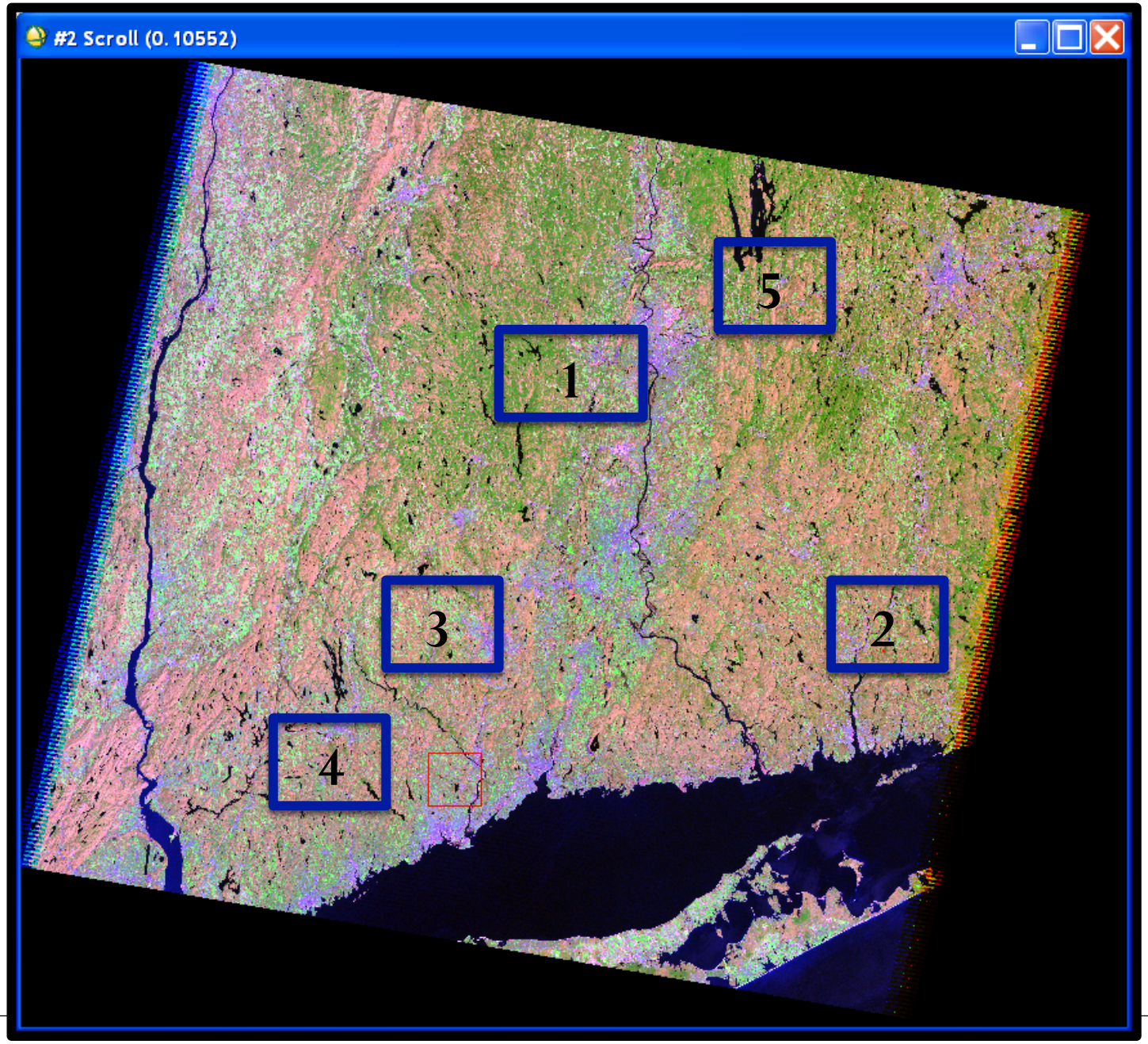
Compare Temperature, NDVI, and Albedo among Different Land Covers

