Georgina Basin – Putta-Putta Prospect

Multi-element Geochemical Assessment of ALSC's Ionic Leach

***DISCLAIMER**: The conclusions and recommendations expressed in this material represent the opinions of the author based on the data available. The opinions and recommendations provided from this information are in response to a request from the client and no liability is accepted for commercial decisions or actions resulting from them.*

***DISCLOSURE** : The author holds shares indirectly in Mincor Resources NL.*

Putta Putta: Summary

- Sampling over the Putta Putta target area has confirmed the ability of ionic leach to generate meaningful data in this geological and regolith regime.
- Interpretation of the ionic leach data has:
  - generated structural traces through the Putta Putta region
  - Identified a number of Zinc associated anomalies
  - Identified a number of Au anomalies.
  - Identified six U anomalies
- To place these anomalies into a geological and regolith context field inspection is required along with rock chip sampling.
- *Results of the field inspection and rock chipping will allow MCR to prioritise these anomalies and formulate a follow-up program which may include infilling a number of the anomalies along with geological mapping and ground based geophysics*

Regional Zn Summary

- Five area of elevated Zn identified
  - Luck Creek – evaluated with a follow-up survey (see below)
  - Tomahawk – elevated Zn-Cd over 5kms – requires field inspection and possible follow-up
  - Tomahawk North - An isolated elevated Zn value supported by Cd; needs to be verified through re-sampling to ensure its genuine rather than a lab anomaly
  - AREA Y - An isolated elevated Zn value which would need to be verified
  - Tarlton - isolated elevated Zn values associated with elevated Mn – need to be verified.

Luck Creek: Summary

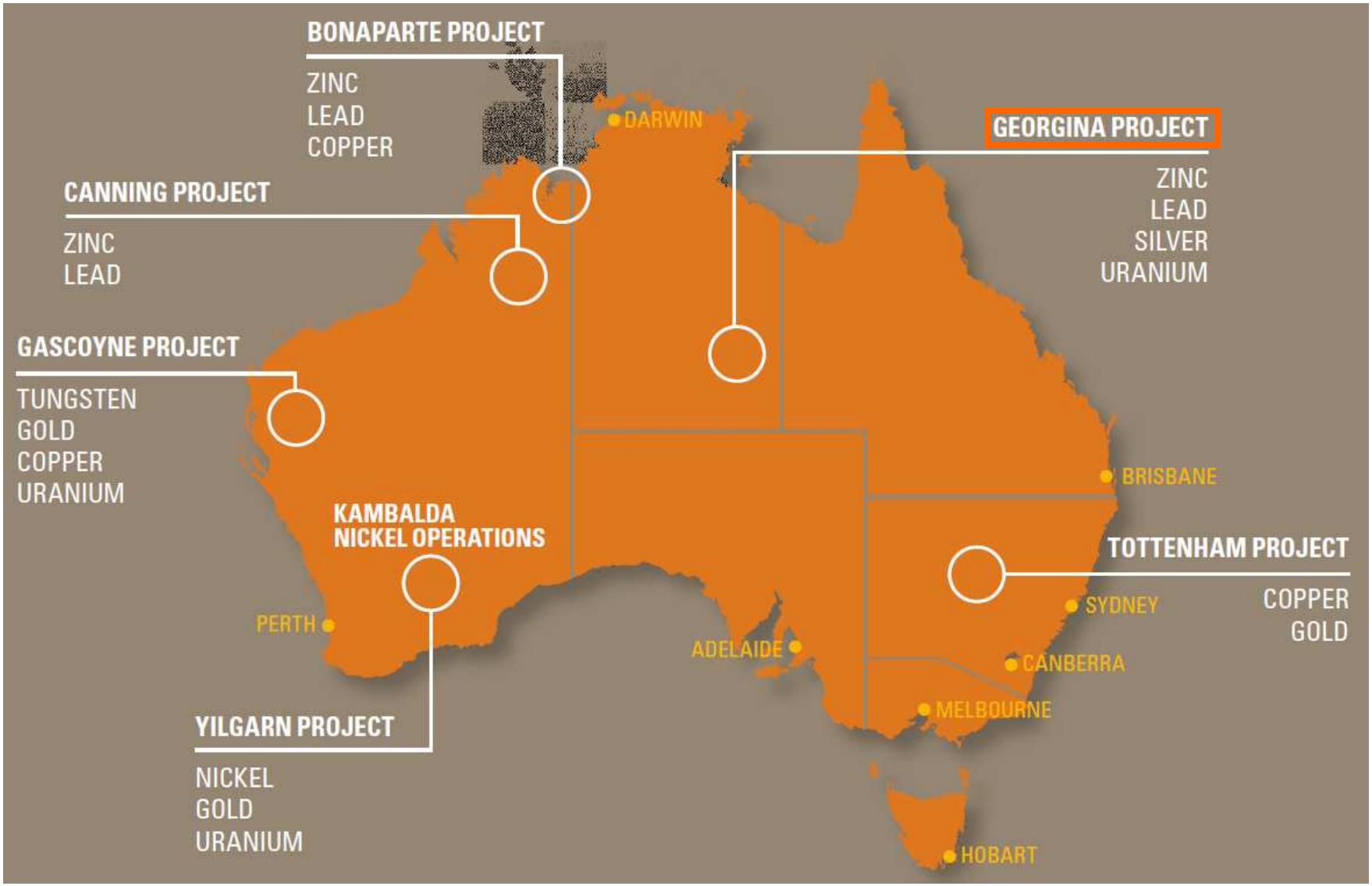
- Interpretation of the ionic leach over Lucy Creek has been more challenging that at Putta Putta due to the presence of more extensive Quaternary sediments (Alluvial sediments).
  - It would appear that anomalous Zn is within the transported sediments and thus not “seeing through” the transported to the underlying Cambrian sediments.

- Interpretation of the ionic leach data has:
  - Identified a two of Zinc associated anomalies
    - ~ 640000mE (Lines GBSS89 & LC4) – possible leakage
    - ~ 650000mE (Lines GBSS97, LC18 & LC19) – alluvial sediments with source in hinterland to SE
  - No Au anomalies present
  - No U anomalies present
- To place the Zn anomalies into a geological and regolith context field inspection is required along with rock chip sampling.
- *Results of the field inspection and rock chipping will allow MCR to prioritise these anomalies and formulate a follow-up program which may include infilling a number of the anomalies along with geological mapping and ground based geophysics*

Comments on ionic leach

- Ionic leach is relatively new to the technique
  - Although proprietary to ALS they will disclose its composition
- By its leaching nature batch effects are inevitable
  - These will have a tendency to self generate anomalies, Thus field inspection is critical to establish their significance.
- We are still learning about the element interactions and associations
  - Thus any anomalies generated may reflect geology and/or the method. Again field inspection is critical for all anomalies.
- To assist in this learning process, a comparison with a method such as aqua regia will benefit the group.
  - Aqua regia is a “total partial leach” and trend generated in ionic leach should be replicated in this data.

Location of MCR's Georgina Project



MCR's Georgina Zinc Project

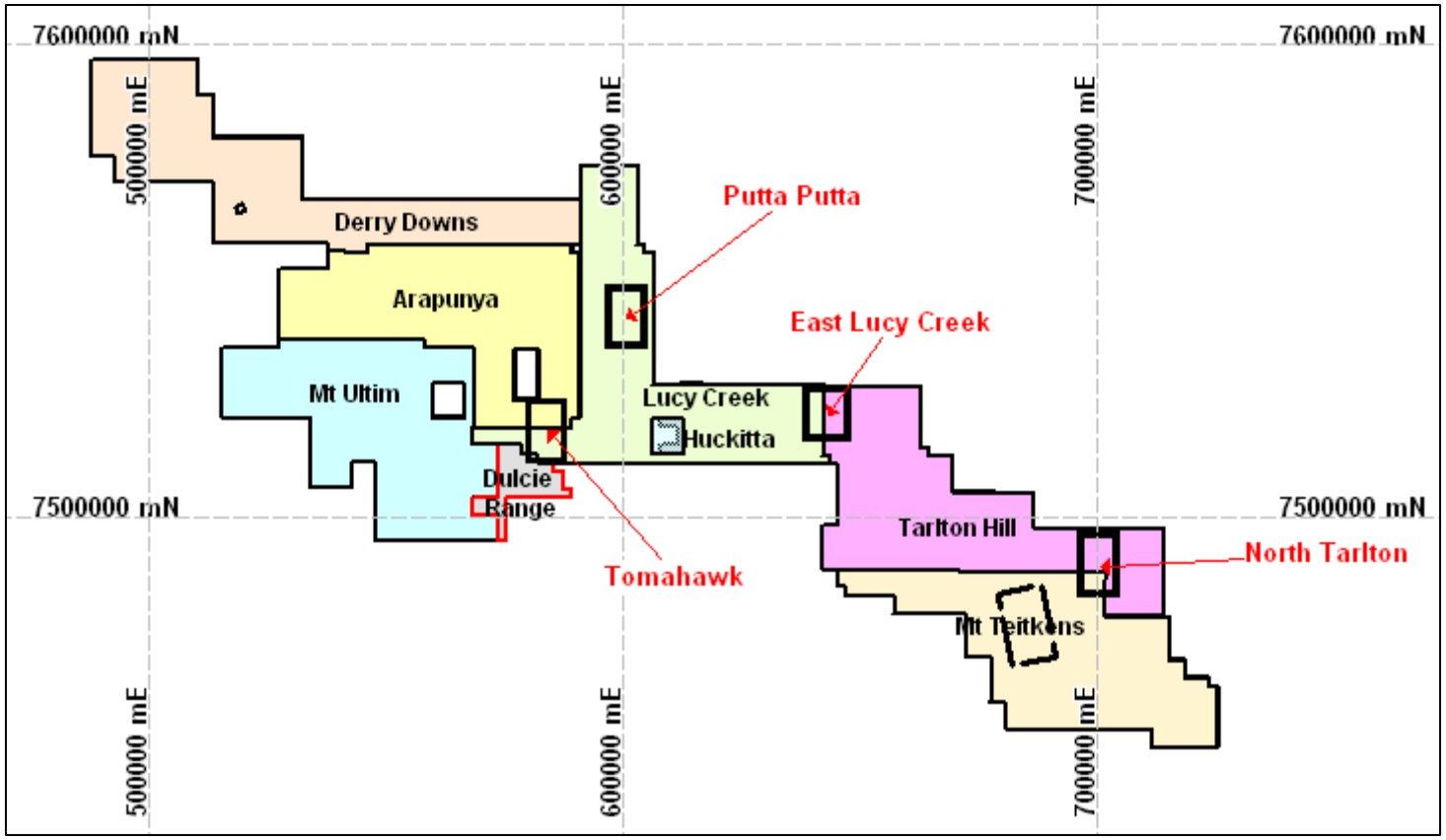
Mincor 100%, JOGMEC sole funding to earn up to 40%

- ~ 200 km NE of Alice Springs in the NT
- Conceptual Zn play
- Program to date
  - Compilation of all data and interpretations
  - New detailed gravity survey of the 9,000 km2 tenement
  - Analysis & interpretation of data,
  - Construct of hypothetical 3D geological and structural model
  - Re-interpretation of historical seismic sections using historical DDH
- Hypothesis suggests thicker and more extensive Neoproterozoic sediments in the deeper parts of the basin.
  - This has positive implications for prospectivity of shallower parts of the basin and areas located above basement highs and/ or tapped by fault structures acting as regional plumbing systems.
- Current Program
  - Regional soil geochemical survey to identifying the interpreted [**ACTIVE**] faults
  - Preliminary results indicate Zn elevation across interpreted fault zones in several traverses, confirming their presence and effectiveness of the technique.
  - One potentially anomalous result identified thus far is associated with a northwest trending fault zone, approximately 40 km south of known lead and zinc mineralisation at the old Box Hole workings.

About ALCS's Ionic Leach

- ALSC's Ionic Leach is designed surface soil samples to extract specific elements while leaving the bulk of the geological sample intact.
  - designed to improve geochemical mapping
  - enhance the potential to detect and resolve subtle geochemical anomalies over ?blind? mineralisation.
  - It is suitable for Au, Ag, PGM, U and base metal exploration.
  - This procedure employs a heavily buffered alkaline cyanide solution in conjunction with other complexing agents to selectively dissolve or solubilise metal ions that have been leached from the primary source, migrated and then redeposited near the surface.

MCR's Tenement* Location & Key Target Areas



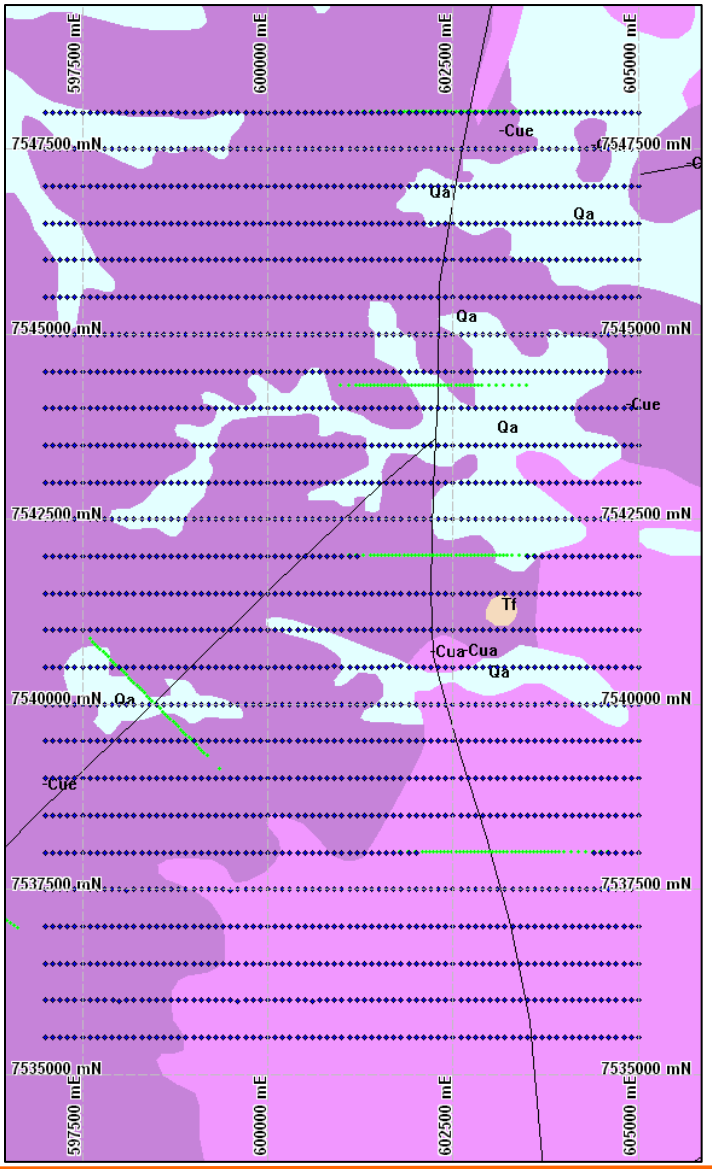
Putta-Putta

Putta Putta ionic leach dataset was evaluated first as it provided a coherent block of grid data in one location with limited geological and regolith variation.

Understanding the ionic leach response in this controlled environment will allow interpellation into the regional ionic leach data sets and the ability to recognise significant anomalies in the data sets.

Putta Putta Sampling

- Two phases of sampling
  - Regional lines ~50m sample spacing (n = 229, green)
  - Grid on 500 x 100m (n = 2061, blue)
- Sampling medium – soil
- Sampling method – (?)
- Sample preparation (?)
- QAQC – (?)



Putta-Putta region

- Predominantly residual in nature
  - Implication: sampling will reflect underlying lithologies, mineralisation that has breached the surface and leakage along faults
- Sub-out cropping lithologies
  - Late Cambrian “dirty” dolo-limestone in SE
  - Late Cambrian sandstone
- SE and NW trending alluvial channels cutting into the residual landscape.
- Water shed separating alluvial trends

Stated Target Commodity

- Zn-Pb SHMS
  - Ore elements: Zn, Pb, Ag
  - Trace and deleterious elements: As, Bi, Cd, Cu, Hg, Mo, Sb, Tl.
  - Lithic elements Fe, Mn, ?Ba, ?Ca
- Potential for uranium
  - Ore elements: U, Th, Pb
  - Trace and deleterious elements: unknown
  - Lithic elements ?Ca, ?P, ?V,

Putta Putta:

Data evaluation

Data Manipulation and Evaluation

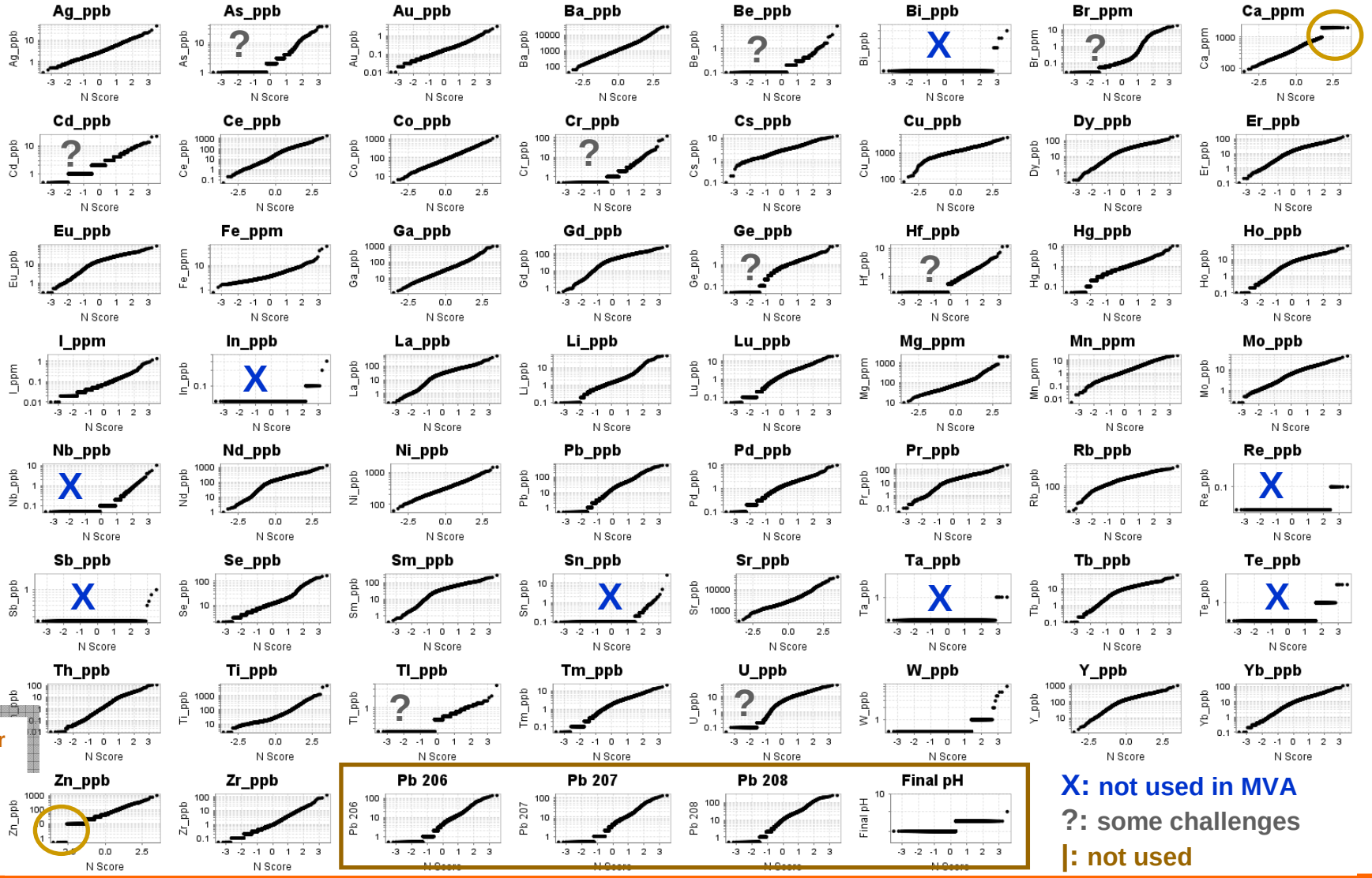
A number of techniques are used to maximize the information gained from the ionic leach datasets to identify element associations and anomalous areas including:

- univariate statistics,
  - summarize large quantities of numerical data and reveal patterns in the raw data.
- Normal probability plots and
  - Identifying outliers through key breaks in data
- Raw element plots over the Putta Putta region.
- Bivatiate correlations
  - Elements transformed to reflect normal distribution.
- Principal Component Analysis (PCA)
  - Grouping of like and associated elements
    - Elements transformed to reflect normal distribution.
    - Ag, B, Cd, S, Sb, Tl & W were excluded from PCA due to low concentration and contrast (values below dl).

Normal Probability plots:

Elements used in multi variant analysis

Restricted by method's upper limits



?lower limits

X: not used in MVA

?: some challenges

|: not used

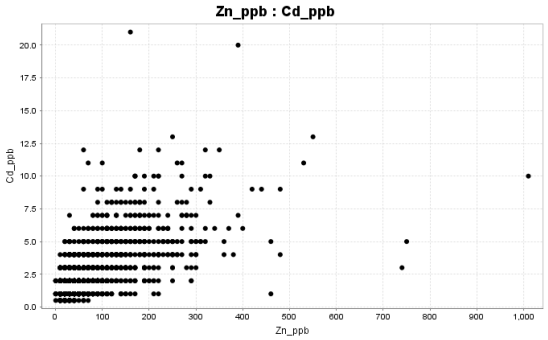
Putta-Putta element correlation

	Ag	As	Au	Ba	Be	Bi	Br	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Hf	Hg	Ho	I	In	La	Li	Lu	Mg	Mn	Mo	Nb	Nd	Ni	Pb	Pd	Pr	Rb	Re	Sb	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	W	Y	Yb	Zn	Zr
Ag		0.29	0.48	0.06	-0.04	-0.01	0.32	0.52	-0.07	-0.30	-0.11	-0.13	-0.40	0.45	-0.37	-0.38	-0.38	0.23	0.07	-0.37	-0.38	-0.27	0.39	-0.38	-0.01	-0.07	-0.36	0.20	-0.35	0.18	-0.24	0.02	-0.12	-0.39	0.30	-0.29	-0.33	-0.37	-0.39	0.12	0.01	0.21	-0.38	-0.02	0.32	-0.03	-0.38	0.09	-0.30	-0.15	-0.10	-0.36	-0.39	0.06	-0.34	-0.36	-0.06	-0.20
As	0.29		0.45	-0.12	0.14	-0.01	0.93	0.57	-0.01	-0.02	-0.01	0.09	-0.11	-0.07	-0.13	-0.10	-0.16	0.43	-0.12	-0.16	-0.17	0.00	0.09	-0.11	0.49	0.09	-0.11	0.77	-0.06	0.62	-0.02	-0.05	0.08	-0.14	0.10	0.01	-0.04	-0.12	-0.22	0.47	0.00	0.89	-0.15	0.11	0.77	0.08	-0.14	0.47	-0.02	0.06	0.03	-0.06	-0.11	0.07	-0.13	-0.07	0.06	0.05
Au	0.48	0.45		0.24	-0.02	0.00	0.46	0.53	-0.25	-0.21	-0.08	-0.09	-0.13	0.15	-0.23	-0.20	-0.26	0.27	0.24	-0.26	-0.30	-0.19	0.33	-0.22	0.46	-0.02	-0.28	0.47	-0.14	0.32	-0.23	-0.20	-0.07	-0.29	0.09	-0.10	-0.19	-0.28	-0.26	0.19	0.02	0.39	-0.28	0.04	0.52	-0.03	-0.25	0.37	-0.24	-0.12	0.03	-0.17	-0.27	0.03	-0.22	-0.17	-0.21	-0.17
Ba	0.06	-0.12	0.24		-0.07	0.00	-0.13	0.10	-0.20	-0.11	-0.05	-0.08	-0.03	0.03	-0.12	-0.08	-0.08	0.04	0.99	-0.14	-0.16	-0.13	0.01	-0.10	0.07	-0.01	-0.14	-0.06	-0.03	-0.02	-0.15	-0.26	-0.05	-0.17	-0.06	0.00	-0.10	-0.16	-0.13	-0.05	-0.01	-0.17	-0.16	-0.02	0.03	-0.03	-0.13	-0.01	-0.16	-0.07	-0.07	-0.05	-0.17	-0.03	-0.10	-0.05	-0.20	-0.11
Be	-0.04	0.14	-0.02	-0.07		-0.01	0.03	-0.05	0.11	0.51	0.06	0.77	0.23	-0.12	0.30	0.29	0.26	0.64	-0.05	0.25	0.36	0.51	-0.02	0.28	0.08	0.64	0.40	0.26	0.27	-0.01	0.15	-0.04	0.76	0.32	0.00	0.27	0.42	0.38	0.13	0.02	0.00	0.10	0.28	0.22	-0.03	0.63	0.26	0.00	0.52	0.80	0.12	0.29	0.29	0.21	0.27	0.30	0.26	0.73
Bi	-0.01	-0.01	0.00	0.00	-0.01		-0.01	0.02	-0.03	-0.03	-0.03	-0.02	-0.05	0.00	0.00	-0.01	-0.01	0.01	0.00	0.00	-0.04	-0.02	0.09	-0.01	0.00	-0.01	-0.02	0.00	-0.02	-0.01	-0.03	-0.03	-0.01	-0.01	-0.01	-0.02	-0.03	-0.02	-0.05	-0.01	0.00	-0.02	-0.01	0.00	0.00	0.00	-0.01	-0.01	-0.03	-0.01	-0.03	-0.02	-0.04	-0.01	0.01	-0.02	-0.02	-0.02
Br	0.32	0.93	0.46	-0.13	0.03	-0.01		0.64	-0.05	-0.13	-0.11	-0.04	-0.18	-0.08	-0.19	-0.19	-0.20	0.34	-0.13	-0.19	-0.22	-0.13	0.11	-0.19	0.47	-0.03	-0.18	0.77	-0.17	0.70	-0.13	-0.02	-0.04	-0.18	0.11	-0.12	-0.13	-0.17	-0.28	0.46	0.01	0.93	-0.18	0.06	0.85	-0.01	-0.19	0.45	-0.14	-0.07	-0.01	-0.17	-0.19	0.04	-0.18	-0.18	-0.01	-0.09
Ca	0.52	0.57	0.53	0.10	-0.05	0.02	0.64		-0.19	-0.39	-0.22	-0.18	-0.46	0.20	-0.47	-0.47	-0.49	0.44	0.10	-0.48	-0.50	-0.35	0.22	-0.47	0.32	-0.10	-0.47	0.46	-0.44	0.48	-0.35	-0.12	-0.15	-0.49	0.16	-0.33	-0.43	-0.48	-0.56	0.29	0.00	0.51	-0.48	0.05	0.72	-0.05	-0.48	0.33	-0.38	-0.20	-0.20	-0.45	-0.52	0.00	-0.44	-0.44	-0.16	-0.26
Cd	-0.07	-0.01	-0.25	-0.20	0.11	-0.03	-0.05	-0.19		0.26	0.36	0.17	0.05	0.11	0.26	0.24	0.27	0.04	-0.20	0.28	0.29	0.33	-0.03	0.25	-0.10	-0.02	0.27	-0.03	0.18	-0.10	0.62	0.33	0.12	0.28	0.41	0.07	0.30	0.27	0.23	-0.01	-0.01	0.04	0.28	0.00	-0.14	0.00	0.27	-0.07	0.26	0.16	0.18	0.22	0.30	0.05	0.23	0.19	0.61	0.27
Ce	-0.30	-0.02	-0.21	-0.11	0.51	-0.03	-0.13	-0.39	0.26		0.26	0.58	0.57	-0.29	0.69	0.74	0.69	0.21	-0.11	0.67	0.77	0.69	-0.15	0.72	0.09	0.51	0.91	0.05	0.71	-0.19	0.49	-0.11	0.49	0.80	-0.10	0.66	0.77	0.87	0.54	-0.05	-0.02	0.07	0.71	0.13	-0.27	0.36	0.69	-0.05	0.87	0.56	0.21	0.74	0.76	0.22	0.66	0.75	0.27	0.67
Co	-0.11	-0.01	-0.08	-0.05	0.06	-0.03	-0.11	-0.22	0.36	0.26		0.18	0.25	0.05	0.24	0.29	0.20	0.00	-0.06	0.20	0.17	0.31	-0.05	0.26	0.12	0.03	0.19	-0.02	0.33	-0.09	0.75	0.04	0.11	0.16	0.28	0.28	0.30	0.17	0.27	-0.06	0.01	-0.04	0.17	0.01	-0.16	0.05	0.21	-0.01	0.18	0.12	0.33	0.33	0.28	0.08	0.21	0.31	0.26	0.20
Cr	-0.13	0.09	-0.09	-0.08	0.77	-0.02	-0.04	-0.18	0.17	0.58	0.18		0.34	-0.20	0.33	0.35	0.30	0.64	-0.07	0.28	0.43	0.69	-0.03	0.33	0.11	0.67	0.46	0.23	0.33	-0.09	0.32	-0.07	0.84	0.36	-0.09	0.38	0.52	0.42	0.23	-0.01	0.01	0.06	0.30	0.25	-0.14	0.72	0.30	-0.02	0.64	0.86	0.18	0.36	0.45	0.20	0.28	0.36	0.35	0.89
Cs	-0.40	-0.11	-0.13	-0.03	0.23	-0.05	-0.18	-0.46	0.05	0.57	0.25	0.34		-0.37	0.62	0.69	0.57	-0.06	-0.03	0.57	0.53	0.48	-0.07	0.66	0.23	0.32	0.57	-0.02	0.74	-0.19	0.31	-0.13	0.33	0.55	-0.23	0.67	0.62	0.56	0.83	-0.07	-0.04	-0.03	0.55	0.07	-0.25	0.17	0.59	0.01	0.50	0.37	0.51	0.72	0.66	0.16	0.60	0.73	0.07	0.36
Cu	0.45	-0.07	0.15	0.03	-0.12	0.00	-0.08	0.20	0.11	-0.29	0.05	-0.20	-0.37		-0.22	-0.27	-0.24	0.09	0.03	-0.22	-0.24	-0.18	0.22	-0.24	-0.19	-0.14	-0.30	-0.12	-0.29	-0.08	-0.11	0.15	-0.18	-0.28	0.46	-0.29	-0.25	-0.30	-0.22	-0.02	-0.03	-0.13	-0.24	-0.06	-0.04	-0.07	-0.23	-0.08	-0.28	-0.20	-0.07	-0.29	-0.28	-0.10	-0.21	-0.29	0.02	-0.22
Dy	-0.37	-0.13	-0.23	-0.12	0.30	0.00	-0.19	-0.47	0.26	0.69	0.24	0.33	0.62	-0.22		0.96	0.96	-0.03	-0.11	0.97	0.82	0.66	-0.05	0.98	0.10	0.30	0.81	-0.04	0.84	-0.14	0.37	0.06	0.28	0.89	0.06	0.60	0.88	0.86	0.66	-0.09	-0.04	0.06	0.94	0.05	-0.24	0.17	0.97	-0.07	0.63	0.34	0.37	0.88	0.74	0.23	0.98	0.90	0.13	0.42
Er	-0.38	-0.10	-0.20	-0.08	0.29	-0.01	-0.19	-0.47	0.24	0.74	0.29	0.35	0.69	-0.27	0.96		0.92	-0.03	-0.08	0.92	0.80	0.68	-0.08	0.99	0.14	0.35	0.81	-0.02	0.94	-0.15	0.42	-0.01	0.29	0.86	0.00	0.70	0.90	0.84	0.69	-0.08	-0.04	0.06	0.89	0.06	-0.25	0.17	0.95	-0.04	0.64	0.35	0.39	0.96	0.76	0.26	0.95	0.98	0.15	0.42
Eu	-0.38	-0.16	-0.26	-0.08	0.26	-0.01	-0.20	-0.49	0.27	0.69	0.20	0.30	0.57	-0.24	0.96	0.92		-0.07	-0.08	0.99	0.87	0.64	-0.08	0.94	0.04	0.27	0.85	-0.07	0.79	-0.14	0.36	0.12	0.26	0.94	0.06	0.53	0.87	0.90	0.66	-0.10	-0.04	0.06	0.98	0.04	-0.24	0.15	0.97	-0.09	0.63	0.31	0.31	0.84	0.73	0.20	0.94	0.84	0.11	0.38
Fe	0.23	0.43	0.27	0.04	0.64	0.01	0.34	0.44	0.04	0.21	0.00	0.64	-0.06	0.09	-0.03	-0.03	-0.07		0.06	-0.07	0.03	0.35	0.10	-0.04	0.23	0.47	0.06	0.47	-0.03	0.18	0.04	-0.11	0.61	-0.03	0.12	0.08	0.14	0.03	-0.18	0.19	0.02	0.33	-0.06	0.24	0.35	0.55	-0.06	0.19	0.26	0.62	-0.05	-0.02	0.00	0.11	-0.04	-0.01	0.20	0.56
Ga	0.07	-0.12	0.24	0.99	-0.05	0.00	-0.13	0.10	-0.20	-0.11	-0.06	-0.07	-0.03	0.03	-0.11	-0.08	-0.08	0.06		-0.13	-0.15	-0.12	0.01	-0.09	0.07	-0.01	-0.13	-0.06	-0.04	-0.02	-0.15	-0.26	-0.03	-0.16	-0.05	0.00	-0.10	-0.16	-0.13	-0.05	-0.01	-0.17	-0.15	-0.02	0.03	-0.02	-0.12	-0.02	-0.15	-0.06	-0.07	-0.06	-0.16	-0.03	-0.10	-0.05	-0.19	-0.10
Gd	-0.37	-0.16	-0.26	-0.14	0.25	0.00	-0.19	-0.48	0.28	0.67	0.20	0.28	0.57	-0.22	0.97	0.92	0.99	-0.07	-0.13		0.86	0.64	-0.06	0.94	0.04	0.25	0.84	-0.06	0.78	-0.13	0.35	0.13	0.25	0.94	0.09	0.52	0.87	0.90	0.66	-0.09	-0.04	0.07	0.99	0.04	-0.23	0.13	0.98	-0.09	0.61	0.30	0.34	0.82	0.73	0.20	0.96	0.84	0.12	0.38
Ge	-0.38	-0.17	-0.30	-0.16	0.36	-0.04	-0.22	-0.50	0.29	0.77	0.17	0.43	0.53	-0.24	0.82	0.80	0.87	0.03	-0.15	0.86		0.73	-0.14	0.82	-0.02	0.38	0.89	-0.05	0.70	-0.17	0.37	0.12	0.41	0.92	0.02	0.50	0.86	0.91	0.60	-0.10	-0.04	0.05	0.89	0.09	-0.30	0.26	0.88	-0.12	0.72	0.46	0.25	0.75	0.75	0.22	0.79	0.75	0.21	0.52
Hf	-0.27	0.00	-0.19	-0.13	0.51	-0.02	-0.13	-0.35	0.33	0.69	0.31	0.69	0.48	-0.18	0.66	0.68	0.64	0.35	-0.12	0.64	0.73		-0.09	0.67	0.07	0.44	0.69	0.11	0.62	-0.16	0.50	0.05	0.61	0.67	0.03	0.56	0.79	0.69	0.46	-0.05	-0.03	0.08	0.64	0.15	-0.23	0.46	0.66	-0.07	0.71	0.65	0.24	0.66	0.69	0.25	0.61	0.64	0.42	0.78
Hg	0.39	0.09	0.33	0.01	-0.02	0.09	0.11	0.22	-0.03	-0.15	-0.05	-0.03	-0.07	0.22	-0.05	-0.08	-0.08	0.10	0.01	-0.06	-0.14	-0.09		-0.07	0.18	-0.06	-0.15	0.07	-0.11	0.04	-0.09	0.09	-0.09	-0.13	0.15	-0.13	-0.10	-0.14	-0.03	0.02	0.01	0.08	-0.09	0.00	0.14	-0.03	-0.07	0.09	-0.15	-0.10	0.22	-0.11	-0.16	0.03	-0.03	-0.10	-0.09	-0.11
Ho	-0.38	-0.11	-0.22	-0.10	0.28	-0.01	-0.19	-0.47	0.25	0.72	0.26	0.33	0.66	-0.24	0.98	0.99	0.94	-0.04	-0.09	0.94	0.82	0.67	-0.07		0.11	0.32	0.81	-0.04	0.90	-0.14	0.40	0.04	0.27	0.88	0.04	0.65	0.90	0.85	0.67	-0.09	-0.04	0.07	0.92	0.05	-0.24	0.17	0.97	-0.05	0.62	0.33	0.37	0.93	0.74	0.25	0.97	0.95	0.14	0.41
I	-0.01	0.49	0.46	0.07	0.08	0.00	0.47	0.32	-0.10	0.09	0.12	0.11	0.23	-0.19	0.10	0.14	0.04	0.23	0.07	0.04	-0.02	0.07	0.18	0.11		0.10	0.02	0.54	0.18	0.45	0.02	-0.13	0.06	0.01	-0.05	0.20	0.11	0.01	0.07	0.30	-0.01	0.50	0.02	0.12	0.50	0.05	0.06	0.64	0.06	0.05	0.27	0.15	0.09	0.07	0.09	0.17	-0.10	0.05
In	-0.07	0.09	-0.02	-0.01	0.64	-0.01	-0.03	-0.10	-0.02	0.51	0.03	0.67	0.32	-0.14	0.30	0.35	0.27	0.47	-0.01	0.25	0.38	0.44	-0.06	0.32	0.10		0.41	0.14	0.39	-0.06	0.09	-0.10	0.61	0.32	-0.11	0.39	0.44	0.39	0.21	-0.01	0.00	0.07	0.27	0.18	-0.08	0.61	0.28	0.00	0.54	0.64	0.10	0.39	0.35	0.20	0.29	0.40	0.11	0.61
La	-0.36	-0.11	-0.28	-0.14	0.40	-0.02	-0.18	-0.47	0.27	0.91	0.19	0.46	0.57	-0.30	0.81	0.81	0.85	0.06	-0.13	0.84	0.89	0.69	-0.15	0.81	0.02	0.41		-0.02	0.73	-0.18	0.42	0.02	0.40	0.95	-0.05	0.59	0.83	0.98	0.61	-0.08	-0.03	0.05	0.88	0.09	-0.29	0.28	0.84	-0.09	0.82	0.46	0.23	0.77	0.78	0.22	0.79	0.77	0.20	0.56
Li	0.20	0.77	0.47	-0.06	0.26	0.00	0.77	0.46	-0.03	0.05	-0.02	0.23	-0.02	-0.12	-0.04	-0.02	-0.07	0.47	-0.06	-0.06	-0.05	0.11	0.07	-0.04	0.54	0.14	-0.02		-0.01	0.60	-0.02	-0.07	0.22	-0.05	0.07	0.03	0.05	-0.03	-0.14	0.34	0.00	0.75	-0.06	0.09	0.69	0.18	-0.05	0.46	0.03	0.22	0.07	-0.01	-0.04	0.08	-0.04	-0.01	0.10	0.15
Lu	-0.35	-0.06	-0.14	-0.03	0.27	-0.02	-0.17	-0.44	0.18	0.71	0.33	0.33	0.74	-0.29	0.84	0.94	0.79	-0.03	-0.04	0.78	0.70	0.62	-0.11	0.90	0.18	0.39	0.73	-0.01		-0.15	0.43	-0.08	0.29	0.74	-0.07	0.73	0.86	0.75	0.68	-0.07	-0.03	0.05	0.75	0.06	-0.24	0.15	0.82	0.00	0.58	0.34	0.42	0.99	0.72	0.27	0.83	0.98	0.13	0.38
Mg	0.18	0.62	0.32	-0.02	-0.01	-0.01	0.70	0.48	-0.10	-0.19	-0.09	-0.09	-0.19	-0.08	-0.14	-0.15	-0.14	0.18	-0.02	-0.13	-0.17	-0.16	0.04	-0.14	0.45	-0.06	-0.18	0.60	-0.15		-0.16	0.05	-0.08	-0.15	0.10	-0.12	-0.11	-0.16	-0.27	0.31	0.01	0.66	-0.13	-0.01	0.74	-0.03	-0.13	0.45	-0.21	-0.11	0.01	-0.14	-0.22	0.03	-0.12	-0.15	-0.05	-0.15
Mn	-0.24	-0.02	-0.23	-0.15	0.15	-0.03	-0.13	-0.35	0.62	0.49	0.75	0.32	0.31	-0.11	0.37	0.42	0.36	0.04	-0.15	0.35	0.37	0.50	-0.09	0.40	0.02	0.09	0.42	-0.02	0.43	-0.16		0.11	0.24	0.38	0.17	0.36	0.45	0.40	0.37	-0.05	0.00	-0.02	0.35	0.04	-0.25	0.06	0.36	-0.07	0.44	0.27	0.32	0.45	0.51	0.13	0.33	0.42	0.49	0.40
Mo	0.02	-0.05	-0.20	-0.26	-0.04	-0.03	-0.02	-0.12	0.33	-0.11	0.04	-0.07	-0.13	0.15	0.06	-0.01	0.12	-0.11	-0.26	0.13	0.12	0.05	0.09	0.04	-0.13	-0.10	0.02	-0.07	-0.08	0.05	0.11		-0.07	0.09	0.31	-0.21	0.07	0.06	0.05	0.05	-0.03	0.02	0.13	-0.03	0.05	-0.03	0.11	-0.04	-0.05	-0.04	0.16	-0.05	0.02	-0.03	0.07	-0.07	0.23	-0.03
Nb	-0.12	0.08	-0.07	-0.05	0.76	-0.01	-0.04	-0.15	0.12	0.49	0.11	0.84	0.33	-0.18	0.28	0.29	0.26	0.61	-0.03	0.25	0.41	0.61	-0.09	0.27	0.06	0.61	0.40	0.22	0.29	-0.08	0.24	-0.07		0.32	-0.08	0.30	0.45	0.37	0.22	-0.01	-0.01	0.04	0.27	0.25	-0.12	0.60	0.26	-0.03	0.54	0.90	0.16	0.31	0.37	0.22	0.24	0.30	0.28	0.79
Nd	-0.39	-0.14	-0.29	-0.17	0.32	-0.01	-0.18	-0.49	0.28	0.80	0.16	0.36	0.55	-0.28	0.89	0.86	0.94	-0.03	-0.16	0.94	0.92	0.67	-0.13	0.88	0.01	0.32	0.95	-0.05	0.74	-0.15	0.38	0.09	0.32		0.01	0.53	0.85	0.98	0.63	-0.08	-0.04	0.07	0.98	0.06	-0.26	0.19	0.93	-0.10	0.74	0.38	0.26	0.79	0.77	0.21	0.88	0.79	0.17	0.46
Ni	0.30	0.10	0.09	-0.06	0.00	-0.01	0.11	0.16	0.41	-0.10	0.28	-0.09	-0.23	0.46	0.06	0.00	0.06	0.12	-0.05	0.09	0.02	0.03	0.15	0.04	-0.05	-0.11	-0.05	0.07	-0.07	0.10	0.17	0.31	-0.08	0.01		-0.20	0.06	-0.03	-0.12	0.03	0.05	0.14	0.06	-0.03	0.15	-0.05	0.07	-0.02	-0.10	-0.09	0.07	-0.04	-0.12	-0.01	0.08	-0.06	0.20	-0.06
Pb	-0.29	0.01	-0.10	0.00	0.27	-0.02	-0.12	-0.33	0.07	0.66	0.28	0.38	0.67	-0.29	0.60	0.70	0.53	0.08	0.00	0.52	0.50	0.56	-0.13	0.65	0.20	0.39	0.59	0.03	0.73	-0.12	0.36	-0.21	0.30	0.53	-0.20		0.64	0.56	0.54	-0.04	-0.02	0.04	0.50	0.07	-0.20	0.23	0.56	0.01	0.58	0.34	0.26	0.72	0.62	0.23	0.59	0.75	0.14	0.45
Pd	-0.33	-0.04	-0.19	-0.10	0.42	-0.03	-0.13	-0.43	0.30	0.77	0.30	0.52	0.62	-0.25	0.88	0.90	0.87	0.14	-0.10	0.87	0.86	0.79	-0.10	0.90	0.11	0.44	0.83	0.05	0.86	-0.11	0.45	0.07	0.45	0.85	0.06	0.64		0.85	0.63	-0.07	-0.04	0.13	0.86	0.11	-0.19	0.34	0.89	-0.04	0.70	0.51	0.35	0.90	0.76	0.27	0.87	0.87	0.25	0.60
Pr	-0.37	-0.12	-0.28	-0.16	0.38	-0.02	-0.17	-0.48	0.27	0.87	0.17	0.42	0.56	-0.30	0.86	0.84	0.90	0.03	-0.16	0.90	0.91	0.69	-0.14	0.85	0.01	0.39	0.98	-0.03	0.75	-0.16	0.40	0.06	0.37	0.98	-0.03	0.56	0.85		0.61	-0.08	-0.04	0.07	0.94	0.08	-0.27	0.24	0.88	-0.09	0.81	0.44	0.24	0.79	0.79	0.22	0.84	0.79	0.19	0.53
Rb	-0.39	-0.22	-0.26	-0.13	0.13	-0.05	-0.28	-0.56	0.23	0.54	0.27	0.23	0.83	-0.22	0.66	0.69	0.66	-0.18	-0.13	0.66	0.60	0.46	-0.03	0.67	0.07	0.21	0.61	-0.14	0.68	-0.27	0.37	0.05	0.22	0.63	-0.12	0.54	0.63	0.61		-0.10	-0.05	-0.11	0.64	0.02	-0.34	0.07	0.65	-0.09	0.46	0.27	0.50	0.69	0.66	0.12	0.65	0.68	0.13	0.27
Re	0.12	0.47	0.19	-0.05	0.02	-0.01	0.46	0.29	-0.01	-0.05	-0.06	-0.01	-0.07	-0.02	-0.09	-0.08	-0.10	0.19	-0.05	-0.09	-0.10	-0.05	0.02	-0.09	0.30	-0.01	-0.08	0.34	-0.07	0.31	-0.05	0.05	-0.01	-0.08	0.03	-0.04	-0.07	-0.08	-0.10		0.00	0.44	-0.09	0.23	0.42	0.00	-0.09	0.24	-0.05	-0.02	0.05	-0.07	-0.08	-0.02	-0.09	-0.08	0.00	-0.03
Sb	0.01	0.00	0.02	-0.01	0.00	0.00	0.01	0.00	-0.01	-0.02	0.01	0.01	-0.04	-0.03	-0.04	-0.04	-0.04	0.02	-0.01	-0.04	-0.04	-0.03	0.01	-0.04	-0.01	0.00	-0.03	0.00	-0.03	0.01	0.00	-0.03	-0.01	-0.04	0.05	-0.02	-0.04	-0.04	-0.05	0.00		0.00	-0.04	0.00	-0.02	0.00	-0.04	-0.01	-0.02	-0.01	-0.04	-0.03	-0.03	-0.01	-0.03	-0.03	0.01	-0.01
Se	0.21	0.89	0.39	-0.17	0.10	-0.02	0.93	0.51	0.04	0.07	-0.04	0.06	-0.03	-0.13	0.06	0.06	0.06	0.33	-0.17	0.07	0.05	0.08	0.08	0.07	0.50	0.07	0.05	0.75	0.05	0.66	-0.02	0.02	0.04	0.07	0.14	0.04	0.13	0.07	-0.11	0.44	0.00		0.08	0.09	0.77	0.06	0.07	0.45	0.04	0.03	0.06	0.06	0.02	0.08	0.07	0.05	0.04	0.03
Sm	-0.38	-0.15	-0.28	-0.16	0.28	-0.01	-0.18	-0.48	0.28	0.71	0.17	0.30	0.55	-0.24	0.94	0.89	0.98	-0.06	-0.15	0.99	0.89	0.64	-0.09	0.92	0.02	0.27	0.88	-0.06	0.75	-0.13	0.35	0.13	0.27	0.98	0.06	0.50	0.86	0.94	0.64	-0.09	-0.04	0.08		0.04	-0.23	0.15	0.96	-0.09	0.66	0.32	0.29	0.80	0.74	0.21	0.94	0.81	0.13	0.40
Sn	-0.02	0.11	0.04	-0.02	0.22	0.00	0.06	0.05	0.00	0.13	0.01	0.25	0.07	-0.06	0.05	0.06	0.04	0.24	-0.02	0.04	0.09	0.15	0.00	0.05	0.12	0.18	0.09	0.09	0.06	-0.01	0.04	-0.03	0.25	0.06	-0.03	0.07	0.11	0.08	0.02	0.23	0.00	0.09	0.04		0.03	0.18	0.04	0.07	0.14	0.25	0.02	0.06	0.08	0.06	0.04	0.06	0.07	0.22
Sr	0.32	0.77	0.52	0.03	-0.03	0.00	0.85	0.72	-0.14	-0.27	-0.16	-0.14	-0.25	-0.04	-0.24	-0.25	-0.24	0.35	0.03	-0.23	-0.30	-0.23	0.14	-0.24	0.50	-0.08	-0.29	0.69	-0.24	0.74	-0.25	0.05	-0.12	-0.26	0.15	-0.20	-0.19	-0.27	-0.34	0.42	-0.02	0.77	-0.23	0.03		-0.04	-0.23	0.47	-0.29	-0.16	-0.01	-0.25	-0.32	-0.01	-0.21	-0.25	-0.11	-0.20
Ta	-0.03	0.08	-0.03	-0.03	0.63	0.00	-0.01	-0.05	0.00	0.36	0.05	0.72	0.17	-0.07	0.17	0.17	0.15	0.55	-0.02	0.13	0.26	0.46	-0.03	0.17	0.05	0.61	0.28	0.18	0.15	-0.03	0.06	-0.03	0.60	0.19	-0.05	0.23	0.34	0.24	0.07	0.00	0.00	0.06	0.15	0.18	-0.04		0.16	-0.01	0.40	0.63	0.06	0.17	0.20	0.12	0.15	0.18	0.22	0.63
Tb	-0.38	-0.14	-0.25	-0.13	0.26	-0.01	-0.19	-0.48	0.27	0.69	0.21	0.30	0.59	-0.23	0.97	0.95	0.97	-0.06	-0.12	0.98	0.88	0.66	-0.07	0.97	0.06	0.28	0.84	-0.05	0.82	-0.13	0.36	0.11	0.26	0.93	0.07	0.56	0.89	0.88	0.65	-0.09	-0.04	0.07	0.96	0.04	-0.23	0.16		-0.08	0.62	0.32	0.34	0.86	0.73	0.22	0.96	0.88	0.13	0.39
Te	0.09	0.47	0.37	-0.01	0.00	-0.01	0.45	0.33	-0.07	-0.05	-0.01	-0.02	0.01	-0.08	-0.07	-0.04	-0.09	0.19	-0.02	-0.09	-0.12	-0.07	0.09	-0.05	0.64	0.00	-0.09	0.46	0.00	0.45	-0.07	-0.04	-0.03	-0.10	-0.02	0.01	-0.04	-0.09	-0.09	0.24	-0.01	0.45	-0.09	0.07	0.47	-0.01	-0.08		-0.07	-0.04	0.08	-0.02	-0.06	0.03	-0.07	-0.02	-0.05	-0.06
Th	-0.30	-0.02	-0.24	-0.16	0.52	-0.03	-0.14	-0.38	0.26	0.87	0.18	0.64	0.50	-0.28	0.63	0.64	0.63	0.26	-0.15	0.61	0.72	0.71	-0.15	0.62	0.06	0.54	0.82	0.03	0.58	-0.21	0.44	-0.05	0.54	0.74	-0.10	0.58	0.70	0.81	0.46	-0.05	-0.02	0.04	0.66	0.14	-0.29	0.40	0.62	-0.07		0.60	0.14	0.61	0.75	0.21	0.58	0.63	0.26	0.77
Ti	-0.15	0.06	-0.12	-0.07	0.80	-0.01	-0.07	-0.20	0.16	0.56	0.12	0.86	0.37	-0.20	0.34	0.35	0.31	0.62	-0.06	0.30	0.46	0.65	-0.10	0.33	0.05	0.64	0.46	0.22	0.34	-0.11	0.27	-0.04	0.90	0.38	-0.09	0.34	0.51	0.44	0.27	-0.02	-0.01	0.03	0.32	0.25	-0.16	0.63	0.32	-0.04	0.60		0.17	0.36	0.42	0.20	0.29	0.36	0.32	0.83
Tl	-0.10	0.03	0.03	-0.07	0.12	-0.03	-0.01	-0.20	0.18	0.21	0.33	0.18	0.51	-0.07	0.37	0.39	0.31	-0.05	-0.07	0.34	0.25	0.24	0.22	0.37	0.27	0.10	0.23	0.07	0.42	0.01	0.32	0.16	0.16	0.26	0.07	0.26	0.35	0.24	0.50	0.05	-0.04	0.06	0.29	0.02	-0.01	0.06	0.34	0.08	0.14	0.17		0.41	0.29	0.08	0.35	0.39	0.09	0.12
Tm	-0.36	-0.06	-0.17	-0.05	0.29	-0.02	-0.17	-0.45	0.22	0.74	0.33	0.36	0.72	-0.29	0.88	0.96	0.84	-0.02	-0.06	0.82	0.75	0.66	-0.11	0.93	0.15	0.39	0.77	-0.01	0.99	-0.14	0.45	-0.05	0.31	0.79	-0.04	0.72	0.90	0.79	0.69	-0.07	-0.03	0.06	0.80	0.06	-0.25	0.17	0.86	-0.02	0.61	0.36	0.41		0.74	0.28	0.86	0.98	0.15	0.41
U	-0.39	-0.11	-0.27	-0.17	0.29	-0.04	-0.19	-0.52	0.30	0.76	0.28	0.45	0.66	-0.28	0.74	0.76	0.73	0.00	-0.16	0.73	0.75	0.69	-0.16	0.74	0.09	0.35	0.78	-0.04	0.72	-0.22	0.51	0.02	0.37	0.77	-0.12	0.62	0.76	0.79	0.66	-0.08	-0.03	0.02	0.74	0.08	-0.32	0.20	0.73	-0.06	0.75	0.42	0.29	0.74		0.20	0.69	0.74	0.28	0.56
W	0.06	0.07	0.03	-0.03	0.21	-0.01	0.04	0.00	0.05	0.22	0.08	0.20	0.16	-0.10	0.23	0.26	0.20	0.11	-0.03	0.20	0.22	0.25	0.03	0.25	0.07	0.20	0.22	0.08	0.27	0.03	0.13	-0.03	0.22	0.21	-0.01	0.23	0.27	0.22	0.12	-0.02	-0.01	0.08	0.21	0.06	-0.01	0.12	0.22	0.03	0.21	0.20	0.08	0.28	0.20		0.24	0.27	0.11	0.20
Y	-0.34	-0.13	-0.22	-0.10	0.27	0.01	-0.18	-0.44	0.23	0.66	0.21	0.28	0.60	-0.21	0.98	0.95	0.94	-0.04	-0.10	0.96	0.79	0.61	-0.03	0.97	0.09	0.29	0.79	-0.04	0.83	-0.12	0.33	0.07	0.24	0.88	0.08	0.59	0.87	0.84	0.65	-0.09	-0.03	0.07	0.94	0.04	-0.21	0.15	0.96	-0.07	0.58	0.29	0.35	0.86	0.69	0.24		0.89	0.10	0.36
Yb	-0.36	-0.07	-0.17	-0.05	0.30	-0.02	-0.18	-0.44	0.19	0.75	0.31	0.36	0.73	-0.29	0.90	0.98	0.84	-0.01	-0.05	0.84	0.75	0.64	-0.10	0.95	0.17	0.40	0.77	-0.01	0.98	-0.15	0.42	-0.07	0.30	0.79	-0.06	0.75	0.87	0.79	0.68	-0.08	-0.03	0.05	0.81	0.06	-0.25	0.18	0.88	-0.02	0.63	0.36	0.39	0.98	0.74	0.27	0.89		0.13	0.42
Zn	-0.06	0.06	-0.21	-0.20	0.26	-0.02	-0.01	-0.16	0.61	0.27	0.26	0.35	0.07	0.02	0.13	0.15	0.11	0.20	-0.19	0.12	0.21	0.42	-0.09	0.14	-0.10	0.11	0.20	0.10	0.13	-0.05	0.49	0.23	0.28	0.17	0.20	0.14	0.25	0.19	0.13	0.00	0.01	0.04	0.13	0.07	-0.11	0.22	0.13	-0.05	0.26	0.32	0.09	0.15	0.28	0.11	0.10	0.13		0.41
Zr	-0.20	0.05	-0.17	-0.11	0.73	-0.02	-0.09	-0.26	0.27	0.67	0.20	0.89	0.36	-0.22	0.42	0.42	0.38	0.56	-0.10	0.38	0.52	0.78	-0.11	0.41	0.05	0.61	0.56	0.15	0.38	-0.15	0.40	-0.03	0.79	0.46	-0.06	0.45	0.60	0.53	0.27	-0.03	-0.01	0.03	0.40	0.22	-0.20	0.63	0.39	-0.06	0.77	0.83	0.12	0.41	0.56	0.20	0.36	0.42	0.41	

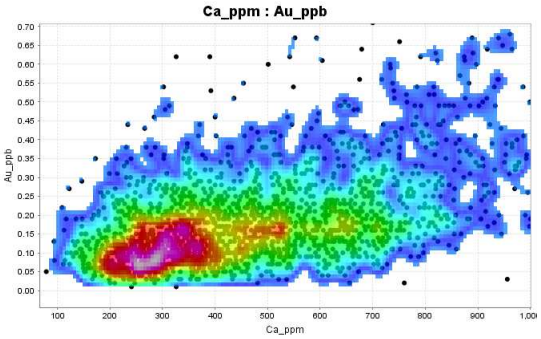
See *Putta_stats.xls*

Putta Putta: Important Correlations

- Zinc:
  - Weak correlation with Cd only



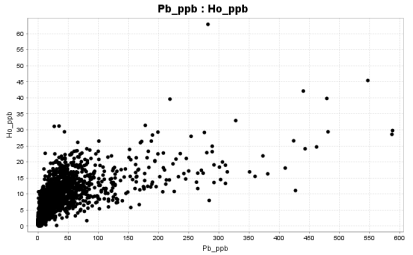
- Gold:
  - Au weakly correlates with Ca and Sr indicating pedogenic carbonates

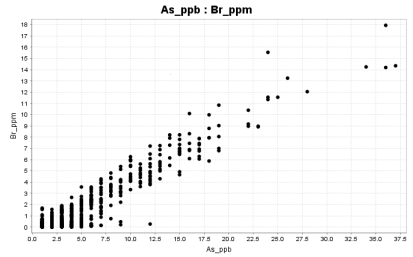


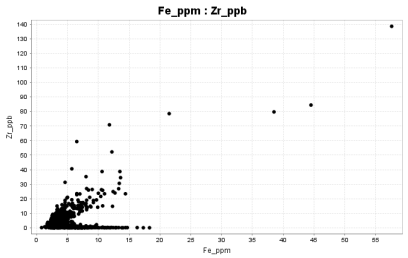
NOTE: all data z-score transformed prior to calculating correlations

Putta Putta: Element correlations in the ionic leach data set related to SHMS and pathfinder elements

Zn – weak Cd	see PCA6
Pb – REE	granitic/sialic origin – PCA1
Ag – Ca	indicating 2nd carbonate – PCA4
As – Br, Ca, Li, Mg, Se, Sr	salts over structure – PCA2
Bi - nil	
Cd – Mn, Zn	possible SHMS - PCA6
Cu - nil	
Hg - nil	
Mo - nil	
Sb - nil	
Tl – Cs, Rb	?clay see PCA7
Fe – Be, Cr, Nb, Ti, Zr	? resistant minerals – PCA3
Mn – Co, Cd	Scavenging – PCA6
Ba – Ga	Ba-Ga system PCA5
Ca – Ag, As, Au, Br, Se, Sr	Auriferous – PCA4







PCA @ Putta-Putta - summary

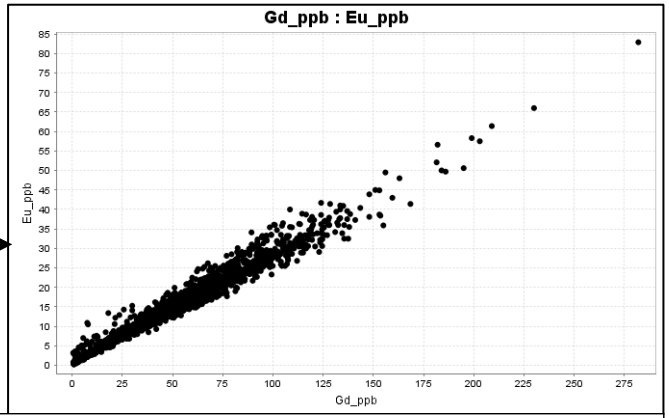
- **PCA1:** REEs indicating granitic suite of elements
- **PCA2**: Carbonate & halogen salt ppt over **structure** with greater response over Cambrian sediments (Mg, Li, Ca, Sr Br, I, As)
- **PCA3**: Elements signature represents HFSE of resistant minerals with random noise & batch effects (Ti, Nb, Cr, Be, Zr)
- **PCA4**: Auriferous signature, coherence between lines & along structures in dolo-limestone stratigraphy (Cu, Ag, Ni, Hg, Au, Ca)
- **PCA5**: Ba-Ga system dominate over Cambrian sandstone
- **PCA6**: Secondary Mn enrichment within the surficial environment (Mn, Co, Cd, Zn)
- **PCA7**: Tl-Hg pathfinders for SHMS with continuity between lines possibly picking up structure

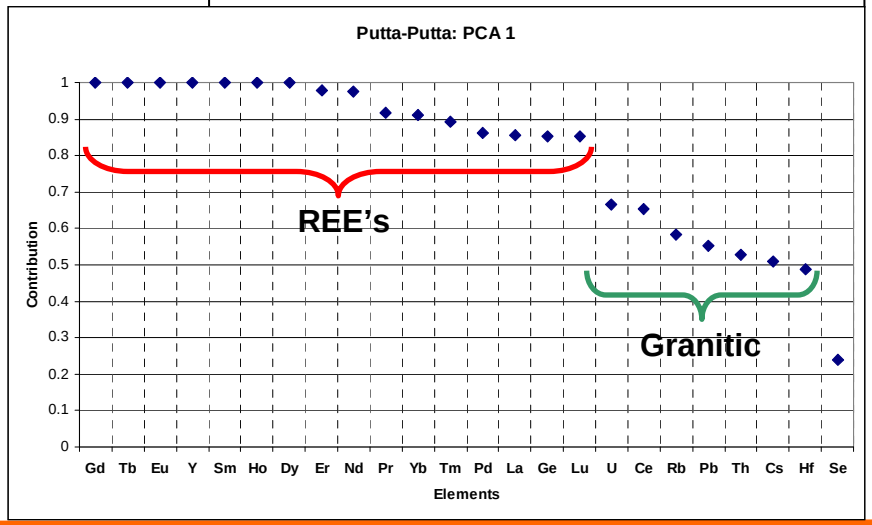
Putta-Putta: PCA1

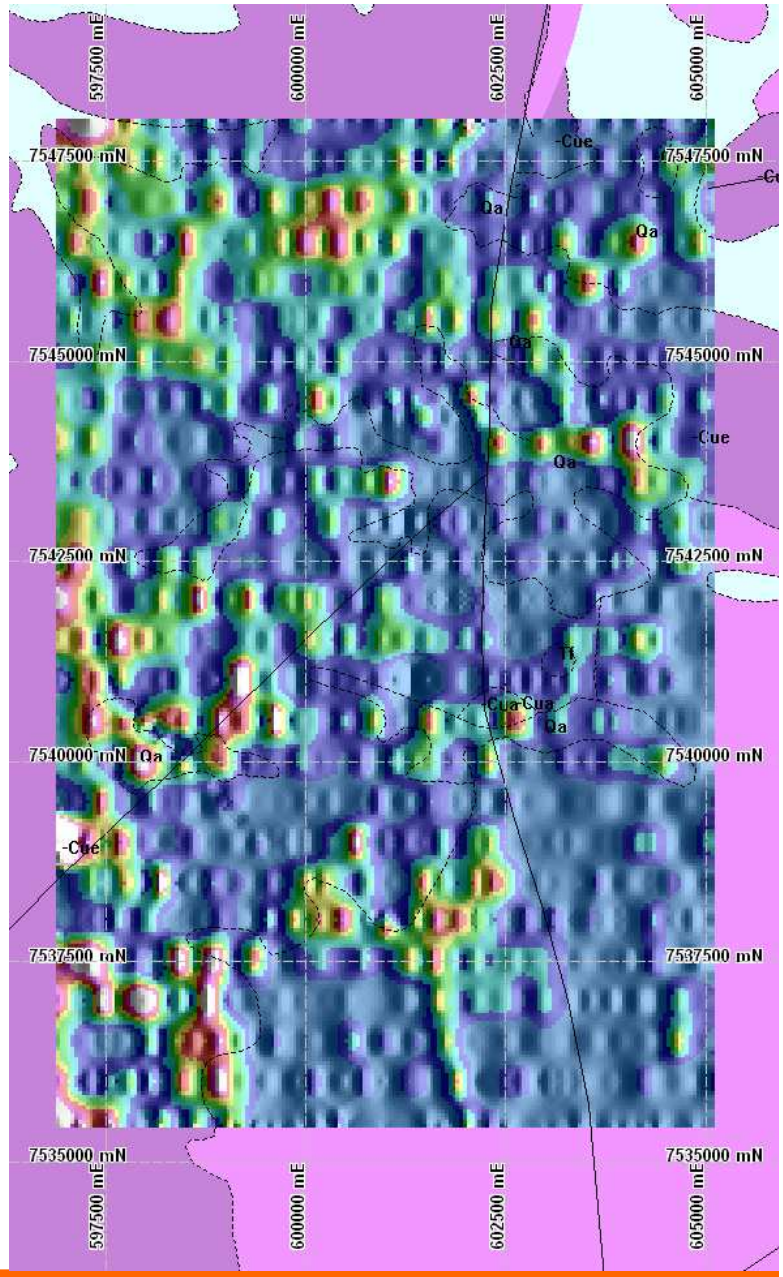
- ? Granitic suite of elements

	PCA 1
Gd	**1.00**
Tb	**1.00**
Eu	**1.00**
Y	**1.00**
Sm	**1.00**
Ho	**1.00**
Dy	**1.00**
Er	**0.98**
Nd	**0.98**
Pr	**0.92**
Yb	**0.91**
Tm	**0.89**
Pd	**0.86**
La	**0.86**
Ge	**0.85**
Lu	**0.85**
U	0.67
Ce	0.65
Rb	**0.58**
Pb	**0.55**
Th	**0.53**
Cs	**0.51**
Hf	0.49
Se	0.24

Strong internal correlation of REE's





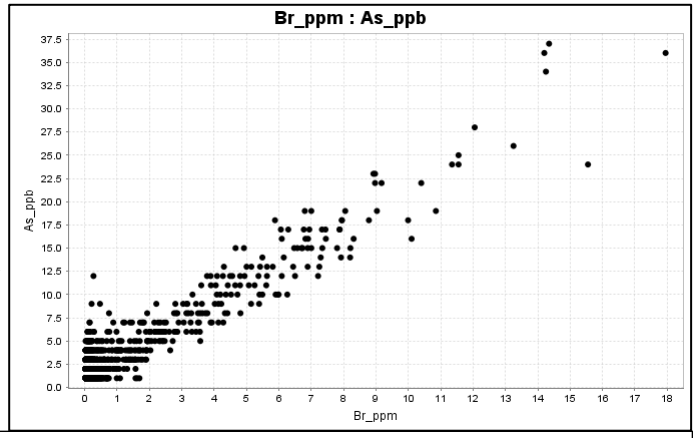


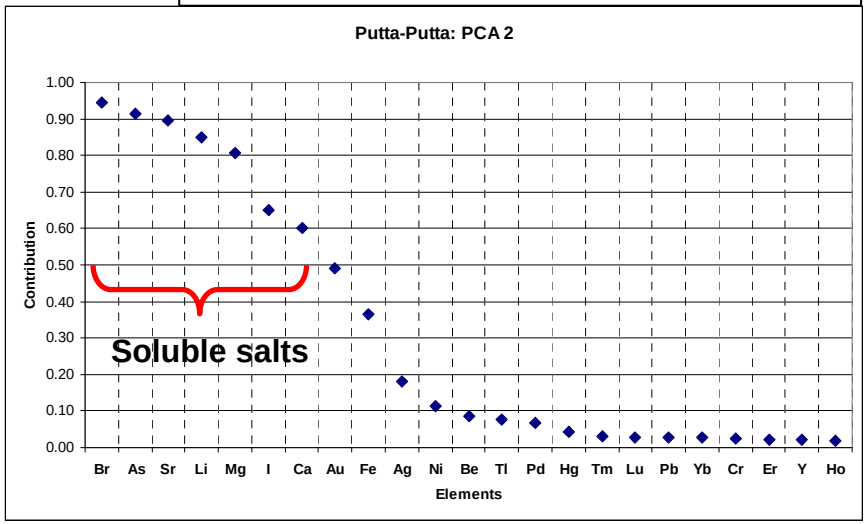
Putta-Putta: PCA2

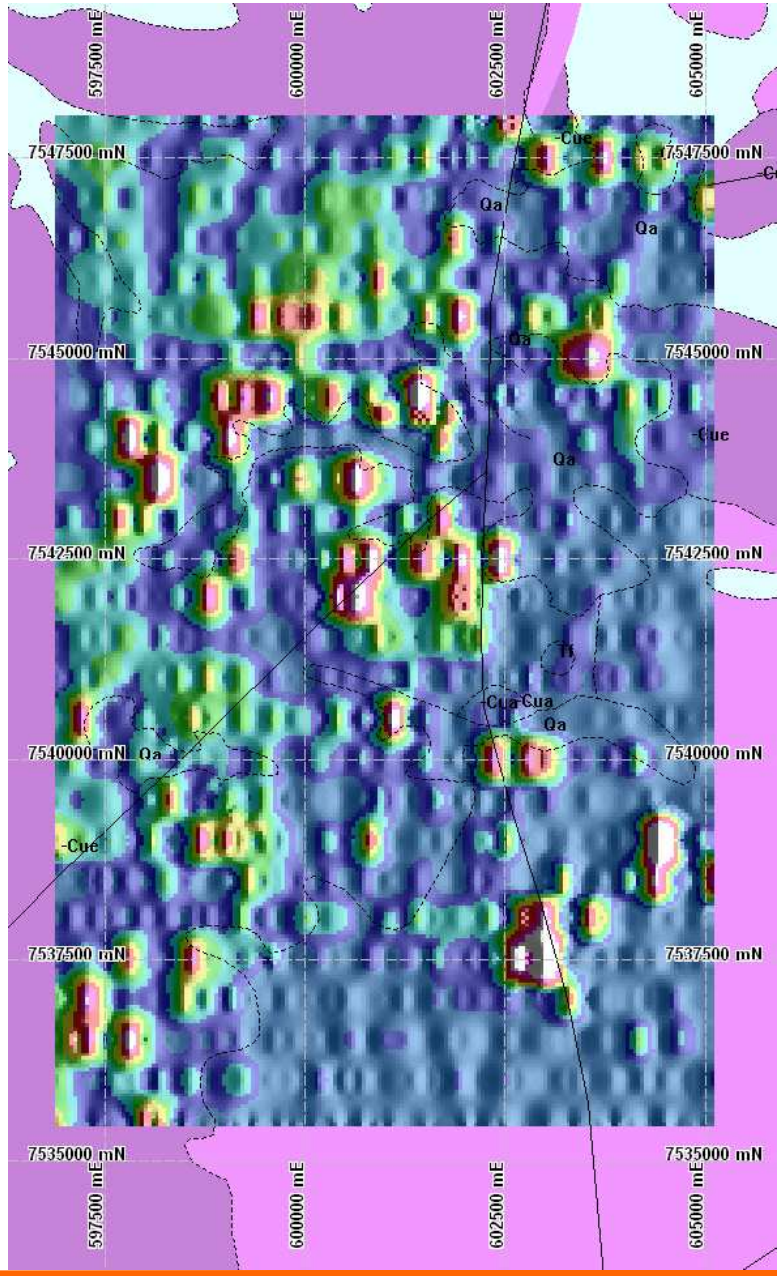
- Carbonate (Mg, Li Ca, Sr) & halogen salt ppt (Br, I, As, Se) ?over structure.
- Greater response over Cambrian sediments

