

Elinsuo

Occurrence type: prospect

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

Easting EUREF: 713395,016
Northing EUREF: 6972523,953

Easting YKJ: 3713653
Northing YKJ: 6975445

Discovery year: 1989

Discovered by: Geological Survey of Finland

Province: Ilomantsi (Au)

District: Hattu (Au)

References: 3, 8, 11, 12

Mineral deposit type

Group: Metallogenetic deposit

Main type: Orogenic (metamorphic hydrothermal)

Comments: Precipitation of gold by desulphidation of fluid and, possibly, by decomposition of Au-bisulphide, -thiosulphide and -telluride complexes of fluid due to cooling and/or changes in pH and fO₂. Probably, gold precipitated just below 500°C with sulphides due to reaction between the mineralising fluid and wall-rock (chiefly by sulphidation). The formation of the present low-temperature Te and Bi minerals probably took place as subsolidus reactions with cooling temperature.

References: 8

Dimension

Expression: exposed

Area (ha): NA

Form: discordant

Dip azim: 25

Shape: NA

Dip: 80

Length (m): NA

Plunge azim: NA

Width (m): NA

Plunge dip: NA

Thickness (m): NA

Orientation method: NA

Depth (m): NA

Dimension comments: Extent not known, the occurrence is open along strike to the N and S and at a shallow depth

Holder history

Current holder: Endomines Oy

Years: 2023

Holding type: Application for reservation

Previous holders:

Company	Years	Holding type	Comments
Geological Survey of Finland	NA	NA	NA
Endomines Oy	2013-2018	Claim (old law)	NA
Endomines Oy	2011-2012	Claim reservation (old law)	NA
Endomines Oy	2006	NA	NA

EXPLORATION ACTIVITY

Endomines Oy

Years	Activity type	Geologist	Exploration result	Ref
2015-2015	detailed geochemistry	NA	NA	
<i>Sampling the base of till, campaign started in March 2015</i>				
2012-2014	core drilling assessment	Jaakko Liikanen	mineralized zone identified	
	<i>2013: eight diamond-drill holes</i>			
	Intersections			
	HoleID	ELI-4		
	From-To	72-76		
	Length	4m		
	gold	1,3ppm		
2011-2011	detailed geophysics	Jaakko Liikanen	geophysical anomaly	
	<i>Airborne low-altitude [VTEM] geophysical surveys were completed over the entire permit area</i>			

Geological Survey of Finland

Years	Activity type	Geologist	Exploration result	Ref
1989-1989	regional geophysics	NA	key geological features	
<i>Low-altitude airborne magnetic, electromagnetic and radiometric survey</i>				
1987-1993	detailed geology	Martti Damsten	NA	1, 2, 4, 5, 7, 8, 9, 10
	<i>Special studies on Quaternary geology, ore mineralogy and geochemistry, and petrogenesis.</i>			
1987-1993	excavation	Martti Damsten	NA	1, 2, 4, 7, 8, 9, 10
1987-1993	core drilling	Martti Damsten	NA	1, 7, 8, 9
	<i>Core drilling (reconnaissance drilling): 3 diamond-drill holes, total 396 m.</i>			
	Intersections			
	HoleID	NA		
	From-To	NA		
	Length	2m		
	gold	3,05ppm		
	HoleID	NA		
	From-To	NA		
	Length	1m		
	gold	2,6ppm		
	HoleID	NA		
	From-To	NA		
	Length	6m		
	gold	1,1ppm		
1987-1993	detailed geochemistry	Martti Damsten	NA	8, 12

Detailed geochemical till sampling at till-bedrock interface geochemistry, samples collected across the Au anomaly along traverses 100 m apart with sampling distance 10-30 m. Regional Au, As and B till anomaly, local Au, Te and Bi anomaly. Au content within the till anomaly is from tens of ppb to >1 ppm. Best combination for defining exploration targets: Au + Te + Bi - better than Au alone.