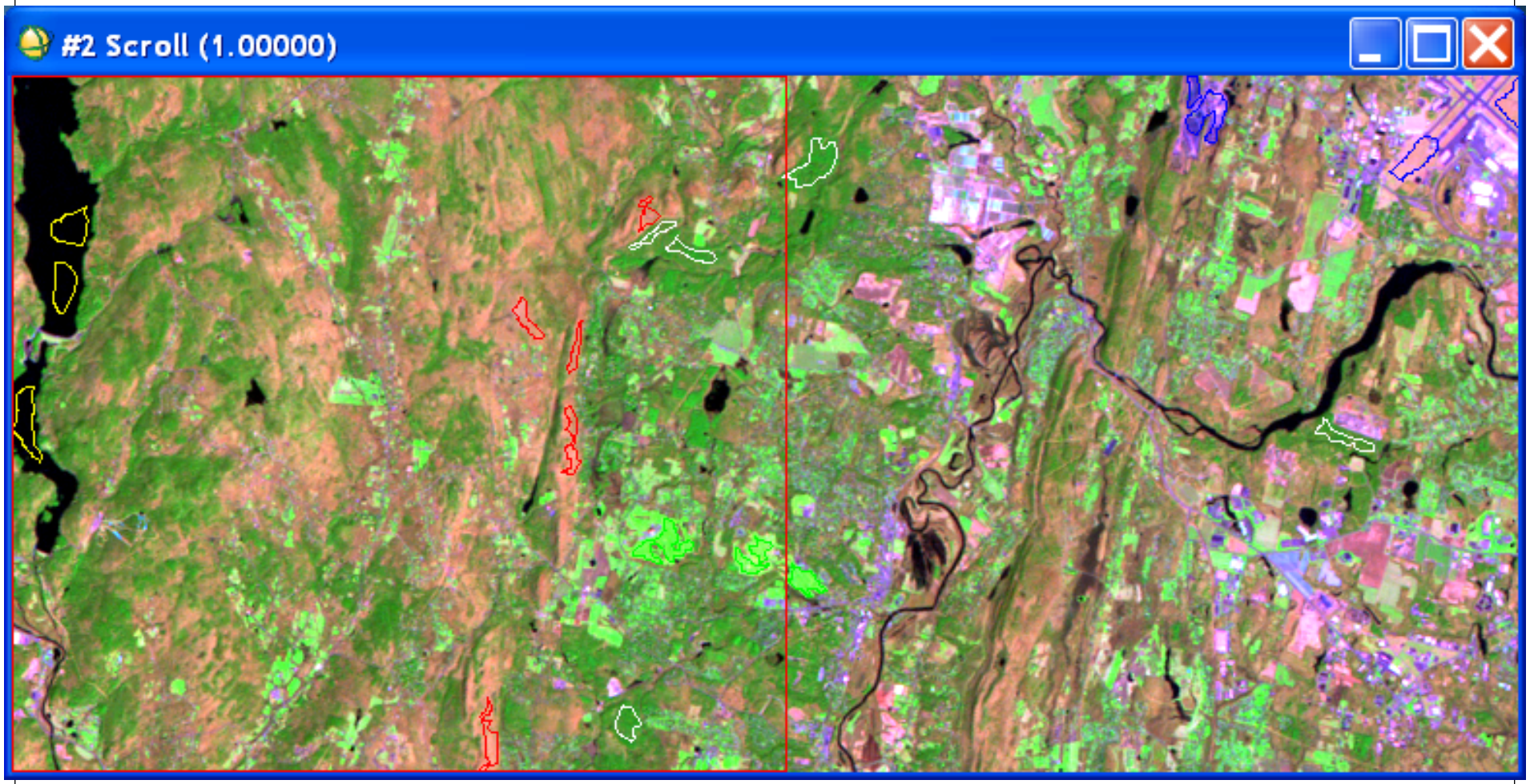
Ziyan Chu

July 21th

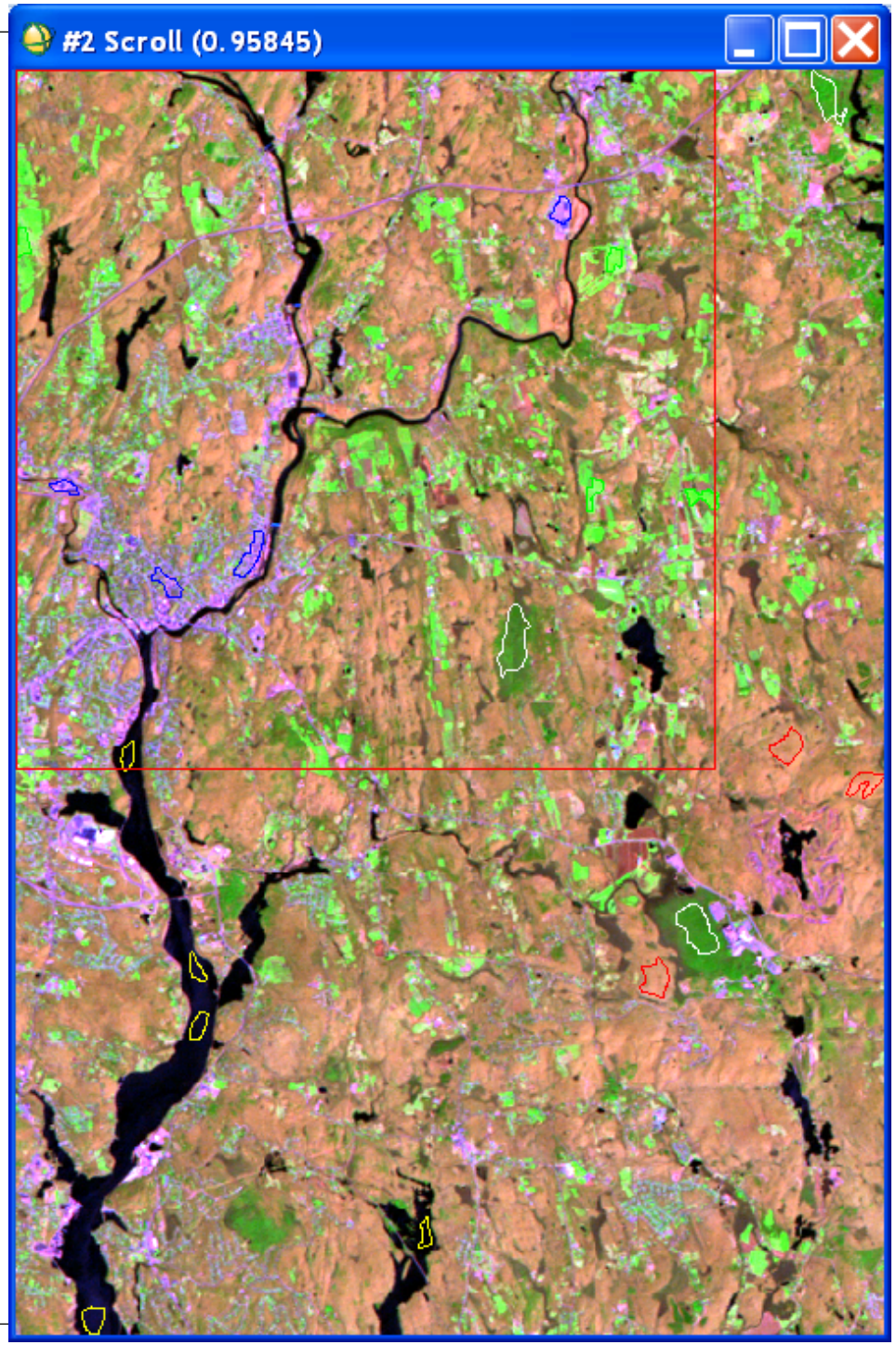
Localized Polygons (Replicas)



