Viinivaara

Occurence type: prospect

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

Easting EUREF: 714216,767
Northing EUREF: 6961349,524
Easting YKJ: 3714475
Northing YKJ: 6964266

Discovery year: 1986
Discovered by: Geological Survey of Finland
Province: Ilomantsi (Au)
District: Hattu (Au)
References: 1, 2, 3, 6, 9, 10

Mineral deposit type

Group: Metallogenic 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).
References: 7

Dimension

Expression: exposed
Form: discordant
Shape: NA
Length (m): NA
Width (m): NA
Thickness (m): NA
Depth (m): NA
Area (ha): NA
Dip azim: 25
Dip: NA
Plunge azim: NA
Plunge dip: NA
Orientation method: NA
Dimension comments: Dimensions not reported; the occurrence is open along strike and at a shallow depth

Holder history

Current holder: Mineral Exploration Network (Suomi) Oy
Years: 2018
Holding type: Application for exploration permit

Previous holders:

Company	Years	Holding type	Comments
Geological Survey of Finland	NA	NA	NA

Mineral Exploration Network (Suomi) Oy	2014-2018	Exploration permit	NA
Mineral Exploration Network (Finland) Limited	2011-2011	Claim reservation (old law)	NA
Endomines Oy	2006	NA	NA
Outokumpu Mining Oy	1995-1998	Claim (old law)	NA

EXPLORATION ACTIVITY

Endomines Oy

Years	Activity type	Geologist	Exploration result	Ref
2011-2011	detailed geophysics	Jaakko Liikanen	geophysical anomaly	
	Airborne low-altitude [VTEM] geophysical surveys were completed over the entire permit area			

Mineral Exploration Network (Finland) Limited

Years	Activity type	Geologist	Exploration result	Ref
2010-2012	detailed geochemistry	NA	geochemical anomaly	6
	Geochemical anomalies in till detcted, in B horizon and in basal till.			

2010-2012	detailed geophysics	NA	geophysical anomaly	6
	Ground magnetic, IP and resistivity survey			

2010-2013	regional reconnaissance	NA	key geological features	6
	Outcrop geology mapping, glacial erratic boulder survey			

Outokumpu Oy

Years	Activity type	Geologist	Exploration result	Ref
1994-1998	detailed geology	Esa Sandberg	mineral occurrences	9
	Minor field work done; no drilling, geochemical nor gephysica lsurvey was done.			

Geological Survey of Finland

Years	Activity type	Geologist	Exploration result	Ref
1993-1993	core drilling	Martti Damsten	mineralized zone identified	1, 2, 5, 8, 9
	5 diamond-drill holes, 666 m.			
	Intersections			
	HoleID	NA		
	From-To	NA		
	Length	1m		
	gold	4,7ppm		
	HoleID	NA		
	From-To	NA		
	Length	5m		
	gold	1,4ppm		

1988-1988	regional geophysics	Martti Damsten	key geological features	1, 2, 7
	Low-altitude airborne magnetic, electromagnetic and radiometric survey			

1986-1993	excavation	Martti Damsten	NA	1, 2, 3, 5, 7, 8

1986-1993	detailed geology	Martti Damsten	NA	1, 2, 3, 5, 7, 8

1986-1993	detailed geophysics	Martti Damsten	NA	7
	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.			