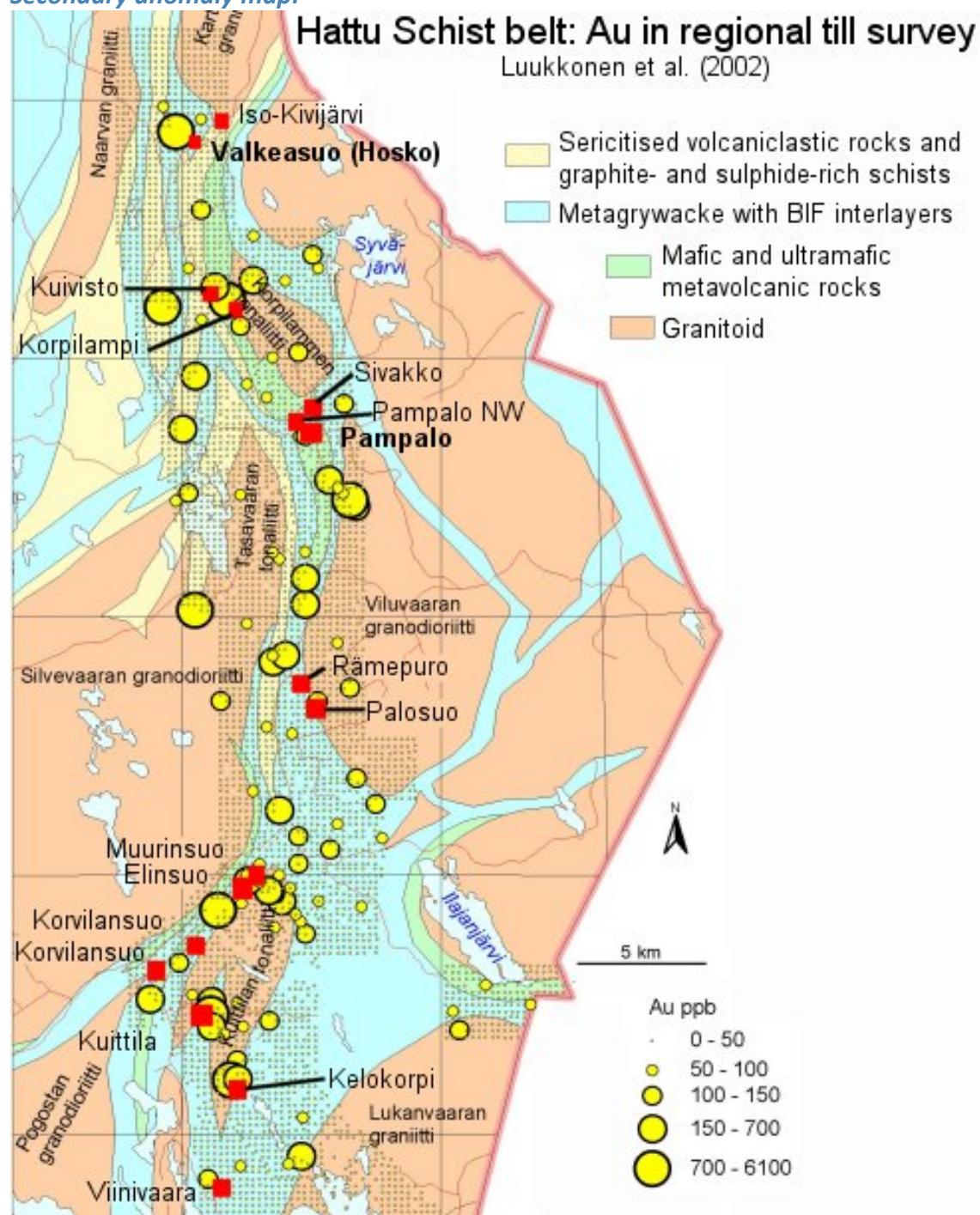
1987-1993	detailed geophysics	Martti Damsten	key geological features	8
<i>No response on magnetic, slingram or IP methods. Magnetic and electric methods do show the structural features of the area, including those which control gold mineralisation.</i>				