	PCA 2
Br	**0.95**
As	**0.91**
Sr	**0.90**
Li	**0.85**
Mg	**0.81**
I	0.65
Ca	0.60
Au	0.49
Fe	0.37
Ag	0.18
Ni	0.11
Be	0.09
Tl	0.08
Pd	0.07
Hg	0.04
Tm	0.03
Lu	0.03
Pb	0.03
Yb	0.03
Cr	0.03
Er	0.02
Y	0.02
Ho	0.02

Strong correlation



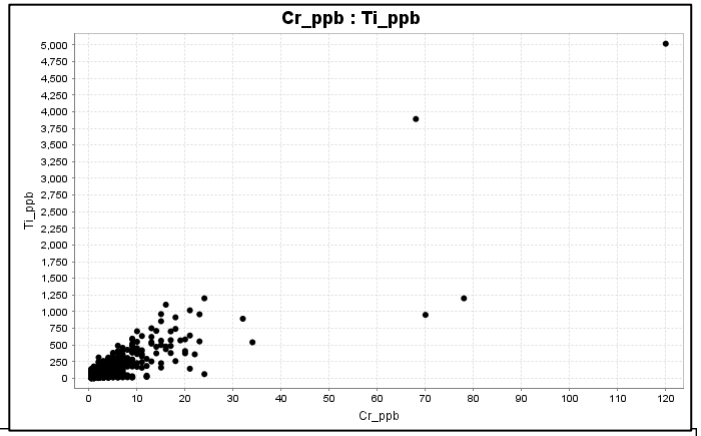


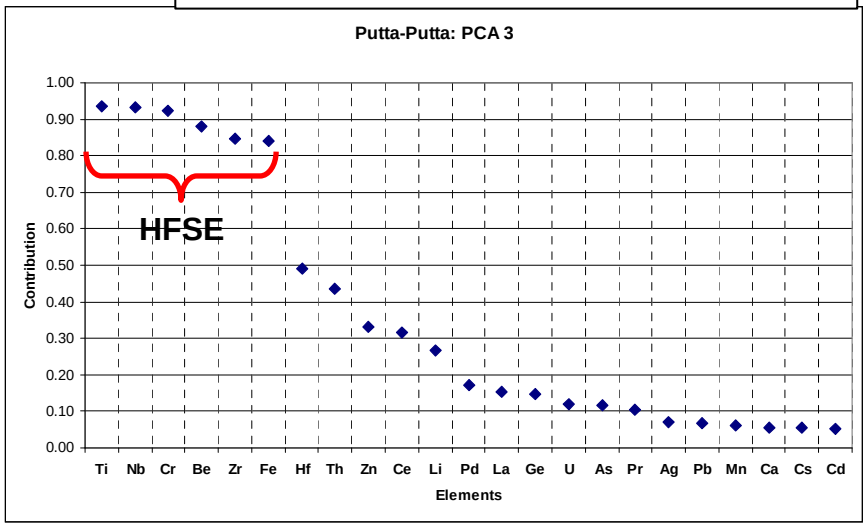


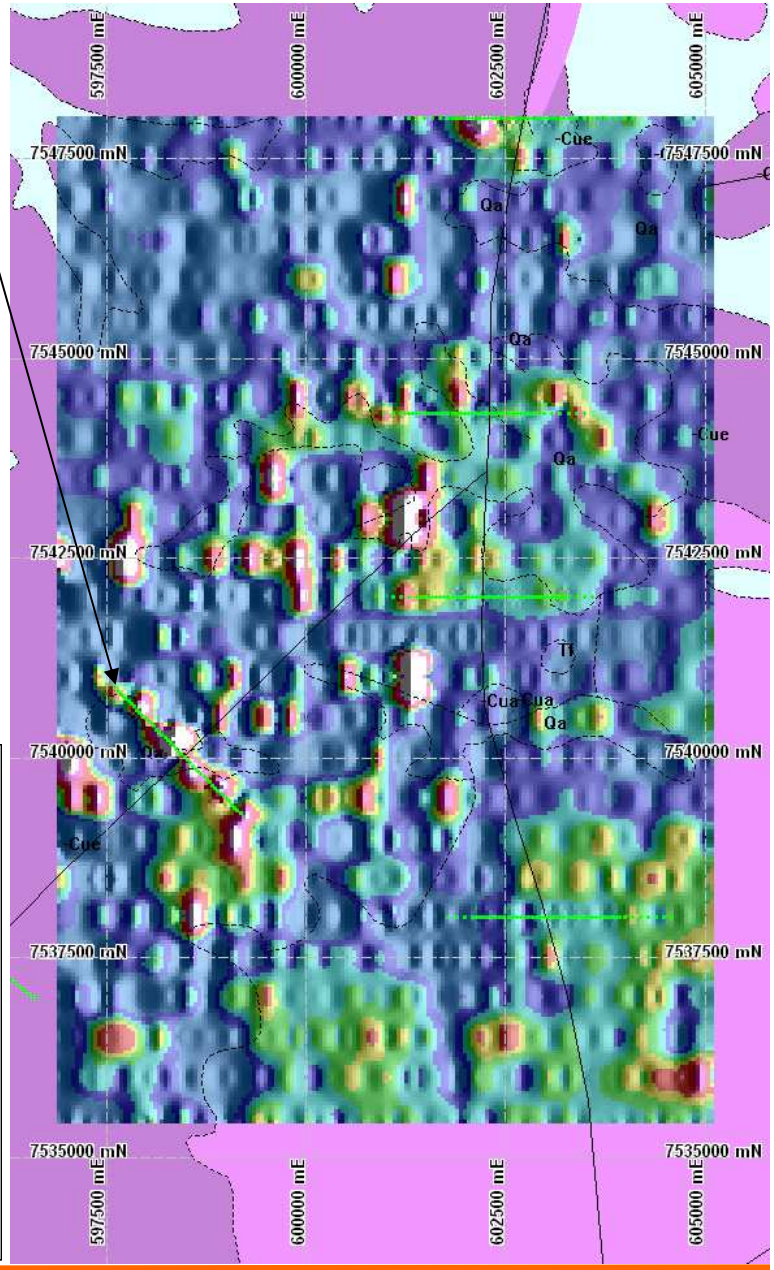
Putta-Putta: PCA3

- Peaks show random noise with batch effects (NOTE see regional line GBSS133)
- Elements signature represents HFSE possibly representing resistant minerals (Cr#, zirconium)

	PCA 3
Ti	**0.94**
Nb	**0.93**
Cr	**0.92**
Be	**0.88**
Zr	**0.85**
Fe	**0.84**
Hf	0.49
Th	0.44
Zn	0.33
Ce	0.32
Li	0.27
Pd	0.17
La	0.15
Ge	0.15
U	0.12
As	0.12
Pr	0.11
Ag	0.07
Pb	0.07
Mn	0.06
Ca	0.06
Cs	0.06
Cd	0.05



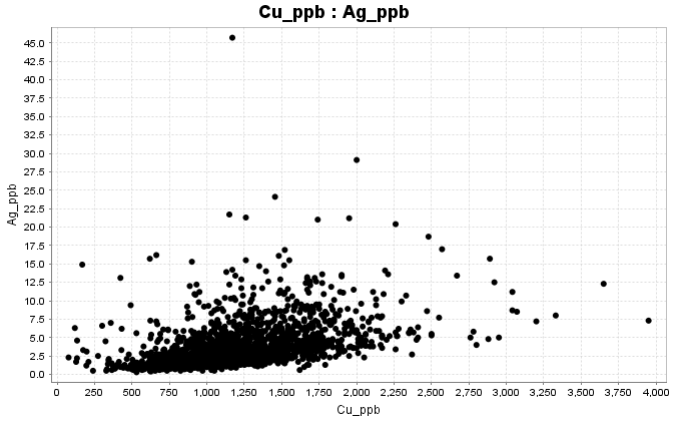


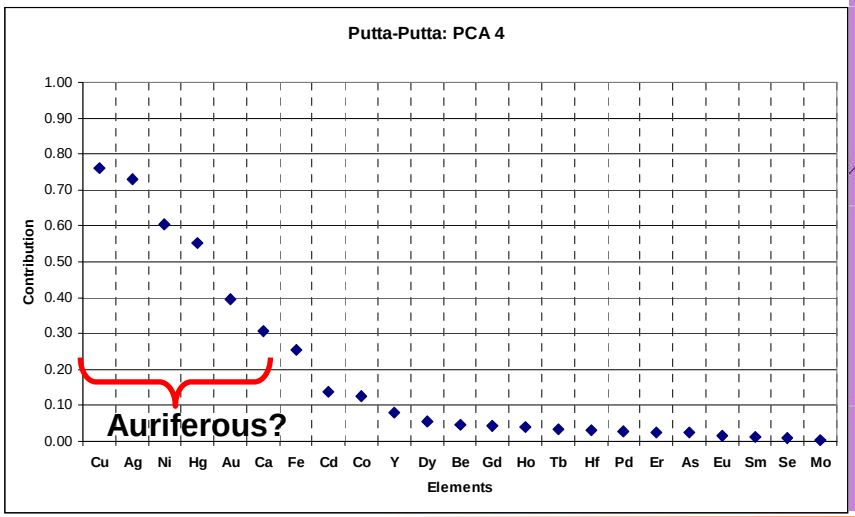


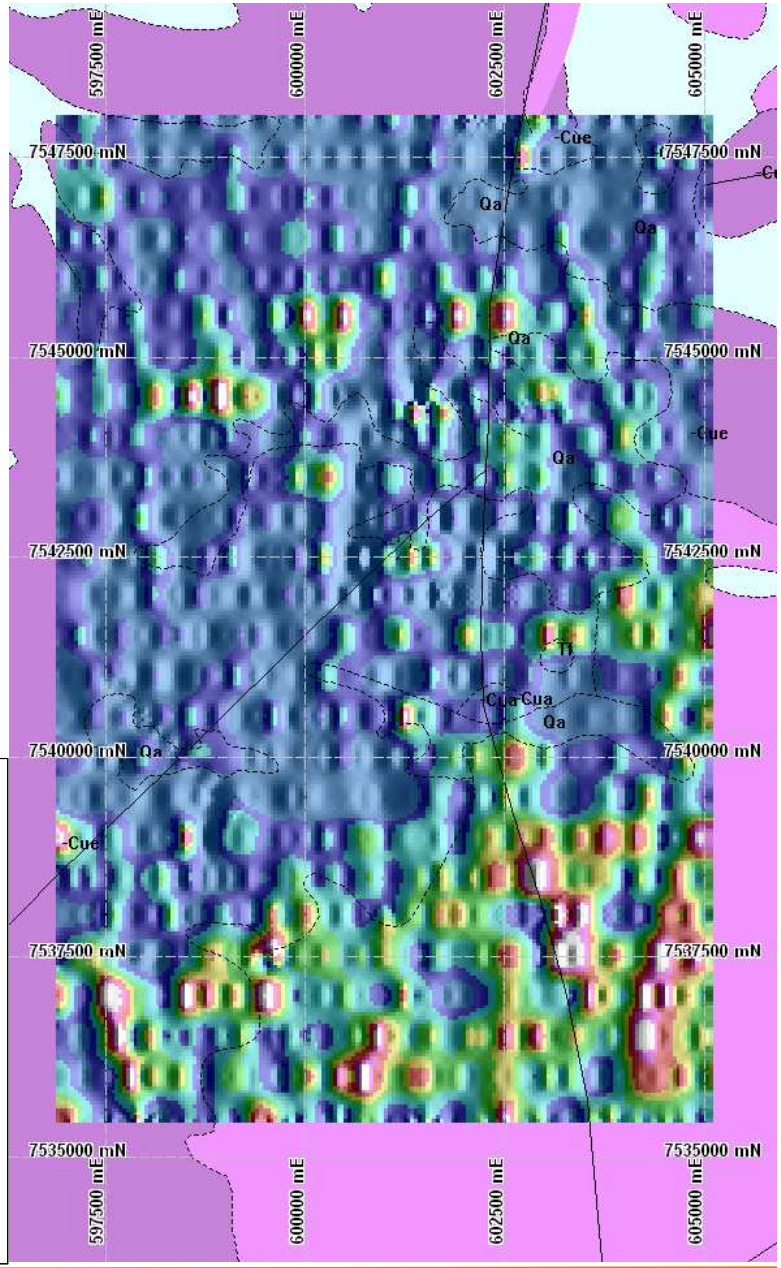
Putta-Putta: PCA4

- Dominant in the dolo-limestone stratigraphy
- Possible ?auriferous signature (Au, Ag, Cu, Hg)
- Elevated values show coherence between lines and possibly along structures

	PCA 4
Cu	0.76
Ag	0.73
Ni	0.60
Hg	**0.55**
Au	0.40
Ca	0.31
Fe	0.25
Cd	0.14
Co	0.13
Y	0.08
Dy	0.06
Be	0.05
Gd	0.04
Ho	0.04
Tb	0.03
Hf	0.03
Pd	0.03
Er	0.03
As	0.02
Eu	0.02
Sm	0.01
Se	0.01
Mo	0.00





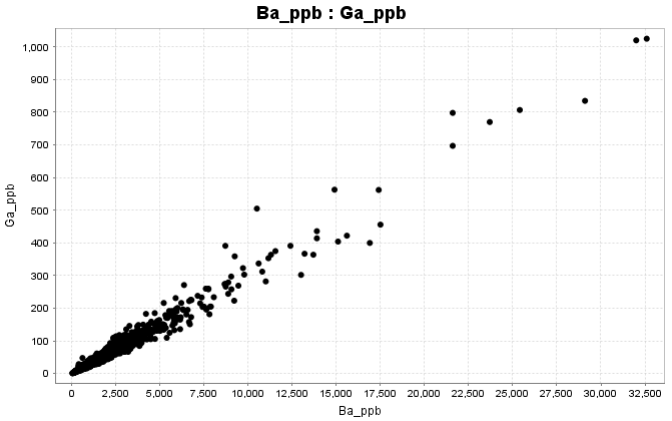


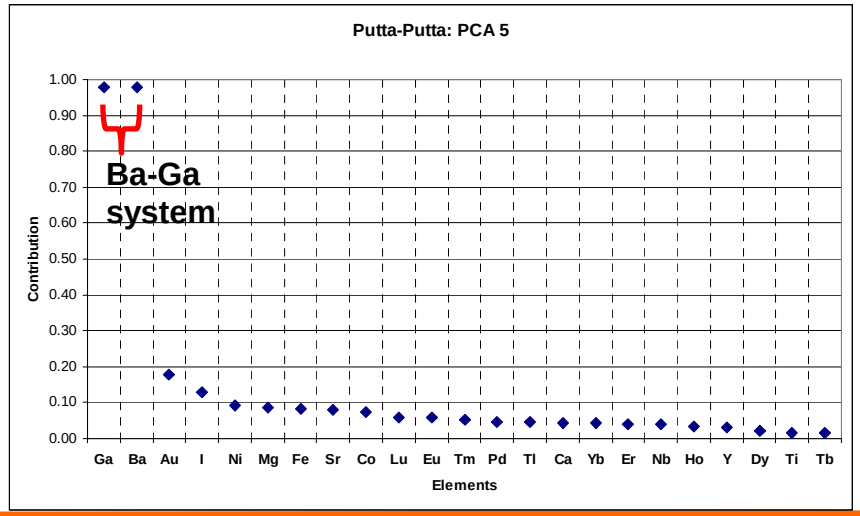
Putta-Putta: PCA5

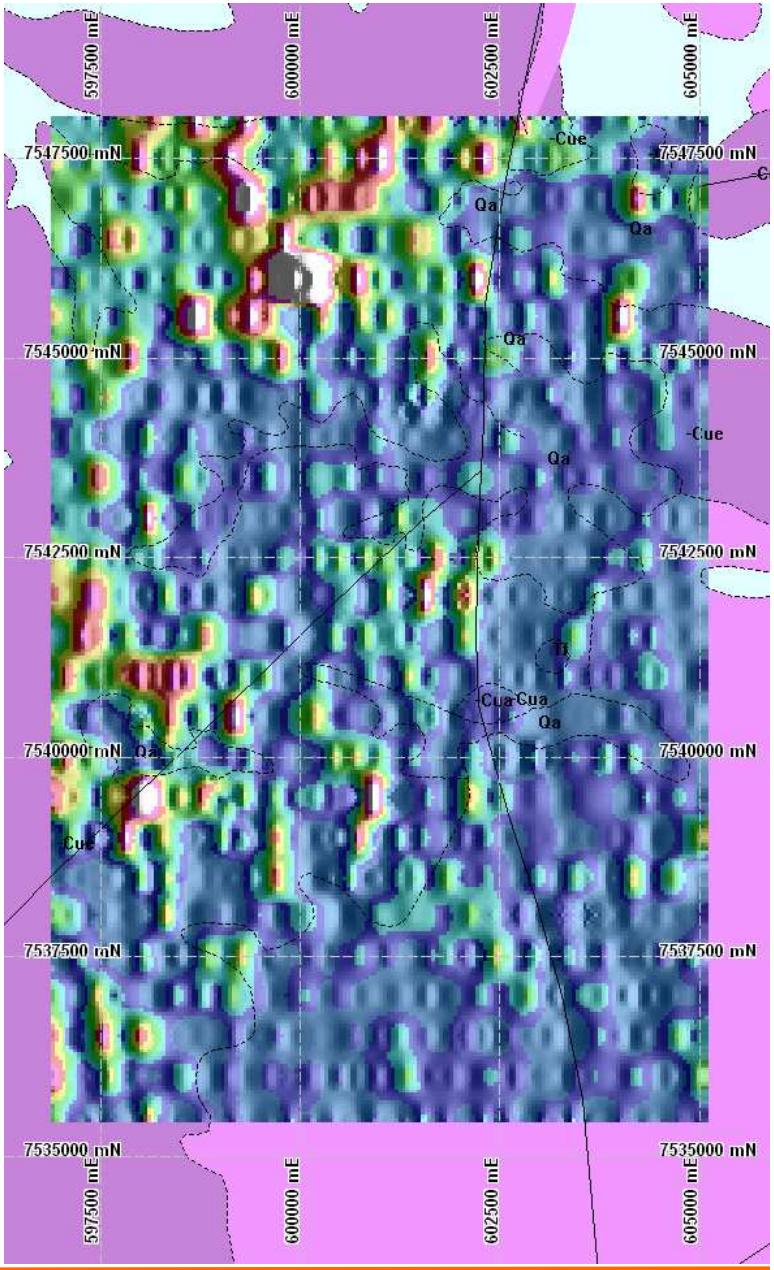
- Ba-Ga system dominate over the northern residual Cambrian sandstone, devoid in alluvial tracks and over limestone.

	PCA 5
Ga	**0.98**
Ba	**0.98**
Au	0.18
I	0.13
Ni	0.09
Mg	0.09
Fe	0.08
Sr	0.08
Co	0.07
Lu	0.06
Eu	0.06
Tm	0.05
Pd	0.05
Tl	0.05
Ca	0.04
Yb	0.04
Er	0.04
Nb	0.04
Ho	0.03
Y	0.03
Dy	0.02
Ti	0.02
Tb	0.02

Strong correlation



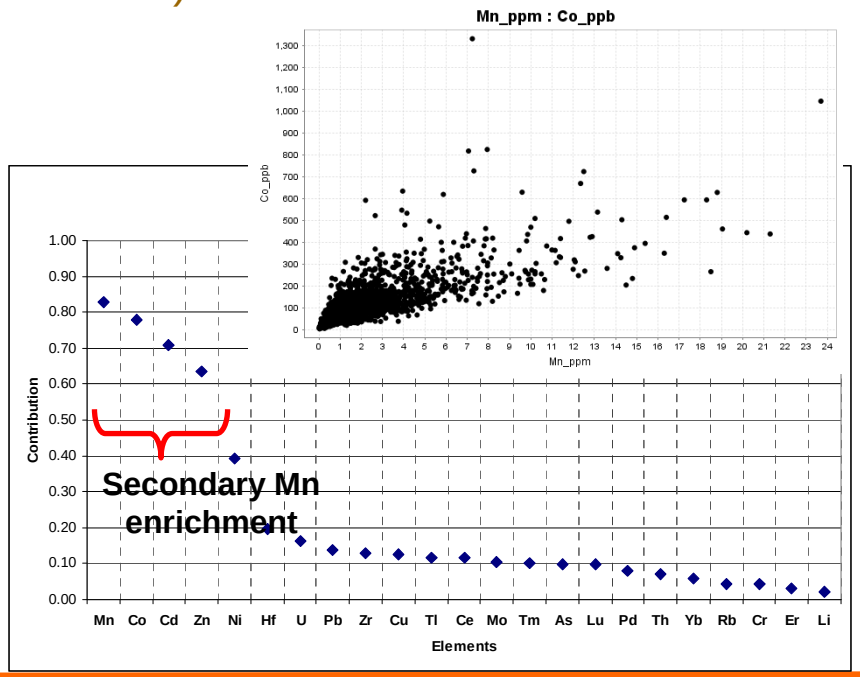


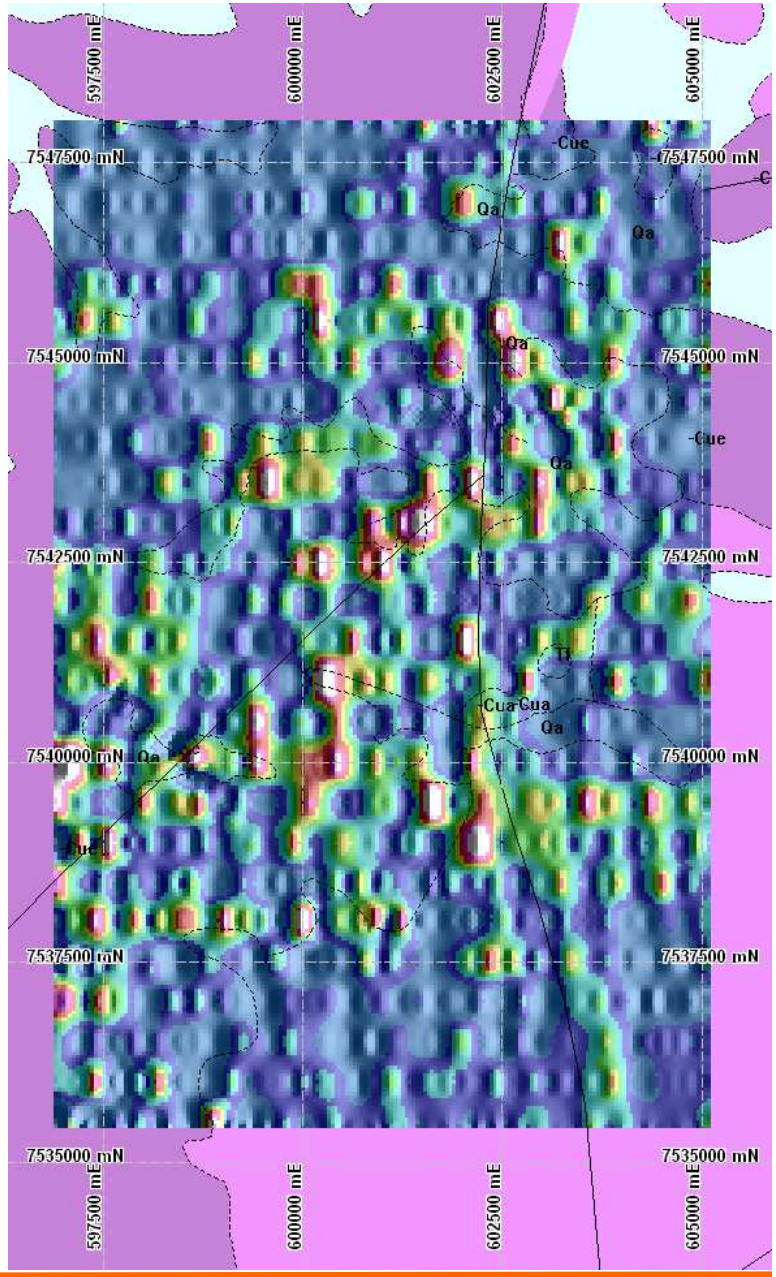


Putta-Putta: PCA6

- Secondary Mn enrichment within the surficial environment scavenging Co, Zn & Cd.
- Is this reflecting
  - scavenging of background Zn (e.g Limestone “Anulas” north of Century)
  - Leakage along structure? (e.g. Lady Loretta)

	PCA 6
Mn	**0.83**
Co	0.78
Cd	0.71
Zn	0.64
Ni	0.39
Hf	0.20
U	0.16
Pb	0.14
Zr	0.13
Cu	0.13
Tl	0.12
Ce	0.12
Mo	0.10
Tm	0.10
As	0.10
Lu	0.10
Pd	0.08
Th	0.07
Yb	0.06
Rb	0.04
Cr	0.04
Er	0.03
Li	0.02

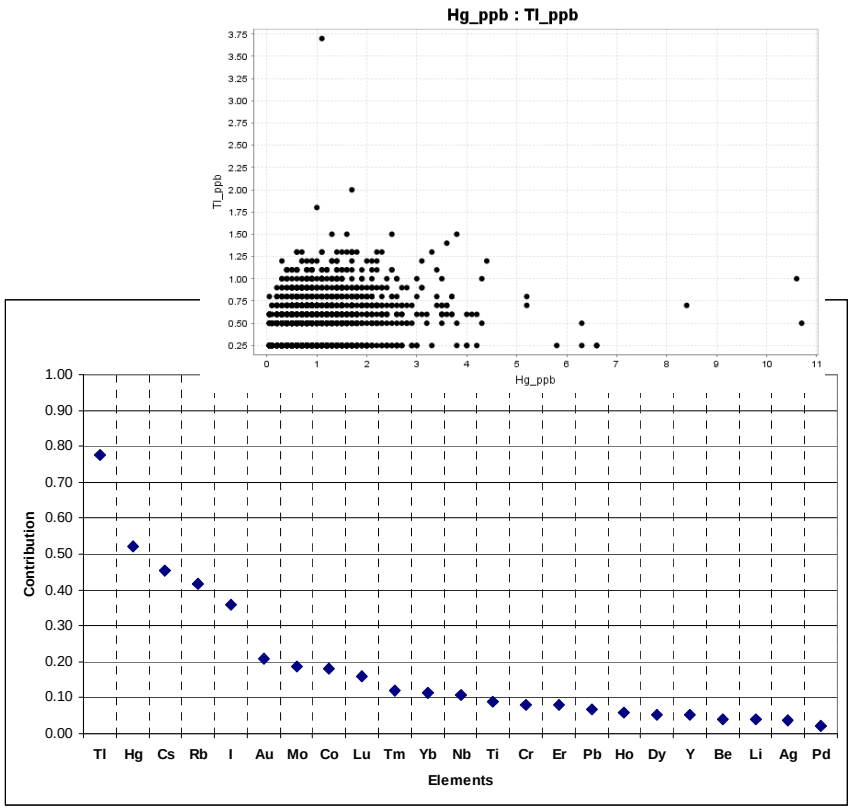


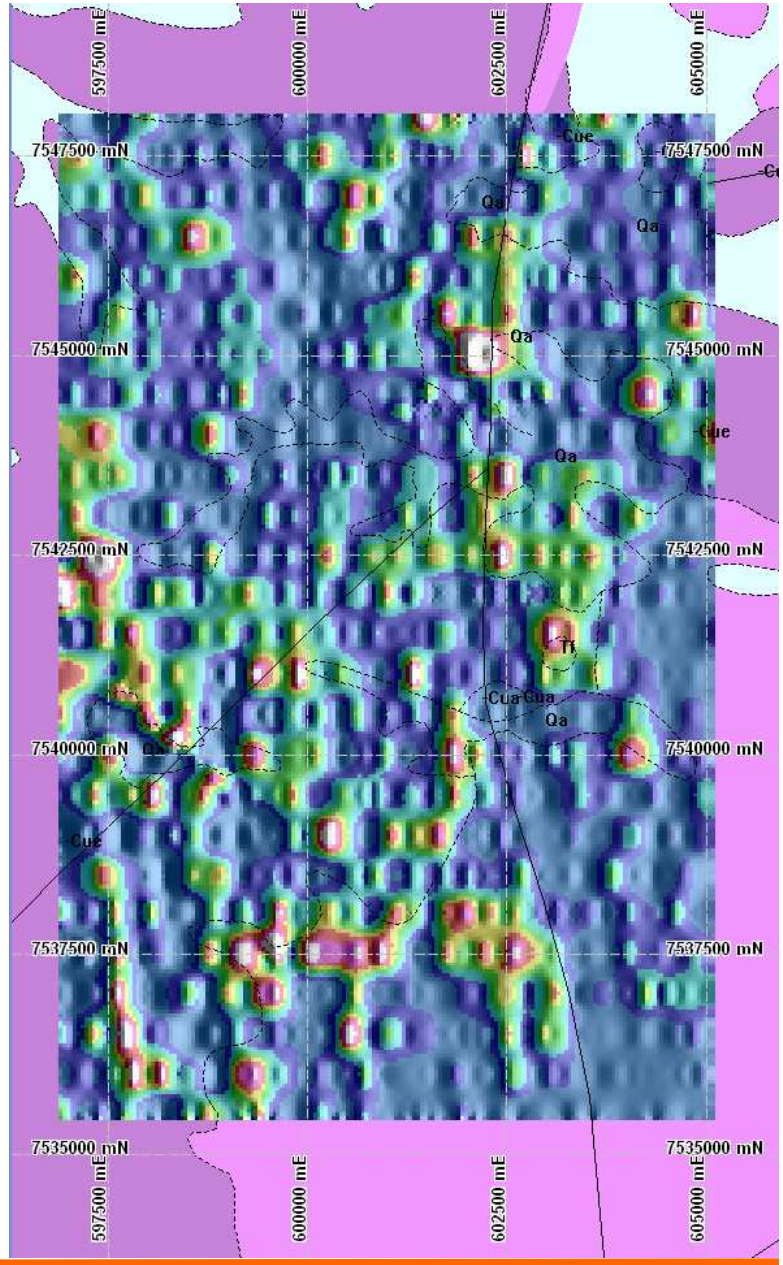


Putta-Putta: PCA7

- No outstanding correlation between Tl-Hg
- Tl-Hg are known pathfinders for SHMS
- Continuity between lines
- Possibly picking up structure

	PCA 7
Tl	0.78
Hg	**0.52**
Cs	0.46
Rb	0.42
I	0.36
Au	0.21
Mo	0.19
Co	0.18
Lu	0.16
Tm	0.12
Yb	0.11
Nb	0.11
Ti	0.09
Cr	0.08
Er	0.08
Pb	0.07
Ho	0.06
Dy	0.05
Y	0.05
Be	0.04
Li	0.04
Ag	0.04
Pd	0.02





Putta Putta

Areas for further consideration

Structural traces

Based on assumption that PCA2 (Mg, Li, Ca, Sr Br, I, As) represents precipitation of carbonates and halogen salts along preferentially weathered structures.

Structural traces

- Two styles of traces
  1. Based on elevated PCA2 values (polygon)
  2. Based on PCA2 trends (lines)
- Each style of trace have similar trends to one another
- Two distinct trends:
  1. NNW-SSE
  2. NE-SW
- Qu. Are the traces outlining “compartments”

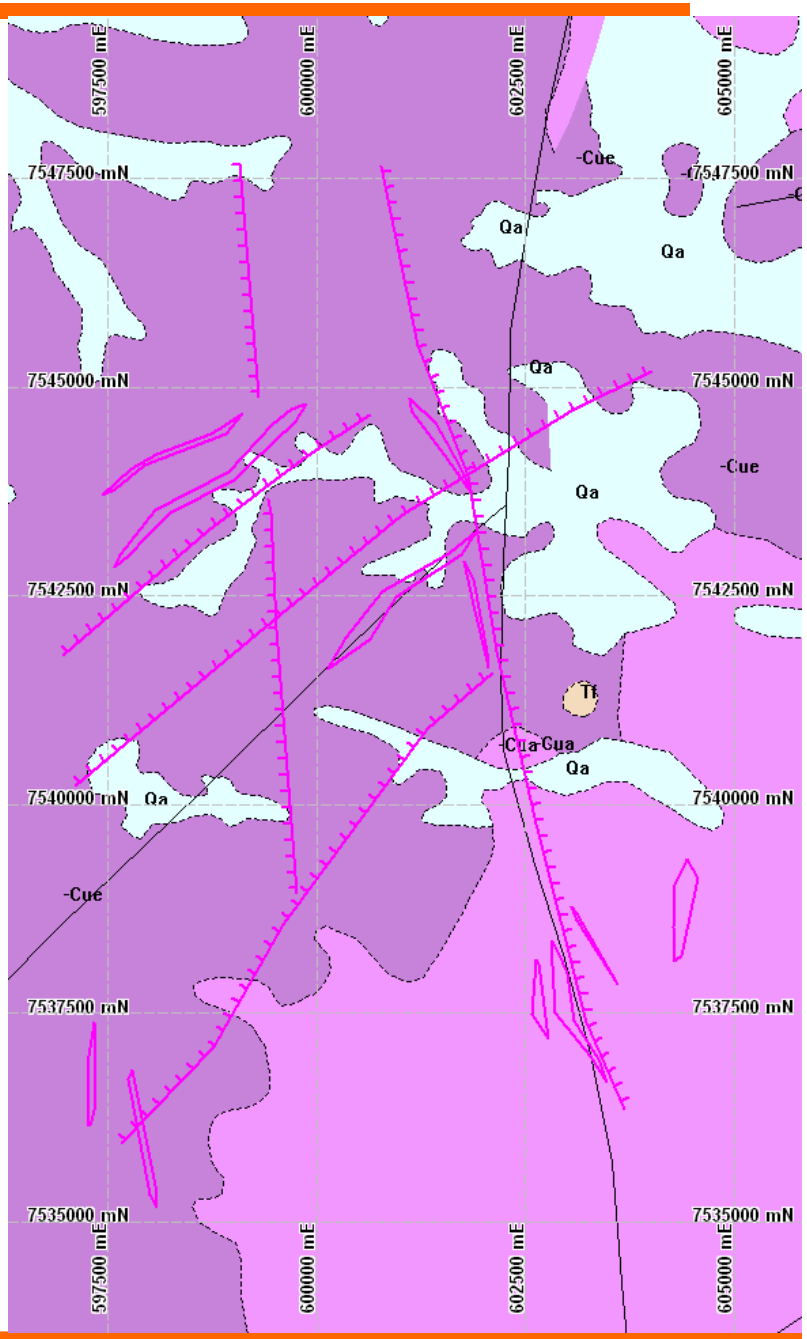


Figure showing interpretation of structural traces overlain on regional geology

Structural traces

- Two styles of traces
  1. Based on elevated PCA2 values (polygon)
  2. Based on PCA2 trends (lines)
- Each style of trace have similar trends to one another
- Two distinct trends:
  1. NNW-SSE
  2. NE-SW
- Qu. Are the traces outlining “compartments”

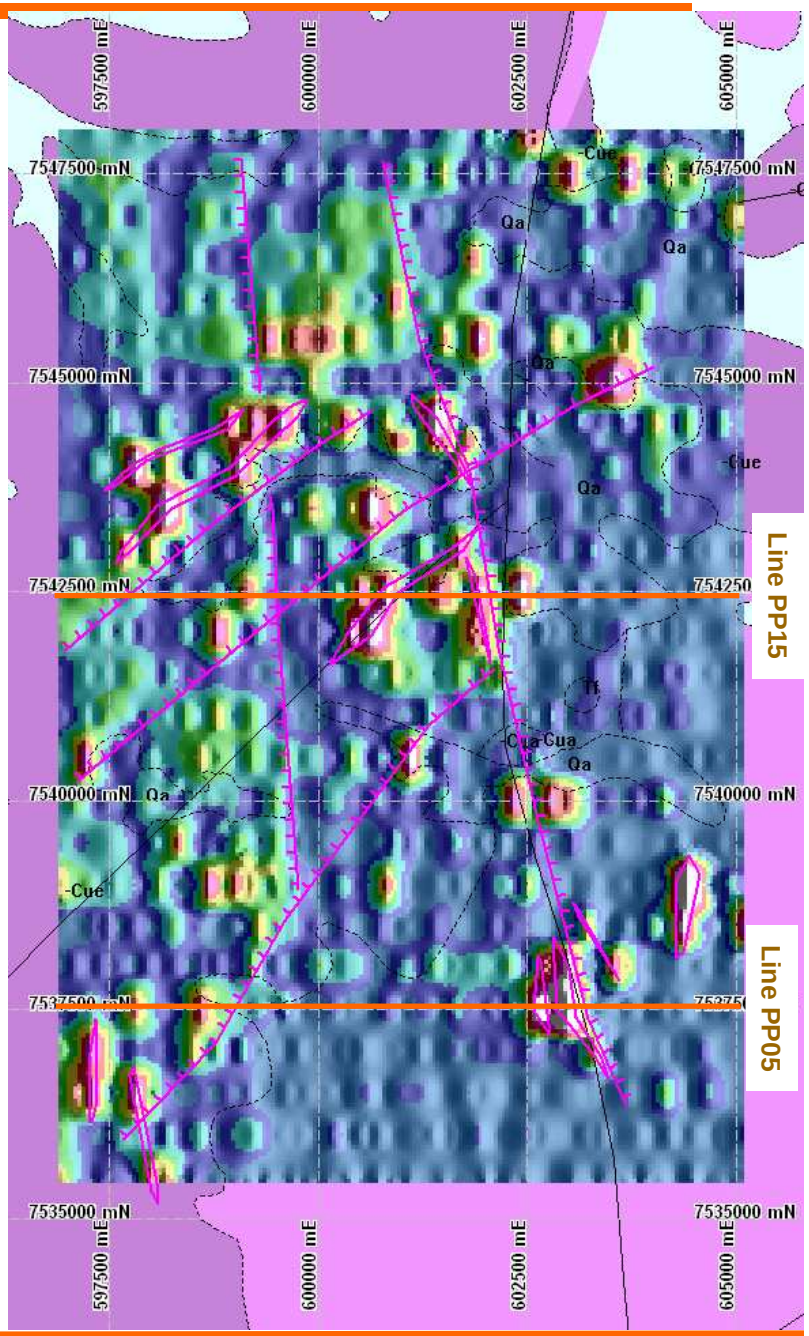
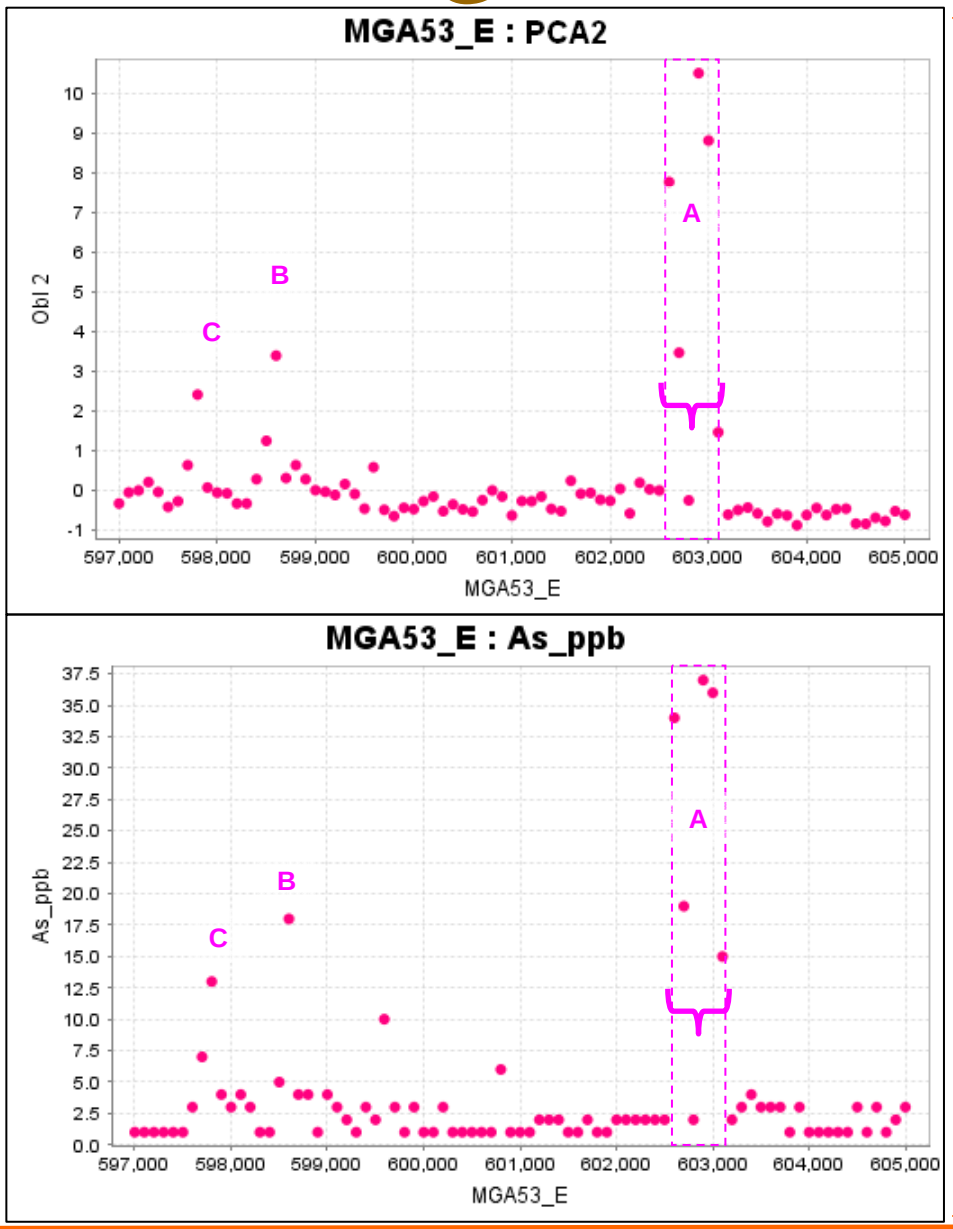
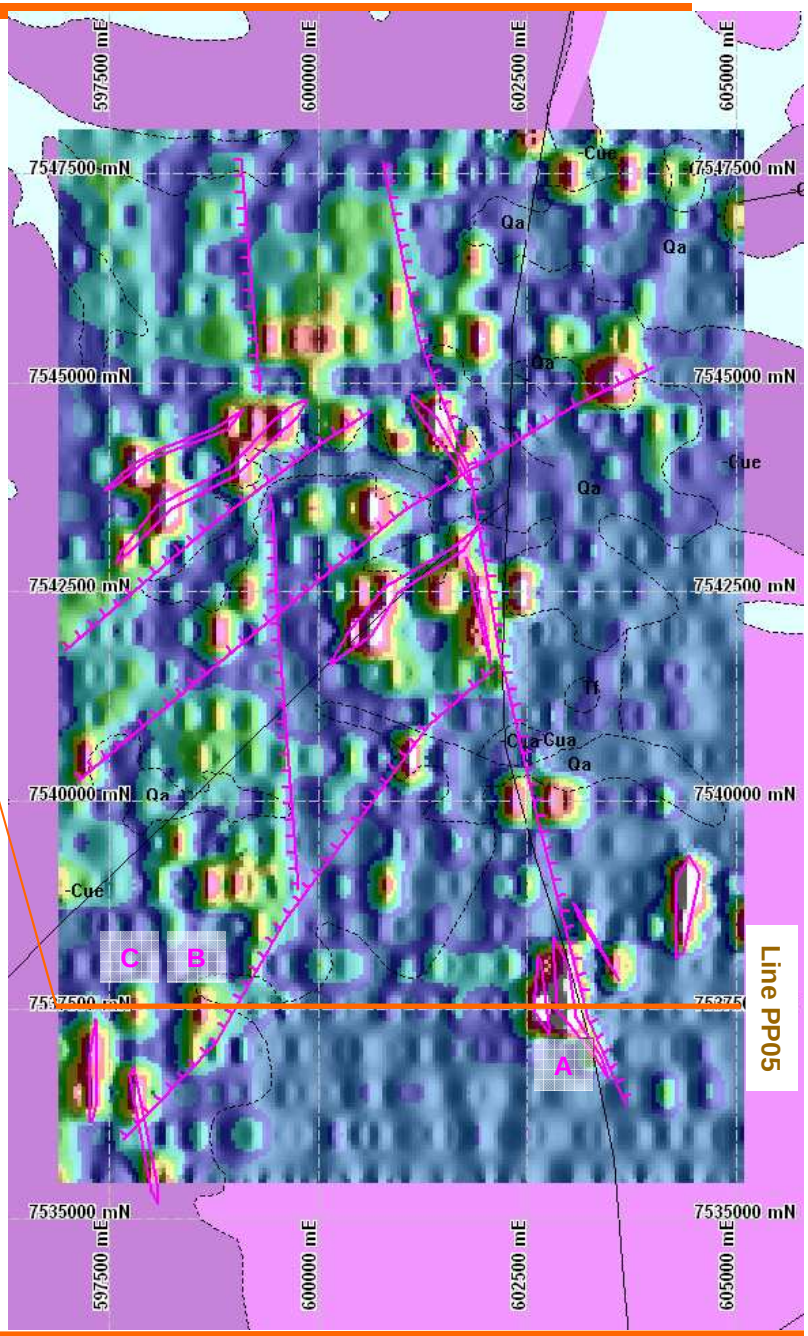


Figure showing interpretation of structural traces overlain on image of PCA2

Line PP05 @ 7537500mN





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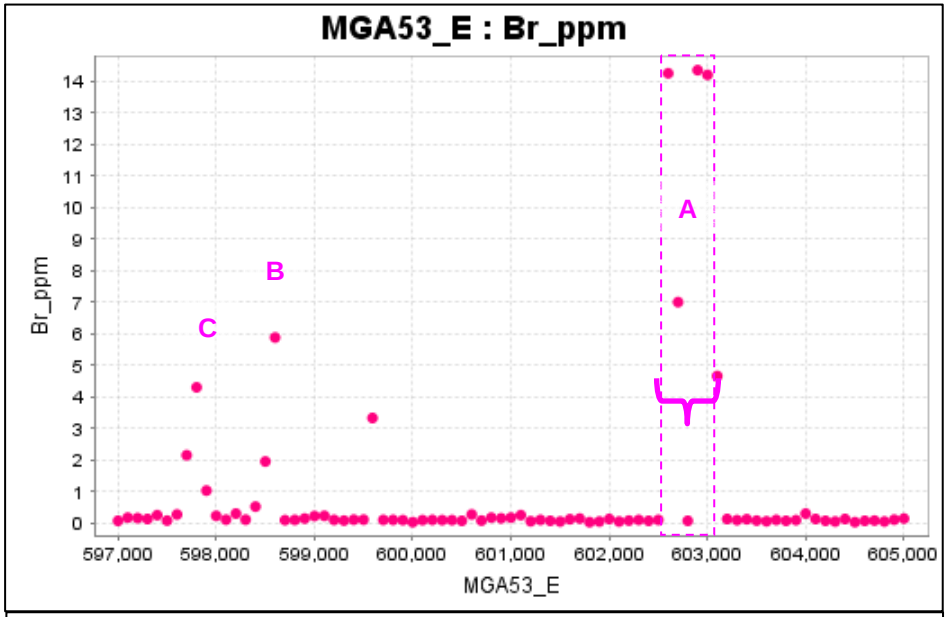

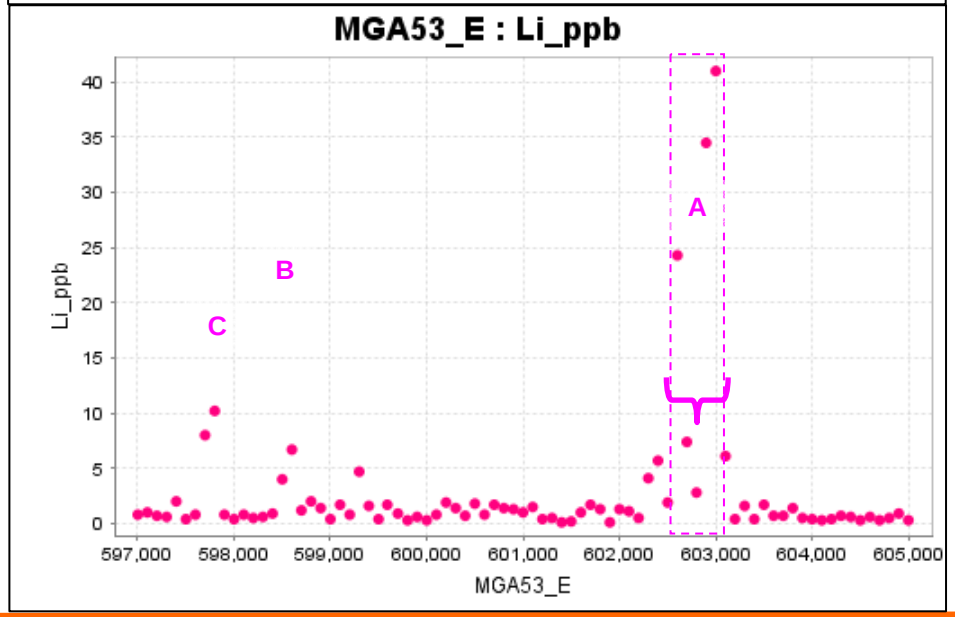

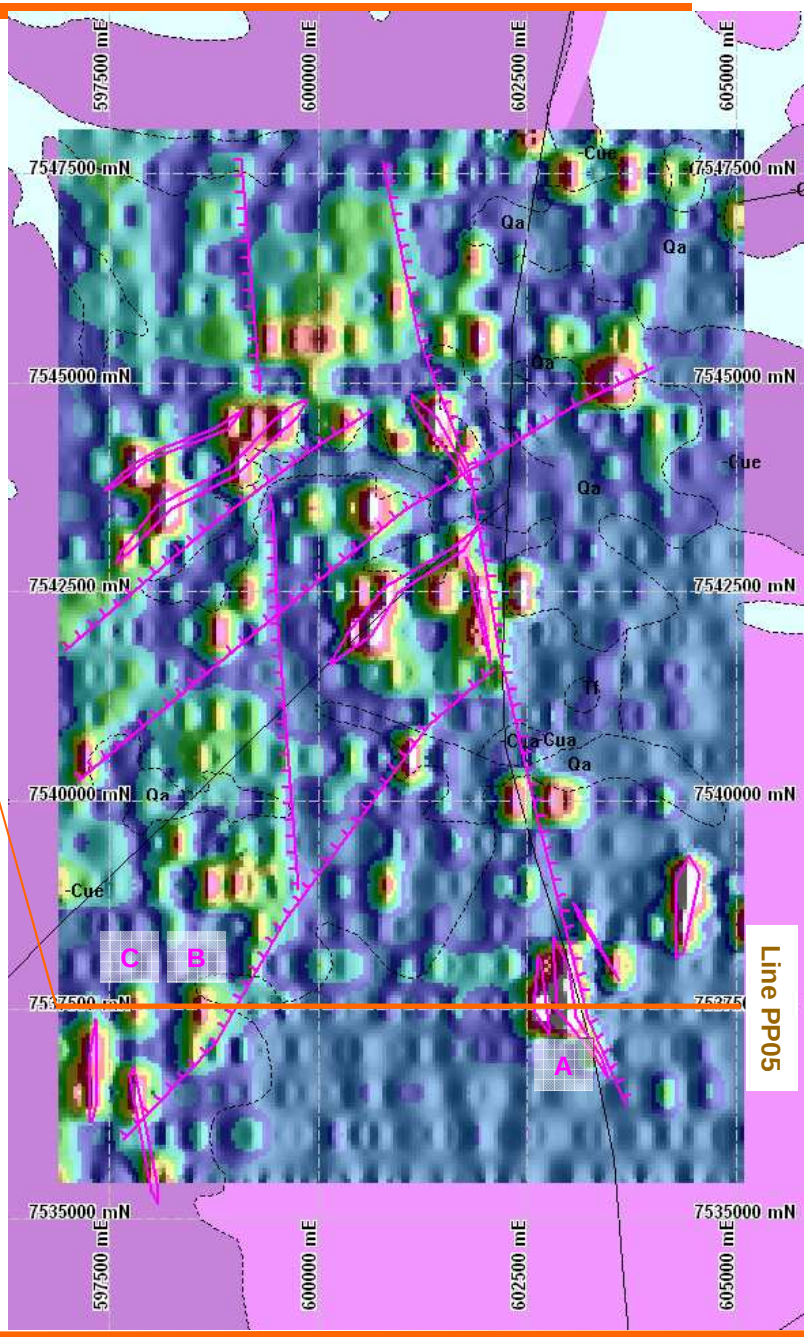

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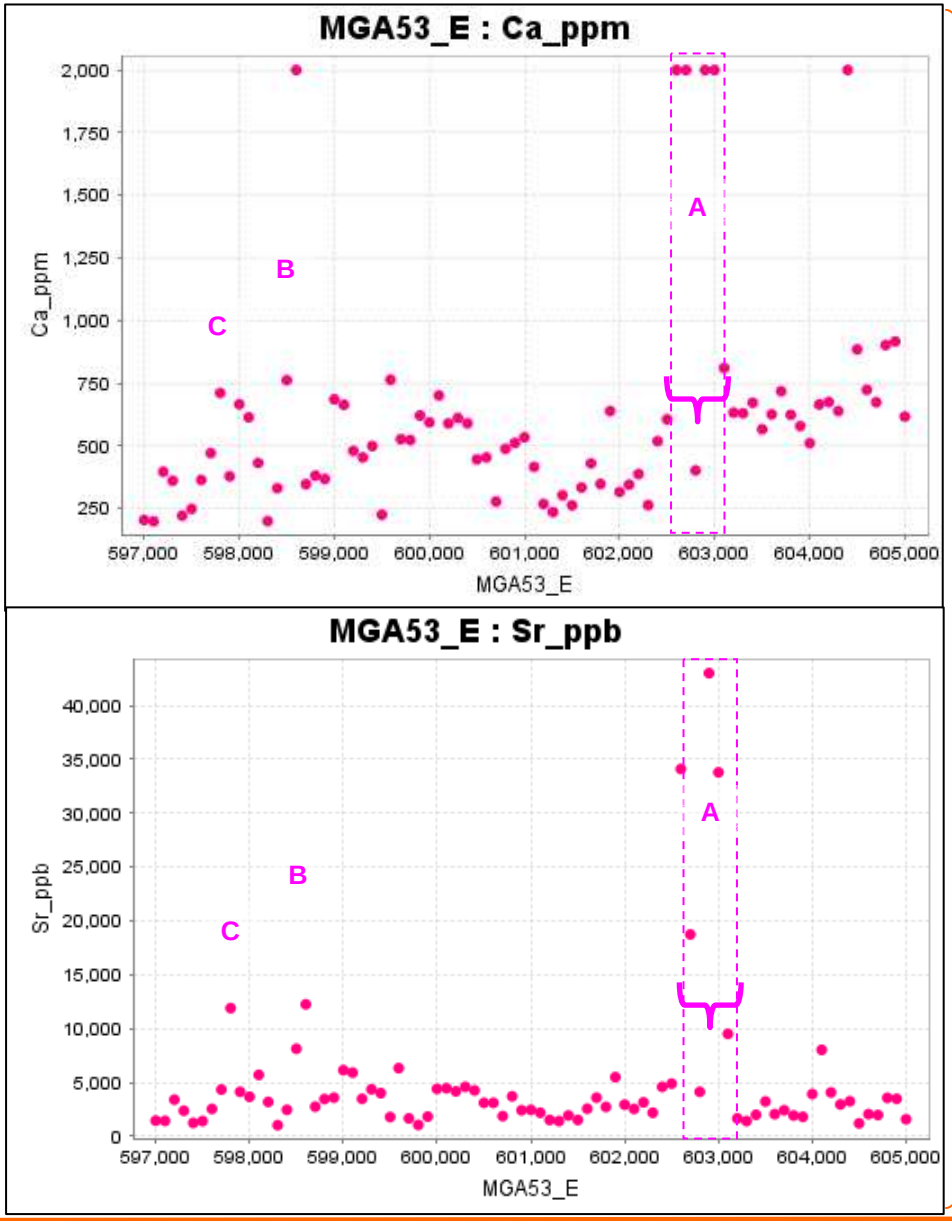

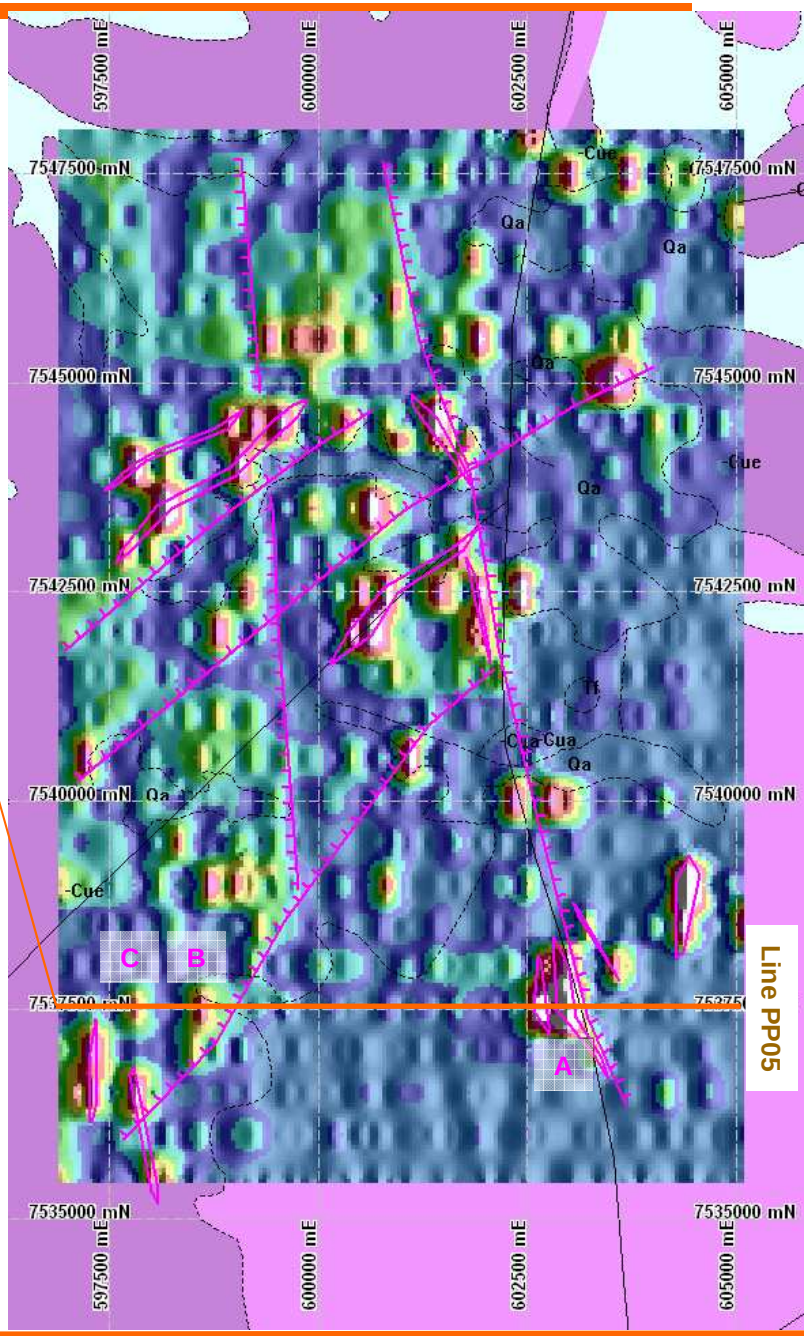

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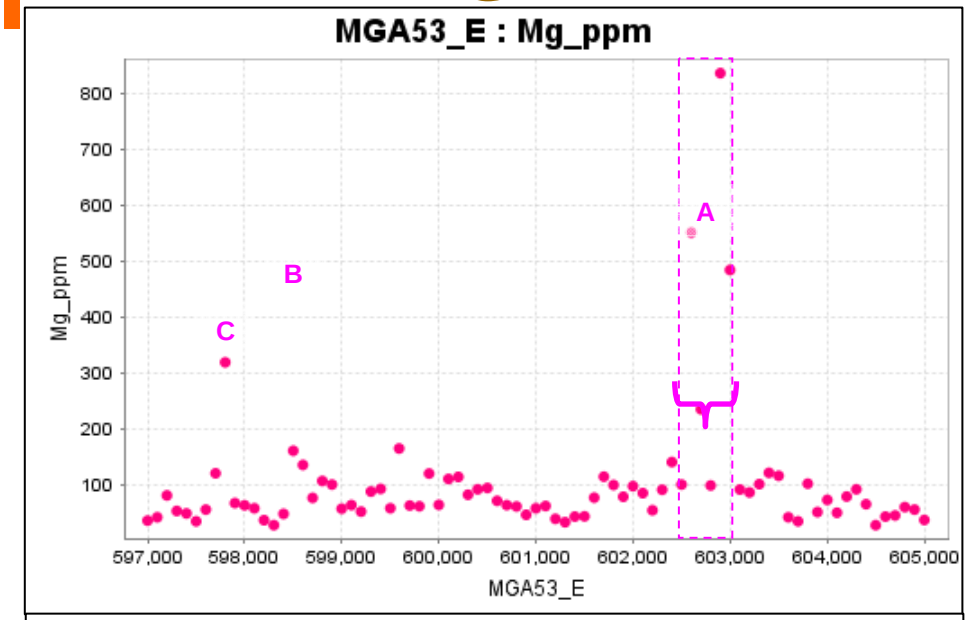

