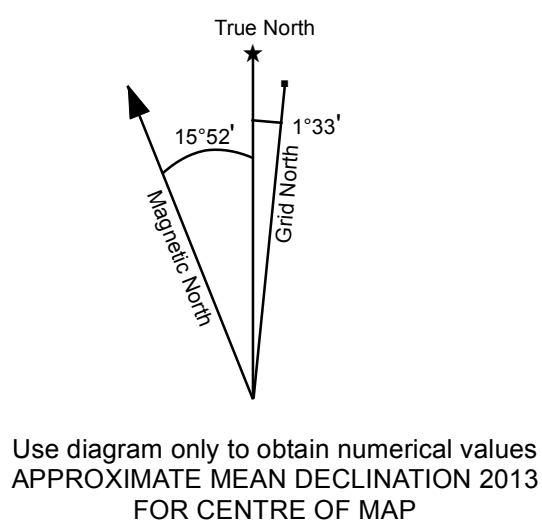
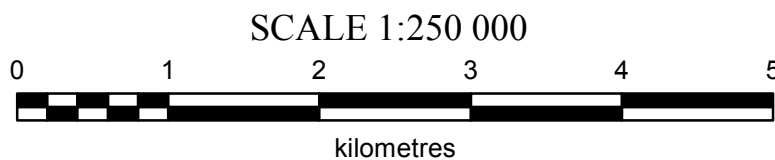


1:250 000-scale topographic base data
produced by
CENTRE FOR TOPOGRAPHIC
INFORMATION,
NATURAL RESOURCES CANADA

ONE THOUSAND METRE GRID
Universal Transverse Mercator Projection
North American Datum 1983
Zone 8

CONTOUR INTERVAL 100 FEET
Elevations in metres above Mean Sea Level

WEIGHTED SUMS MODEL POLYMETALLIC VEIN DEPOSITS YUKON



116A LARSEN CREEK	106D NASH CREEK	106C NADALEEN RIVER
115P MCQUESTEN	105M THIS MAP	105N LANSING RANGE
115I CARMACKS	105L GLENLYON	105K TAY RIVER

Weighted Sums Modelling

The application of Weighted Sums Modelling (WSM) to exploration geochemistry was described by Garrett and Grunsky (2001) as a means to model multi-element data using a priori knowledge of the mineralogy and element composition of the sought after mineral deposit (Kane, 1977; Garrett et al., 1980). In this procedure weights or relative importances are assigned to each variable, or a subset of variables, according to some geochemical or mineralogical model of the target mineral deposit type or geological process. Weighted sums (WS) are new variables calculated from the multi-element geochemical results. Like Principal Components Analysis (PCA) or Factor Analysis scores, WS scores have the form of normal or standardized scores with a mean of zero and a standard deviation of one. The main difference between WSM and traditional multivariate statistical methods is that the user assigns the variable weightings rather than determining them with a covariance/correlation matrix for the dataset, as is done in PCA. Furthermore WSM is a robust statistical technique that is not influenced by the presence of outliers (Beckman & Cook, 1983).

The reader is referred to Garrett and Grunsky (2001) for a description of the WS calculation. In summary, relative importance is assigned for each variable. A weighting of 3, for example, means that that particular element is three times more important than an element with a weighting of one. Weighting can be positive or negative. Positive weightings mean that the target model is associated with elevated concentrations of an element. Negative weightings indicate that low concentrations or depletions of an element are important.

Individual relative importance is converted into weights that sum to one by dividing each importance by the sum of the absolute values of importance (i.e., ignoring the negative signs). A requirement of the method is that the sums of the squares of the final weights also equal one. This is achieved by dividing each weight by the square root of the sum of the squares of the weights.

The next step involves calculation of the normal scores for the variables included in the model for each individual sample. To do this, robust estimates of the mean and standard deviation are used. The median (or 50th percentile) is used as a robust estimate of the mean and the inter-quartile range (IQR) multiplied by 0.7413 is used as a robust estimate of the standard deviation. IQR is the difference between the 75th and 25th percentiles of the data distribution and therefore covers a band of data 25% wide (or 0.67449 standard deviation units) on either side of the mean. The constant 0.7413 is used to convert the IQR, which covers a range of 1.3490 standard deviation units to an equivalent standard deviation. Weighted sums are then calculated by multiplying the normal scores for each element by the element's corresponding weight and summing for each sample. The high resistance of the median and IQR to outliers mean that it is not usually necessary to trim outlier and far outliers from the dataset before calculation.