1983-1989	regional geochemistry	Aimo Hartikainen	geochemical anomaly	
<i>Sampling grid 250x250 m (basal till) over the greenstone belt covering 400 km2.</i>				

1982-1982	regional geochemistry	Aimo Hartikainen	geochemical anomaly	
<i>Country-wide regional survey</i>				

Figures

Secondary anomaly map:



GEOLOGY

Host rock: Porphyry, Quartz vein, Mica schist

Porphyry (Host rock)

Rock type: Host rock

Proportion: major

Grain size: NA

Color: NA

References: 2, 5, 6, 8, 10, 12

Comments: The occurrence is located in the NE-trending Korvilansuo shear zone. The mica schists are intruded by felsic porphyry dikes.

Ore minerals:

Mineral	Proportion	Mineral texture
Arsenopyrite	minor	
Chalcopyrite	minor	
Gold	minor	
		<i>Dissemination in host rocks, veins and "tourmaline-quartz rock". Gold occurs intergrown with tellurides, in the host rocks also intergrown with pyrite and in veins also as inclusions in pyrite. Fineness 89-92% Au, 6-7% Ag</i>
Hessite	minor	
Ilmenite	minor	
Pentlandite	minor	
Pyrite	major	
Pyrrhotite	major	
Rutile	minor	
Tellurobismuthite	minor	
Volynskite	minor	

Other minerals:

Mineral	Proportion	Mineral texture
Albite	present	
Biotite	present	
Calcite	present	
Chlorite	present	
Epidote	present	Alteration product
Garnet	present	
K-Feldspar	present	
Muscovite	present	
Quartz	present	
Scheelite	present	
Titanite	present	
Tourmaline	present	

Structures

Folded

Comments: Mineralised rock near the hinge zone of the Muurinsuo F2 antiform

Textures

Granoblastic

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	Post		-550

Comments: Progressive regional metamorphism on ca. 2750-2700 Ma, apparently peaked soon after gold mineralisation, at a temperature of about 550±50°C. Thermal peak was synchronous or outlasted deformation. A relatively strong, but unevenly distributed Palaeoproterozoic overprint.

Geological age:

Geological era:	Max age - Min age (Ma):	Inferred age (Ma):	Age of mineralization:
Neoarchean (2800-2500 Ma)	2708-2708	2708	Y

Comments: Either pre-peak metamorphic and formed under greenschist-facies conditions, or syn-peak metamorphic.

Radiometric age:	Method:	Age:	Error (Ma):	Mineral:	Reference:
	U-Pb	2708		Titanite	8

Quartz vein (Host rock)

Rock type: Host rock

Proportion: minor

Grain size: NA

Color: NA

References: 8

Comments: Quartz-tourmaline veins. Tourmaline-quartz rock: vein-dominated material? Delta 18O (SMOW): +10.0 per mill (tourmaline); deltaD (SMOW): -97 per mill (tourmaline).

Other minerals:

Mineral	Proportion	Mineral texture
Quartz	major	
Tourmaline	minor	

Mica schist (Host rock)

Rock type: Host rock

Proportion: minor

Grain size: NA

Color: NA

References: 5, 6, 8

Alteration:	Distribution:	Degree:	Relation to mineralization:
tourmalinisation	Disseminated	Moderate	NA

Comments: Tourmaline replaces biotite, relationship to mineralisation unclear, but seems to be proximal to auriferous qz-tour veins