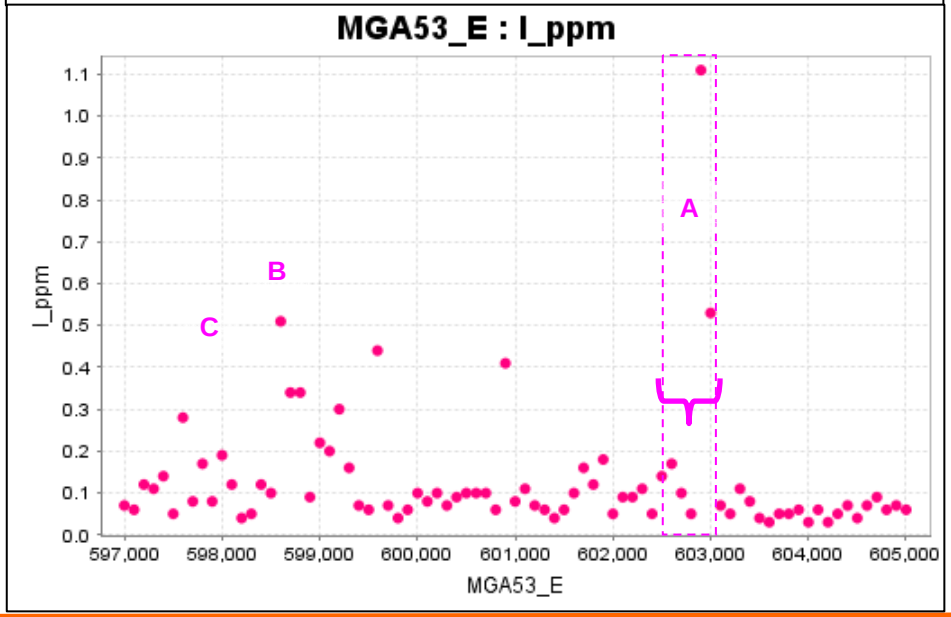

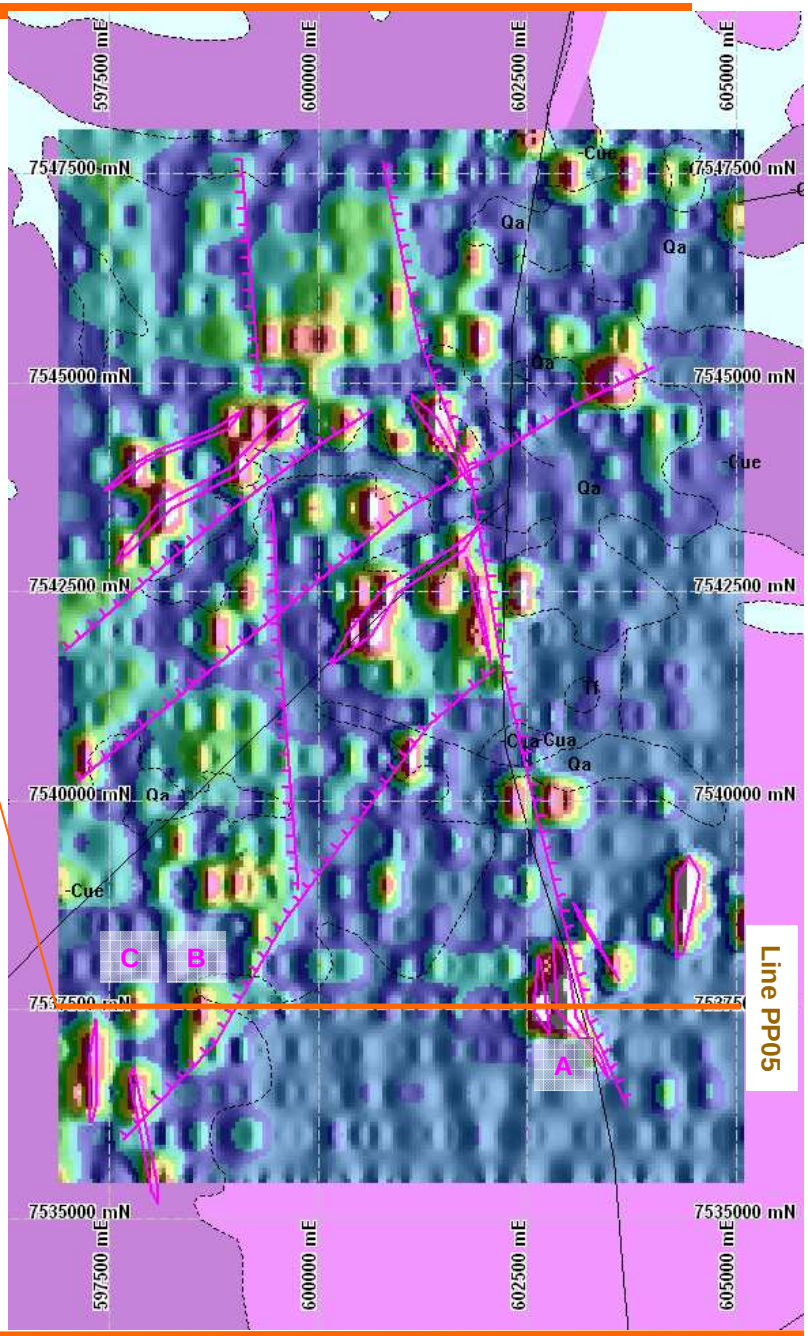

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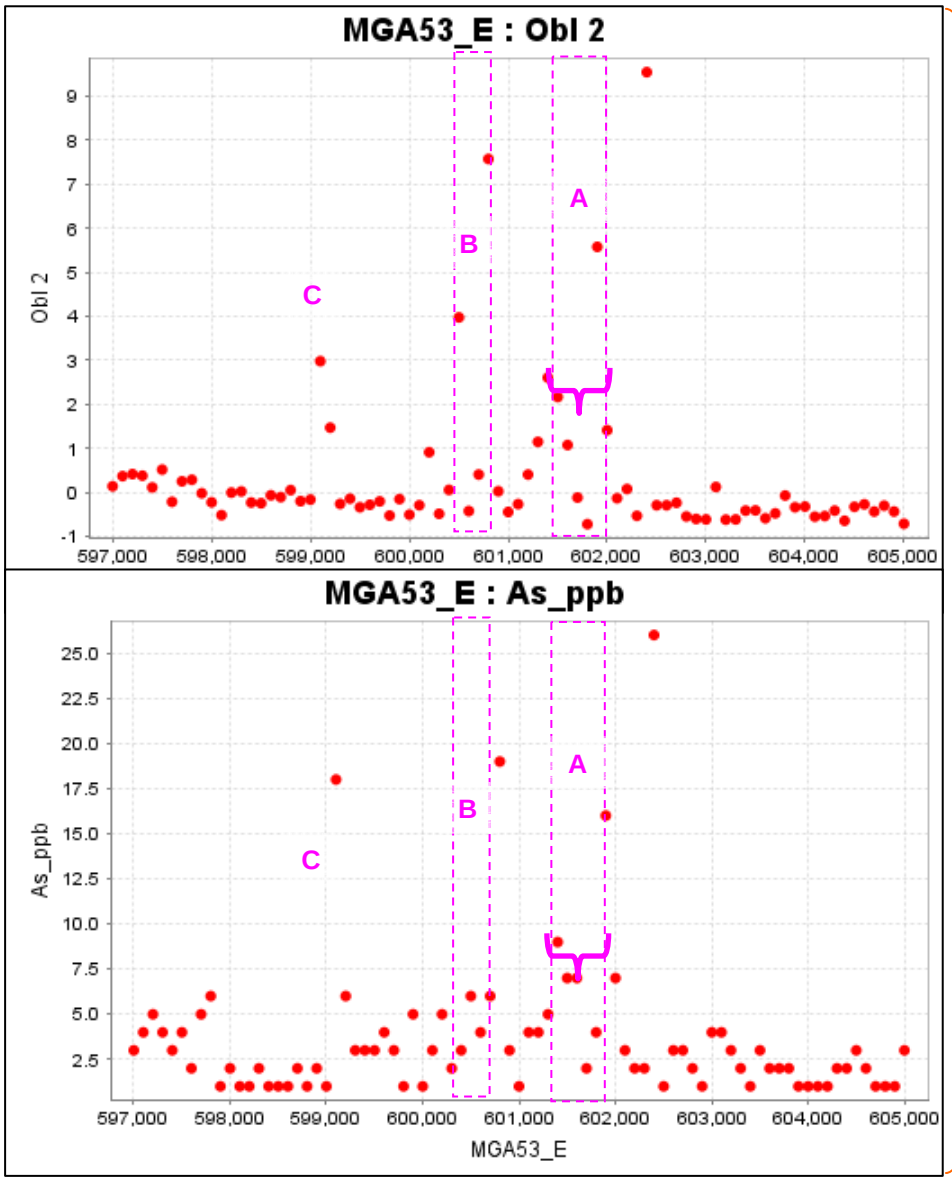
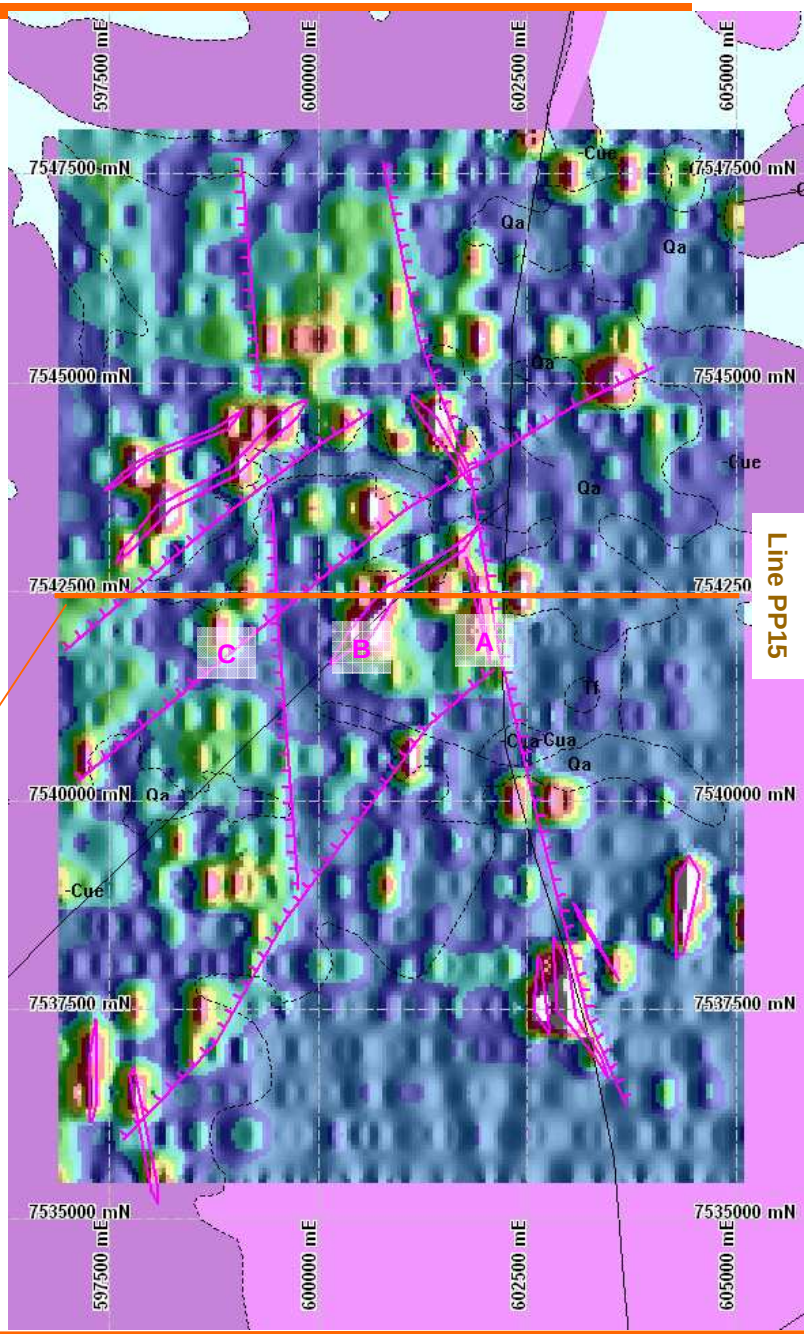
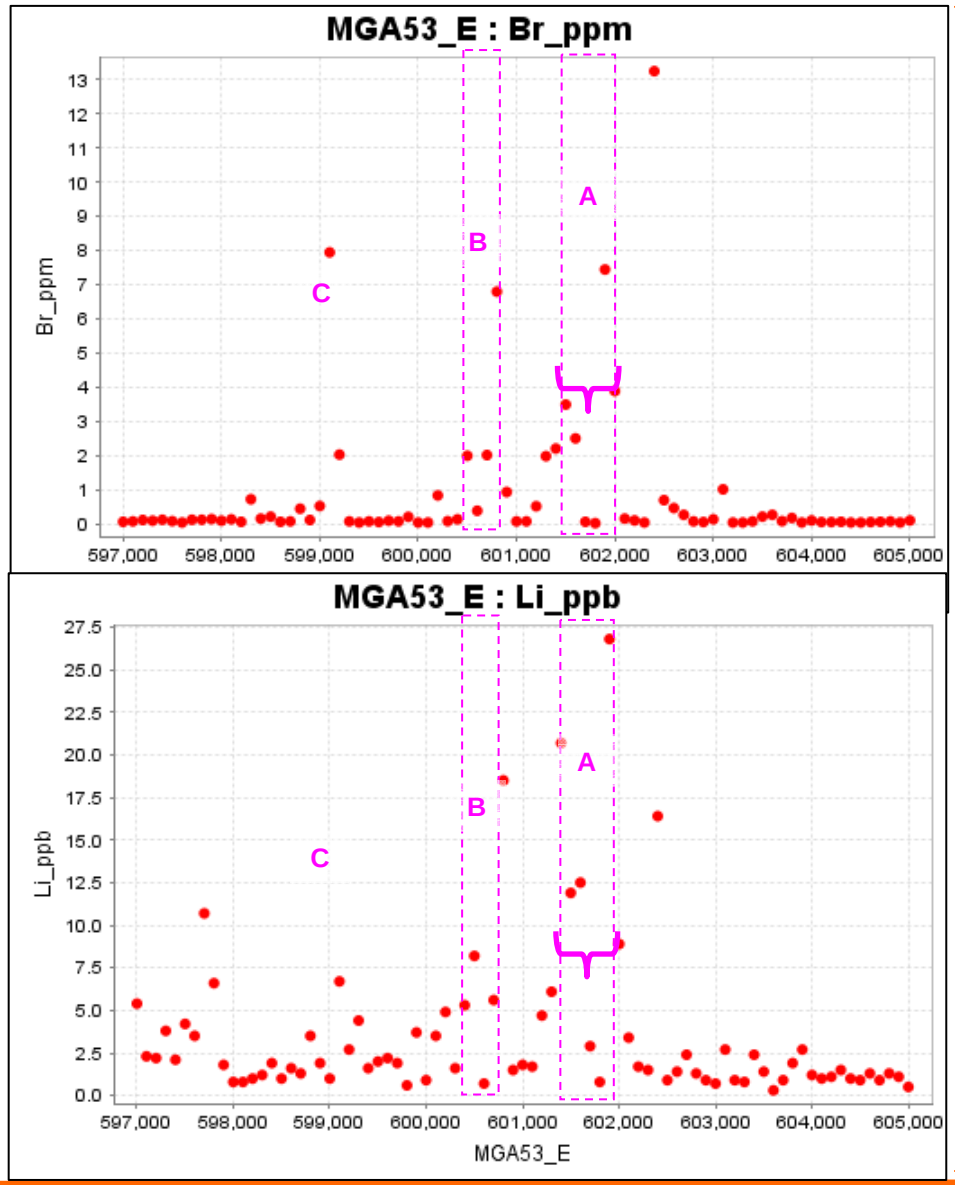
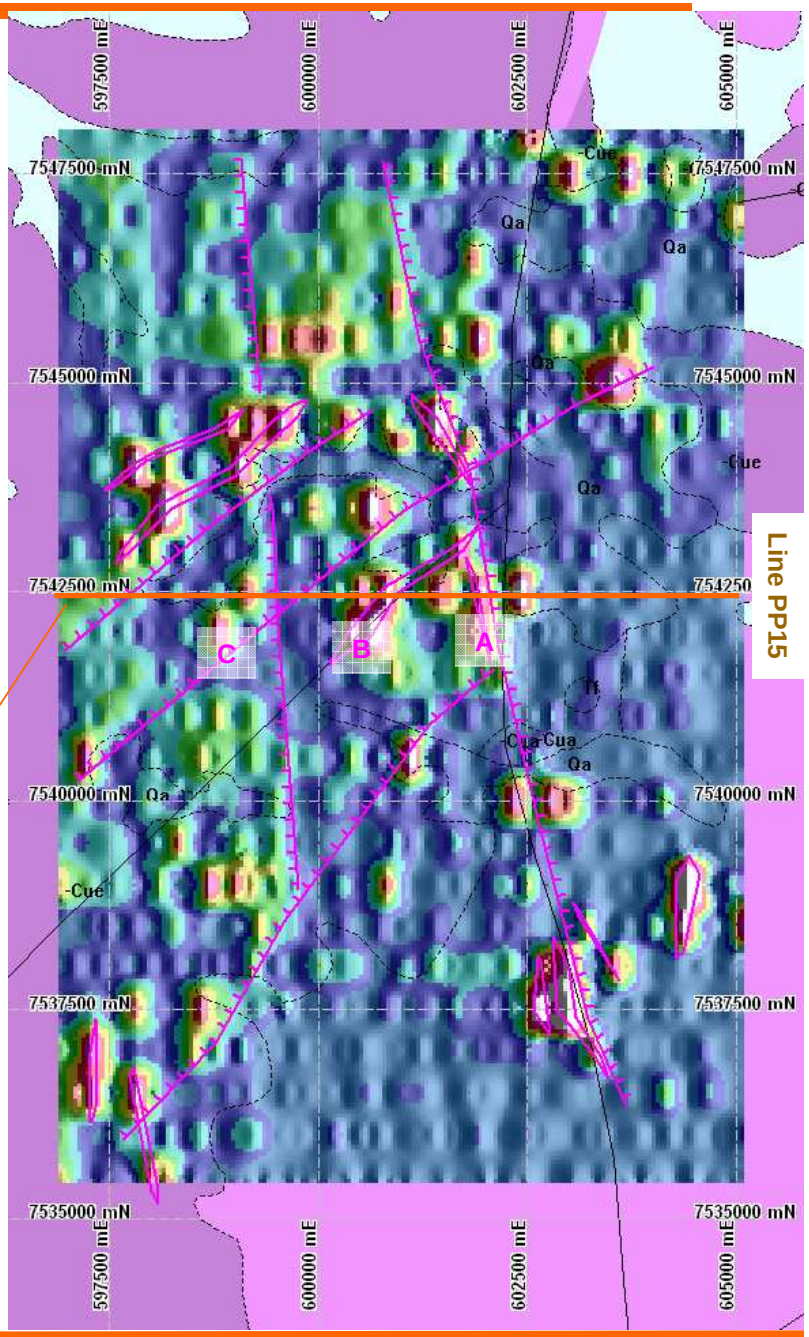




Line PP15 @ 7542500mN





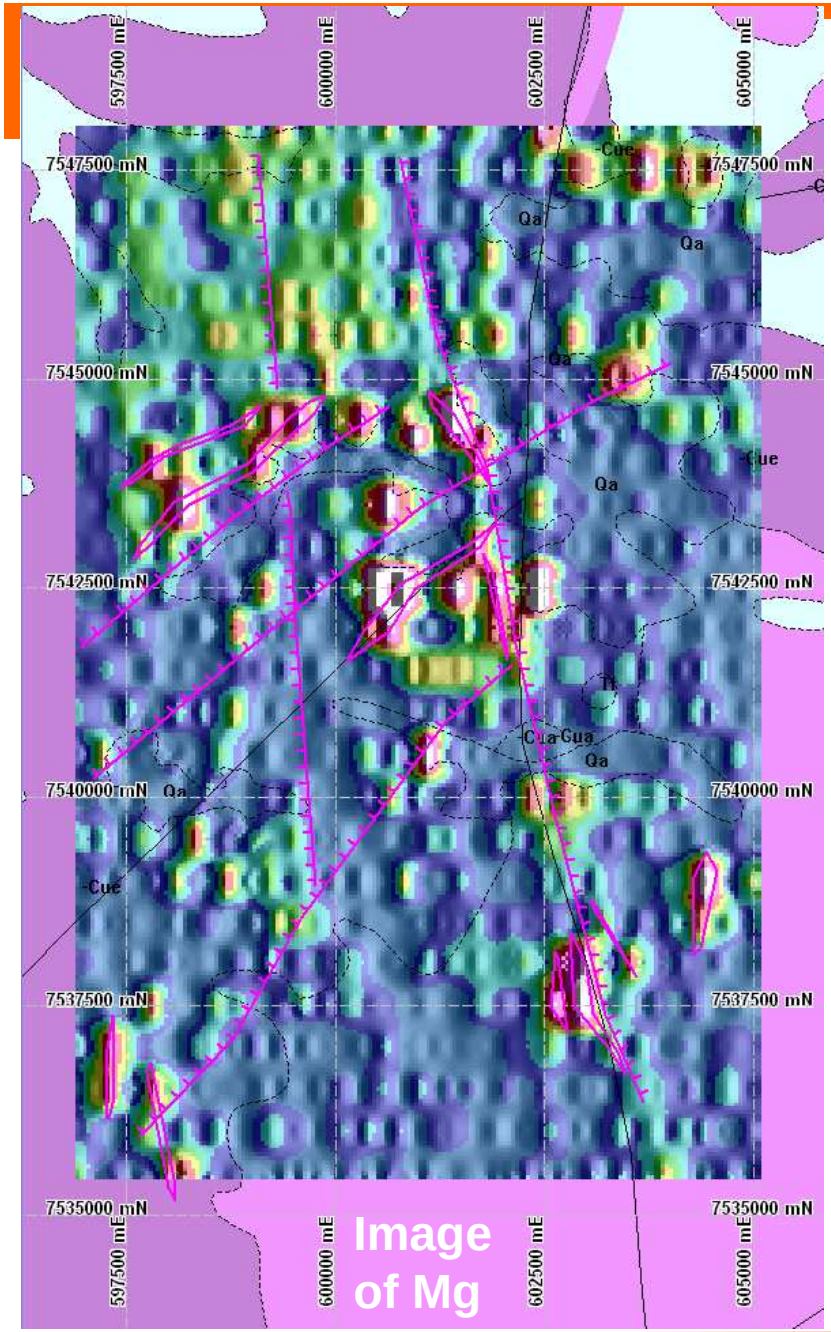
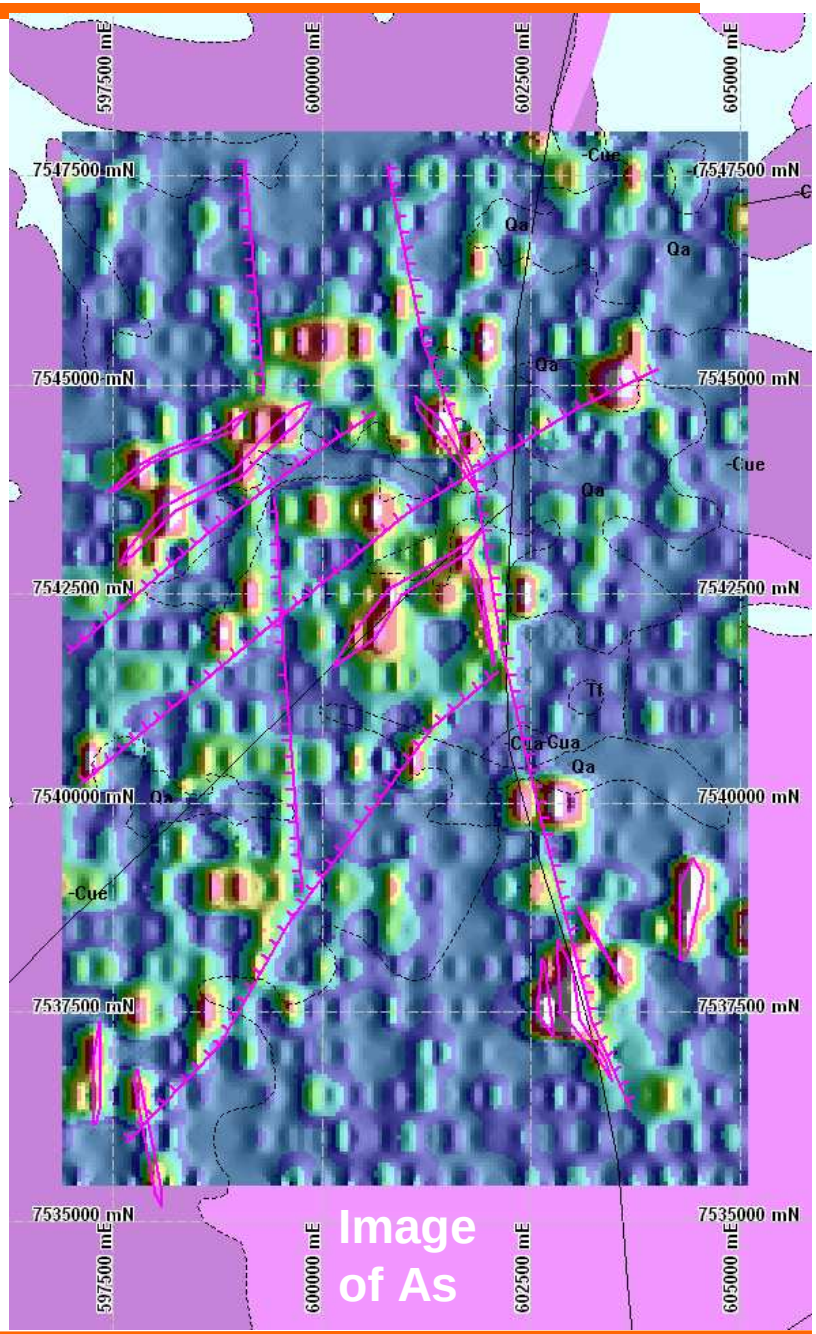


Image of Mg



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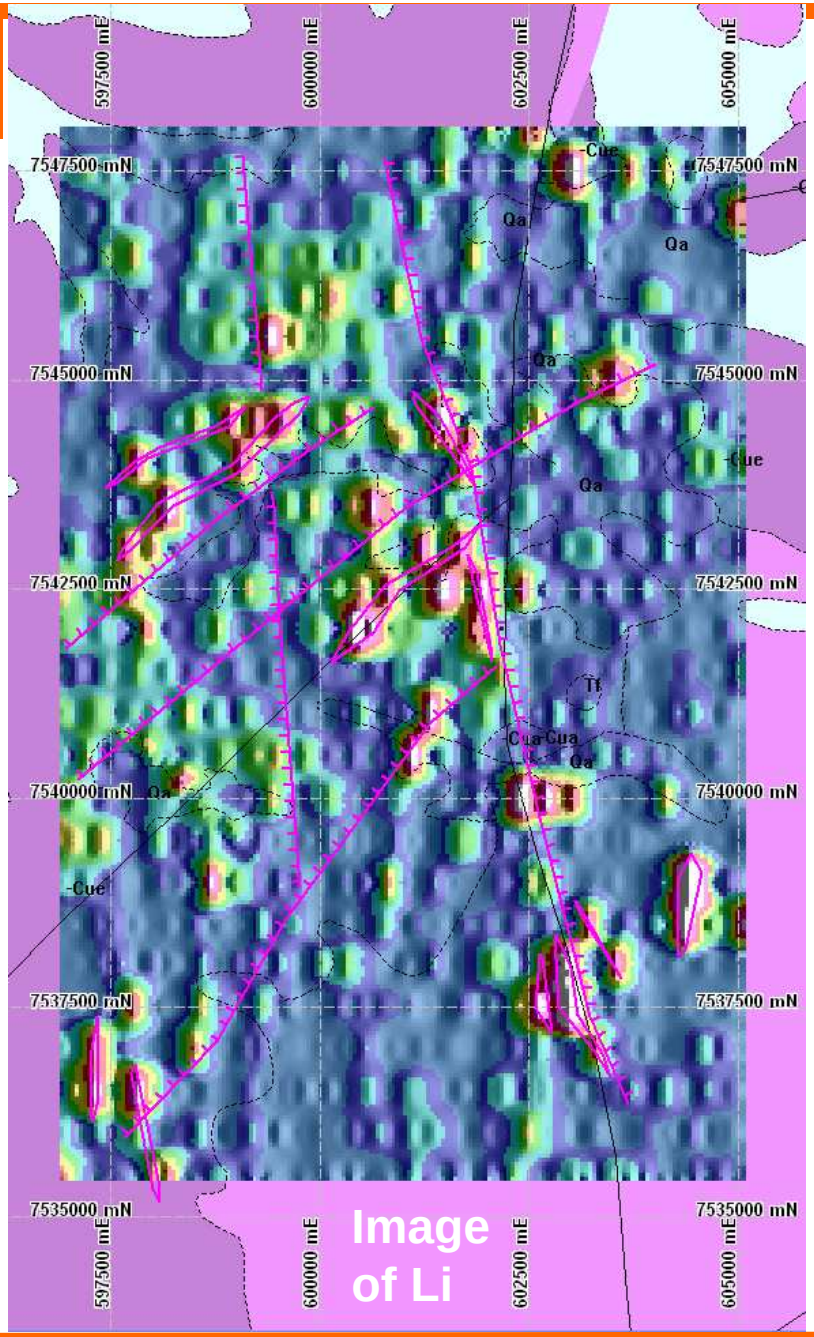
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605000 mE
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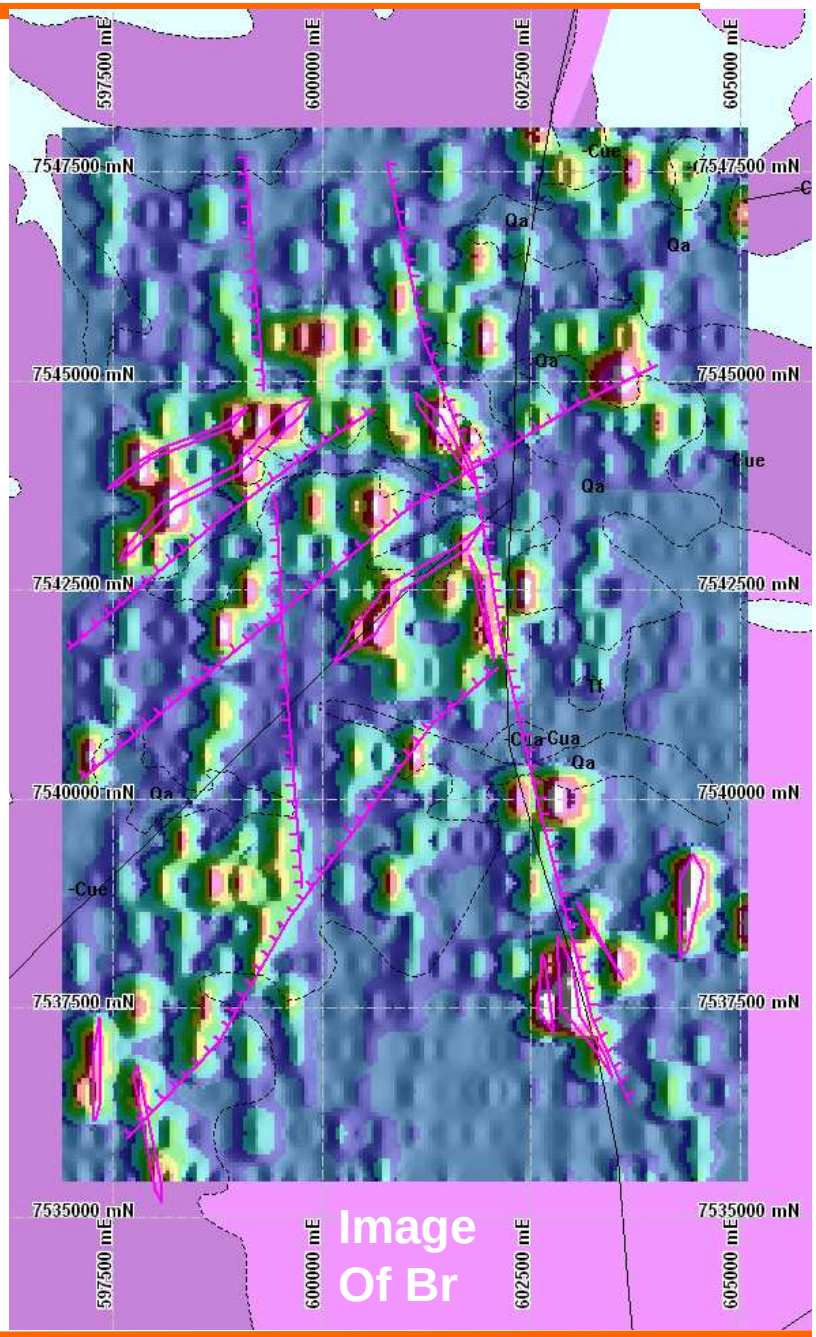
of Li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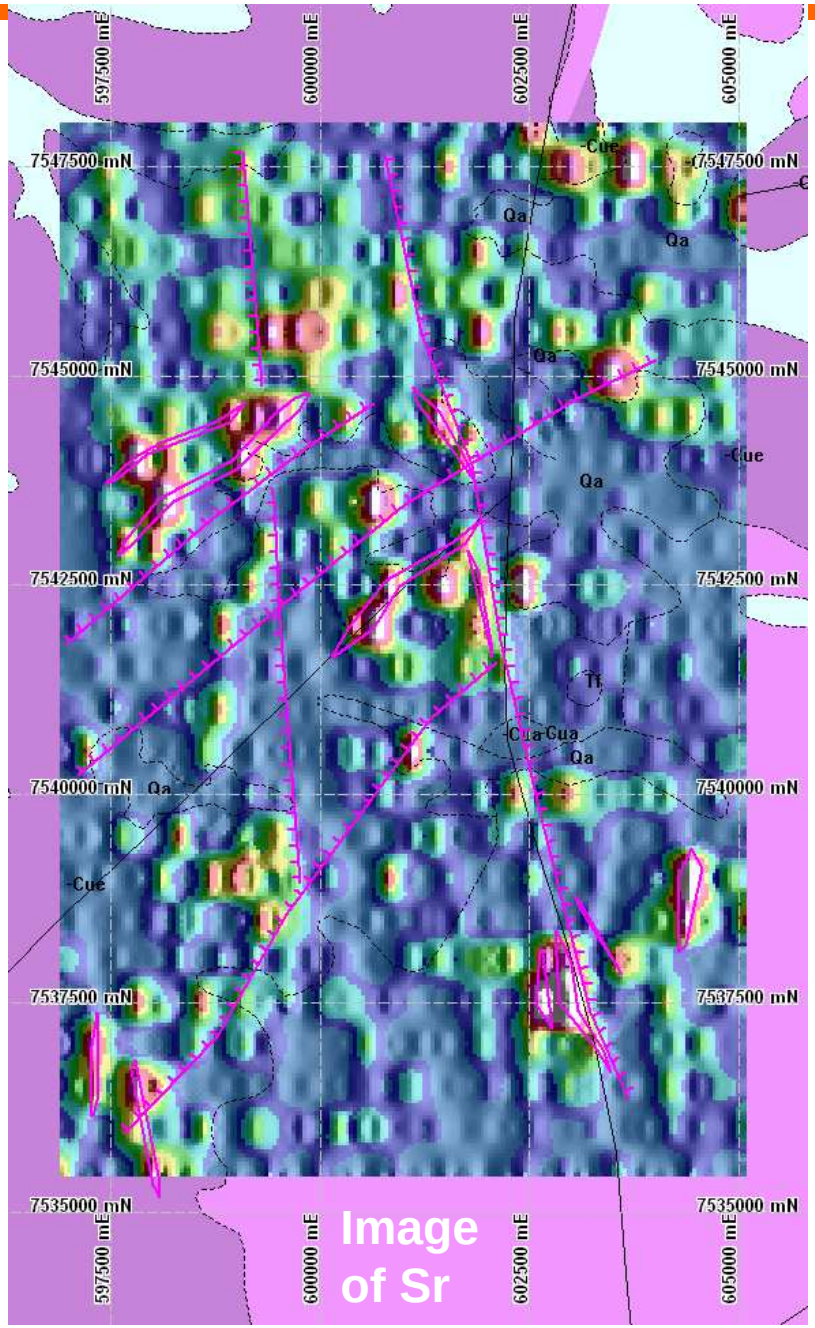
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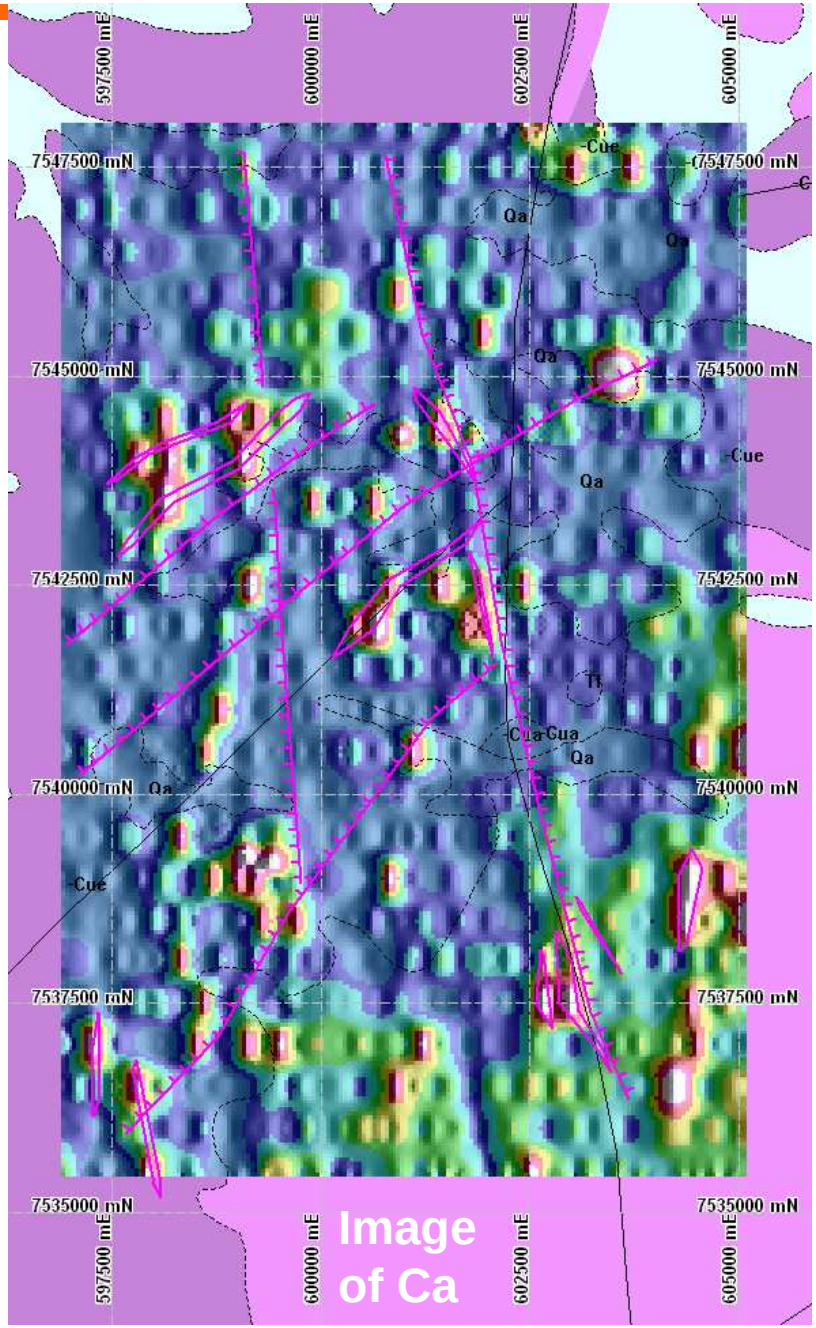
Image of Sr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Cue
Qa
Tl
Cua
Gua
Image of Ca

Zinc

Based on population Zn breaks and the assumption that **PCA6** represents secondary Mn enrichment within the surficial environment that scavenges Zn, Cd & Co and **PCA7** represents Tl-Hg potential pathfinders for SHMS

Putta Putta: Zinc

- Two population breaks
  1. ~260 ppb Zn
  2. ~400 ppb Zn
- Elevated Zn within the central SW-NE corridor of Putta Putta

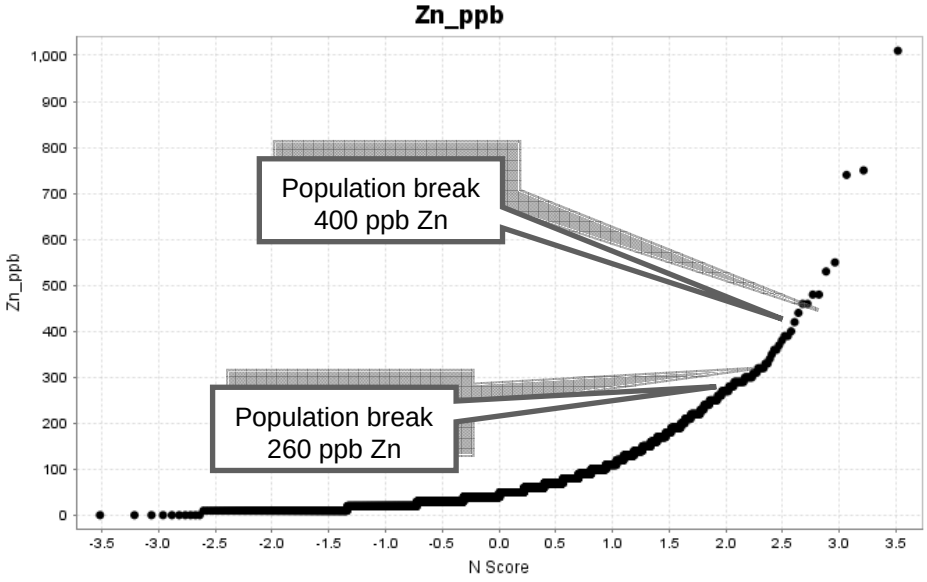
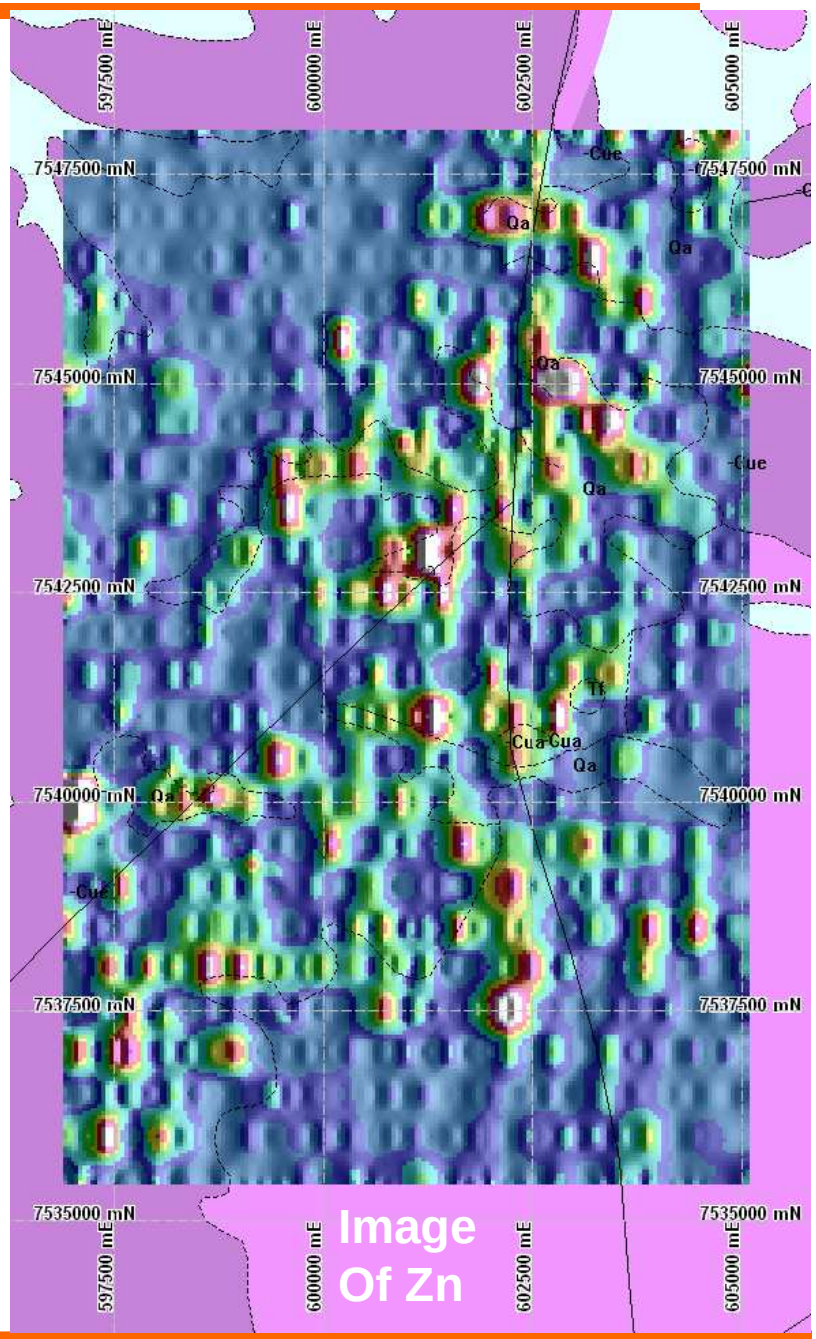


Figure image of Zn



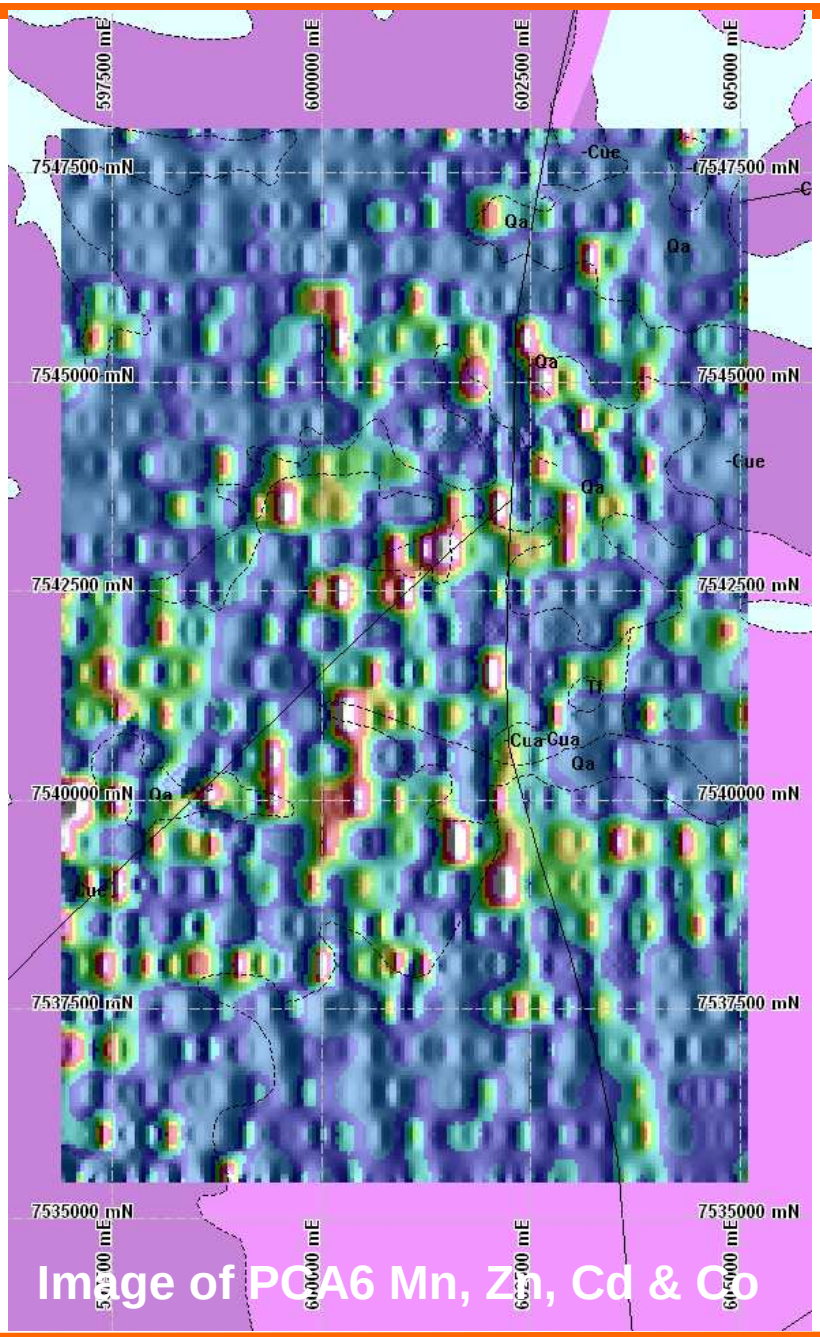


Image of PCA6 Mn, Zn, Cd & Co

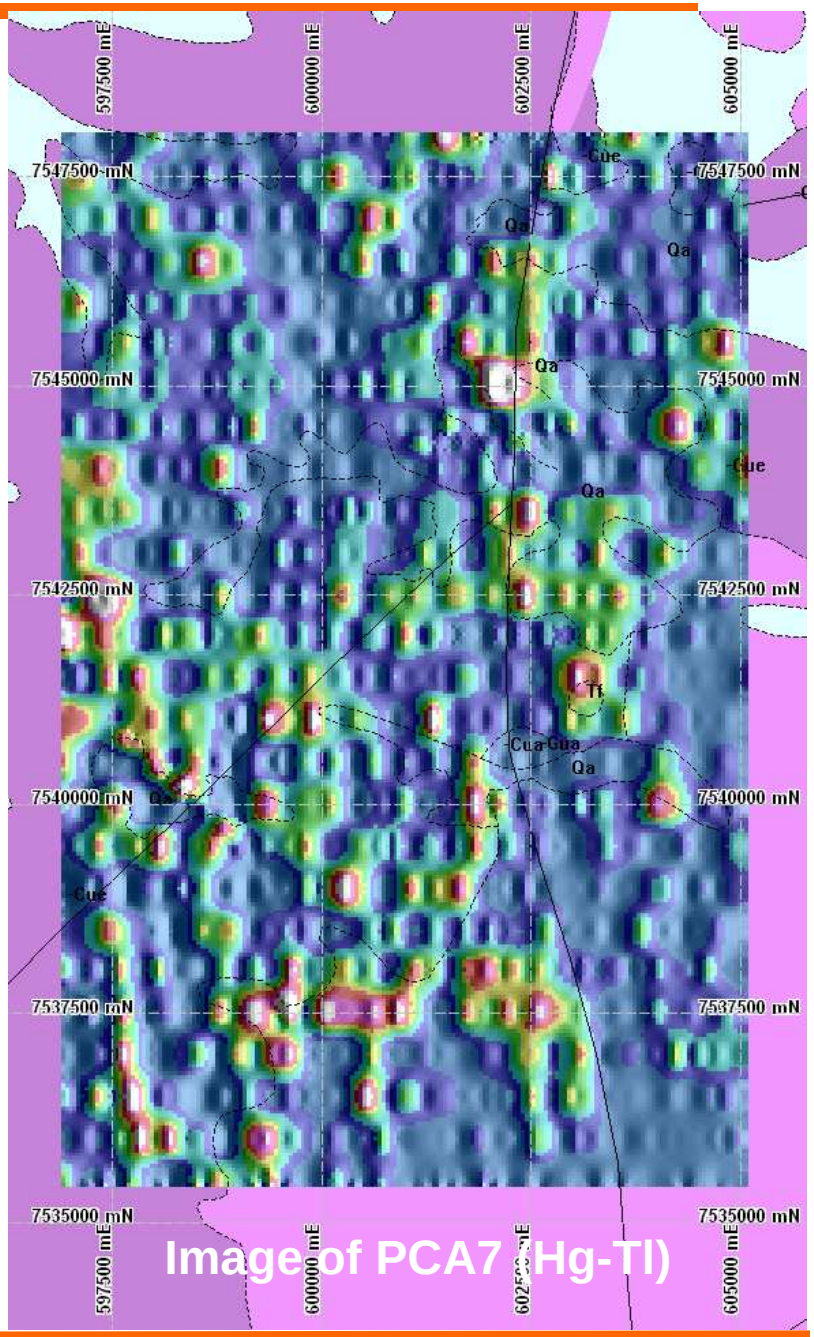


Image of PCA7 (Hg-Tl)

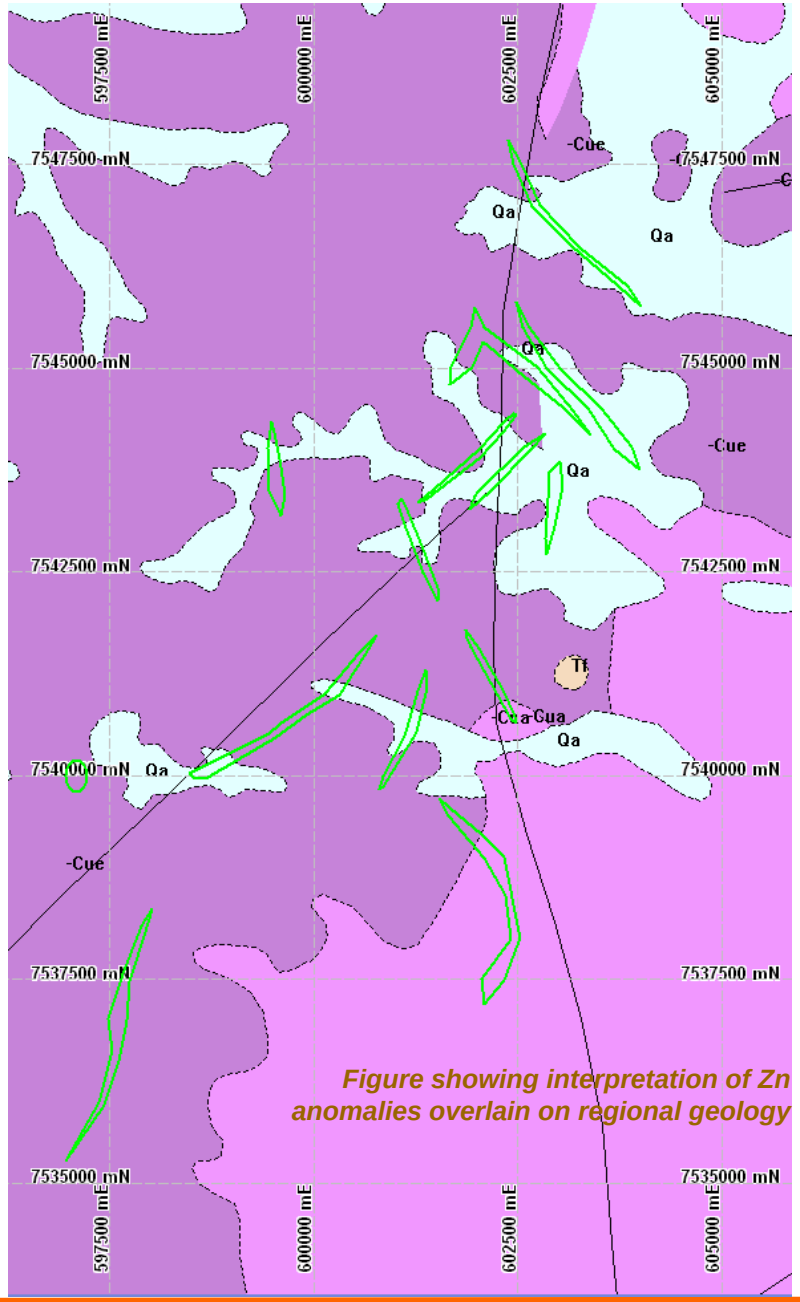


Figure showing interpretation of Zn anomalies overlain on regional geology

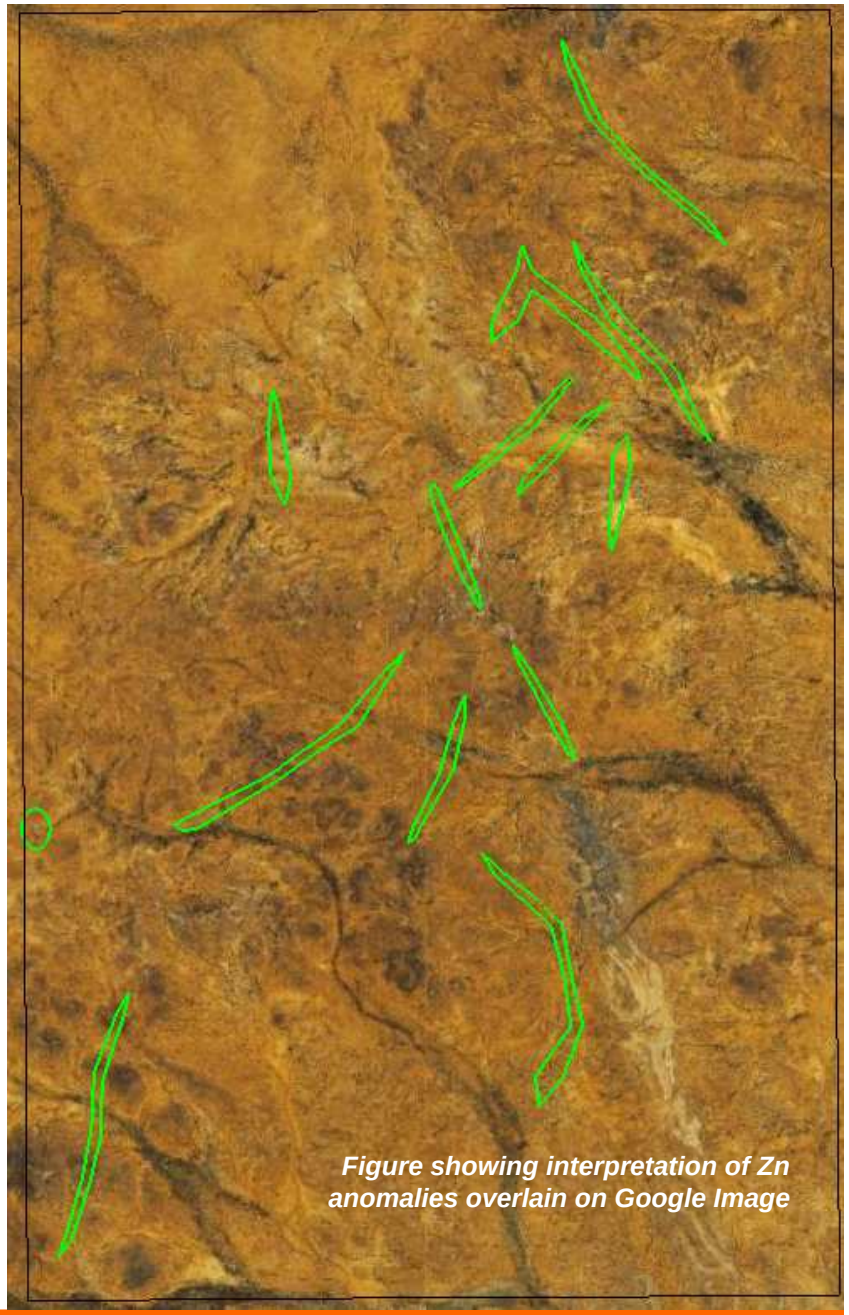


Figure showing interpretation of Zn anomalies overlain on Google Image

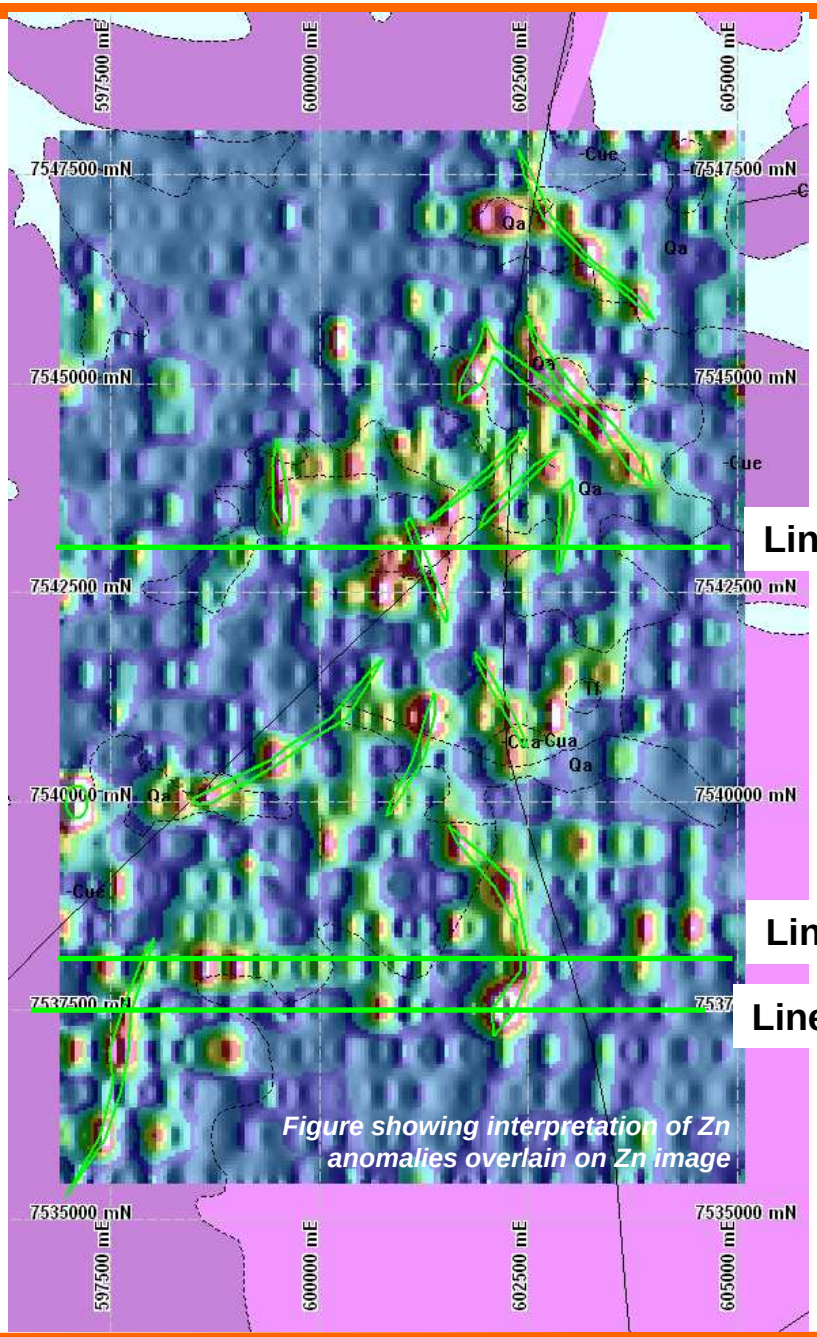


Figure showing interpretation of Zn anomalies overlain on Zn image

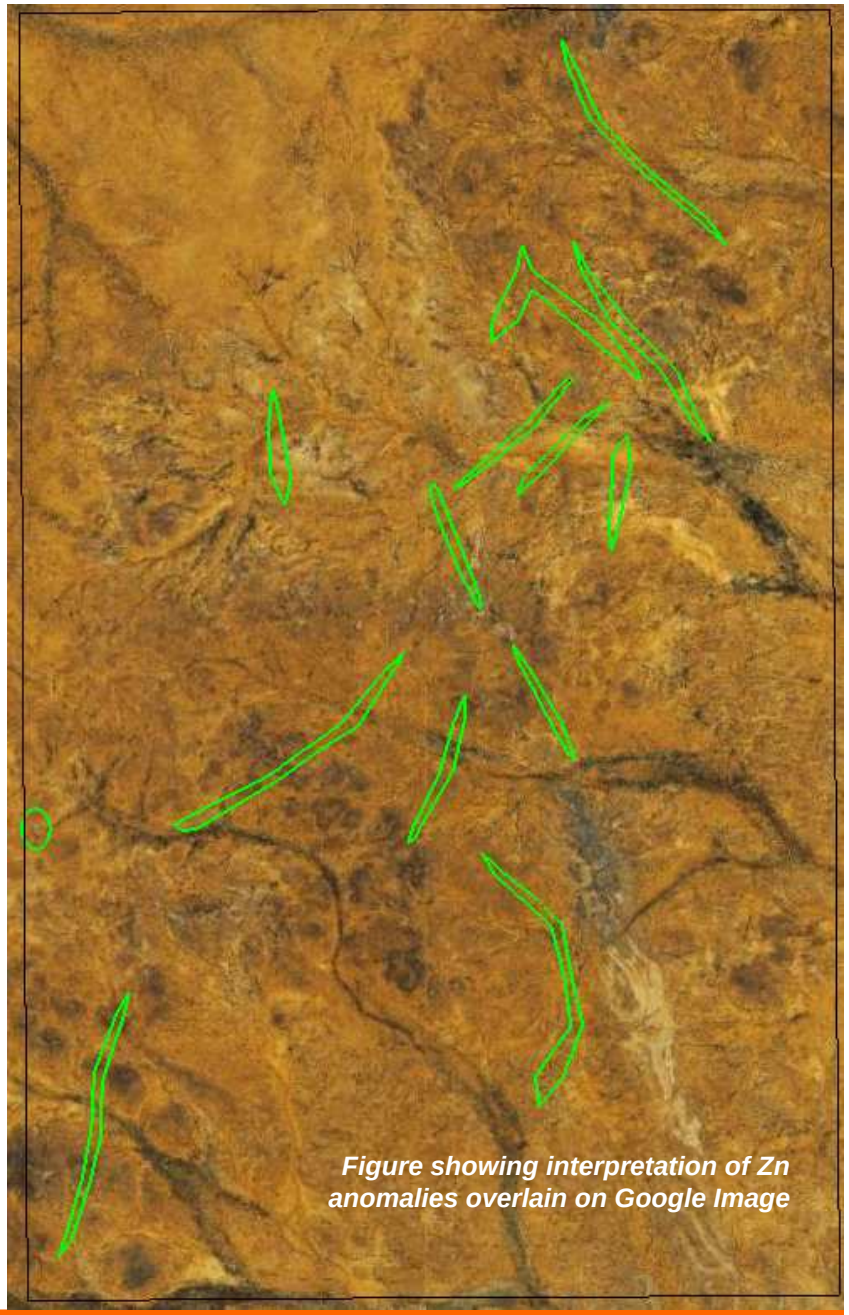
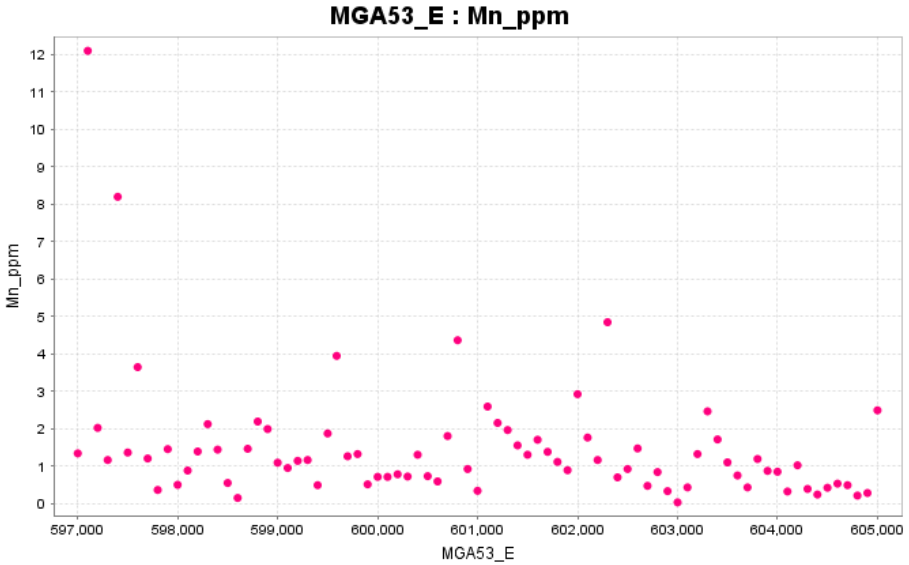
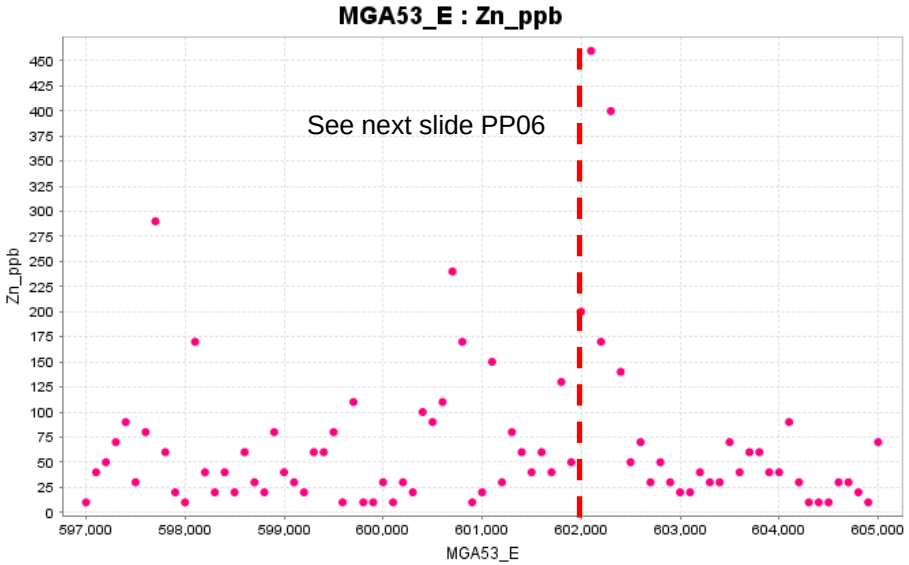
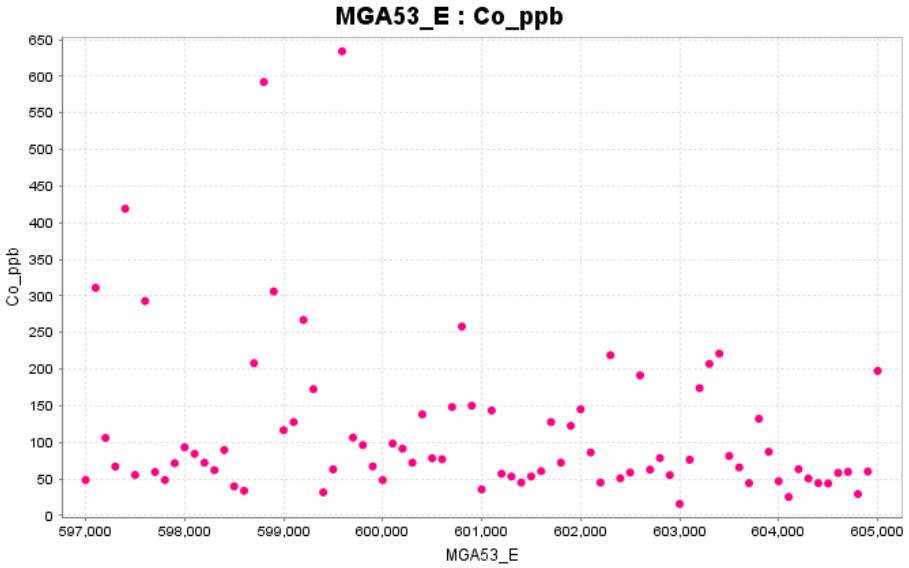


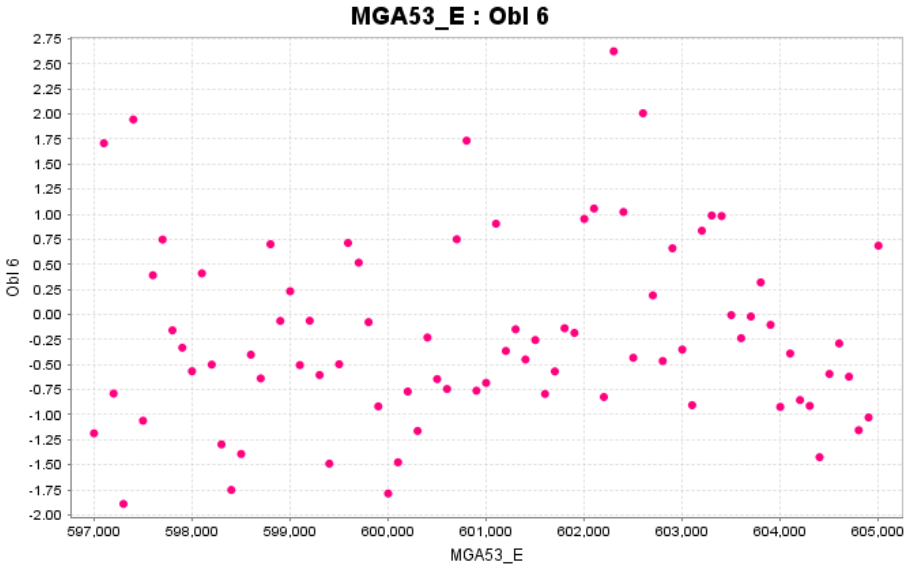
Figure showing interpretation of Zn anomalies overlain on Google Image

Line PP05



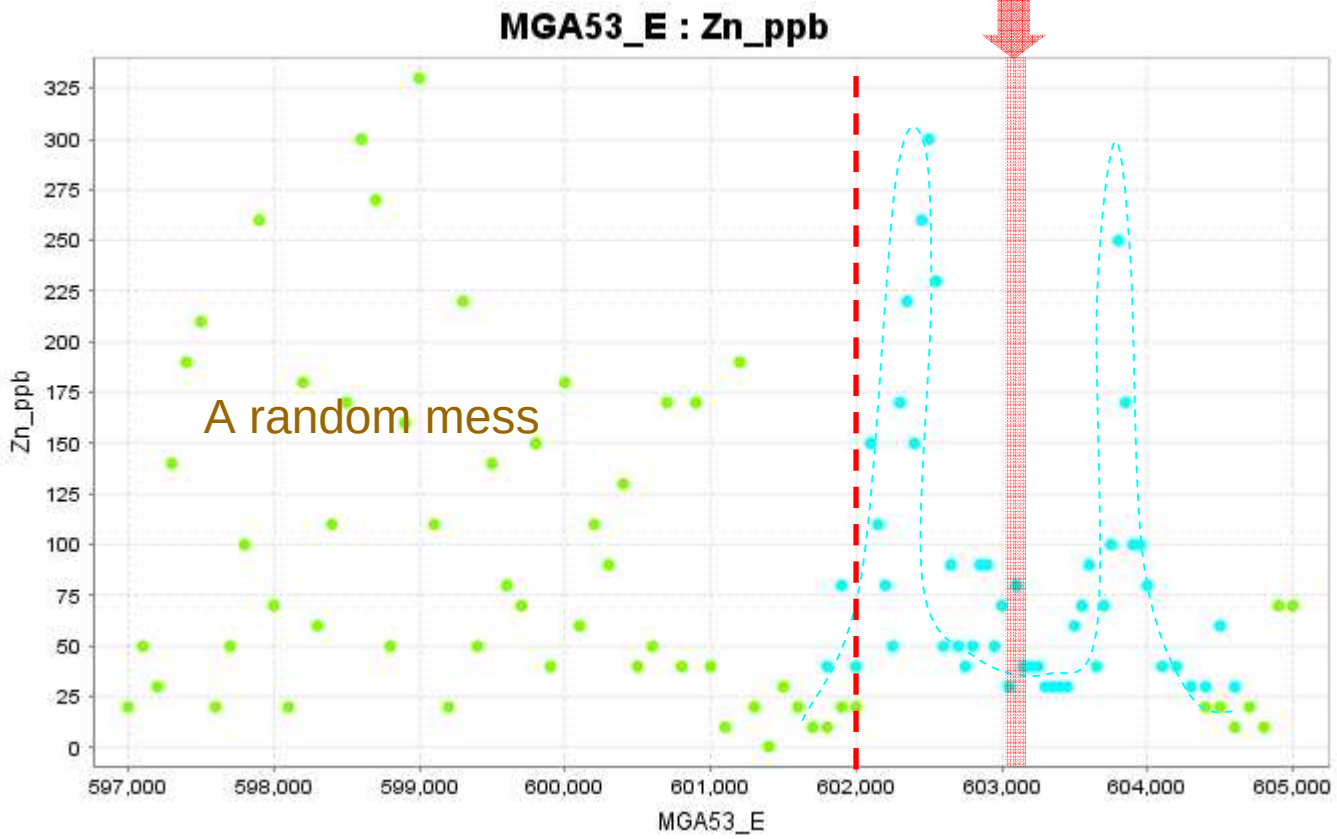




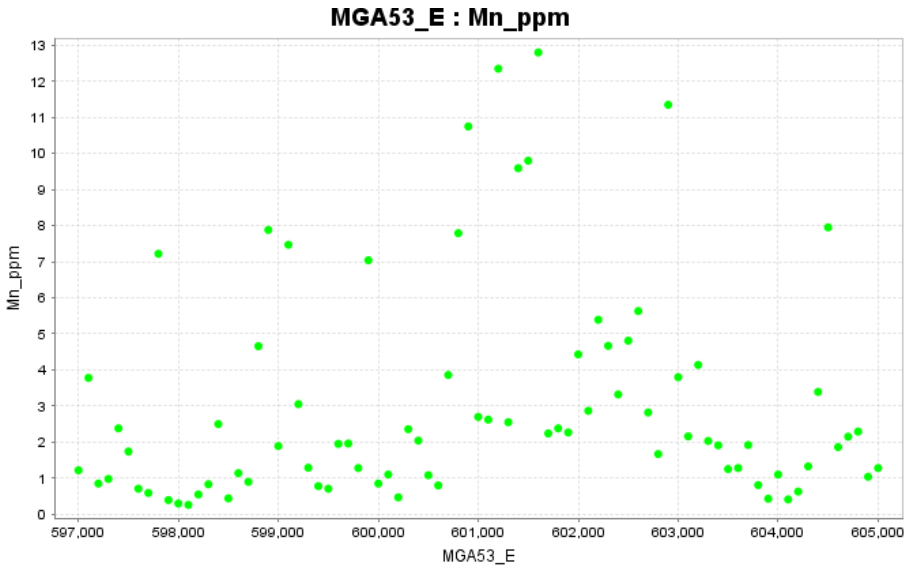


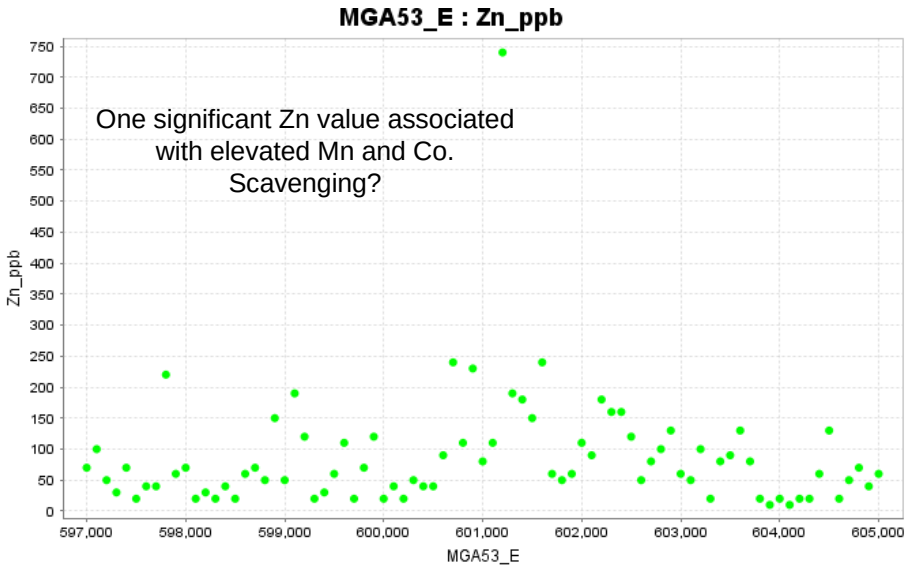
Line PP06

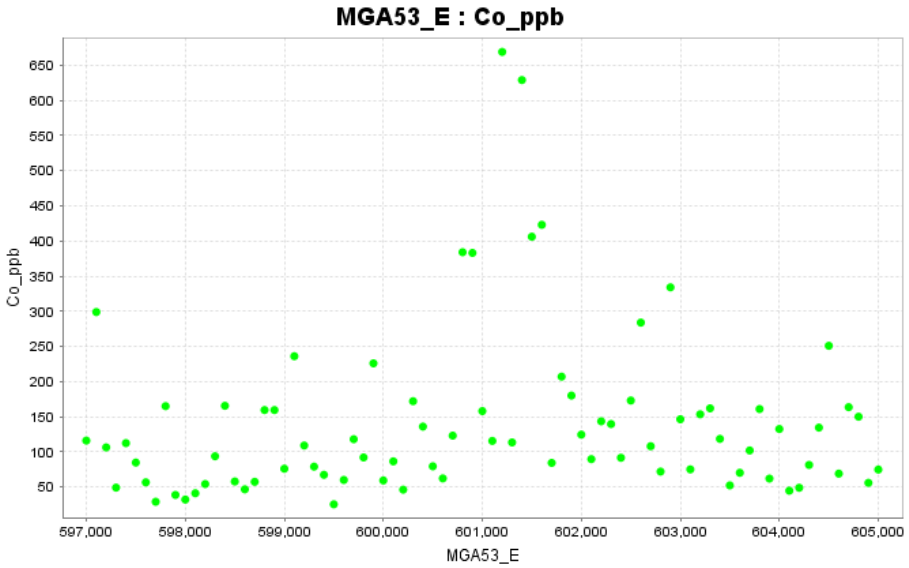
Anomalous Au samples

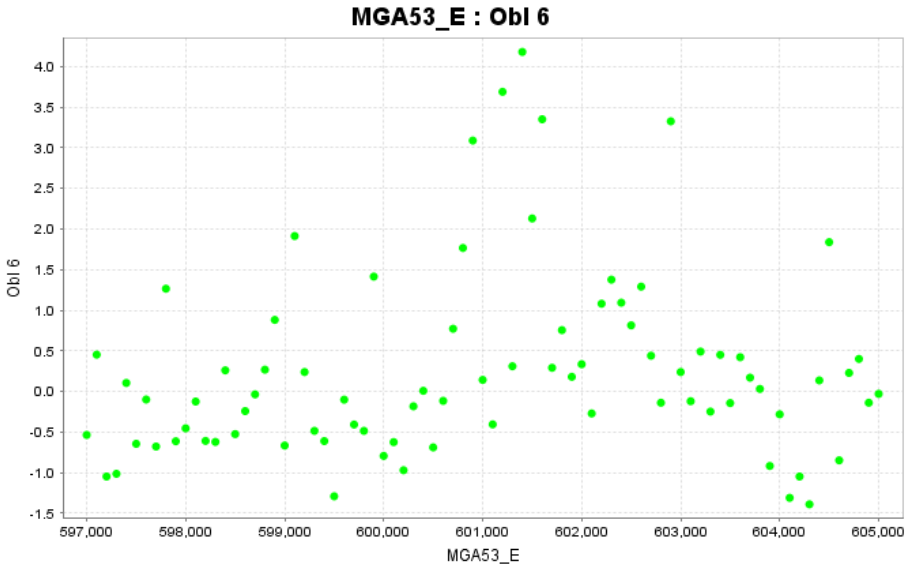


Line PP16







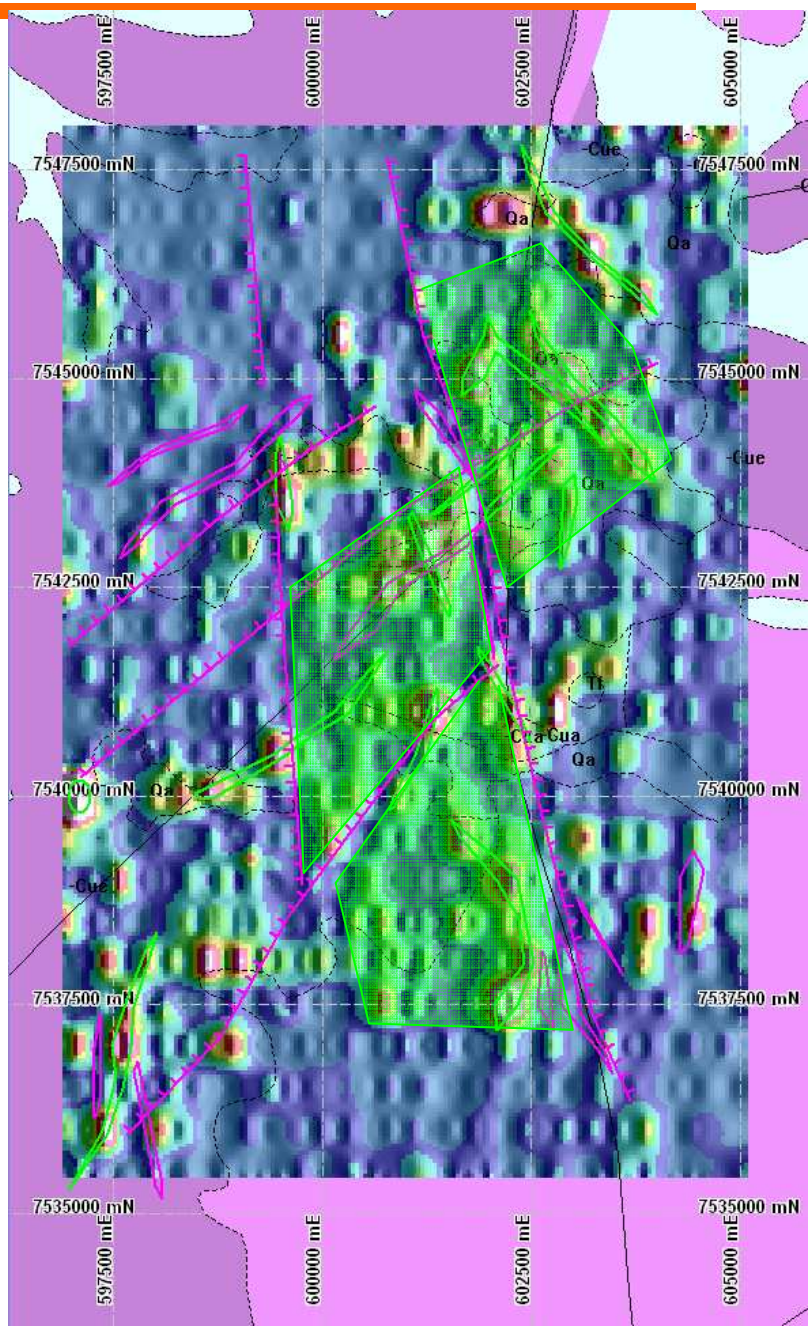


Zinc “compartments”

- With Zinc anomalies clustering and their control by interpreted structural traces, Zn-rich “compartments” are apparent.

