

2023. 2학기. 원격탐사활용

ErdasImagine을 활용한
토지피복분류

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01

자료수집

USGS(미국 지질조사국)의 LANSAT8 -9

Suitable Season: JUNE
with **NO** Cloud

EarthExplorer

Search Criteria Data Sets Additional Criteria Results

Search Criteria Summary (Show) Clear Search Criteria

4. Search Results

If you selected more than one data set to search, use the dropdown to see the search results for each specific data set.
Note: You must be logged in to download and order scenes

Show Result Controls

Data Set Click here to export your results

Landsat 8-9 OLI/TIRS C2 L2

< First < Previous 1 of 1 Next > Last >

Displaying 1 - 5 of 5

ID: LC08_L2SP_110036_20230617_20230623_02_T1
Date Acquired: 2023/06/17
Path: 115
Row: 036

ID: LC08_L2SP_110037_20230617_20230623_02_T1
Date Acquired: 2023/06/17
Path: 115
Row: 037

ID: LC08_L2SP_110038_20230616_20230618_02_T1
Date Acquired: 2023/06/16
Path: 115
Row: 036

ID: LC08_L2SP_110037_20230616_20230618_02_T1
Date Acquired: 2023/06/16

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U.S. Department of the Interior | DOI Inspector General | White House | E.gov | No Fear Act | FOIA

01

Data 전처리

Data Processing using ArcGIS

1.Compositing Bands

☘️ Luckily No Required
Feathering for my Data

2.Masking

BEFORE



AFTER



02

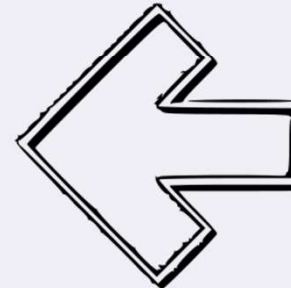
감독분류

ArcGis에서는 RGB
값

Erdas에서는 RGB
Percentage

토지피복에 따라

1. 상업지역
2. 주거지역
3. 나지
4. 활엽수림
5. 침엽수림
6. 혼효림
7. 초지
8. 농업
9. 물
10. 도로(+)



환경부 토지 피복 지도 분류 체계

대분류	중분류	세분류	
시가지·건조 지역	주거 지역	단독 주거 시설	
		공동 주거 시설	
	공업 지역	공업 시설	
		상업·업무 시설	
	상업 지역	상업·업무 시설	
		혼합 지역	
	문화·체육·휴양 지역	문화·체육·휴양 시설	
		공원	
	교통 지역	항만	
		철도	
농업 지역	농지	도로	
		기타 교통·통신 시설	
	공업 시설 지역	환경 기초 시설	
		교육·행정 시설	
	농지	기타 공업 시설	
		경지 불리가 된 논	
	밭	경지 불리가 된 밭	
		경지 불리가 된 밭	
	시설 재배지	시설 재배지	
		과수원	
산림 지역	과수원	과수원	
		목장·양식장	
	기타 재배지	기타 재배지	
		활엽수림	
	활엽수림	활엽수림	
		침엽수림	
	혼효림	혼효림	
		자연 초지	
	초지	자연 초지	
		인공 초지	
습지	인공 초지	요지	
		기타 초지	
	내륙 습지(수변 식생)	내륙 습지(수변 식생)	
		갯벌	
	염안 습지	염안	
		염전	
	자연 나지	해변	
		강가습	
나지	활엽·비위	활엽·비위	
		채광 지역	
	인공 나지	운동장	
		기타 나지	
수역	내륙수	하천	
		호소	
	해양수	해양수	
		해양수	
	해양수	해양수	
		해양수	
	해양수	해양수	
		해양수	
	해양수	해양수	
		해양수	

