

ETM, ASTER

...
گرانیت

(O^g)

ASTER

(Crossta & moore)

کلمات کلیدی: کانی زائی - ذخایر اپی ترمال - گرانیت قولان - سیه رود - آلتراسیون - ASTER - PCA - Croosta & Moore

Interpretation And Analyzing ASTER & ETM Data For Metal Deposites Exploration, Study Area; Siyahrud M.Bloki, H.Shekouhi, B.Samani, M.Nasiri

Abstract

The study area Siyahrud is situated 70 km west of Ahar. The area is comprises of Eocene volcanic rocks as andesit, dasite, volcanic breccia, basic tuff and synsedimentary volcanics.

Post Eocene magmatism had been played important roles in Siyahrud area, which results of these processes had caused Oligocene plutonism and volcanic activities.

The intrusion of Oligocene body in various faces caused to the alteration and mineralization as copper, molybdenum, gold and iron in the study area.

Granitoidic rocks (O^g) with component of granodiorite to alkali that has been influenced of hydrothermal fluids. And hydrothermal alteration zones are seen in various areas.

IN this paper in order to recognition of hydrothermal alteration zone as an exploration tools, has used from ASTER data. Alteration mapping has used from principal component analysis methods. Which result of this studies and field studies caused to presentation the great of hydrothermal alteration zone include: iron oxide-bearing & hydroxide-bearing minerals and mineral endmembers related to epithermal gold include phyllosilicates minerals (Kaolinite, Illite, Alunite minerals).

The results illustrate ASTER's ability to provide information on alteration minerals which are valuable for mineral exploration activatites.

Keyword: Epithermal Gold Mineralization - Siyahrud- Altration -ASTER-band ratio- PCA- Croosta & Moore

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ASTER

SWIR

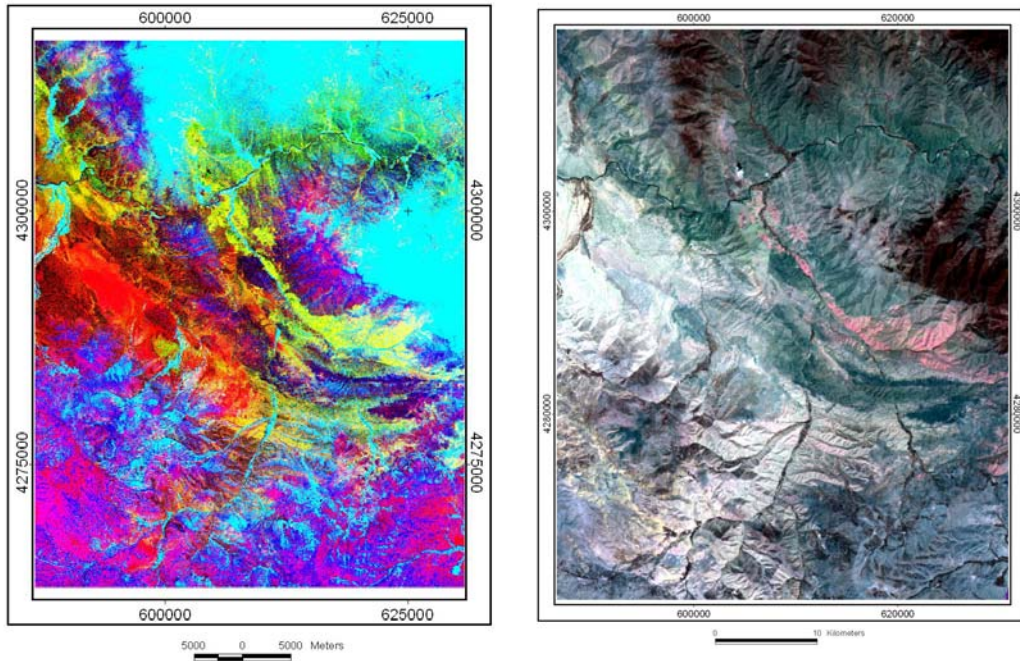
SWIR

SWIR

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(R,G,B)=(2/1,4/9,3/2)



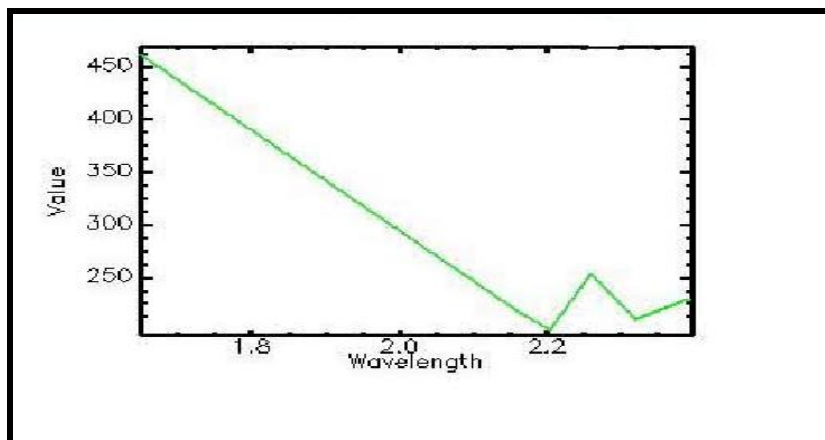
$$(R,G,B)=(4,6,8)$$

$$(R,G,B)=(2/1, 4/9, 3/2)$$

Principal Component Analyses
(PCA)

PCA .