- 14 anomalies generated with require integrating with other MCR dataset to ascertain their validity, priority and follow-up strategy.

See ***MCR_GB_GCH_ZN_ANOM.TAB***

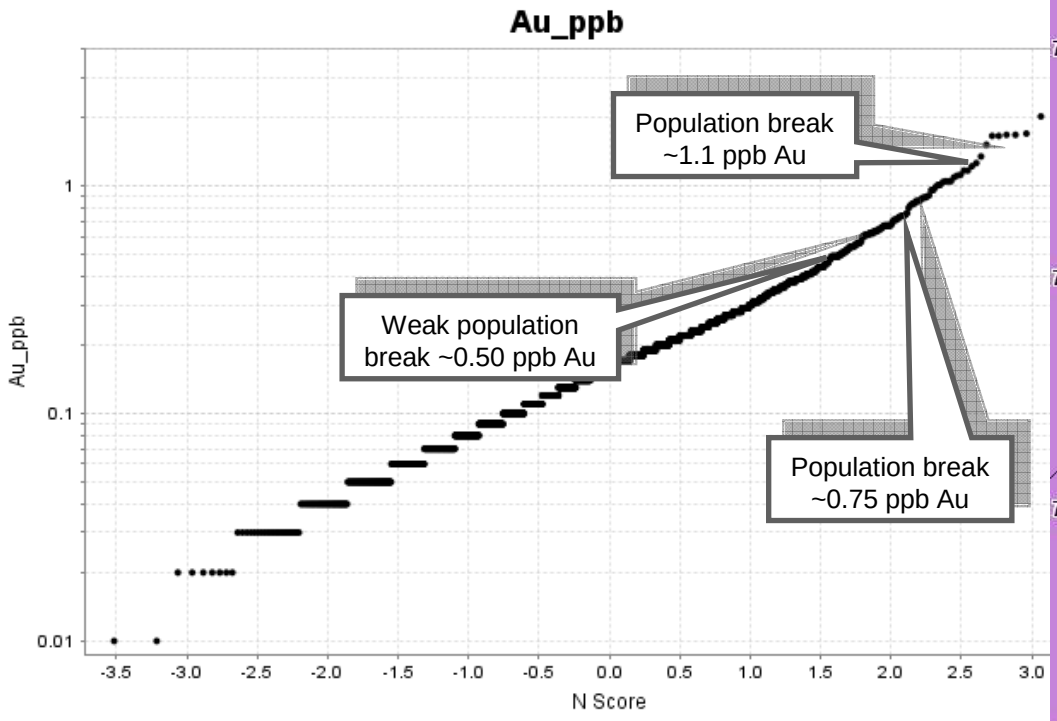


Putta Putta: Gold

In addition to raw Au gold values, **PCA4** (Cu, Ag, Ni, Hg, Au, Ca) shows an auriferous signature with coherence between lines & along structures in dolo-limestone stratigraphy

Putta-Putta: Au

- Clusters of elevated Au and spot highs
- Population breaks @ 0.75 ppb and 1.1 ppb Au



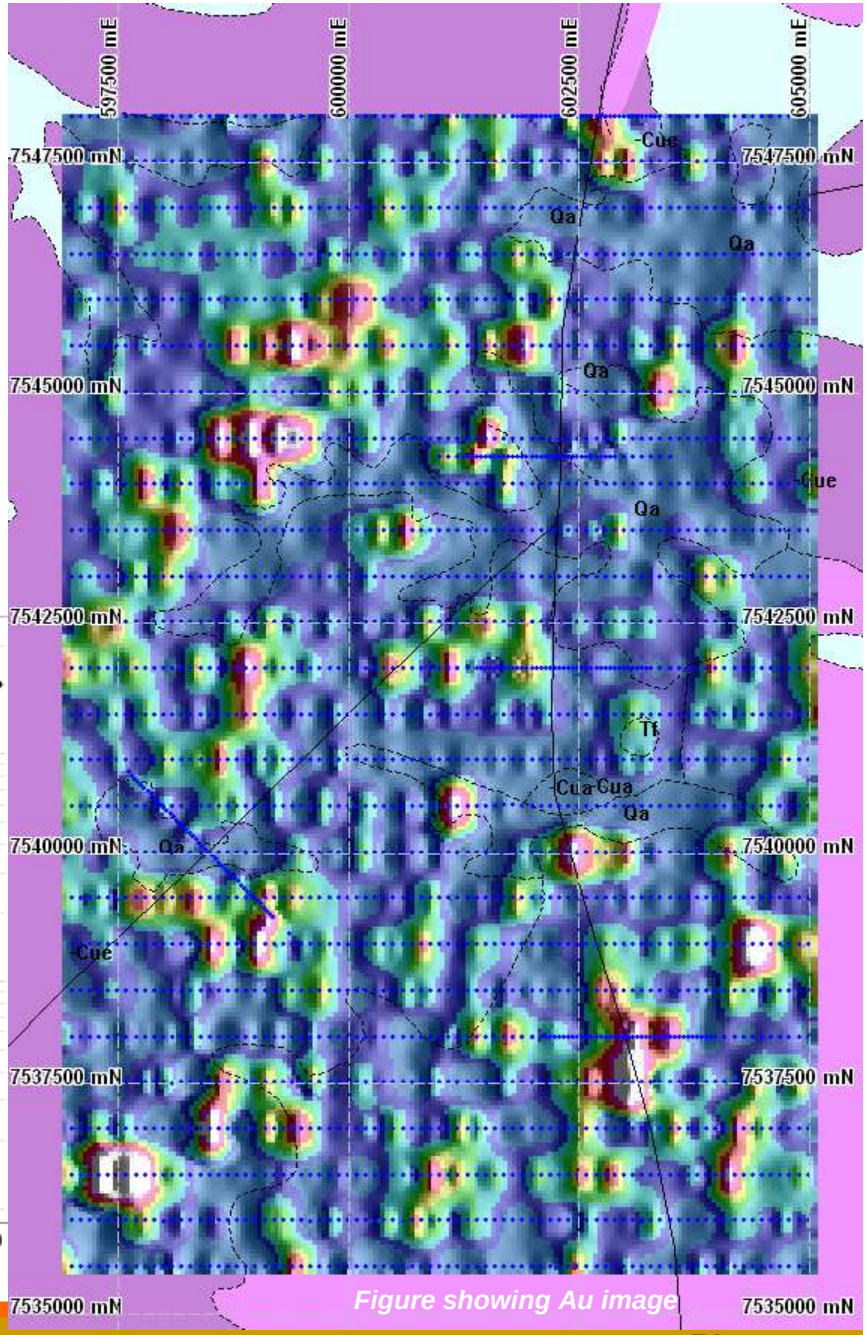


Figure showing Au image

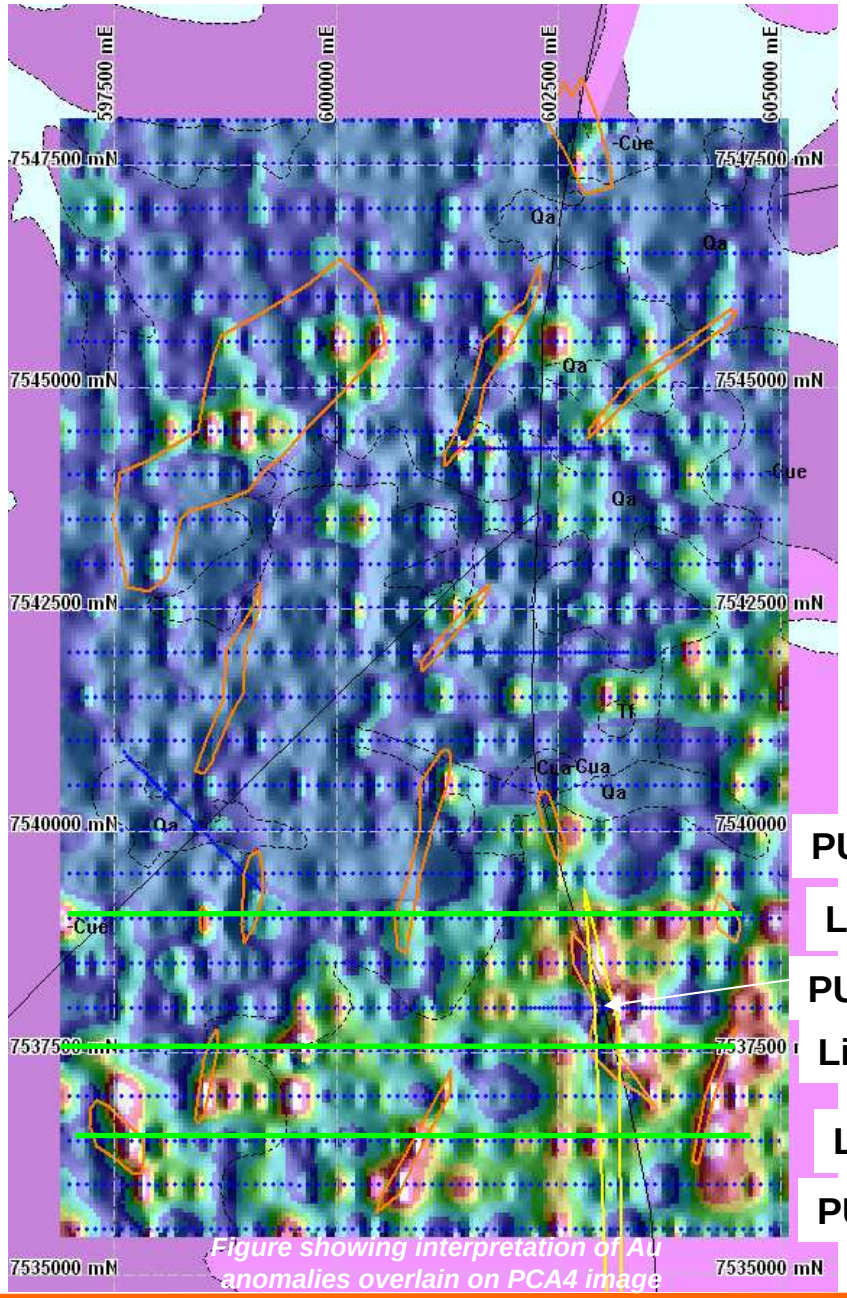


Figure showing interpretation of Au anomalies overlain on PCA4 image

PUT002: Au

Line PP08

PUT001: Au

Line PP05

Line PP03

PUT003: Au

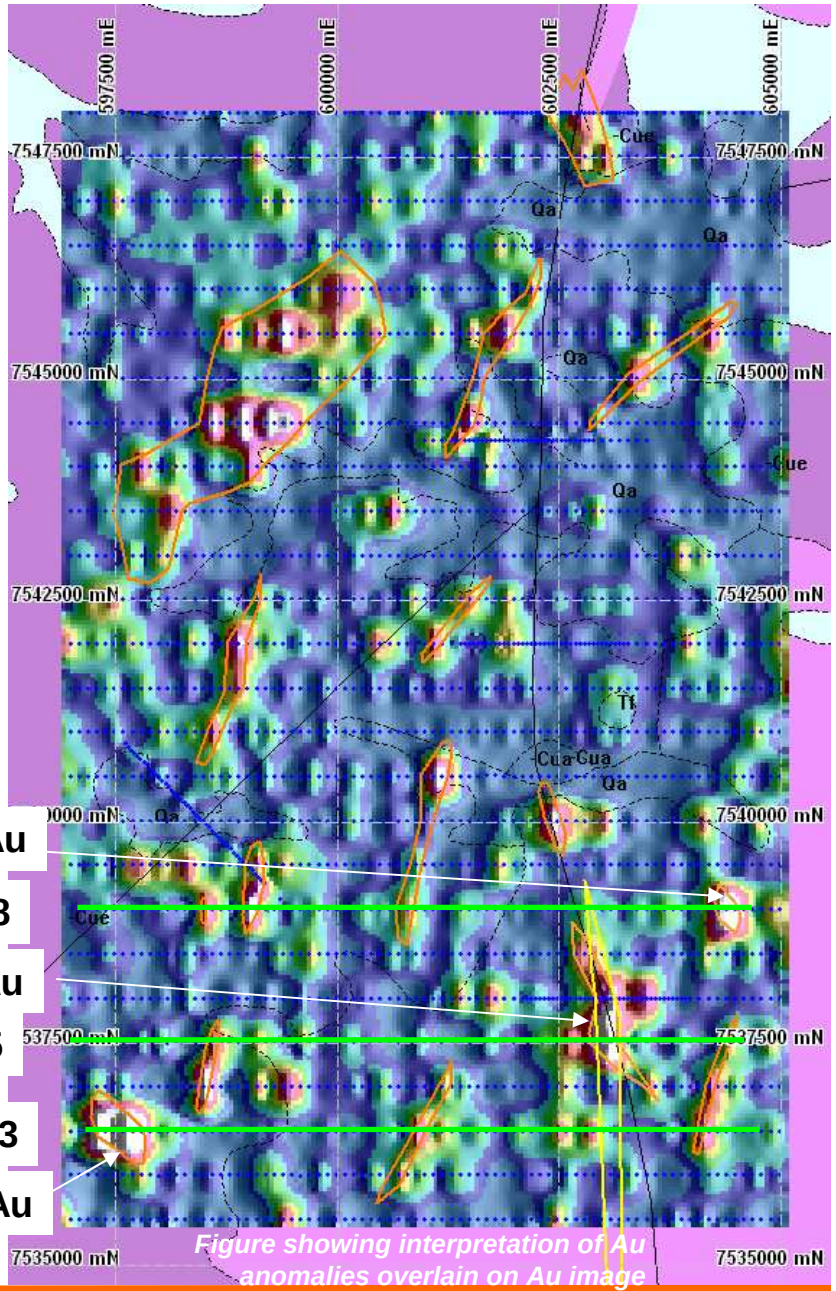
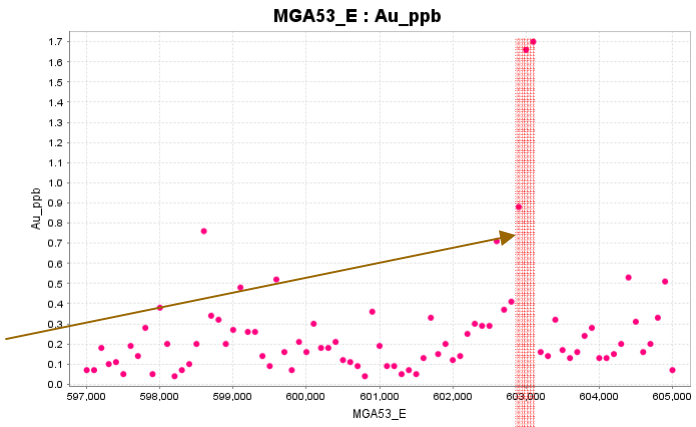
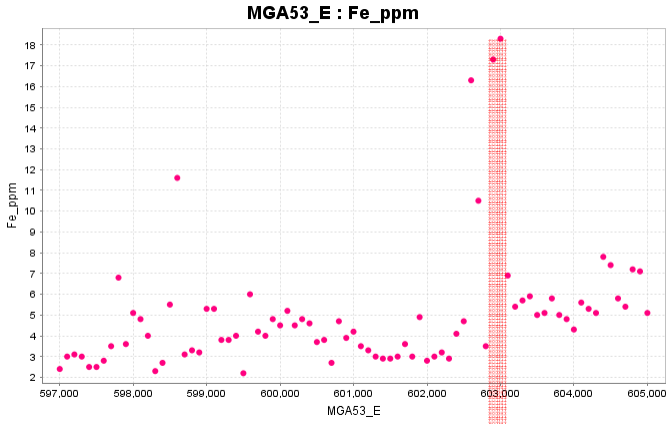


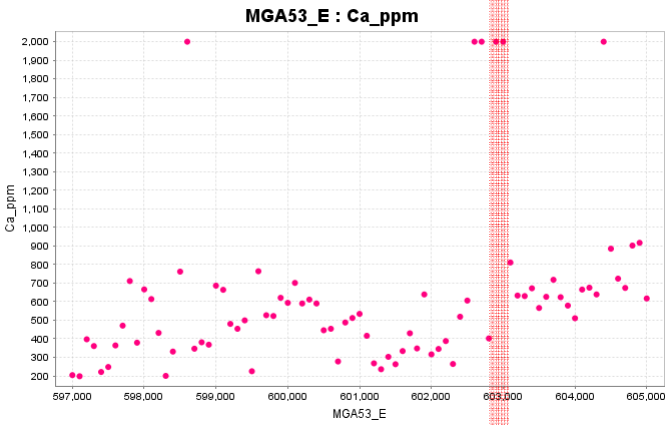
Figure showing interpretation of Au anomalies overlain on Au image

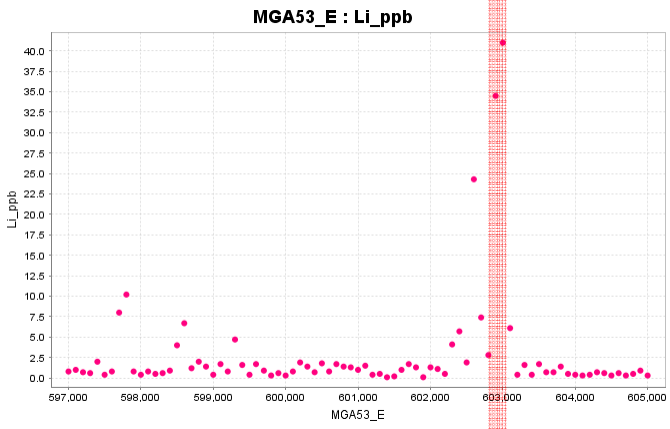
Line: PP05

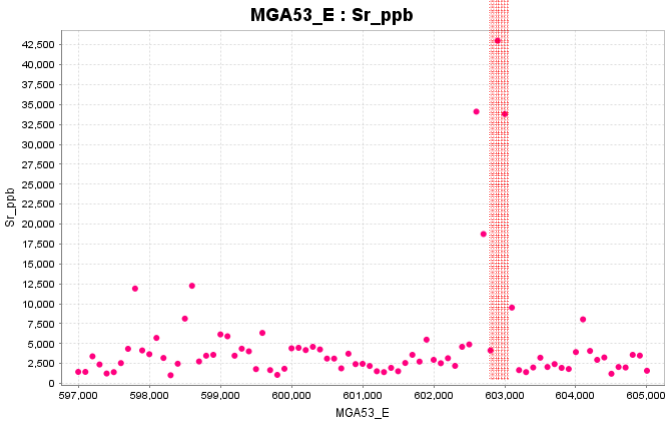
PUT001 Au

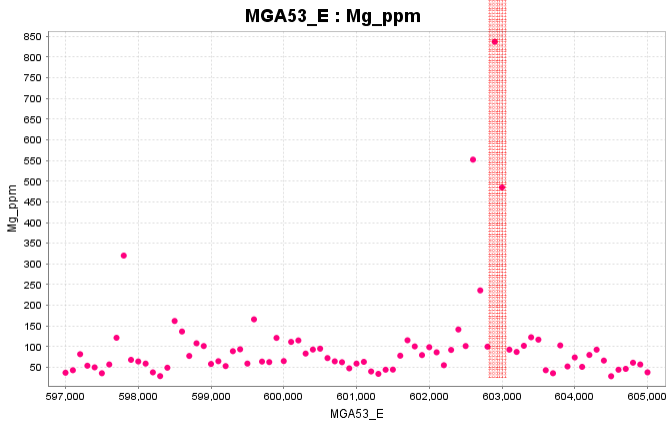






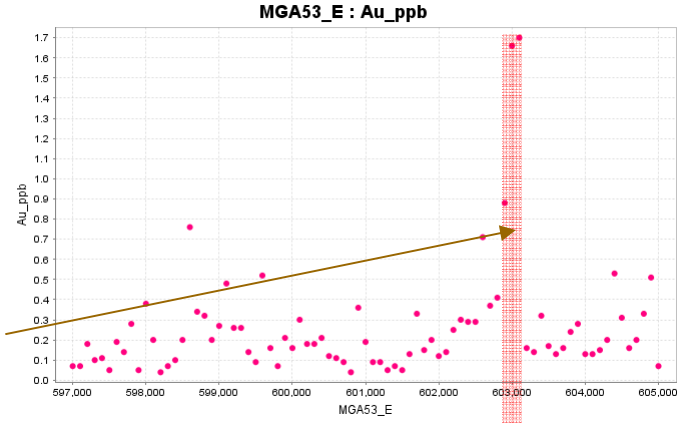


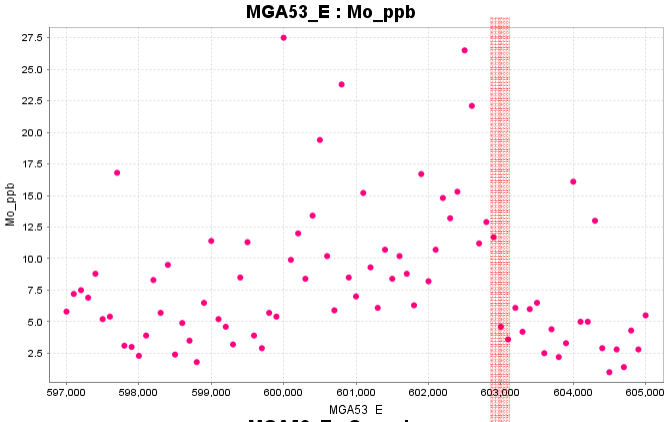


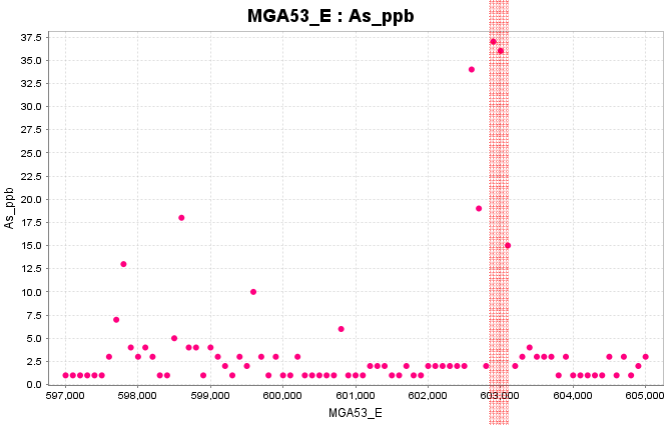


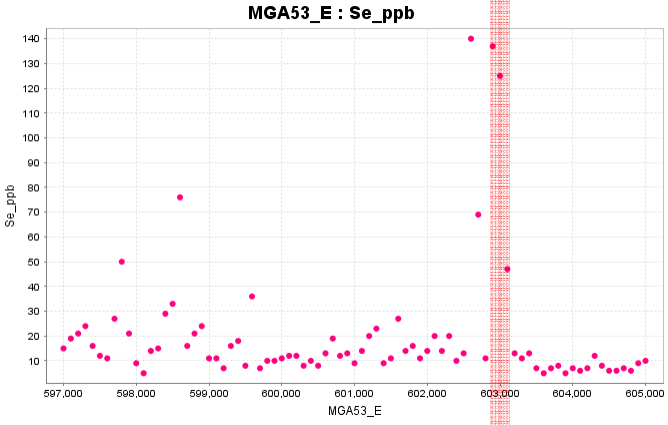
Line: PP05

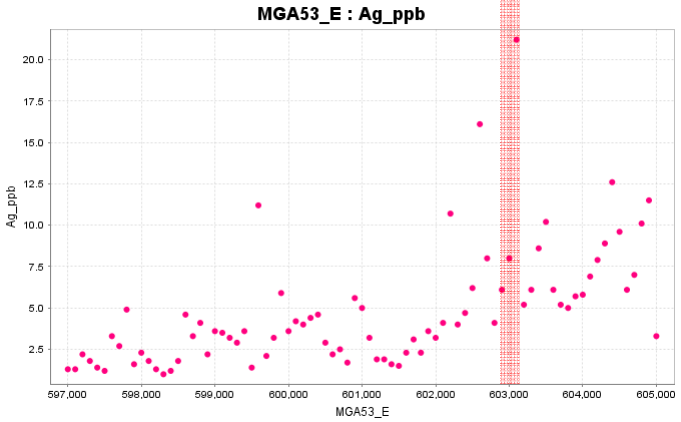
PUT001 Au

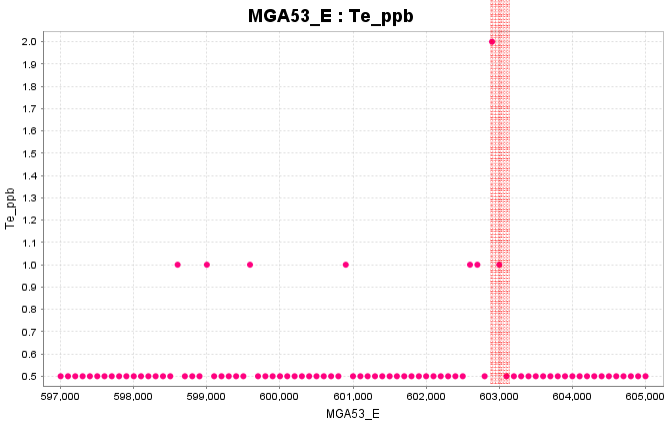


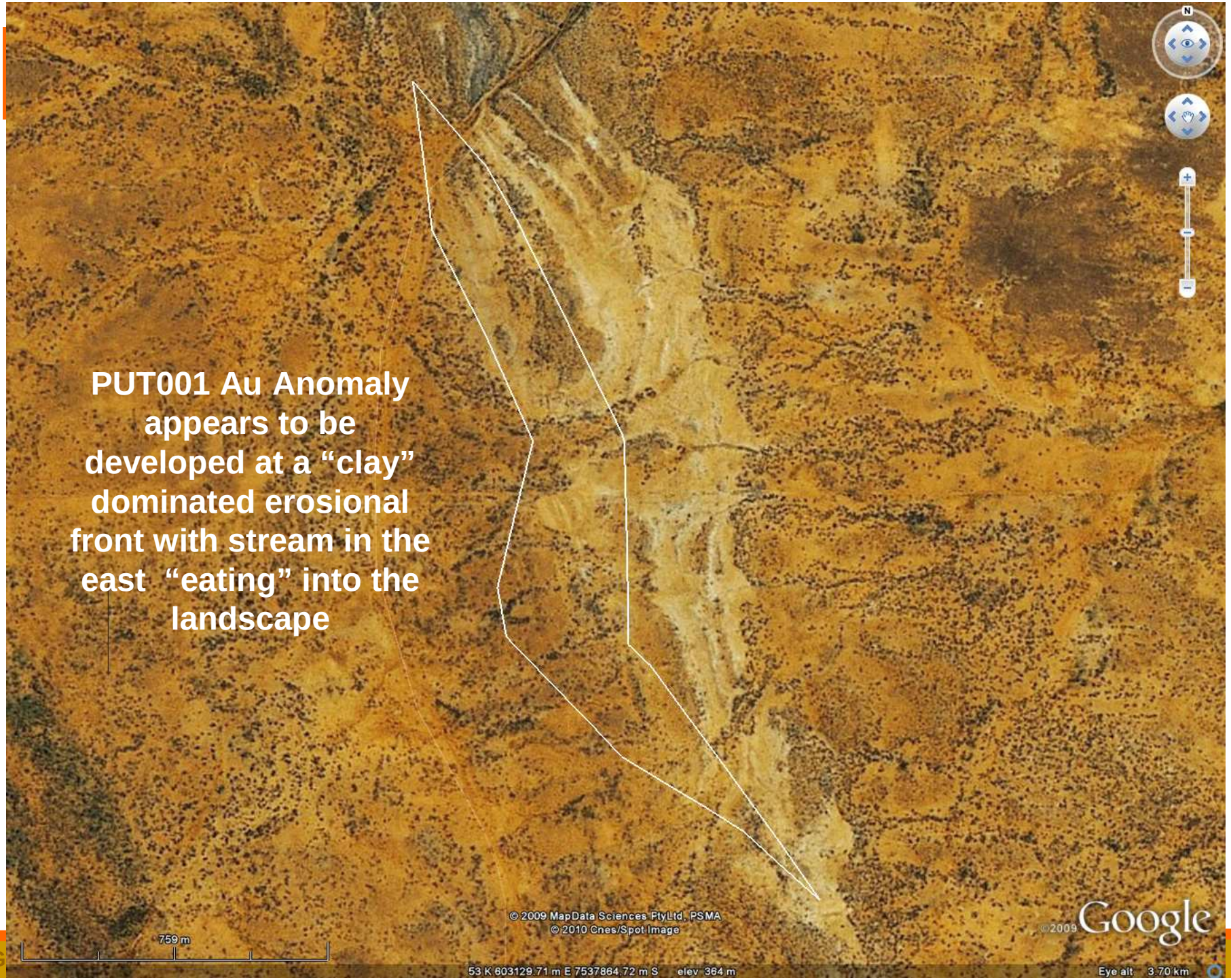




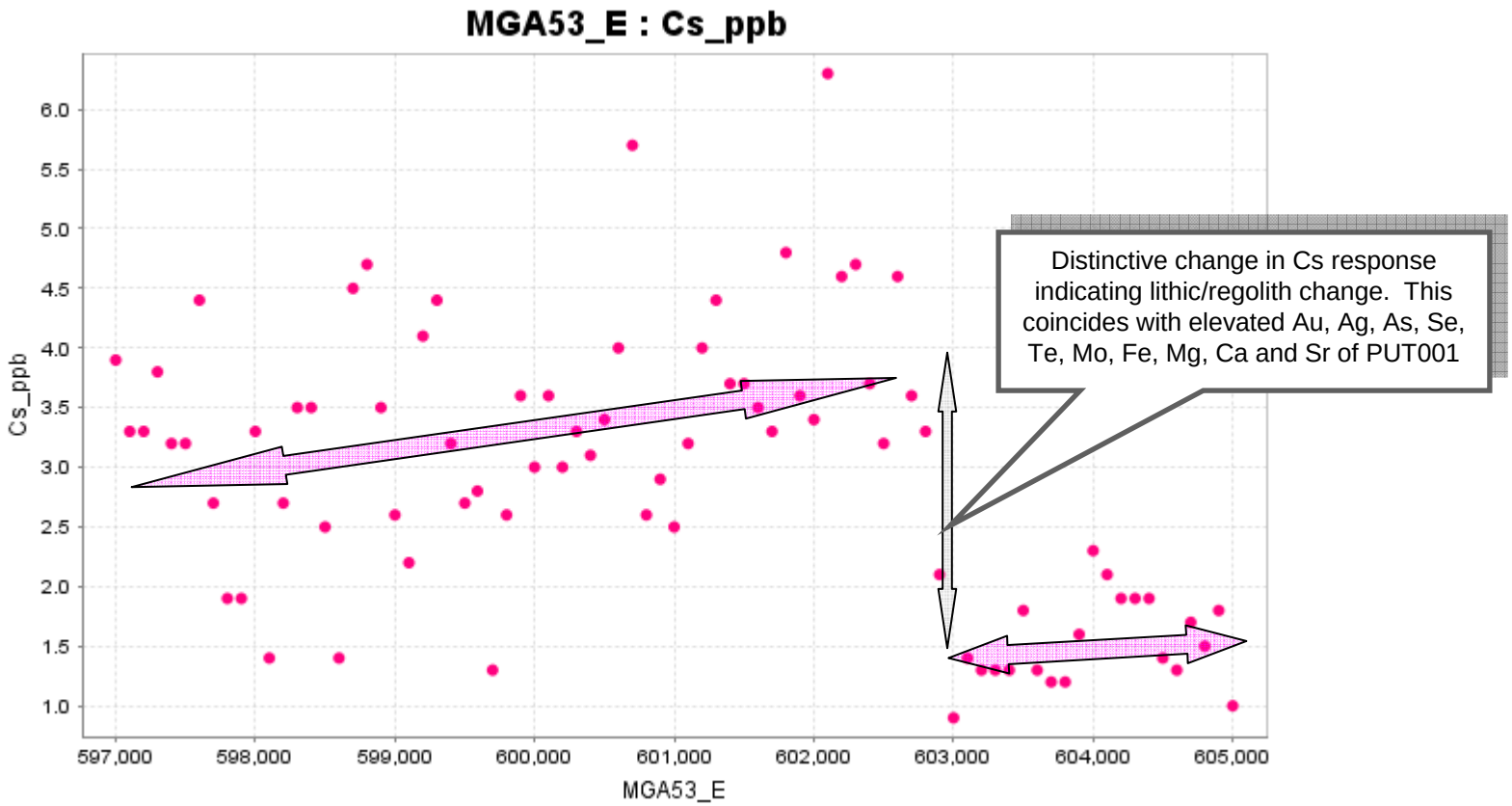


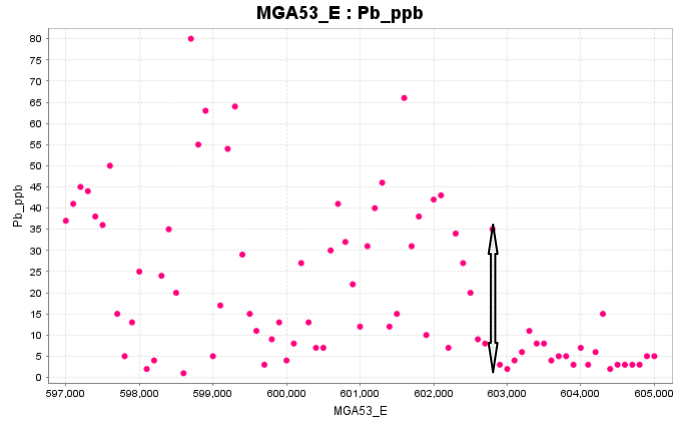


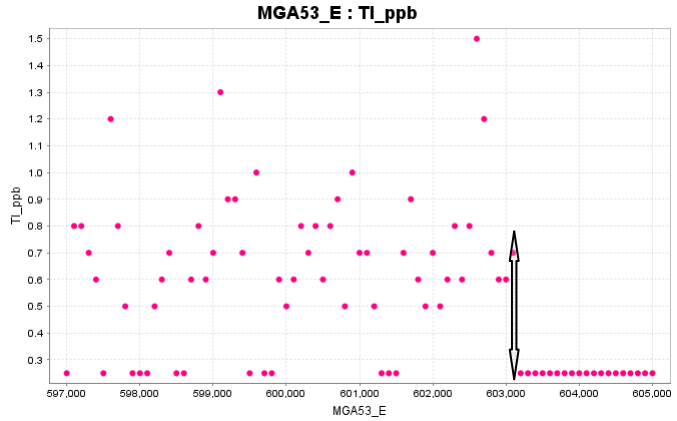



PUT001 Au Anomaly appears to be developed at a “clay” dominated erosional front with stream in the east “eating” into the landscape
© 2009 MapData Sciences PtyLtd, PSMA
© 2010 Cnes/Spot Image
759 m
53 K 603129.71 m E 7537864.72 m S elev 364 m
Eye alt 3.70 km
Google

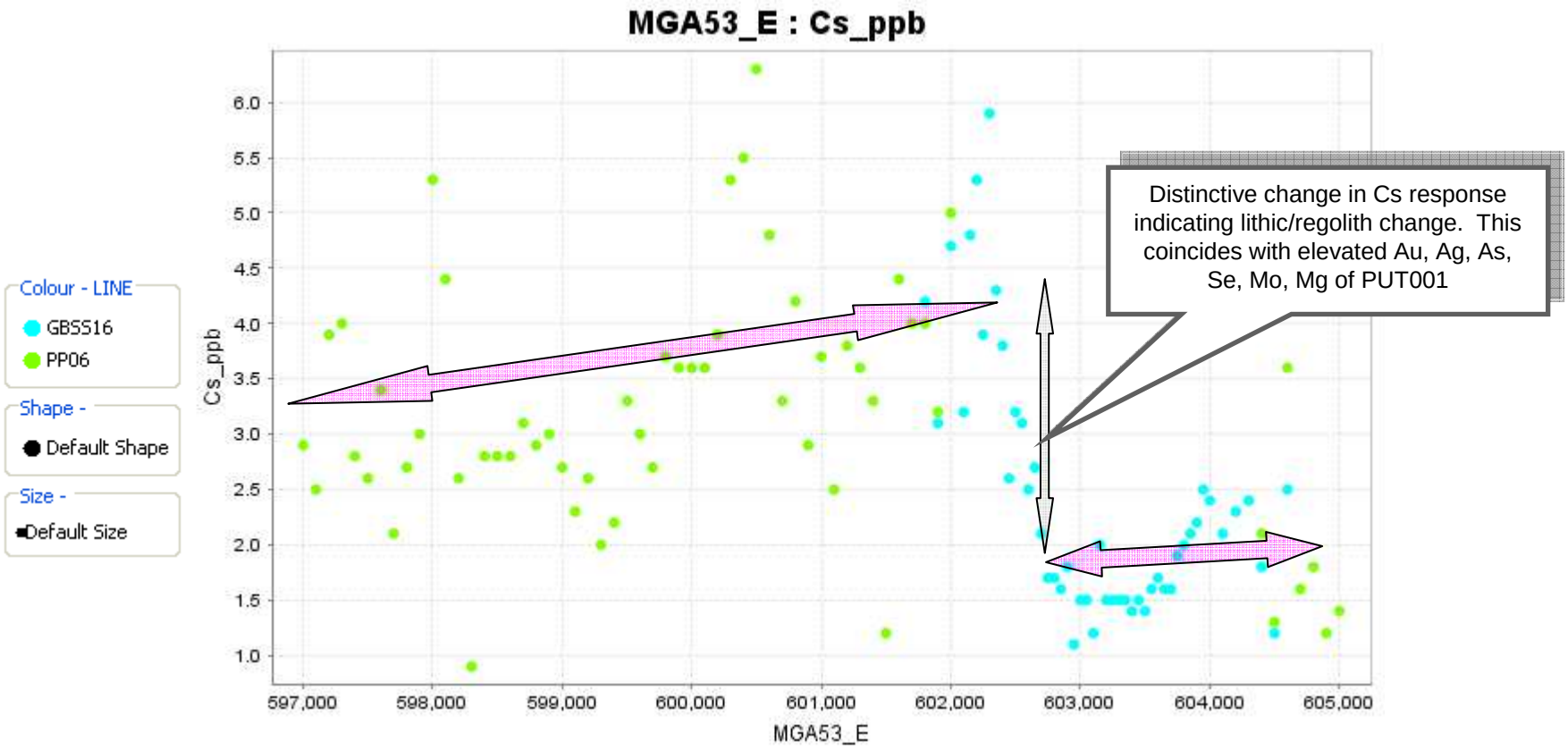
Line: PP05







Line PP06: PUT001 Au



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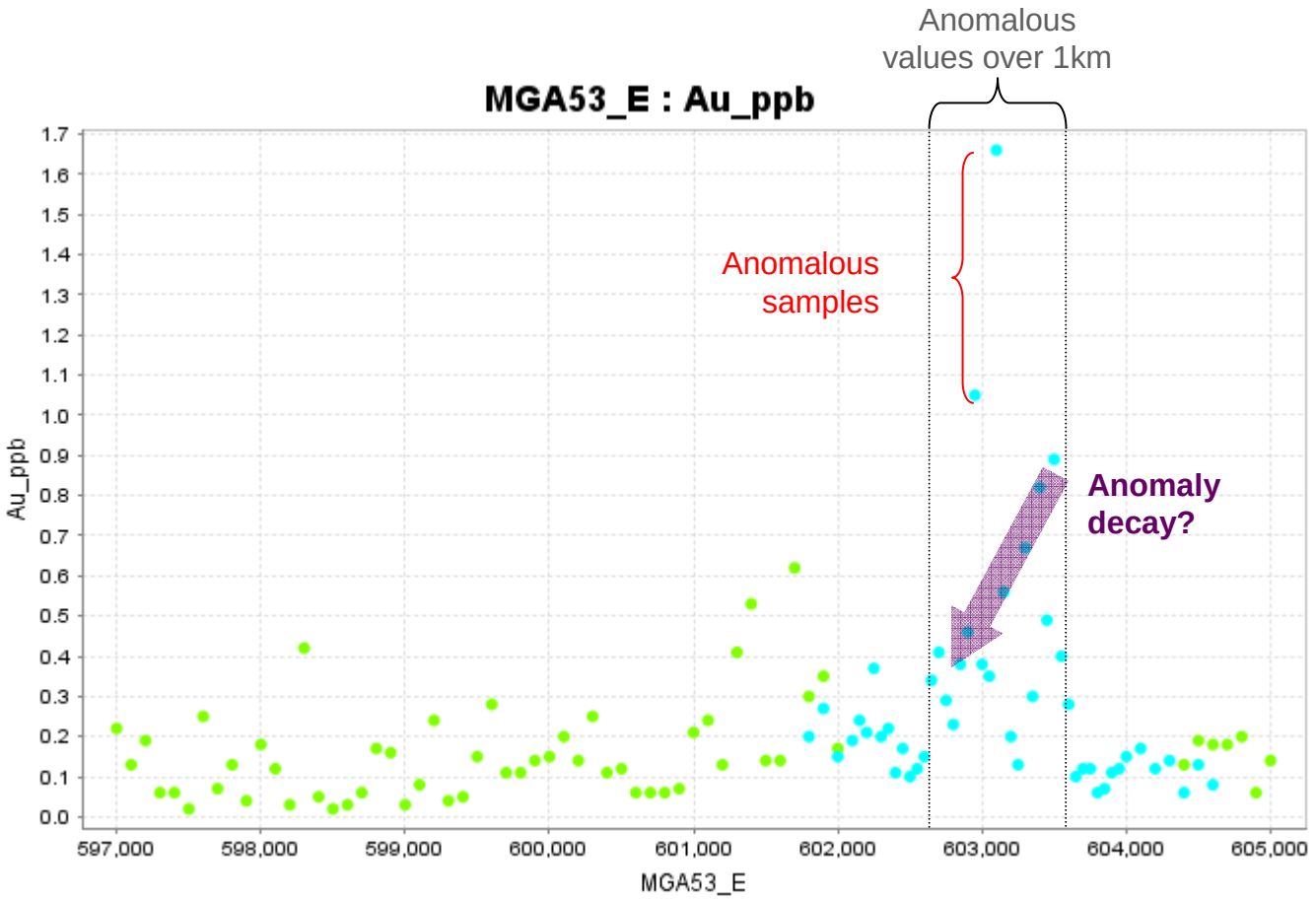
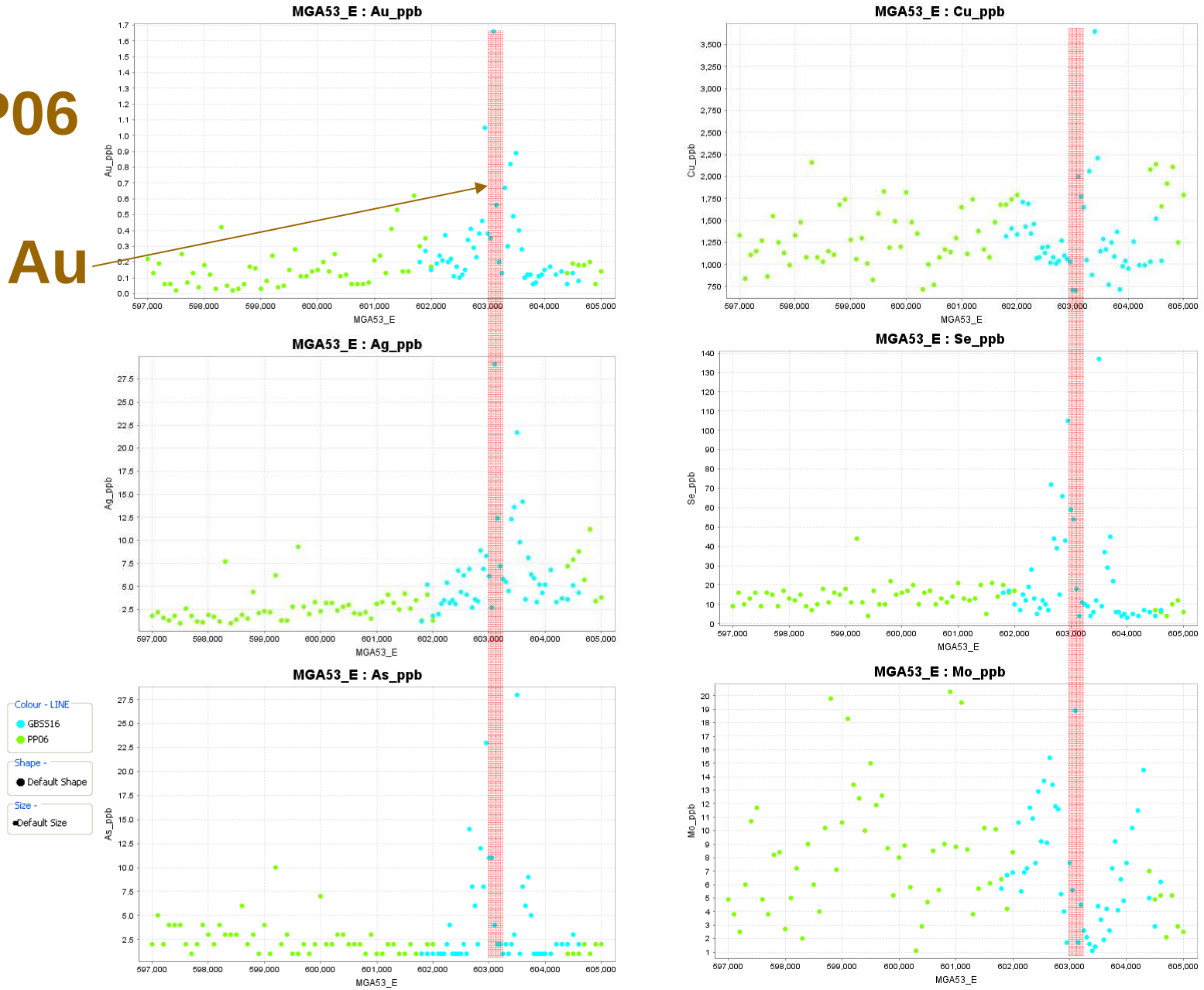
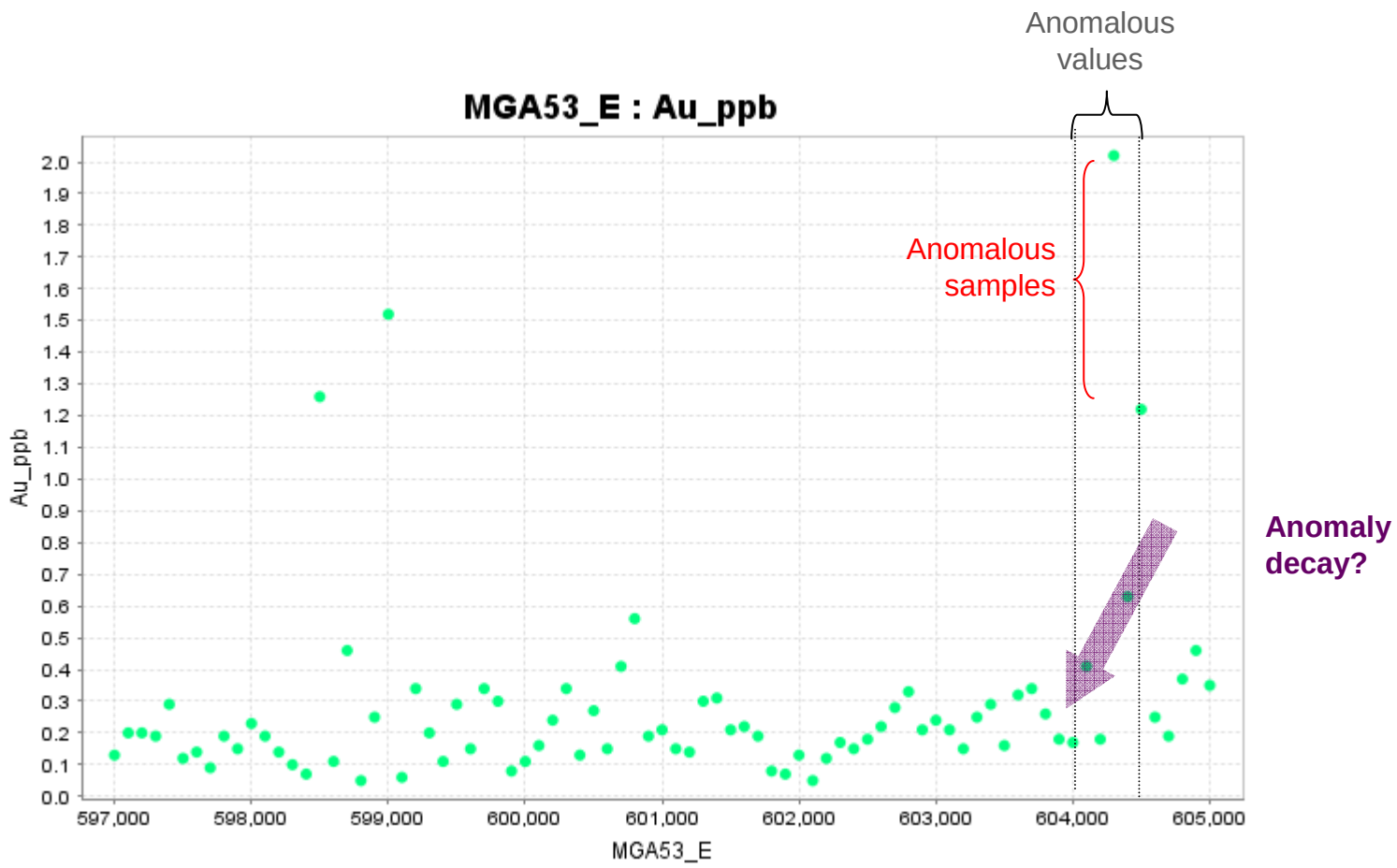


Line: PP06

PUT001 Au

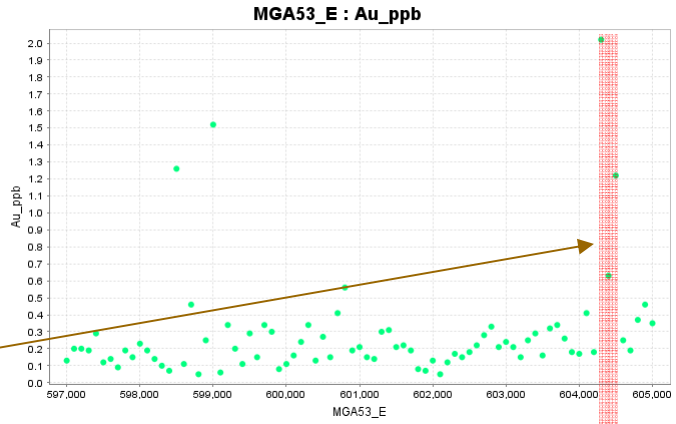


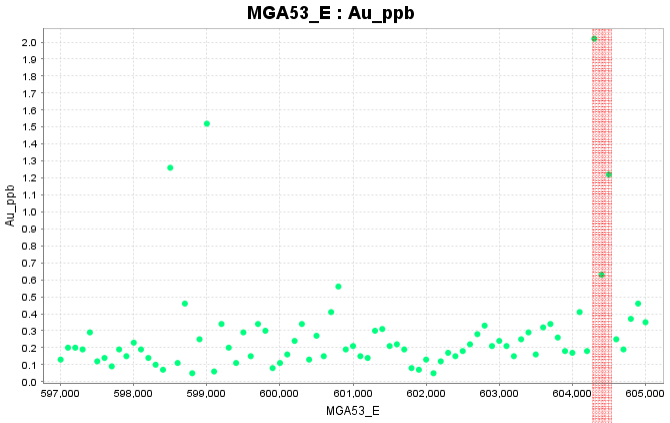
Line PP08: PUT002 Au

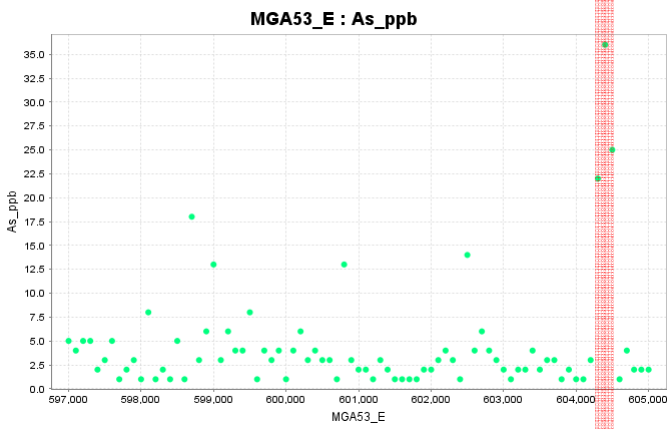


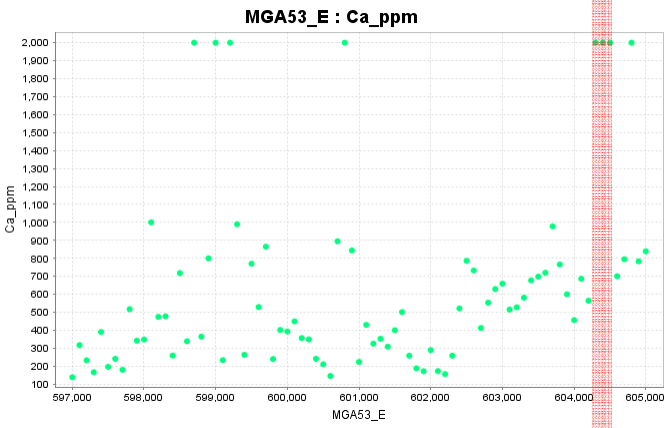
Line: PP08

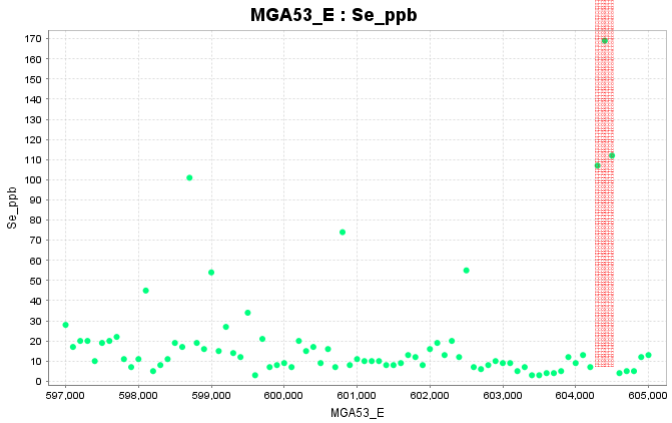
PUT002 Au

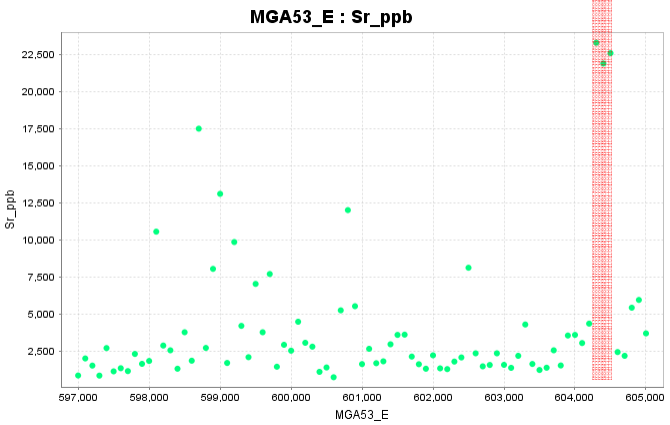




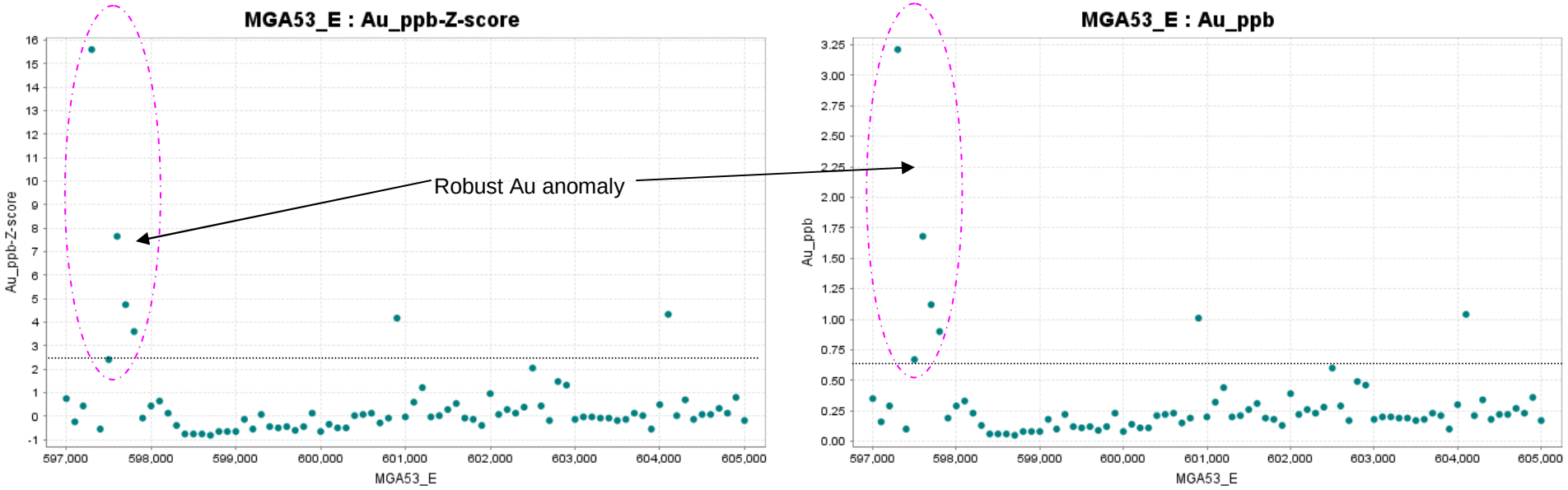








Line PP03: PUT003 Au

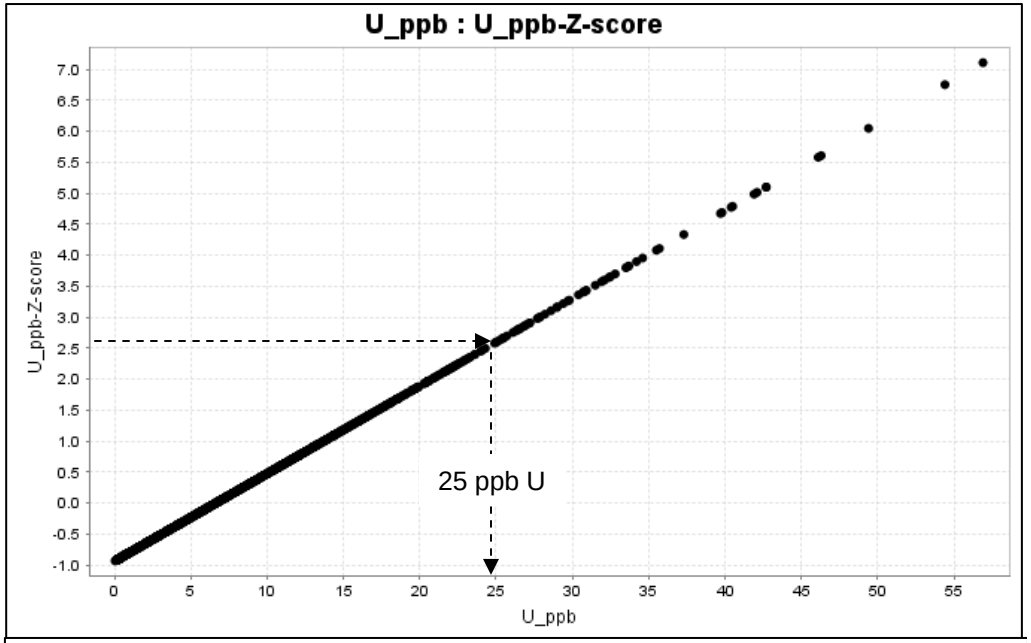


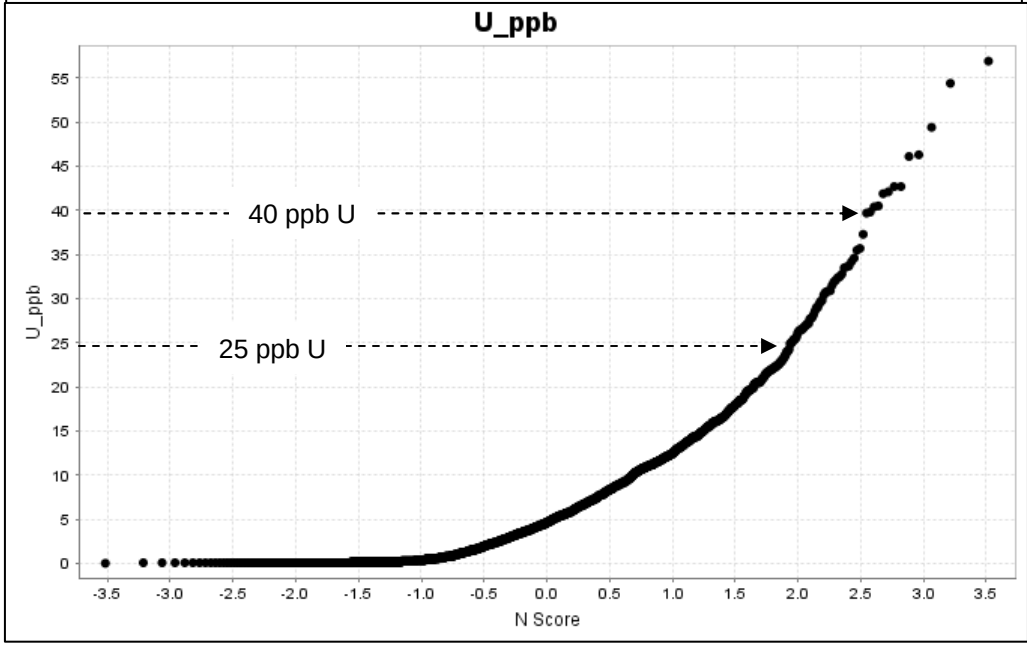
Google Image of PUT003

Putta Putta - Uranium

Putta Putta Uranium

- Anomalous U values exist in the data set
  - 25 ppb U
  - 40 ppb U
- Anomalous U is restricted to the Eurowie Sst Member
- U is strongly associated with REE, Th, Pb and Zr as shown in PCA1.