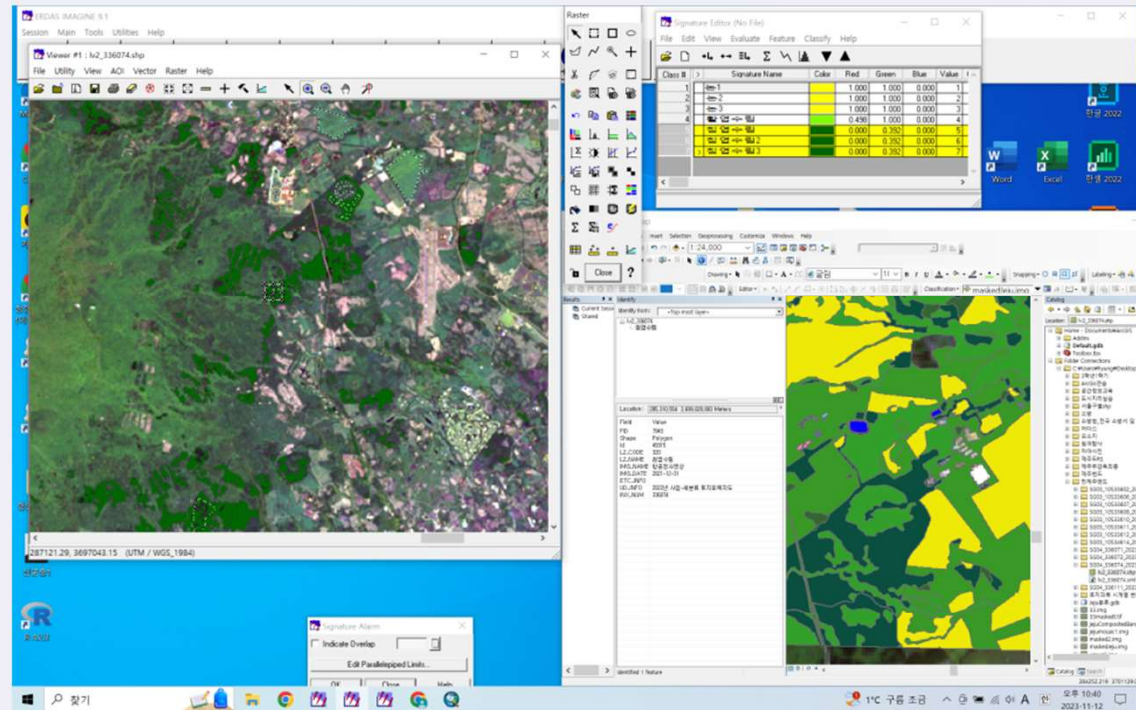
환경부(2013)

02

감독분류

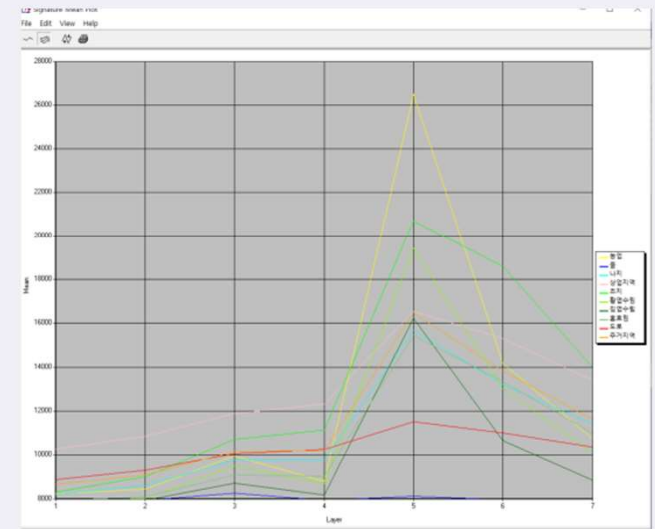
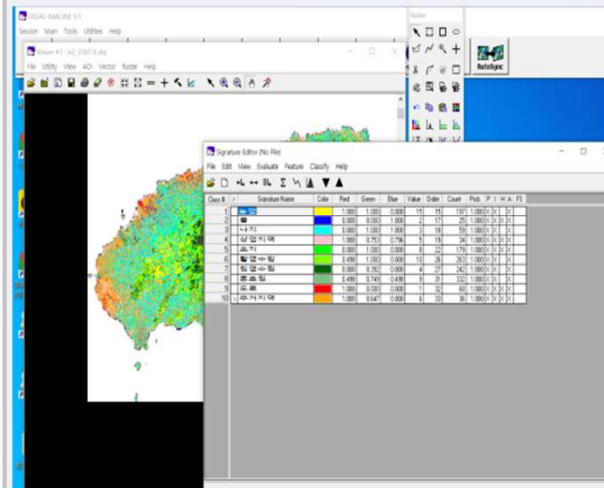
MY Data
90%
구글맵
9%
환경공간정보서비스
1%
(cheating)

Area Of Interest



02

감독분류



02

감독분류

5번,6번,7번 밴드가 찰떡궁합이구나!

Separability CellArray

Distance Measure: Euclidean Distance
 Using Layers: 1 2 3 4 5 6 7
 Taken 3 at a time
 Best Average Separability: 7305.02
 Combination: 5 6 7