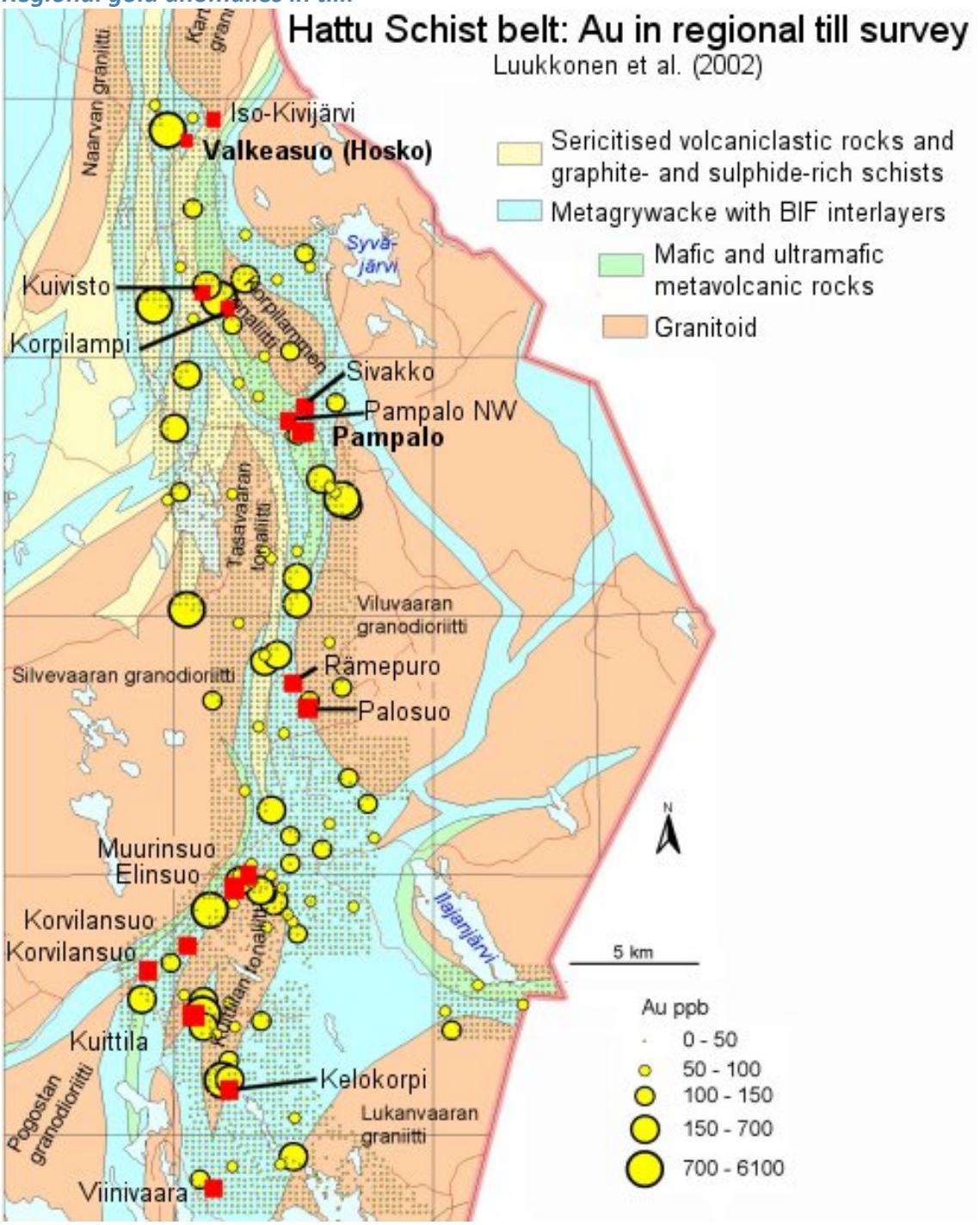
1986-1993	detailed geochemistry	Martti Damsten	geochemical anomaly	1, 2, 3, 5, 7
	Sampling at till-bedrock interface geochemistry, samples collected across the Au anomaly along traverses 100 m apart with sampling distance 10-30 m.			

1983-1989	regional geochemistry	Aimo Hartikainen	geochemical anomaly	
	Sampling grid 250x250 m over the greenstone belt covering 400 km2. 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.			

1982-1982	regional geochemistry	Aimo Hartikainen	geochemical anomaly	
	Country-wide till-geochemical survey			

Figures

Regional gold anomalies in till:



GEOLOGY

Host rock: Greywacke

Greywacke (Host rock)

Rock type: Host rock
Proportion: major
Grain size: NA
Color: NA
References: 4, 7, 8, 9
Comments: The mineralisation is in the intensely sericitised metagreywacke, in subsidiary shear or fault zones probably related to the Kelokorpi Shear Zone

Metamorphic description:
Ore minerals:

Mineral	Proportion	Mineral texture
Gold	minor	
	Dissemination in mica schist.	
Pyrite	major	
Pyrrhotite	major	

