]	-1.[redacted]	0.0017[redacted]	-0.01[redacted]	
7	0.04[redacted]	-0.[redacted]	0.0016[redacted]	-0.01[redacted]	

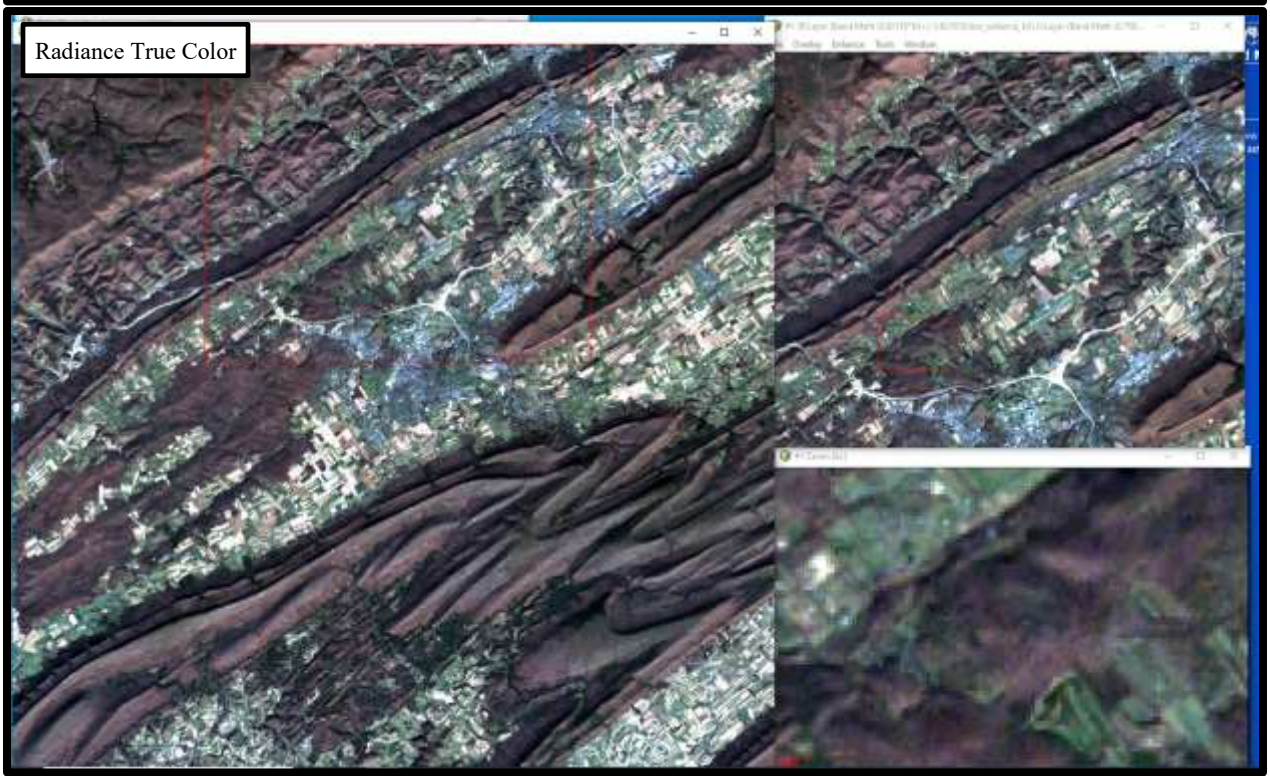
Radiance: $L\lambda = ML * DN + AL$ Reflectance: $\rho\lambda' = M\rho * DN + A\rho$