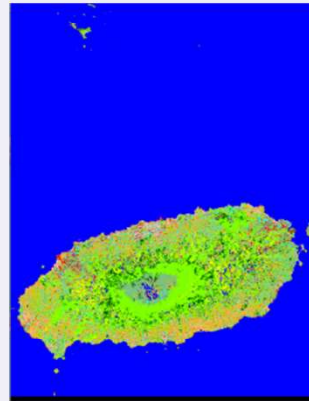
Signature Name	1	2	3	4	5	6	7	8	9	10
농업 1	0	10855.8	10356	7976.59	7187.58	11001.1	11068.6	15299.2	10056.5	19087.3
나지 2	10855.8	0	3006.67	7781.78	3954.53	3666	503.596	4838.65	1021.31	9328.21
농업지역 3	10356	3006.67	0	5329.49	4940.47	6516.57	3304.36	7278.83	2300.82	11926.1
초지 4	7976.59	7781.78	5329.49	0	6918.81	10457.6	8011.08	12448.6	6781.27	17022.2
밭업수림 5	7187.58	3954.53	4940.47	6918.81	0	4157.36	4077.93	8152.73	3418.78	12051.1
밭업수림 6	11001.1	3666	6516.57	10457.6	4157.36	0	3516.75	4959.88	4235.84	8101.55
혼합림 7	11068.6	503.596	3304.36	8011.08	4077.93	3516.75	0	4612.7	1310.67	9061.85
도로 8	15299.2	4838.65	7278.83	12448.6	8152.73	4959.88	4612.7	0	5846.91	4658.45
휴거지역 9	10056.5	1021.31	2300.82	6781.27	3418.78	4235.84	1310.67	5846.91	0	10337.6
물 10	19087.3	9328.21	11926.1	17022.2	12051.1	8101.55	9061.85	4658.45	10337.6	0