Putta Putta U anomalies

- Six U anomalies identified based on
  - raw U values
  - Association and coincidence with elevated Th-Pb
  - Elevated PCA1 response
- Anomalies are
  - Only developed in the Eurowie Sst Member
  - typically linear
  - A number cluster along the regional NE-SW structure

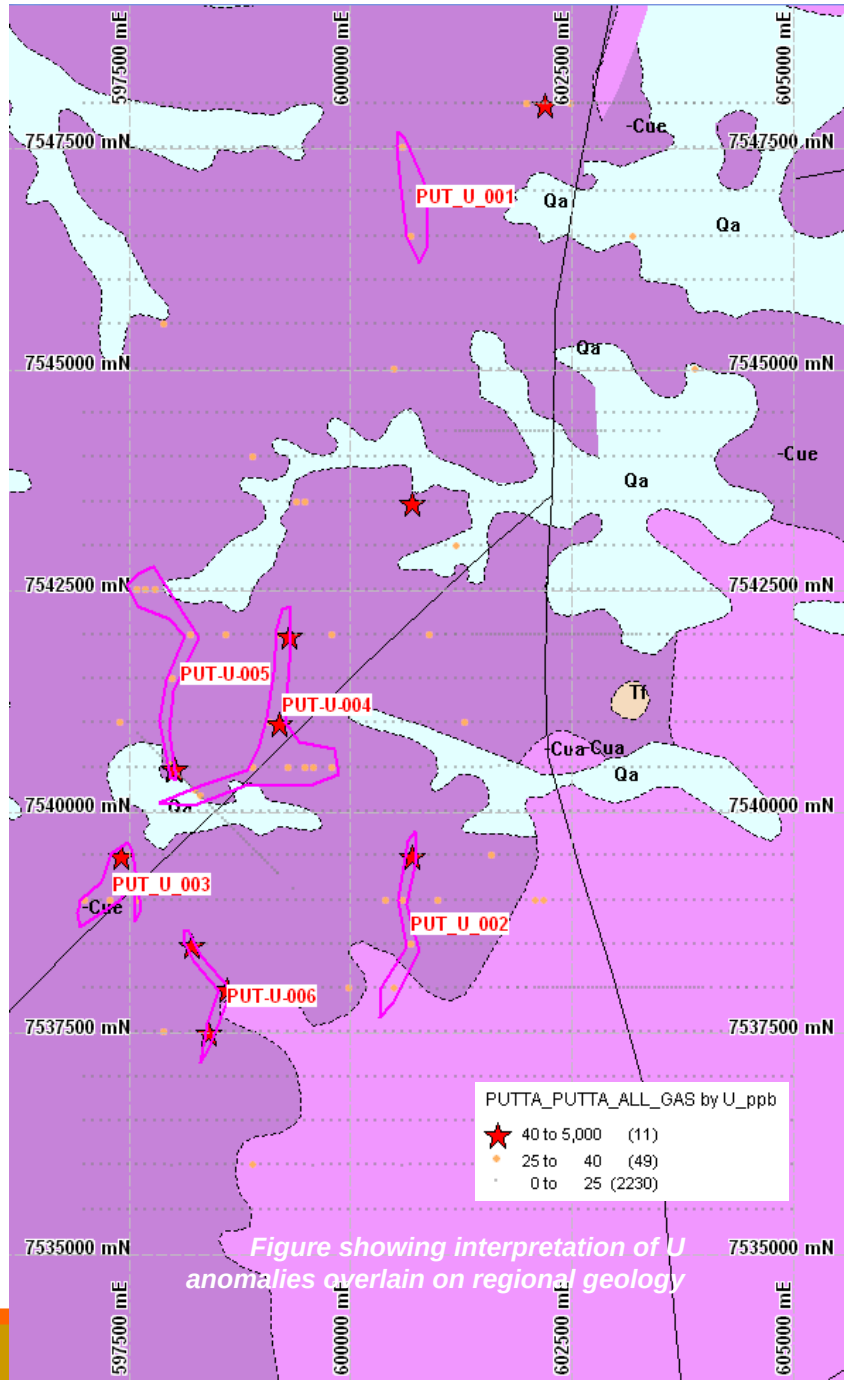


Figure showing interpretation of U anomalies overlain on regional geology

Putta Putta U anomalies

- Six U anomalies identified based on
  - raw U values
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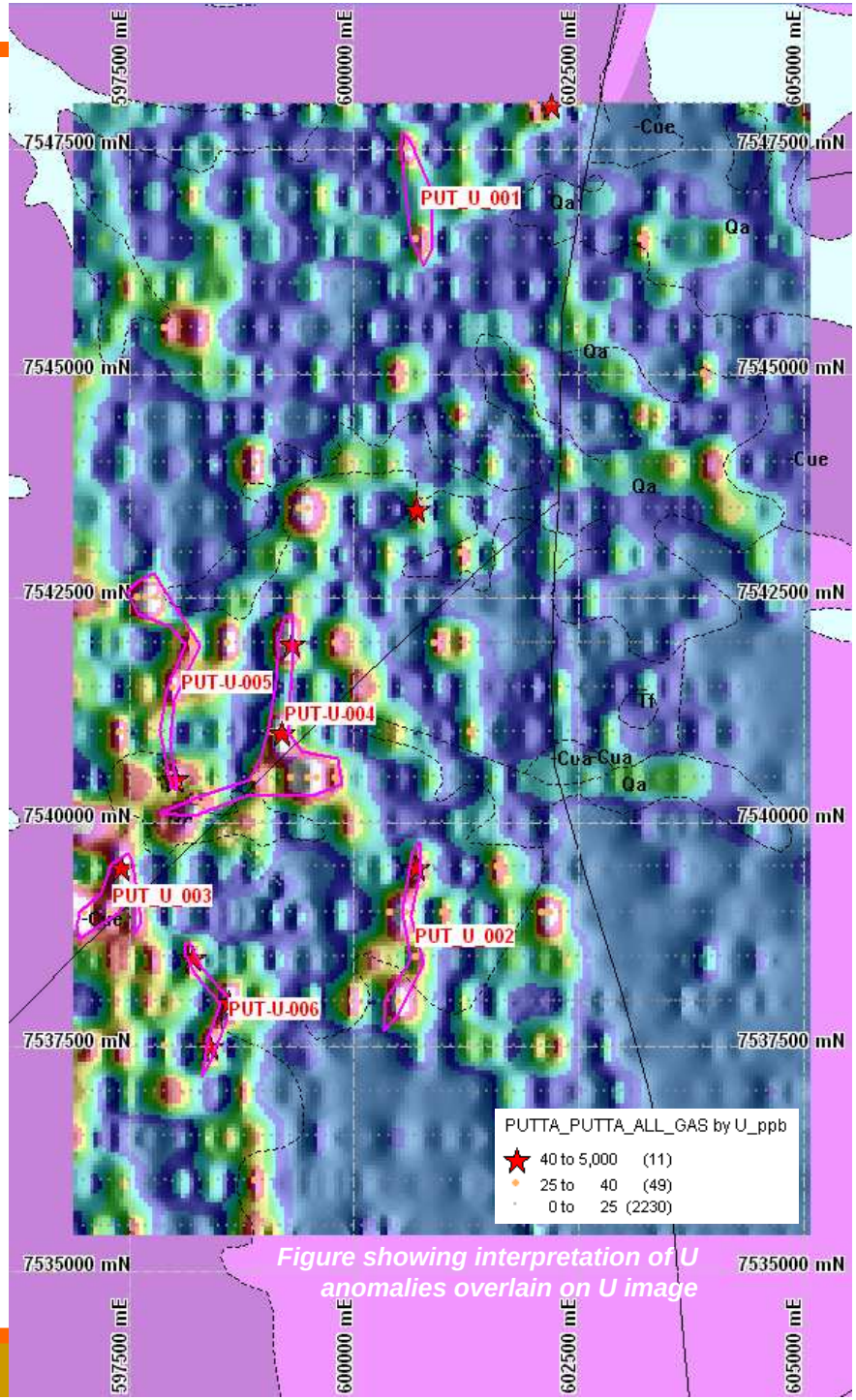

Figure showing interpretation of U anomalies overlain on U image

Putta Putta U anomalies

- Six U anomalies identified based on
  - raw U values
  - Association and coincidence with elevated Th-Pb
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  - typically linear
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Figure showing interpretation of U anomalies overlain on Google Image

Putta Putta: Summary

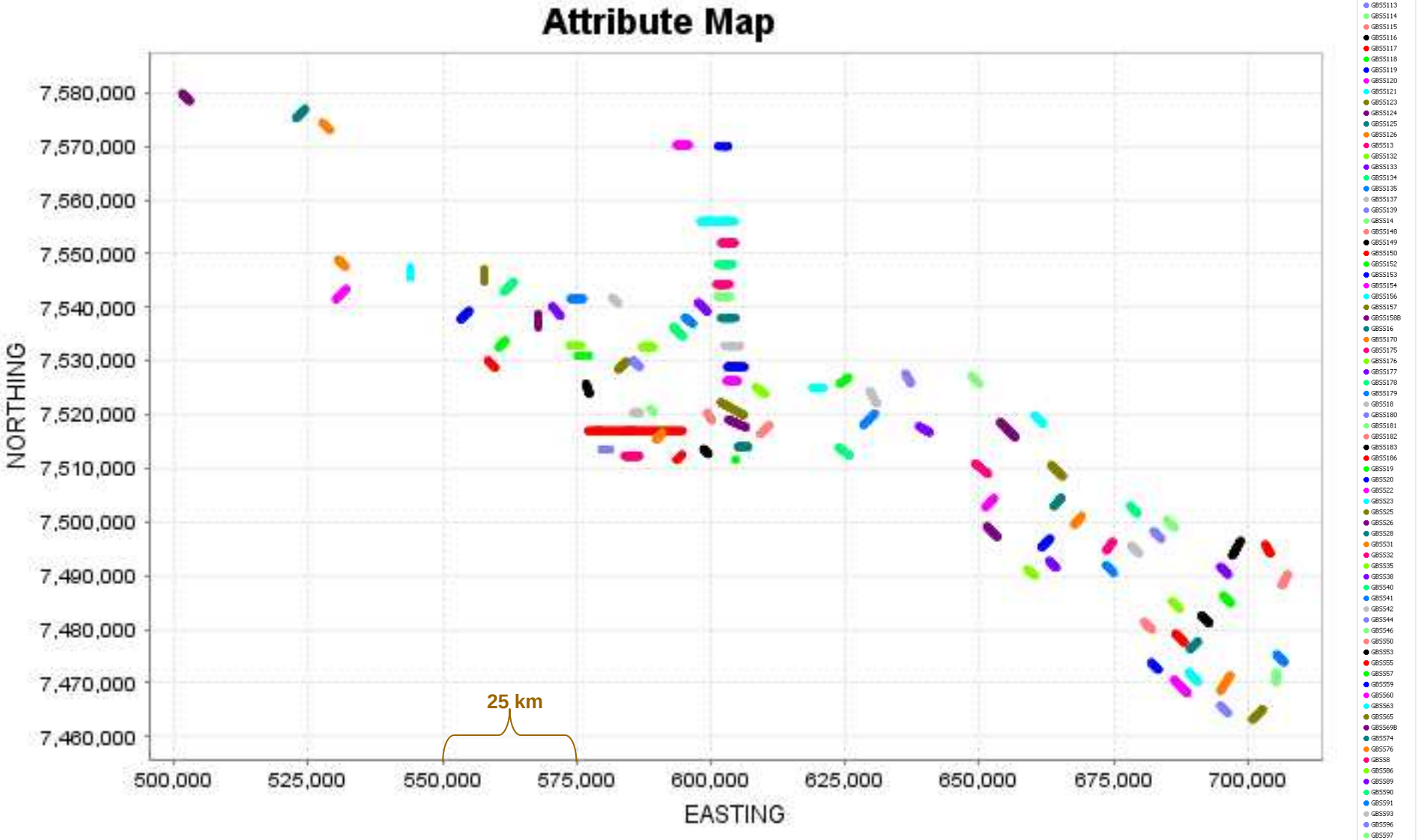
- Sampling over the Putta Putta target area has confirmed the ability of ionic leach to generate meaningful data in this geological and regolith regime.
- Interpretation of the ionic leach data has:
  - generated structural traces through the Putta Putta region
  - Identified a number of Zinc associated anomalies
  - Identified a number of Au anomalies.
  - Identified six U anomalies
- To place these anomalies into a geological and regolith context field inspection is required along with rock chip sampling.
- *Results of the field inspection and rock chipping will allow MCR to prioritise these anomalies and formulate a follow-up program which may include infilling a number of the anomalies along with geological mapping and ground based geophysics*

Regional Traverses

Following the evaluation of ionic leach data from Putta Putta and the confidence that the anomalies generated are real, robust and coherent the same principles are now applied to the regional data set.

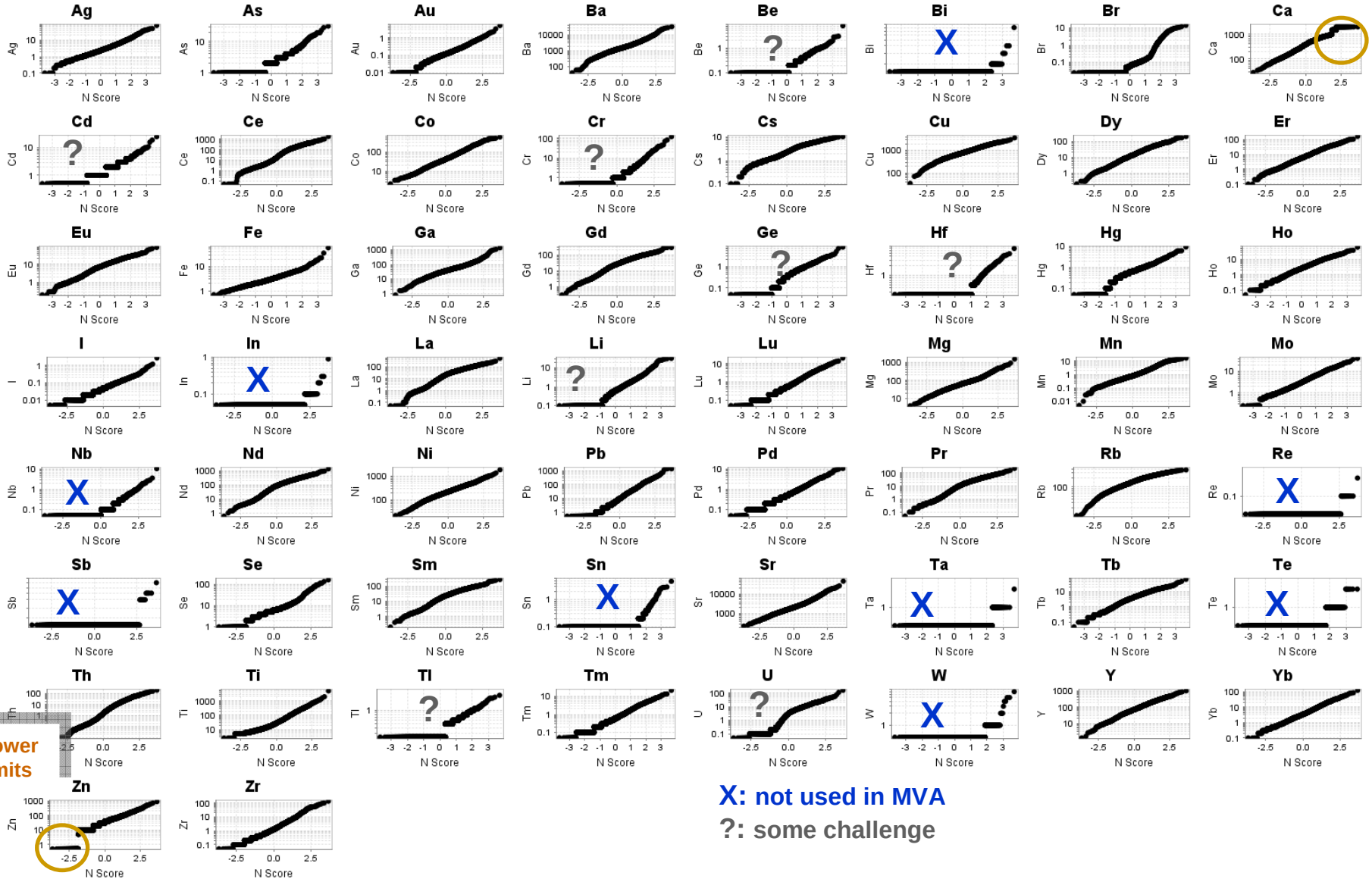
Although logically the regional traverses should have been evaluated first, the opportunity to evaluate a relatively geologically and regolith controlled data set enables extrapolation into the regional data sets.

Distribution of Regional Lines



Probability Plots for regional lines

Restricted by method's upper limits



?lower limits

X: not used in MVA

?: some challenge

Regional element correlation

	Ag	As	Au	Ba	Be	Bi	Br	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Hf	Hg	Ho	I	In	La	Li	Lu	Mg	Mn	Mo	Nb	Nd	Ni	Pb	Pd	Pr	Rb	Re	Sb	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	W	Y	Yb	Zn	Zr
Ag		0.18	0.41	0.05	0.02	0.00	0.24	0.43	0.10	-0.26	-0.13	-0.13	-0.27	0.42	-0.22	-0.22	-0.24	0.10	0.05	-0.22	-0.21	-0.14	0.50	-0.22	0.00	-0.03	-0.29	0.11	-0.21	0.30	-0.19	0.12	-0.12	-0.26	0.28	-0.09	-0.18	-0.28	-0.21	0.01	0.00	0.17	-0.24	0.06	0.28	-0.02	-0.23	0.05	-0.23	-0.16	-0.02	-0.21	-0.25	0.07	-0.19	-0.21	0.12	-0.18
As	0.18		0.21	-0.07	0.17	-0.01	0.71	0.25	0.13	0.15	0.17	0.22	-0.06	0.00	0.16	0.18	0.12	0.32	-0.11	0.13	0.08	0.28	0.10	0.17	0.31	0.06	0.09	0.51	0.18	0.51	0.20	-0.02	0.14	0.09	0.12	0.13	0.23	0.09	-0.06	0.16	-0.01	0.72	0.12	0.08	0.50	0.01	0.15	0.15	0.19	0.14	0.10	0.19	0.15	0.15	0.16	0.19	0.19	0.23
Au	0.41	0.21		0.28	0.02	-0.01	0.23	0.40	-0.03	-0.15	0.05	-0.10	-0.15	0.31	-0.06	-0.06	-0.07	0.14	0.21	-0.08	-0.14	-0.07	0.32	-0.05	0.18	0.01	-0.20	0.20	-0.05	0.37	-0.13	-0.02	-0.08	-0.16	0.34	-0.03	-0.07	-0.18	-0.18	0.07	-0.02	0.20	-0.11	0.00	0.38	0.03	-0.07	0.10	-0.16	-0.12	0.07	-0.05	-0.14	0.06	-0.04	-0.05	0.01	-0.14
Ba	0.05	-0.07	0.28		-0.06	-0.01	-0.11	0.26	-0.10	-0.14	0.05	-0.10	-0.09	0.11	-0.06	-0.06	-0.01	0.12	0.91	-0.07	-0.11	-0.08	0.02	-0.06	0.03	-0.02	-0.15	-0.05	-0.05	0.11	-0.12	-0.13	-0.09	-0.13	0.24	-0.04	-0.07	-0.14	-0.14	-0.03	-0.03	-0.11	-0.10	-0.05	0.15	-0.01	-0.08	0.02	-0.14	-0.10	0.02	-0.06	-0.15	-0.03	-0.05	-0.06	-0.09	-0.11
Be	0.02	0.17	0.02	-0.06		-0.01	0.03	-0.08	0.15	0.42	0.12	0.60	0.17	-0.06	0.35	0.36	0.32	0.52	-0.02	0.33	0.43	0.55	0.04	0.35	0.18	0.19	0.37	0.27	0.34	0.01	0.25	-0.06	0.64	0.33	0.03	0.22	0.47	0.35	0.16	0.01	-0.01	0.18	0.32	0.38	-0.04	0.16	0.35	0.13	0.43	0.62	0.07	0.37	0.32	0.14	0.33	0.36	0.16	0.54
Bi	0.00	-0.01	-0.01	-0.01	-0.01		0.01	0.01	-0.01	-0.02	-0.02	-0.01	-0.02	-0.04	-0.03	-0.02	-0.03	-0.01	-0.01	-0.03	-0.02	-0.01	-0.01	-0.02	-0.01	0.00	-0.02	0.00	-0.02	0.00	0.01	-0.02	-0.01	-0.02	-0.03	0.03	-0.02	-0.02	-0.03	0.00	0.00	0.01	-0.03	-0.01	0.00	0.00	-0.03	-0.01	-0.01	-0.01	-0.02	-0.02	-0.02	0.00	-0.03	-0.02	-0.02	-0.01
Br	0.24	0.71	0.23	-0.11	0.03	0.01		0.39	0.07	-0.08	-0.02	-0.02	-0.13	0.02	-0.05	-0.05	-0.06	0.17	-0.10	-0.05	-0.09	-0.04	0.14	-0.05	0.30	-0.01	-0.08	0.59	-0.06	0.66	-0.05	0.04	-0.02	-0.06	0.14	-0.05	-0.03	-0.07	-0.13	0.21	-0.01	0.87	-0.05	0.02	0.71	-0.01	-0.05	0.08	-0.08	-0.05	0.05	-0.05	-0.06	0.13	-0.03	-0.06	0.13	-0.06
Ca	0.43	0.25	0.40	0.26	-0.08	0.01	0.39		0.08	-0.44	-0.13	-0.22	-0.55	0.55	-0.36	-0.35	-0.39	0.35	0.22	-0.40	-0.44	-0.23	0.21	-0.36	0.05	-0.05	-0.51	0.15	-0.33	0.38	-0.29	-0.04	-0.20	-0.48	0.41	-0.21	-0.33	-0.50	-0.52	0.06	-0.03	0.28	-0.43	-0.03	0.54	-0.03	-0.39	0.05	-0.40	-0.27	-0.20	-0.34	-0.45	0.07	-0.34	-0.34	0.12	-0.31
Cd	0.10	0.13	-0.03	-0.10	0.15	-0.01	0.07	0.08		0.07	0.23	0.17	-0.07	0.22	0.19	0.18	0.18	0.22	-0.07	0.18	0.12	0.20	0.08	0.19	0.01	-0.01	0.06	0.08	0.14	0.08	0.37	0.31	0.11	0.12	0.35	0.09	0.20	0.09	0.09	-0.01	0.00	0.15	0.16	0.09	0.05	-0.02	0.20	0.00	0.12	0.12	0.10	0.17	0.13	0.04	0.18	0.16	0.62	0.19
Ce	-0.26	0.15	-0.15	-0.14	0.42	-0.02	-0.08	-0.44	0.07		0.36	0.63	0.60	-0.33	0.76	0.77	0.78	0.32	-0.12	0.77	0.81	0.76	-0.10	0.76	0.29	0.16	0.93	0.16	0.75	-0.25	0.57	-0.12	0.50	0.87	-0.21	0.42	0.81	0.91	0.50	0.03	-0.02	0.17	0.81	0.27	-0.24	0.06	0.78	0.00	0.89	0.58	0.23	0.77	0.75	0.11	0.73	0.77	-0.01	0.74
Co	-0.13	0.17	0.05	0.05	0.12	-0.02	-0.02	-0.13	0.23	0.36		0.25	0.28	-0.01	0.48	0.49	0.42	0.15	0.01	0.43	0.30	0.36	-0.10	0.49	0.28	0.01	0.31	0.13	0.49	0.05	0.73	-0.05	0.16	0.35	0.29	0.23	0.44	0.32	0.25	0.00	-0.01	0.13	0.39	0.06	-0.01	-0.01	0.45	0.03	0.32	0.19	0.22	0.49	0.38	0.05	0.48	0.50	0.19	0.30
Cr	-0.13	0.22	-0.10	-0.10	0.60	-0.01	-0.02	-0.22	0.17	0.63	0.25		0.32	-0.17	0.50	0.50	0.46	0.69	-0.07	0.45	0.51	0.84	-0.04	0.50	0.22	0.23	0.56	0.28	0.49	-0.13	0.50	-0.07	0.81	0.48	-0.10	0.37	0.70	0.52	0.25	0.03	0.02	0.16	0.46	0.47	-0.14	0.12	0.49	0.03	0.74	0.84	0.11	0.52	0.57	0.16	0.45	0.52	0.16	0.90
Cs	-0.27	-0.06	-0.15	-0.09	0.17	-0.02	-0.13	-0.55	-0.07	0.60	0.28	0.32		-0.40	0.60	0.61	0.62	-0.03	-0.04	0.61	0.58	0.34	-0.03	0.61	0.33	0.09	0.65	0.11	0.61	-0.25	0.28	-0.03	0.35	0.65	-0.30	0.32	0.53	0.65	0.84	0.04	0.00	0.03	0.62	0.13	-0.19	0.06	0.61	-0.04	0.49	0.40	0.49	0.60	0.58	0.04	0.59	0.61	-0.18	0.36
Cu	0.42	0.00	0.31	0.11	-0.06	-0.04	0.02	0.55	0.22	-0.33	-0.01	-0.17	-0.40		-0.23	-0.22	-0.24	0.22	0.10	-0.25	-0.28	-0.16	0.26	-0.22	-0.13	-0.05	-0.37	-0.08	-0.22	0.10	-0.14	0.16	-0.17	-0.32	0.50	-0.21	-0.23	-0.35	-0.28	-0.02	-0.03	-0.03	-0.28	-0.01	0.12	-0.04	-0.23	-0.01	-0.29	-0.22	-0.12	-0.22	-0.30	-0.01	-0.22	-0.22	0.19	-0.23
Dy	-0.22	0.16	-0.06	-0.06	0.35	-0.03	-0.05	-0.36	0.19	0.76	0.48	0.50	0.60	-0.23		0.98	0.94	0.24	-0.07	0.96	0.82	0.68	-0.01	0.98	0.34	0.12	0.79	0.20	0.93	-0.09	0.51	0.05	0.43	0.89	0.06	0.43	0.88	0.85	0.57	0.03	-0.03	0.23	0.94	0.21	-0.08	0.03	0.97	0.02	0.68	0.49	0.35	0.96	0.74	0.14	0.98	0.95	0.05	0.58
Er	-0.22	0.18	-0.06	-0.06	0.36	-0.02	-0.05	-0.35	0.18	0.77	0.49	0.50	0.61	-0.22	0.98		0.92	0.26	-0.07	0.92	0.80	0.70	-0.01	0.99	0.36	0.12	0.77	0.21	0.98	-0.10	0.53	0.02	0.44	0.85	0.03	0.46	0.89	0.82	0.57	0.03	-0.03	0.23	0.90	0.21	-0.10	0.03	0.96	0.02	0.67	0.50	0.35	0.99	0.73	0.16	0.97	0.99	0.05	0.58
Eu	-0.24	0.12	-0.07	-0.01	0.32	-0.03	-0.06	-0.39	0.18	0.78	0.42	0.46	0.62	-0.24	0.94	0.92		0.20	-0.01	0.98	0.86	0.64	-0.01	0.94	0.31	0.12	0.84	0.18	0.85	-0.08	0.48	0.11	0.40	0.94	0.05	0.39	0.85	0.90	0.60	0.02	-0.03	0.23	0.98	0.20	-0.07	0.03	0.98	0.00	0.68	0.45	0.37	0.88	0.74	0.12	0.93	0.87	0.02	0.55
Fe	0.10	0.32	0.14	0.12	0.52	-0.01	0.17	0.35	0.22	0.32	0.15	0.69	-0.03	0.22	0.24	0.26	0.20		0.13	0.18	0.24	0.63	0.03	0.25	0.20	0.17	0.20	0.33	0.26	0.06	0.27	-0.10	0.64	0.15	0.21	0.20	0.46	0.18	-0.06	0.05	-0.02	0.29	0.17	0.41	0.18	0.11	0.22	0.04	0.41	0.63	-0.05	0.28	0.23	0.17	0.21	0.29	0.22	0.61
Ga	0.05	-0.11	0.21	0.91	-0.02	-0.01	-0.10	0.22	-0.07	-0.12	0.01	-0.07	-0.04	0.10	-0.07	-0.07	-0.01	0.13		-0.08	-0.08	-0.07	0.03	-0.07	0.04	-0.02	-0.13	-0.04	-0.05	0.05	-0.13	-0.12	-0.04	-0.12	0.18	-0.04	-0.04	-0.13	-0.12	-0.03	-0.02	-0.09	-0.10	-0.04	0.09	-0.01	-0.08	-0.01	-0.12	-0.05	-0.04	-0.06	-0.13	-0.03	-0.07	-0.06	-0.07	-0.09
Gd	-0.22	0.13	-0.08	-0.07	0.33	-0.03	-0.05	-0.40	0.18	0.77	0.43	0.45	0.61	-0.25	0.96	0.92	0.98	0.18	-0.08		0.87	0.63	0.00	0.94	0.32	0.11	0.84	0.18	0.85	-0.08	0.49	0.11	0.38	0.95	0.05	0.39	0.86	0.91	0.59	0.01	-0.03	0.24	0.99	0.19	-0.07	0.02	0.98	0.01	0.68	0.44	0.36	0.88	0.74	0.12	0.94	0.87	0.03	0.54
Ge	-0.21	0.08	-0.14	-0.11	0.43	-0.02	-0.09	-0.44	0.12	0.81	0.30	0.51	0.58	-0.28	0.82	0.80	0.86	0.24	-0.08	0.87		0.65	-0.01	0.81	0.26	0.16	0.85	0.17	0.74	-0.16	0.44	0.04	0.52	0.90	-0.08	0.35	0.83	0.89	0.54	0.00	-0.02	0.20	0.89	0.28	-0.18	0.06	0.85	0.01	0.70	0.56	0.28	0.77	0.69	0.12	0.79	0.76	0.04	0.59
Hf	-0.14	0.28	-0.07	-0.08	0.55	-0.01	-0.04	-0.23	0.20	0.76	0.36	0.84	0.34	-0.16	0.68	0.70	0.64	0.63	-0.07	0.63	0.65		-0.05	0.69	0.25	0.19	0.68	0.23	0.68	-0.15	0.62	-0.10	0.67	0.63	-0.06	0.45	0.87	0.65	0.30	0.03	-0.02	0.21	0.63	0.38	-0.16	0.08	0.68	0.04	0.85	0.73	0.13	0.71	0.67	0.17	0.64	0.71	0.14	0.92
Hg	0.50	0.10	0.32	0.02	0.04	-0.01	0.14	0.21	0.08	-0.10	-0.10	-0.04	-0.03	0.26	-0.01	-0.01	-0.01	0.03	0.03	0.00	-0.01	-0.05		-0.01	0.10	-0.01	-0.09	0.10	-0.02	0.16	-0.11	0.20	-0.04	-0.04	0.17	-0.03	-0.03	-0.07	0.06	0.02	0.00	0.13	-0.02	0.03	0.19	-0.02	-0.01	0.03	-0.10	-0.07	0.16	-0.02	-0.07	0.10	0.01	-0.03	0.01	-0.10
Ho	-0.22	0.17	-0.05	-0.06	0.35	-0.02	-0.05	-0.36	0.19	0.76	0.49	0.50	0.61	-0.22	0.98	0.99	0.94	0.25	-0.07	0.94	0.81	0.69	-0.01		0.35	0.13	0.78	0.21	0.96	-0.09	0.52	0.05	0.43	0.87	0.05	0.44	0.88	0.83	0.58	0.03	-0.03	0.24	0.92	0.21	-0.08	0.03	0.98	0.02	0.66	0.49	0.37	0.98	0.74	0.15	0.97	0.97	0.05	0.57
I	0.00	0.31	0.18	0.03	0.18	-0.01	0.30	0.05	0.01	0.29	0.28	0.22	0.33	-0.13	0.34	0.36	0.31	0.20	0.04	0.32	0.26	0.25	0.10	0.35		0.05	0.25	0.39	0.38	0.27	0.18	-0.09	0.17	0.28	0.06	0.17	0.34	0.27	0.22	0.09	-0.02	0.46	0.30	0.09	0.26	0.01	0.32	0.31	0.24	0.17	0.24	0.37	0.32	0.08	0.35	0.37	0.04	0.20
In	-0.03	0.06	0.01	-0.02	0.19	0.00	-0.01	-0.05	-0.01	0.16	0.01	0.23	0.09	-0.05	0.12	0.12	0.12	0.17	-0.02	0.11	0.16	0.19	-0.01	0.13	0.05		0.15	0.07	0.13	-0.05	0.04	-0.02	0.26	0.12	-0.05	0.06	0.16	0.14	0.08	0.18	0.00	0.03	0.12	0.17	-0.04	0.19	0.12	0.08	0.15	0.24	0.08	0.13	0.10	0.06	0.11	0.13	0.01	0.19
La	-0.29	0.09	-0.20	-0.15	0.37	-0.02	-0.08	-0.51	0.06	0.93	0.31	0.56	0.65	-0.37	0.79	0.77	0.84	0.20	-0.13	0.84	0.85	0.68	-0.09	0.78	0.25	0.15		0.14	0.72	-0.24	0.51	-0.02	0.46	0.94	-0.21	0.37	0.79	0.97	0.59	0.03	-0.02	0.16	0.88	0.22	-0.22	0.05	0.82	-0.02	0.83	0.53	0.28	0.75	0.73	0.09	0.76	0.75	-0.06	0.67
Li	0.11	0.51	0.20	-0.05	0.27	0.00	0.59	0.15	0.08	0.16	0.13	0.28	0.11	-0.08	0.20	0.21	0.18	0.33	-0.04	0.18	0.17	0.23	0.10	0.21	0.39	0.07	0.14		0.20	0.52	0.10	-0.01	0.35	0.15	0.12	0.08	0.24	0.14	0.06	0.12	0.00	0.61	0.17	0.17	0.45	0.06	0.20	0.09	0.14	0.31	0.12	0.21	0.18	0.15	0.20	0.20	0.13	0.22
Lu	-0.21	0.18	-0.05	-0.05	0.34	-0.02	-0.06	-0.33	0.14	0.75	0.49	0.49	0.61	-0.22	0.93	0.98	0.85	0.26	-0.05	0.85	0.74	0.68	-0.02	0.96	0.38	0.13	0.72	0.20		-0.12	0.52	-0.03	0.44	0.78	-0.02	0.46	0.84	0.76	0.55	0.04	-0.02	0.20	0.83	0.21	-0.12	0.04	0.90	0.03	0.64	0.49	0.35	0.99	0.70	0.16	0.93	1.00	0.03	0.55
Mg	0.30	0.51	0.37	0.11	0.01	0.00	0.66	0.38	0.08	-0.25	0.05	-0.13	-0.25	0.10	-0.09	-0.10	-0.08	0.06	0.05	-0.08	-0.16	-0.15	0.16	-0.09	0.27	-0.05	-0.24	0.52	-0.12		-0.11	0.11	-0.12	-0.16	0.36	-0.09	-0.11	-0.20	-0.20	0.06	-0.02	0.62	-0.10	-0.04	0.68	-0.02	-0.08	0.11	-0.25	-0.17	0.04	-0.11	-0.15	0.10	-0.06	-0.12	0.20	-0.19
Mn	-0.19	0.20	-0.13	-0.12	0.25	0.01	-0.05	-0.29	0.37	0.57	0.73	0.50	0.28	-0.14	0.51	0.53	0.48	0.27	-0.13	0.49	0.44	0.62	-0.11	0.52	0.18	0.04	0.51	0.10	0.52	-0.11		0.00	0.29	0.48	0.02	0.35	0.59	0.49	0.32	-0.01	0.00	0.12	0.48	0.12	-0.18	-0.01	0.50	0.01	0.63	0.35	0.18	0.53	0.55	0.06	0.49	0.54	0.24	0.61
Mo	0.12	-0.02	-0.02	-0.13	-0.06	-0.02	0.04	-0.04	0.31	-0.12	-0.05	-0.07	-0.03	0.16	0.05	0.02	0.11	-0.10	-0.12	0.11	0.04	-0.10	0.20	0.05	-0.09	-0.02	-0.02	-0.01	-0.03	0.11	0.00		-0.06	0.07	0.27	-0.05	-0.01	0.02	0.15	-0.01	0.00	0.05	0.10	-0.02	0.19	-0.02	0.10	-0.02	-0.09	-0.06	0.19	-0.02	0.02	0.02	0.06	-0.03	0.19	-0.09
Nb	-0.12	0.14	-0.08	-0.09	0.64	-0.01	-0.02	-0.20	0.11	0.50	0.16	0.81	0.35	-0.17	0.43	0.44	0.40	0.64	-0.04	0.38	0.52	0.67	-0.04	0.43	0.17	0.26	0.46	0.35	0.44	-0.12	0.29	-0.06		0.41	-0.10	0.28	0.57	0.43	0.26	0.03	0.01	0.13	0.39	0.56	-0.12	0.21	0.42	0.03	0.52	0.95	0.12	0.46	0.43	0.19	0.38	0.45	0.10	0.72
Nd	-0.26	0.09	-0.16	-0.13	0.33	-0.02	-0.06	-0.48	0.12	0.87	0.35	0.48	0.65	-0.32	0.89	0.85	0.94	0.15	-0.12	0.95	0.90	0.63	-0.04	0.87	0.28	0.12	0.94	0.15	0.78	-0.16	0.48	0.07	0.41		-0.09	0.37	0.81	0.99	0.61	0.02	-0.03	0.20	0.98	0.20	-0.15	0.03	0.92	-0.01	0.76	0.47	0.33	0.81	0.75	0.11	0.87	0.80	-0.01	0.58
Ni	0.28	0.12	0.34	0.24	0.03	-0.03	0.14	0.41	0.35	-0.21	0.29	-0.10	-0.30	0.50	0.06	0.03	0.05	0.21	0.18	0.05	-0.08	-0.06	0.17	0.05	0.06	-0.05	-0.21	0.12	-0.02	0.36	0.02	0.27	-0.10	-0.09		-0.09	0.01	-0.16	-0.17	-0.02	-0.03	0.18	0.00	0.02	0.33	-0.04	0.06	0.02	-0.20	-0.13	0.02	0.00	-0.11	0.01	0.07	-0.01	0.28	-0.12
Pb	-0.09	0.13	-0.03	-0.04	0.22	0.03	-0.05	-0.21	0.09	0.42	0.23	0.37	0.32	-0.21	0.43	0.46	0.39	0.20	-0.04	0.39	0.35	0.45	-0.03	0.44	0.17	0.06	0.37	0.08	0.46	-0.09	0.35	-0.05	0.28	0.37	-0.09		0.45	0.37	0.26	0.03	0.03	0.09	0.38	0.12	-0.10	0.02	0.41	0.03	0.44	0.32	0.14	0.47	0.40	0.07	0.42	0.47	0.04	0.42
Pd	-0.18	0.23	-0.07	-0.07	0.47	-0.02	-0.03	-0.33	0.20	0.81	0.44	0.70	0.53	-0.23	0.88	0.89	0.85	0.46	-0.04	0.86	0.83	0.87	-0.03	0.88	0.34	0.16	0.79	0.24	0.84	-0.11	0.59	-0.01	0.57	0.81	0.01	0.45		0.81	0.48	0.02	-0.03	0.26	0.84	0.29	-0.11	0.05	0.88	0.02	0.81	0.64	0.25	0.87	0.75	0.17	0.86	0.87	0.11	0.79
Pr	-0.28	0.09	-0.18	-0.14	0.35	-0.02	-0.07	-0.50	0.09	0.91	0.32	0.52	0.65	-0.35	0.85	0.82	0.90	0.18	-0.13	0.91	0.89	0.65	-0.07	0.83	0.27	0.14	0.97	0.14	0.76	-0.20	0.49	0.02	0.43	0.99	-0.16	0.37	0.81		0.59	0.02	-0.02	0.18	0.95	0.21	-0.19	0.04	0.88	-0.01	0.81	0.50	0.31	0.79	0.76	0.10	0.82	0.78	-0.03	0.63
Rb	-0.21	-0.06	-0.18	-0.14	0.16	-0.03	-0.13	-0.52	0.09	0.50	0.25	0.25	0.84	-0.28	0.57	0.57	0.60	-0.06	-0.12	0.59	0.54	0.30	0.06	0.58	0.22	0.08	0.59	0.06	0.55	-0.20	0.32	0.15	0.26	0.61	-0.17	0.26	0.48	0.59		0.01	0.01	0.02	0.59	0.10	-0.17	0.04	0.59	-0.05	0.41	0.30	0.52	0.55	0.51	0.03	0.57	0.55	-0.11	0.30
Re	0.01	0.16	0.07	-0.03	0.01	0.00	0.21	0.06	-0.01	0.03	0.00	0.03	0.04	-0.02	0.03	0.03	0.02	0.05	-0.03	0.01	0.00	0.03	0.02	0.03	0.09	0.18	0.03	0.12	0.04	0.06	-0.01	-0.01	0.03	0.02	-0.02	0.03	0.02	0.02	0.01		0.00	0.22	0.01	0.02	0.16	0.25	0.02	0.07	0.03	0.02	0.10	0.04	0.03	-0.01	0.02	0.03	0.00	0.05
Sb	0.00	-0.01	-0.02	-0.03	-0.01	0.00	-0.01	-0.03	0.00	-0.02	-0.01	0.02	0.00	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.03	-0.02	-0.02	0.00	-0.03	-0.02	0.00	-0.02	0.00	-0.02	-0.02	0.00	0.00	0.01	-0.03	-0.03	0.03	-0.03	-0.02	0.01	0.00		-0.02	-0.03	-0.01	-0.02	0.00	-0.03	0.01	-0.01	-0.01	-0.01	-0.03	-0.01	-0.01	-0.03	-0.03	-0.01	-0.01
Se	0.17	0.72	0.20	-0.11	0.18	0.01	0.87	0.28	0.15	0.17	0.13	0.16	0.03	-0.03	0.23	0.23	0.23	0.29	-0.09	0.24	0.20	0.21	0.13	0.24	0.46	0.03	0.16	0.61	0.20	0.62	0.12	0.05	0.13	0.20	0.18	0.09	0.26	0.18	0.02	0.22	-0.02		0.23	0.09	0.64	0.01	0.25	0.11	0.15	0.12	0.13	0.22	0.18	0.13	0.24	0.21	0.18	0.15
Sm	-0.24	0.12	-0.11	-0.10	0.32	-0.03	-0.05	-0.43	0.16	0.81	0.39	0.46	0.62	-0.28	0.94	0.90	0.98	0.17	-0.10	0.99	0.89	0.63	-0.02	0.92	0.30	0.12	0.88	0.17	0.83	-0.10	0.48	0.10	0.39	0.98	0.00	0.38	0.84	0.95	0.59	0.01	-0.03	0.23		0.19	-0.09	0.03	0.97	0.00	0.71	0.46	0.36	0.86	0.75	0.12	0.92	0.85	0.02	0.56
Sn	0.06	0.08	0.00	-0.05	0.38	-0.01	0.02	-0.03	0.09	0.27	0.06	0.47	0.13	-0.01	0.21	0.21	0.20	0.41	-0.04	0.19	0.28	0.38	0.03	0.21	0.09	0.17	0.22	0.17	0.21	-0.04	0.12	-0.02	0.56	0.20	0.02	0.12	0.29	0.21	0.10	0.02	-0.01	0.09	0.19		-0.02	0.14	0.22	0.03	0.27	0.53	0.06	0.23	0.19	0.11	0.18	0.22	0.09	0.38
Sr	0.28	0.50	0.38	0.15	-0.04	0.00	0.71	0.54	0.05	-0.24	-0.01	-0.14	-0.19	0.12	-0.08	-0.10	-0.07	0.18	0.09	-0.07	-0.18	-0.16	0.19	-0.08	0.26	-0.04	-0.22	0.45	-0.12	0.68	-0.18	0.19	-0.12	-0.15	0.33	-0.10	-0.11	-0.19	-0.17	0.16	-0.02	0.64	-0.09	-0.02		-0.01	-0.08	0.07	-0.24	-0.16	0.09	-0.11	-0.17	0.07	-0.06	-0.12	0.10	-0.20
Ta	-0.02	0.01	0.03	-0.01	0.16	0.00	-0.01	-0.03	-0.02	0.06	-0.01	0.12	0.06	-0.04	0.03	0.03	0.03	0.11	-0.01	0.02	0.06	0.08	-0.02	0.03	0.01	0.19	0.05	0.06	0.04	-0.02	-0.01	-0.02	0.21	0.03	-0.04	0.02	0.05	0.04	0.04	0.25	0.00	0.01	0.03	0.14	-0.01		0.03	0.01	0.04	0.19	0.07	0.04	0.03	0.03	0.02	0.04	0.00	0.08
Tb	-0.23	0.15	-0.07	-0.08	0.35	-0.03	-0.05	-0.39	0.20	0.78	0.45	0.49	0.61	-0.23	0.97	0.96	0.98	0.22	-0.08	0.98	0.85	0.68	-0.01	0.98	0.32	0.12	0.82	0.20	0.90	-0.08	0.50	0.10	0.42	0.92	0.06	0.41	0.88	0.88	0.59	0.02	-0.03	0.25	0.97	0.22	-0.08	0.03		0.01	0.68	0.48	0.37	0.93	0.74	0.14	0.95	0.92	0.04	0.57
Te	0.05	0.15	0.10	0.02	0.13	-0.01	0.08	0.05	0.00	0.00	0.03	0.03	-0.04	-0.01	0.02	0.02	0.00	0.04	-0.01	0.01	0.01	0.04	0.03	0.02	0.31	0.08	-0.02	0.09	0.03	0.11	0.01	-0.02	0.03	-0.01	0.02	0.03	0.02	-0.01	-0.05	0.07	0.01	0.11	0.00	0.03	0.07	0.01	0.01		0.01	0.01	0.02	0.03	0.04	0.06	0.02	0.03	0.02	0.02
Th	-0.23	0.19	-0.16	-0.14	0.43	-0.01	-0.08	-0.40	0.12	0.89	0.32	0.74	0.49	-0.29	0.68	0.67	0.68	0.41	-0.12	0.68	0.70	0.85	-0.10	0.66	0.24	0.15	0.83	0.14	0.64	-0.25	0.63	-0.09	0.52	0.76	-0.20	0.44	0.81	0.81	0.41	0.03	-0.01	0.15	0.71	0.27	-0.24	0.04	0.68	0.01		0.61	0.17	0.67	0.73	0.11	0.64	0.67	0.05	0.86
Ti	-0.16	0.14	-0.12	-0.10	0.62	-0.01	-0.05	-0.27	0.12	0.58	0.19	0.84	0.40	-0.22	0.49	0.50	0.45	0.63	-0.05	0.44	0.56	0.73	-0.07	0.49	0.17	0.24	0.53	0.31	0.49	-0.17	0.35	-0.06	0.95	0.47	-0.13	0.32	0.64	0.50	0.30	0.02	-0.01	0.12	0.46	0.53	-0.16	0.19	0.48	0.01	0.61		0.12	0.51	0.49	0.16	0.45	0.51	0.10	0.78
Tl	-0.02	0.10	0.07	0.02	0.07	-0.02	0.05	-0.20	0.10	0.23	0.22	0.11	0.49	-0.12	0.35	0.35	0.37	-0.05	-0.04	0.36	0.28	0.13	0.16	0.37	0.24	0.08	0.28	0.12	0.35	0.04	0.18	0.19	0.12	0.33	0.02	0.14	0.25	0.31	0.52	0.10	-0.01	0.13	0.36	0.06	0.09	0.07	0.37	0.02	0.17	0.12		0.34	0.29	0.03	0.35	0.34	0.01	0.10
Tm	-0.21	0.19	-0.05	-0.06	0.37	-0.02	-0.05	-0.34	0.17	0.77	0.49	0.52	0.60	-0.22	0.96	0.99	0.88	0.28	-0.06	0.88	0.77	0.71	-0.02	0.98	0.37	0.13	0.75	0.21	0.99	-0.11	0.53	-0.02	0.46	0.81	0.00	0.47	0.87	0.79	0.55	0.04	-0.03	0.22	0.86	0.23	-0.11	0.04	0.93	0.03	0.67	0.51	0.34		0.72	0.16	0.95	1.00	0.04	0.59
U	-0.25	0.15	-0.14	-0.15	0.32	-0.02	-0.06	-0.45	0.13	0.75	0.38	0.57	0.58	-0.30	0.74	0.73	0.74	0.23	-0.13	0.74	0.69	0.67	-0.07	0.74	0.32	0.10	0.73	0.18	0.70	-0.15	0.55	0.02	0.43	0.75	-0.11	0.40	0.75	0.76	0.51	0.03	-0.01	0.18	0.75	0.19	-0.17	0.03	0.74	0.04	0.73	0.49	0.29	0.72		0.12	0.70	0.72	0.06	0.66
W	0.07	0.15	0.06	-0.03	0.14	0.00	0.13	0.07	0.04	0.11	0.05	0.16	0.04	-0.01	0.14	0.16	0.12	0.17	-0.03	0.12	0.12	0.17	0.10	0.15	0.08	0.06	0.09	0.15	0.16	0.10	0.06	0.02	0.19	0.11	0.01	0.07	0.17	0.10	0.03	-0.01	-0.01	0.13	0.12	0.11	0.07	0.03	0.14	0.06	0.11	0.16	0.03	0.16	0.12		0.15	0.16	0.07	0.14
Y	-0.19	0.16	-0.04	-0.05	0.33	-0.03	-0.03	-0.34	0.18	0.73	0.48	0.45	0.59	-0.22	0.98	0.97	0.93	0.21	-0.07	0.94	0.79	0.64	0.01	0.97	0.35	0.11	0.76	0.20	0.93	-0.06	0.49	0.06	0.38	0.87	0.07	0.42	0.86	0.82	0.57	0.02	-0.03	0.24	0.92	0.18	-0.06	0.02	0.95	0.02	0.64	0.45	0.35	0.95	0.70	0.15		0.94	0.05	0.52
Yb	-0.21	0.19	-0.05	-0.06	0.36	-0.02	-0.06	-0.34	0.16	0.77	0.50	0.52	0.61	-0.22	0.95	0.99	0.87	0.29	-0.06	0.87	0.76	0.71	-0.03	0.97	0.37	0.13	0.75	0.20	1.00	-0.12	0.54	-0.03	0.45	0.80	-0.01	0.47	0.87	0.78	0.55	0.03	-0.03	0.21	0.85	0.22	-0.12	0.04	0.92	0.03	0.67	0.51	0.34	1.00	0.72	0.16	0.94		0.04	0.59
Zn	0.12	0.19	0.01	-0.09	0.16	-0.02	0.13	0.12	0.62	-0.01	0.19	0.16	-0.18	0.19	0.05	0.05	0.02	0.22	-0.07	0.03	0.04	0.14	0.01	0.05	0.04	0.01	-0.06	0.13	0.03	0.20	0.24	0.19	0.10	-0.01	0.28	0.04	0.11	-0.03	-0.11	0.00	-0.01	0.18	0.02	0.09	0.10	0.00	0.04	0.02	0.05	0.10	0.01	0.04	0.06	0.07	0.05	0.04		0.15
Zr	-0.18	0.23	-0.14	-0.11	0.54	-0.01	-0.06	-0.31	0.19	0.74	0.30	0.90	0.36	-0.23	0.58	0.58	0.55	0.61	-0.09	0.54	0.59	0.92	-0.10	0.57	0.20	0.19	0.67	0.22	0.55	-0.19	0.61	-0.09	0.72	0.58	-0.12	0.42	0.79	0.63	0.30	0.05	-0.01	0.15	0.56	0.38	-0.20	0.08	0.57	0.02	0.86	0.78	0.10	0.59	0.66	0.14	0.52	0.59	0.15	

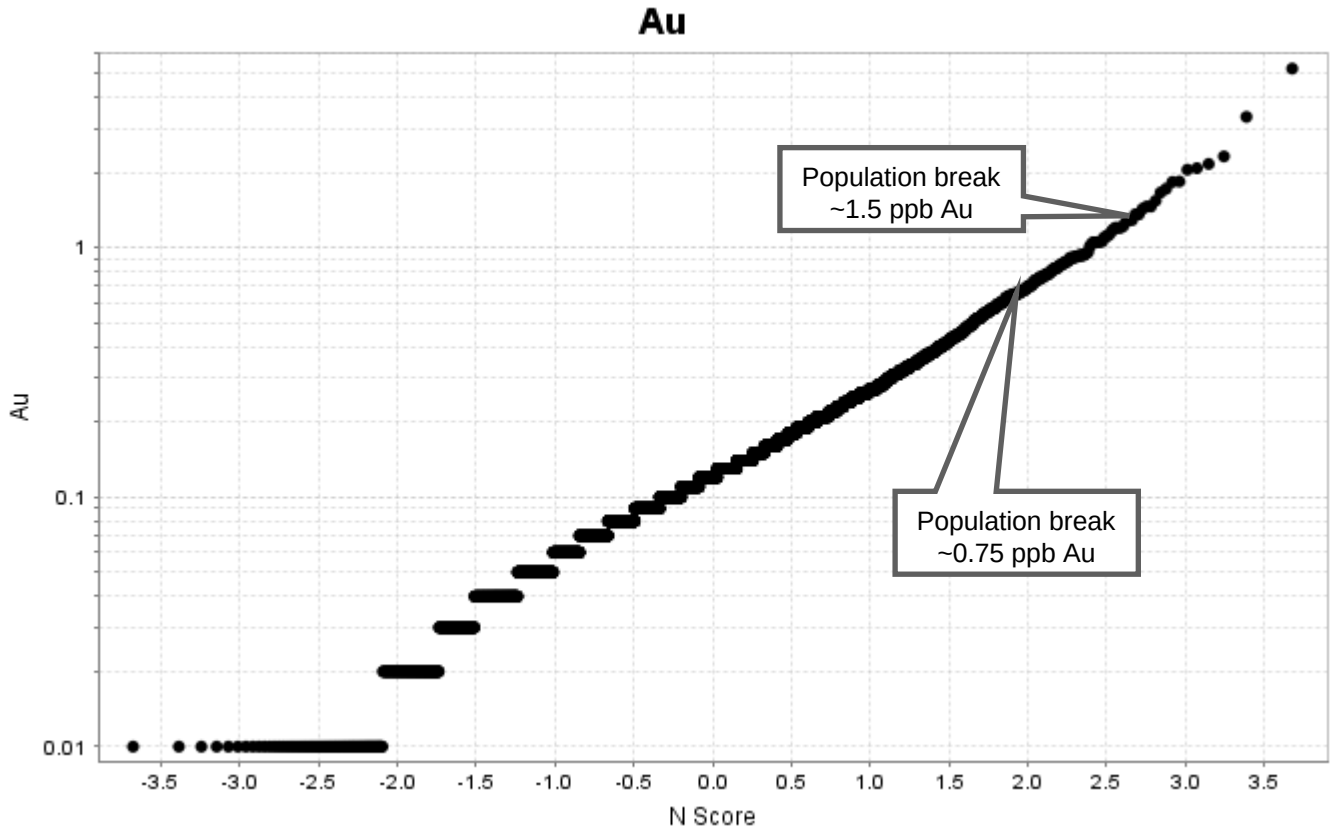
See *Regional_stats.xls*

PCA – regional vs Putta Putta

- A comparison between Principal Components in Putta Putta and regional ionic leach data sets indicates very similar element associations.
  - This strongly suggests consistency in geology, regolith, sampling and analysis

Putta-Putta			Regional		
PCA	Summary	Putt-Putta	PCA	Summary	Regional
PCA1	REE's	Ce, Cs, Dy, Er, Eu, Ge, Ho, La, Lu, Nd, Pb, Pd, Pr, Rb, Sm, Th, Tm, U, Y, Yb	PCA1	REE's	Ce, Dy, Er, Eu, Gd, Ge, Ho, La, Lu, Nd, Pd, Pr, Sm, Tb, Tm, U, Y, Yb
PCA2	Salts	As, Au, Br, Ca, I, Li, Mg, Sr	PCA2	Salts	As, Au, Br, Ca, I, Li, Mg, Se, Sr
PCA3	HFSE	Be, Cr, Fe, Hf, Nb, Ti, Zr	PCA3	HFSE	Be, Cr, Fe, Hf, Nb, Ti, Zr
PCA4	Auriferous	Ag, Au, Ca, Cu, Hg, Ni	PCA4	Mn enrich	Cd, Co, Cu, Mn, Mo, Ni, Zn
PCA5	Ba-Ga	Ba, Ga	PCA5	Ba-Ga	Ba, Ga
PCA6	Mn enrich	Co, Cd, Mn, Zn	PCA6	Auriferous	Ag, Au, Ca, Cu, Hg, Ni
PCA7	Tl-Hg	Tl, Hg	PCA7	Tl-Hg	Tl, Hg, Cs, Mo, Rb
Note PCA4 & PCA6 at Putta-Putta are reverse in regional					

Regional assessment of Au anomalies

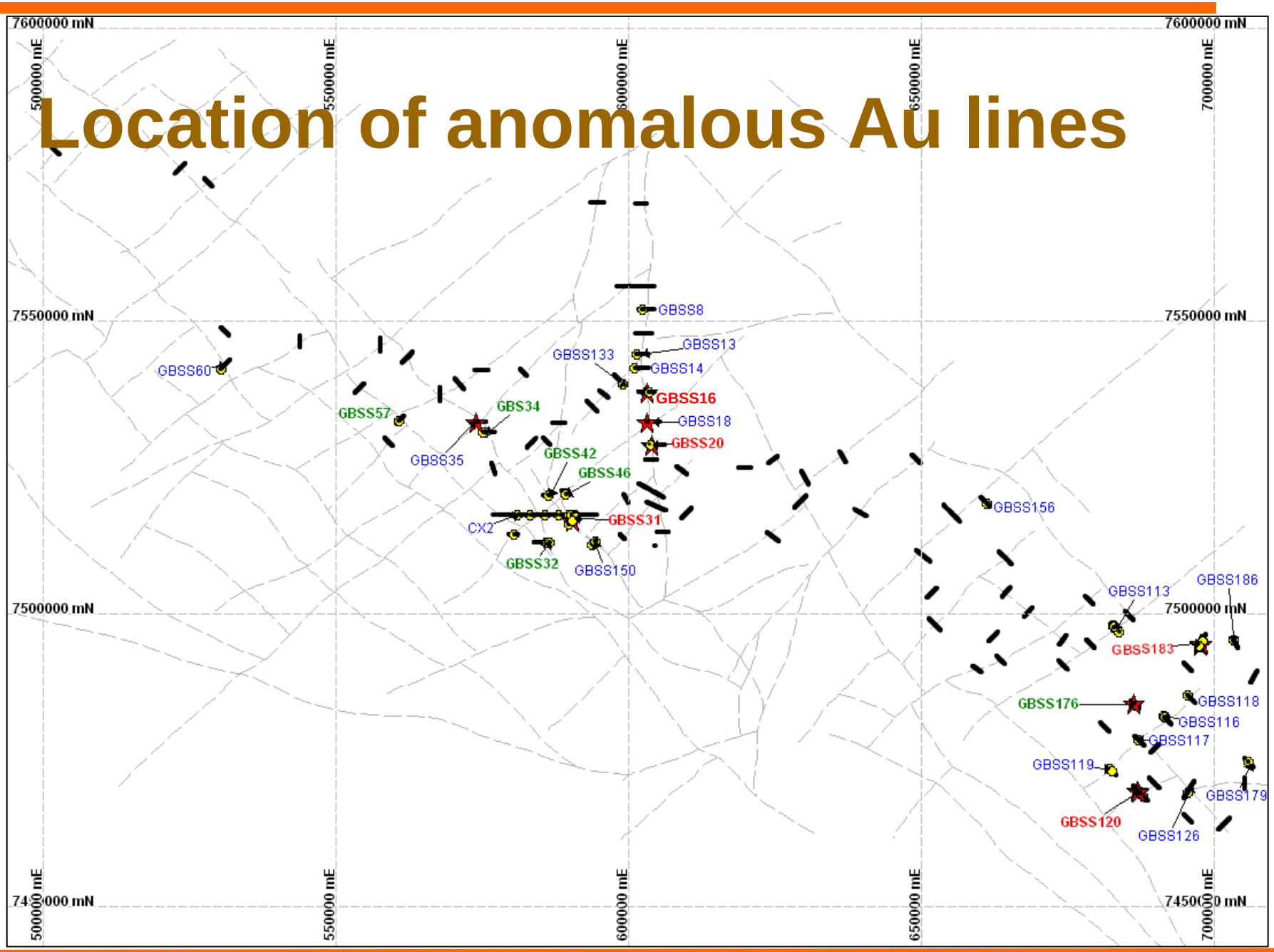


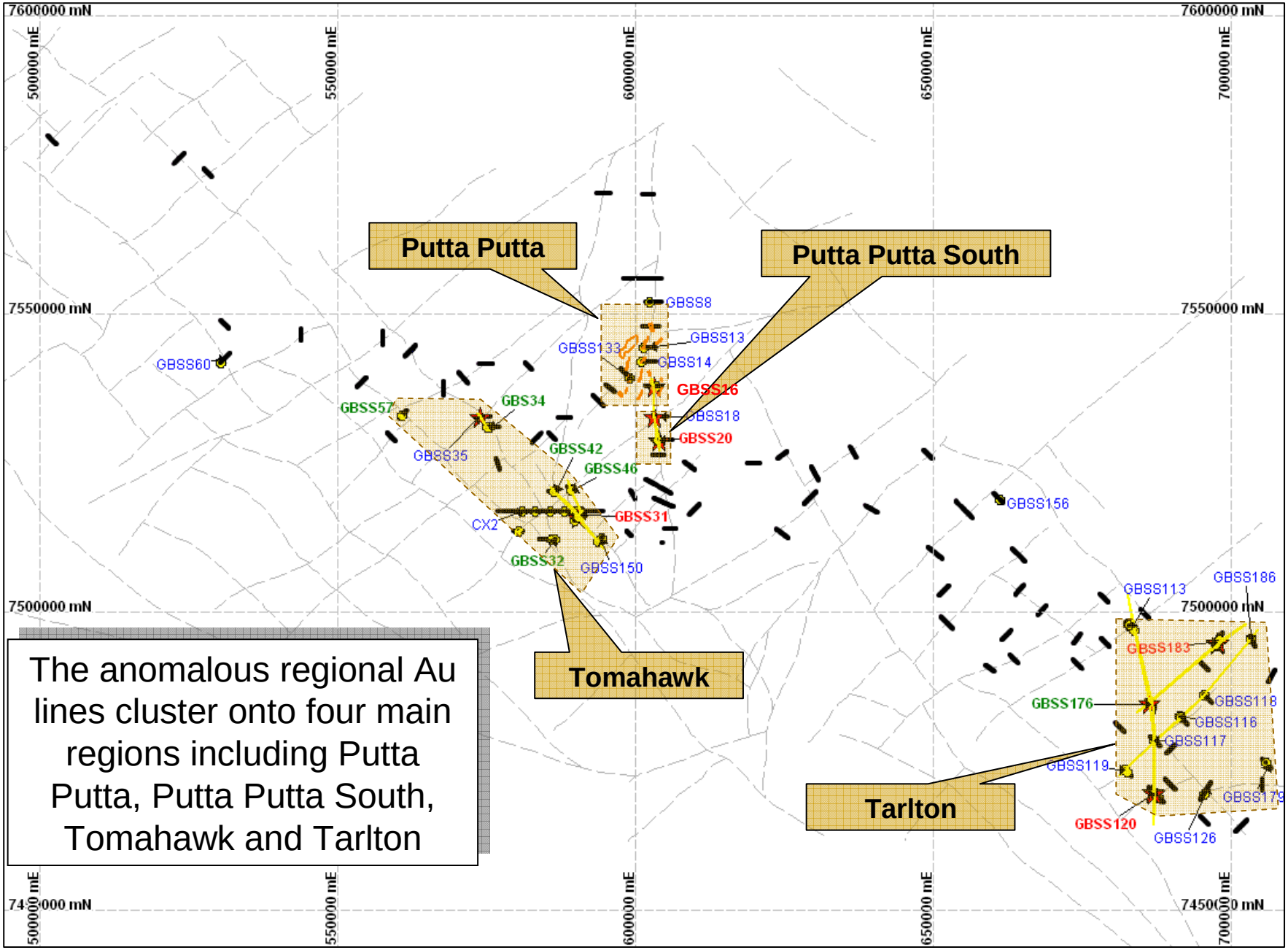
Regional Lines – Assessment

- Assessment of the lines show
  - 5 lines with strong elevated Au > 1.5 ppb in adjacent samples.
  - 8 lines with moderately elevated Au > 0.75 ppb Au in adjacent samples.
  - 15 lines with isolated Au values > 0.75 ppb Au

Line		Au	Comment
GBSS	16	STRONG	Elevated values up to 1.66 ppb Au over 550m
GBSS	20	STRONG	Au values up to 2.05 ppb Au
GBSS	31	STRONG	Elevated Au (upto 1.54 ppb Au) overlying structure. NOTE elevated Au at end of line
GBSS	120	STRONG	Several elevated Au values upto 5.21 ppb agjacent to structure
GBSS	183	STRONG	Elevated Au over 500m upto 2.08 ppb Au
GBSS	32	Moderate	Elevated Au (upto 1.36 ppb Au) overlying structure.
GBSS	34	Moderate	Low order Au values (up to 1.03 ppb Au) over 500m
GBSS	42	Moderate	low order Au values (up to 1.05 ppb Au) over structure
GBSS	46	Moderate	Broad auriferous zone adjacent to structure over 250m peaking at 1.4 ppb Au
GBSS	57	Moderate	Two adjacent values 0.93 & 1.06 ppb Au
GBSS	113	Moderate	Several values up to 0.92ppb Au on line
GBSS	139	Moderate	Two adjacent values upto 1.43 ppb Au
GBSS	176	Moderate	Two adjacent values upto 0.9 ppb Au & isolated value to 2.32 ppb
GBSS	8	Weak	isolated value 0.91 ppb Au
GBSS	13	Weak	isolated value 0.96 ppb Au
GBSS	18	Weak	isolated value 2.16 ppb Au
GBSS	35	Weak	isolated Au to 3.34 ppb
GBSS	60	Weak	isolated value 0.91 ppb Au
GBSS	116	Weak	Two isolated values on line up to 0.78 ppb Au
GBSS	117	Weak	isolated value 0.92 ppb Au
GBSS	118	Weak	isolated value 0.76 ppb Au
GBSS	119	Weak	Two isolated values on line up to 0.85 ppb Au
GBSS	126	Weak	isolated value 0.87 ppb Au
GBSS	133	Weak	isolated value 1.01 ppb Au
GBSS	150	Weak	Several isolated values on line up to 1.22ppb Au
GBSS	156	Weak	isolated value 0.8 ppb Au
GBSS	179	Weak	isolated value 1.18 ppb Au
GBSS	186	Weak	isolated value 1.2 ppb Au

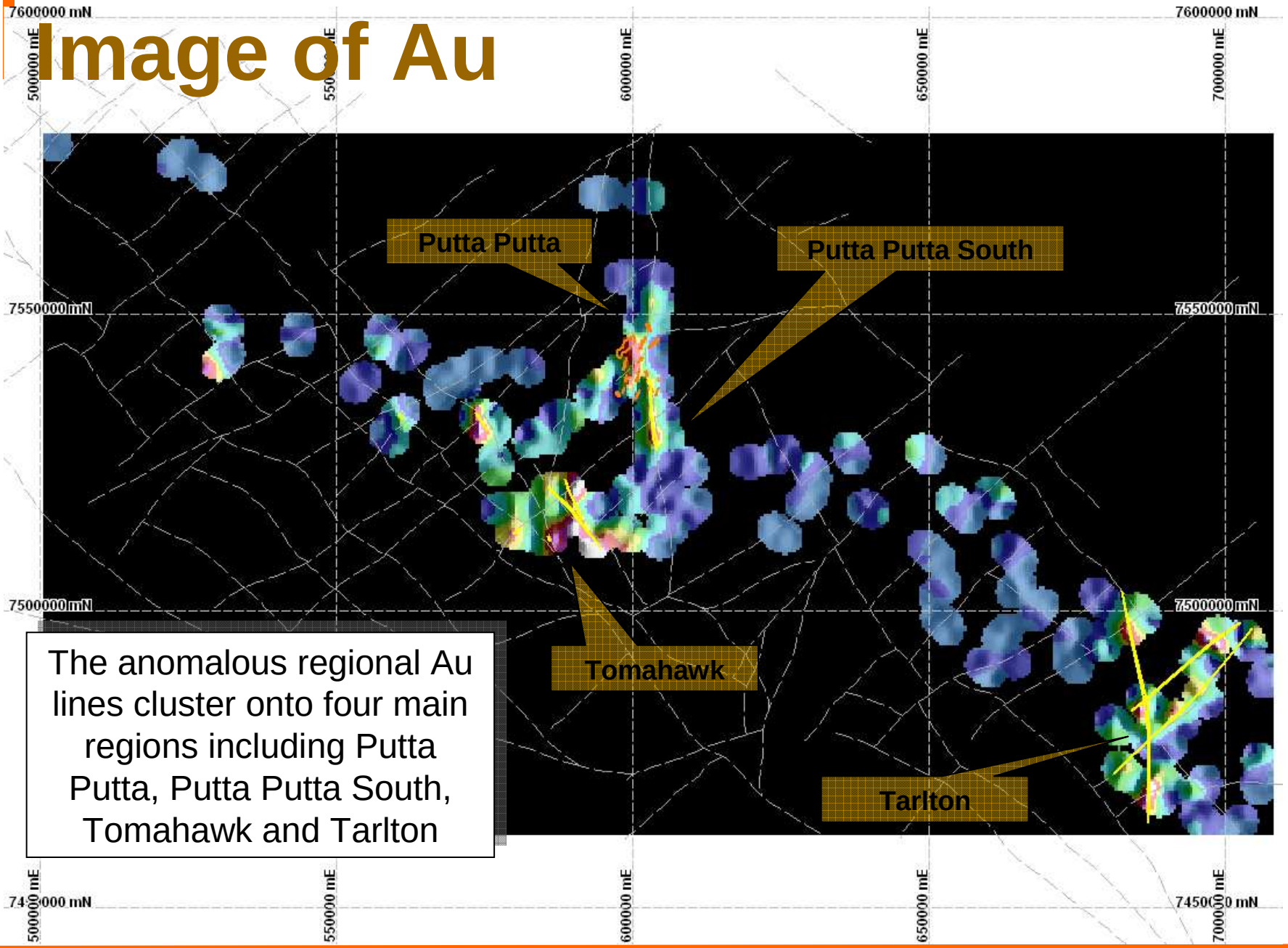
Location of anomalous Au lines





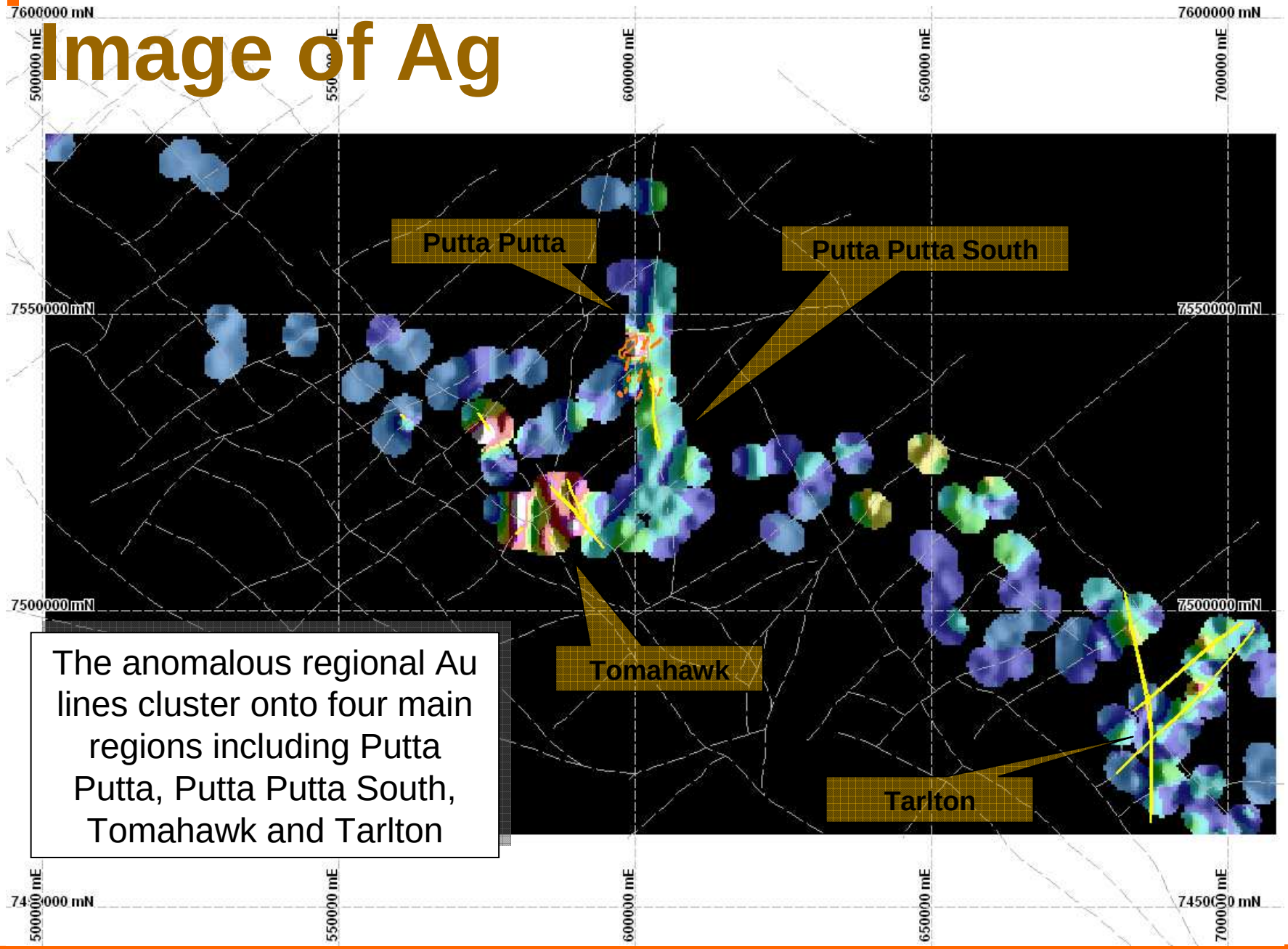
The anomalous regional Au lines cluster onto four main regions including Putta Putta, Putta Putta South, Tomahawk and Tarlton

