Seipelä

Occurence type: occurrence

Commodity	Rank	Total measure	Total production	Total resource	Importance
gold	1	NA	NA	NA	NA

Easting EUREF: 609772,153
Northing EUREF: 7239469,132
Easting YKJ: 3609989
Northing YKJ: 7242499

Discovery year: 1997
Discovered by: Geological Survey of Finland
Province: Kuhmo (Ni, Ag, Au)
District: Tormua (Au)
Comments: Discovery: the first indications were anomalous Au values in regional till geochemistry and quartz-, arsenopyrite- and tourmaline-rich rocks detected in outcrop in the region; the mineralisation was detected by diamond-drilling into an area with a distinct IP anomaly
References: 1, 2, 3, 6, 8, 9

Mineral deposit type

Group: Metallogenic deposit
Main type: Orogenic (metamorphic hydrothermal)
Comments: Clearly epigenetic, "mesothermal" mineralisation with a distinct structural control, formed during late-Archaean cratonisation.
References: 5

Dimension

Expression: exposed
Form: discordant
Shape: NA
Length (m): NA
Width (m): NA
Thickness (m): NA
Depth (m): NA
Area (ha): NA
Dip azim: NA
Dip: NA
Plunge azim: NA
Plunge dip: NA
Orientation method: NA

Holder history

Previous holders:

Company	Years	Holding type	Comments
Kalevala Gold Oy	2017	Reservation	NA
Mineral Exploration Network (Finland) Limited	2009-2010	Claim reservation (old law)	NA
Polar Mining Oy	2003	NA	NA
Outokumpu Oy	2002-2003	NA	NA
Geological Survey of Finland	1997-1999	NA	NA

EXPLORATION ACTIVITY

Geological Survey of Finland

Years	Activity type	Geologist	Exploration result	Ref
1998-1998	core drilling	Kimmo Pietikäinen	mineralized zone identified	4, 7
	Core drilling (reconnaissance drilling): 21 diamond-drill holes, total 1240 m.			
	Intersections			
	HoleID	R592		
	From-To	15,4-16,4		
	Length	1m		

1995-1995	detailed geophysics	Kimmo Pietikäinen	geophysical anomaly	4
	Ground IP survey, The most intense IP anomalies are related to graphitic phyllite. Mineralisation was detected by diamond-drilling into an area with a distinct IP anomaly.			

1995-1999	detailed geochemistry	Kimmo Pietikäinen	geochemical anomaly	4, 7
	The Au and As anomalies in till in the area are only partially explained by the mineralisation detected.			

1995-1999	detailed geology	Kimmo Pietikäinen	key geological features	4, 7

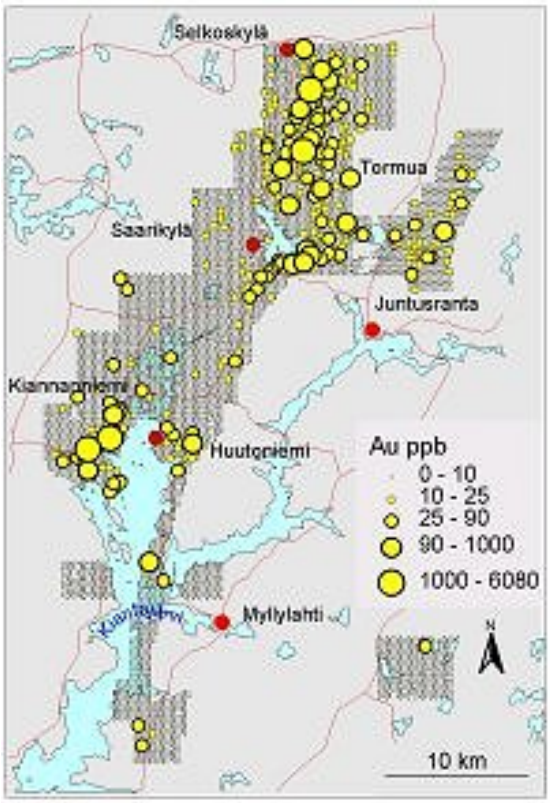
1990-2001	regional geochemistry	Markku Tenhola	geochemical anomaly	
	Greenstone belt-wide till-geochemical survey with 16 damples per one sq.km			

1987-1987	regional geochemistry	Markku Tenhola	geochemical anomaly	4
	Country-wide till-geochemical survey			

1977-1977	regional geophysics	NA	key geological features	
	Low-altitude airborne magnetic, electromagnetic and radiometric survey			