Close

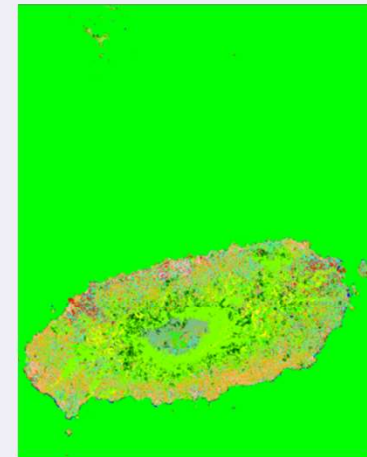
02

감독분류

Parametric Rule: Minimum Distance



Parametric Rule: Maximum Likelihood



02

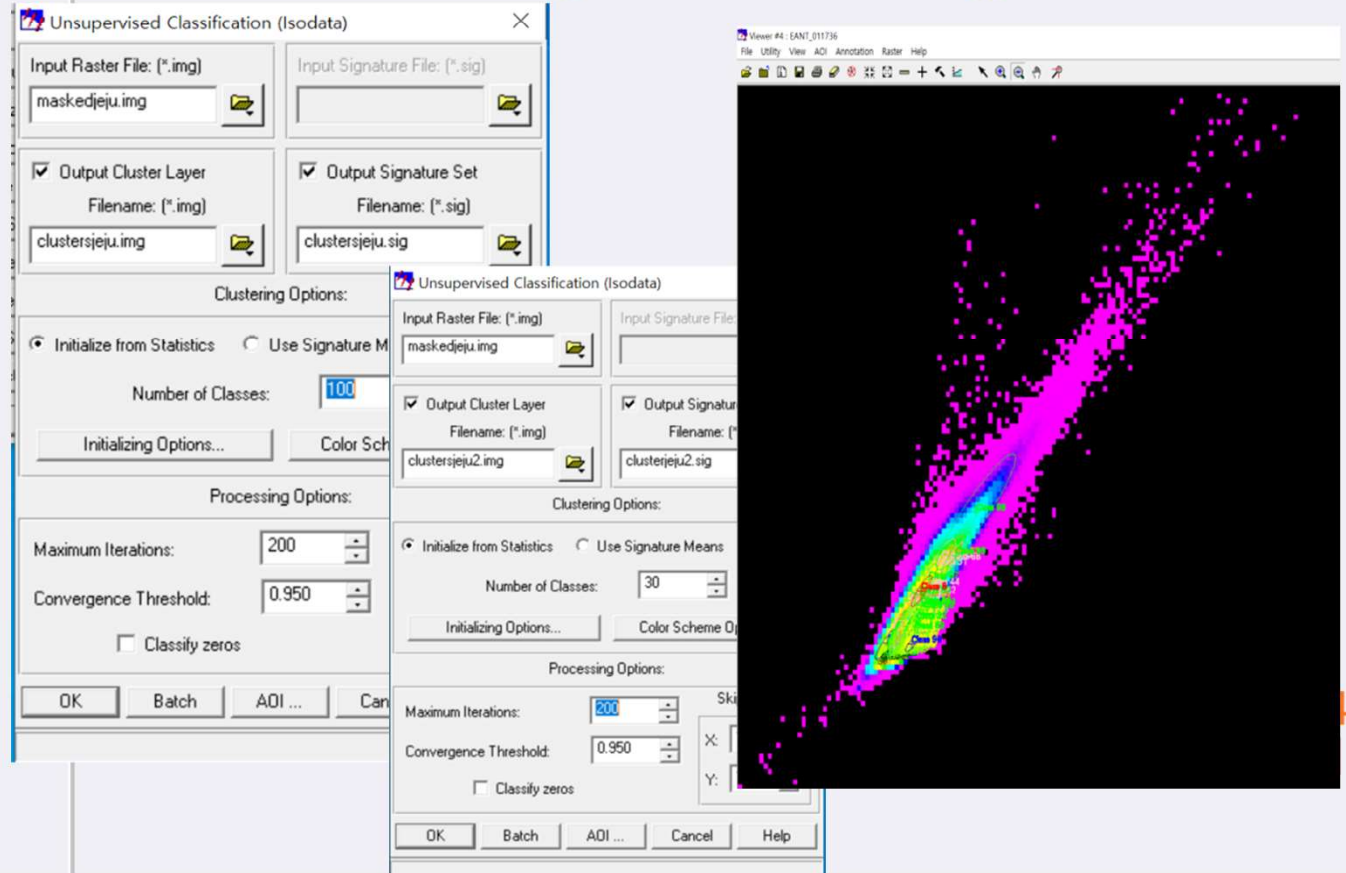
무감독분류

Cmax:100개
Threshold: 95%
MaxIteration:200

VS

Cmax:30개
Threshold: 95%
MaxIteration:200

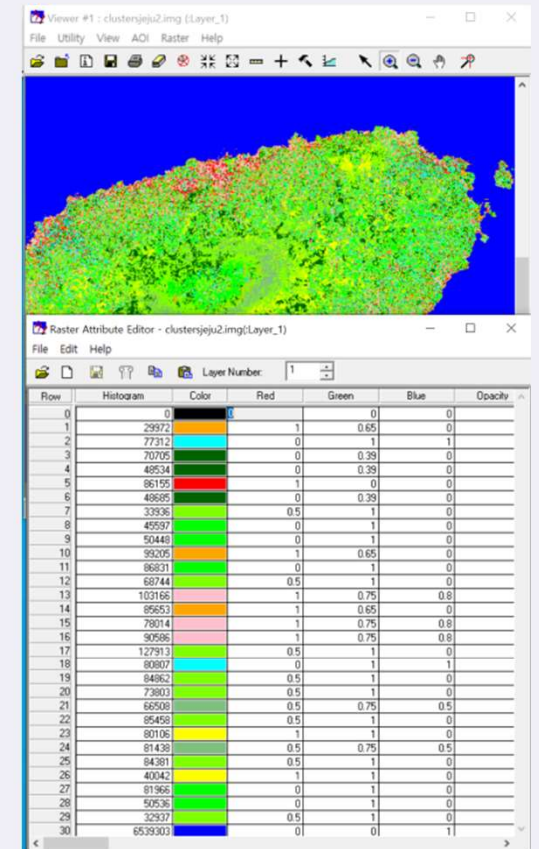
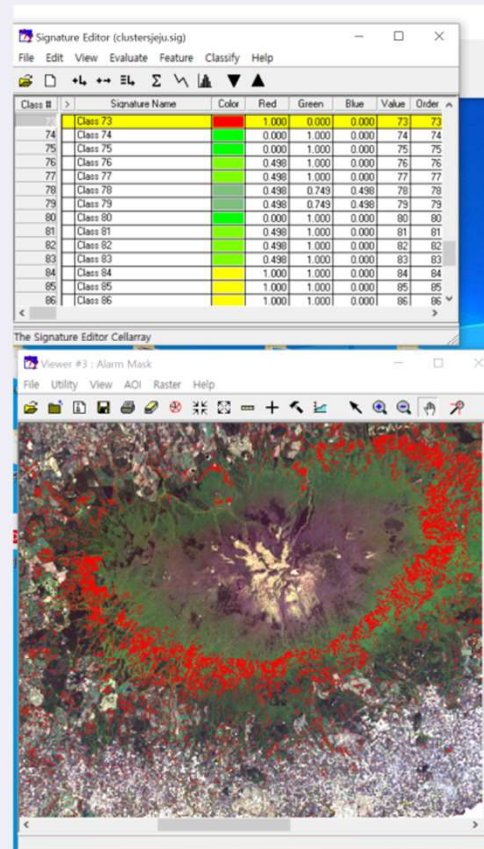
ISODATA algorithm setting