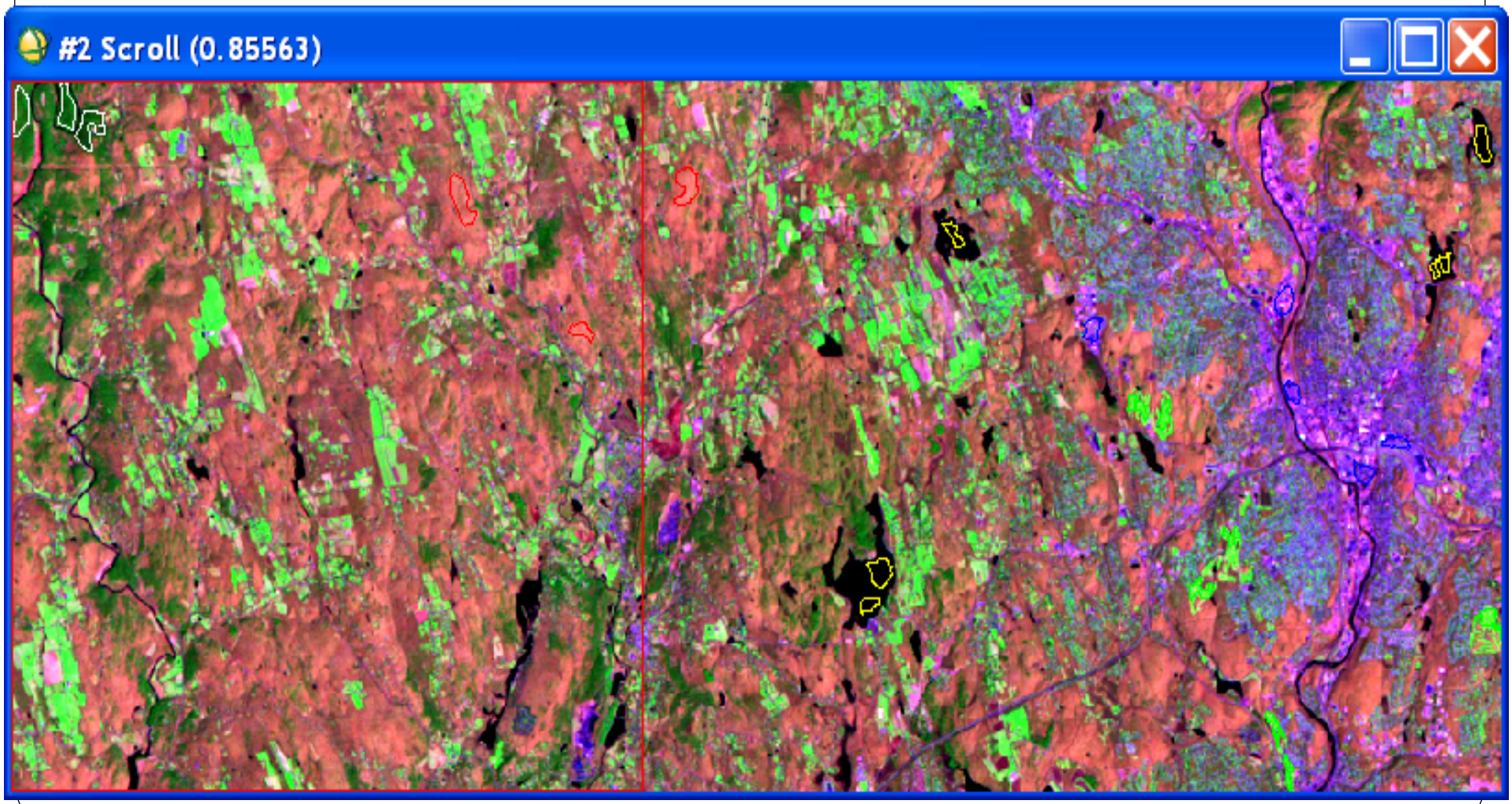
Replica 1



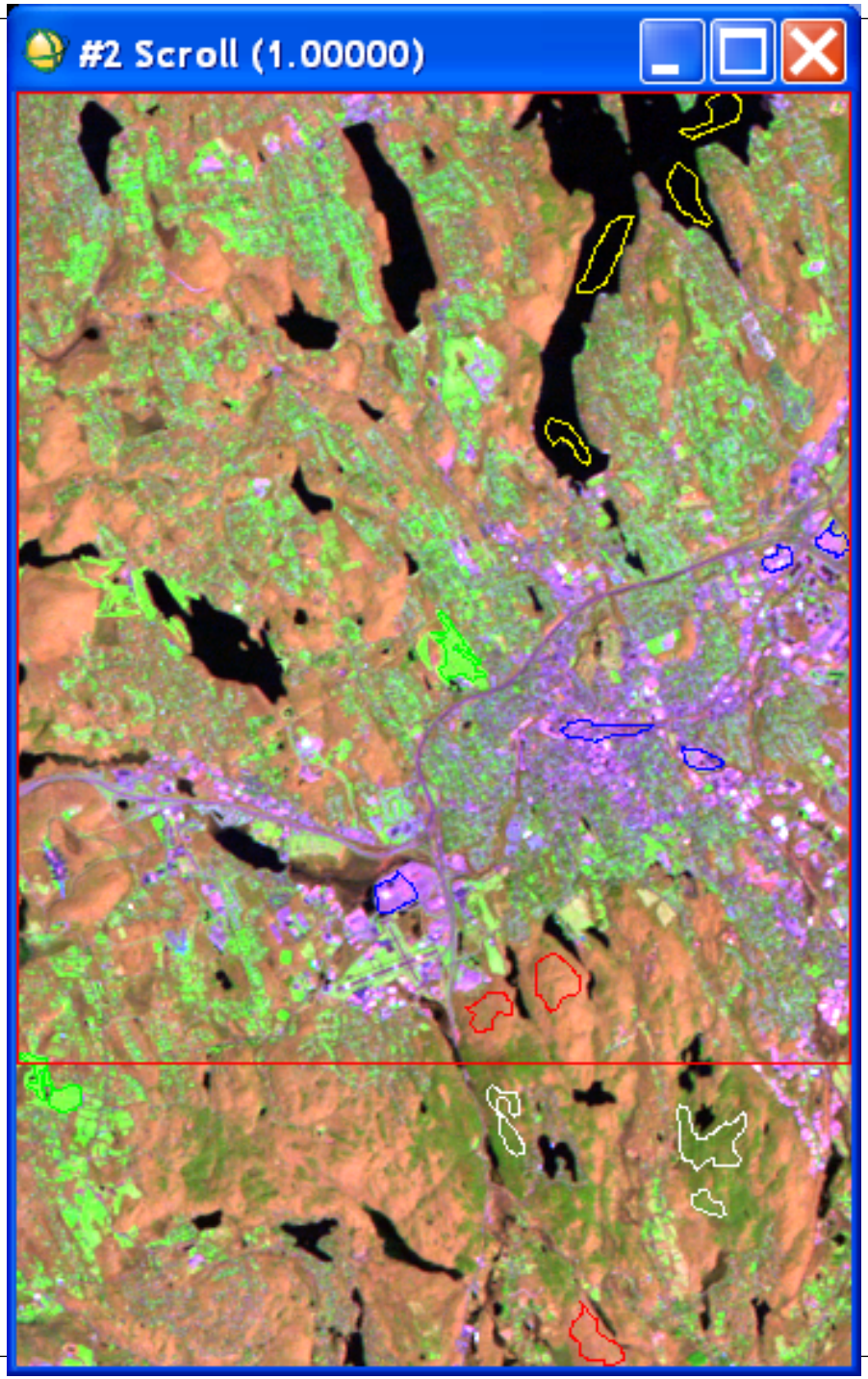
Replica 2



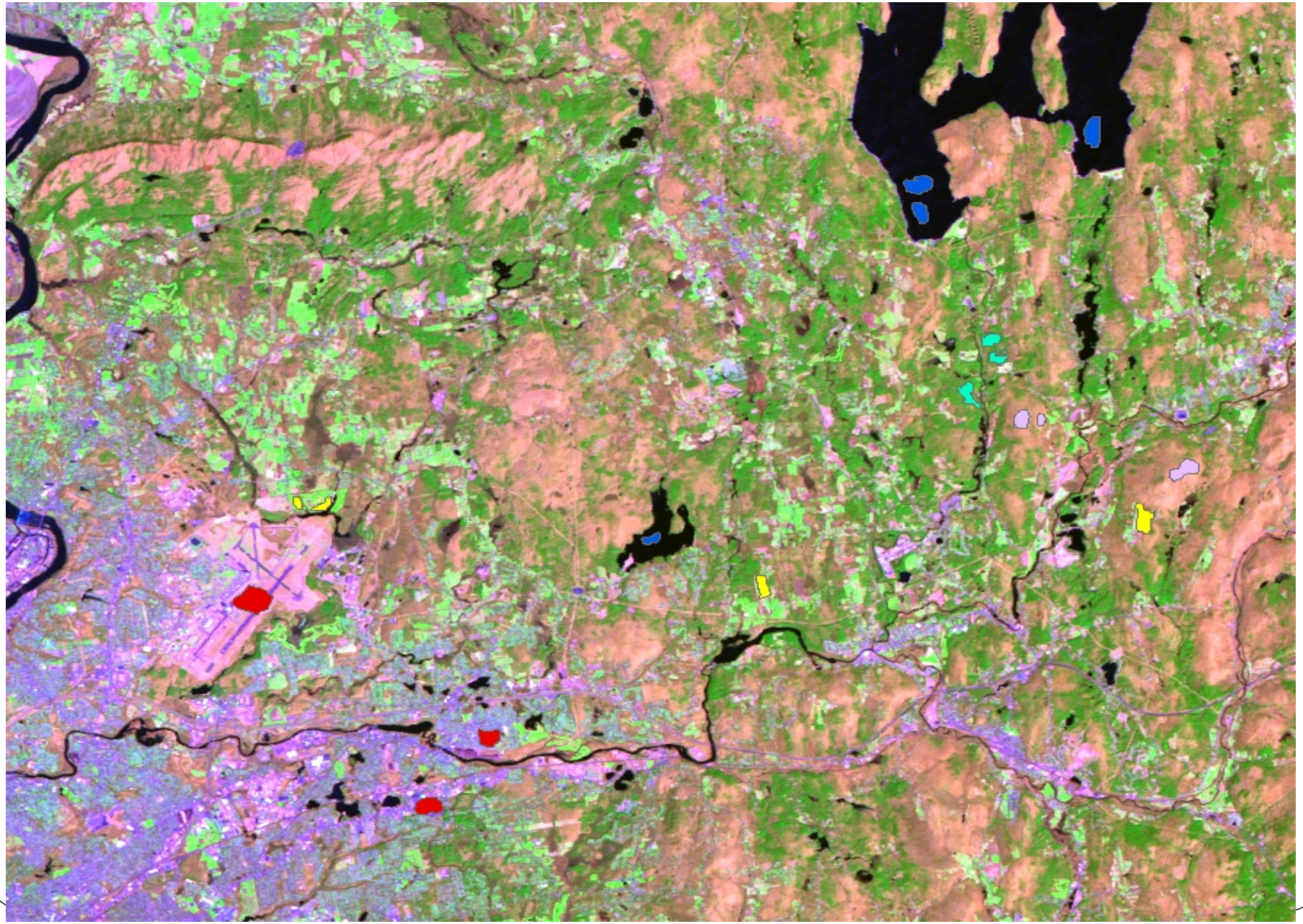
Replica 3



Replica 4



Replica 5



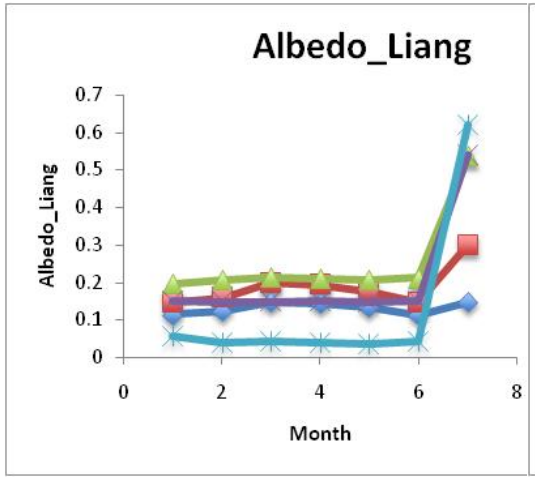
Date

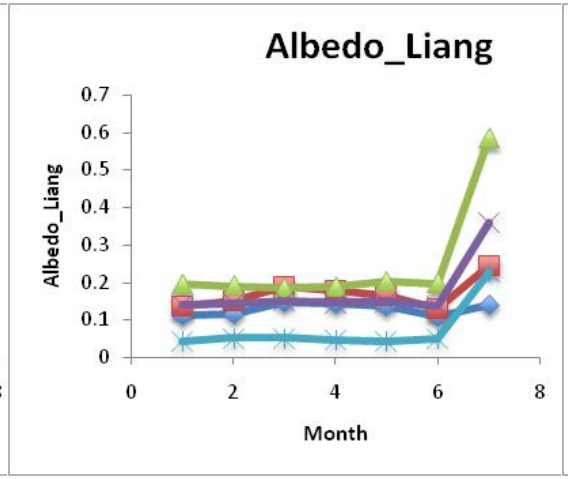
- March
- April
- June
- July
- August
- Oct28
- Jan 27 (snow)

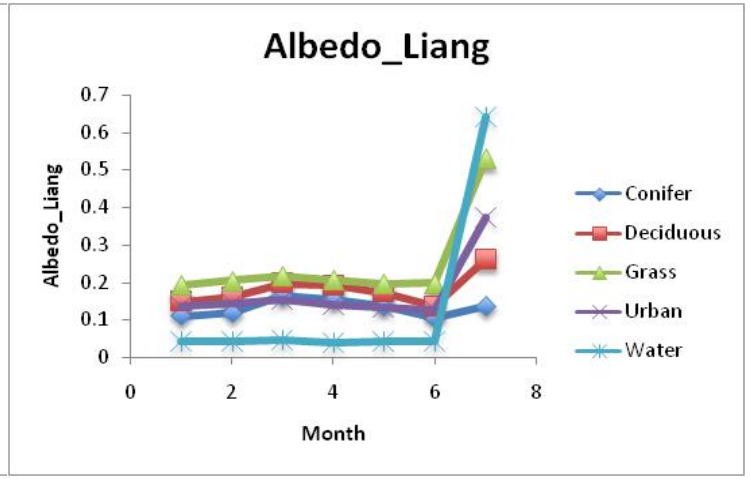
Variables

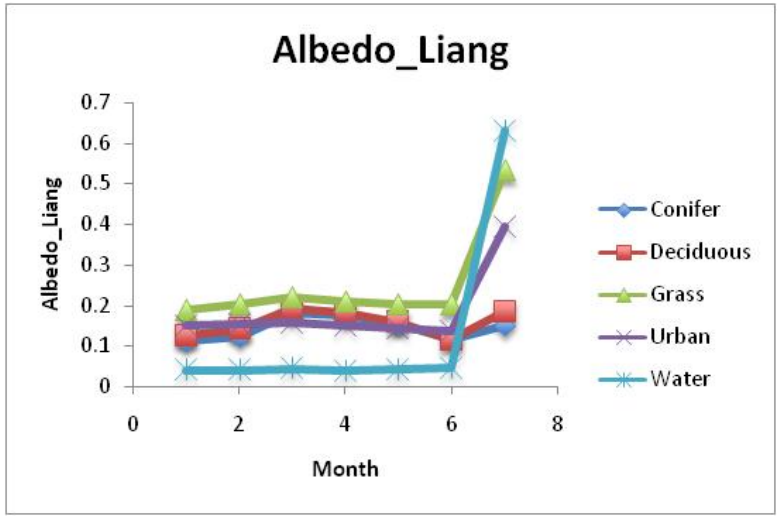
- Albedo_Liang
- Albedo_Tasumi
- Albedo_Mean
- Surface Temperature
- NDVI
- Air Temperautre
- Temperature Difference (DT)
- Insolation