Figures

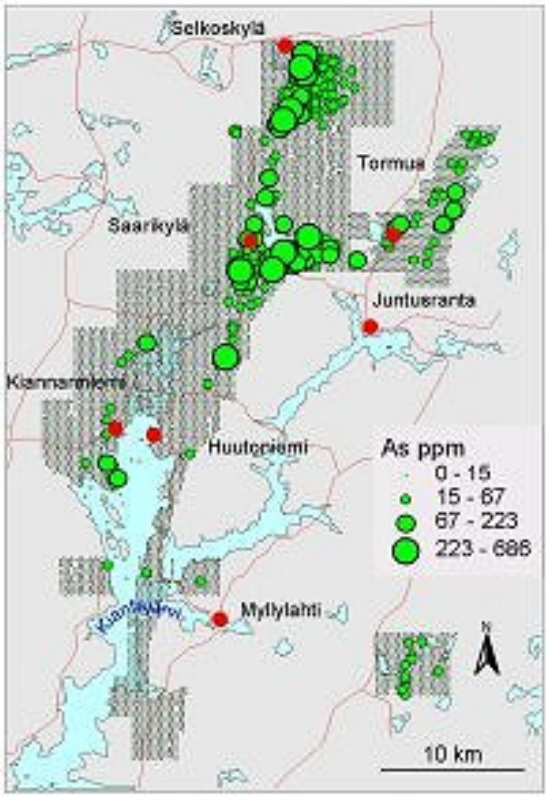
Suomussalmi greenstone belt: aeromagnetic image and gold occurrences:

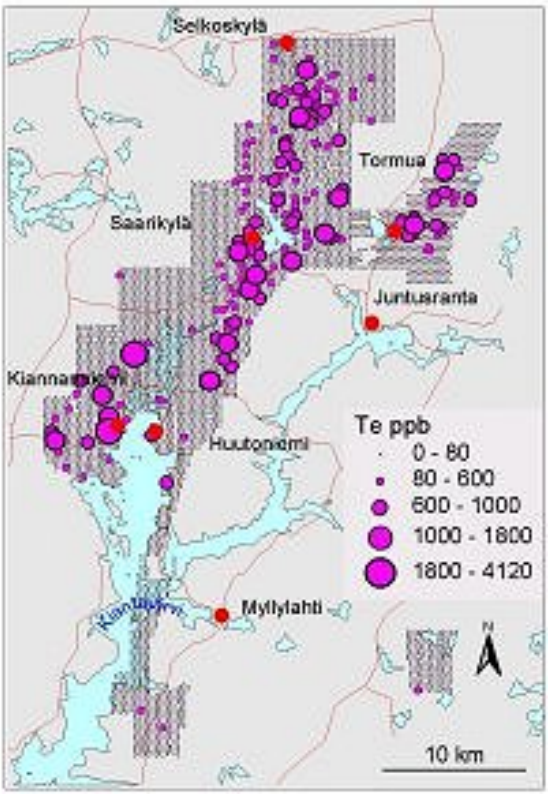


Suomussalmi greenstone belt

As, Au and Te in till

(Luukkonen et al. 2002)





GEOLOGY

Host rock: Tholeiitic basalt, Intermediate volcanic rock
Wall rock: Granitic rock, Dolerite

Tholeiitic basalt (Host rock)

Rock type: Host rock
Proportion: major
Grain size: NA
Color: Dark coloured
References: 4, 5, 7
Comments: The deposit is in the western part of the Tormua Schist Belt which forms the NE part of the Suomussalmi Greenstone Belt and is in the rocks of the 3.0-2.8 Ga Luoma Group of the belt. The main host is a high-Mg metatholeiite (a basaltic komatiite?). Early sugary and later clear quartz veins, postdated by arsenopyrite-tourmaline bearing auriferous quartz veins

Ore minerals:

Mineral	Proportion	Mineral texture
Arsenopyrite	major	
Pyrrhotite	major	

Other minerals:

Mineral	Proportion	Mineral texture
Quartz	present	
Scheelite	present	
Tourmaline	present	

Alteration:	Distribution:	Degree:	Relation to mineralization:
carbonate alteration	Disseminated	NA	Syn
sericitic alteration	Disseminated	NA	Syn

Metamorphic description:

Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	amphibolite metamorphic facies	medium metamorphic grade	NA	-5	-600

Geological age:

Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:
Mesoarchean (3200-2800 Ma)	2800-3000		N
Comments: Mineralisation during ca. 2720-2650 Ma.			