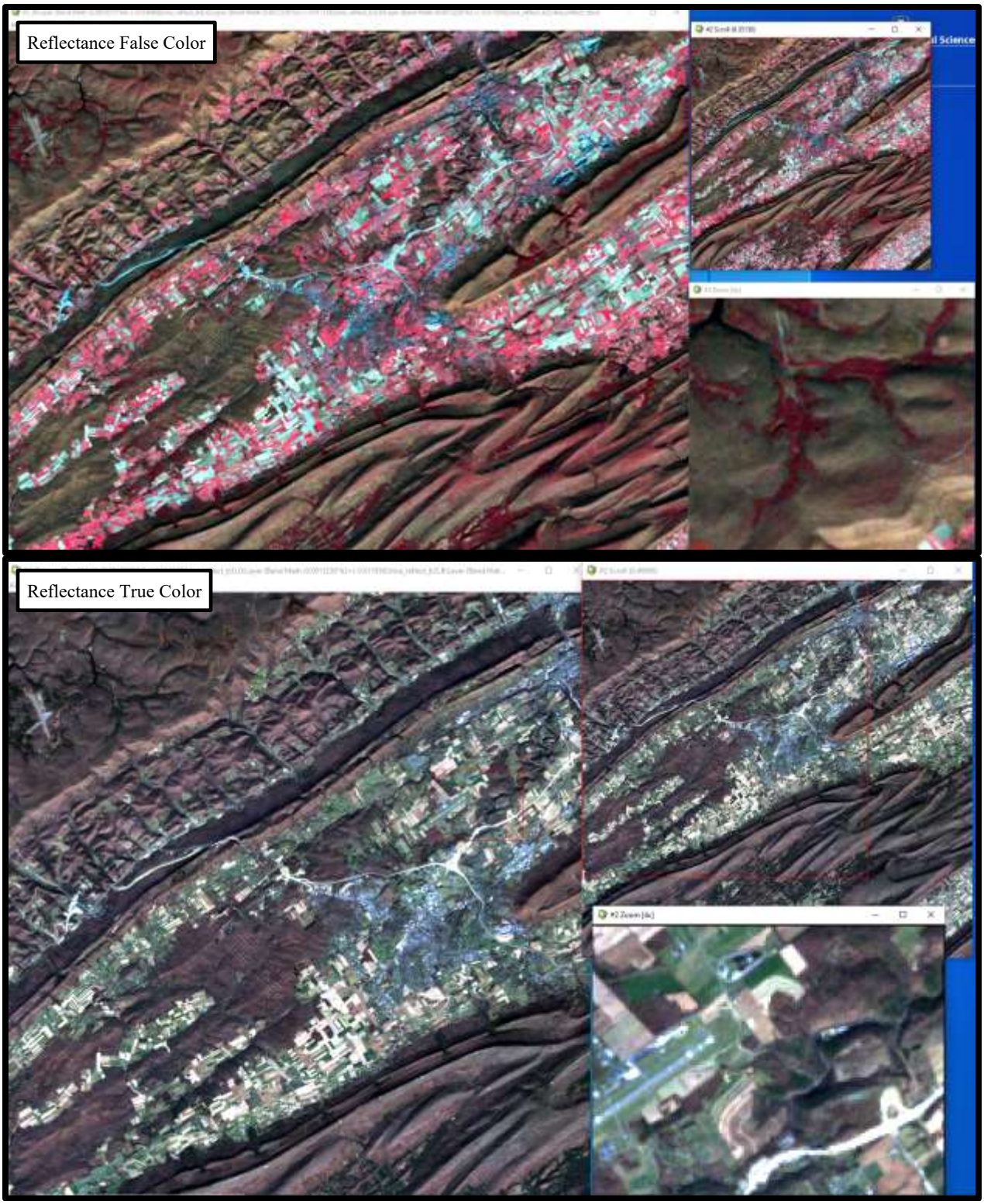


[redacted]

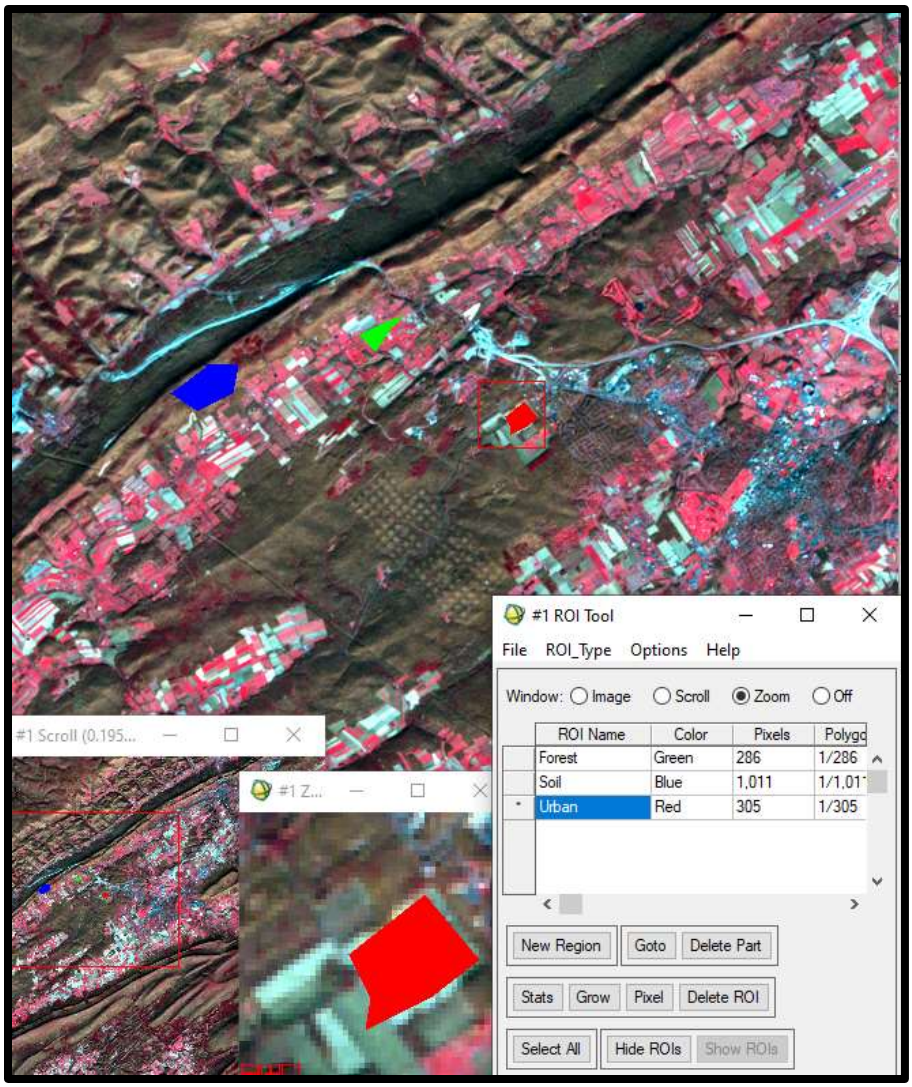
[redacted]