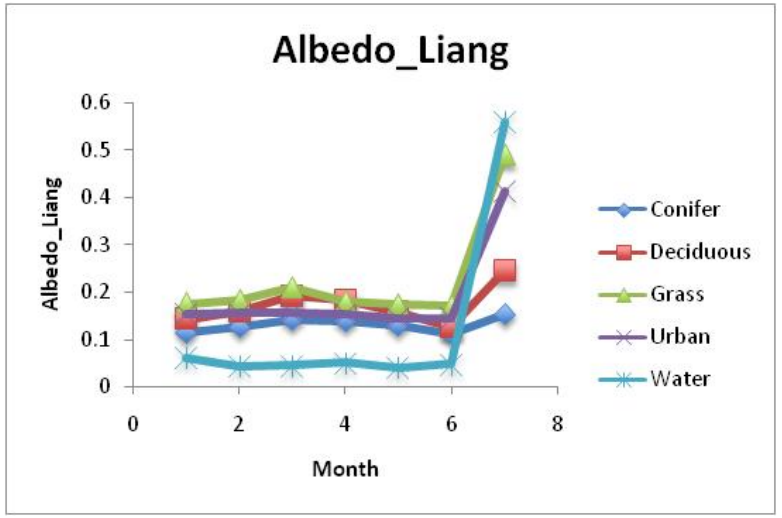
Albedo_Liang



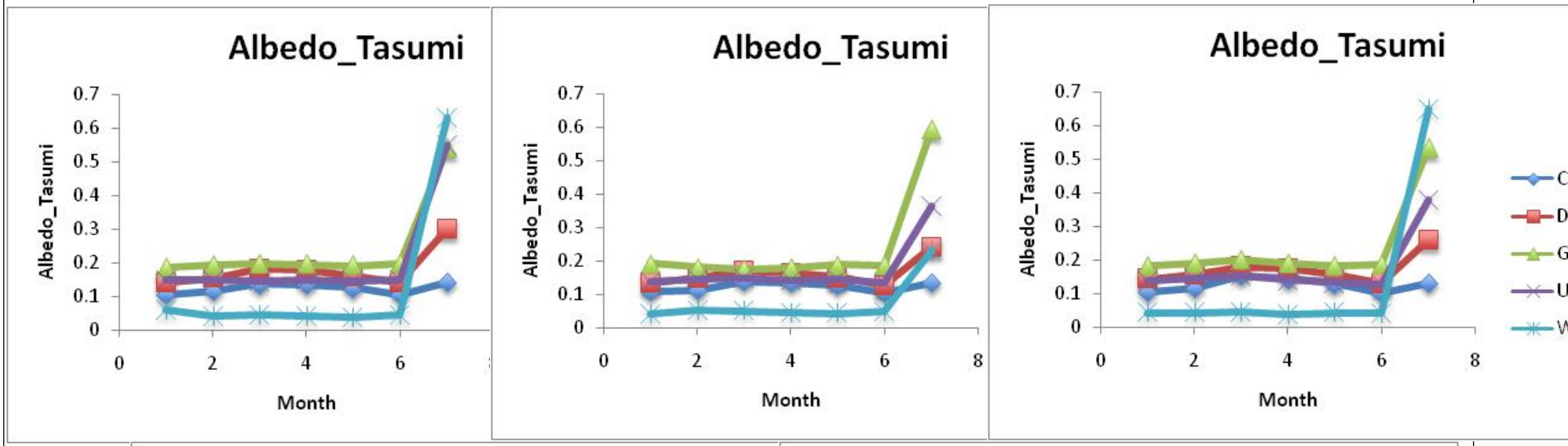


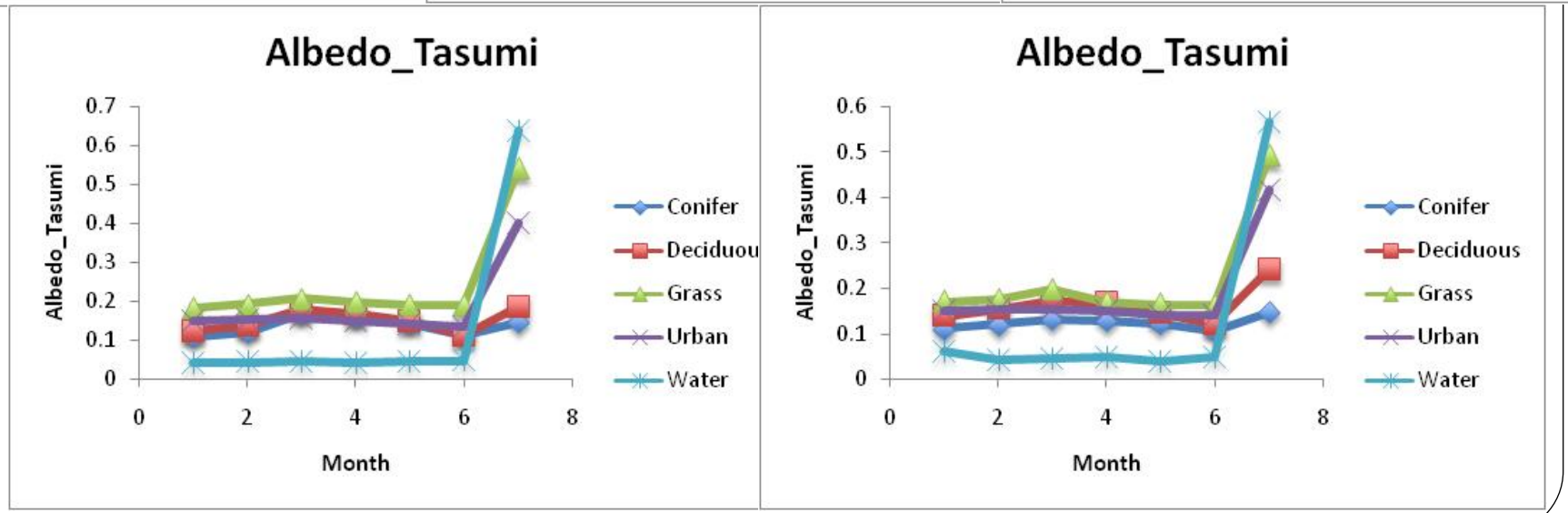




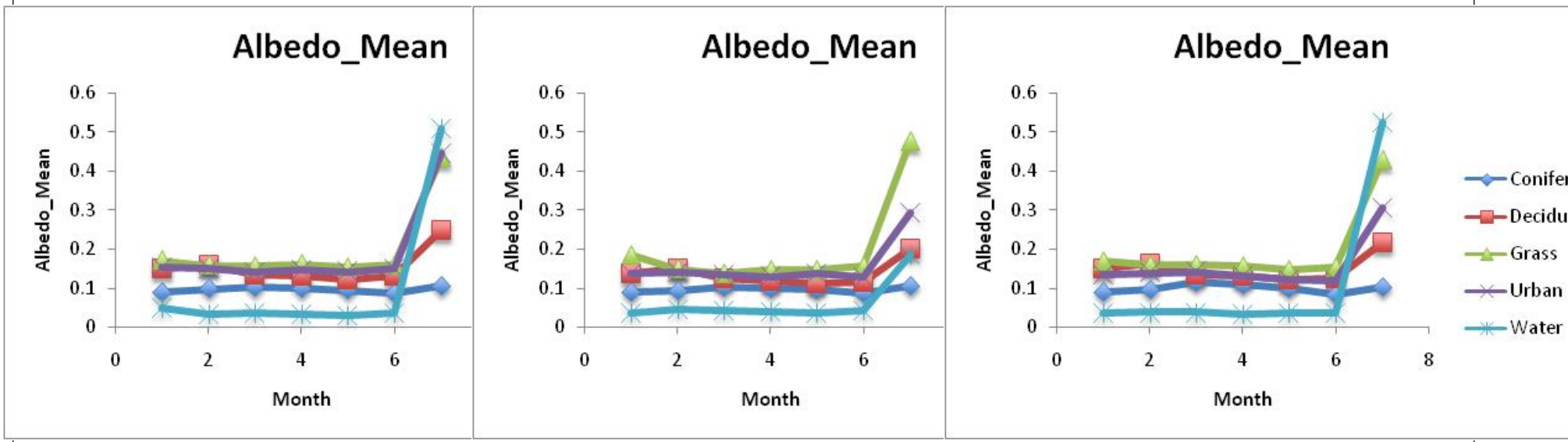


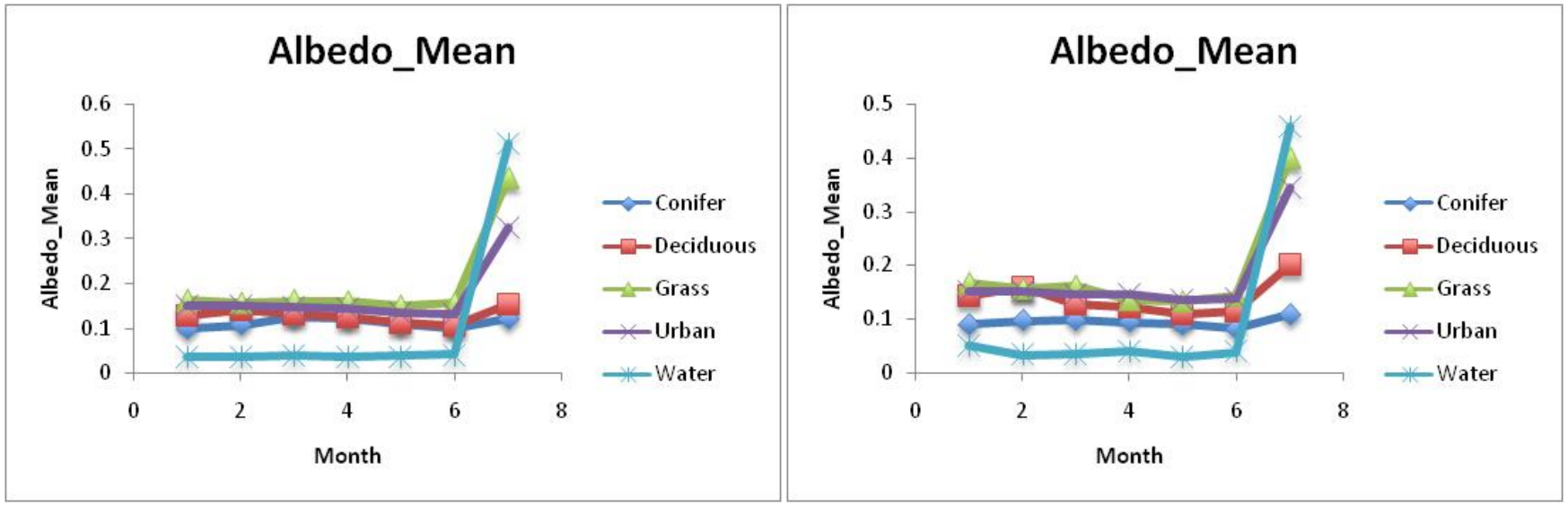
Albedo_Tasumi



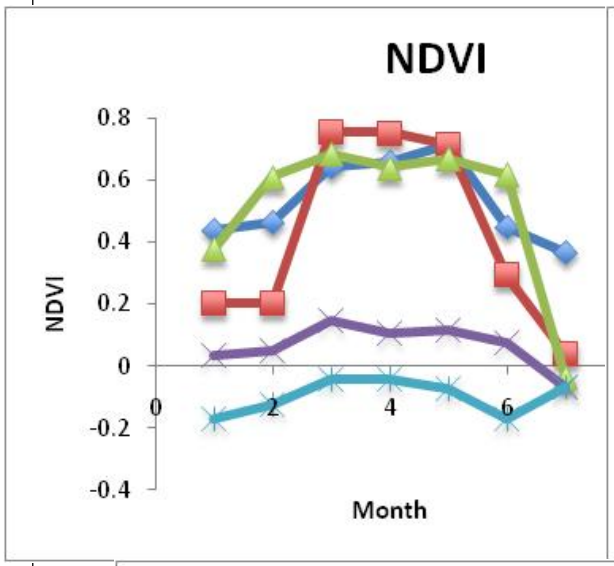


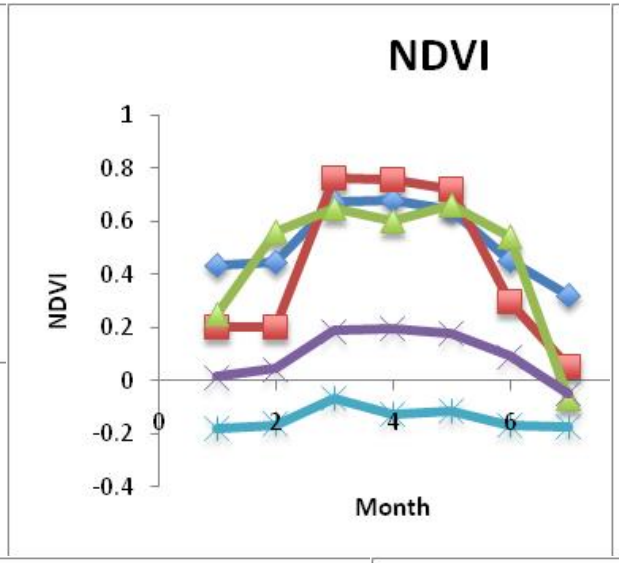
Albedo_Mean

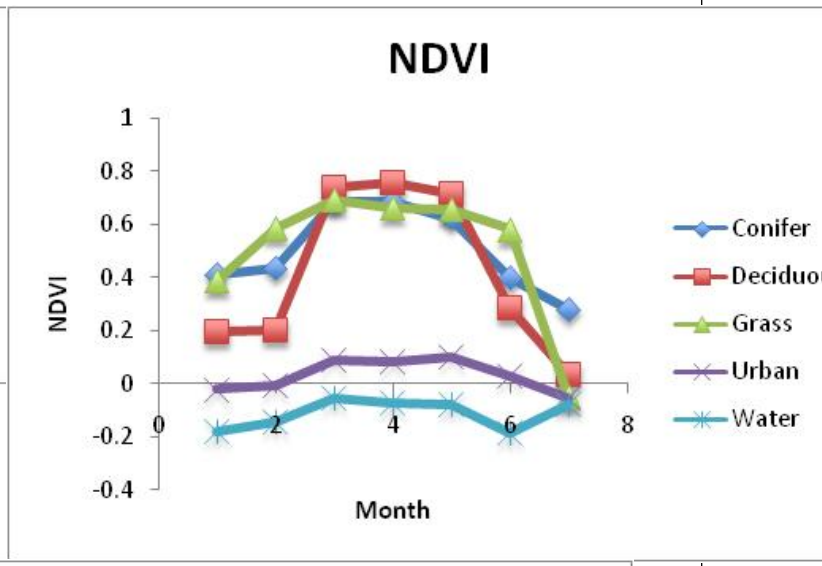

Albedo_Mean
Albedo_Mean
Month
Albedo_Mean
Albedo_Mean
Month
Albedo_Mean
Albedo_Mean
Month
Conifer
Deciduous
Grass
Urban
Water