Intermediate volcanic rock (Host rock)

Rock type: Host rock

Proportion: minor
Color: Greyish

Granitic rock (Wall rock)

Rock type: Wall rock
Proportion: minor
Color: Grey
Comments: The hosting sequence is cut by plutons ranging from leucotonalite to granite

Dolerite (Wall rock)

Rock type: Wall rock
Proportion: minor
Color: Dark coloured
Comments: The hosting sequence is intruded by dolerite dykes

Figures

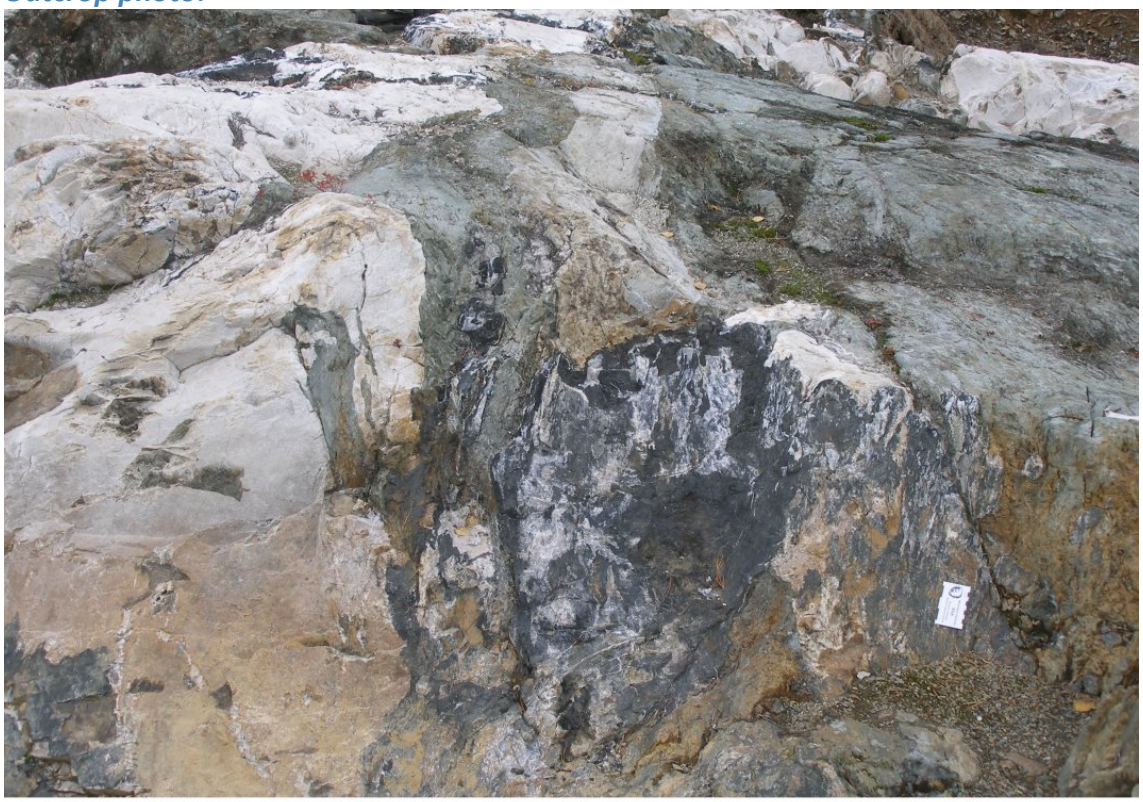
Structure:

Intense carbonation around quartz vein boudin in high-Mg metatholeiite at Seipelä. Ykj-coord: easting = 3609836, northing = 7242903. Scale 9 cm. Photo Pasi Eilu.

Structure:

Quartz and quartz-tourmaline veins in brittle granitic dykes and ductile high-Mg metabasalt at Seipelä. Ykj-coord: easting = 3609960, northing = 7243002. Scale 9 cm. Photo Pasi Eilu.

Outcrop photo:



Quartz and quartz-tourmaline veins in granitic dykes and high-Mg metabasalt at Seipelä. Ykj-coord: easting = 3609960, northing = 7243002. Scale 9 cm. Photo Pasi Eilu.