¹ For a normal distribution the standard deviation is equal to 0.7413*IQR, where 0.7413 is the reciprocal of 1.349.

Models and Weightings

Six mineral deposit types (SEDEX, Porphyry Cu, W-Skarn, IIRCG, Polymetallic veins, and Carlin) that are either known or believed to occur in the map sheet areas and one geochemical process (hydromorphic dispersion) are modeled using the WS method. Included elements and their relative importance are presented in Table 1.

Data Presentation

Results of each WS model are attached to the corresponding catchment basin polygons using a spatial join in ArcGIS. This process allows for the entire polygon to be assigned a colour based on its WS score. Colours are assigned on the basis of the following percentile breaks:

0-50% Dark blue
50-75% Pale blue
75-90% Pale green
90-95% Yellow
95-98% Orange
98-100% Red

With this scheme, catchment basins with the hotter colours represent samples with geochemical characteristics consistent with the mineralization style being modelled.

Table 1: Table of Relative Importances used to calculate weighted sums models

Deposit Type	Ag	Au	As	Ba	Bi	Cd	Co	Cu	Cs	Fe	Hg	K	Mn	Mo	Ni	Pb	S	Sb	Ti	W	Zn
Polymetallic Veins	4	4	3			4	1	2		1	1	1	1	1	5		3				5
W-Skarn			3		3					1	3		3								5
Porphyry Cu	2	2					5	3					3		1		2				
Intrusive Related Cu-Au	1	2	5				2			1	5		1	2	1	5			1	5	2
SEDEX				5		3													5		
Carlin	2	1	5	2							4										
Hydromorphic Dispersion	2		1			4	5	2	5				5	2	4	2		1			3

LEGEND

- Regional Geochemistry Sample (RGS) location
- National Topographic System grid (1:250 000 scale)
- National Topographic System grid (1:50 000 scale)
- highway, paved
- highway, unpaved
- local road, paved
- local road, unpaved
- contour
- watercourse
- waterbody
- wetland

Polymetallic Vein Deposits

WSM Percentiles: WSM Score, Number of RGS Samples

- 0 - 50%: -9.00 - 0.27, 424 samples
- 50 - 75%: 0.28 - 2.26, 212 samples
- 75 - 90%: 2.27 - 4.15, 127 samples
- 90 - 95%: 4.16 - 5.19, 42 samples
- 95 - 98%: 5.20 - 6.41, 26 samples
- 98 - 100%: 6.42 - 11.22, 16 samples