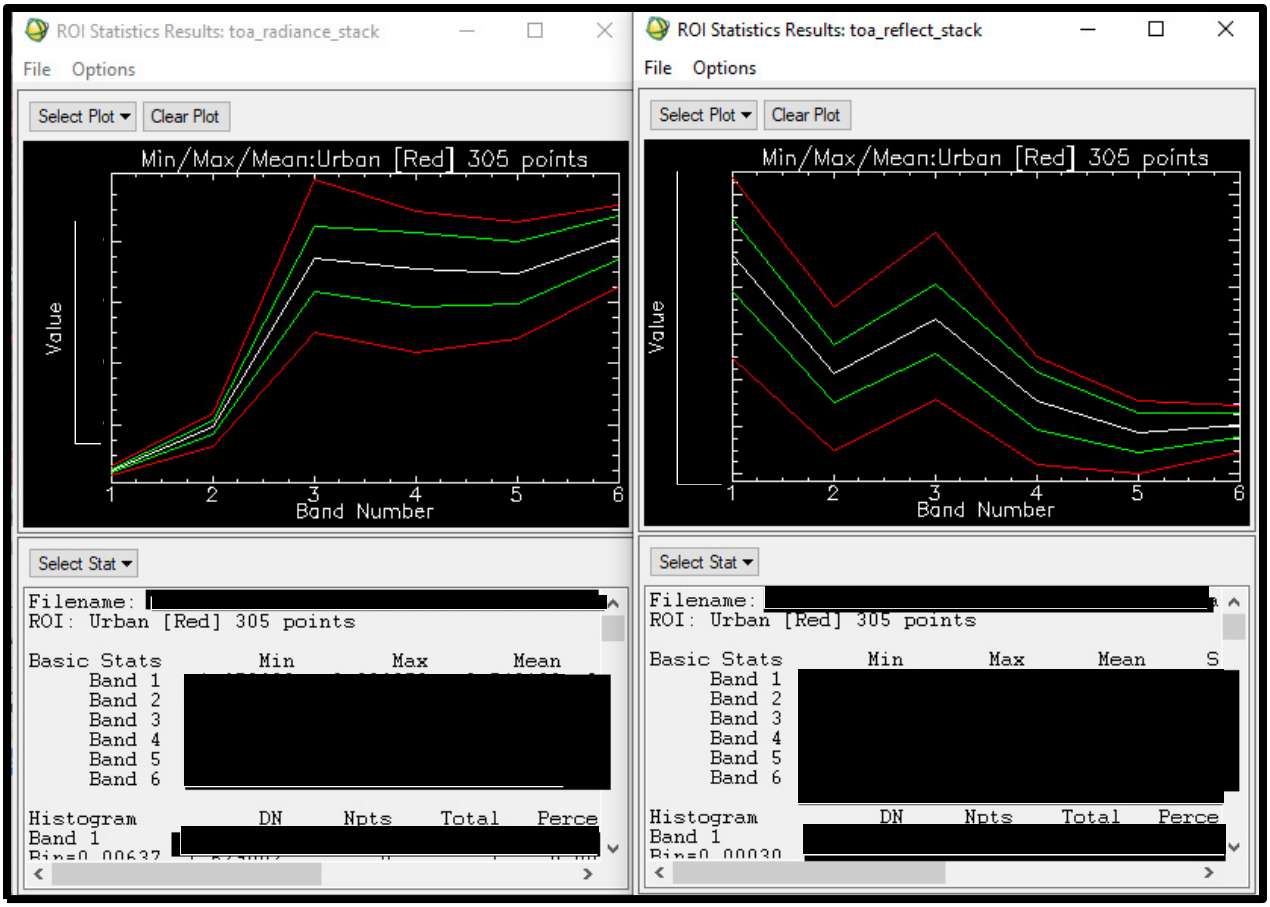


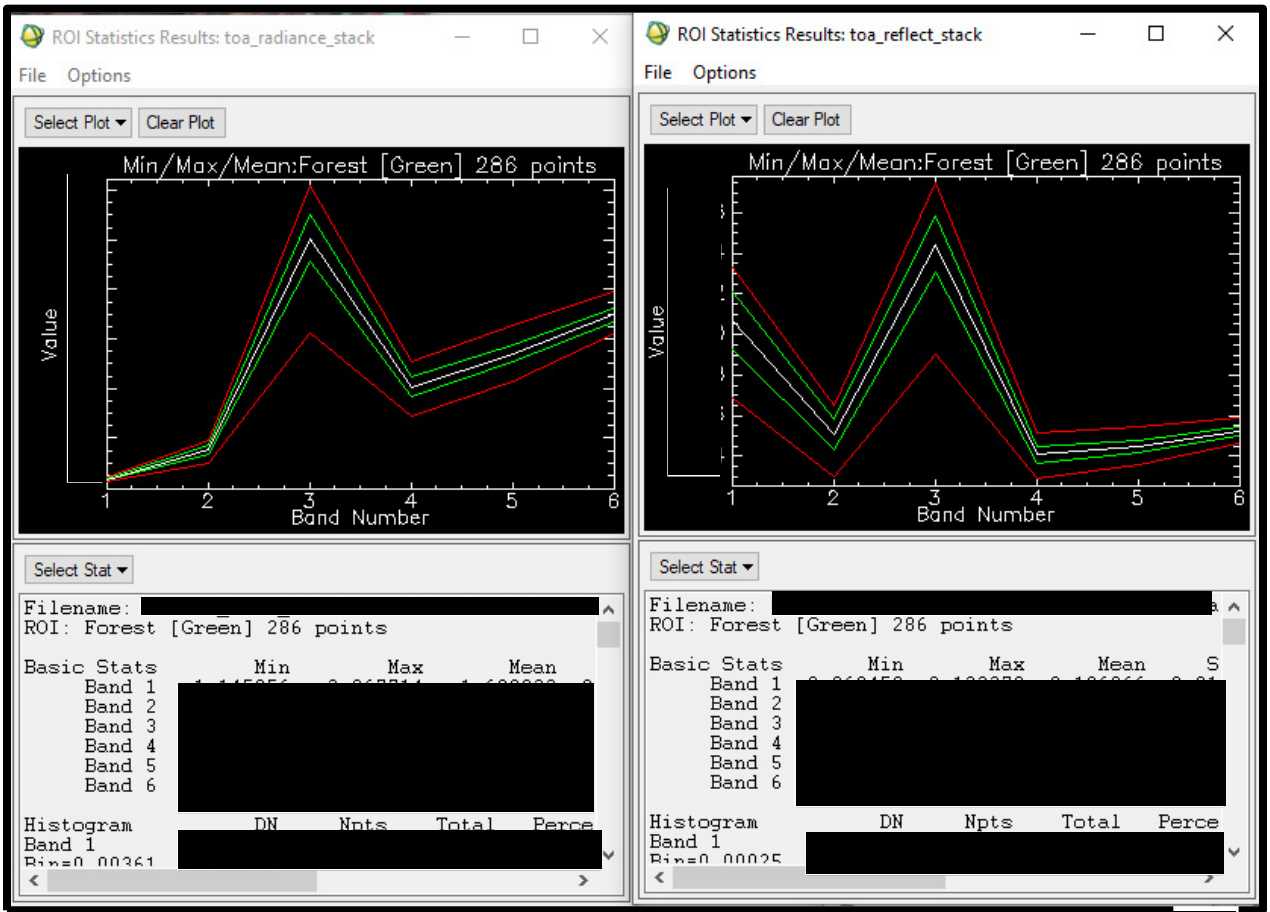
Use ROI tool to select samples for urban, forest/grass and soil