Image of Au



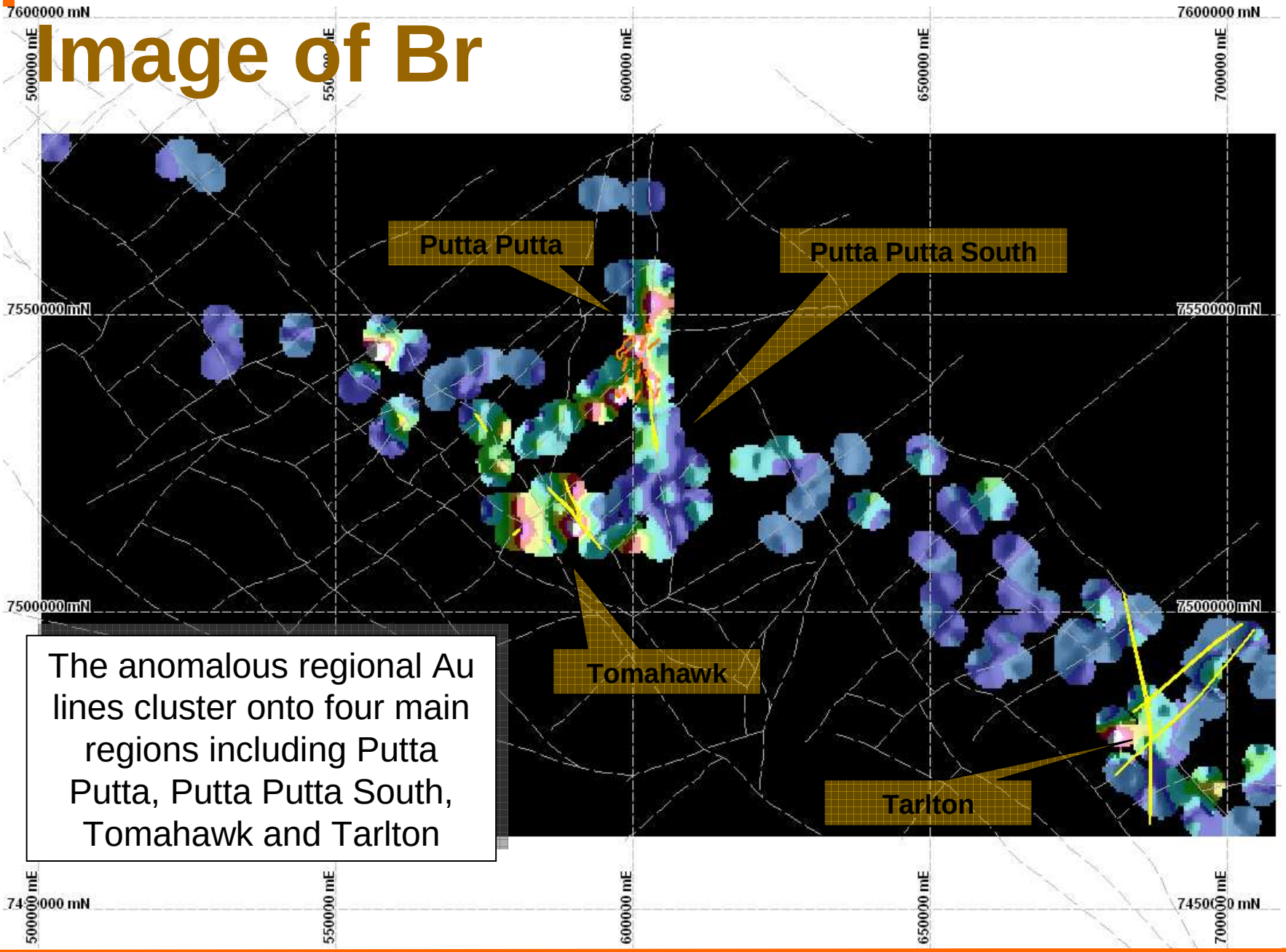
The anomalous regional Au lines cluster onto four main regions including Putta Putta, Putta Putta South, Tomahawk and Tarlton

Image of Ag



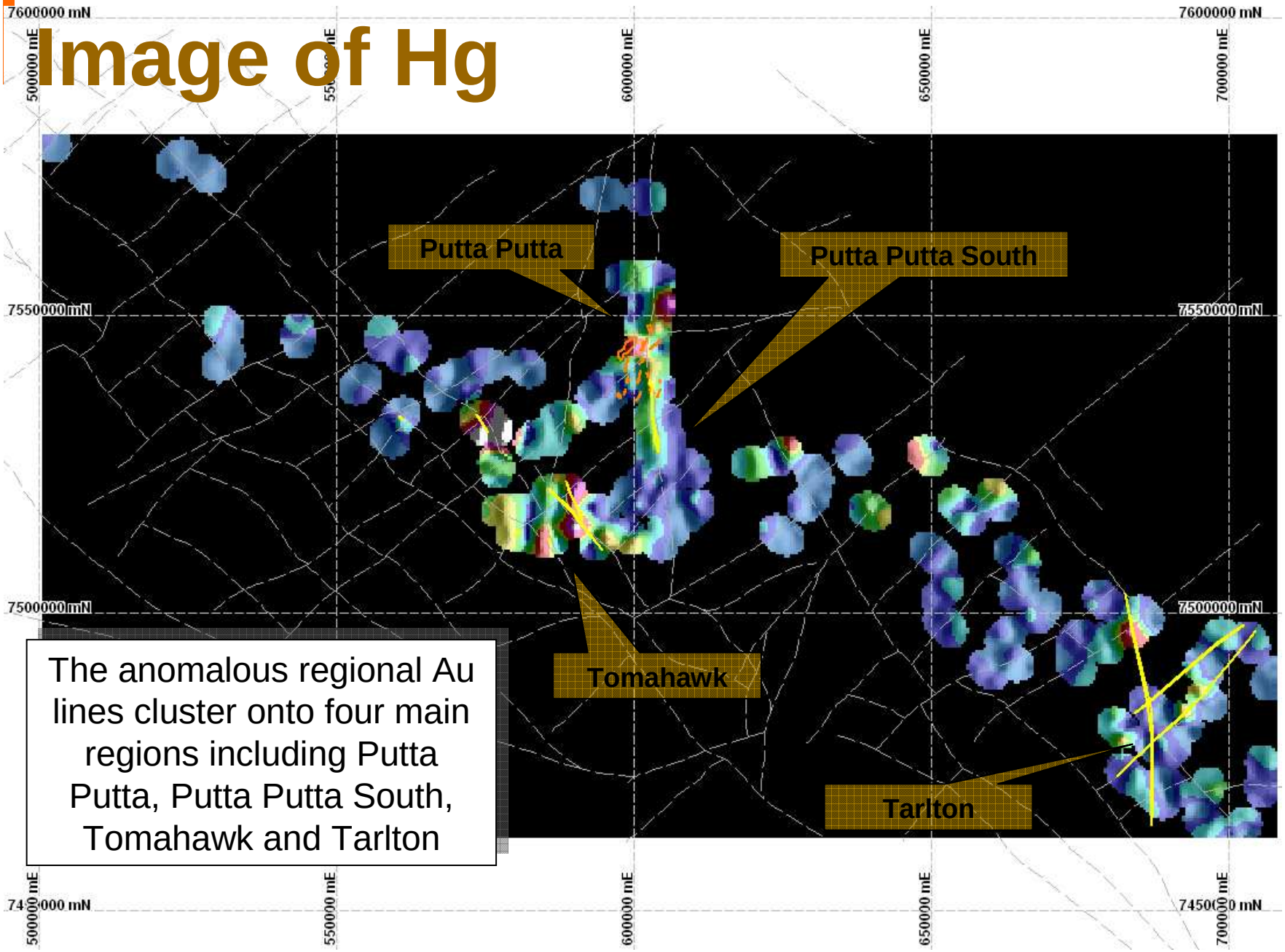
The anomalous regional Au lines cluster onto four main regions including Putta Putta, Putta Putta South, Tomahawk and Tarlton

Image of Br



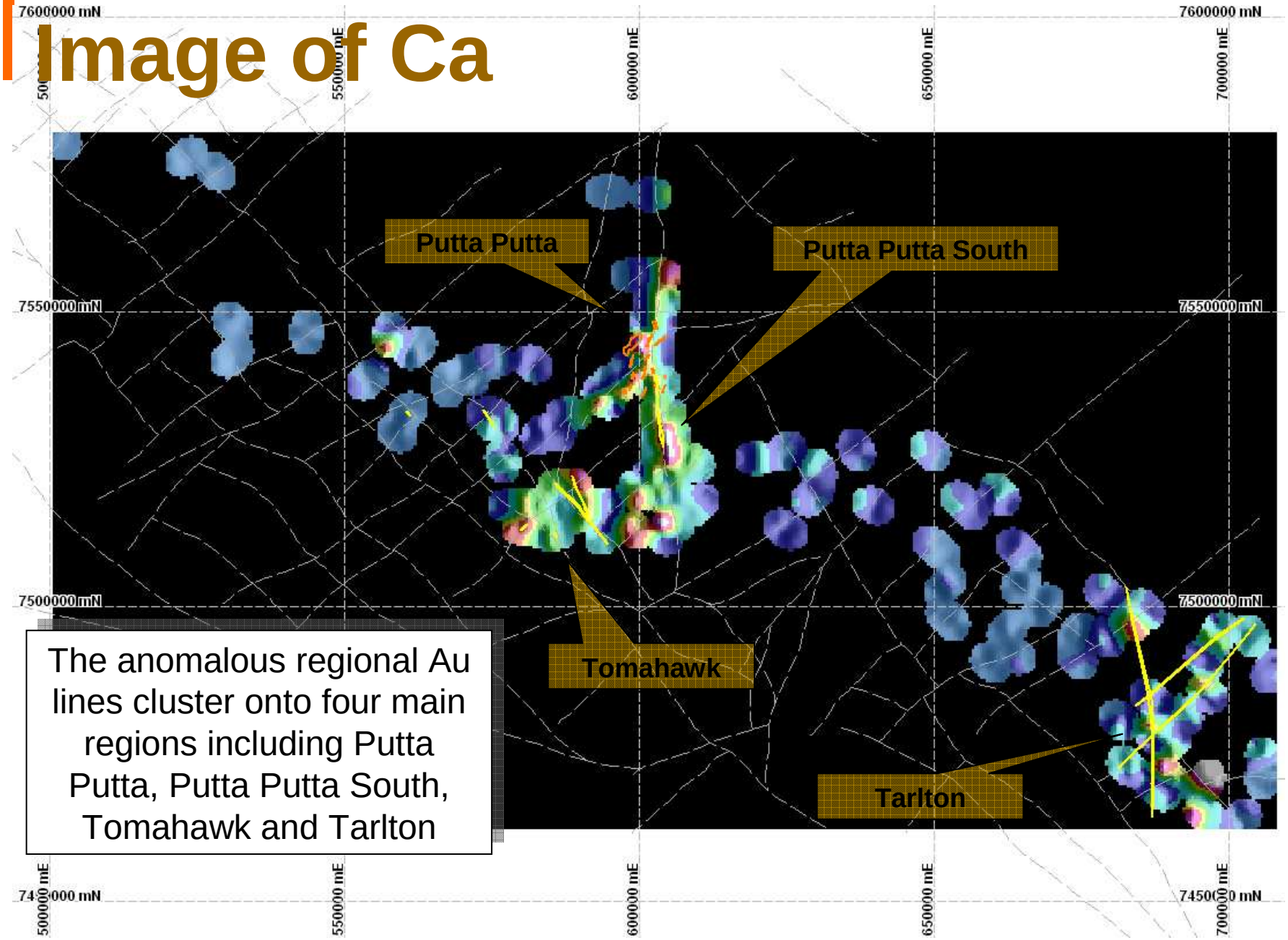
The anomalous regional Au lines cluster onto four main regions including Putta Putta, Putta Putta South, Tomahawk and Tarlton

Image of Hg



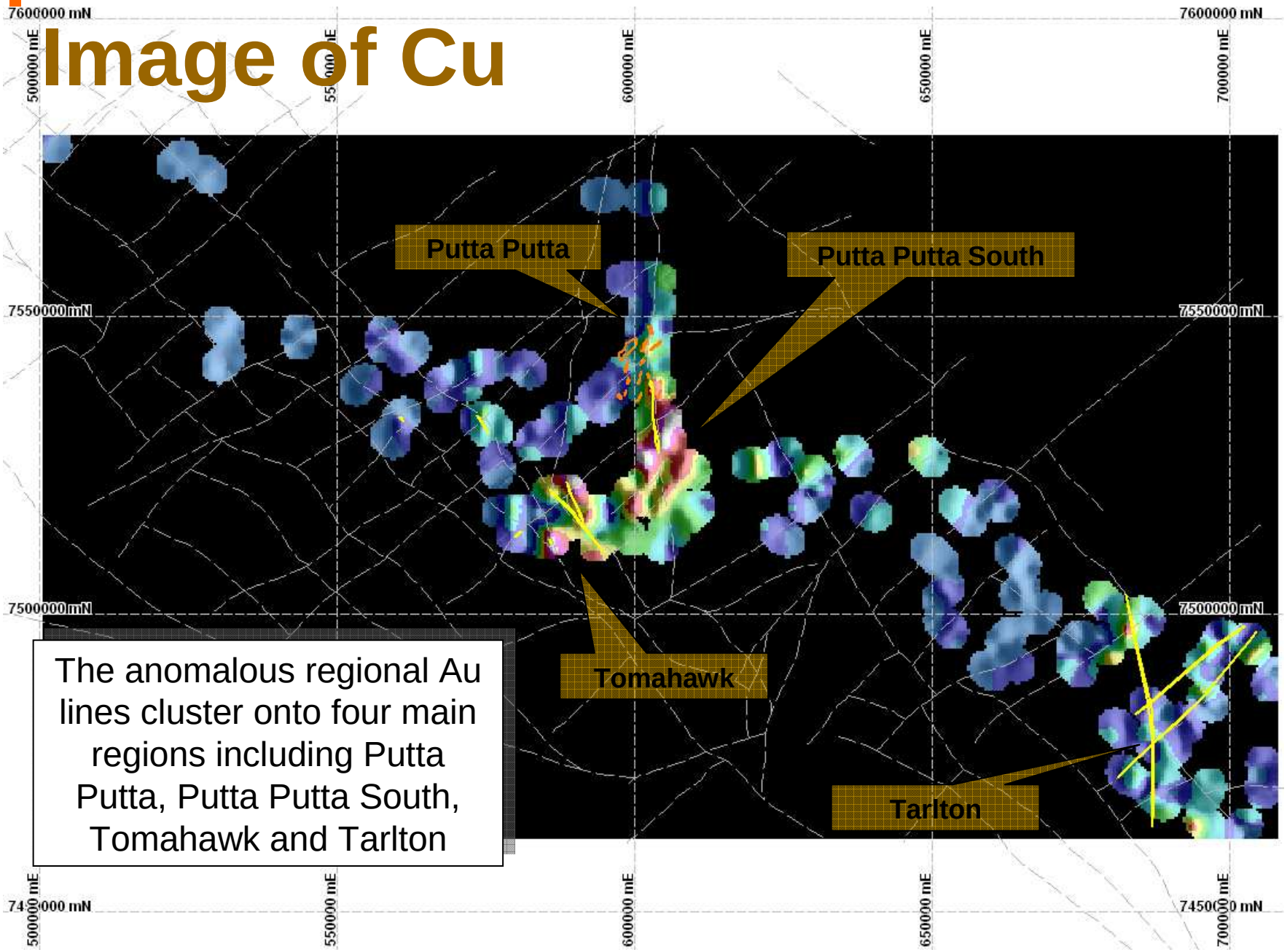
The anomalous regional Au lines cluster onto four main regions including Putta Putta, Putta Putta South, Tomahawk and Tarlton

Image of Ca



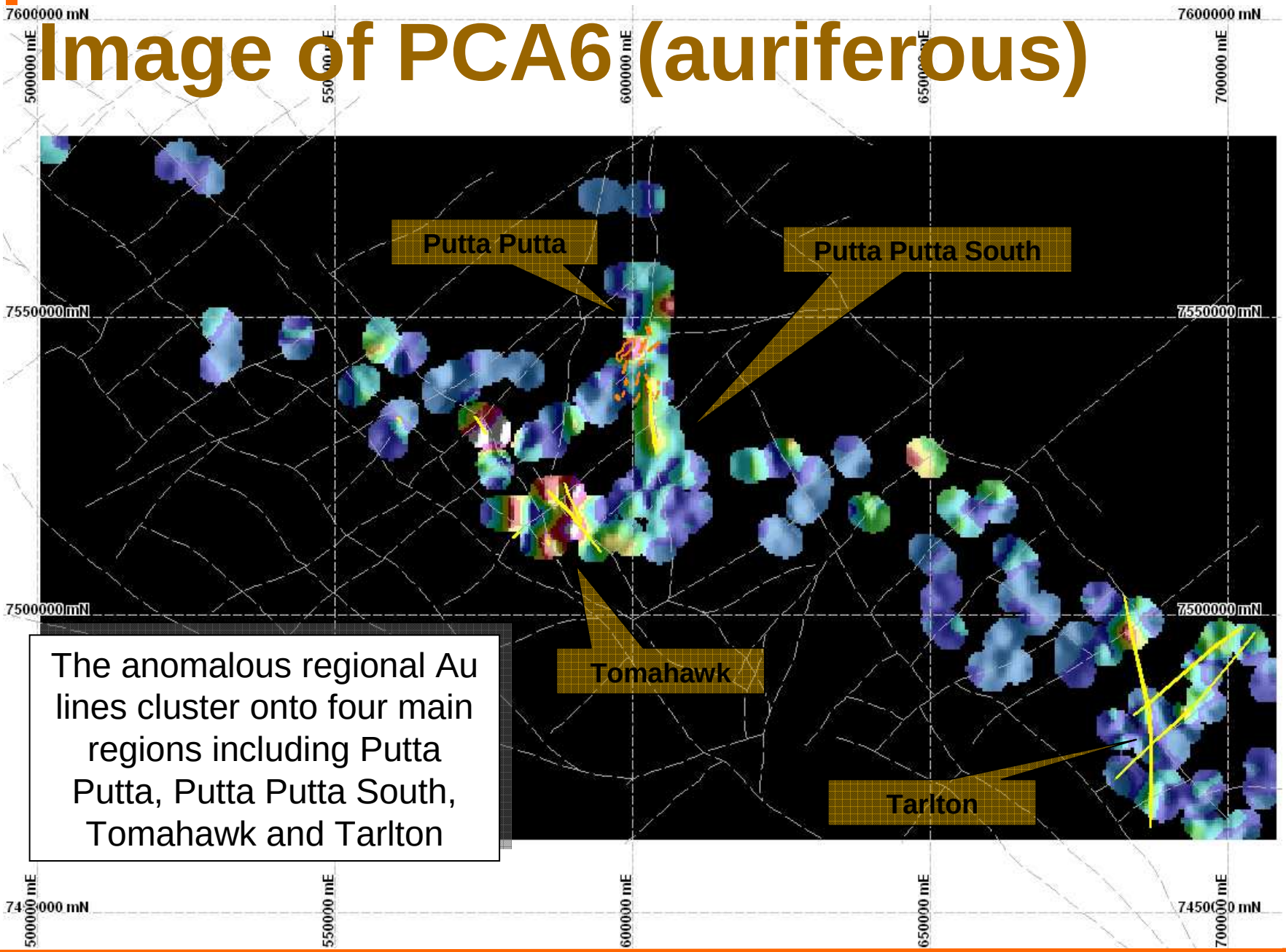
The anomalous regional Au lines cluster onto four main regions including Putta Putta, Putta Putta South, Tomahawk and Tarlton

Image of Cu



The anomalous regional Au lines cluster onto four main regions including Putta Putta, Putta Putta South, Tomahawk and Tarlton

Image of PCA6 (auriferous)

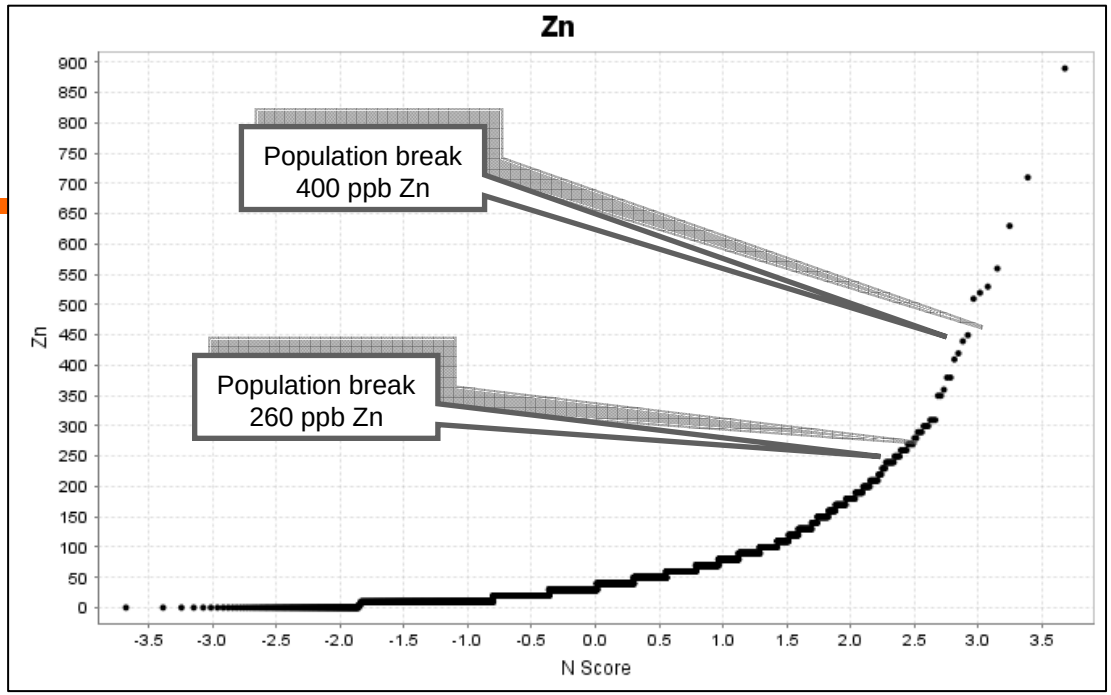


The anomalous regional Au lines cluster onto four main regions including Putta Putta, Putta Putta South, Tomahawk and Tarlton

Regional Au anomalies

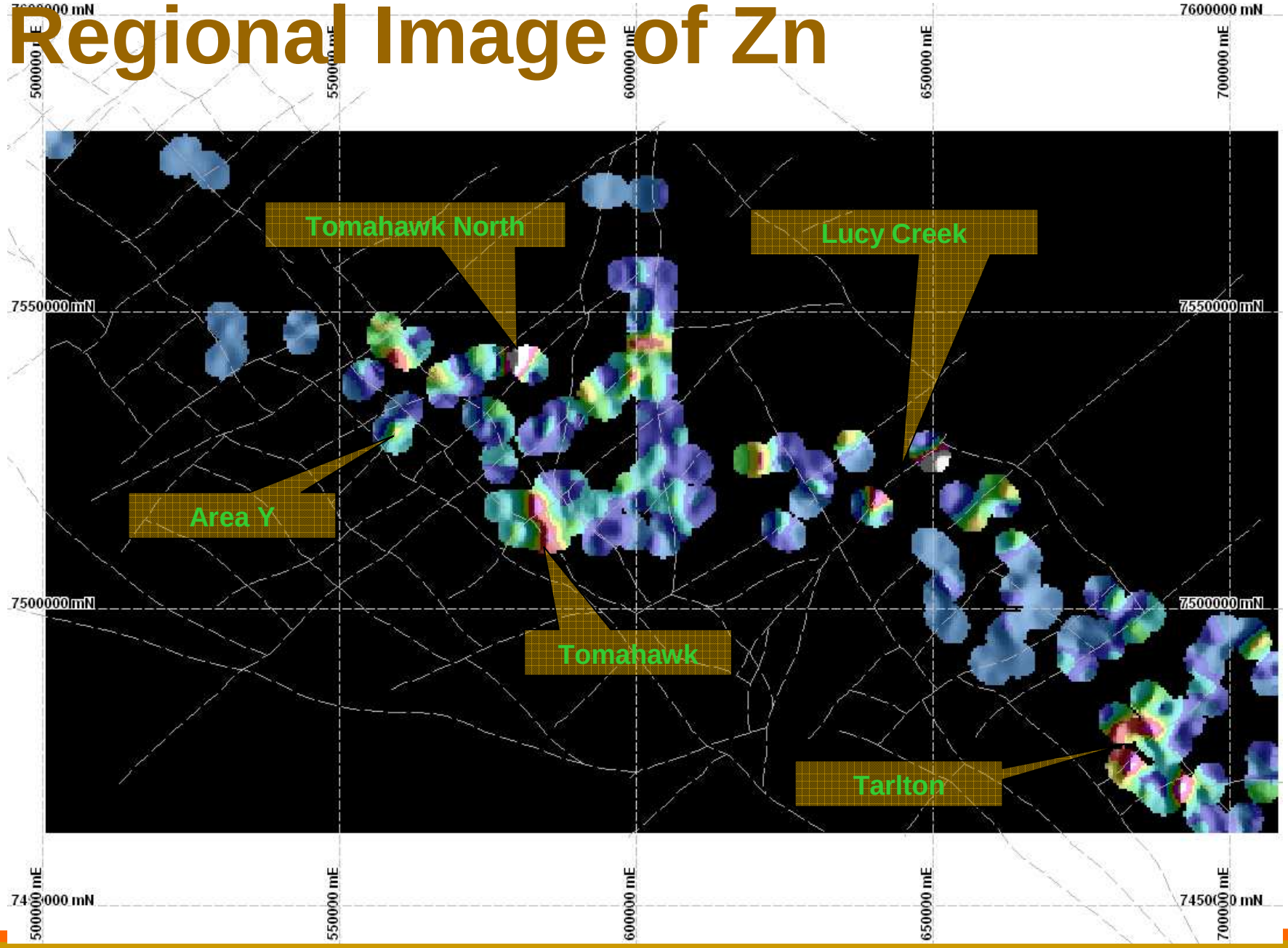
- Interpretation and interpolations suggest Au is coincident to and indicating structural trends.
- Au interpolation can be demonstrated for over 50 km
- Future work
  - Is Au a MCR JV target
  - Is it realistic to explore for Au in the Cambrian portion of the GB?
  - What Au model should be used?

Assessment of Regional Zn anomalism

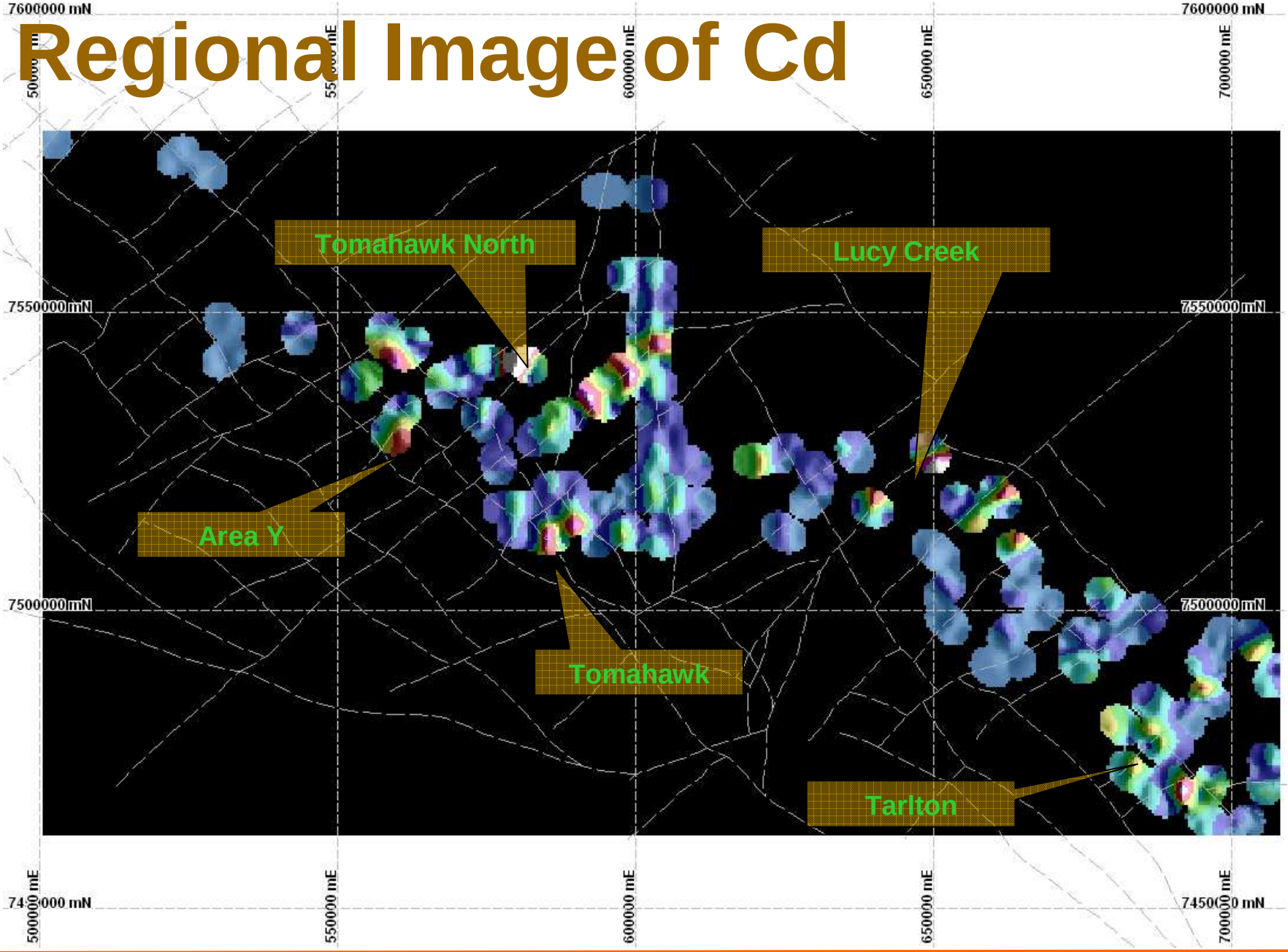


Based on population Zn breaks and the assumption that **PCA4** represents secondary Mn enrichment within the surficial environment that scavenges Zn, Cd & Co and **PCA7** represents Tl-Hg potential pathfinders for SHMS

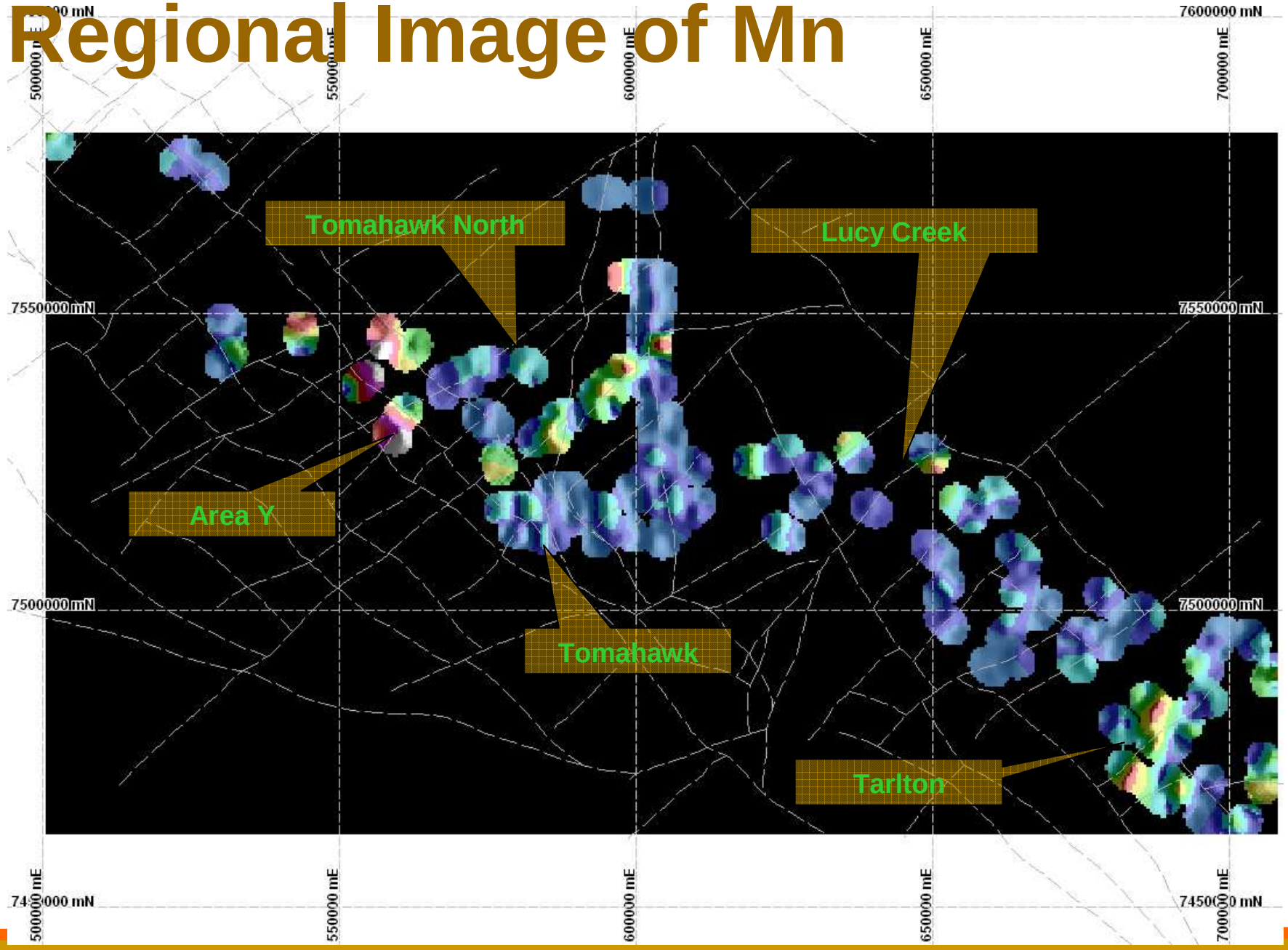
Regional Image of Zn



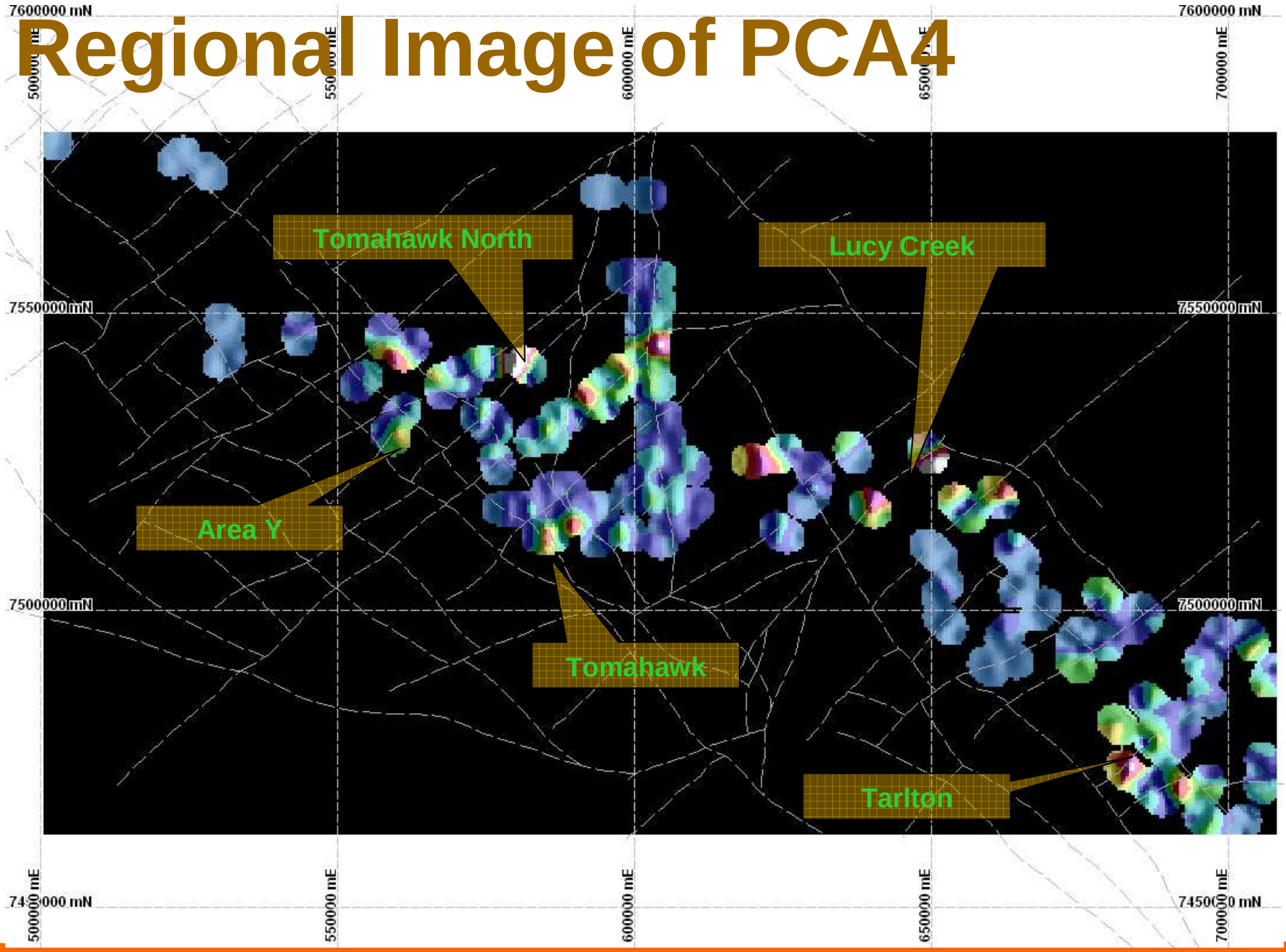
Regional Image of Cd



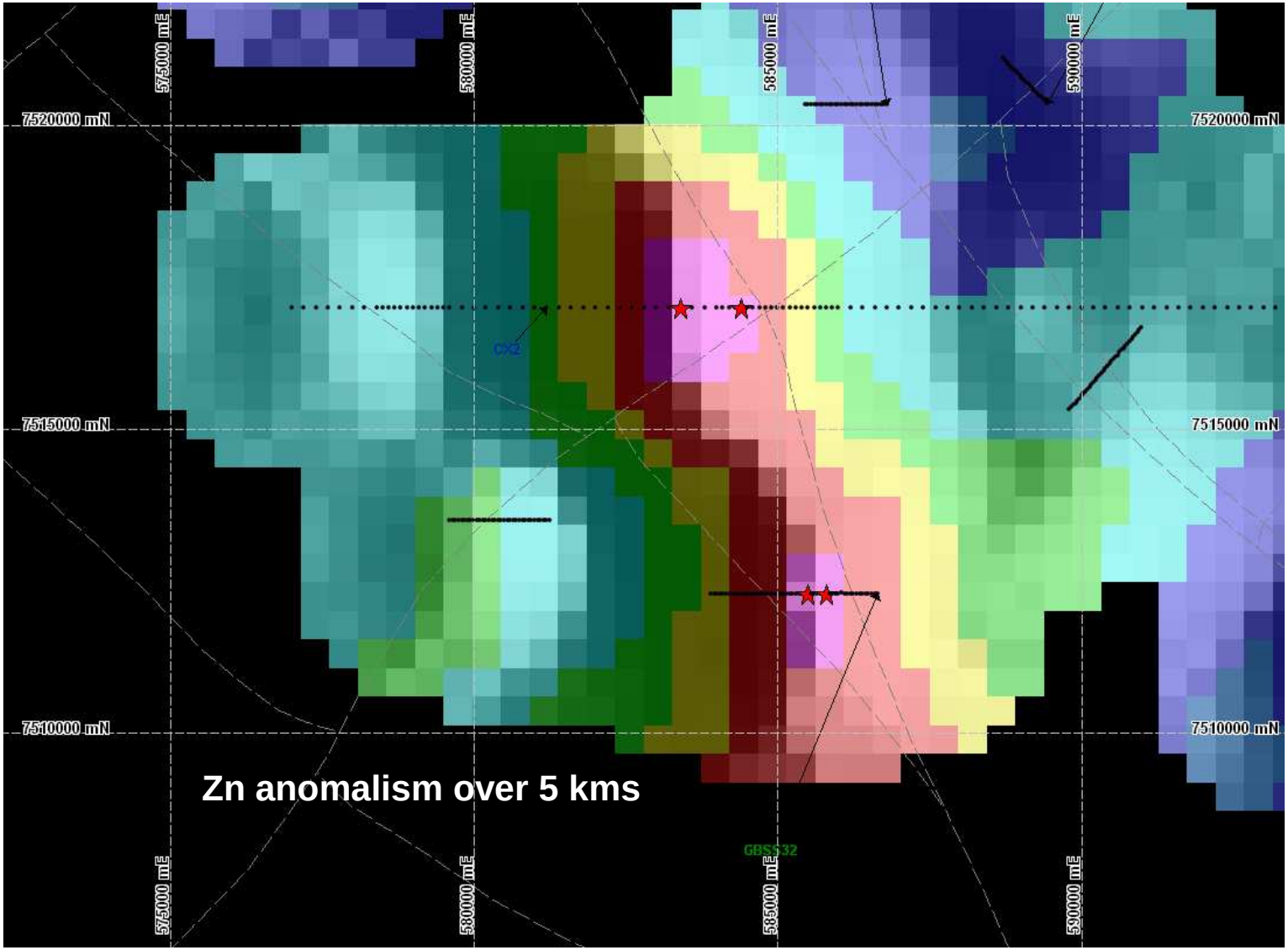
Regional Image of Mn



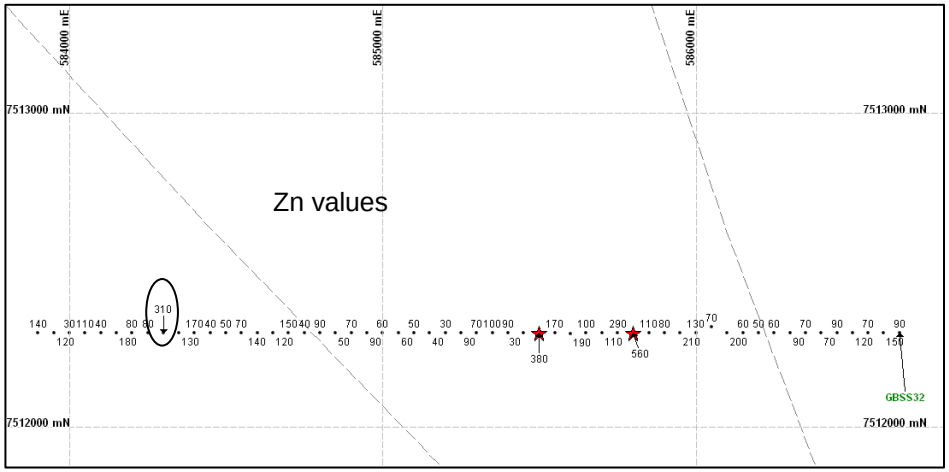
Regional Image of PCA4

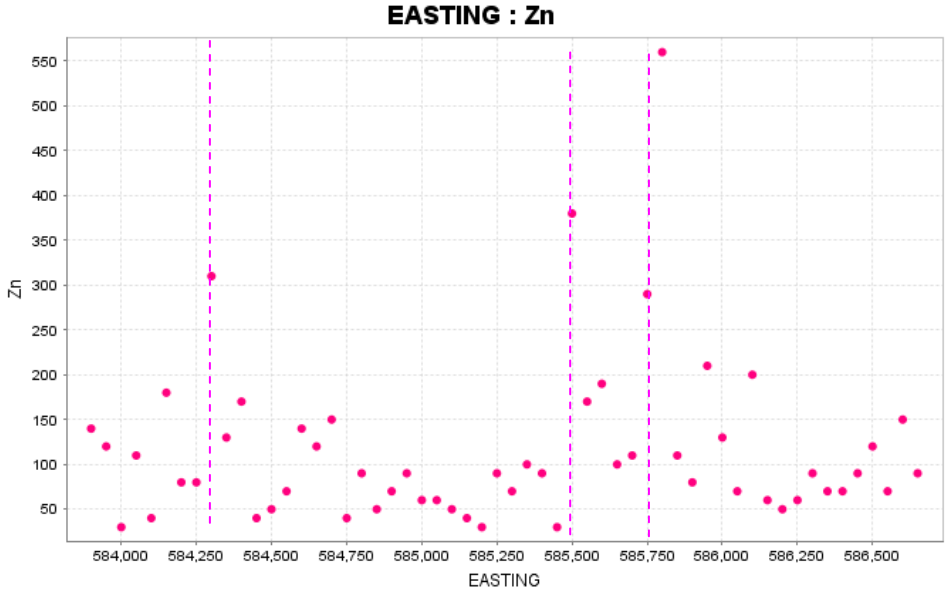


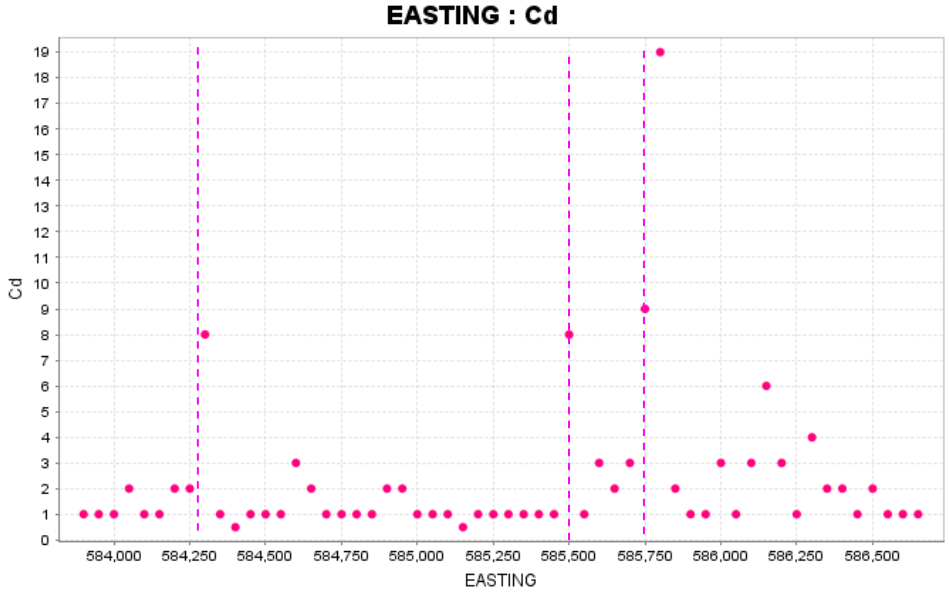
Tomahawk - Image of Zn



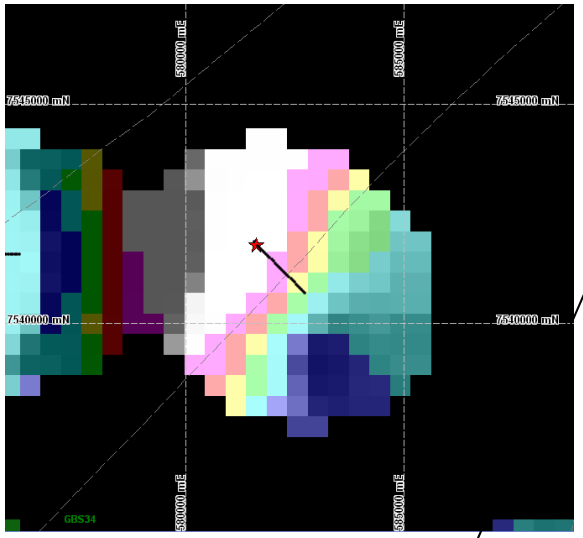
Tomahawk - Zn & Cd profiles on Line GBSS32

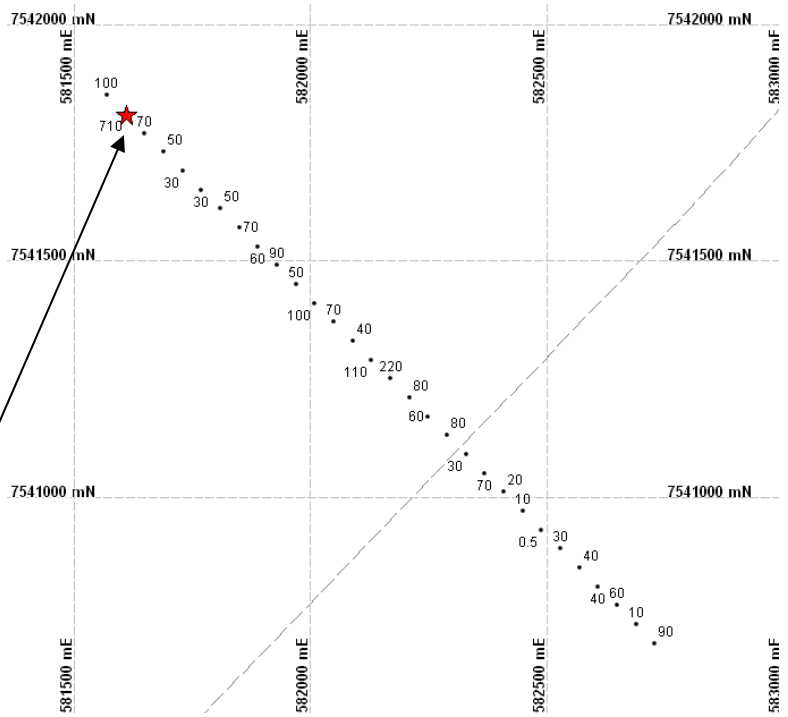




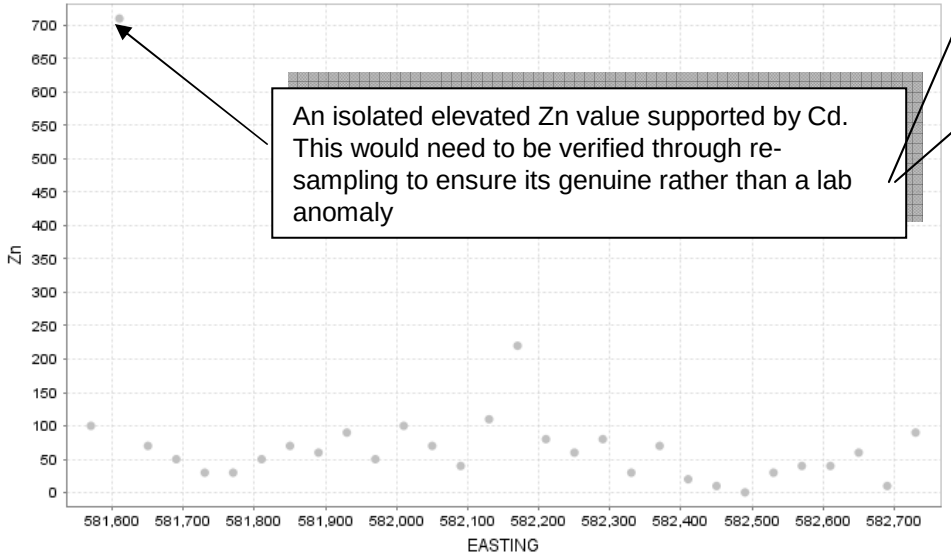


Tomahawk North Line GBSS137



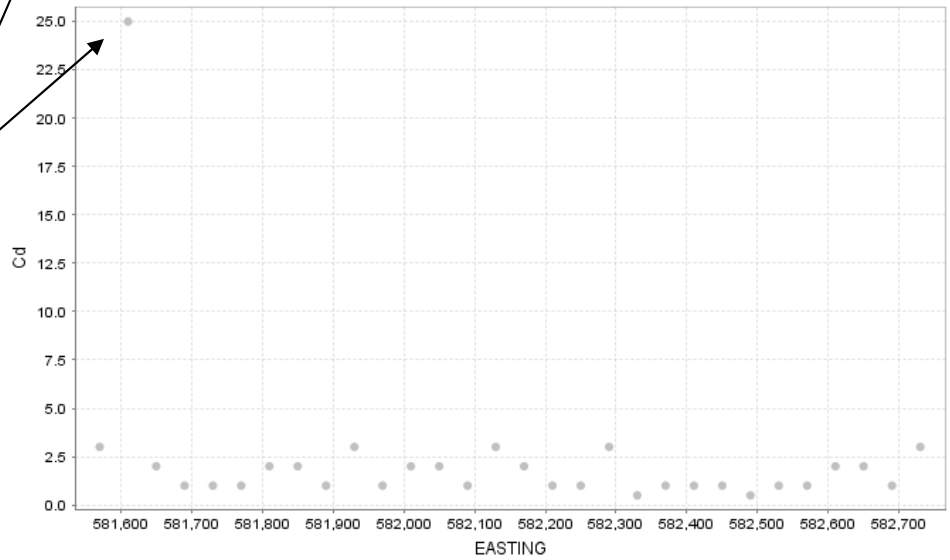


EASTING : Zn

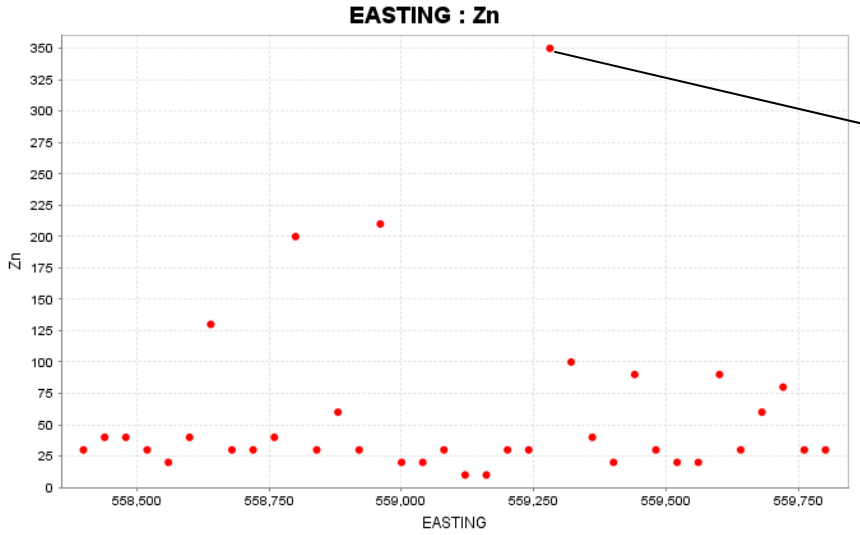


An isolated elevated Zn value supported by Cd. This would need to be verified through re-sampling to ensure its genuine rather than a lab anomaly

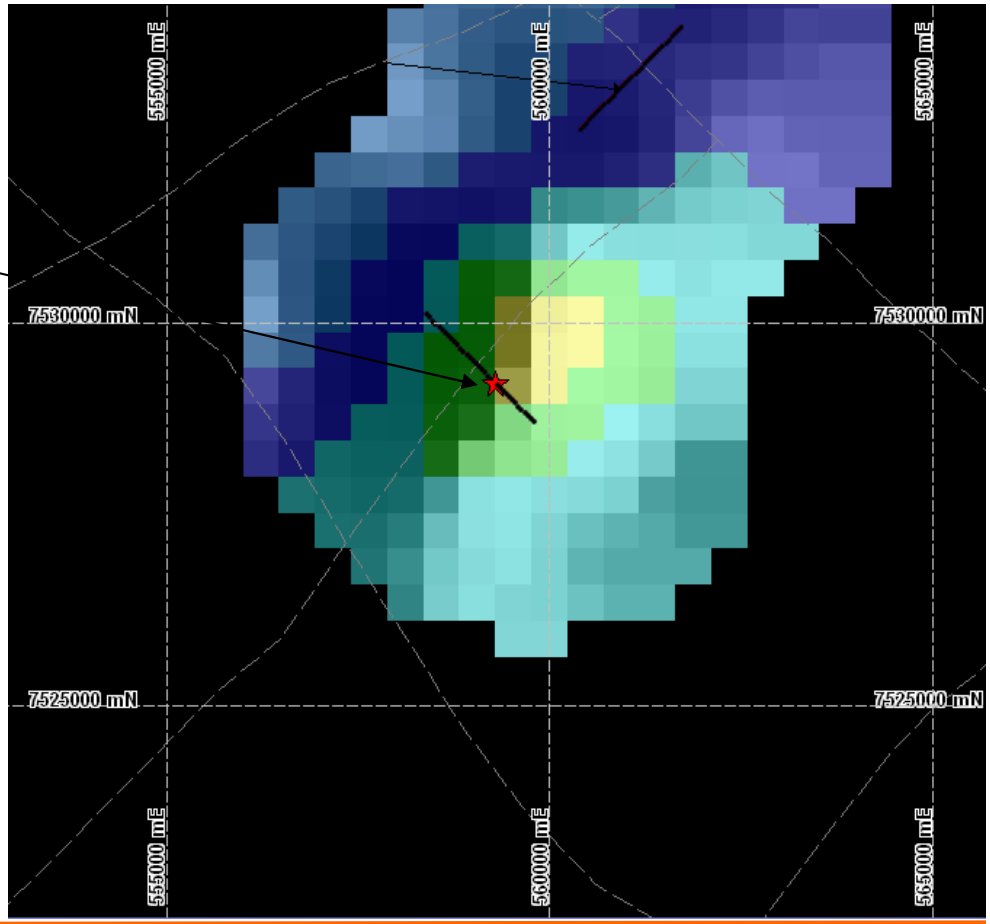
EASTING : Cd



AREA Y: Regional Line GBSS55

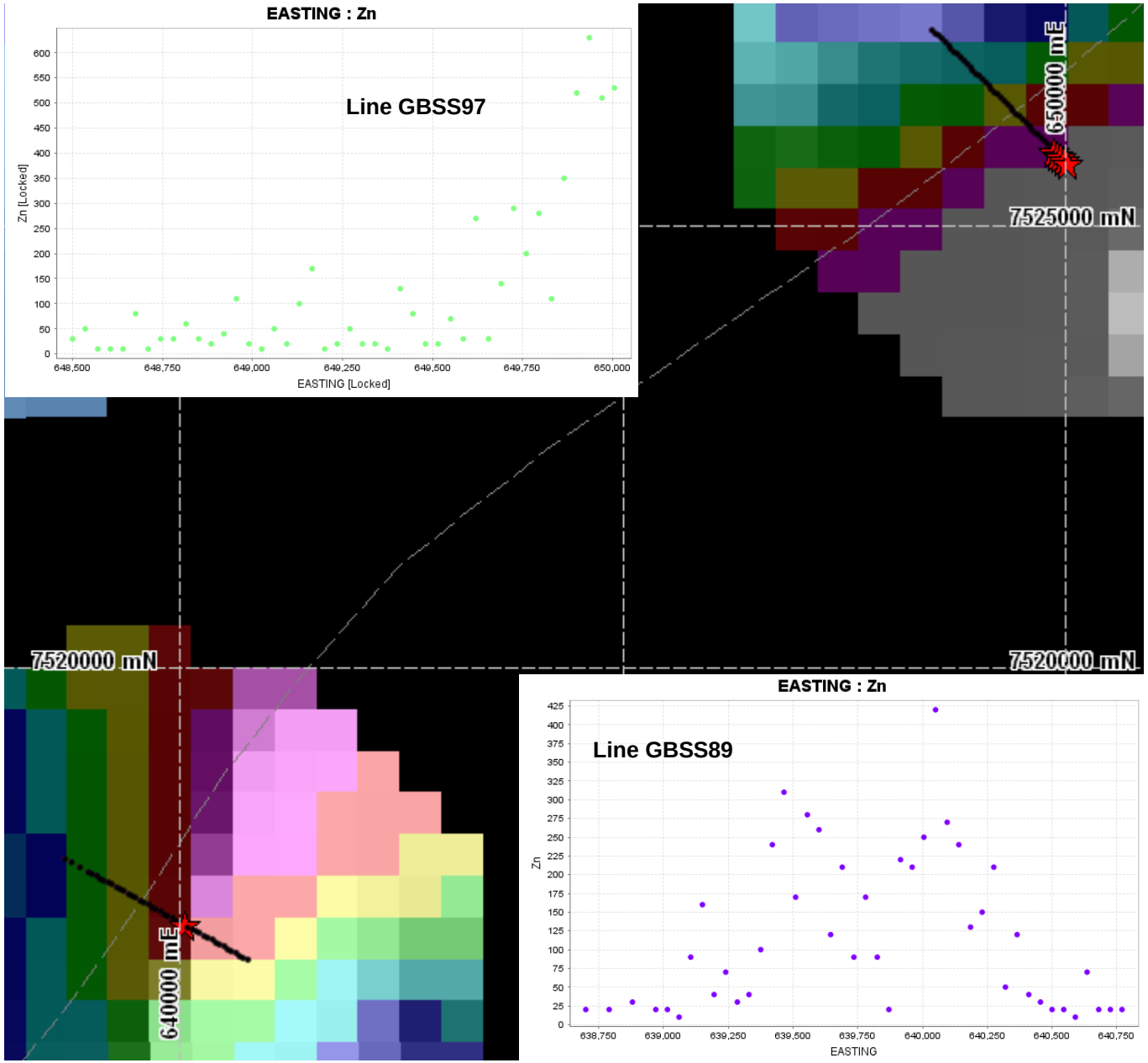


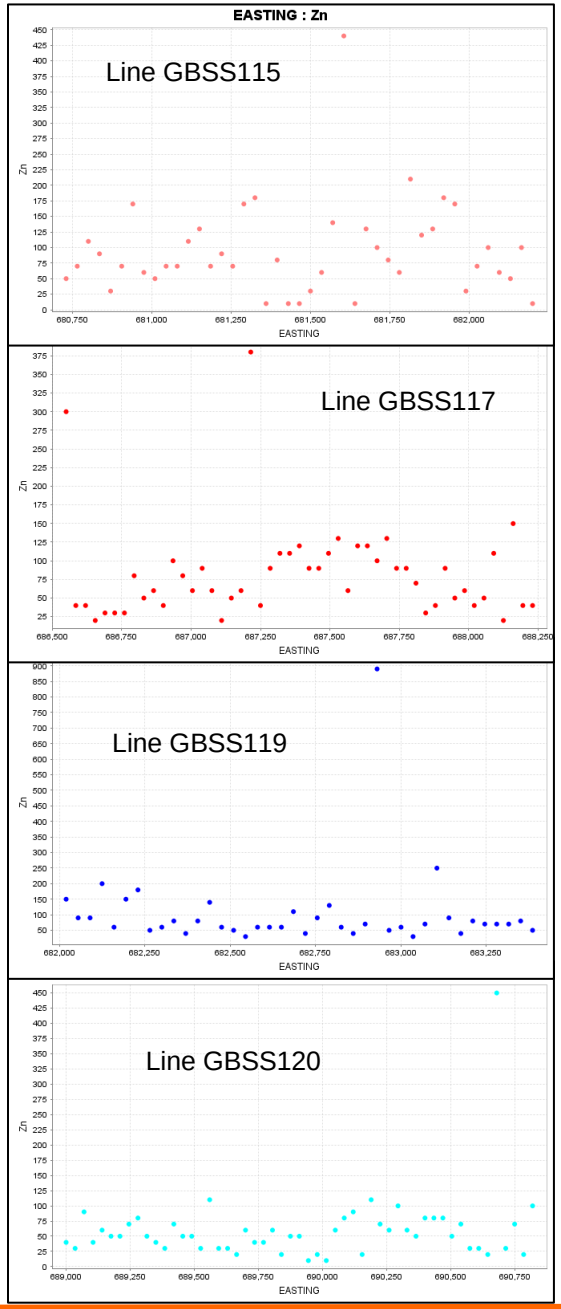
An isolated elevated Zn value which would need to be verified through re-sampling to ensure its genuine rather than a lab anomaly



Lucky Creek

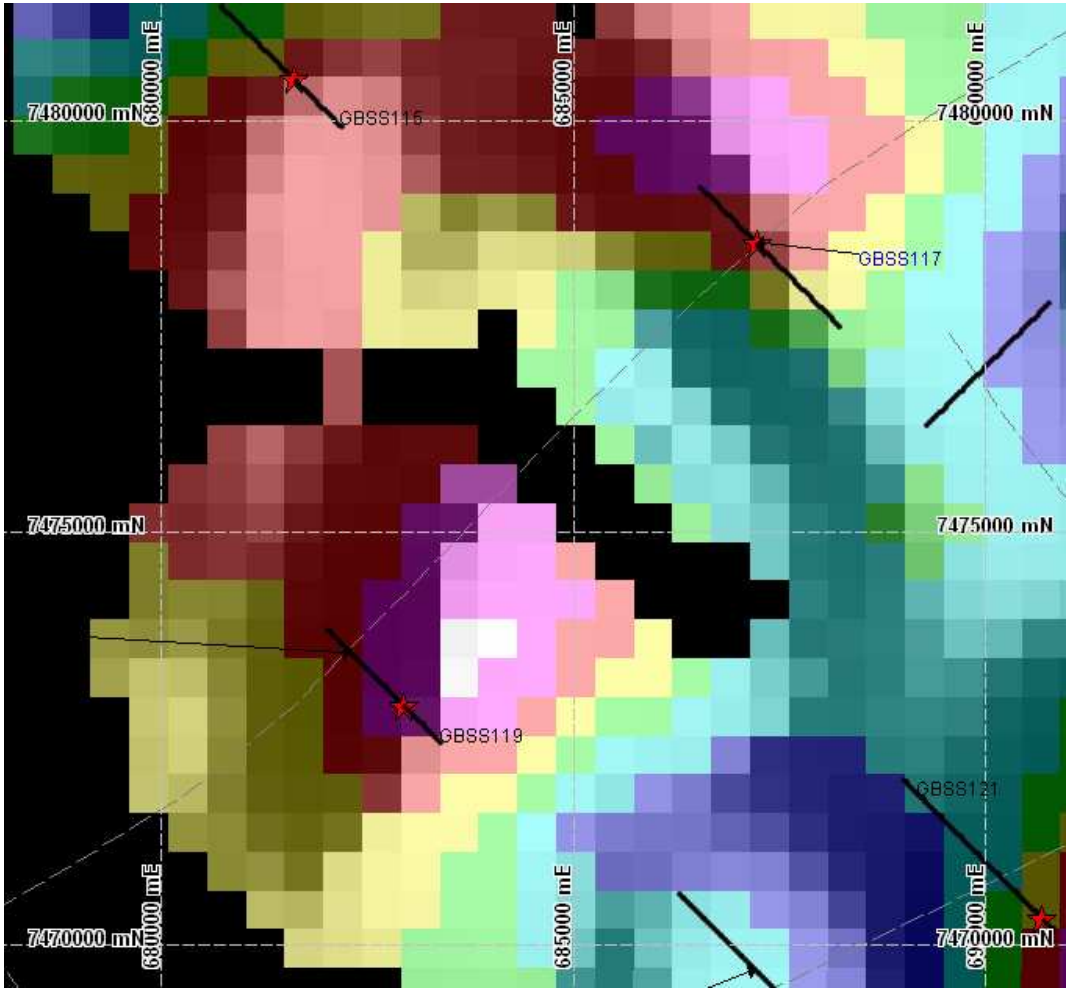
- Elevated Zn with Cd support on end of line GBSS97 and two elevated zones in GBSS89
- This area has been infilled with soils and is discussed later in the presentation





Tarlton

All single isolated points



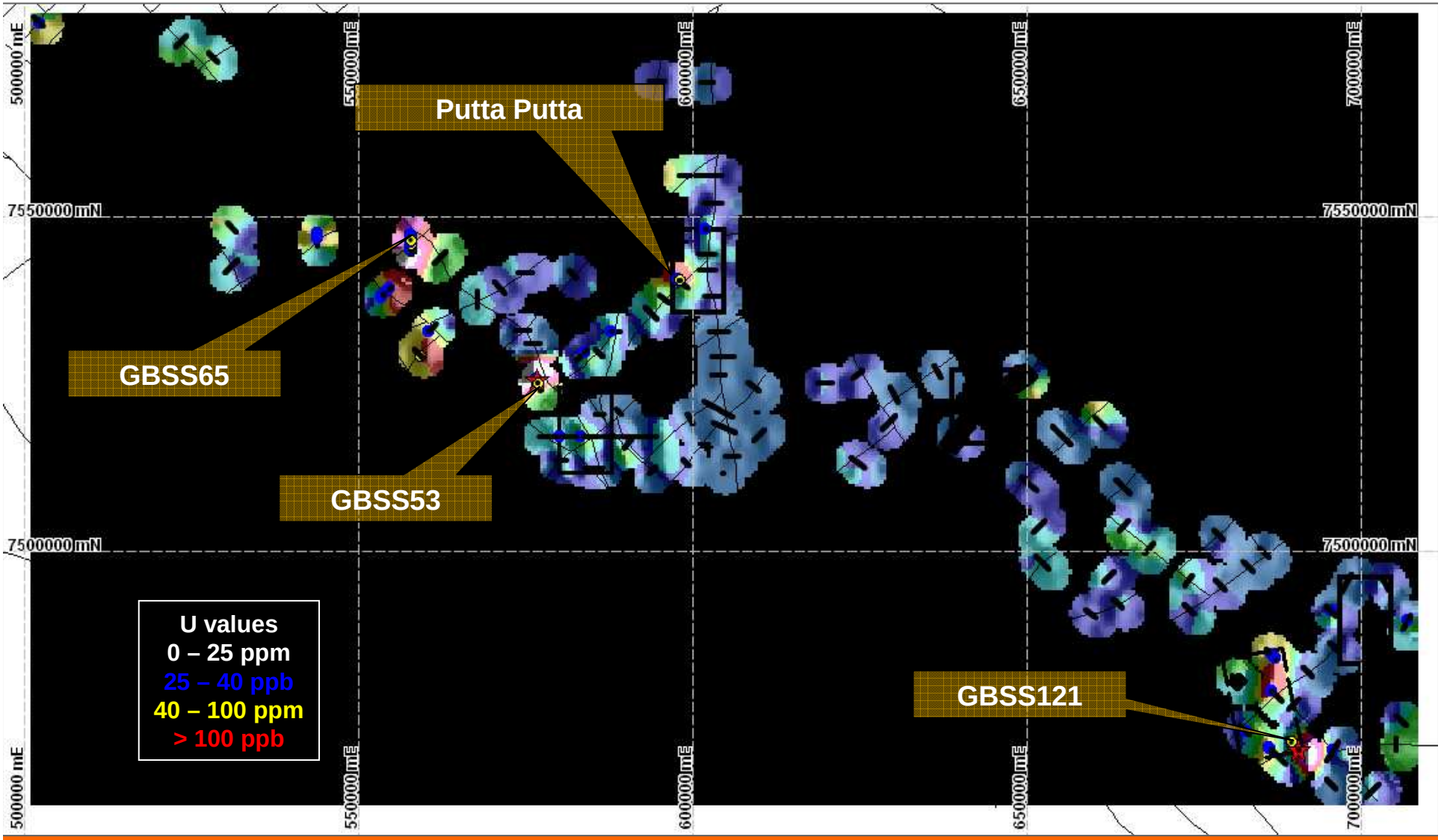
A cluster of isolated anomalous Zn values

Regional Zn Summary

- Five area of elevated Zn identified
  - Luck Creek – evaluated with a follow-up survey (see below)
  - Tomahawk – elevated Zn-Cd over 5kms – requires field inspection and possible follow-up
  - Tomahawk North - An isolated elevated Zn value supported by Cd; needs to be verified through re-sampling to ensure its genuine rather than a lab anomaly
  - AREA Y - An isolated elevated Zn value which would need to be verified
  - Tarlton - isolated elevated Zn values associated with elevated Mn – need to be verified.