02

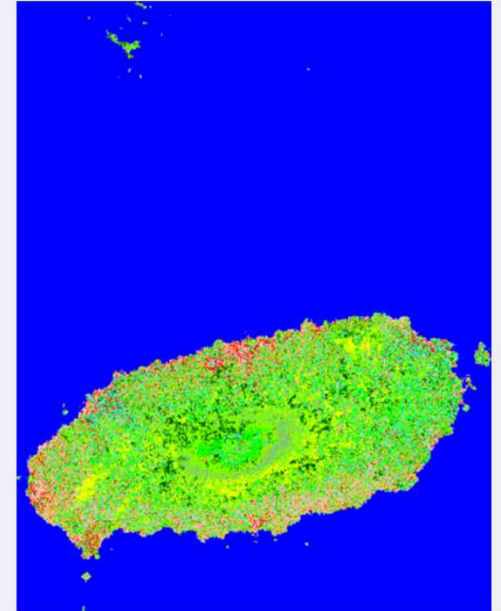
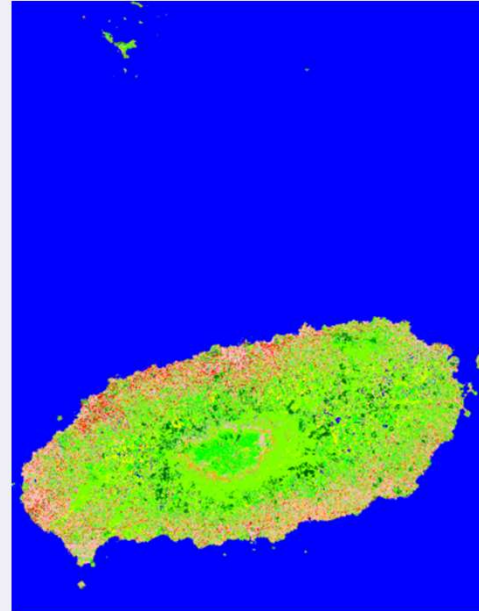
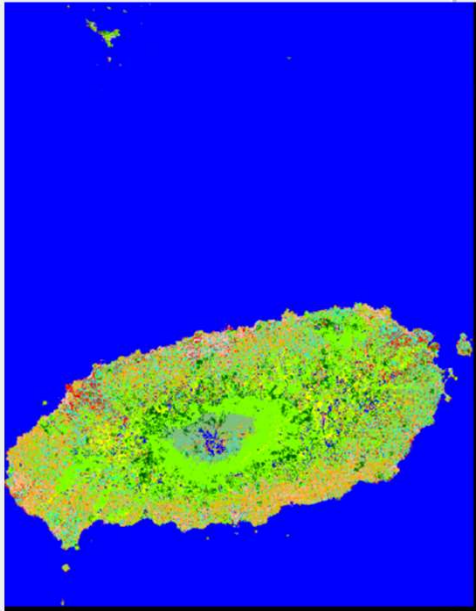
무감독분류