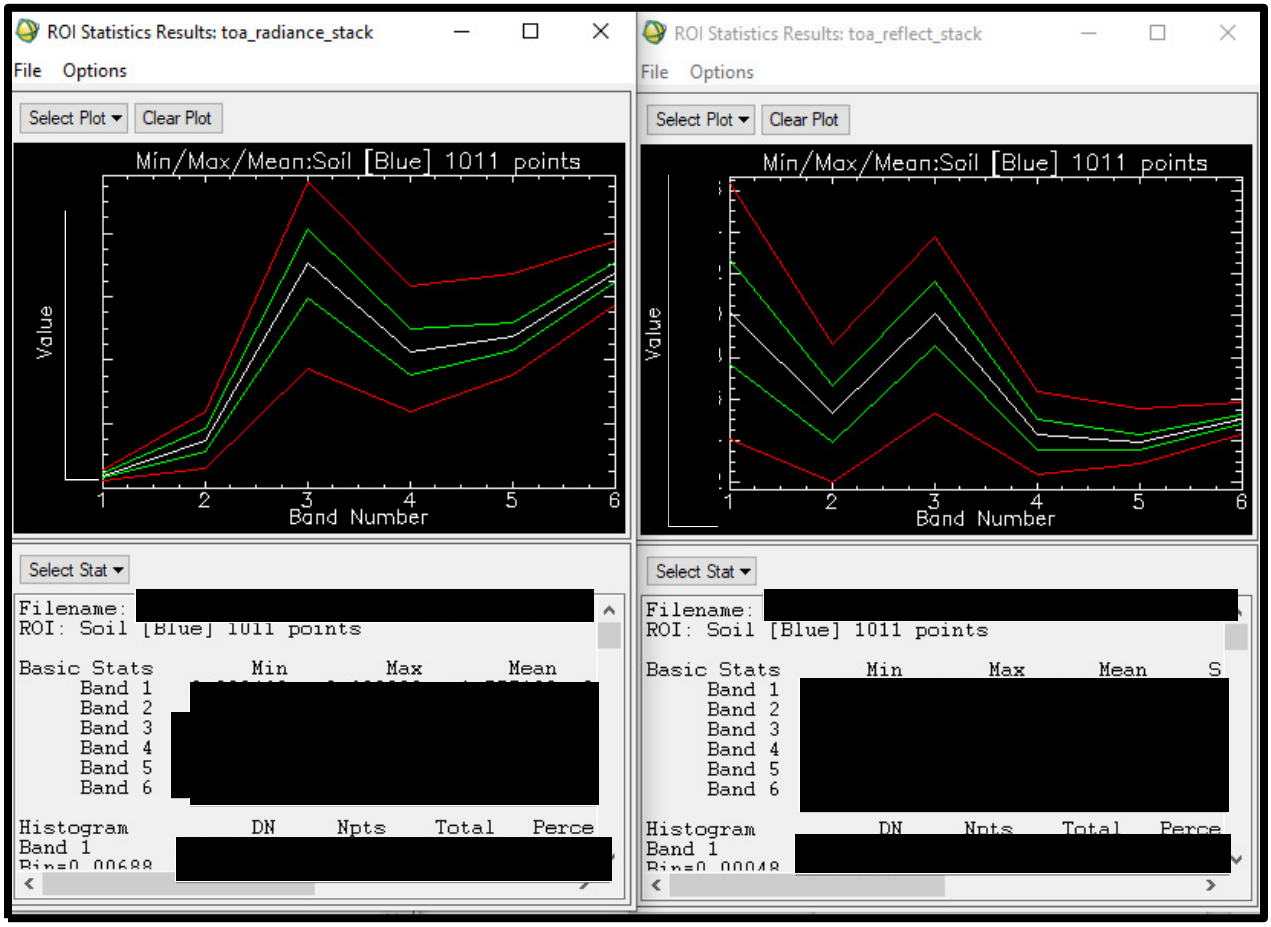

#1 ROI Tool
File ROI_Type Options Help
Window: Image Scroll Zoom Off
ROI Name Color Pixels Polygo
Forest Green 286 1/286
Soil Blue 1,011 1/1,01
Urban Red 305 1/305
New Region Goto Delete Part
Stats Grow Pixel Delete ROI
Select All Hide ROIs Show ROIs
#1 Scroll (0.195...
#1 Z...

[redacted]

[redacted]

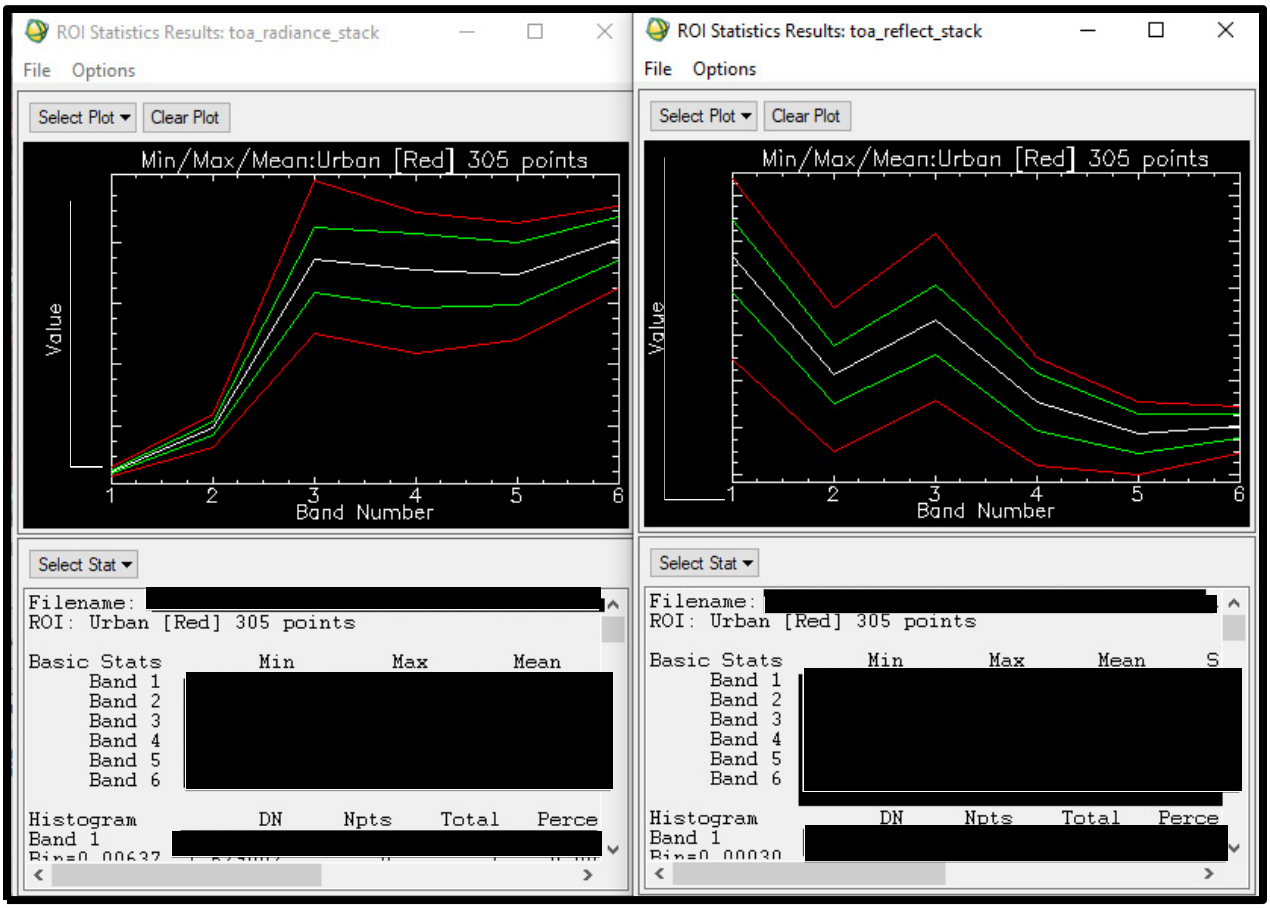





ROI Statistics Results: toa_radiance_stack
File Options
Select Plot
Clear Plot
Min/Max/Mean:Soil [Blue] 1011 points
Value
Band Number
Select Stat
Filename:
ROI: Soil [Blue] 1011 points
Basic Stats Min Max Mean
Band 1
Band 2
Band 3
Band 4
Band 5
Band 6
Histogram DN Npts Total Perce
Band 1
ROI Statistics Results: toa_reflect_stack
File Options
Select Plot
Clear Plot
Min/Max/Mean:Soil [Blue] 1011 points
Value
Band Number
Select Stat
Filename:
ROI: Soil [Blue] 1011 points
Basic Stats Min Max Mean S
Band 1
Band 2
Band 3
Band 4
Band 5
Band 6
Histogram DN Npts Total Perce
Band 1