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SWIR



PCA	B1	B2	B3	B4
pc1	0.64	0.69	0.08	0.33
pc2	0.08	0.14	-0.96	-0.22
pc3	-0.31	-0.12	-0.25	0.91
pc4	0.70	-0.70	-0.07	0.12

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(-PC4)

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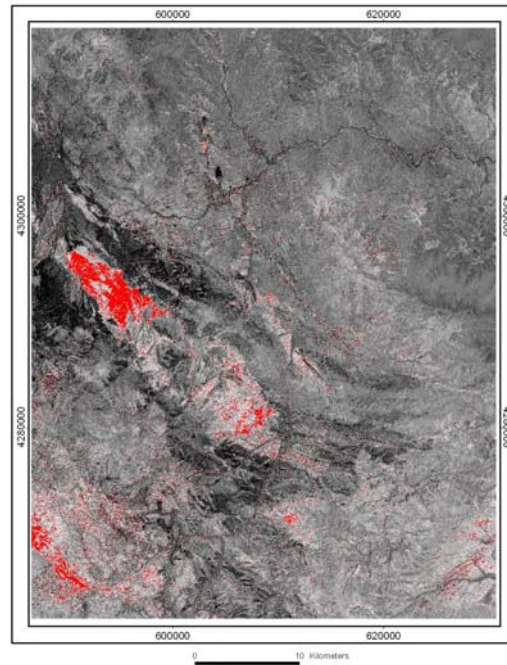
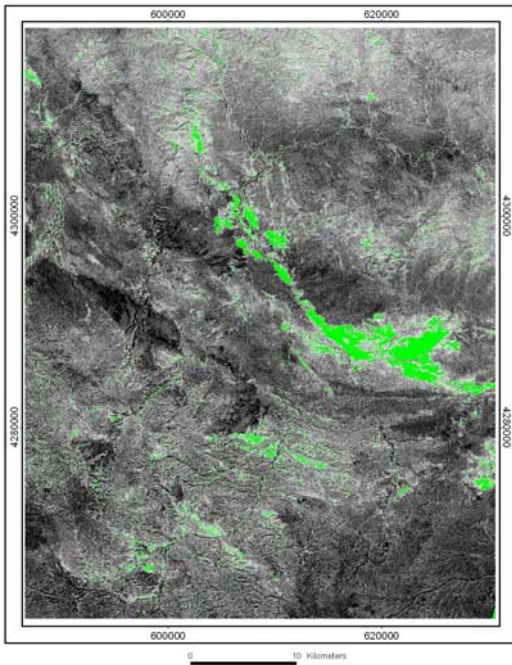
PCA	B1	B3	B4	B6
pc1	0.74	0.12	0.42	0.51
pc2	0.18	-0.97	-0.14	0.09
pc3	0.64	0.15	-0.53	-0.54
pc4	0.07	-0.15	0.73	-0.67

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(PC4)

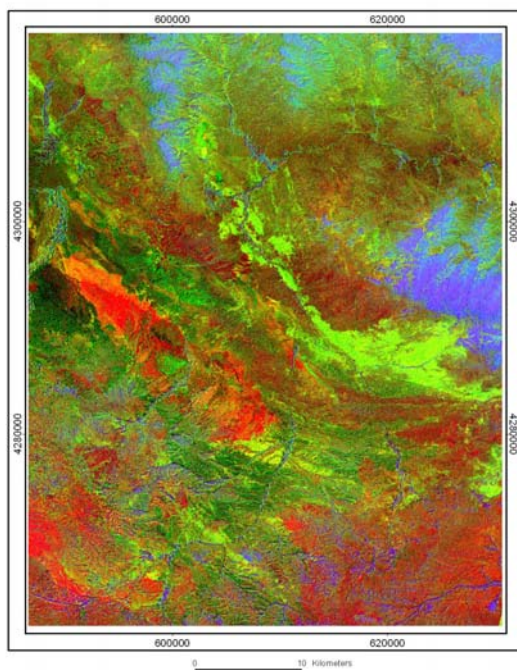
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$$(R,G,B)=(-PC4(1234),PC4(1346),3/2)$$



-PC4(1234)

PC4(1346)



$$(R,G,B)=(-pc4(1234),pc4(1346),3/2)$$

PCA	B1	B4	B6	B7
pc1	0.66	0.38	0.47	0.45
pc2	0.74	-0.45	-0.37	-0.33
pc3	-0.10	-0.81	0.45	0.37
pc4	-0.02	-0.03	-0.66	0.75