100개 vs 30개



02

감독분류&무감독100&무감독30



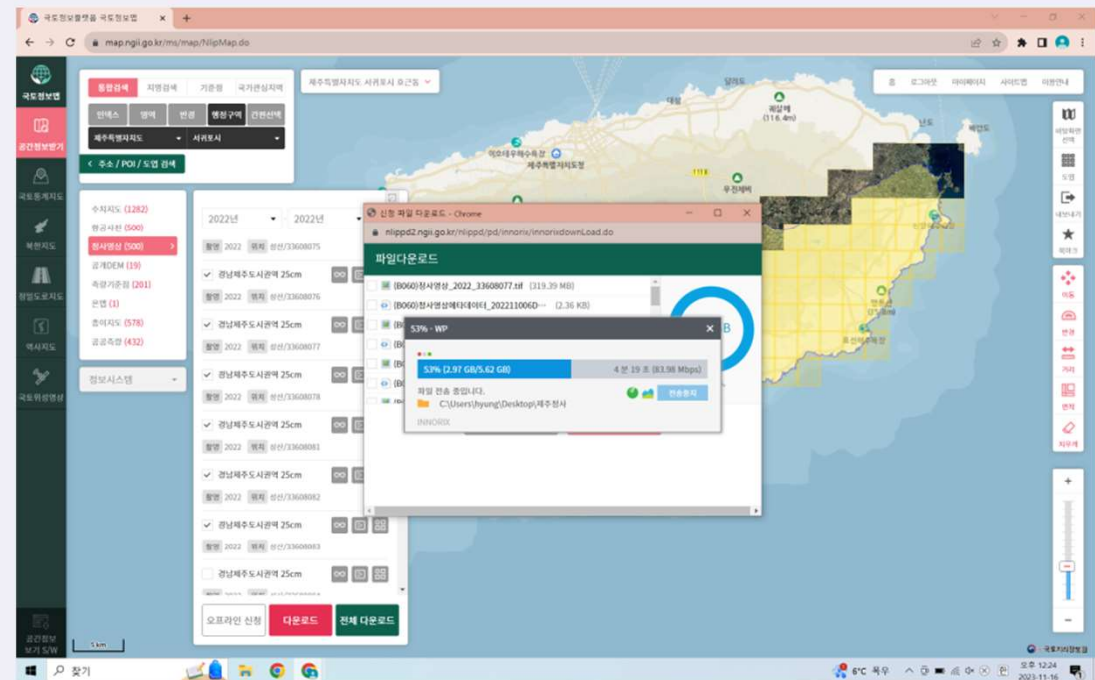
03

정확도평가

Accuracy Assessment

정사영상 다운로드

국토정보플랫폼

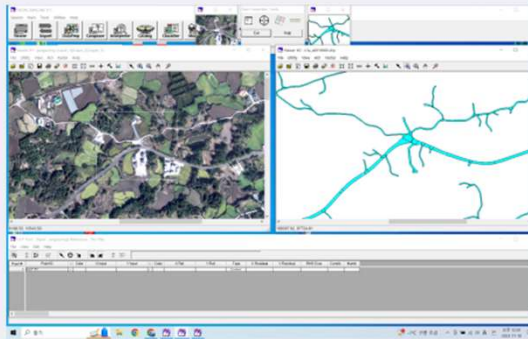


03

정확도평가

Accuracy Assessment

Image to map Rectification



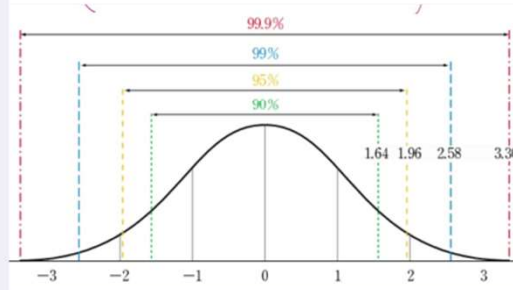
03

정확도평가

Accuracy Assessment

Sample Size

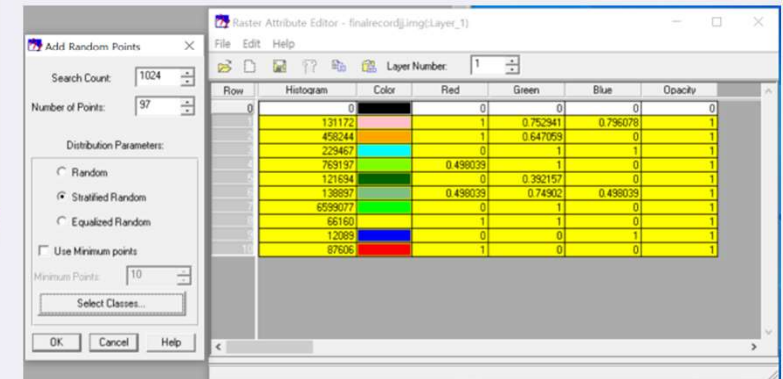
$$N = \frac{Z^2(p)(q)}{E^2}$$



신뢰구간: 90

허용오차: 5

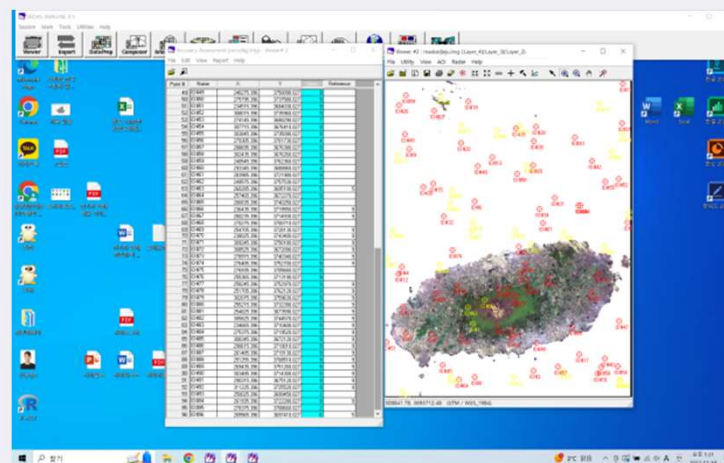
$$96.8xx = \{(1.64)^2 \times 90 \times 10\} / 5^2$$



03

정확도평가

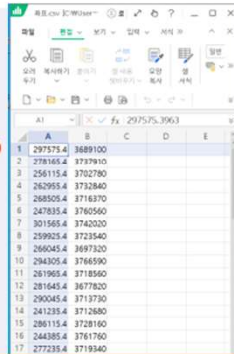
Accuracy Assessment



03 정확도평가

Accuracy Assessment

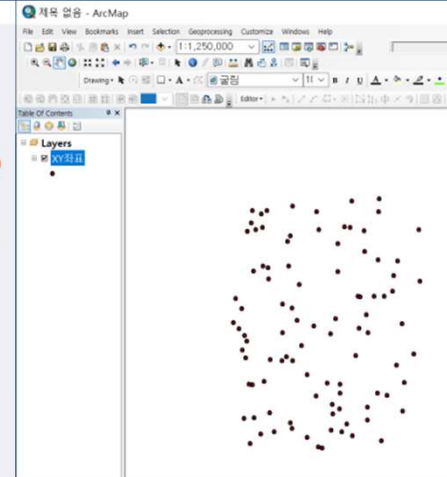
1.