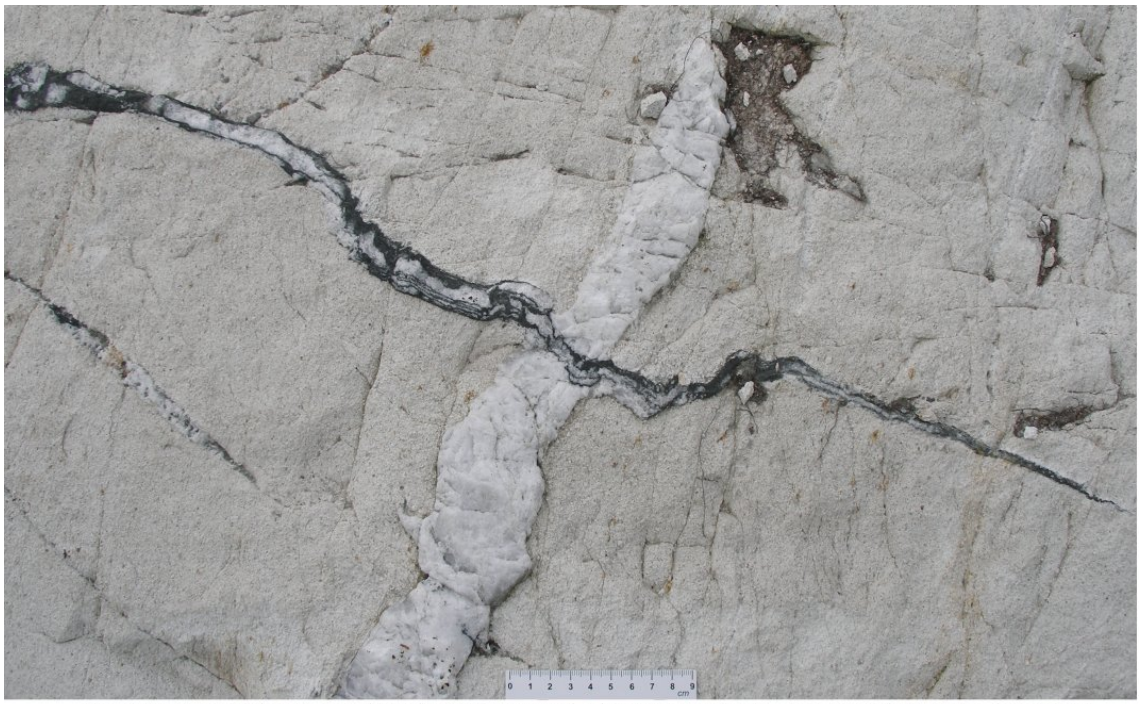
Vein:

Early sugary and later less deformed quartz veins (both predate quartz-tourmaline veins) in granitic dyke at Seipelä. Ykj-coord: easting = 3609836, northing = 7242903. Scale 9 cm. Photo Pasi Eilu.

Vein:

A quartz-tourmaline vein through a brittle granitic dyke, into a ductile high-Mg metabasalt at Seipelä. Ykj-coord: easting = 3609960, northing = 7243002. Scale 9 cm. Photo Pasi Eilu.