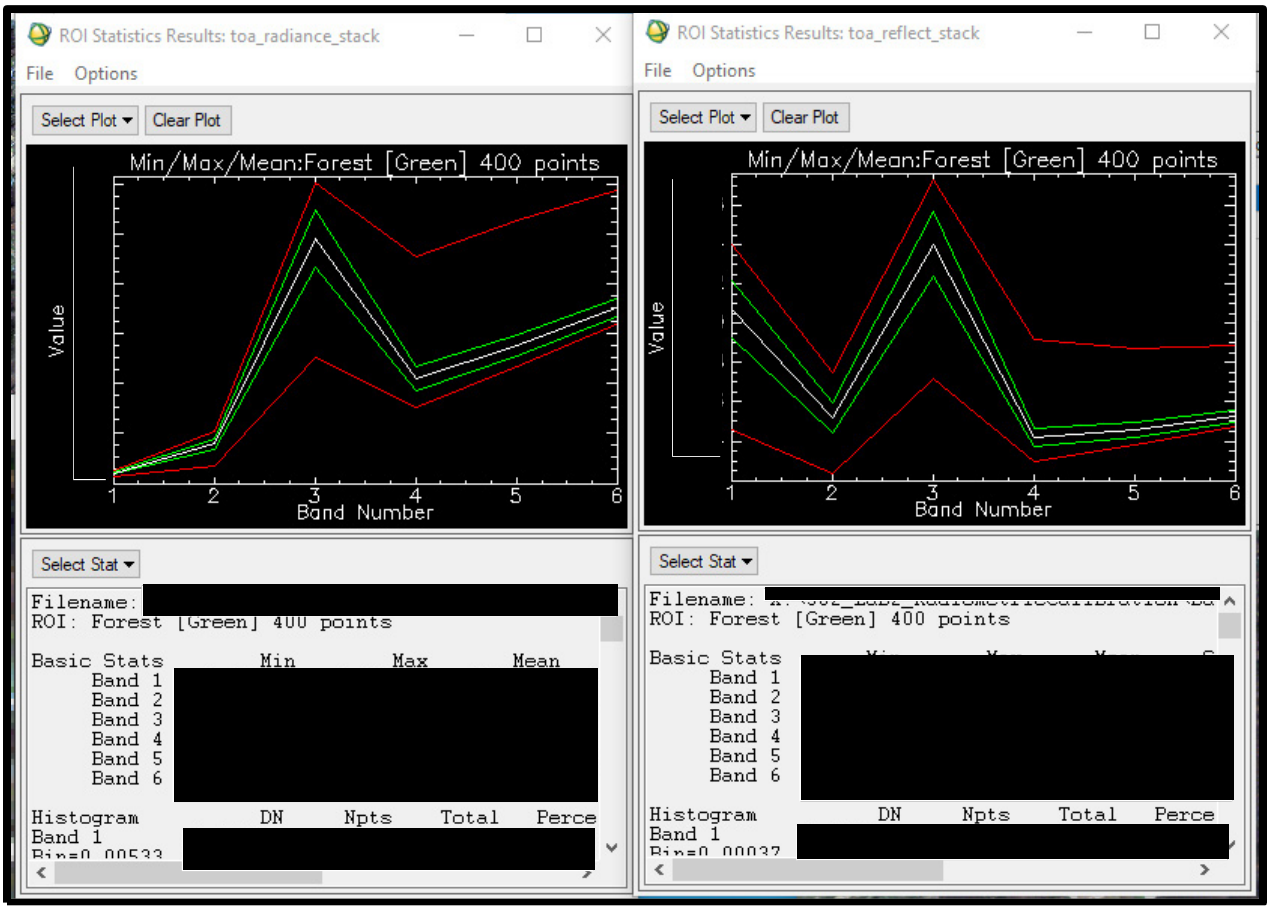

#1 ROI Tool
File ROI_Type Options Help
Window: Image Scroll Zoom Off
ROI Name Color Pixels Polygo
Region #1 Red 284 1/284
Region #2 Green 400 1/400
Region #3 Blue 891 1/891
#1 Zoom [4x]

[redacted] [redacted]