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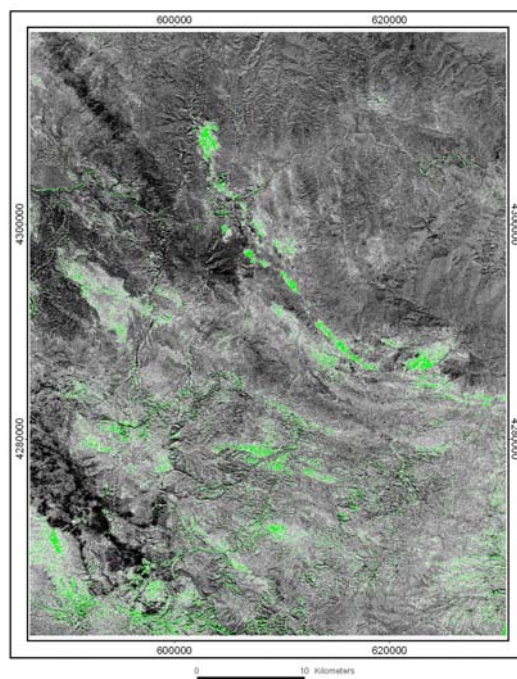
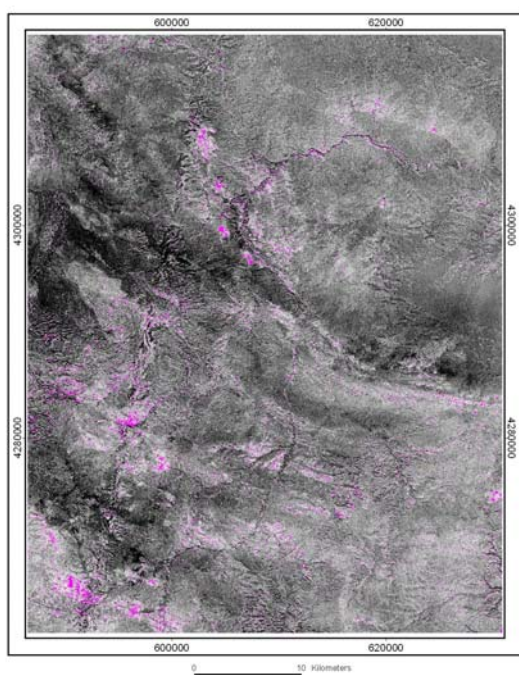
PCA	B1	B3	B5	B7
pc1	0.73	0.09	0.46	0.48
pc2	0.07	-0.99	0.04	0.04
pc3	0.67	0.002	-0.51	-0.52
pc4	-0.00	0.00	0.71	-0.69

Negative

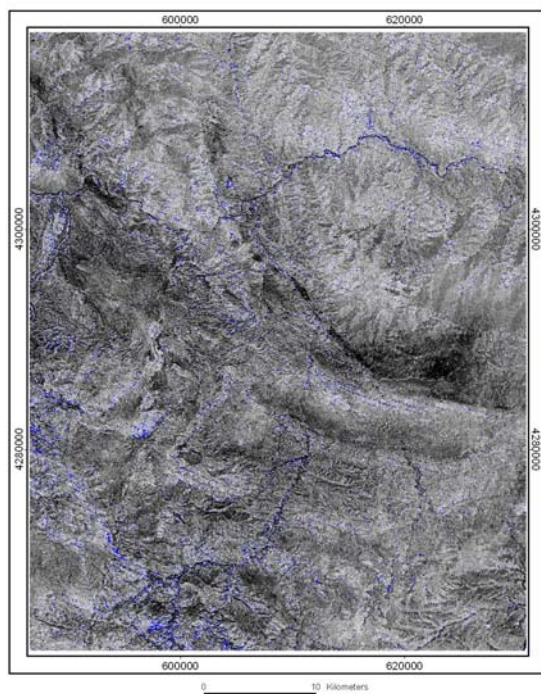
-PC4

PCA	B1	B3	B5	B6
pc1	0.72	0.09	0.47	0.50
pc2	0.06	-1.00	0.05	0.05
pc3	0.69	-0.01	-0.47	-0.55
pc4	-0.02	0.00	0.75	-0.67

Negative



pc4(1467)
-pc4(1357)



-pc4(1356)

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(B)

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ETM

ASTER

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ASTER,ETM

ASTER

TM

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References

-Gilbert Mhlanga; Data driven predictive modelling for Archean lode gold potential, Bubi greenstone belt, southwest Zimbabwe.
 -H. Ranjbar¹, H. Shahriari¹ and M. Honarmand²; Comparison of ASTER and ETM+ data for exploration of porphyry copper mineralization: A case study of Sar Cheshmeh.
 -F. AZEVEDO and C. BRODIE; targeting key alteration minerals in epithermal deposits in Patagonia, Argentina, using ASTER imagery and principal component analysis (Received 5 September 2002; in final form 20 May 2003)