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	Post		-550

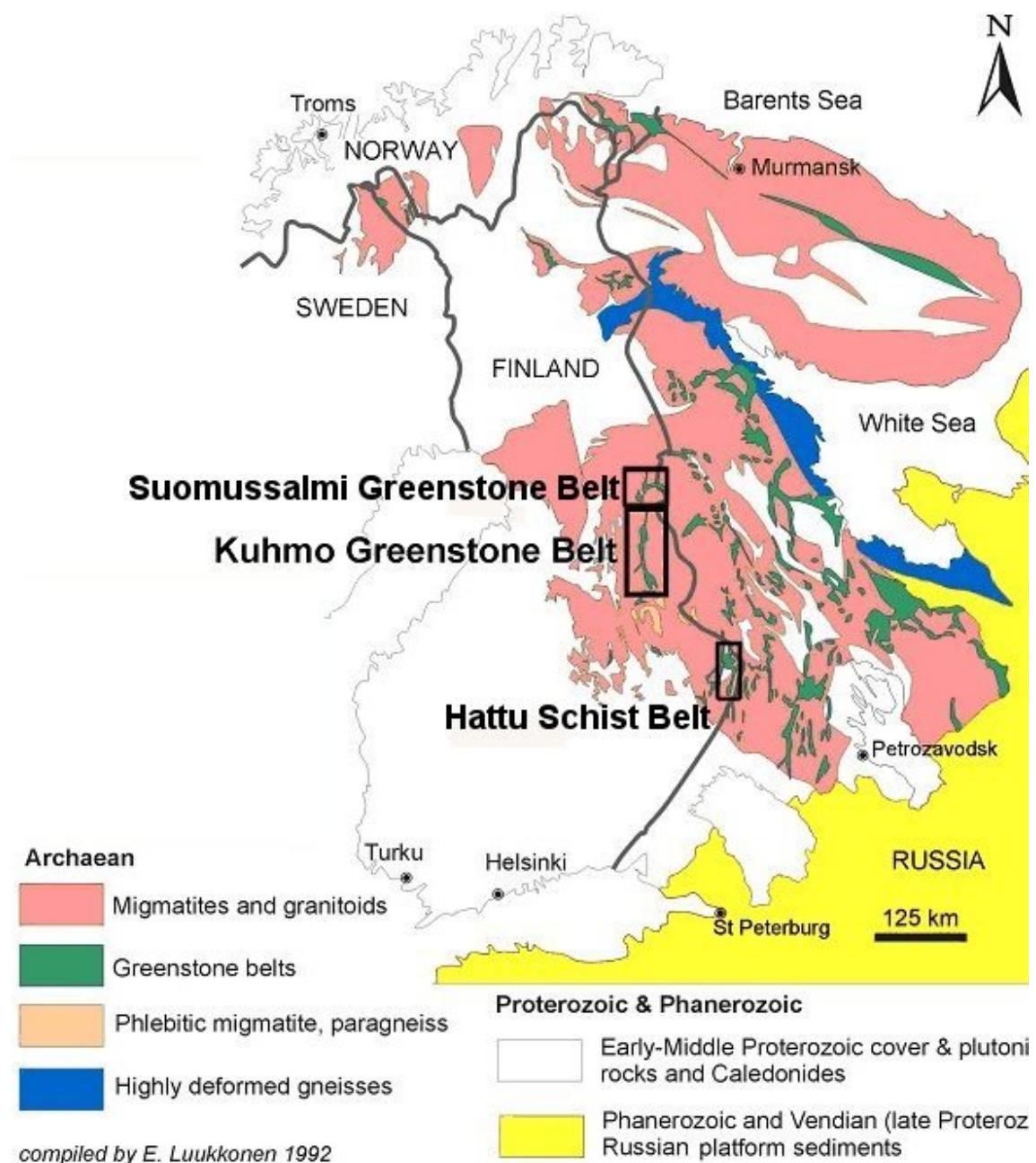
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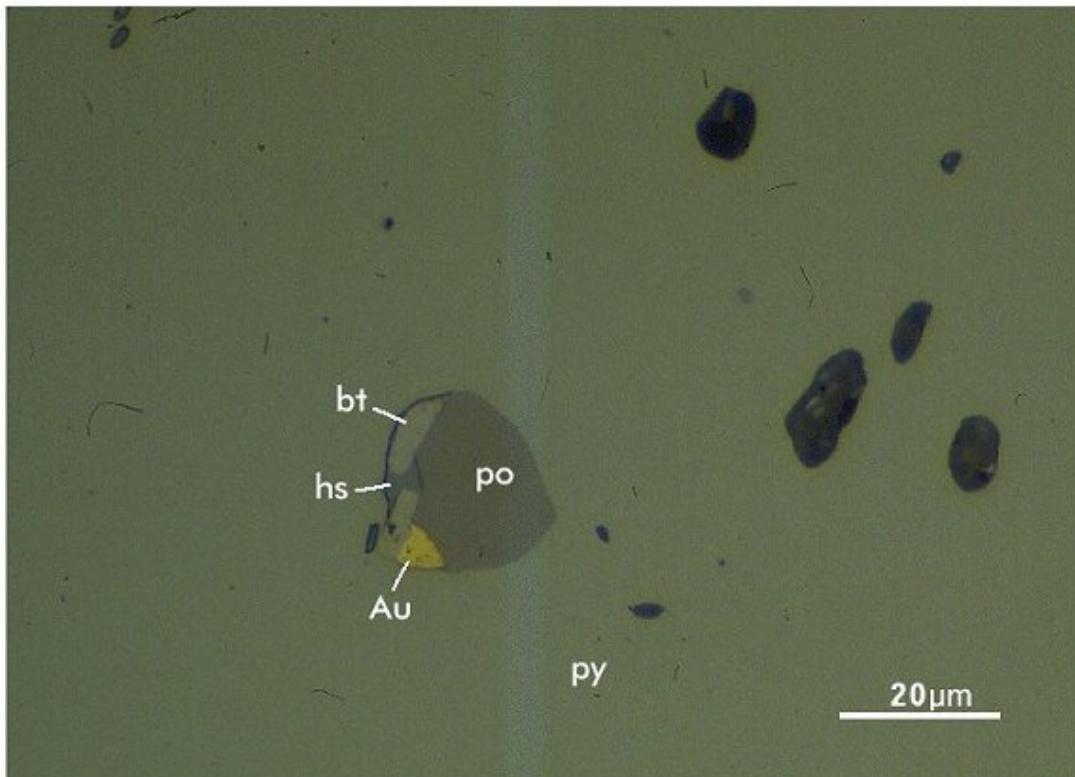
Geological era:	Max age - Min age (Ma):	Inferred age (Ma):	Age of mineralization:
Neoarchean (2800-2500 Ma)	2726-2754	N	