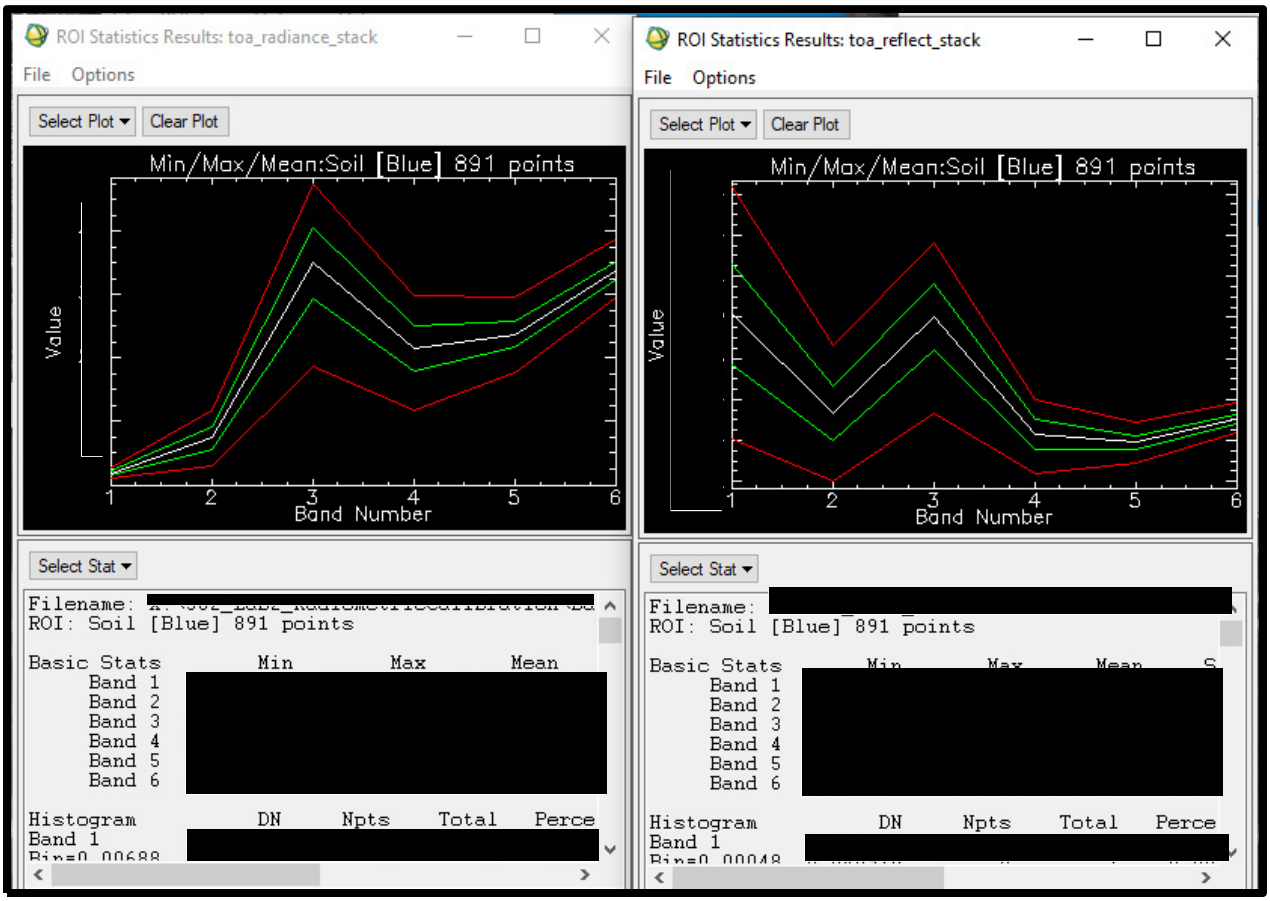
[redacted]

[redacted]



[redacted]

[redacted]



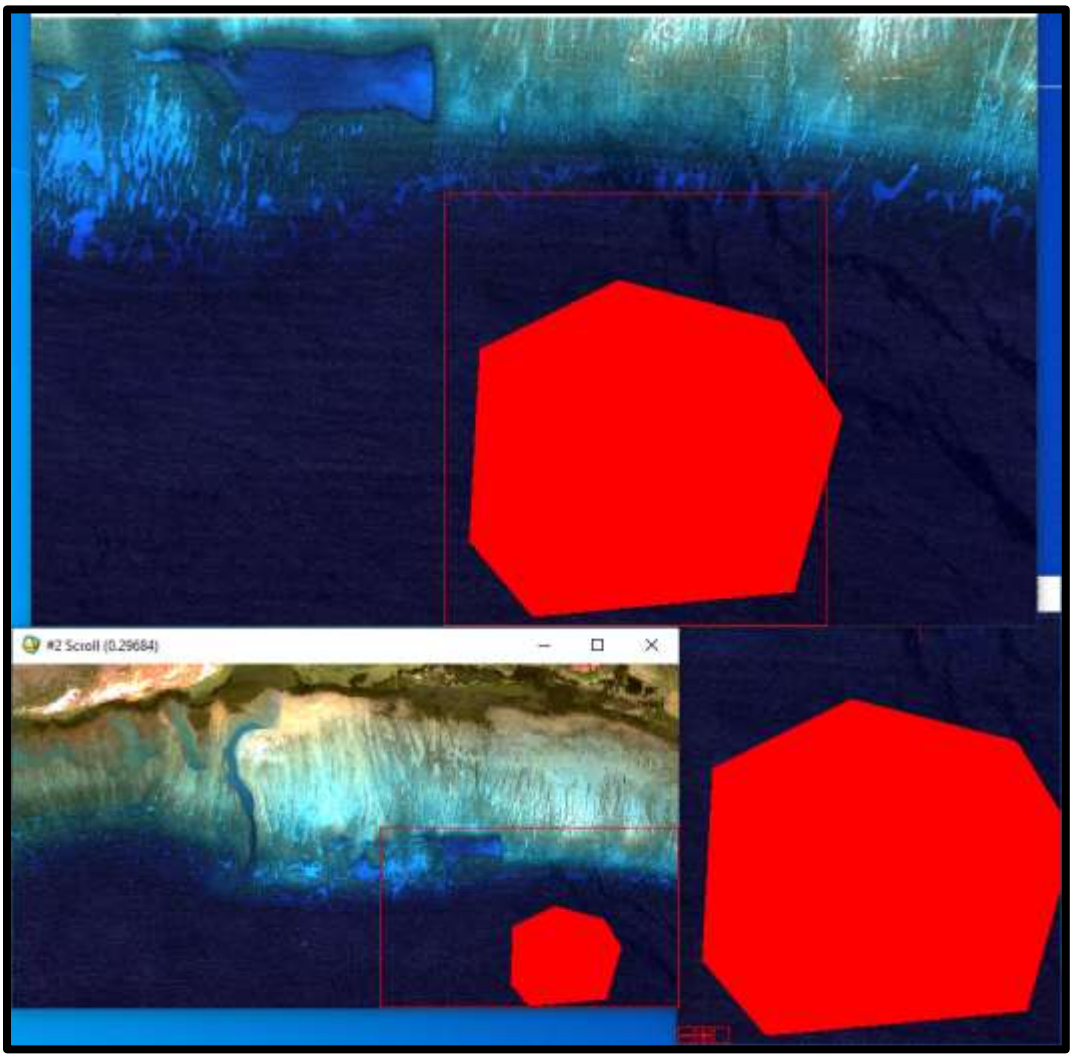
[redacted] [redacted]