Table 2: List of Mineral Occurrences for NTS map sheets 1050 and part of 105P

OCCURRENCE #	OCCURRENCE NAME	ALIAS(S)	DEPOSIT TYPE	STATUS	ECONOMIC COMMODITIES	OTHER COMMODITIES
105M 001	KENO HILL	BELEKENO, ELISA, KENO 200, LUCKY QUEEN, ONEK, SILVER KING	Polymetallic Veins Ag-Pb-Zn/Au	Past Producer	Pb, Ag, Zn	Cu, Au, Sn
105M 002	FAITH		Polymetallic Veins Ag-Pb-Zn/Au	Showing		Au, Pb, Ag, Zn
105M 003	QUANAN		Polymetallic Veins Ag-Pb-Zn/Au	Past Producer	Pb, Ag	
105M 004	GOLDEN QUEEN		Polymetallic Veins Ag-Pb-Zn/Au	Drilled Prospect		Sb, Pb, Ag
105M 005	SILVER BASIN		Polymetallic Veins Ag-Pb-Zn/Au	Prospect	Ag	Au, Pb
105M 006	MAISON		Polymetallic Veins Ag-Pb-Zn/Au	Showing		Au, Pb, Ag
105M 007	MONUMENT		Polymetallic Veins Ag-Pb-Zn/Au	Showing		Pb, Ag
105M 008	COMETICKA		Polymetallic Veins Ag-Pb-Zn/Au	Past Producer	Pb, Ag, Zn	
105M 009	APPEX		Polymetallic Veins Ag-Pb-Zn/Au	Showing		Pb, Ag, Zn
105M 010	WILSON		Polymetallic Veins Ag-Pb-Zn/Au	Past Producer	Pb, Ag	
105M 011	HOMESTAKE		Polymetallic Veins Ag-Pb-Zn/Au	Drilled Prospect		Au, Pb, Ag, Zn
105M 012	CHRISTINE		Polymetallic Veins Ag-Pb-Zn/Au	Showing		Pb, Ag
105M 013	MO		Polymetallic Veins Ag-Pb-Zn/Au	Past Producer		Au, Pb, Ag
105M 014	MAYBURN		Polymetallic Veins Ag-Pb-Zn/Au	Past Producer	Ag, Pb	
105M 015	HOGAN		Polymetallic Veins Ag-Pb-Zn/Au	Showing		Pb, Ag
105M 016	BURNER	MT. KENO	Polymetallic Veins Ag-Pb-Zn/Au	Past Producer	Pb, Ag	
105M 017	WERNESKE	RAULADAD	Polymetallic Veins Ag-Pb-Zn/Au	Drilled Prospect		Au, Pb, Ag, Zn
105M 018	FORMO	VALENT	Polymetallic Veins Ag-Pb-Zn/Au	Past Producer	Pb, Ag, Zn	
105M 019	NOAMAD		Porphyry W	Anomaly		
105M 020	PADIP		Polymetallic Veins Ag-Pb-Zn/Au	Past Producer	Pb, Ag, Zn	
105M 021	EAGLE		Polymetallic Veins Ag-Pb-Zn/Au	Drilled Prospect		Pb, Ag, Zn
105M 022	FISHER		Polymetallic Veins Ag-Pb-Zn/Au	Anomaly		Au, Pb, Ag, Zn
105M 023	PARIENT		Unknown			
105M 024	CREAM AND JEAN		Polymetallic Veins Ag-Pb-Zn/Au	Past Producer	Pb, Ag	
105M 025	NEED		Polymetallic Veins Ag-Pb-Zn/Au	Drilled Prospect		Au, Pb, Ag, Zn
105M 026	GRUBBIE		Polymetallic Veins Ag-Pb-Zn/Au	Drilled Prospect		Pb, Zn, Ag
105M 027	TITAN		Polymetallic Veins Ag-Pb-Zn/Au	Drilled Prospect		Pb, Ag, Zn
105M 028	SHANGHAI	NORTH LUMB	Polymetallic Veins Ag-Pb-Zn/Au	Drilled Prospect		Cu, Pb, Ag, Zn
105M 029	MCQUESTEN	WAYNE	Plutonic Related Au	Past Producer	Au, Pb, Ag, Zn	
105M 030	ARGENT		Unknown			
105M 031	STRECHER	JOURMIRA	Porphyry Sn	Prospect		Au, Cu, Pb, Ag, Sn, W, Zn
105M 032	MT. HALDANE	LOOKOUT	Polymetallic Veins Ag-Pb-Zn/Au	Past Producer	Pb, Ag	
105M 033	LAVENDER		Polymetallic Veins Ag-Pb-Zn/Au	Anomaly		Au, Pb, Ag, Zn
105M 034	COBALT		Polymetallic Veins Ag-Pb-Zn/Au	Past Producer	Pb, Ag	
105M 035	PATTERSON		Unknown			Au, Cu, Au, Pb, Ag, Zn
105M 036	ETTA		Unknown			
105M 037	GORDON		Silicic Veins & Disseminations	Prospect		Au, Pb, Ag, Zn