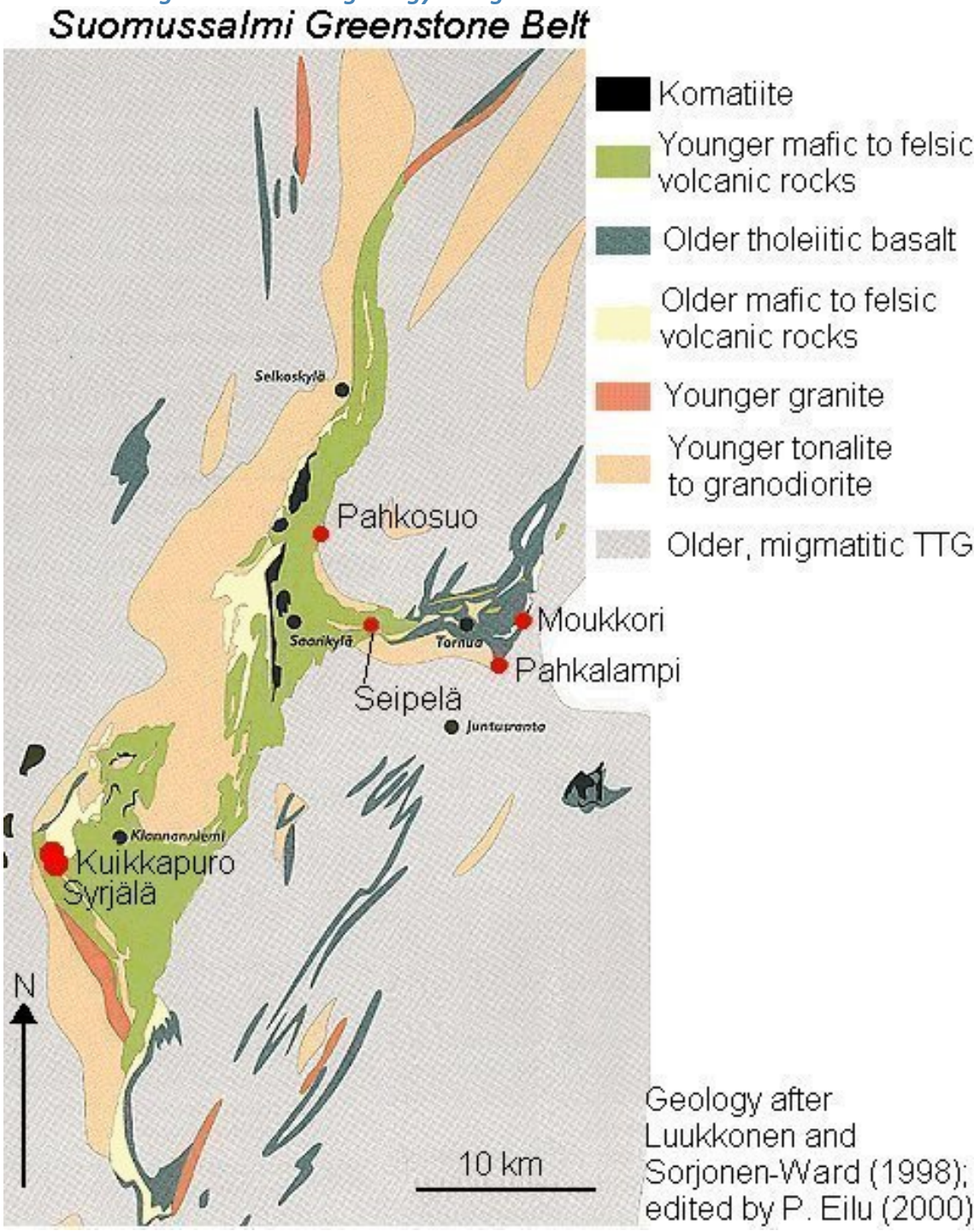
Vein:



An earlier quartz vein cut by the later quartz-tourmaline vein in a granitic dyke at Seipelä. Ykj-coord: easting = 3609960, northing = 7243002. Scale 9 cm. Photo Pasi Eilu.

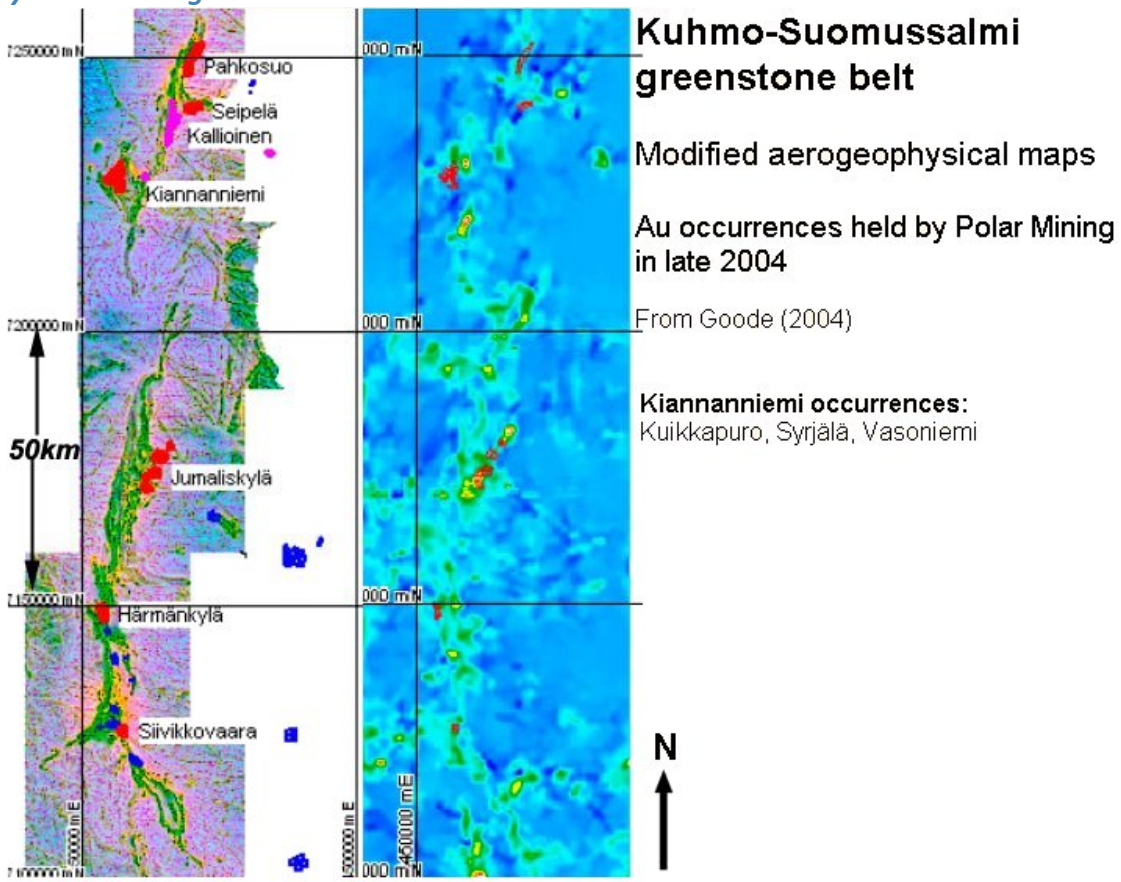
Intensely altered, carbonated and biotitised(?), high-Mg metatholeiite at Seipelä.
Ykj-coord: easting = 3609960, northing = 7243002. Scale 9 cm. Photo Pasi Eilu.