TASK TWO: DEEP WATER CORRECTION

Files	ikonos05.hdr
Satellite	IKONOS-2
Date	Feb 21, 2005
Time	21:19 GMT

Sun Elevation Angle	[redacted]°
Azimuth angle	[redacted]°
Spatial Resolution	[redacted] m
Projection	UTM zone 4N

The multi-spectral imagery has three visible bands (blue 450-520 nm, green 510-600 nm, red 630-700 nm) and one [redacted] (NIR) band ([redacted]) with a spatial resolution of [redacted] m. The IKONOS sensor has an instrument nominal sensitivity about [redacted] fold greater than the Landsat-7 ETM, and each band has [redacted]-bit dynamic range per pixel.

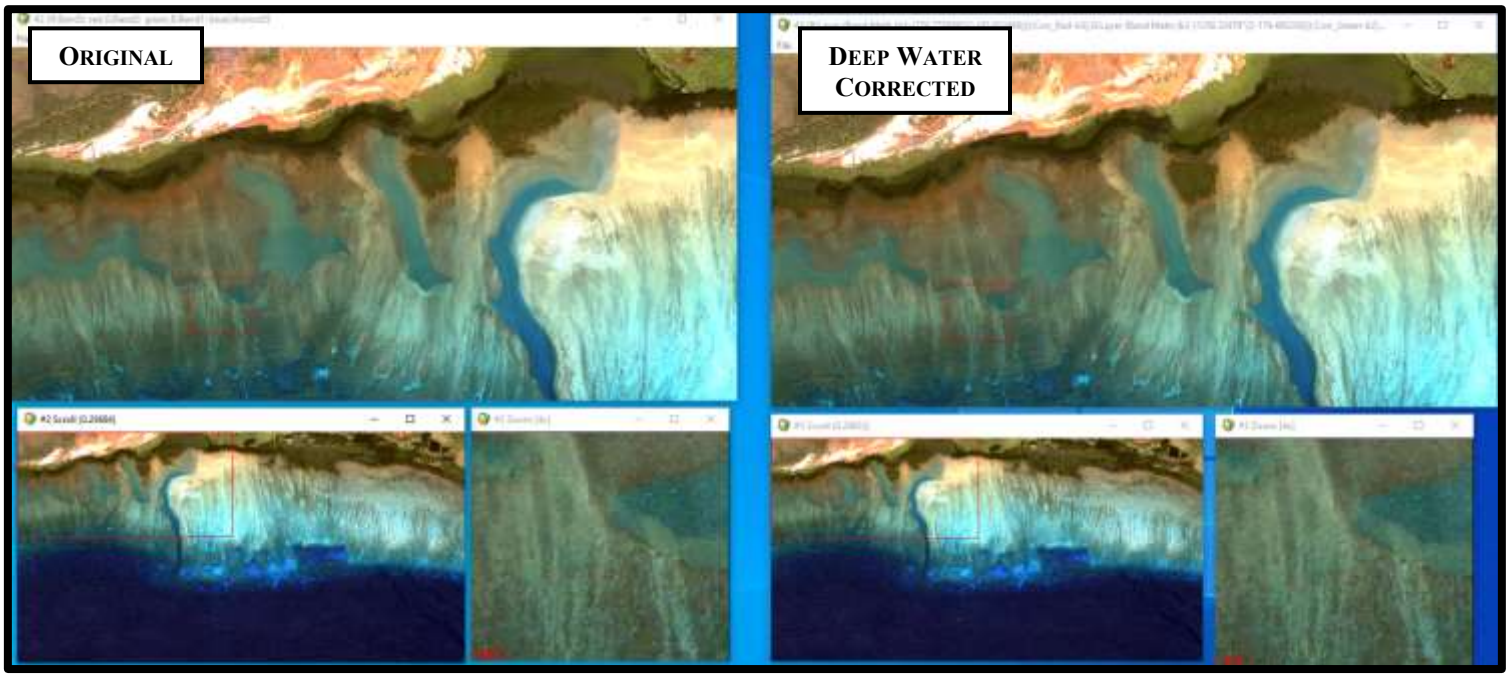


[redacted] [redacted]

Basic Stats	Min	Max	Mean	Stdev
Band 1	[redacted]			
Band 2				
Band 3				

	Red	Blue	Green
Band Number	3	2	1
Average	[redacted]	[redacted]	[redacted]
Standard Deviation	[redacted]	[redacted]	[redacted]

$$B_{corr}=B-(B_{ave}-2B_{std})$$



[redacted]