105M 038	TWO BUTTES		W-Skarn	Drilled Prospect		W, Au, Bi, Au, Pb, Ag, W
105M 039	SHEEP SLIP		Cu Skarn	Showing		Cu
105M 040	GRAT KORN		W-Skarn	Prospect		Cu, W, Zn
105M 041	RAM		Unknown			
105M 042	MCQUESTEN		Polymetallic Veins Ag-Pb-Zn/Au	Showing		Pb, Ag
105M 043	ROOP		Unknown			Cu
105M 044	ANDERSON		Polymetallic Veins Ag-Pb-Zn/Au	Drilled Prospect		Au, Pb, Ag, Zn
105M 045	MT. ALBERT		Polymetallic Veins Ag-Pb-Zn/Au	Showing		Pb, Ag
105M 046	MAISON		Unknown			Ag
105M 047	VACA		Unknown			
105M 048	NEED		Polymetallic Veins Ag-Pb-Zn/Au	Anomaly		Pb, Ag
105M 049	FRIESEN		W-Skarn	Showing		Cu, Au, Pb, Mo, Ag, W
105M 050	MT. HINTON		Polymetallic Veins Ag-Pb-Zn/Au	Drilled Prospect		Au, Ag
105M 051	AVON		Polymetallic Veins Ag-Pb-Zn/Au	Showing		Pb, Ag
105M 052	CHANCE		Silicic Veins & Disseminations	Showing		Sn
105M 053	YOND		Polymetallic Veins Ag-Pb-Zn/Au	Showing		Au, Bi, Au, Pb, Ag, Sn, W
105M 054	SUNDOWN		Plutonic Related Au	Showing		
105M 055	GUSTAVUS		Polymetallic Veins Ag-Pb-Zn/Au	Showing		Pb, Ag
105M 056	HALF WAY	SNISTER	Unknown	Drilled Prospect		Au, W, W
105M 057	RANKIN		Unknown			
105M 058	NEWBY	ALEX	W-Skarn	Drilled Prospect		Pb, Bi, Cu, Au, Pb, W, Zn
105M 059	CHRISTAL	DOROTHY	Polymetallic Veins Ag-Pb-Zn/Au	Showing		Pb, Ag, Zn
105M 060	SESWORTH	CARIBOU HILL	Polymetallic Veins Ag-Pb-Zn/Au	Past Producer	Pb, Ag	
105M 061	IRON CLAD		Polymetallic Veins Ag-Pb-Zn/Au	Drilled Prospect		Au, W, W
105M 062	KALZAS		W-Veins	Drilled Prospect		Be, Pb, Mo, Ag, Sn, W
105M 063	CONROY	ELSO	Unknown			
105M 064	WELLES		Unknown			
105M 065	GAMBLER		Polymetallic Veins Ag-Pb-Zn/Au	Past Producer	Pb, Ag	
105M 066	HAYTER		Polymetallic Veins Ag-Pb-Zn/Au	Drilled Prospect		Zn, Pb, Ag
105M 067	DRILL		W-Veins	Showing		W
105M 068	BELLY		Polymetallic Veins Ag-Pb-Zn/Au	Drilled Prospect		Pb, Ag, Zn
105M 069	BEMA		Polymetallic Veins Ag-Pb-Zn/Au	Showing		Au, Ag
105M 070	WHITMAN		Unknown			
105M 071	THYSLAND		Prospect			
105M 072	GORDON		Sediment-Hosted Barite	Prospect		barite
105M 073	BELEKENO		Polymetallic Veins Ag-Pb-Zn/Au	Prospect	Pb, Ag, Zn	Cd, Sn
105M 074	ELSA TAILINGS		Tailings Reprocessing	Deposit	Au, Pb, Ag, Zn	
105M 075	ONEK		Polymetallic Veins Ag-Pb-Zn/Au	Deposit	Ag, Pb, Au, Zn	in
105M 076	LUCKY QUEEN		Polymetallic Veins Ag-Pb-Zn/Au	Deposit	Ag, Pb, Zn, Au	
105M 077	BERMINGHAM		Polymetallic Veins Ag-Pb-Zn/Au	Deposit	Pb, Zn, Ag, Au	
105M 078	FLAME & SNOT		Unknown	Deposit	Au, Pb, Ag, Zn	

- Mineral Occurrence Deposit Type (Total on map)**
- ◆ Sediment-Hosted Barite (1)
 - Cu Skarn (1)
 - ▼ Plutonic Related Au (2)
 - ◇ Polymetallic Veins Ag-Pb-Zn +/-Au (49)
 - Porphyry Sn (1)
 - Porphyry W (1)
 - ◆ Stibnite Veins & Disseminations (2)
 - ▲ Tailings Reprocessing (1)
 - Unknown (15)
 - W Skarn (5)
 - ◆ W Veins (2)

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