Figures

Location in the Carelian craton:

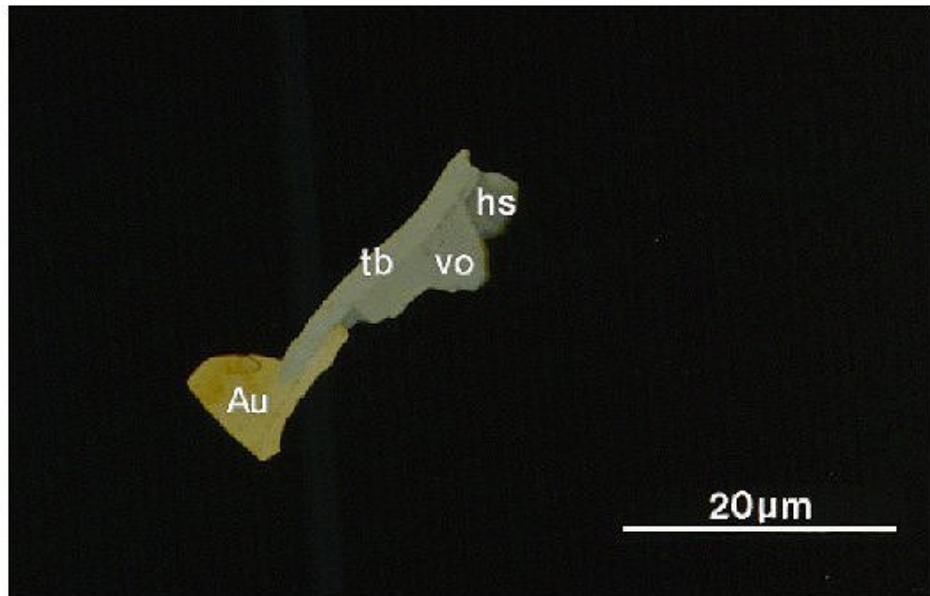


Gold, ore minerals polished section image:



An inclusion in pyrite (py) consisting of pyrrhotite (po), native gold (Au), bismuth telluride (bt) and hessite (hs), Elinsuo, Ilomantsi. Ddh 354, depth 76.35 m. From Kojonen et al. (1993).