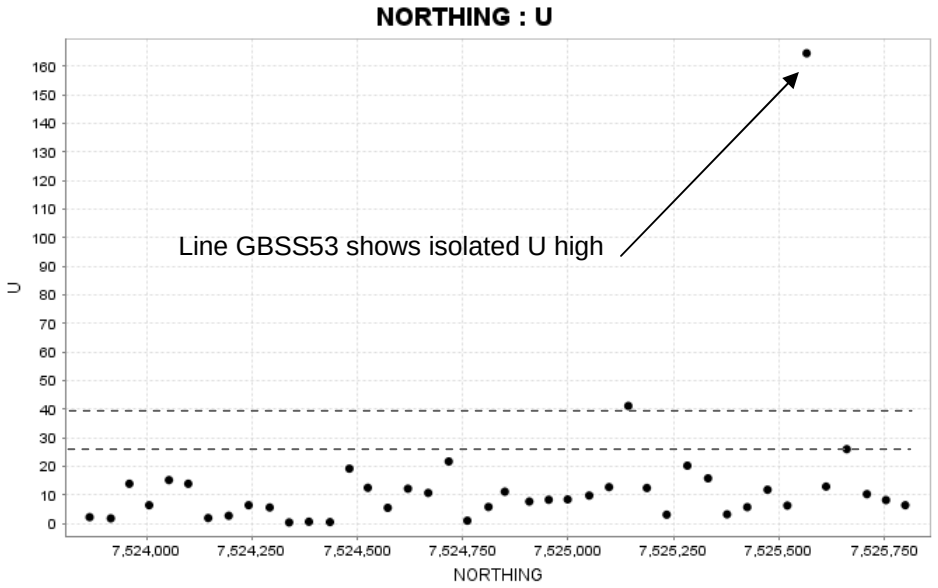
Assessment of Regional U anomalism

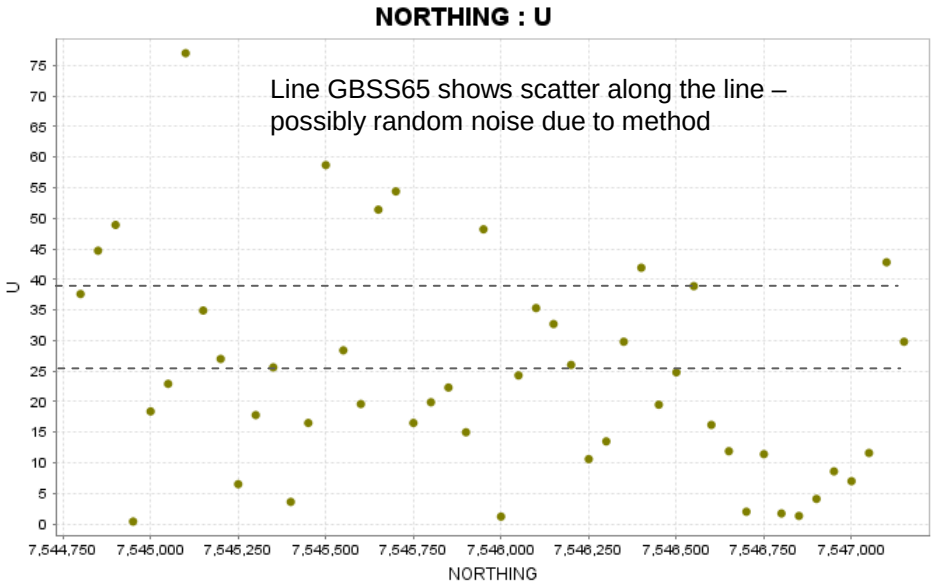
Regional U image

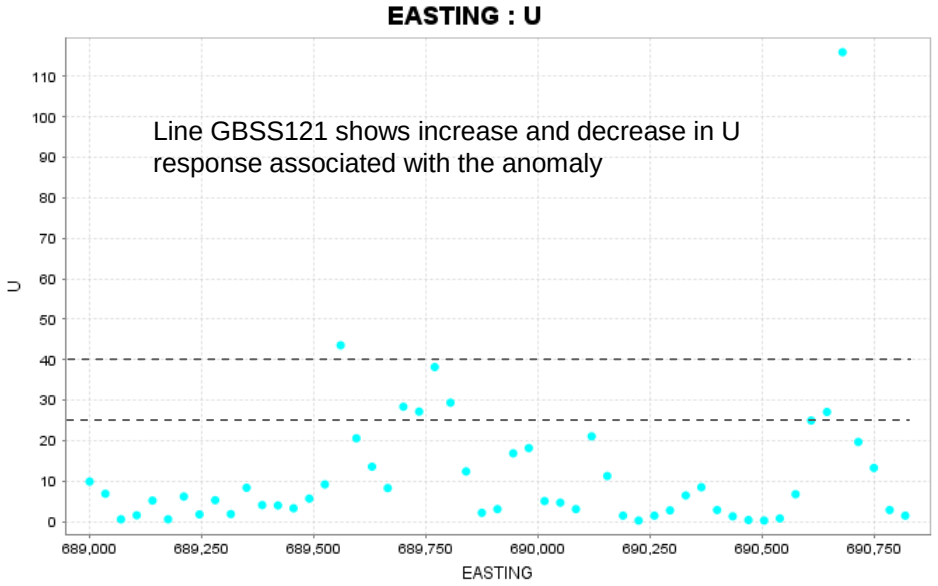


Regional Uranium Anomalies

- Four main areas of elevated U identified:
  - Putta Putta (see above)
  - GBSS53 – isolated high
  - GBSS65 – random noise
  - GBSS121 – coherent anoms

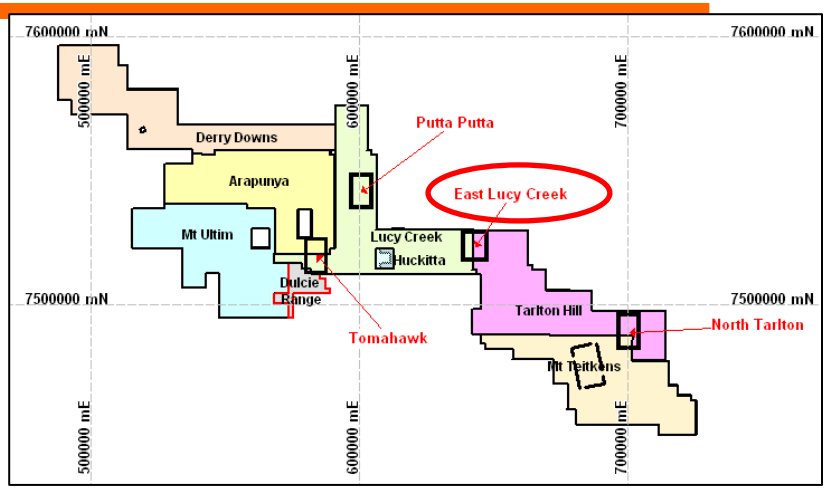






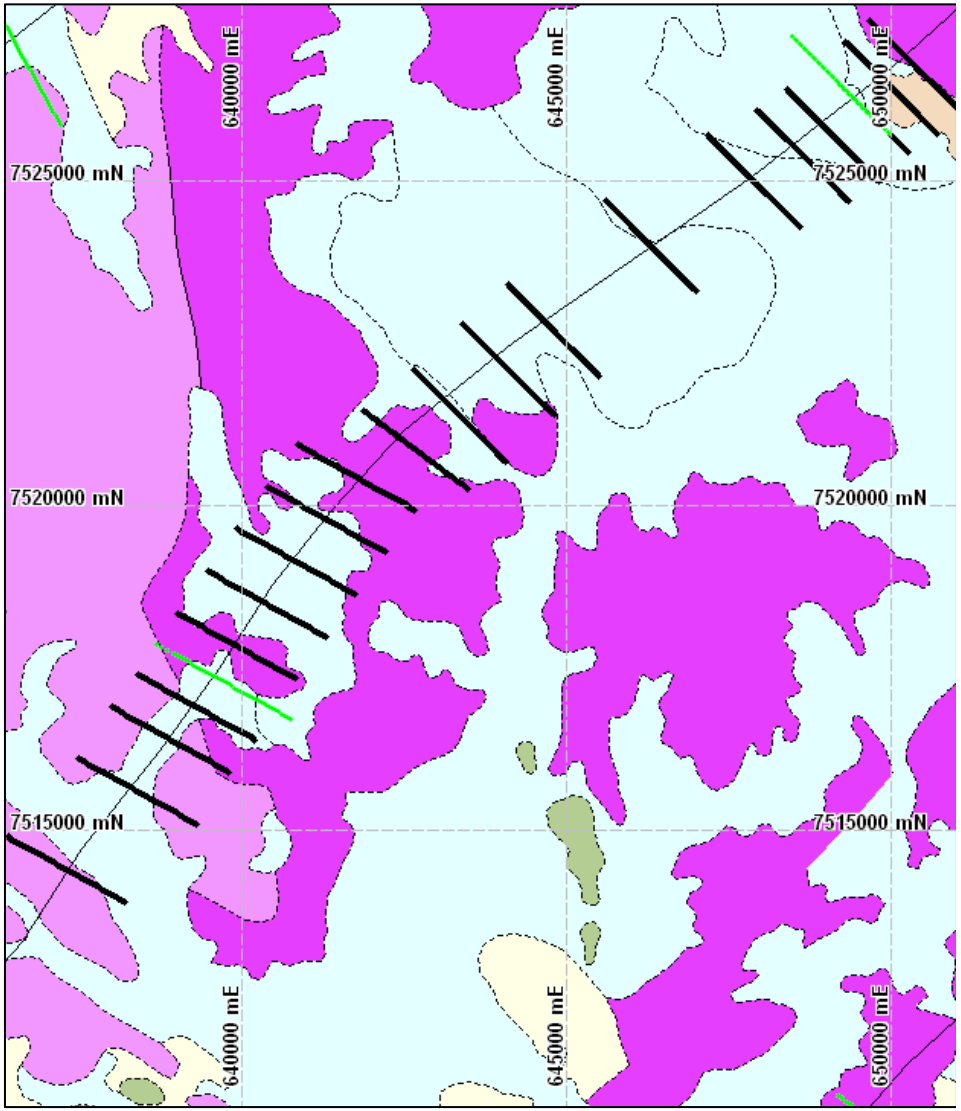
Evaluation of Lucy Creek dataset

The Lucy Creek ionic leach dataset has been evaluated along the same principles used to evaluate the Putta Putta and Regional ionic leach data sets



Lucy Creek Sampling

- Two phases of sampling
  - Regional lines ~50m sample spacing (n = 88, green)
  - Grid on 0.8-2.2km line spacing, 50m sample spacing (n = 786, black)
- Sampling medium – soil
- Sampling method – 20-30cm depth, -1mm
- Sample preparation (?pulverise -75um)
- MCR QAQC – (nil)



Lucy Creek region

- Islands of residual substrate
  - Implication: sampling will reflect underlying lithologies, mineralisation that has breached the surface and leakage along faults
- Extensive Quaternary alluvial and aeolian sediments
  - Implication: the philosophy of the ionic leach techniques should “see through” this cover to the inderlying Cambrian-Ordovician Tomahawk Sandstones.
- Major drainage to the SW of the project area.

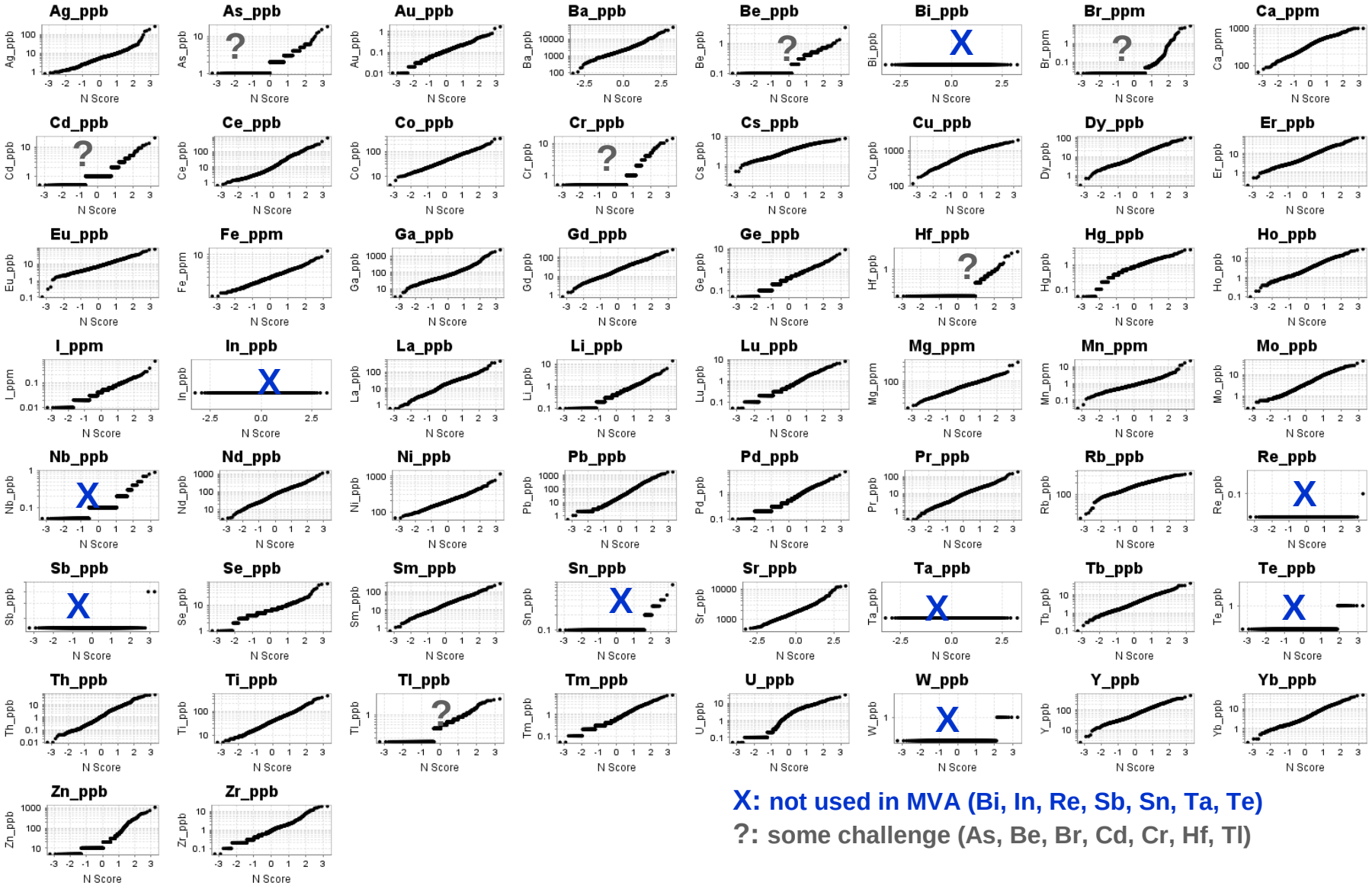
Stated Target Commodity

- Zn-Pb SHMS
  - Ore elements: Zn, Pb, Ag
  - Trace and deleterious elements: As, Bi, Cd, Cu, Hg, Mo, Sb, Tl.
  - Lithic elements Fe, Mn, ?Ba, ?Ca
- Potential for uranium
  - Ore elements: U, Th, Pb
  - Trace and deleterious elements: unknown
  - Lithic elements ?Ca, ?P, ?V
- Potential for Au

Lucy Creek:

Data evaluation

Probability Plots for Lucy Creek



X: not used in MVA (Bi, In, Re, Sb, Sn, Ta, Te)

?: some challenge (As, Be, Br, Cd, Cr, Hf, Tl)

Lucy Creek element correlation

	Ag	As	Au	Ba	Be	Br	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Hf	Hg	Ho	I	La	Li	Lu
Ag		0.32	0.36	0.05	0.00	0.29	0.24	0.13	-0.08	-0.05	-0.02	-0.18	0.08	-0.05	-0.05	-0.01	0.26	0.04	-0.02	0.04	-0.04	0.27	-0.05	0.31	-0.05	0.30	-0.07
As	0.32		0.29	-0.04	0.08	0.65	0.28	0.23	0.09	0.21	0.18	-0.28	0.10	-0.06	-0.03	-0.07	0.48	-0.04	-0.06	-0.03	0.11	0.14	-0.05	0.18	-0.04	0.46	-0.03
Au	0.36	0.29		0.25	-0.03	0.28	0.48	-0.10	-0.17	0.07	-0.09	-0.04	0.32	-0.01	-0.01	0.04	0.43	0.20	-0.02	-0.03	-0.05	0.54	0.00	0.33	-0.08	0.28	0.01
Ba	0.05	-0.04	0.25		-0.11	-0.07	0.19	-0.13	-0.17	-0.10	-0.14	0.00	0.08	-0.18	-0.18	-0.03	0.07	0.97	-0.17	-0.14	-0.11	0.15	-0.19	-0.01	-0.11	-0.14	-0.16
Be	0.00	0.08	-0.03	-0.11		0.03	-0.18	0.29	0.42	0.08	0.36	0.08	-0.03	0.49	0.48	0.53	0.11	-0.08	0.53	0.57	0.56	0.06	0.48	0.02	0.53	0.19	0.41
Br	0.29	0.65	0.28	-0.07	0.03		0.28	0.07	-0.04	0.03	0.01	-0.15	0.03	-0.06	-0.05	-0.06	0.37	-0.06	-0.05	-0.04	-0.03	0.17	-0.05	0.33	-0.06	0.58	-0.05
Ca	0.24	0.28	0.48	0.19	-0.18	0.28		-0.05	-0.42	-0.04	-0.24	-0.66	0.57	-0.39	-0.39	-0.32	0.77	0.14	-0.36	-0.31	-0.27	0.31	-0.38	-0.09	-0.37	0.03	-0.39
Cd	0.13	0.23	-0.10	-0.13	0.29	0.07	-0.05		0.36	0.11	0.44	-0.13	0.29	0.29	0.25	0.26	0.16	-0.10	0.30	0.24	0.40	0.16	0.25	-0.06	0.24	0.13	0.20
Ce	-0.08	0.09	-0.17	-0.17	0.42	-0.04	-0.42	0.36		0.37	0.68	0.37	-0.16	0.68	0.70	0.61	0.01	-0.14	0.65	0.60	0.73	-0.06	0.66	0.21	0.70	0.31	0.68
Co	-0.05	0.21	0.07	-0.10	0.08	0.03	-0.04	0.11	0.37		0.23	0.15	-0.01	0.25	0.31	0.20	0.16	-0.09	0.19	0.19	0.30	-0.15	0.28	0.29	0.20	0.16	0.35
Cr	-0.02	0.18	-0.09	-0.14	0.36	0.01	-0.24	0.44	0.68	0.23		0.21	-0.02	0.46	0.46	0.41	0.17	-0.11	0.43	0.34	0.56	0.04	0.44	0.16	0.43	0.39	0.45
Cs	-0.18	-0.28	-0.04	0.00	0.08	-0.15	-0.66	-0.13	0.37	0.15	0.21		-0.37	0.43	0.45	0.41	-0.49	0.03	0.39	0.29	0.23	-0.03	0.44	0.43	0.37	0.11	0.51
Cu	0.08	0.10	0.32	0.08	-0.03	0.03	0.57	0.29	-0.16	-0.01	-0.02	-0.37		-0.03	-0.06	0.01	0.42	0.05	-0.01	-0.03	0.02	0.35	-0.05	-0.13	-0.09	0.00	-0.07
Dy	-0.05	-0.06	-0.01	-0.18	0.49	-0.06	-0.39	0.29	0.68	0.25	0.46	0.43	-0.03		0.98	0.95	-0.06	-0.16	0.97	0.87	0.84	0.11	0.98	0.31	0.83	0.25	0.93
Er	-0.05	-0.03	-0.01	-0.18	0.48	-0.05	-0.39	0.25	0.70	0.31	0.46	0.45	-0.06	0.98		0.93	-0.05	-0.15	0.94	0.86	0.86	0.10	0.99	0.35	0.80	0.27	0.98
Eu	-0.01	-0.07	0.04	-0.03	0.53	-0.06	-0.32	0.26	0.61	0.20	0.41	0.41	0.01	0.95	0.93		-0.02	-0.02	0.97	0.91	0.82	0.17	0.94	0.26	0.89	0.22	0.87
Fe	0.26	0.48	0.43	0.07	0.11	0.37	0.77	0.16	0.01	0.16	0.17	-0.49	0.42	-0.06	-0.05	-0.02		0.05	-0.05	0.00	0.13	0.26	-0.05	0.06	-0.07	0.29	-0.08
Ga	0.04	-0.04	0.20	0.97	-0.08	-0.06	0.14	-0.10	-0.14	-0.09	-0.11	0.03	0.05	-0.16	-0.15	-0.02	0.05		-0.15	-0.12	-0.09	0.11	-0.16	0.00	-0.09	-0.11	-0.13
Gd	-0.02	-0.06	-0.02	-0.17	0.53	-0.05	-0.36	0.30	0.65	0.19	0.43	0.39	-0.01	0.97	0.94	0.97	-0.05	-0.15		0.93	0.81	0.13	0.95	0.27	0.89	0.24	0.86
Ge	0.04	-0.03	-0.03	-0.14	0.57	-0.04	-0.31	0.24	0.60	0.19	0.34	0.29	-0.03	0.87	0.86	0.91	0.00	-0.12	0.93		0.79	0.12	0.86	0.22	0.87	0.21	0.77
Hf	-0.04	0.11	-0.05	-0.11	0.56	-0.03	-0.27	0.40	0.73	0.30	0.56	0.23	0.02	0.84	0.86	0.82	0.13	-0.09	0.81	0.79		0.07	0.85	0.19	0.75	0.28	0.81
Hg	0.27	0.14	0.54	0.15	0.06	0.17	0.31	0.16	-0.06	-0.15	0.04	-0.03	0.35	0.11	0.10	0.17	0.26	0.11	0.13	0.12	0.07		0.11	0.22	0.07	0.10	0.09
Ho	-0.05	-0.05	0.00	-0.19	0.48	-0.05	-0.38	0.25	0.66	0.28	0.44	0.44	-0.05	0.98	0.99	0.94	-0.05	-0.16	0.95	0.86	0.85	0.11		0.34	0.80	0.27	0.96
I	0.31	0.18	0.33	-0.01	0.02	0.33	-0.09	-0.06	0.21	0.29	0.16	0.43	-0.13	0.31	0.35	0.26	0.06	0.00	0.27	0.22	0.19	0.22	0.34		0.17	0.42	0.42
La	-0.05	-0.04	-0.08	-0.11	0.53	-0.06	-0.37	0.24	0.70	0.20	0.43	0.37	-0.09	0.83	0.80	0.89	-0.07	-0.09	0.89	0.87	0.75	0.07	0.80	0.17		0.21	0.71
Li	0.30	0.46	0.28	-0.14	0.19	0.58	0.03	0.13	0.31	0.16	0.39	0.11	0.00	0.25	0.27	0.22	0.29	-0.11	0.24	0.21	0.28	0.10	0.27	0.42	0.21		0.28
Lu	-0.07	-0.03	0.01	-0.16	0.41	-0.05	-0.39	0.20	0.68	0.35	0.45	0.51	-0.07	0.93	0.98	0.87	-0.08	-0.13	0.86	0.77	0.81	0.09	0.96	0.42	0.71	0.28	
Mg	0.50	0.22	0.47	0.08	-0.01	0.34	0.44	-0.01	-0.20	0.05	-0.14	-0.15	0.33	0.04	0.02	0.09	0.35	0.06	0.06	0.06	-0.03	0.33	0.04	0.24	-0.01	0.26	0.01
Mn	-0.07	0.21	-0.22	-0.16	0.26	-0.01	-0.23	0.53	0.65	0.58	0.52	0.03	-0.04	0.32	0.33	0.24	0.08	-0.13	0.28	0.24	0.46	-0.09	0.30	0.00	0.35	0.12	0.32
Mo	0.08	0.01	-0.04	-0.17	0.17	0.06	-0.09	0.57	0.12	-0.05	0.18	0.02	0.23	0.27	0.22	0.27	-0.03	-0.12	0.31	0.27	0.18	0.28	0.24	0.04	0.21	0.10	0.17
Nb	-0.05	0.11	-0.15	-0.15	0.36	-0.02	-0.22	0.31	0.47	0.17	0.60	0.13	-0.08	0.30	0.32	0.27	0.21	-0.12	0.29	0.28	0.49	-0.11	0.31	0.04	0.29	0.36	0.28
Nd	-0.01	-0.04	-0.07	-0.16	0.58	-0.05	-0.38	0.31	0.69	0.16	0.45	0.36	-0.05	0.92	0.88	0.95	-0.06	-0.13	0.97	0.94	0.80	0.10	0.89	0.20	0.96	0.22	0.79
Ni	0.10	0.19	0.36	-0.12	0.23	0.19	0.33	0.37	0.14	0.31	0.17	-0.20	0.46	0.38	0.33	0.36	0.43	-0.12	0.39	0.33	0.31	0.27	0.36	0.15	0.26	0.25	0.28
Pb	0.16	0.01	0.09	0.01	0.14	0.01	-0.28	0.02	0.25	0.25	0.11	0.35	-0.15	0.37	0.38	0.35	-0.11	0.01	0.35	0.31	0.27	0.01	0.36	0.41	0.27	0.14	0.41
Pd	0.02	-0.02	0.05	-0.16	0.51	-0.03	-0.30	0.28	0.61	0.28	0.41	0.37	0.02	0.95	0.96	0.92	0.05	-0.14	0.92	0.89	0.86	0.14	0.96	0.33	0.76	0.29	0.91
Pr	-0.02	-0.02	-0.10	-0.15	0.60	-0.05	-0.40	0.31	0.74	0.17	0.46	0.35	-0.08	0.89	0.86	0.92	-0.06	-0.13	0.95	0.94	0.81	0.07	0.86	0.18	0.96	0.22	0.77
Rb	-0.23	-0.32	0.02	-0.11	0.11	-0.17	-0.57	-0.01	0.33	0.16	0.20	0.83	-0.19	0.53	0.52	0.46	-0.45	-0.08	0.47	0.34	0.29	0.08	0.52	0.41	0.37	0.12	0.55
Re	0.01	0.30	0.09	-0.02	0.05	0.52	0.12	0.01	-0.02	-0.01	-0.01	-0.05	0.01	-0.04	-0.03	-0.04	0.26	-0.01	-0.04	-0.03	-0.01	0.08	-0.03	0.14	-0.03	0.18	-0.03
Sb	-0.01	-0.01	-0.01	-0.02	-0.03	0.00	-0.01	0.00	0.01	-0.03	0.08	0.00	0.02	0.02	0.00	0.01	-0.01	-0.02	0.02	0.01	-0.02	-0.04	0.00	0.01	0.02	0.01	-0.01
Se	0.31	0.53	0.25	-0.11	0.31	0.75	0.10	0.18	0.27	0.18	0.18	0.02	0.06	0.46	0.45	0.44	0.32	-0.09	0.47	0.49	0.42	0.17	0.46	0.45	0.38	0.63	0.41
Sm	-0.01	-0.04	-0.03	-0.16	0.55	-0.05	-0.36	0.31	0.65	0.17	0.43	0.36	-0.02	0.95	0.91	0.97	-0.04	-0.14	0.99	0.94	0.81	0.13	0.92	0.24	0.91	0.23	0.83
Sn	-0.03	0.13	-0.06	-0.01	0.20	-0.02	-0.17	0.29	0.38	0.08	0.41	0.08	-0.04	0.21	0.22	0.22	0.09	-0.02	0.21	0.17	0.39	0.06	0.21	0.03	0.25	0.14	0.19
Sr	0.38	0.33	0.41	-0.02	-0.04	0.52	0.45	0.06	-0.10	0.00	-0.03	-0.16	0.09	0.01	0.00	0.03	0.45	-0.02	0.04	0.02	-0.07	0.28	0.00	0.32	-0.03	0.39	-0.02
Tb	-0.03	-0.06	-0.01	-0.18	0.53	-0.05	-0.36	0.26	0.65	0.23	0.42	0.41	-0.03	0.98	0.97	0.98	-0.04	-0.15	0.98	0.92	0.85	0.12	0.98	0.28	0.87	0.25	0.91
Te	0.18	0.13	0.10	-0.01	0.01	0.06	0.03	0.01	0.01	0.01	0.10	-0.01	0.07	0.04	0.03	0.03	-0.01	-0.02	0.04	0.03	0.02	0.02	0.02	0.23	0.03	0.07	0.06
Th	-0.09	0.12	-0.24	-0.20	0.47	-0.05	-0.46	0.45	0.86	0.22	0.64	0.29	-0.15	0.65	0.64	0.58	-0.04	-0.16	0.64	0.57	0.68	-0.07	0.61	0.10	0.62	0.19	0.59
Ti	-0.13	0.00	-0.28	-0.16	0.30	-0.08	-0.55	0.21	0.63	0.16	0.56	0.42	-0.33	0.38	0.39	0.32	-0.13	-0.12	0.36	0.32	0.44	-0.15	0.37	0.09	0.41	0.25	0.36
Tl	0.09	0.07	0.12	-0.06	0.20	0.08	-0.31	0.32	0.35	0.13	0.37	0.42	-0.09	0.38	0.37	0.40	-0.13	-0.04	0.40	0.34	0.30	0.30	0.37	0.35	0.35	0.25	0.37
Tm	-0.07	-0.04	-0.01	-0.17	0.44	-0.05	-0.39	0.22	0.69	0.34	0.46	0.49	-0.07	0.96	0.99	0.90	-0.07	-0.15	0.89	0.80	0.84	0.08	0.98	0.38	0.75	0.27	0.99
U	-0.13	-0.03	-0.22	-0.24	0.39	-0.06	-0.63	0.31	0.78	0.22	0.55	0.55	-0.21	0.77	0.77	0.68	-0.25	-0.19	0.73	0.64	0.67	-0.03	0.76	0.31	0.65	0.25	0.76
W	0.24	0.21	0.03	-0.03	0.33	0.01	-0.03	0.35	0.44	0.21	0.32	-0.01	0.05	0.41	0.45	0.42	0.20	-0.02	0.40	0.42	0.57	0.07	0.43	0.09	0.43	0.18	0.40
Y	-0.01	-0.07	0.00	-0.19	0.48	-0.05	-0.36	0.28	0.63	0.23	0.42	0.41	-0.01	0.99	0.97	0.94	-0.06	-0.17	0.97	0.87	0.81	0.12	0.98	0.31	0.79	0.24	0.92
Yb	-0.07	-0.03	0.00	-0.17	0.43	-0.05	-0.39	0.22	0.69	0.35	0.46	0.49	-0.07	0.95	0.99	0.89	-0.07	-0.15	0.88	0.79	0.83	0.08	0.98	0.39	0.74	0.28	1.00
Zn	0.12	0.26	-0.13	-0.13	0.27	0.05	-0.09	0.84	0.39	0.12	0.40	-0.14	0.21	0.28	0.23	0.24	0.14	-0.11	0.30	0.25	0.40	0.04	0.22	-0.06	0.25	0.12	0.16
Zr	-0.08	0.15	-0.26	-0.17	0.52	-0.05	-0.40	0.55	0.76	0.25	0.65	0.18	-0.12	0.56	0.55	0.50	0.07	-0.12	0.56	0.55	0.73	-0.12	0.53	0.05	0.55	0.25	0.48

	Mg	Mn	Mo	Nb	Nd	Ni	Pb	Pd	Pr	Rb	Re	Sb	Se	Sm	Sn	Sr	Tb	Te	Th	Ti	Tl	Tm	U	W	Y	Yb	Zn	Zr
Ag	0.50	-0.07	0.08	-0.05	-0.01	0.10	0.16	0.02	-0.02	-0.23	0.01	-0.01	0.31	-0.01	-0.03	0.38	-0.03	0.18	-0.09	-0.13	0.09	-0.07	-0.13	0.24	-0.01	-0.07	0.12	-0.08
As	0.22	0.21	0.01	0.11	-0.04	0.19	0.01	-0.02	-0.02	-0.32	0.30	-0.01	0.53	-0.04	0.13	0.33	-0.06	0.13	0.12	0.00	0.07	-0.04	-0.03	0.21	-0.07	-0.03	0.26	0.15
Au	0.47	-0.22	-0.04	-0.15	-0.07	0.36	0.09	0.05	-0.10	0.02	0.09	-0.01	0.25	-0.03	-0.06	0.41	-0.01	0.10	-0.24	-0.28	0.12	-0.01	-0.22	0.03	0.00	0.00	-0.13	-0.26
Ba	0.08	-0.16	-0.17	-0.15	-0.16	-0.12	0.01	-0.16	-0.15	-0.11	-0.02	-0.02	-0.11	-0.16	-0.01	-0.02	-0.18	-0.01	-0.20	-0.16	-0.06	-0.17	-0.24	-0.03	-0.19	-0.17	-0.13	-0.17
Be	-0.01	0.26	0.17	0.36	0.58	0.23	0.14	0.51	0.60	0.11	0.05	-0.03	0.31	0.55	0.20	-0.04	0.53	0.01	0.47	0.30	0.20	0.44	0.39	0.33	0.48	0.43	0.27	0.52
Br	0.34	-0.01	0.06	-0.02	-0.05	0.19	0.01	-0.03	-0.05	-0.17	0.52	0.00	0.75	-0.05	-0.02	0.52	-0.05	0.06	-0.05	-0.08	0.08	-0.05	-0.06	0.01	-0.05	-0.05	0.05	-0.05
Ca	0.44	-0.23	-0.09	-0.22	-0.38	0.33	-0.28	-0.30	-0.40	-0.57	0.12	-0.01	0.10	-0.36	-0.17	0.45	-0.36	0.03	-0.46	-0.55	-0.31	-0.39	-0.63	-0.03	-0.36	-0.39	-0.09	-0.40
Cd	-0.01	0.53	0.57	0.31	0.31	0.37	0.02	0.28	0.31	-0.01	0.01	0.00	0.18	0.31	0.29	0.06	0.26	0.01	0.45	0.21	0.32	0.22	0.31	0.35	0.28	0.22	0.84	0.55
Ce	-0.20	0.65	0.12	0.47	0.69	0.14	0.25	0.61	0.74	0.33	-0.02	0.01	0.27	0.65	0.38	-0.10	0.65	0.01	0.86	0.63	0.35	0.69	0.78	0.44	0.63	0.69	0.39	0.76
Co	0.05	0.58	-0.05	0.17	0.16	0.31	0.25	0.28	0.17	0.16	-0.01	-0.03	0.18	0.17	0.08	0.00	0.23	0.01	0.22	0.16	0.13	0.34	0.22	0.21	0.23	0.35	0.12	0.25
Cr	-0.14	0.52	0.18	0.60	0.45	0.17	0.11	0.41	0.46	0.20	-0.01	0.08	0.18	0.43	0.41	-0.03	0.42	0.10	0.64	0.56	0.37	0.46	0.55	0.32	0.42	0.46	0.40	0.65
Cs	-0.15	0.03	0.02	0.13	0.36	-0.20	0.35	0.37	0.35	0.83	-0.05	0.00	0.02	0.36	0.08	-0.16	0.41	-0.01	0.29	0.42	0.42	0.49	0.55	-0.01	0.41	0.49	-0.14	0.18
Cu	0.33	-0.04	0.23	-0.08	-0.05	0.46	-0.15	0.02	-0.08	-0.19	0.01	0.02	0.06	-0.02	-0.04	0.09	-0.03	0.07	-0.15	-0.33	-0.09	-0.07	-0.21	0.05	-0.01	-0.07	0.21	-0.12
Dy	0.04	0.32	0.27	0.30	0.92	0.38	0.37	0.95	0.89	0.53	-0.04	0.02	0.46	0.95	0.21	0.01	0.98	0.04	0.65	0.38	0.38	0.96	0.77	0.41	0.99	0.95	0.28	0.56
Er	0.02	0.33	0.22	0.32	0.88	0.33	0.38	0.96	0.86	0.52	-0.03	0.00	0.45	0.91	0.22	0.00	0.97	0.03	0.64	0.39	0.37	0.99	0.77	0.45	0.97	0.99	0.23	0.55
Eu	0.09	0.24	0.27	0.27	0.95	0.36	0.35	0.92	0.92	0.46	-0.04	0.01	0.44	0.97	0.22	0.03	0.98	0.03	0.58	0.32	0.40	0.90	0.68	0.42	0.94	0.89	0.24	0.50
Fe	0.35	0.08	-0.03	0.21	-0.06	0.43	-0.11	0.05	-0.06	-0.45	0.26	-0.01	0.32	-0.04	0.09	0.45	-0.04	-0.01	-0.04	-0.13	-0.13	-0.07	-0.25	0.20	-0.06	-0.07	0.14	0.07
Ga	0.06	-0.13	-0.12	-0.12	-0.13	-0.12	0.01	-0.14	-0.13	-0.08	-0.01	-0.02	-0.09	-0.14	-0.02	-0.02	-0.15	-0.02	-0.16	-0.12	-0.04	-0.15	-0.19	-0.02	-0.17	-0.15	-0.11	-0.12
Gd	0.06	0.28	0.31	0.29	0.97	0.39	0.35	0.92	0.95	0.47	-0.04	0.02	0.47	0.99	0.21	0.04	0.98	0.04	0.64	0.36	0.40	0.89	0.73	0.40	0.97	0.88	0.30	0.56
Ge	0.06	0.24	0.27	0.28	0.94	0.33	0.31	0.89	0.94	0.34	-0.03	0.01	0.49	0.94	0.17	0.02	0.92	0.03	0.57	0.32	0.34	0.80	0.64	0.42	0.87	0.79	0.25	0.55
Hf	-0.03	0.46	0.18	0.49	0.80	0.31	0.27	0.86	0.81	0.29	-0.01	-0.02	0.42	0.81	0.39	-0.07	0.85	0.02	0.68	0.44	0.30	0.84	0.67	0.57	0.81	0.83	0.40	0.73
Hg	0.33	-0.09	0.28	-0.11	0.10	0.27	0.01	0.14	0.07	0.08	0.08	-0.04	0.17	0.13	0.06	0.28	0.12	0.02	-0.07	-0.15	0.30	0.08	-0.03	0.07	0.12	0.08	0.04	-0.12
Ho	0.04	0.30	0.24	0.31	0.89	0.36	0.36	0.96	0.86	0.52	-0.03	0.00	0.46	0.92	0.21	0.00	0.98	0.02	0.61	0.37	0.37	0.98	0.76	0.43	0.98	0.98	0.22	0.53
I	0.24	0.00	0.04	0.04	0.20	0.15	0.41	0.33	0.18	0.41	0.14	0.01	0.45	0.24	0.03	0.32	0.28	0.23	0.10	0.09	0.35	0.38	0.31	0.09	0.31	0.39	-0.06	0.05
La	-0.01	0.35	0.21	0.29	0.96	0.26	0.27	0.76	0.96	0.37	-0.03	0.02	0.38	0.91	0.25	-0.03	0.87	0.03	0.62	0.41	0.35	0.75	0.65	0.43	0.79	0.74	0.25	0.55
Li	0.26	0.12	0.10	0.36	0.22	0.25	0.14	0.29	0.22	0.12	0.18	0.01	0.63	0.23	0.14	0.39	0.25	0.07	0.19	0.25	0.25	0.27	0.25	0.18	0.24	0.28	0.12	0.25
Lu	0.01	0.32	0.17	0.28	0.79	0.28	0.41	0.91	0.77	0.55	-0.03	-0.01	0.41	0.83	0.19	-0.02	0.91	0.06	0.59	0.36	0.37	0.99	0.76	0.40	0.92	1.00	0.16	0.48
Mg		-0.19	0.04	-0.17	0.02	0.33	0.06	0.11	-0.02	-0.10	0.05	0.00	0.36	0.05	-0.13	0.45	0.06	0.16	-0.30	-0.35	-0.02	0.01	-0.26	0.04	0.07	0.01	-0.04	-0.26
Mn	-0.19		0.21	0.35	0.31	0.21	0.09	0.28	0.36	0.08	-0.03	-0.01	0.12	0.28	0.26	-0.11	0.28	-0.03	0.60	0.43	0.27	0.34	0.46	0.31	0.29	0.33	0.52	0.64
Mo	0.04	0.21		0.16	0.29	0.39	-0.01	0.26	0.27	0.18	-0.03	0.03	0.18	0.31	0.05	0.27	0.27	-0.05	0.22	0.14	0.37	0.19	0.27	0.09	0.29	0.18	0.50	0.27
Nb	-0.17	0.35	0.16		0.31	0.11	0.08	0.36	0.34	0.11	0.00	0.01	0.14	0.30	0.42	-0.06	0.31	-0.06	0.45	0.59	0.13	0.30	0.40	0.31	0.28	0.29	0.32	0.66
Nd	0.02	0.31	0.29	0.31		0.33	0.31	0.86	0.99	0.39	-0.03	0.02	0.45	0.99	0.25	0.01	0.94	0.04	0.67	0.41	0.39	0.82	0.72	0.43	0.90	0.82	0.32	0.60
Ni	0.33	0.21	0.39	0.11	0.33		0.01	0.41	0.29	0.08	0.06	0.03	0.42	0.37	0.03	0.40	0.37	0.01	0.14	-0.04	0.13	0.30	0.12	0.21	0.39	0.30	0.30	0.21
Pb	0.06	0.09	-0.01	0.08	0.31	0.01		0.36	0.29	0.30	0.00	-0.02	0.21	0.32	0.06	0.01	0.34	0.14	0.17	0.08	0.21	0.39	0.28	0.14	0.36	0.40	0.05	0.15
Pd	0.11	0.28	0.26	0.36	0.86	0.41	0.36		0.84	0.46	-0.02	0.00	0.51	0.91	0.21	0.04	0.95	0.03	0.55	0.33	0.36	0.93	0.69	0.43	0.96	0.93	0.25	0.55
Pr	-0.02	0.36	0.27	0.34	0.99	0.29	0.29	0.84		0.37	-0.03	0.01	0.44	0.97	0.26	-0.01	0.92	0.02	0.71	0.44	0.38	0.80	0.73	0.46	0.87	0.79	0.33	0.64
Rb	-0.10	0.08	0.18	0.11	0.39	0.08	0.30	0.46	0.37		-0.08	0.04	0.07	0.43	0.09	-0.12	0.49	0.00	0.28	0.34	0.46	0.54	0.55	0.00	0.51	0.54	-0.05	0.19
Re	0.05	-0.03	-0.03	0.00	-0.03	0.06	0.00	-0.02	-0.03	-0.08		0.00	0.37	-0.03	-0.01	0.24	-0.03	-0.01	-0.02	-0.03	-0.03	-0.03	-0.03	0.00	-0.04	-0.03	0.00	-0.02
Sb	0.00	-0.01	0.03	0.01	0.02	0.03	-0.02	0.00	0.01	0.04	0.00		-0.01	0.02	-0.01	0.01	0.01	0.13	0.02	-0.01	-0.02	-0.01	0.03	-0.01	0.01	-0.01	-0.01	0.01
Se	0.36	0.12	0.18	0.14	0.45	0.42	0.21	0.51	0.44	0.07	0.37	-0.01		0.47	0.03	0.45	0.47	0.10	0.25	0.08	0.21	0.43	0.30	0.25	0.48	0.42	0.17	0.26
Sm	0.05	0.28	0.31	0.30	0.99	0.37	0.32	0.91	0.97	0.43	-0.03	0.02	0.47		0.24	0.04	0.97	0.04	0.66	0.38	0.40	0.86	0.72	0.42	0.94	0.85	0.31	0.58
Sn	-0.13	0.26	0.05	0.42	0.25	0.03	0.06	0.21	0.26	0.09	-0.01	-0.01	0.03	0.24		-0.10	0.22	-0.03	0.39	0.43	0.27	0.20	0.29	0.32	0.17	0.20	0.26	0.40
Sr	0.45	-0.11	0.27	-0.06	0.01	0.40	0.01	0.04	-0.01	-0.12	0.24	0.01	0.45	0.04	-0.10		0.01	0.04	-0.13	-0.16	0.16	-0.02	-0.10	0.08	0.04	-0.02	0.03	-0.11
Tb	0.06	0.28	0.27	0.31	0.94	0.37	0.34	0.95	0.92	0.49	-0.03	0.01	0.47	0.97	0.22	0.01		0.01	0.62	0.36	0.38	0.94	0.73	0.43	0.97	0.93	0.24	0.54
Te	0.16	-0.03	-0.05	-0.06	0.04	0.01	0.14	0.03	0.02	0.00	-0.01	0.13	0.10	0.04	-0.03	0.04	0.01		-0.02	-0.09	0.03	0.04	-0.01	-0.02	0.04	0.05	0.01	-0.06
Th	-0.30	0.60	0.22	0.45	0.67	0.14	0.17	0.55	0.71	0.28	-0.02	0.02	0.25	0.66	0.39	-0.13	0.62	-0.02		0.66	0.34	0.61	0.81	0.37	0.62	0.61	0.51	0.84
Ti	-0.35	0.43	0.14	0.59	0.41	-0.04	0.08	0.33	0.44	0.34	-0.03	-0.01	0.08	0.38	0.43	-0.16	0.36	-0.09	0.66		0.30	0.38	0.61	0.20	0.36	0.37	0.24	0.69
Tl	-0.02	0.27	0.37	0.13	0.39	0.13	0.21	0.36	0.38	0.46	-0.03	-0.02	0.21	0.40	0.27	0.16	0.38	0.03	0.34	0.30		0.37	0.44	0.18	0.37	0.37	0.23	0.28
Tm	0.01	0.34	0.19	0.30	0.82	0.30	0.39	0.93	0.80	0.54	-0.03	-0.01	0.43	0.86	0.20	-0.02	0.94	0.04	0.61	0.38	0.37		0.77	0.42	0.95	1.00	0.19	0.51
U	-0.26	0.46	0.27	0.40	0.72	0.12	0.28	0.69	0.73	0.55	-0.03	0.03	0.30	0.72	0.29	-0.10	0.73	-0.01	0.81	0.61	0.44	0.77		0.31	0.74	0.76	0.31	0.68
W	0.04	0.31	0.09	0.31	0.43	0.21	0.14	0.43	0.46	0.00	0.00	-0.01	0.25	0.42	0.32	0.08	0.43	-0.02	0.37	0.20	0.18	0.42	0.31		0.37	0.42	0.34	0.43
Y	0.07	0.29	0.29	0.28	0.90	0.39	0.36	0.96	0.87	0.51	-0.04	0.01	0.48	0.94	0.17	0.04	0.97	0.04	0.62	0.36	0.37	0.95	0.74	0.37		0.94	0.27	0.53
Yb	0.01	0.33	0.18	0.29	0.82	0.30	0.40	0.93	0.79	0.54	-0.03	-0.01	0.42	0.85	0.20	-0.02	0.93	0.05	0.61	0.37	0.37	1.00	0.76	0.42	0.94		0.18	0.50
Zn	-0.04	0.52	0.50	0.32	0.32	0.30	0.05	0.25	0.33	-0.05	0.00	-0.01	0.17	0.31	0.26	0.03	0.24	0.01	0.51	0.24	0.23	0.19	0.31	0.34	0.27	0.18		0.61
Zr	-0.26	0.64	0.27	0.66	0.60	0.21	0.15	0.55	0.64	0.19	-0.02	0.01	0.26	0.58	0.40	-0.11	0.54	-0.06	0.84	0.69	0.28	0.51	0.68	0.43	0.53	0.50	0.61	

See *Lucy_stats.xls*

PCA @ Lucy Creek - summary

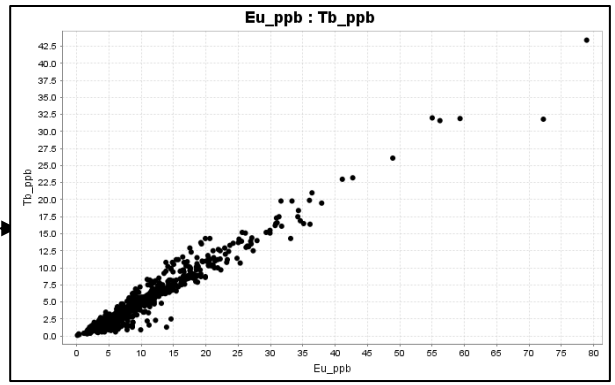
- **PCA1:** REEs indicating granitic suite of elements
- **PCA2**: Carbonate & halogen salt ppt over **structure** with greater response over Cambrian sediments (Mg, Li, Ca, Sr Br, I, As)
- **PCA3**: Elements signature represents HFSE of resistant minerals with random noise & batch effects (Ti, Nb, Cr, Be, Zr)
- **PCA4**: Tl-Hg pathfinders for SHMS with continuity between lines possibly picking up structure
- **PCA5**: Ba-Ga system dominate over Cambrian sandstone
- **PCA6:** Zn-Cd-Mo-Tl elements associated with SHMS
- **PCA7**: Secondary Mn enrichment within the surficial environment (Mn, Co, Cd, Zn)
- **PCA8**: Auriferous signature, (Au, Ca, Cu, Fe, Hg, Ni)

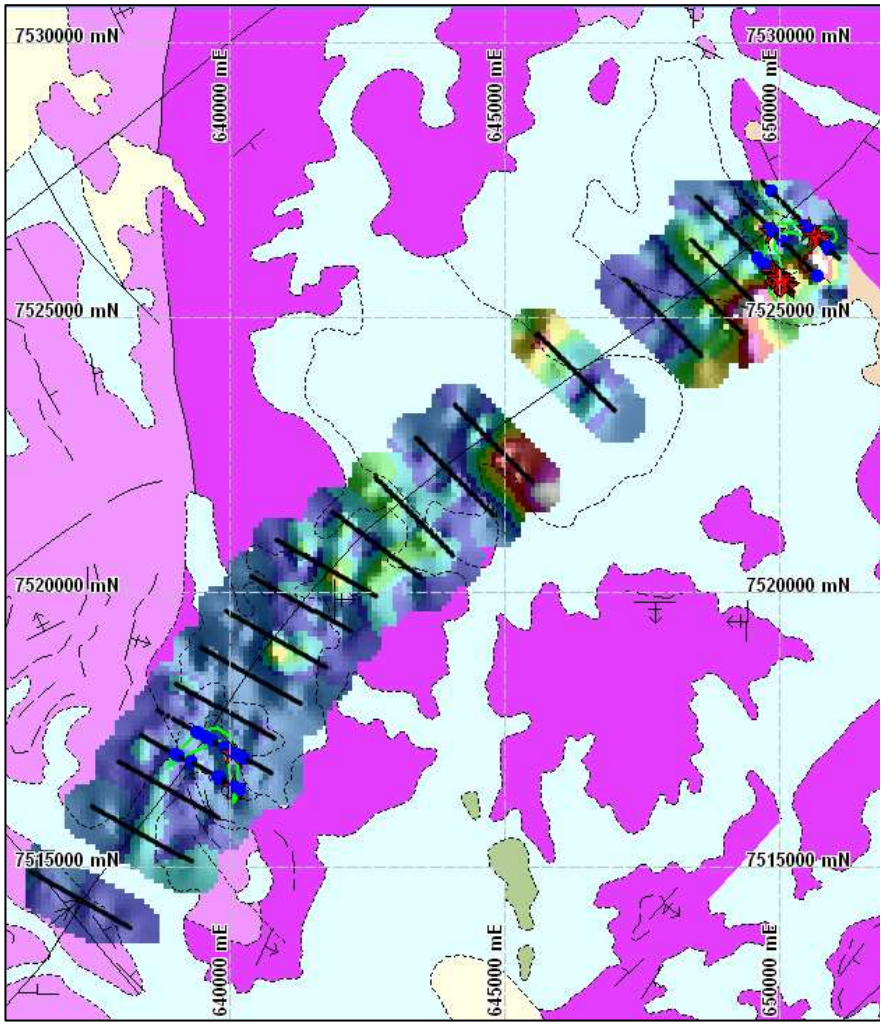
Lucy Creek: PCA1

	PCA 1
Eu	0.83
Tb	0.83
Ge	0.82
Sm	0.81
Gd	0.81
Nd	0.80
Ho	0.78
Y	0.78
Dy	0.78
Pd	0.78
Pr	0.78
Er	0.77
La	0.75
Tm	0.72
Yb	0.72
Lu	0.70
Hf	0.66
Be	0.47
U	0.40
Se	0.38
Ce	0.36
Th	0.33
W	0.33
Ni	0.29
Zr	0.25
Pb	0.21

? Granitic suite of elements

Strong internal correlation of REE's



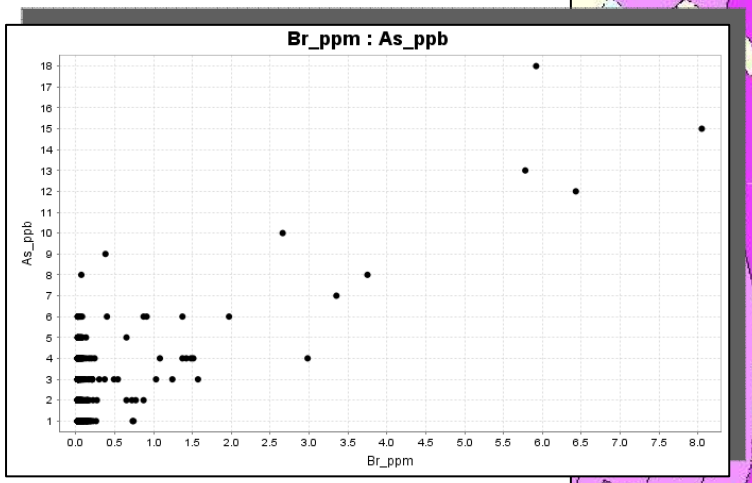


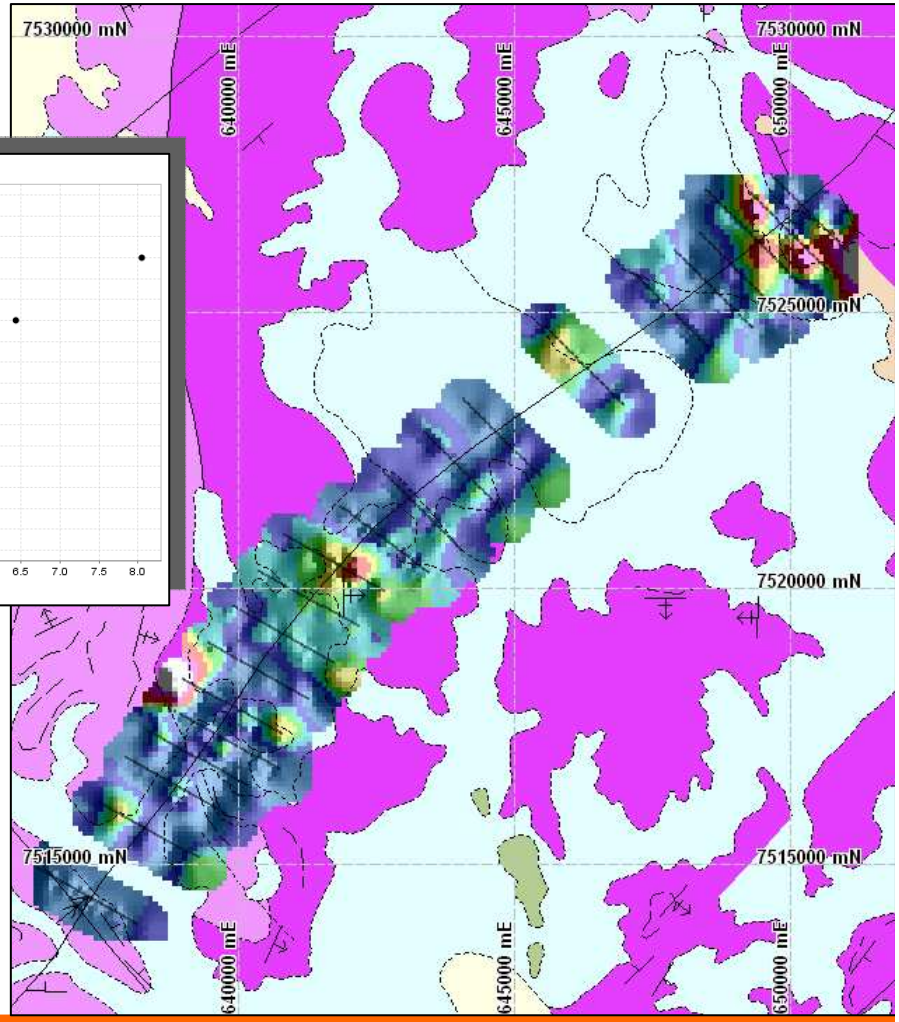
Lucy Creek: PCA2

- Carbonate (Mg, Li Ca, Sr) & halogen salt ppt (Br, I, As, Se) ?over structure or in drainage

	PCA 2
Br	0.92
Se	0.78
As	0.69
Li	0.65
Sr	0.57
I	0.38
Fe	0.33
Mg	0.27
Au	0.23
Ag	0.22
Ca	0.20
Ni	0.19
Co	0.13
Tl	0.09
Be	0.03
Ce	0.03
Mn	0.03
Mo	0.02

Strong correlation

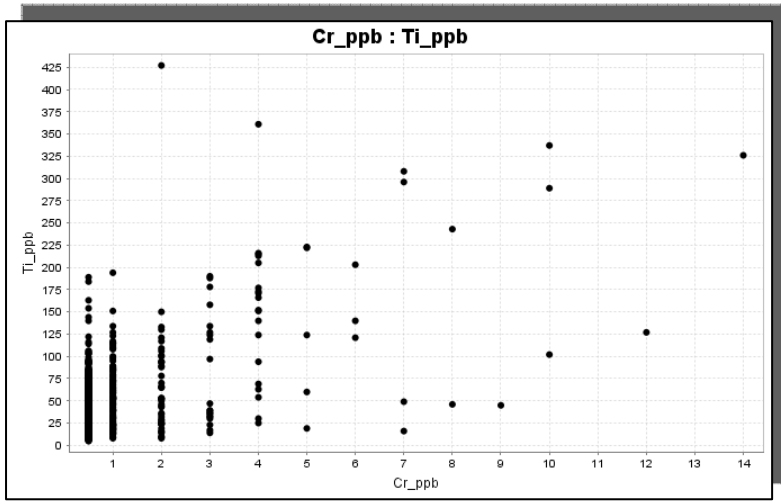


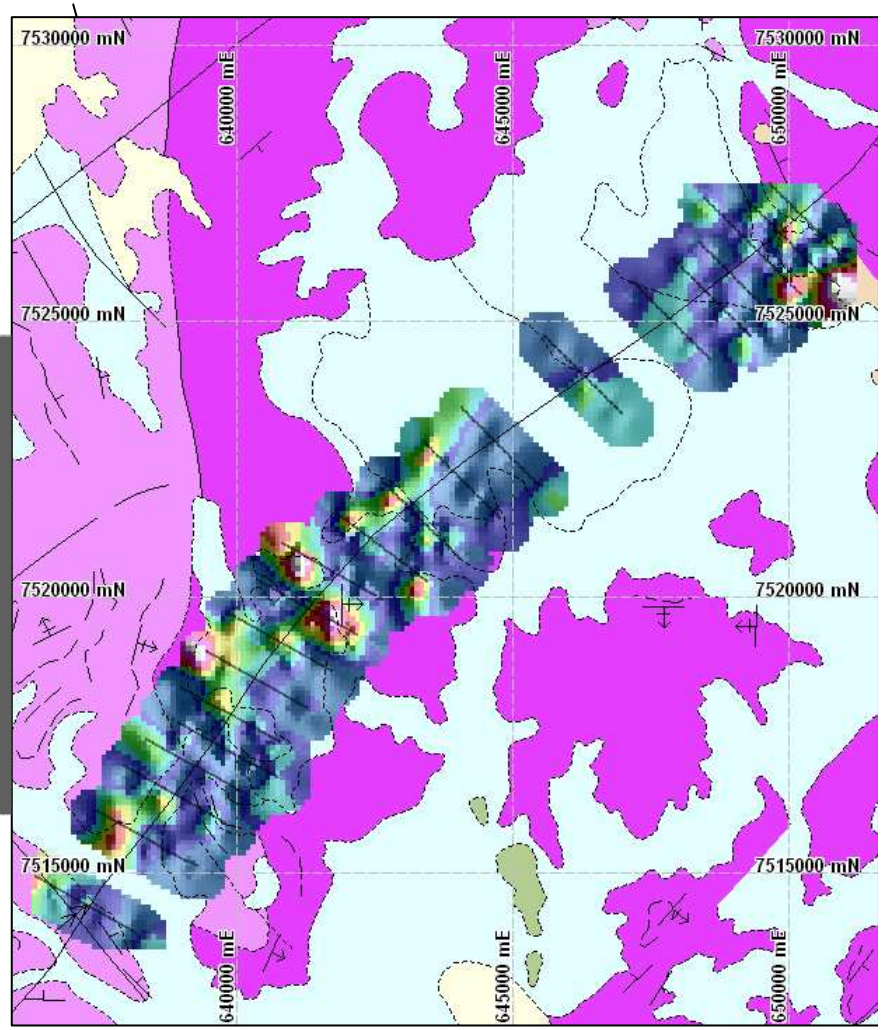


Lucy Creek: PCA3

- Random noise due to ?batch effects
- Not convincing correlations
- Elements signature represents HFSE possibly representing resistant minerals (Cr#, zirconium)

	PCA 3
Nb	0.74
Cr	0.63
Ti	0.61
Zr	0.47
Ce	0.38
Th	0.35
Li	0.33
Fe	0.30
Hf	0.22
Be	0.21
Mn	0.21
U	0.21
W	0.19
As	0.10

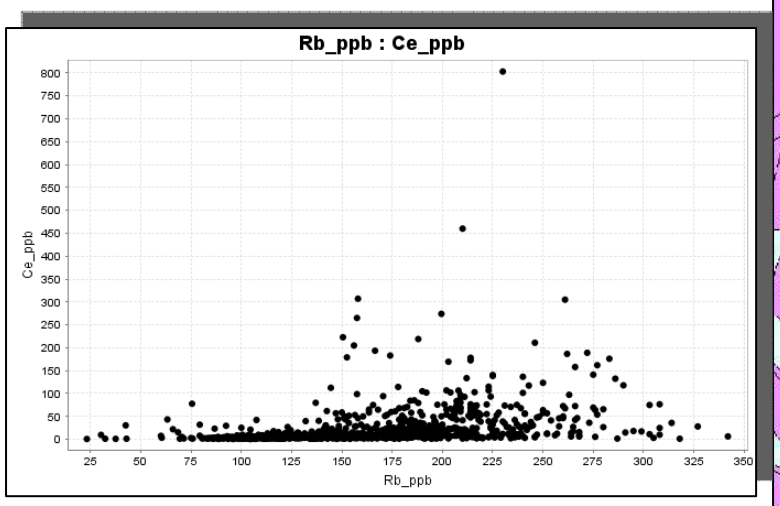


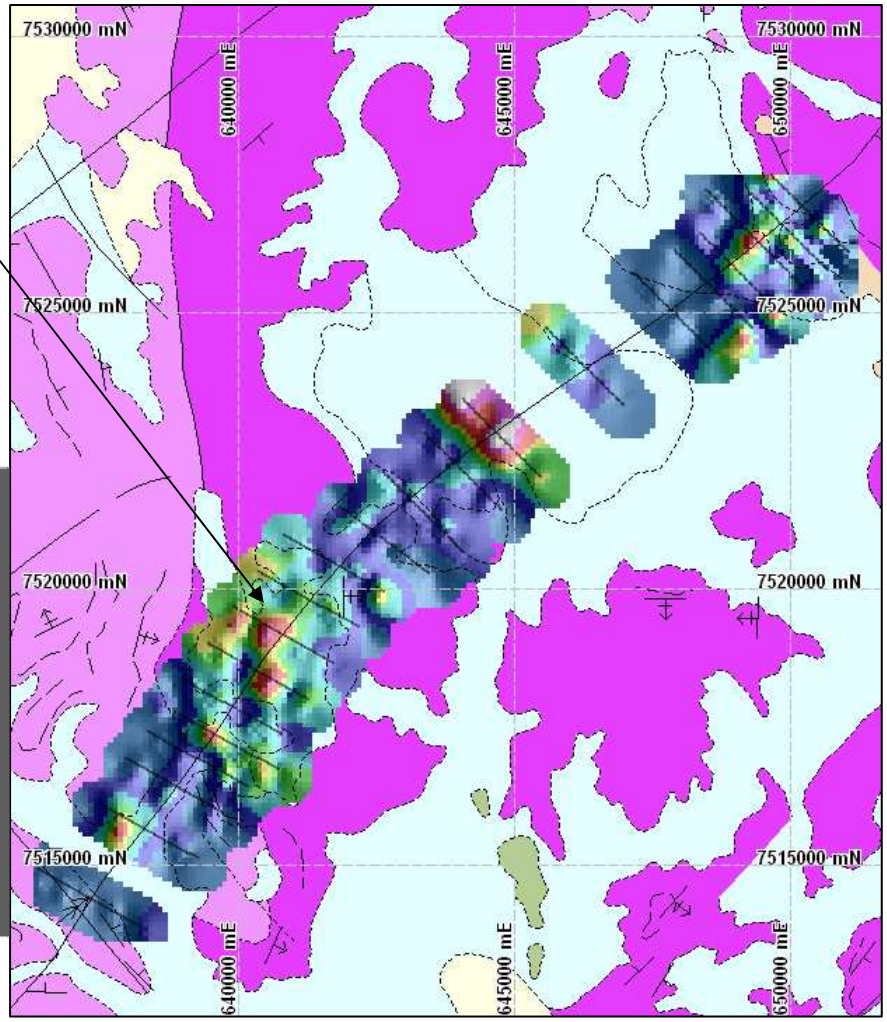


Luck Creek: PCA4

- No outstanding correlations
- Tl-Hg are known pathfinders for SHMS
- Elevated response close to Tomahawk Beds - Arrinthrunga Formation contact
- Possibly picking up leakage along structure associated with Zn mineralization
- See raw Zn

	PCA 4
Rb	0.71
Cs	0.68
Tl	**0.59**
I	0.49
Mo	0.31
Hg	0.30
U	0.26
Pb	0.21
Ti	0.21
Au	0.20
Li	0.15
Lu	0.13



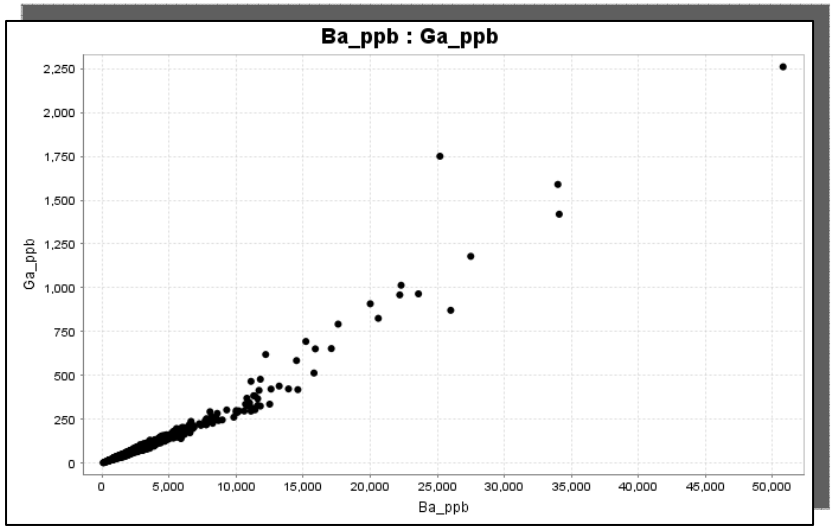


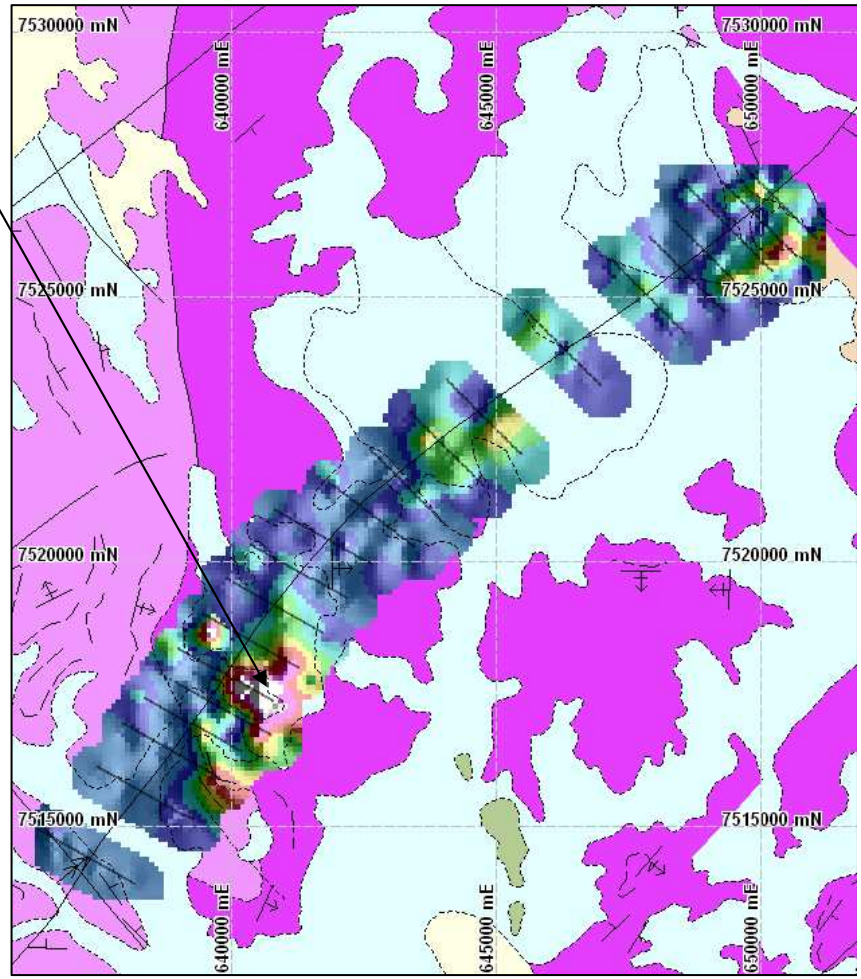
Lucy Creek: PCA5

- Strong Ba-Ga anomalous area close to elevated Zinc.
- Ba is a known pathfinder for SHMS