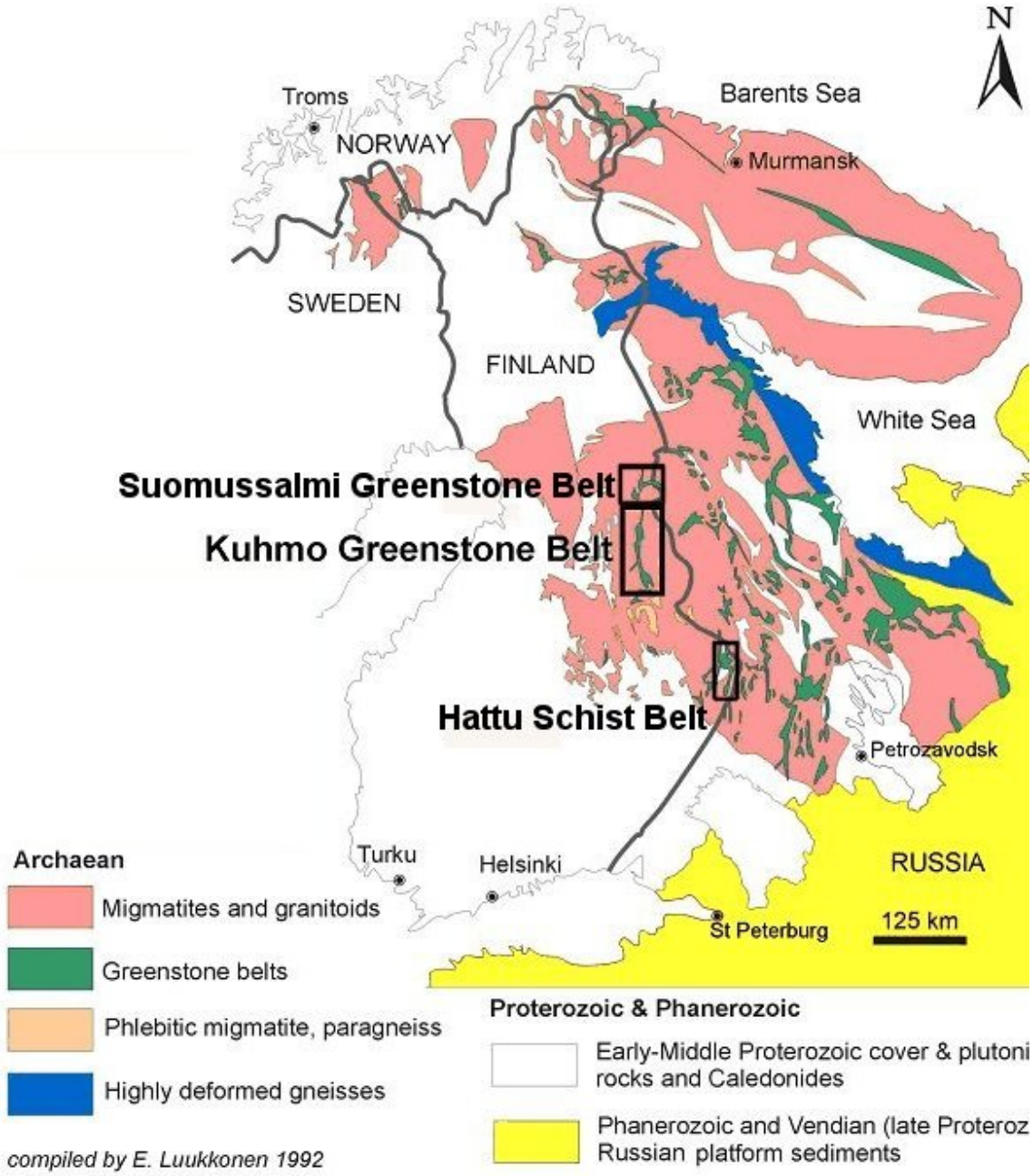
Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	amphibolite metamorphic facies	medium metamorphic grade	Post		-550
Comments: Greenschist-amphibolite facies transition. Progressive regional metamorphism on ca. 2750-2700 Ma, apparently peaked soon after 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:

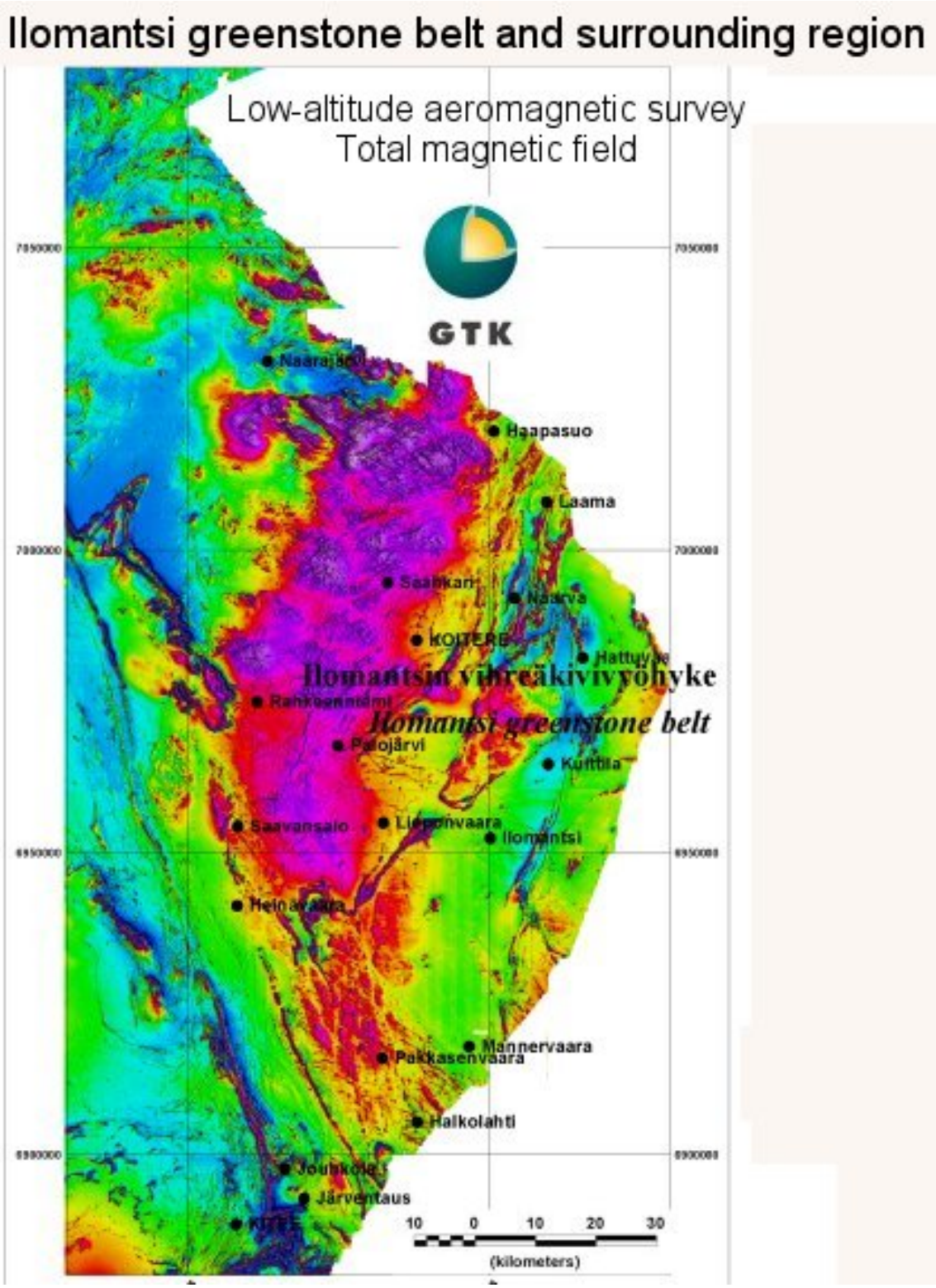
Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:		
Neoarchean (2800-2500 Ma)	2708-2708	2708	Y		
Comments: Either pre-peak metamorphic and formed under greenschist-facies conditions, or syn-peak metamorphic.					
Radiometric age:	**Method:**	**Age:**	**Error (Ma):**	**Mineral:**	**Reference:**
	U-Pb	2708		Zircon	7