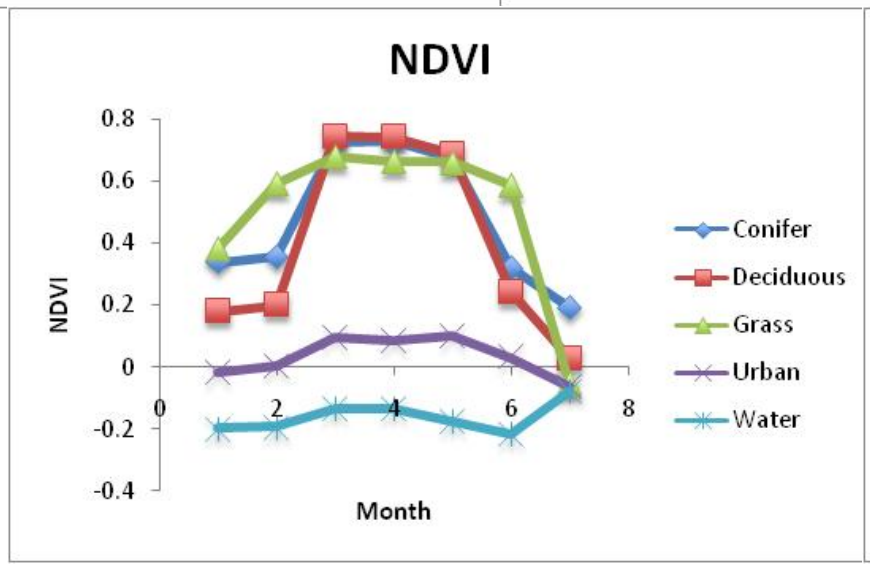

Albedo_Mean
Albedo_Mean
Month
Conifer
Deciduous
Grass
Urban
Water
Albedo_Mean
Albedo_Mean
Month
Conifer
Deciduous
Grass
Urban
Water

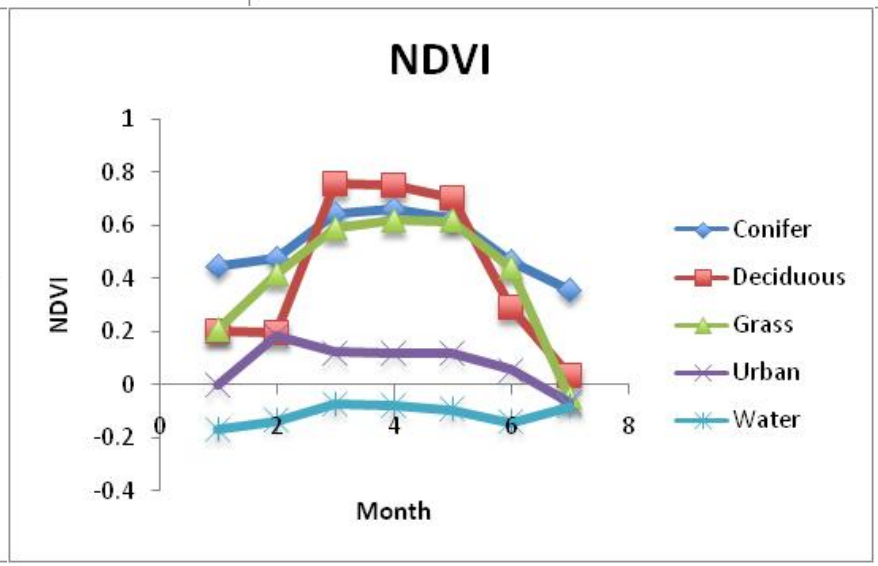
NDVI


NDVI
0.8
0.6
0.4
0.2
0
-0.2
-0.4
NDVI
0
2
4
6
Month

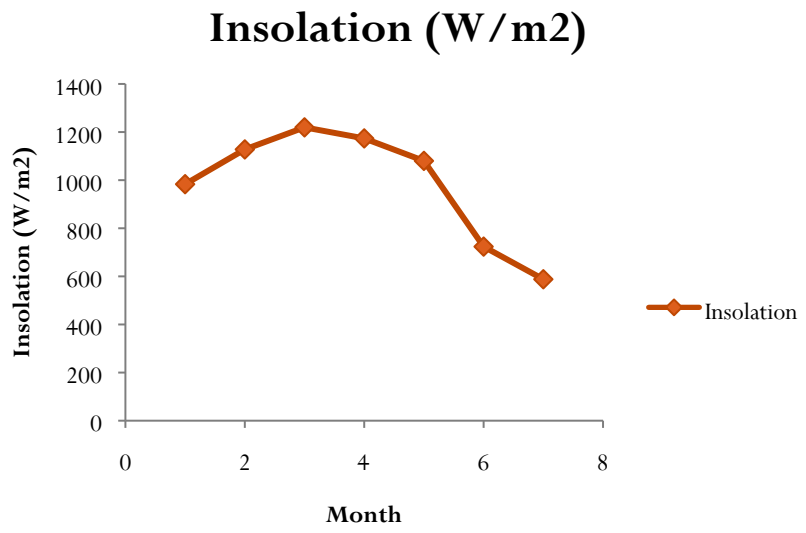

NDVI
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
NDVI
0
2
4
6
Month


NDVI
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
NDVI
0
2
4
6
8
Month
Conifer
Deciduo
Grass
Urban
Water