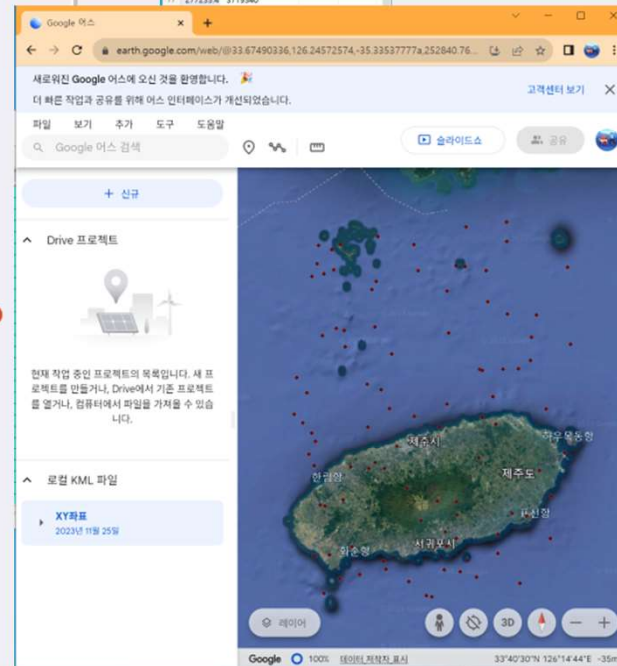
	A	B	C	D	E
1	297575.4	3689100			
2	297575.4	3739100			
3	256115.4	3702780			
4	262955.4	3732840			
5	268505.4	3716370			
6	247835.4	3765560			
7	301565.4	3742020			
8	259925.4	3723540			
9	266045.4	3697320			
10	294305.4	3765590			
11	261965.4	3718560			
12	281645.4	3677820			
13	290045.4	3713730			
14	241235.4	3712680			
15	286115.4	3728160			
16	244385.4	3761760			
17	277235.4	3719340			

2.

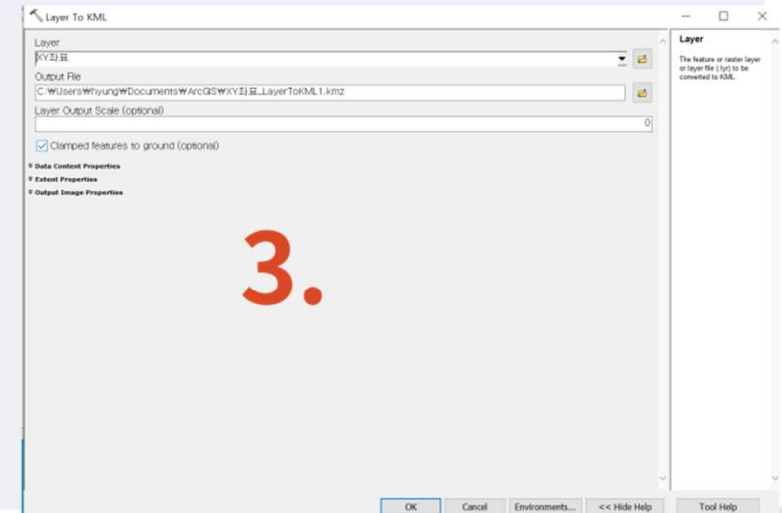
UTM, Zone 52, WGS 1984



4.



3.



정확도평가

30개 무감독분류 정확도
overall accuracy: 87.63
kappa statistics: 0.6934

파일을 열음 - Windows 메모장

파일(F) 편집(E) 서식(O) 보기(V) 도움말(H)

ACCURACY TOTALS

Class Name	Reference Totals	Classified Totals	Number Correct	Producers Accuracy	Users Accuracy
Class 1	1	3	1	100.00%	33.33%
Class 2	4	2	2	50.00%	100.00%
Class 3	4	2	2	50.00%	100.00%
Class 4	4	7	2	50.00%	28.57%
Class 5	4	2	2	50.00%	100.00%
Class 6	3	2	1	33.33%	50.00%
Class 7	0	3	0	---	---
Class 8	0	1	0	---	---
Class 9	75	74	74	98.67%	100.00%
Class 10	2	1	1	50.00%	100.00%
Totals	97	97	85		

Overall Classification Accuracy = 87.63%

----- End of Accuracy Totals -----

KAPPA (K^2) STATISTICS

Overall Kappa Statistics = 0.6934

Class Name	Kappa
Class 1	0.3264
Class 2	1.0000
Class 3	1.0000
Class 4	0.2550
Class 5	1.0000
Class 6	0.4840
Class 7	0.0000
Class 8	0.0000
Class 9	1.0000
Class 10	1.0000