Figures

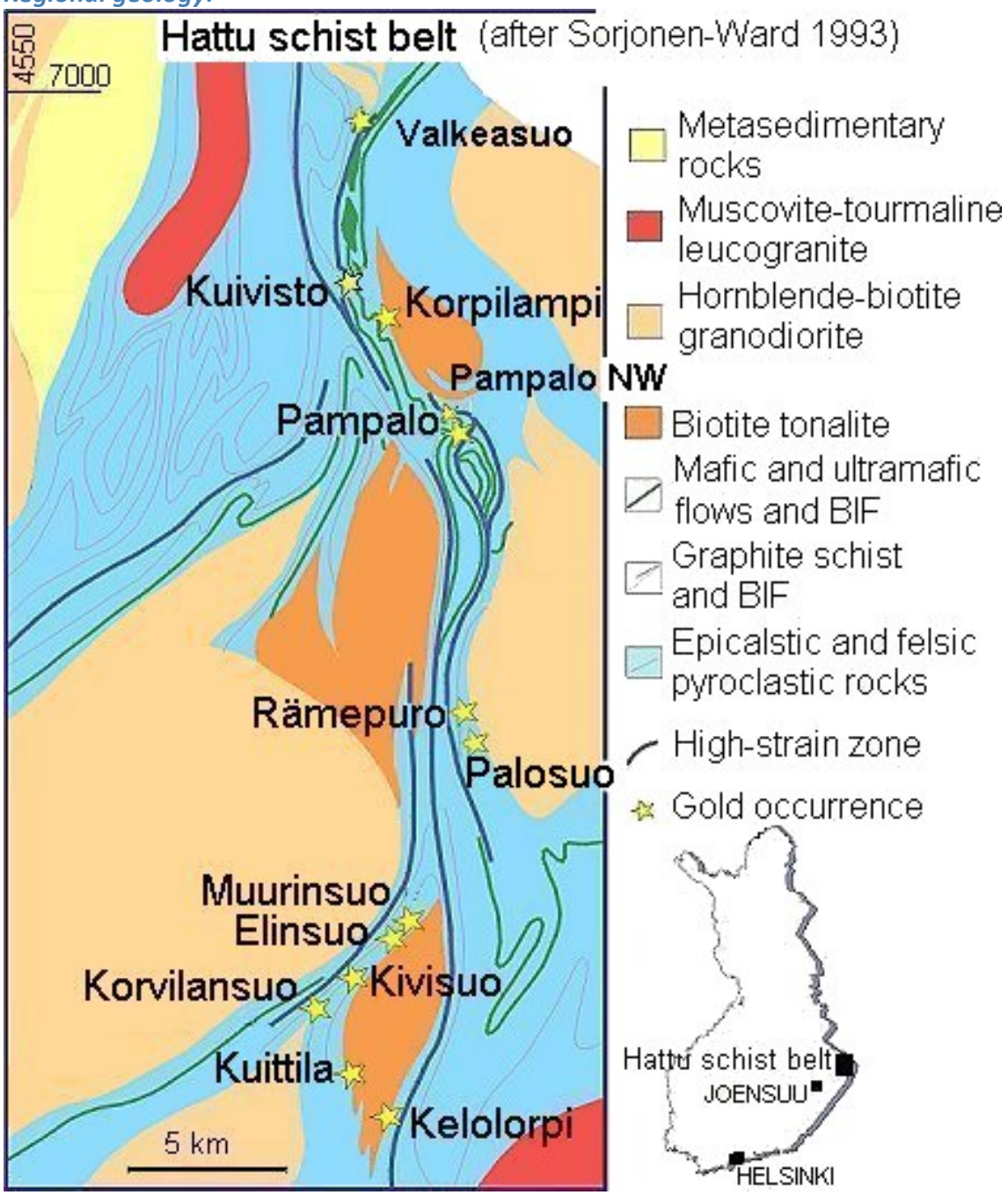
Location in the Carelian craton:



Low-altitude airborne magnetic image:



Regional geology:



REFERENCES

1. Damsten, M. & Nurmi, P. 1994. Alustava raportti kultamalmitutkimuksista ns. Kuittilan vyöhykkeellä Ilomantsin kunnassa. Geological Survey of Finland, Report M 19/4244/94/1/10. 14 p. (in Finnish)*http://tupa.gtk.fi/raportti/valtaus/m06_4244_94_1_10.pdf*

2. Damsten, M., Hartikainen, A., Koistinen, E. & Nurmi, P.A. 1994. Tutkimustyöselostus Ilomantsin kunnassa valtausalueilla Muurinsuo (kaivosrekisterinro 4273/1), Korvilansuo 1 (4165/1), Kelokorpi 1 (4165/2), Palosuo (5027/1), Muurinsuo 2 (5359/1), Muurinsuo 3 (5359/2) sekä valtausvarausalueilla Elinsuo (156/93), Kiimasuo (156/93) ja Viinivaara (25/94) suoritetuista kultamalmitutkimuksista vuosina 1984-1993. English summary: Report on exploration in Ilomantsi during 1984-1993 in claims Muurinsuo (Mine Reg. No. 4273/1), Korvilansuo 1 (4165/1), Kelokorpi 1 (4165/2), Palosuo (5027/1), Muurinsuo 2 (5359/1), Muurinsuo 3 (5359/2) and claim reservation areas Elinsuo (156/93), Kiimasuo (156/93) and Viinivaara (25/94). Geological Survey of Finland, Report M06/4244/-94/1/10. 14 p. *http://tupa.gtk.fi/raportti/valtaus/m06_4244_94_1_10.pdf*

3. Hartikainen, A. & Niskanen, M. 2001. Maaperägeokemialliset kultatutkimukset Hatun liuskejaksolla Ilomantsissa vv. 1983-1995. Geological Survey of Finland, Report S/41/4244/1/2001. 22 p. *http://tupa.gtk.fi/raportti/arkisto/S41_4244_1_2001.pdf*

4. Korsman, K. (ed.) & Glebovitsky, V. (ed.) 1999. Raahe-Ladoga Zone structure-lithology, metamorphism and metallogeny: a Finnish-Russian cooperation project 1996-1999. Map 2: Metamorphism of the Raahe-Ladoga Zone 1:1000000. Geological Survey of Finland.

5. Luukkonen, E., Halkoaho, T., Hartikainen, A., Heino, T., Niskanen, M., Pietikäinen, K. & Tenhola, M. 2002. Itä-Suomen arkeeiset alueet -hankkeen (12201 ja 210 5000) toiminta vuosina 1992-2001 Suomussalmen, Hyrynsalmen, Kuhmon, Nurmeksen, Rautavaaran, Valtimon, Lieksan, Ilomantsin, Kiihtelysvaaran, Enon, Kontiolahden, Tohmajärven ja Tuupovaaran alueella. Geological Survey of Finland, Report M19/4513/2002/1. 265 p. (in Finnish) *http://tupa.gtk.fi/raportti/arkisto/m19_4513_2002_1.pdf*

6. MEN Finland 2013. Viinivaara. 12 p.

7. Nurmi, P. A. & Sorjonen-Ward, P. (eds) 1993. Geological Development, Gold Mineralization and Exploration Methods in the Late Archaean Hattu Schist Belt, Ilomantsi, Eastern Finland. Geological Survey of Finland, Special Paper 17. 386 p.*http://tupa.gtk.fi/julkaisu/specialpaper/sp_017.pdf*

8. Nurmi, P. A. 1993. Archaean Au in Finland. Engineering and Mining Journal, Nov., 32-34.

9. Sandberg, E. 2000. Kaivoslain 19 §:n mukainen tutkimustyöselostus: Ilomantsi Korvilansuo 6, kaiv.rek.n:o 5510/6. Outokumpu Oy, Report 080/4244 07B/EAS/2000. 3 p. (in Finnish) *http://tupa.gtk.fi/raportti/valtaus/5510_5.pdf*

10. Sorjonen-Ward, P. & Luukkonen, E.J. 2005. Archean rocks. In: Precambrian Geology of Finland - Key to the Evolution of The Fennoscandian Shield. Elsevier Science B.V., Amsterdam, 19-99.