Gold, ore minerals polished section image:

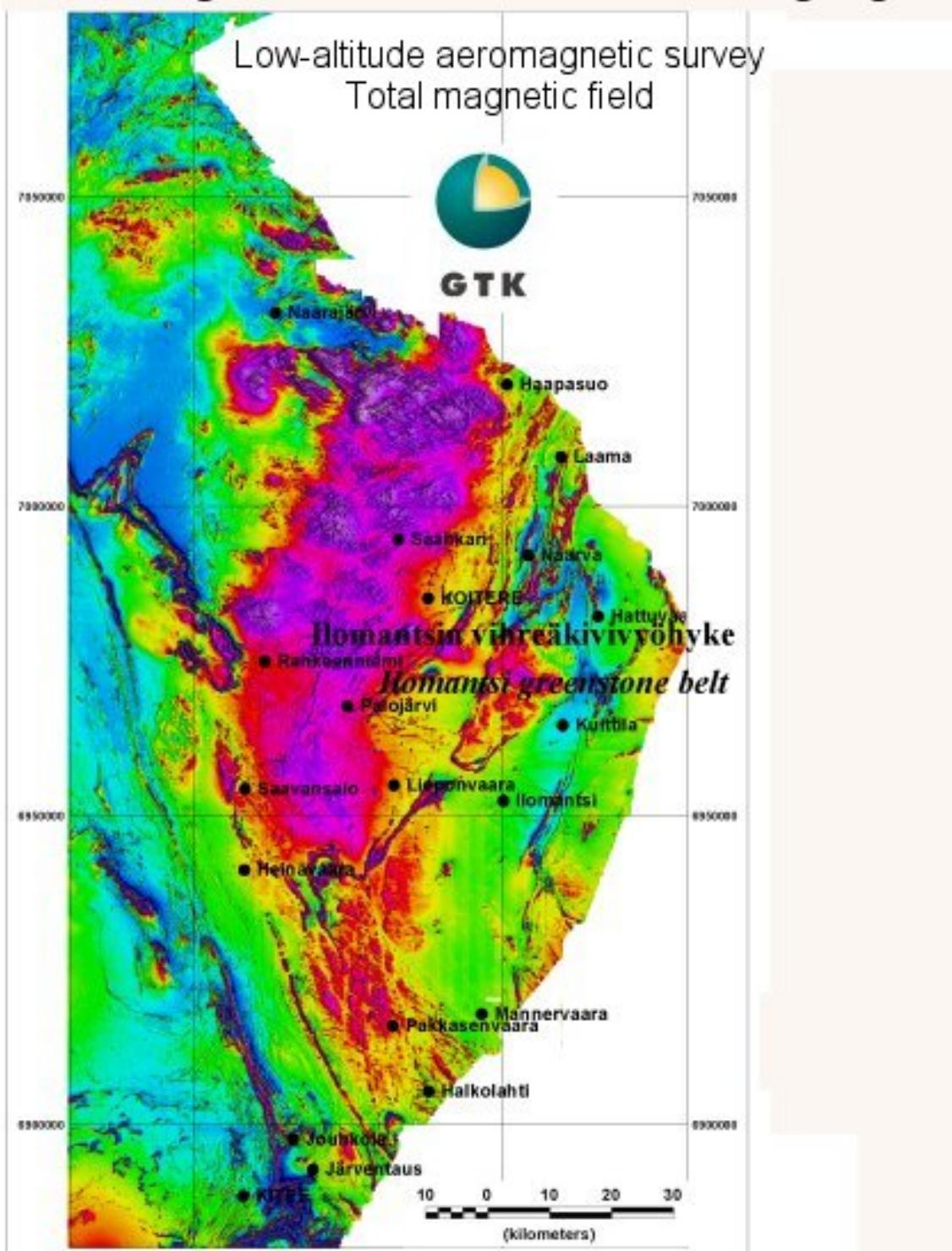


Volynskite (vo), hessite (hs), tellurobismuthite (tb) and native gold (Au)
in plagioclase porphyrite, Elinsuo, Ilomantsi. Ddh 553, depth 70.80 m.