----- End of Kappa Statistics -----

Ln 25, Col 34 100% Windows (CRLF) UTF-8

03

정확도평가

Accuracy Assessment

100개 무감독분류 정확도
overall accuracy: 95.83
kappa statistics:0.8987

Editor: ECAAR008908, Dir: C:/Users/hyung/AppData/Local/Temp/

무감독분류정확도평가 - Windows 메모장

파일(F) 편집(E) 서식(O) 보기(V) 도움말(H)

CLASSIFICATION ACCURACY ASSESSMENT REPORT

ACCURACY TOTALS

Class Name	Reference Totals	Classified Totals	Number Correct	Producers Accuracy	Users Accuracy
Class 0	0	0	0	---	---
Class 1	5	5	5	100.00%	100.00%
Class 2	2	2	2	100.00%	100.00%
Class 3	0	0	0	---	---
Class 4	6	8	6	100.00%	75.00%
Class 5	2	1	1	50.00%	100.00%
Class 6	2	2	1	50.00%	50.00%
Class 7	3	3	2	66.67%	66.67%
Class 8	1	1	1	100.00%	100.00%
Class 9	73	73	73	100.00%	100.00%
Class 10	2	1	1	50.00%	100.00%
Totals	96	96	92		

Overall Classification Accuracy = 95.83%

----- End of Accuracy Totals -----

KAPPA (K²) STATISTICS

Overall Kappa Statistics = 0.8987

conditional Kappa for each Category.

Class Name	Kappa
Class 0	0.0000
Class 1	1.0000
Class 2	1.0000
Class 3	0.0000
Class 4	0.7333
Class 5	1.0000
Class 6	0.4894
Class 7	0.6559
Class 8	1.0000
Class 9	1.0000
Class 10	1.0000

----- End of Kappa Statistics -----

Ln 46, Col 38 100% Windows (CRLF) UTF-8

03

정확도평가

Accuracy Assessment

감독분류 정확도
overall accuracy: 92.78
kappa statistics: 0.8343

Editor: ECAAR004892, Dir: C:/Users/hyung/AppData/Local/Temp/

File Edit View Find Help

Class 234	0	0	0	----	----
Class 235	0	0	0	----	----
Class 236	0	0	0	----	----
Class 237	0	0	0	----	----
Class 238	0	0	0	----	----
Class 239	0	0	0	----	----
Class 240	0	0	0	----	----
Class 241	0	0	0	----	----
Class 242	0	0	0	----	----
Class 243	0	0	0	----	----
Class 244	0	0	0	----	----
Class 245	0	0	0	----	----
Class 246	0	0	0	----	----
Class 247	0	0	0	----	----
Class 248	0	0	0	----	----
Class 249	0	0	0	----	----
Class 250	0	0	0	----	----
Class 251	0	0	0	----	----
Class 252	0	0	0	----	----
Class 253	0	0	0	----	----
Class 254	0	0	0	----	----
Class 255	0	0	0	----	----
Totals	97	97	90		

Overall Classification Accuracy = 92.78%

----- End of Accuracy Totals -----

KAPPA (K²) STATISTICS

Overall Kappa Statistics = 0.8343

Conditional Kappa for each Category.

Class Name	Kappa
Class 0	0.0000
Class 1	1.0000
Class 2	0.7914
Class 3	1.0000
Class 4	0.7522
Class 5	1.0000
Class 6	1.0000
Class 7	0.8058
Class 8	1.0000
Class 9	0.0000
Class 10	1.0000
Class 11	0.0000

감독분류정확도평가 - Windows 메모장

파일(F) 편집(E) 서식(O) 보기(V) 도움말(H)

ACCURACY TOTALS

Class Name	Reference Totals	Classified Totals	Number Correct	Producers Accuracy	Users Accuracy
Class 0	0	0	0	---	---
Class 1	2	1	1	50.00%	100.00%
Class 2	4	5	4	100.00%	80.00%
Class 3	3	3	3	100.00%	100.00%
Class 4	10	9	7	70.00%	77.78%
Class 5	3	1	1	33.33%	100.00%
Class 6	3	2	2	66.67%	100.00%
Class 7	70	74	70	100.00%	94.59%
Class 8	1	1	1	100.00%	100.00%
Class 9	0	0	0	---	---
Class 10	1	1	1	100.00%	100.00%
Totals	97	97	90		

Overall Classification Accuracy = 92.78%

----- End of Accuracy Totals -----

KAPPA (K²) STATISTICS

Overall Kappa Statistics = 0.8343
Conditional Kappa for each Category.

Class Name	Kappa
Class 0	0.0000
Class 1	1.0000
Class 2	0.7914
Class 3	1.0000
Class 4	0.7522
Class 5	1.0000
Class 6	1.0000
Class 7	0.8058
Class 8	1.0000
Class 9	0.0000
Class 10	1.0000

----- End of Kappa Statistics -----

Ln 27, Col 34

100%

Windows (CRLF)

UTF-8

100개 무감독분류
WIN

2023. 원격탐사활용



감사합니다



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