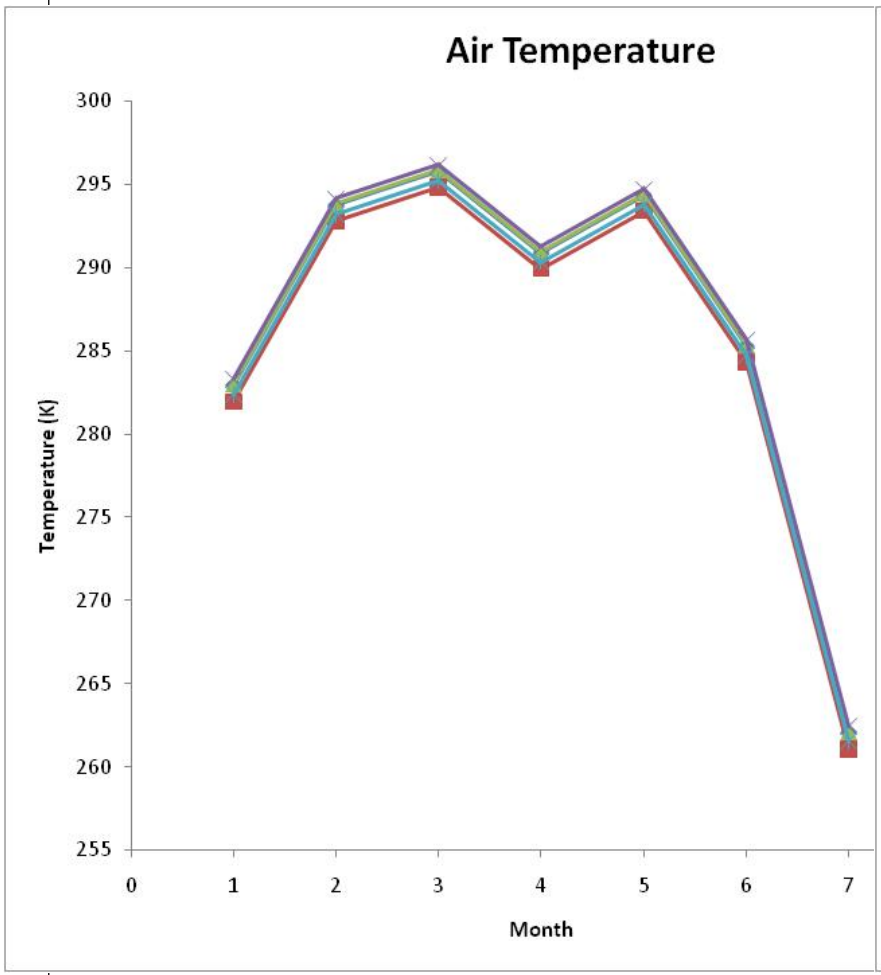

NDVI
0.8
0.6
0.4
0.2
0
-0.2
-0.4
NDVI
0
2
4
6
8
Month
Conifer
Deciduous
Grass
Urban
Water

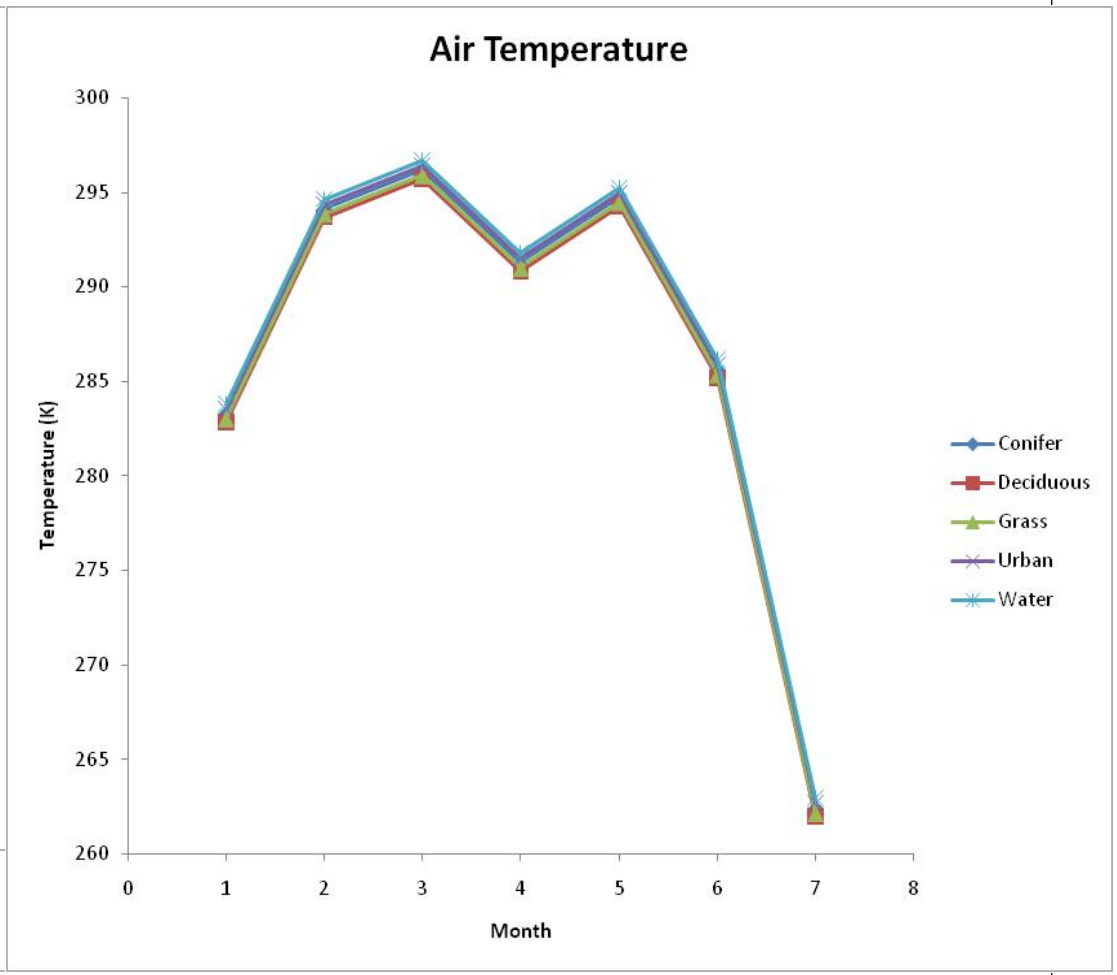

NDVI
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
NDVI
0
2
4
6
8
Month
Conifer
Deciduous
Grass
Urban
Water

Insolation (W/m^2)