Suomussalmi greenstone belt geology and gold occurrences:

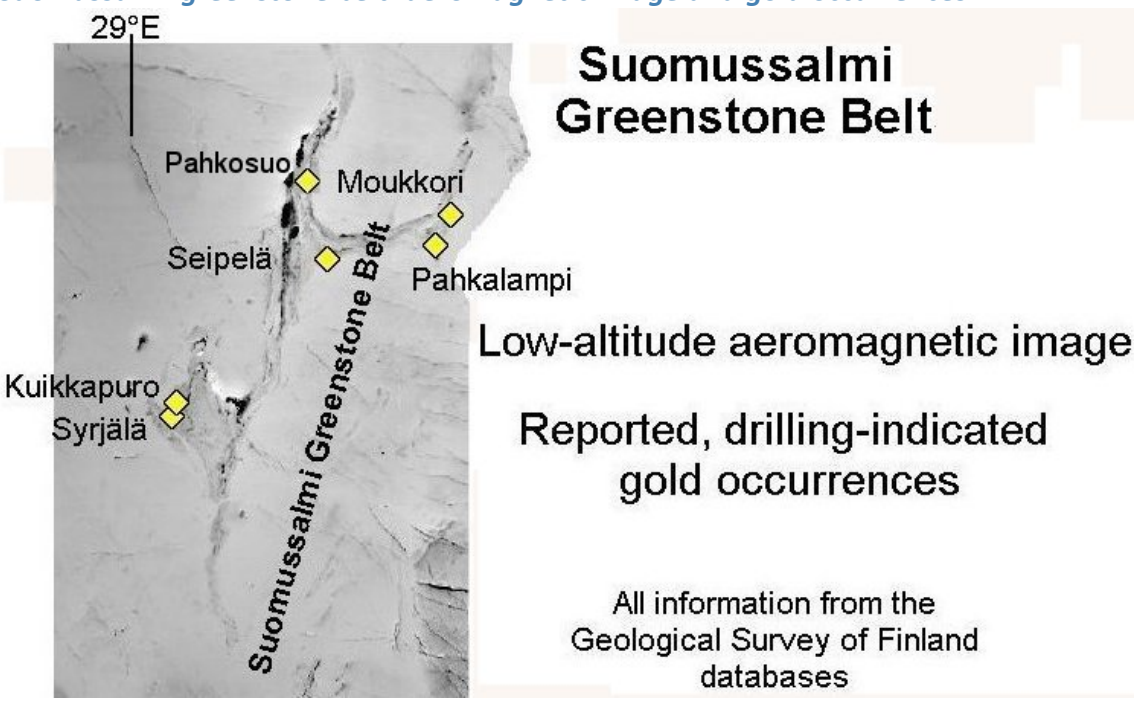


Kuhmo and Suomussalmi greenstone belts: processed aerogeophysics and tenements held

by Polar Mining in 2004:



Suomussalmi greenstone belt: aeromagnetic image and gold occurrences:



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