From Kojonen et al. (1993).

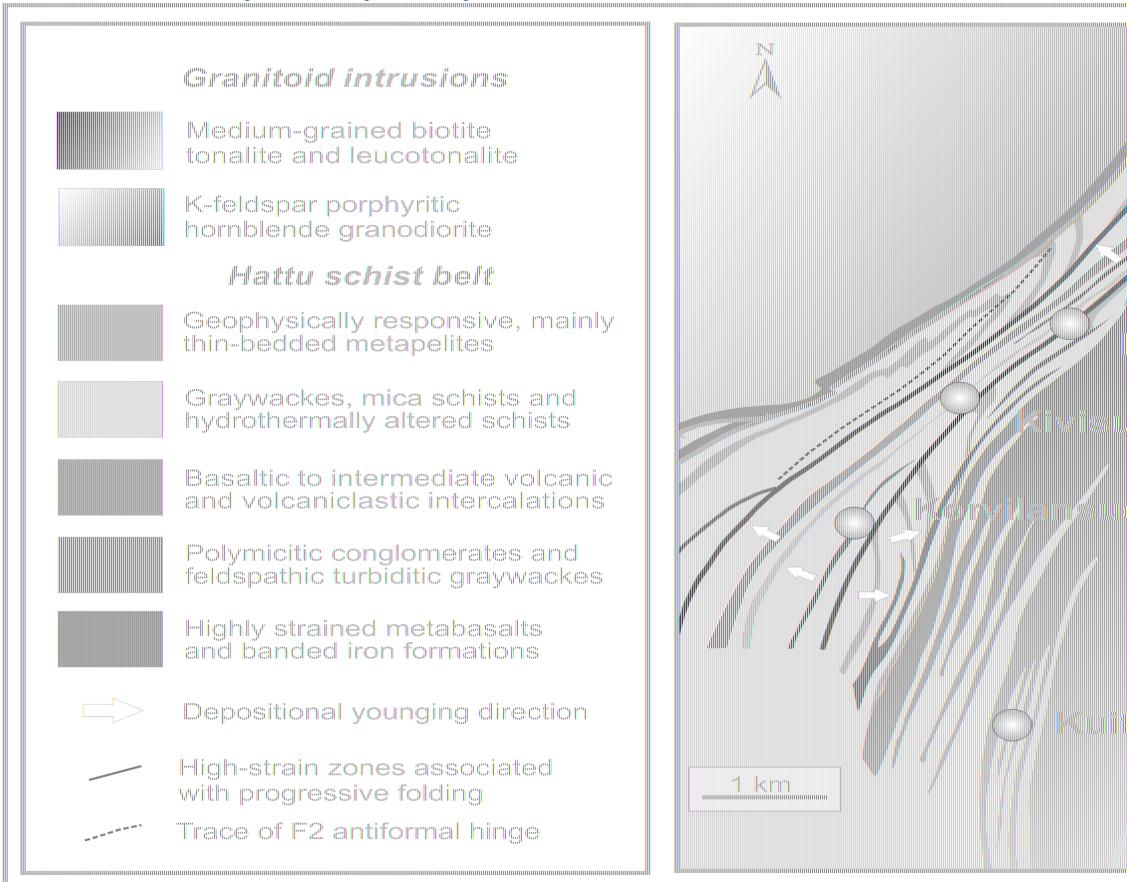
Low-altitude aeromagnetic image of the Iломанци region:

Iломанци greenstone belt and surrounding region

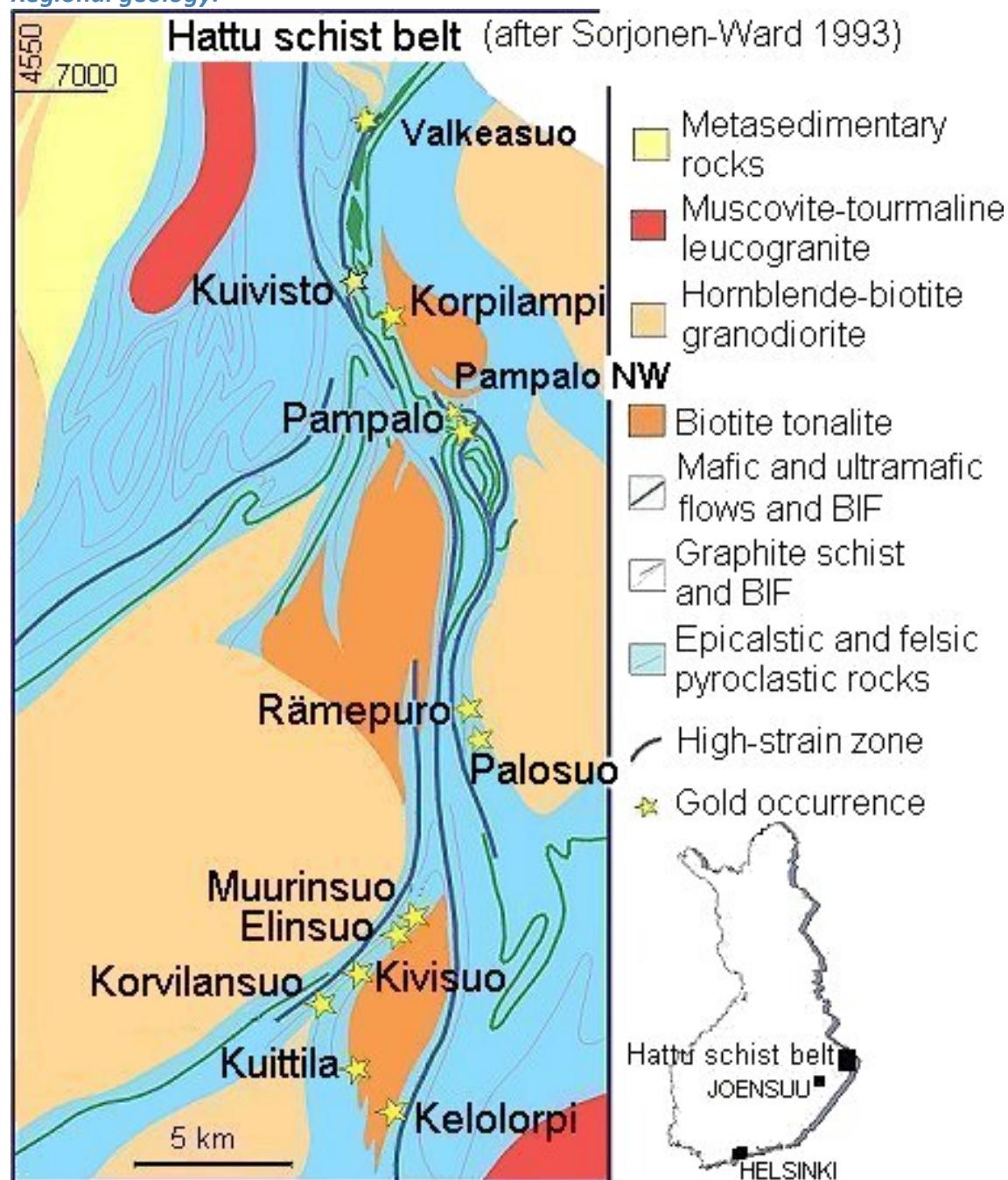


Kuttila-Muurinsuo area, Ilomantsi greenstone belt. Image by Peter Sorjonen-Ward, 2011.

Published in GTK Special Paper 53, p. 260:



Regional geology:



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