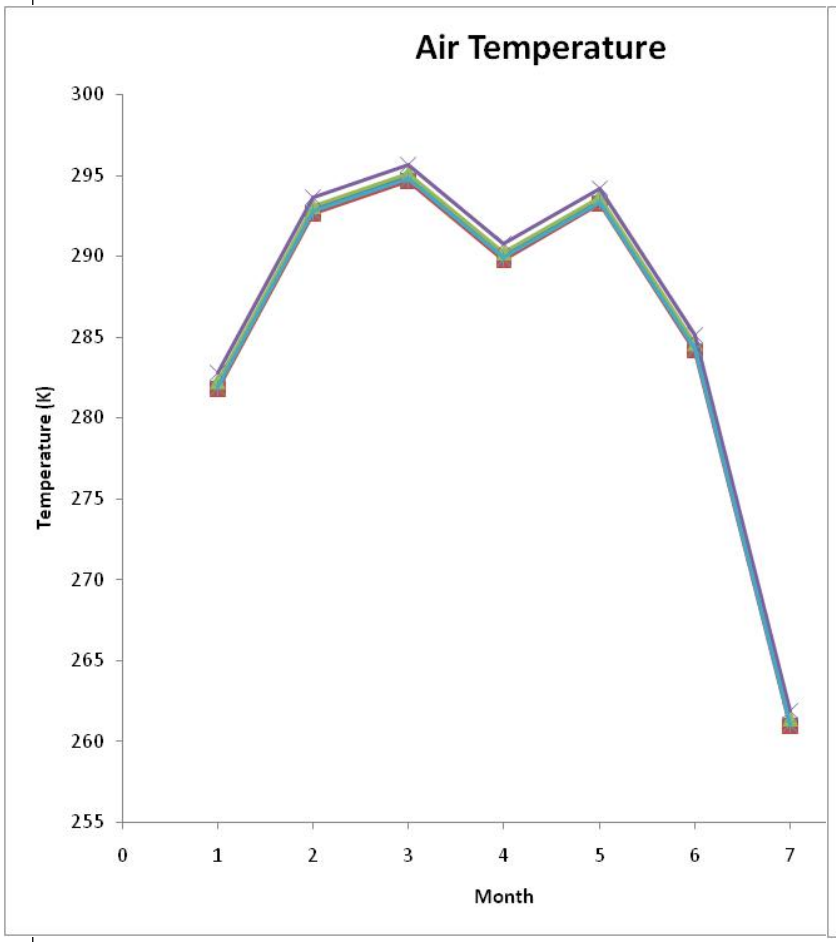


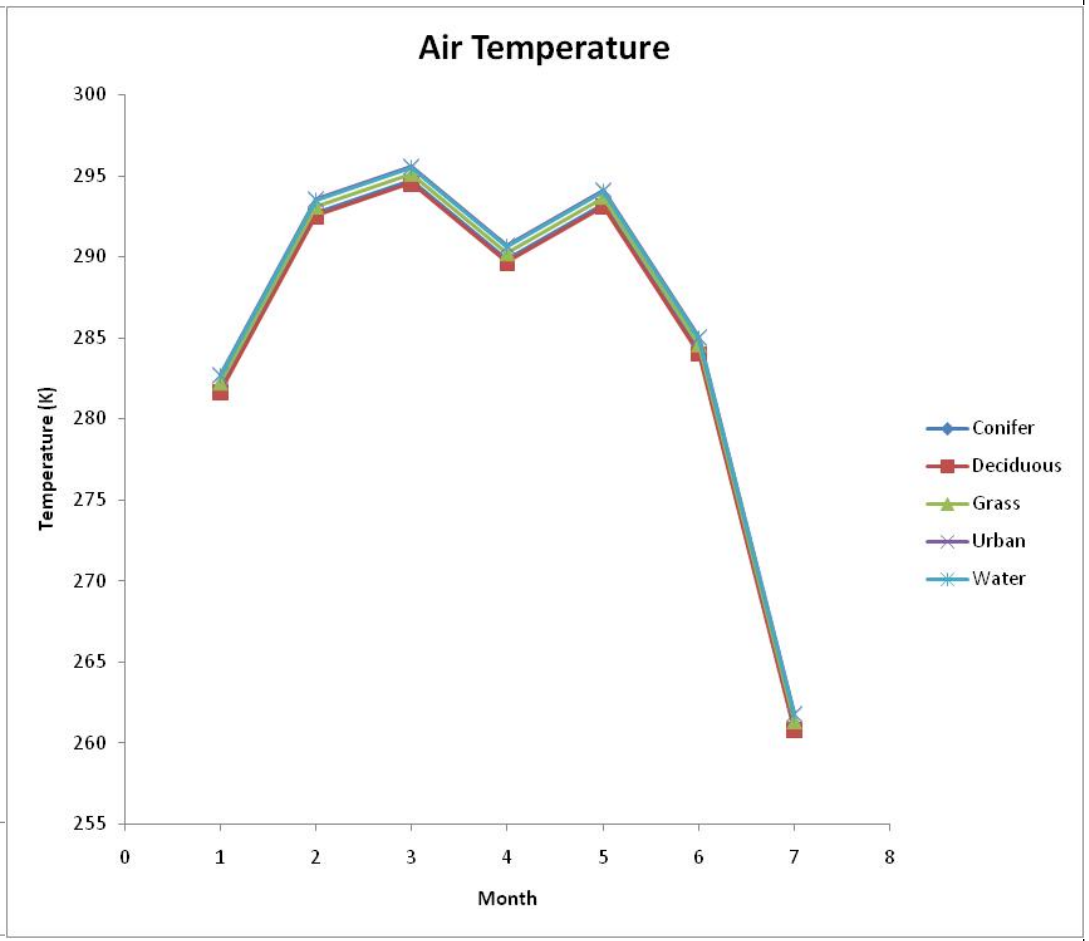
Air Temperature (K)



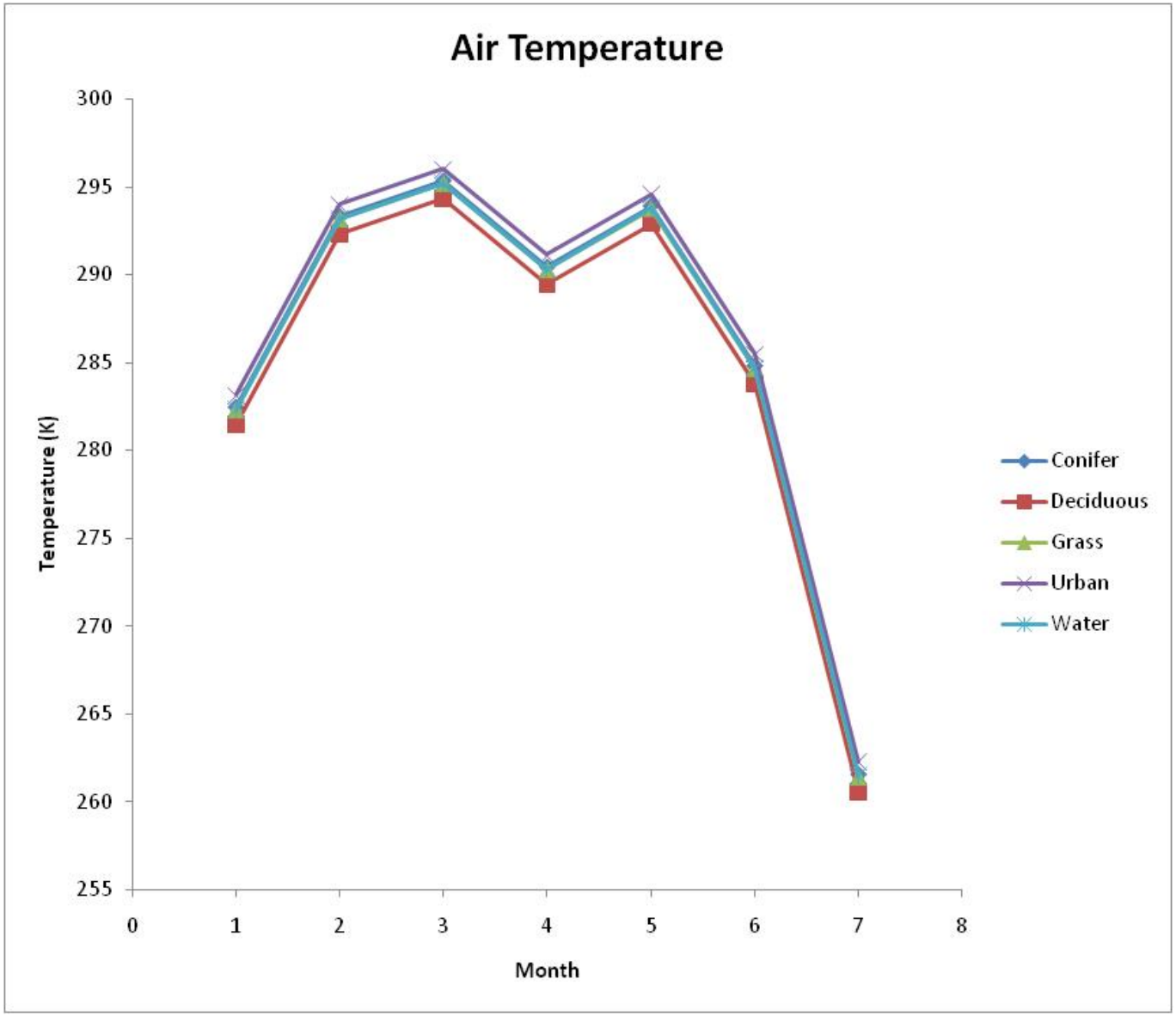


Air Temperature (K)