	PCA 5
Ga	**0.95**
Ba	**0.94**
Au	0.15
Eu	0.11
Hg	0.10
La	0.07
Cs	0.07
As	0.06
Ca	0.06
Tl	0.05
Hf	0.04
Pr	0.04

Strong correlation

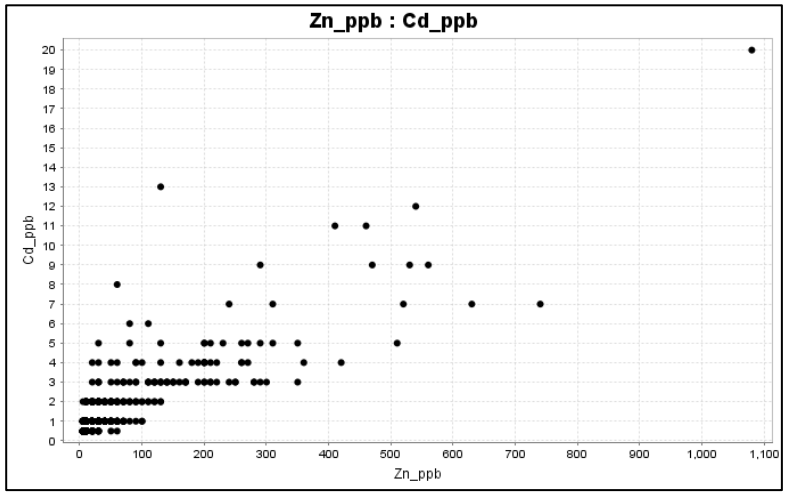


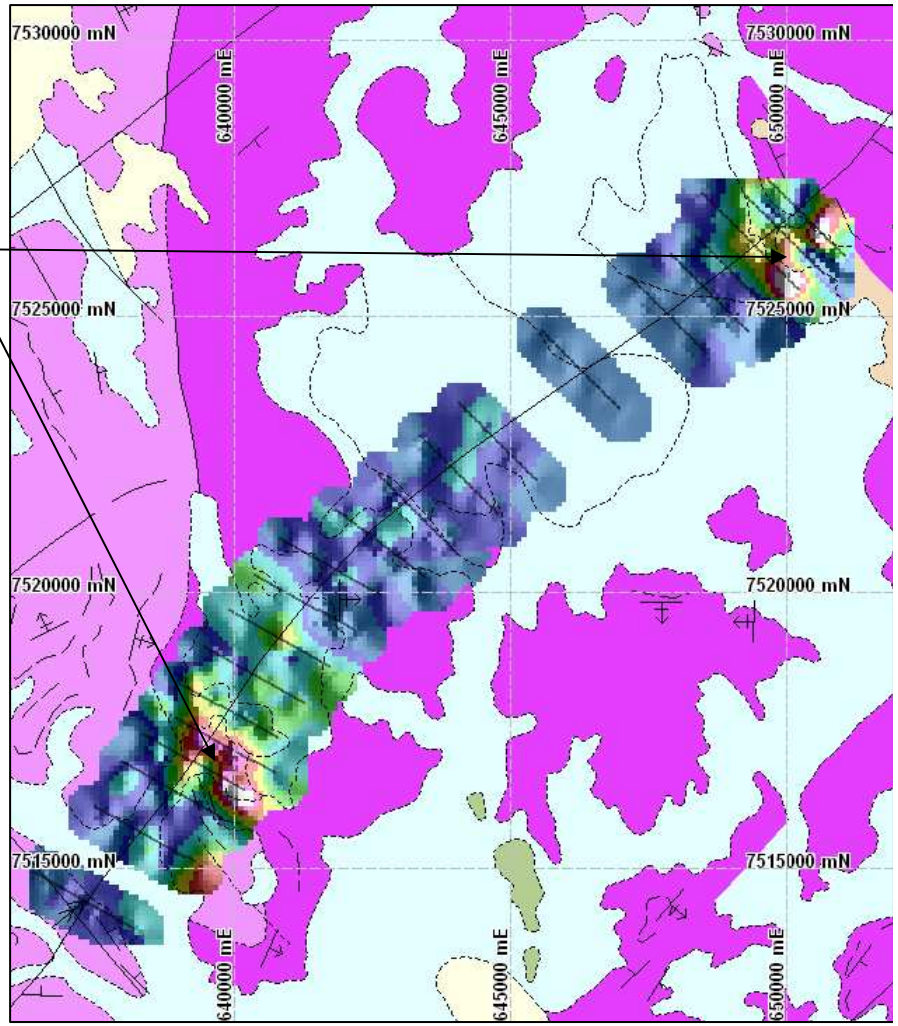


Lucy Creek: PCA6

- Two Areas where PCA6 is elevated in the Lucy Creek data
  - ~ 640000mE (Lines GBSS89 & LC4)
  - ~ 650000mE (Lines GBSS97, LC18 & LC19)

	PCA 6
Cd	0.75
Mo	0.74
Zn	0.70
Tl	0.38
Mn	0.35
Ni	0.25
Cu	0.25
Hg	0.22
Zr	0.20
Th	0.18
Ag	0.11
U	0.11
Sr	0.10
As	0.07

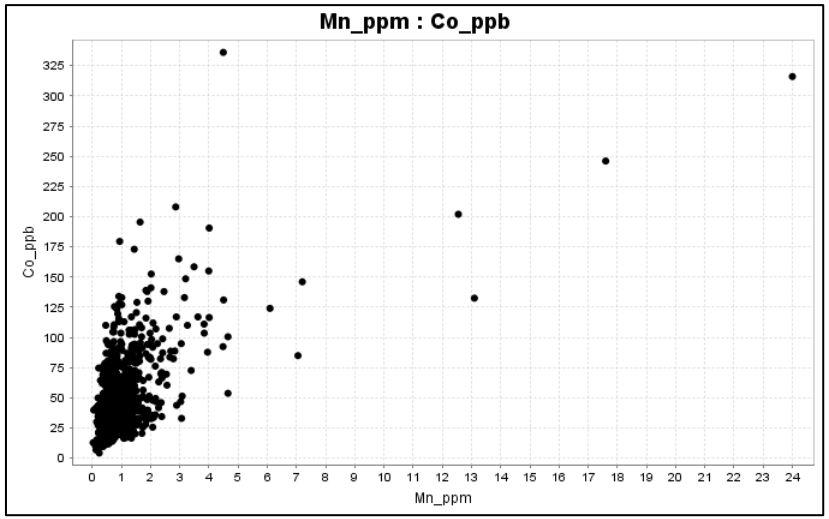


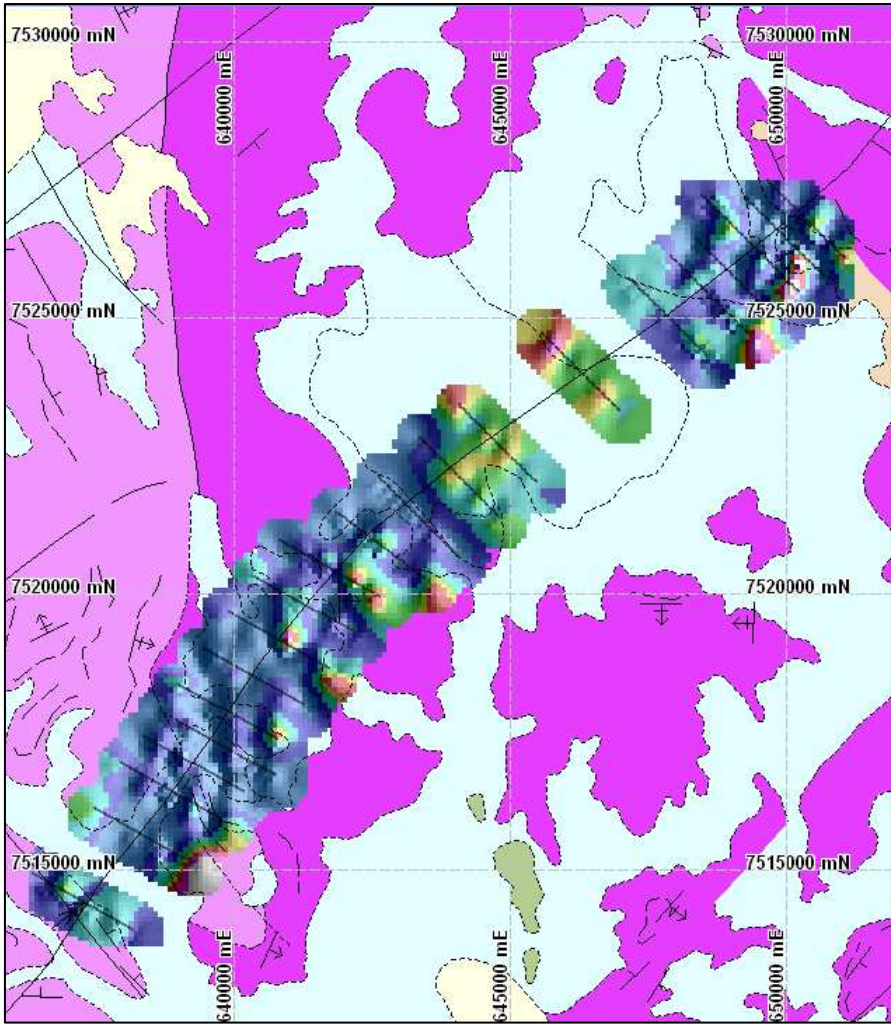


Lucy Creek: PCA7

- Mn-Co (surfacial enrichment)
- No systematic trends (thus limited influence of surface scavenging)

	PCA 7
Co	0.82
Mn	0.52
Pb	0.28
As	0.25
Ce	0.20
I	0.18
Lu	0.18
Yb	0.17
Tm	0.16
Ni	0.14
Hf	0.11
W	0.11
Fe	0.10
Er	0.10

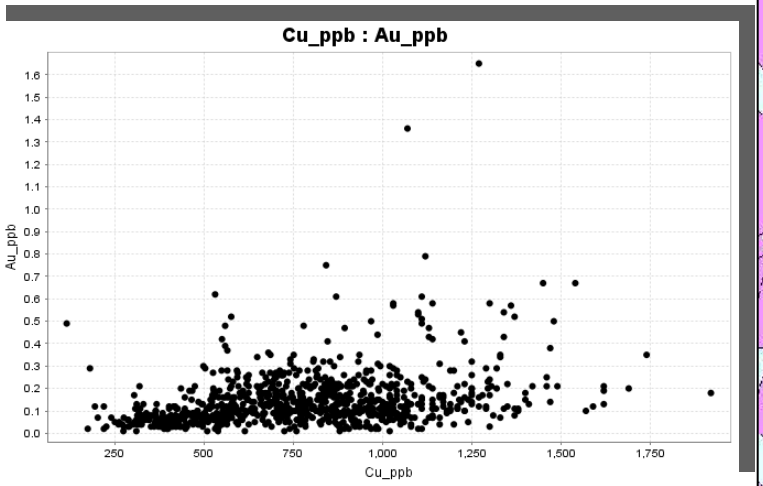


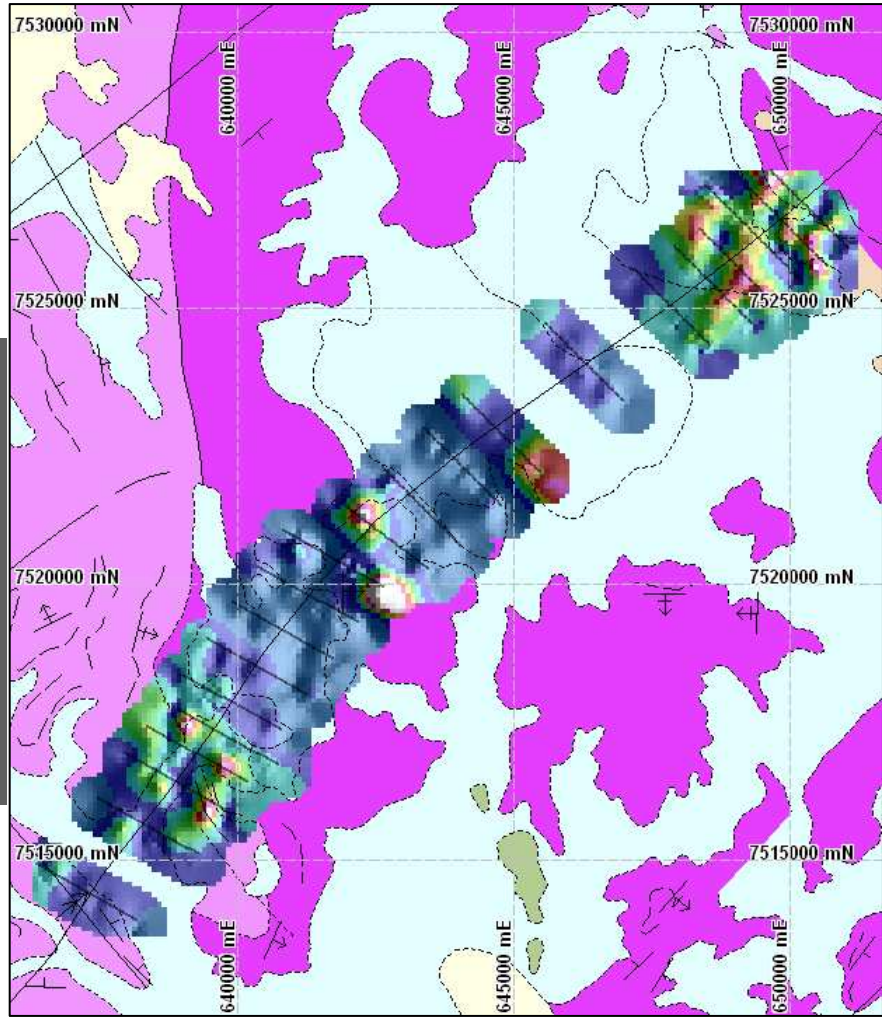


Lucy Creek: PCA8

- Patchy response
- Correlations are weak
- Lucy Creek was not highlighted as a potential auriferous region.

	PCA 8
Cu	0.69
Au	0.65
Hg	0.65
Ca	0.63
Fe	**0.58**
Ni	**0.55**
Mg	0.44
Sr	0.34
Mo	0.22
Ag	0.17
Li	0.14
Cd	0.13
Cr	0.12
Pd	0.12
I	0.09
Nb	0.09





Comparison of PCA between Putt Putta, Lucy Creek and Regional Lines

- Note there is a commonality of PCA between the different data sets.

Putta-Putta			Lucy Creek			Regional		
PCA	Summary	Putt-Putta	PCA	Summary	Lucy Creek	PCA	Summary	Regional
PCA1	REE's	Ce, Cs, Dy, Er, Eu, Ge, Ho, La, Lu, Nd, Pb, Pd, Pr, Rb, Sm, Th, Tm, U, Y, Yb	PCA1	REE's	Dy, Er, Eu, Gd, Ge, Hf, Ho, La, Lu, Nd, Pd, Pr, Sm, Tb, Tm, Y, Yb	PCA1	REE's	Ce, Dy, Er, Eu, Gd, Ge, Ho, La, Lu, Nd, Pd, Pr, Sm, Tb, Tm, U, Y, Yb
PCA2	Salts	As, Au, Br, Ca, I, Li, Mg, Sr	PCA2	Salts	As, Br, I, Li, Se, Sr	PCA2	Salts	As, Au, Br, Ca, I, Li, Mg, Se, Sr
PCA3	HFSE	Be, Cr, Fe, Hf, Nb, Ti, Zr	PCA3	HFSE	Cr, Nb, Ti, Zr	PCA3	HFSE	Be, Cr, Fe, Hf, Nb, Ti, Zr
PCA4	Auriferous	Ag, Au, Ca, Cu, Hg, Ni	PCA4	Tl-Hg	Tl, Hg, Cs, Mo, Rb	PCA4	Mn enrich	Cd, Co, Cu, Mn, Mo, Ni, Zn
PCA5	Ba-Ga	Ba, Ga	PCA5	Ba-Ga	Ba, Ga	PCA5	Ba-Ga	Ba, Ga
PCA6	Mn enrich	Co, Cd, Mn, Zn	PCA6	Zn	Cd, Mo, Tl, Zn	PCA6	Auriferous	Ag, Au, Ca, Cu, Hg, Ni
PCA7	Tl-Hg	Tl, Hg	PCA7	Mn enrich	Co, Mn, Pb	PCA7	Tl-Hg	Tl, Hg, Cs, Mo, Rb
			PCA8	Auiferous	**Au, Ca, Cu, Fe, Hg, Ni**			

Lucy Creek

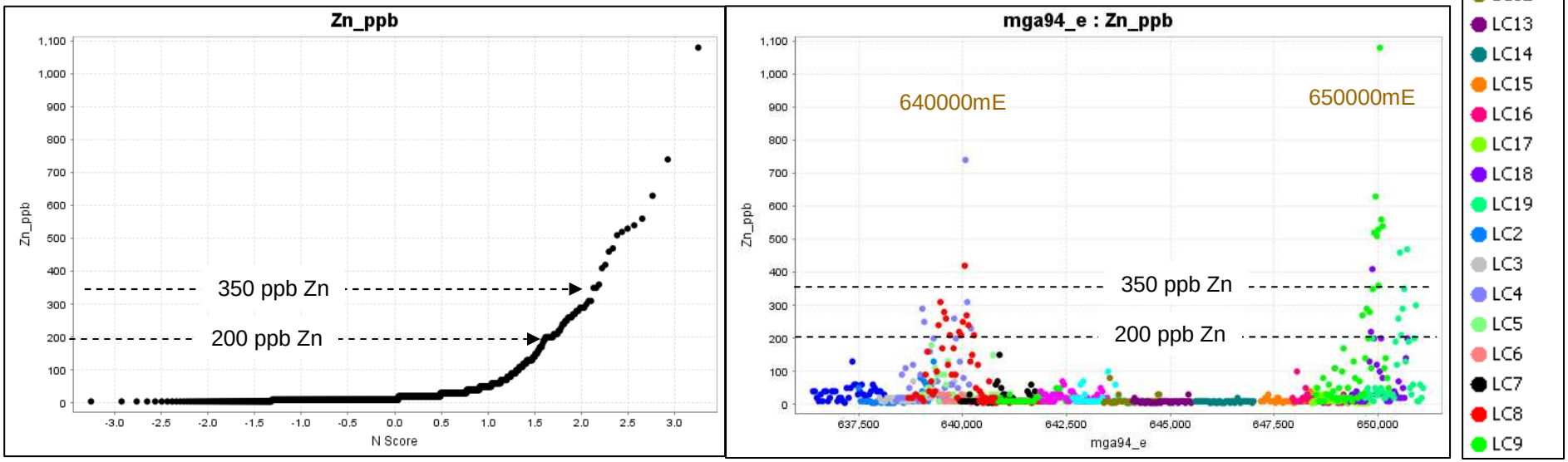
Areas for further consideration

Zinc

Based on population Zn breaks and the assumption that **PCA6** represents Zn SHMS associated elements and **PCA4** represents Tl-Hg potential pathfinders for SHMS

Lucy Creek: Anomalous Zn

- Two Areas where Zn is anomalous in the Lucy Creek data
  - ~ 640000mE (Lines GBSS89 & LC4)
  - ~ 650000mE (Lines GBSS97, LC18 & LC19)



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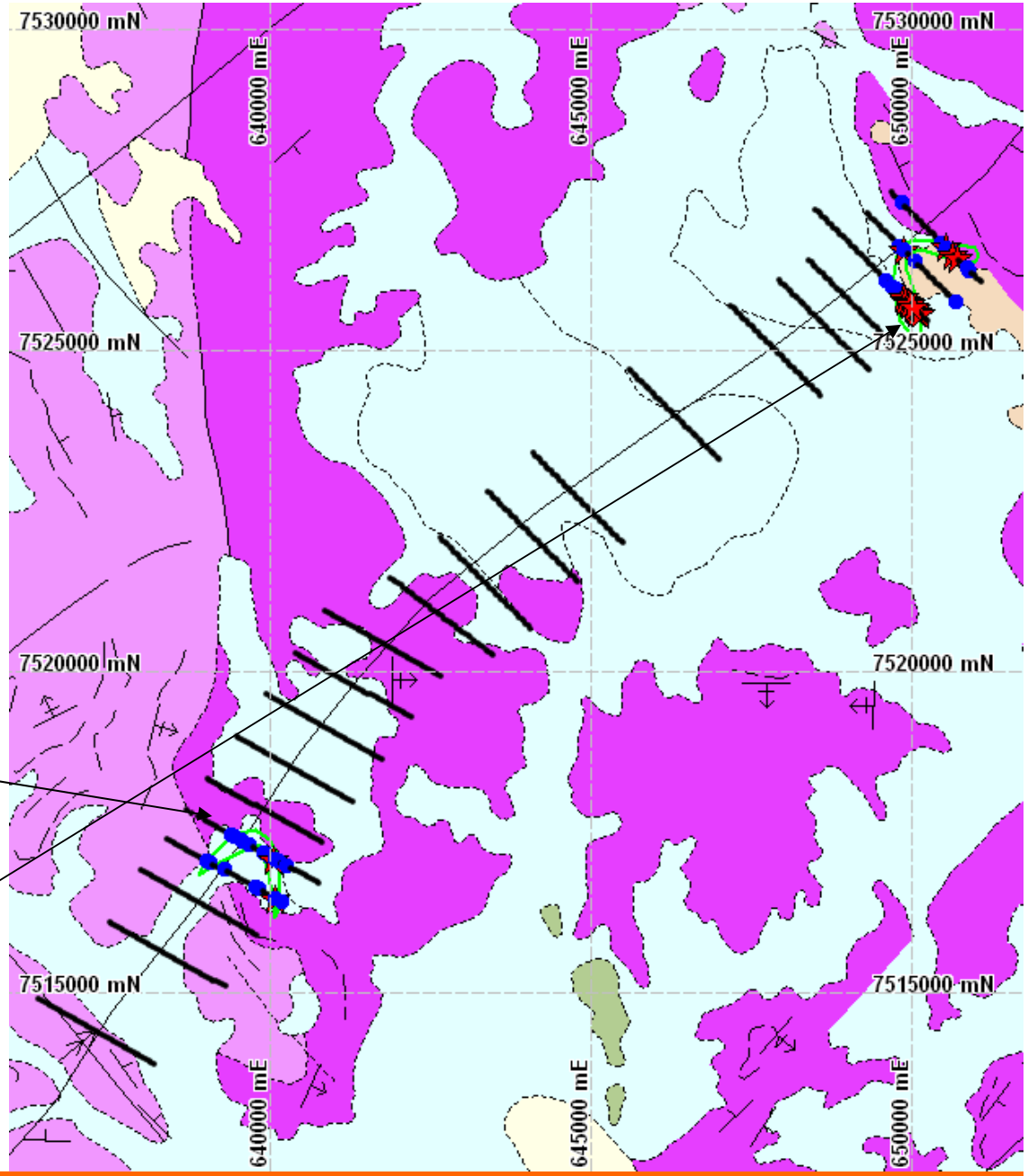
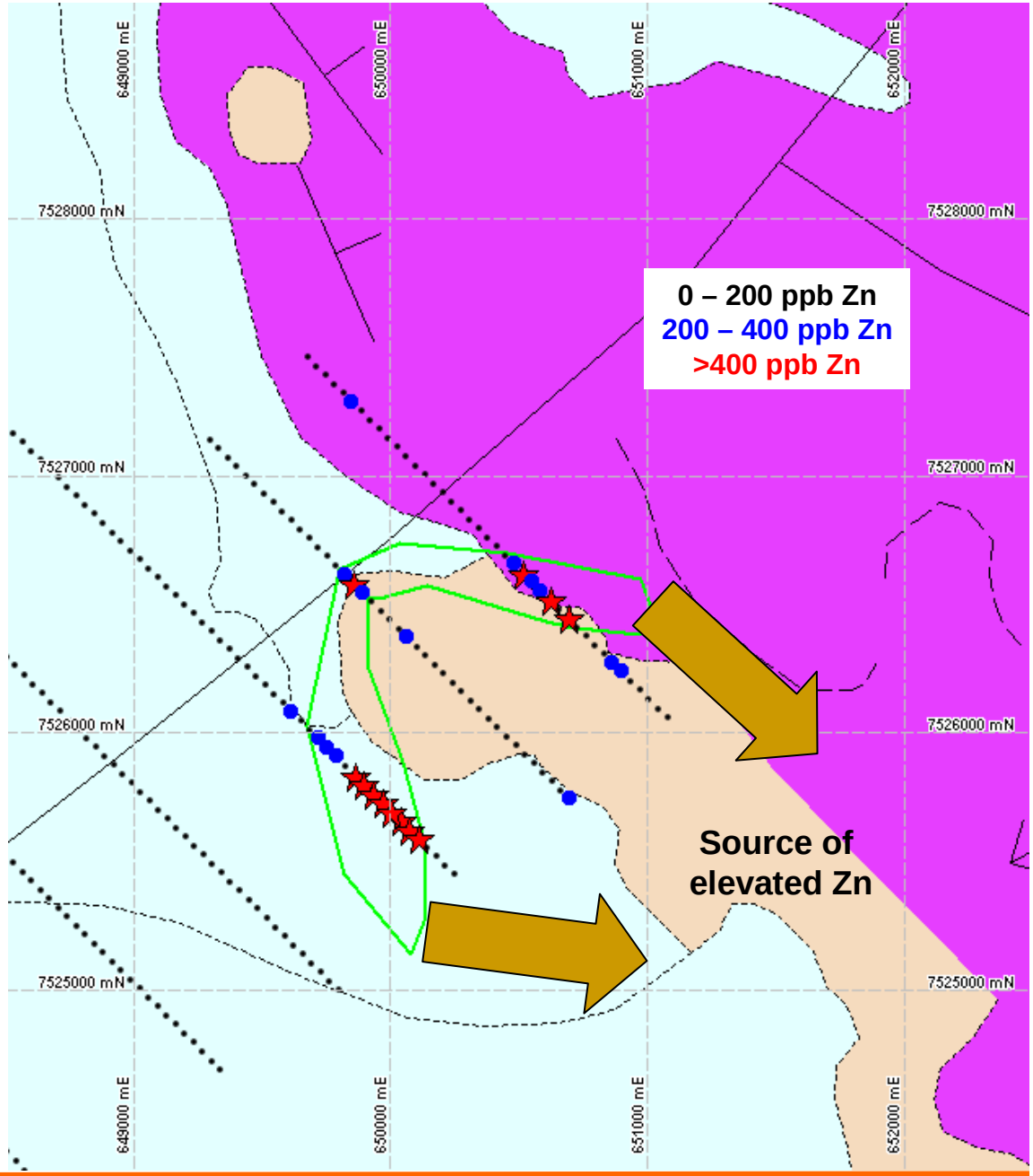


Elevated Zn @ 650000mE (Lines GBSS97, LC18 & LC19)

- Elevated Zn confined to the alluvial sediments which drain from SE to NW.
- These elevated Zn values within the alluvial system act as “stream sediments” rather than reflecting leakage through the alluvial sediments.
- Source of Zn in the hinterland to the SE
- Field inspection required to see if Zn source can be located.



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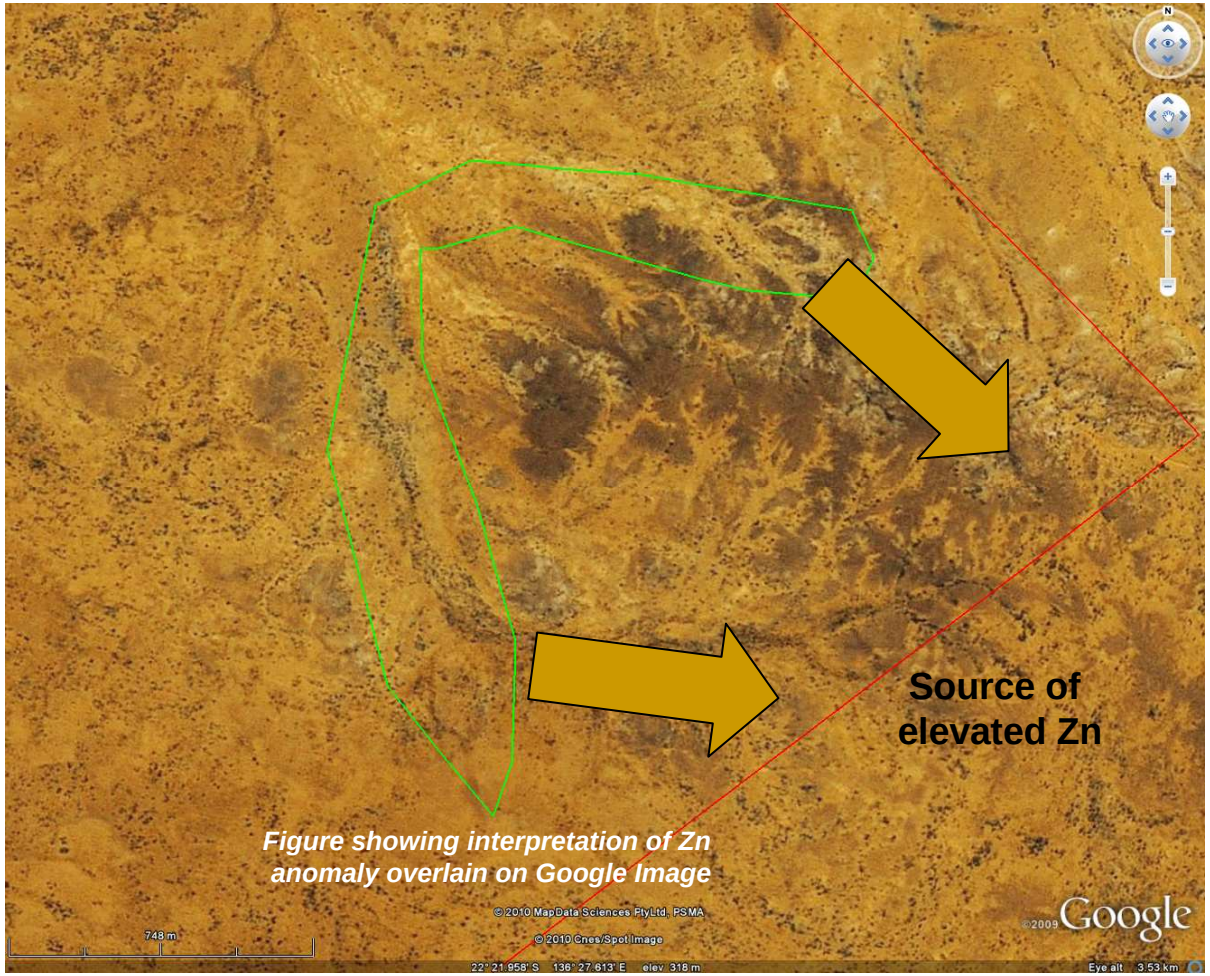
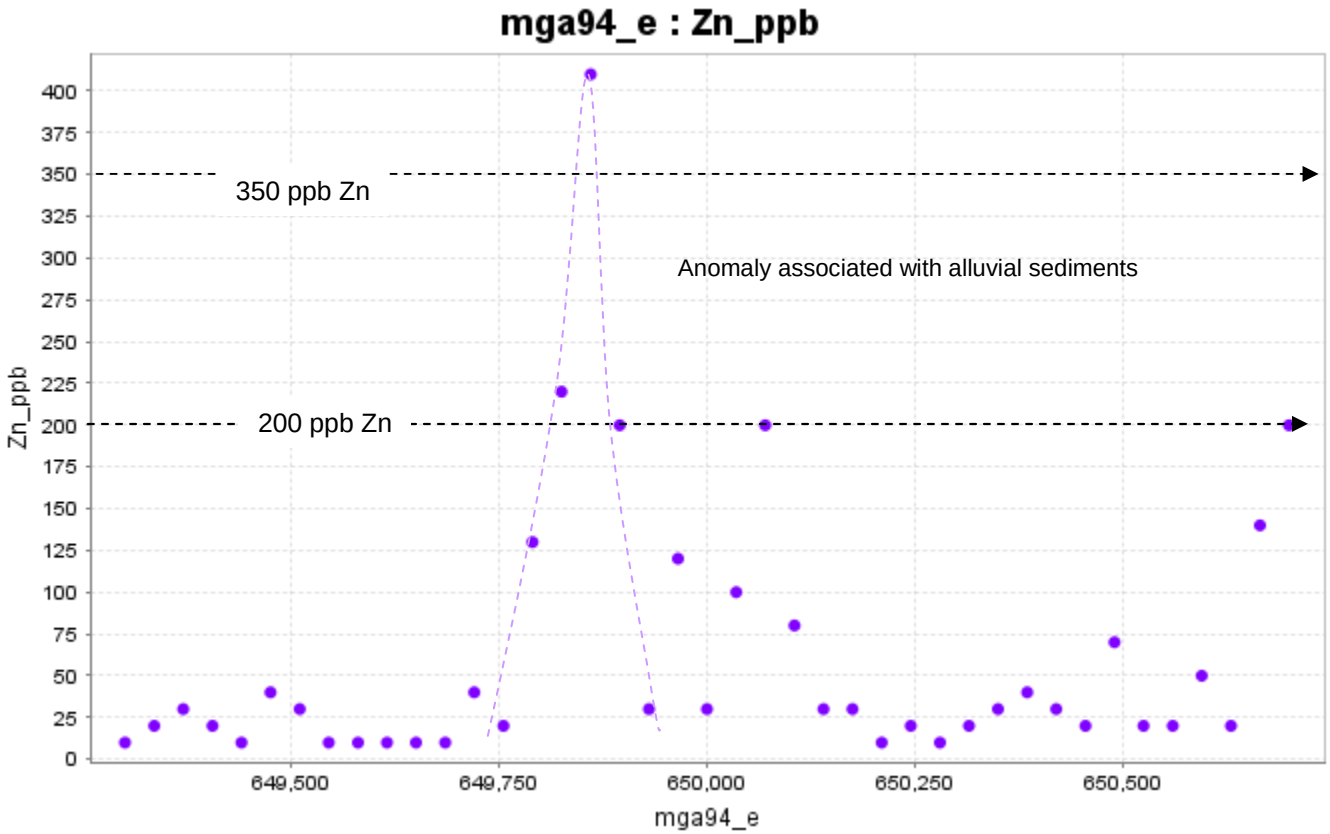


Figure showing interpretation of Zn anomaly overlain on Google Image

Lucy Creek: Zinc response on LC18

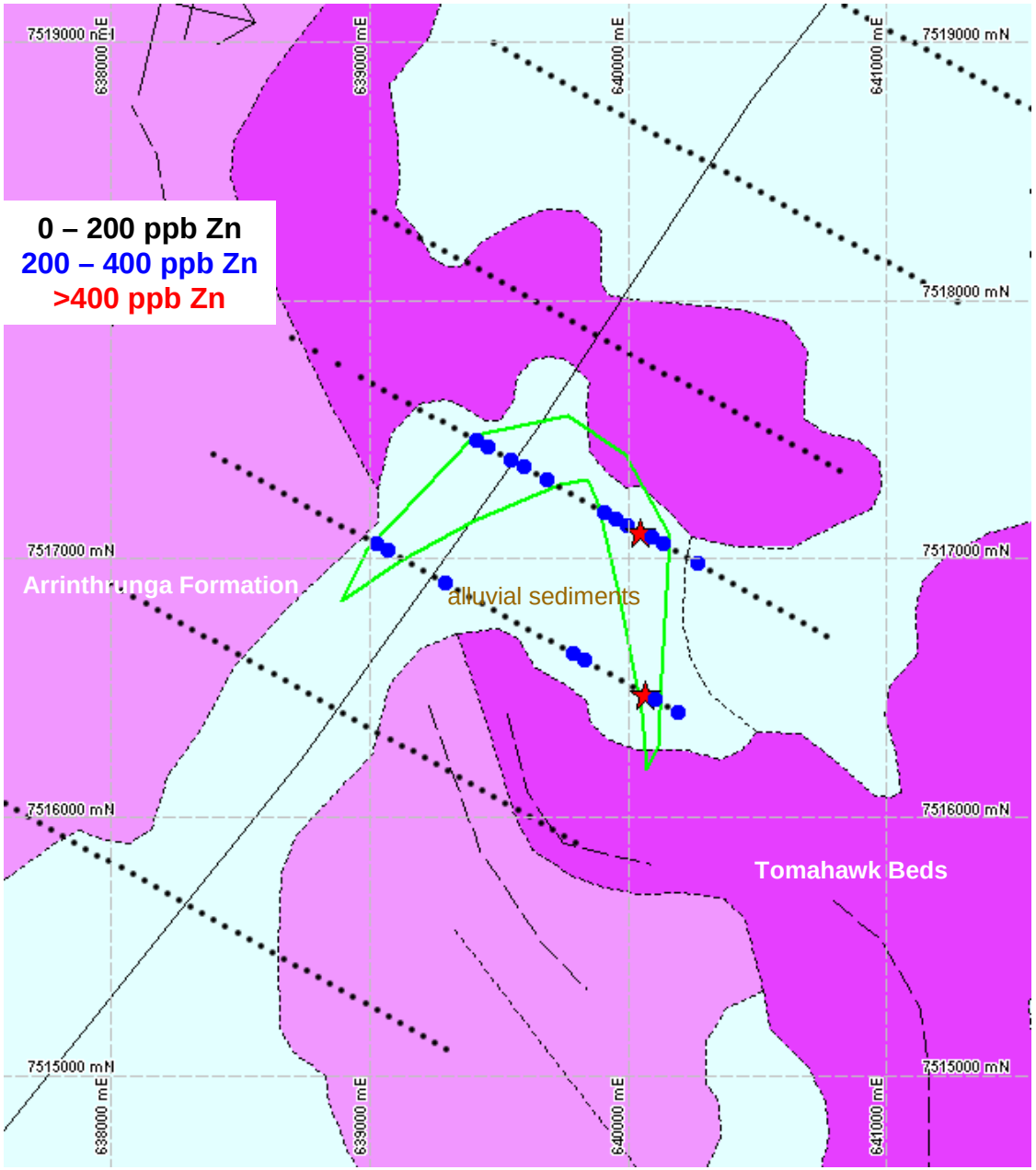


Elevated Zn @ 640000mE (Lines GBSS89 & LC4)

- Anomaly developed over Tomahawk Beds adjacent to the contact with the older Arrinthrunga Formation
- Anomaly confined to the alluvial sediments.

- QU: is this elevated Zn leakage from Tomahawk Beds - Arrinthrunga Formation contact?
- QU: Why is the anomaly confined to the alluvial sediments?

- Anomalous area requires field inspection with possible infill and ground Gpx.



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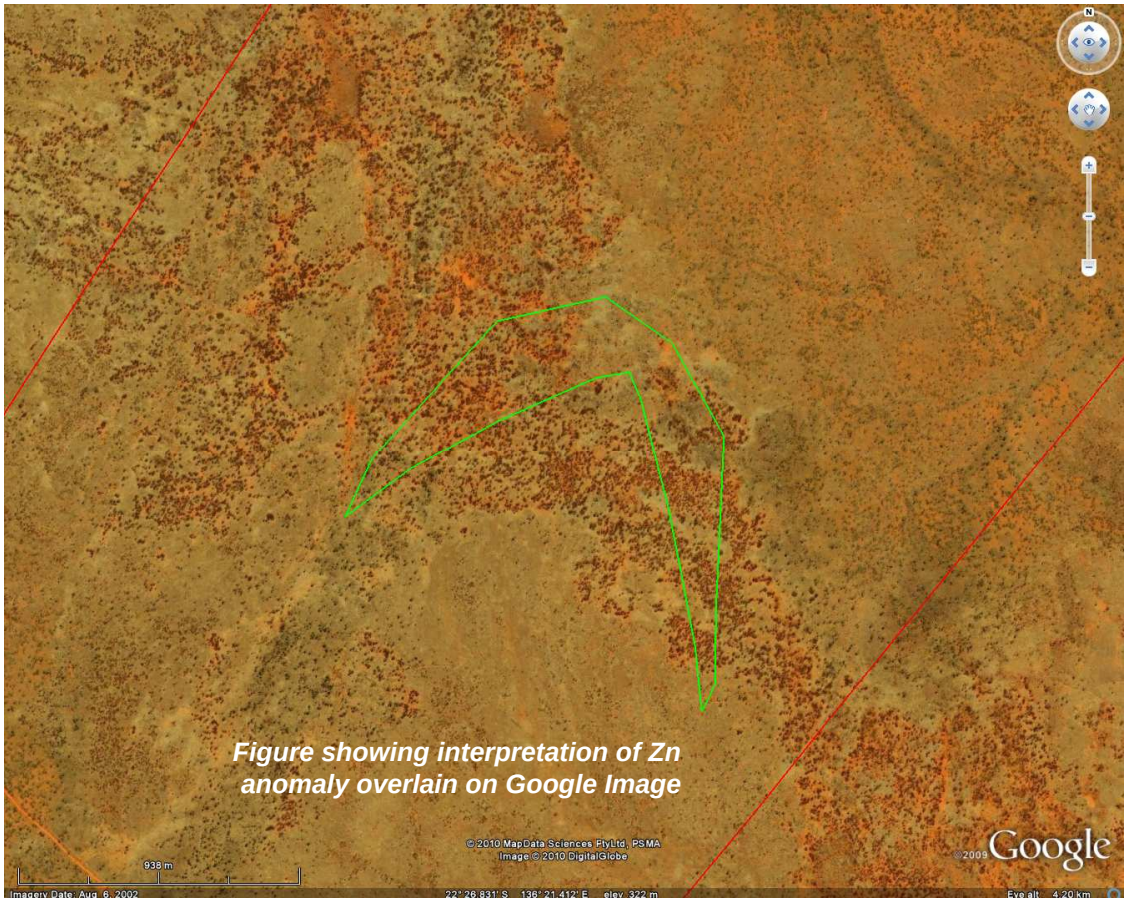
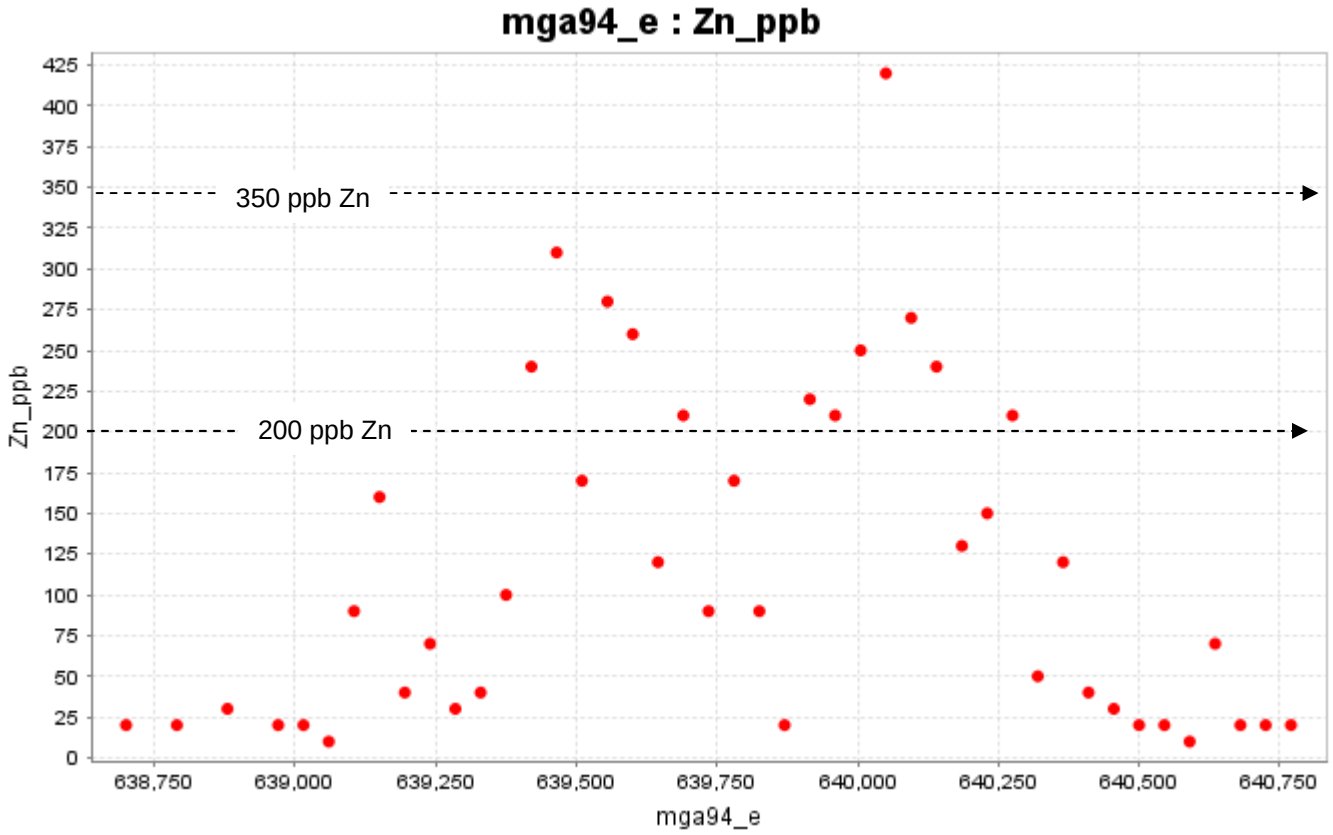


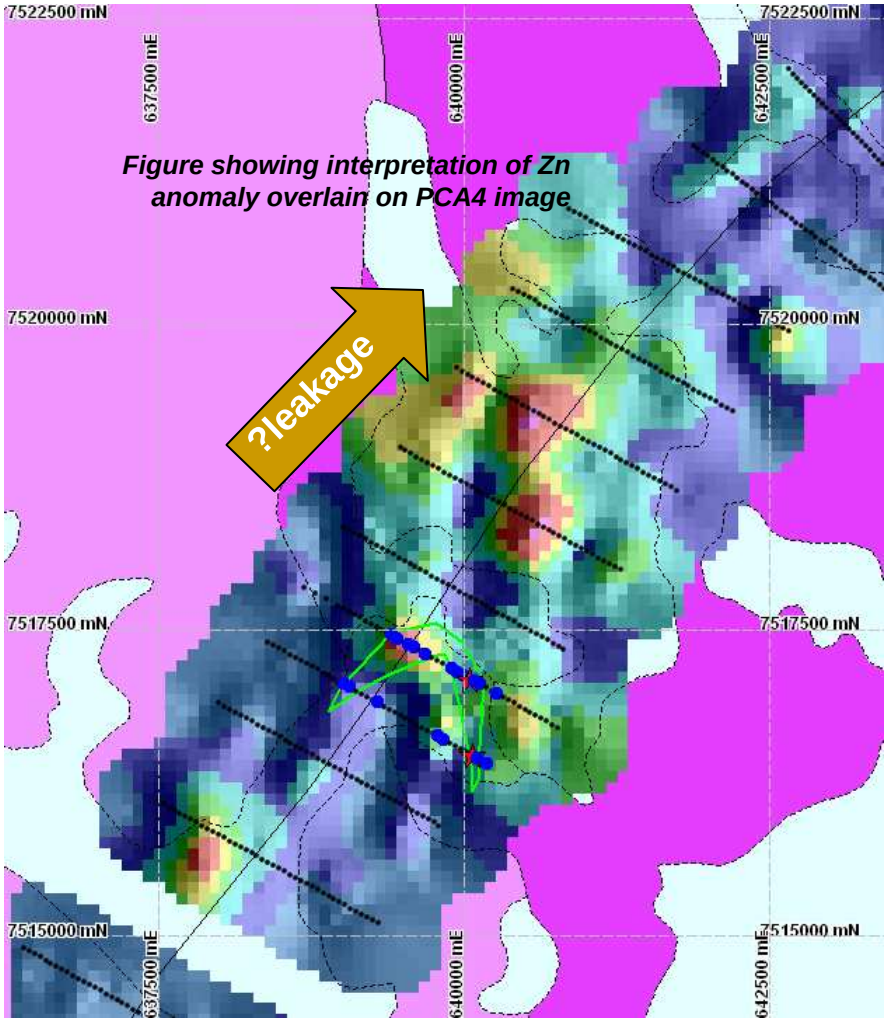
Figure showing interpretation of Zn anomaly overlain on Google Image

Lucy Creek: Zinc response on GBSS89



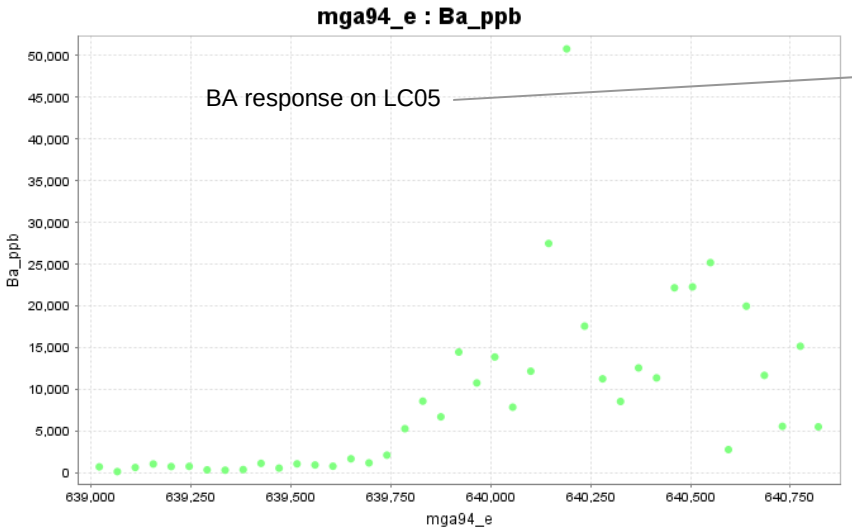
Elevated PCA4 (Tl-Hg) associated with elevated Zn @ 640000mE (Lines GBSS89 & LC4)

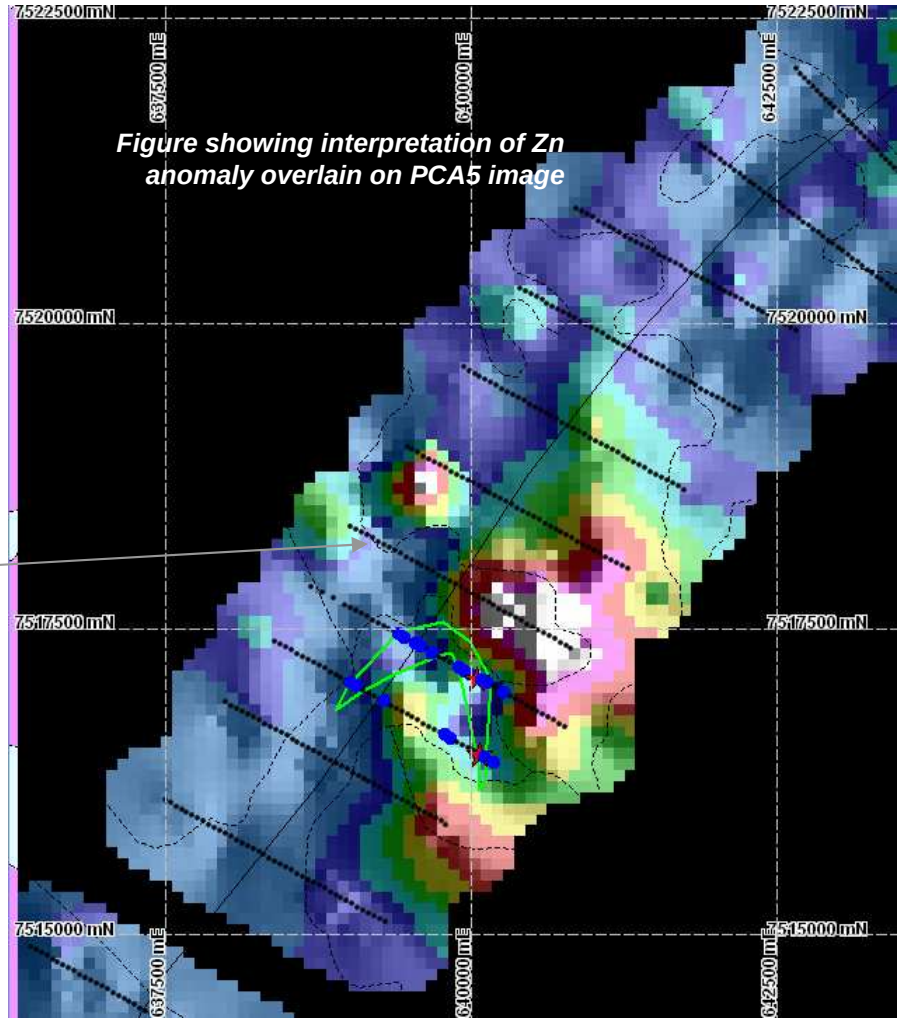
- PCA4 which is partially composed of Tl-Hg are known pathfinders for SHMS
- Elevated response close to Tomahawk Beds - Arrinthrunga Formation contact
- Possibly picking up leakage along structure associated with Zn mineralization
- See raw Zn



Lucy Creek: PCA5 (Ba-Ga)

- PCA5, composed of Ba, Ga are known pathfinders for SHMS
- Elevated response surrounding elevated Zn
- Anomalous accumulation close to Tomahawk Beds - Arrinthrunga Formation contact



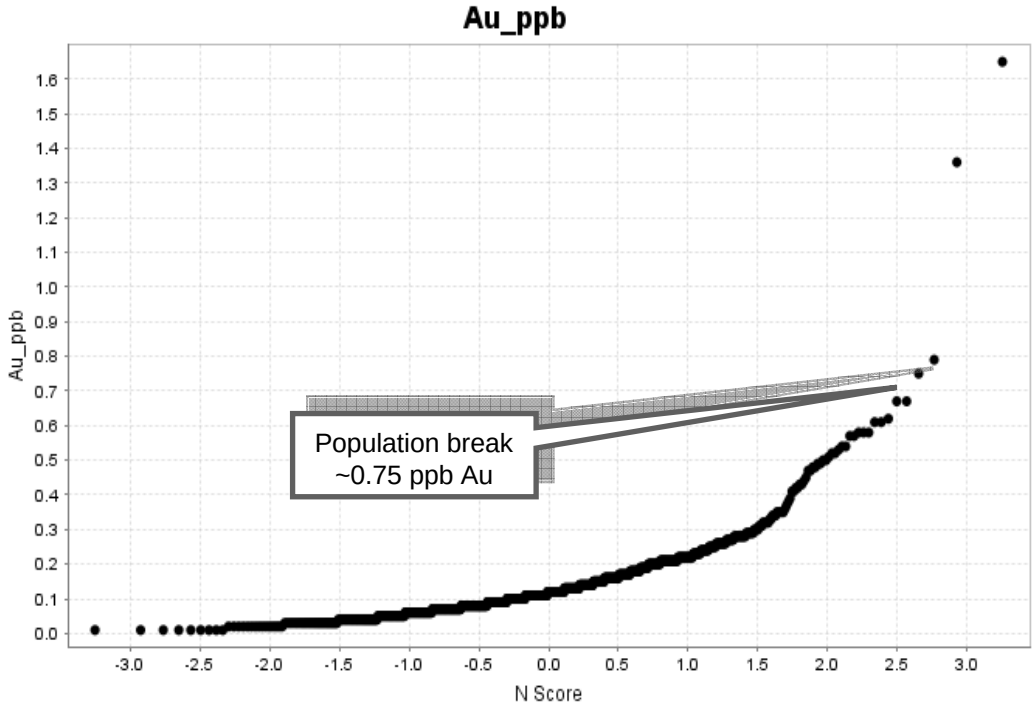


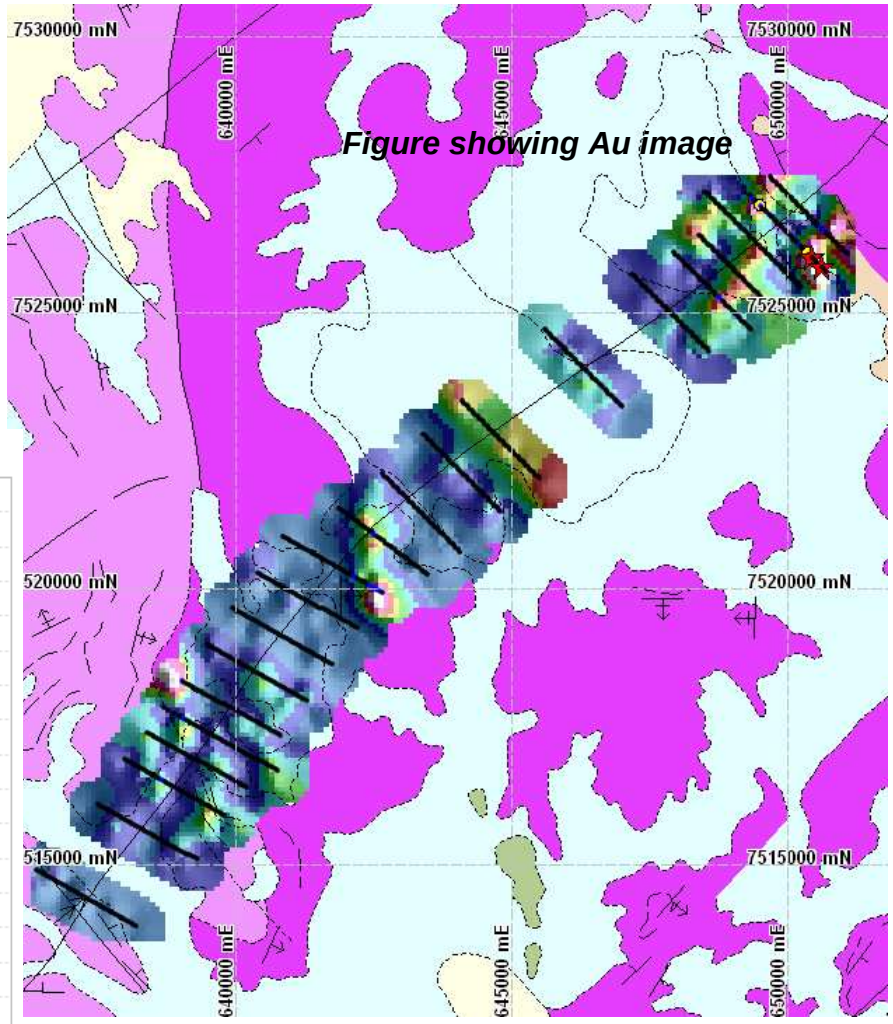
Lucy Creek: Gold

Lucy Creek was not identified as a auriferous region from the Regaional ionic leach dataset.

Lucy Creek: Au

- Only four samples > 0.75ppb Au
- Elevated samples associated with northern Zn anomaly
  - Au in “steam sediments”

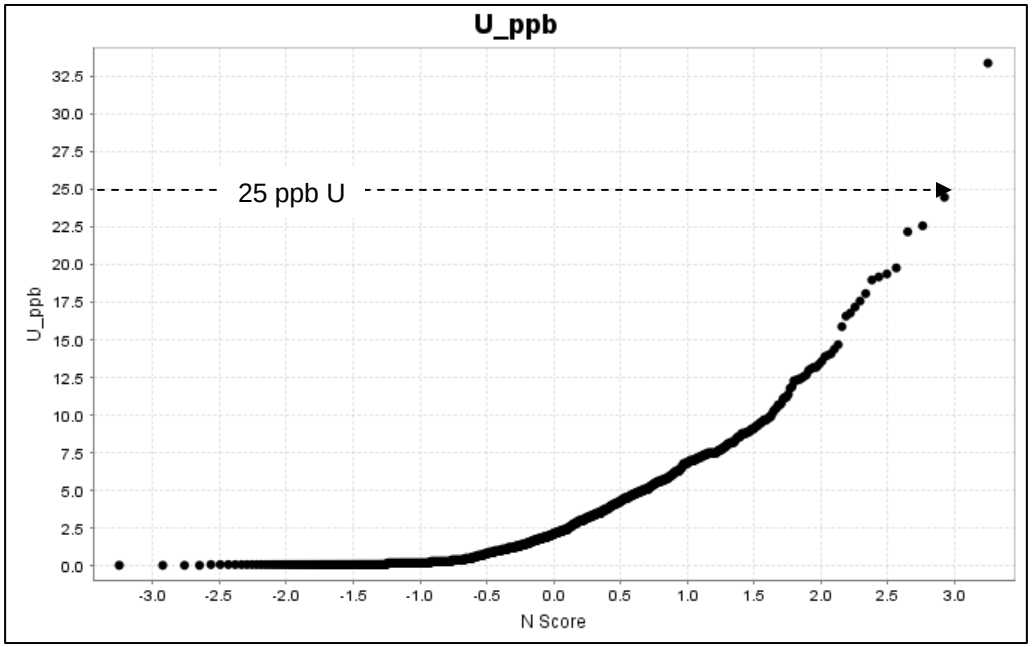




Lucy Creek - Uranium

Lucy Creek Uranium

- No significant U anomalies present at Lucy Creek
  - Only one sample > 25 ppb U.



Luck Creek: Summary

- Interpretation of the ionic leach over Lucy Creek has been more challenging that at Putta Putta due to the presence of more extensive Quaternary sediments (Alluvial sediments).
  - It would appear that anomalous Zn is within the transported sediments and thus not “seeing through” the transported to the underlying Cambrian sediments.

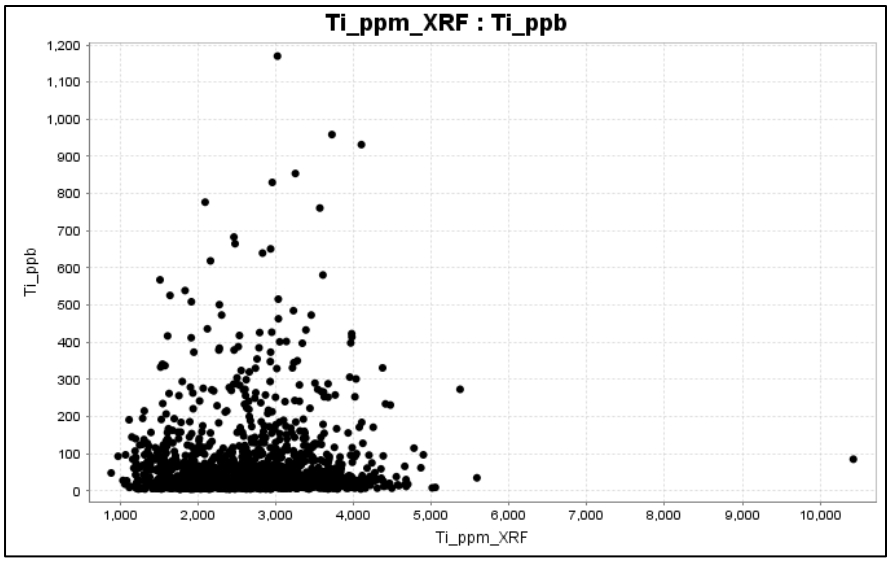
- Interpretation of the ionic leach data has:
  - Identified a two of Zinc associated anomalies
    - ~ 640000mE (Lines GBSS89 & LC4) – possible leakage
    - ~ 650000mE (Lines GBSS97, LC18 & LC19) – alluvial sediments with source in hinterland to SE
  - No Au anomalies present
  - No U anomalies present
- To place the Zn anomalies into a geological and regolith context field inspection is required along with rock chip sampling.
- *Results of the field inspection and rock chipping will allow MCR to prioritise these anomalies and formulate a follow-up program which may include infilling a number of the anomalies along with geological mapping and ground based geophysics*

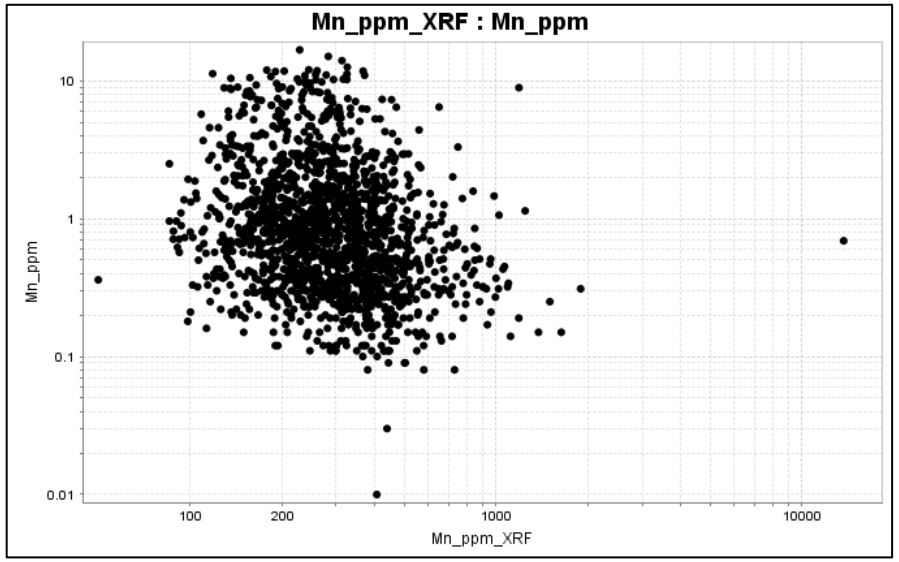
Comments on ionic leach

- Ionic leach is relatively new to the technique
  - Although proprietary to ALS they will disclose its composition
- By its leaching nature batch effects are inevitable
  - These will have a tendency to self generate anomalies, Thus field inspection is critical to establish their significance.
- We are still learning about the element interactions and associations
  - Thus any anomalies generated may reflect geology and/or the method. Again field inspection is critical for all anomalies.
- To assist in this learning process, a comparison with a method such as aqua regia will benefit the group.
  - Aqua regia is a “total partial leach” and trend generated in ionic leach should be replicated in this data.

Comparison between IONIC LEACH and XRF data (supplied by MCR)

- No ionic leach element correlates in any way to the XRF data supplied.
- Consideration should be given to comparing IONIC LEACH data with AQUA REGIA data
  - Aqua regia is a “total partial leach” and trend generated in ionic leach should be replicated in this data.





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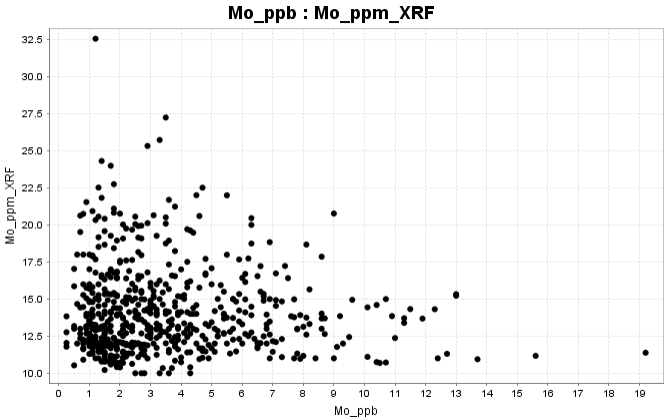

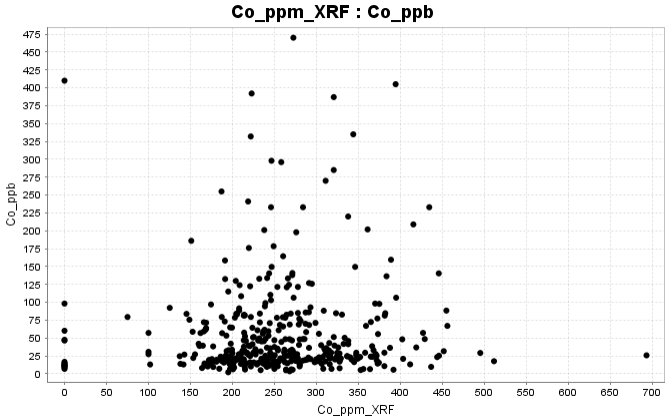

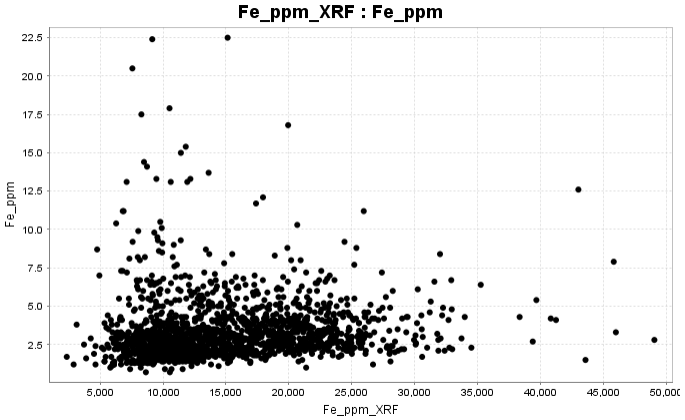

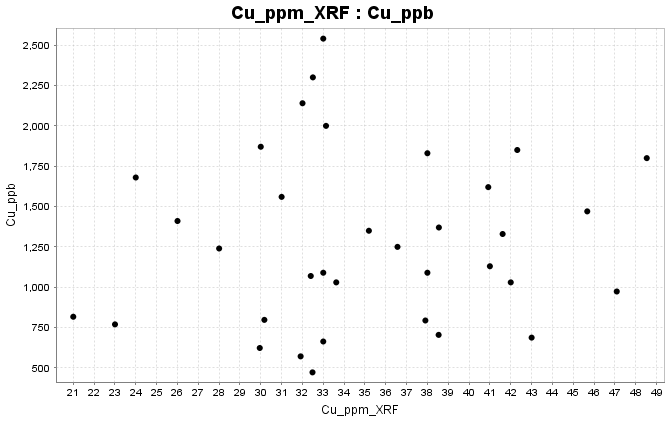

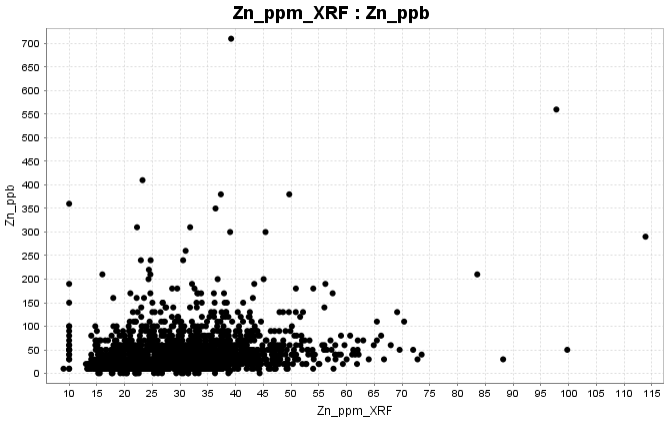

end