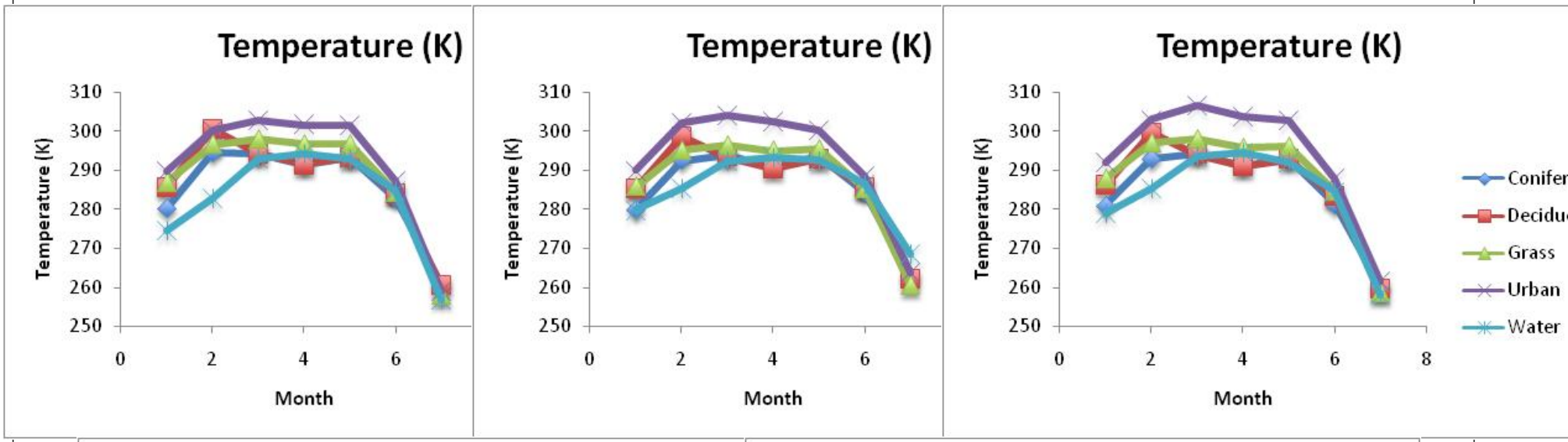


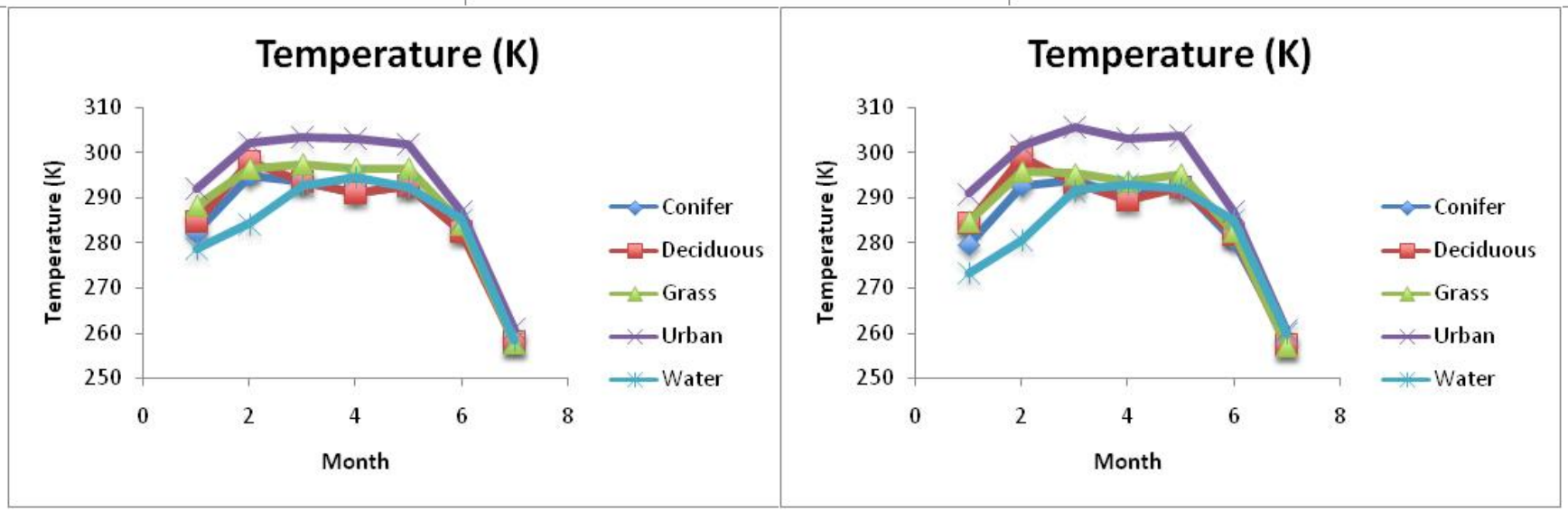


Air Temperature (K)_replica 5

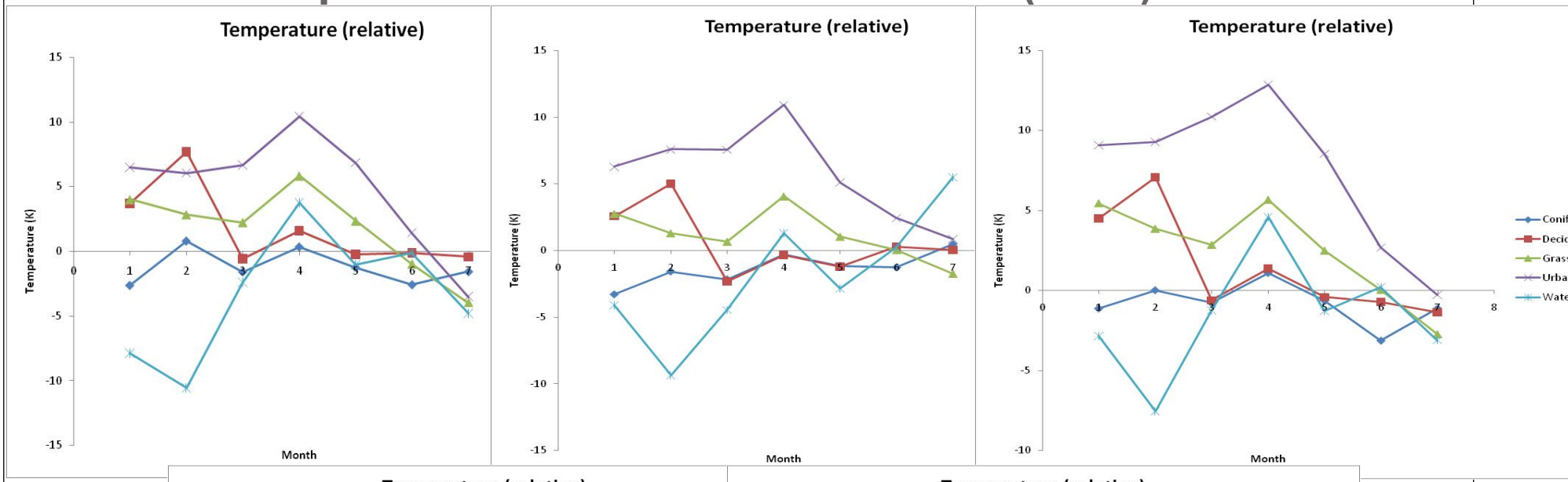


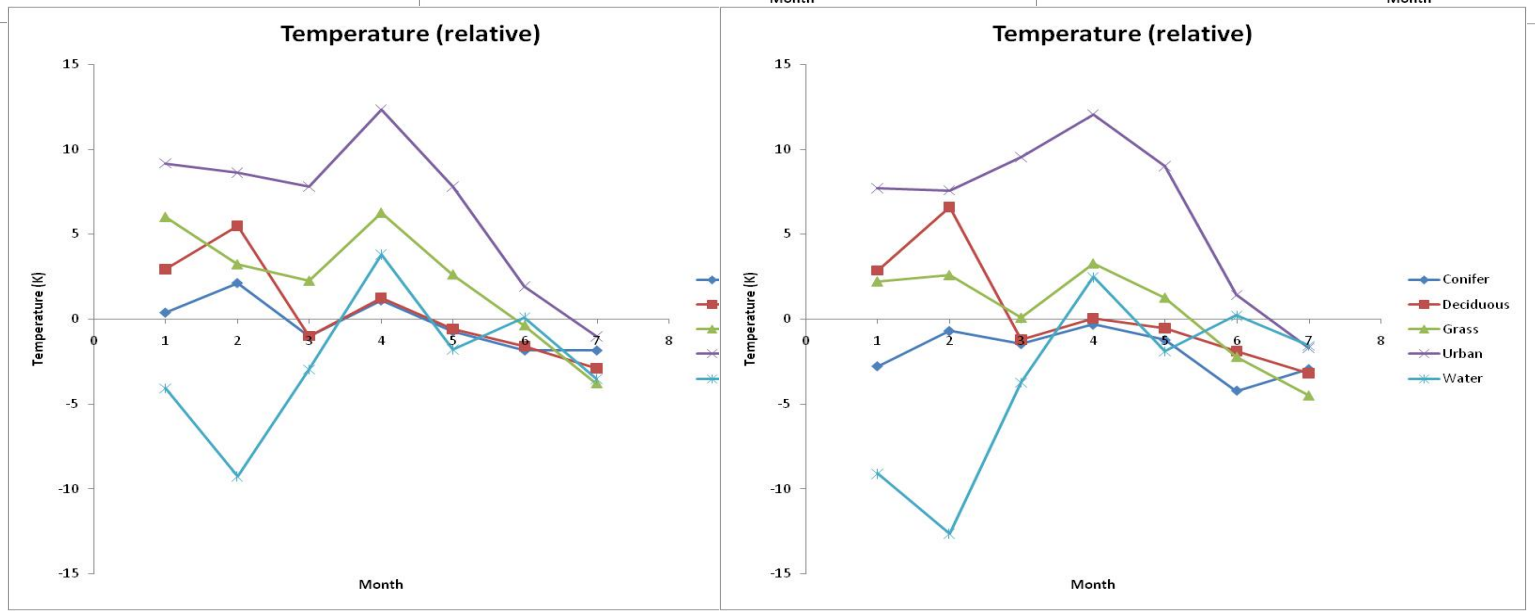
Surface Temperature (K)





Temperature Difference (DT)





ASTER

- Bands: VNIR (3), SWIR (4-9), TIR (10-14)
- NDVI: (VIR3-VIR2)/(VIR3+VIR2)
- Albedo (Liang, 2000)
  - $0.484\alpha_1+0.335^{\alpha}{}_3-0.324^{\alpha}{}_5+0.551^{\alpha}{}_6+0.305^{\alpha}{}_8-0.367^{\alpha}{}_9-0.0015$
- Surface Temperature (Daytime and Night time)

Short Name	Level	Parameter Name	Production Mode	Units	Absolute Accuracy	Relative Accuracy	Horizontal Resolution (m)
AST_06V	2	Decorrelation stretch -VNIR	routine	none	N/A	N/A	15
AST_06S	2	Decorrelation stretch -SWIR	routine	none	N/A	N/A	30
AST_06T	2	Decorrelation stretch -TIR	routine	none	N/A	N/A	90
AST_04	2	Brightness temperature	on-demand	degrees C	1-2 C	0.3 C	90
AST_07	2	Surface reflectance VNIR,SWIR	on-demand	none	4%	1%	15, 30
AST_09	2	Surface radiance -VNIR, SWIR	on-demand	$W/m^2/sr/\mu m$	2%	1%	15, 30
AST_09T	2	Surface radiance -TIR	on-demand	$W/m^2/sr/\mu m$	2%	1%	90
AST_05	2	Surface emissivity	on-demand	none	0.05-0.1	0.005	90
AST_08	2	Surface kinetic temperature	on-demand	degrees K	1-4 K	0.3 K	90
AST13POL	2	Polar surface and cloud classification	on-demand	none	3%	3%	15, 30, 90
AST14DEM	3	Digital elevation model (DEM)	on-demand	m	>= 7 m	>= 10 m	30

Table 3: ASTER Higher-Level Standard Data Products.