Hetteilä

Alternative Names: Hetteilä 1, Hetteilä N
Occurence type: occurrence

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

Easting EUREF: 603729,691
Northing EUREF: 7137897,226
Easting YKJ: 3603944
Northing YKJ: 7140886

Discovery year: 2002
Discovered by: Geological Survey of Finland
Province: Kuhmo (Ni, Ag, Au)
District: Kuhmo (Au)
Comments: A Ni-rich glacial erratic found by an amateur prospector draw GTK to the area in 2001. Gold-mineralised zones were discovered in drilling into Ni-potential zones
References: 2, 3, 4

Mineral deposit type

Group: Metallogenic deposit
Main type: Orogenic (metamorphic hydrothermal)
Comments: Structurally controlled orogenic gold mineralisation suggested by the hints given in the reference.
References: 1

Dimension

Expression: NA
Form: NA
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
Dimension comments: Open along strike and at depth

Holder history

Previous holders:

Company	Years	Holding type	Comments
Magnus Minerals Oy	2021	Application for reservation	NA
Mineral Exploration Network (Finland) Limited	2010-2011	Claim reservation (old law)	NA
Magnus Minerals Oy	2007	NA	NA
Geological Survey of Finland	2002-2005	NA	NA

EXPLORATION ACTIVITY

Geological Survey of Finland

Years	Activity type	Geologist	Exploration result	Ref
2002-2002	regional geophysics	Tapio Halkoaho	geophysical anomaly	1

2002-2002	detailed geophysics	Tapio Halkoaho	geophysical anomaly	1

2002-2002	detailed geochemistry	Tapio Halkoaho	geochemical anomaly	1

2002-2003	core drilling	Tapio Halkoaho	mineral occurrences	1
	Gold-mineralised zones were discovered in drilling into Ni-potential zones; 10 diamond-drill holes, total 1274 m.			
	Intersections			
	HoleID	NA		
	From-To	NA		
	Length	1m		
	gold	1,6ppm		

2002-2002	detailed geology	Tapio Halkoaho	key geological features	1

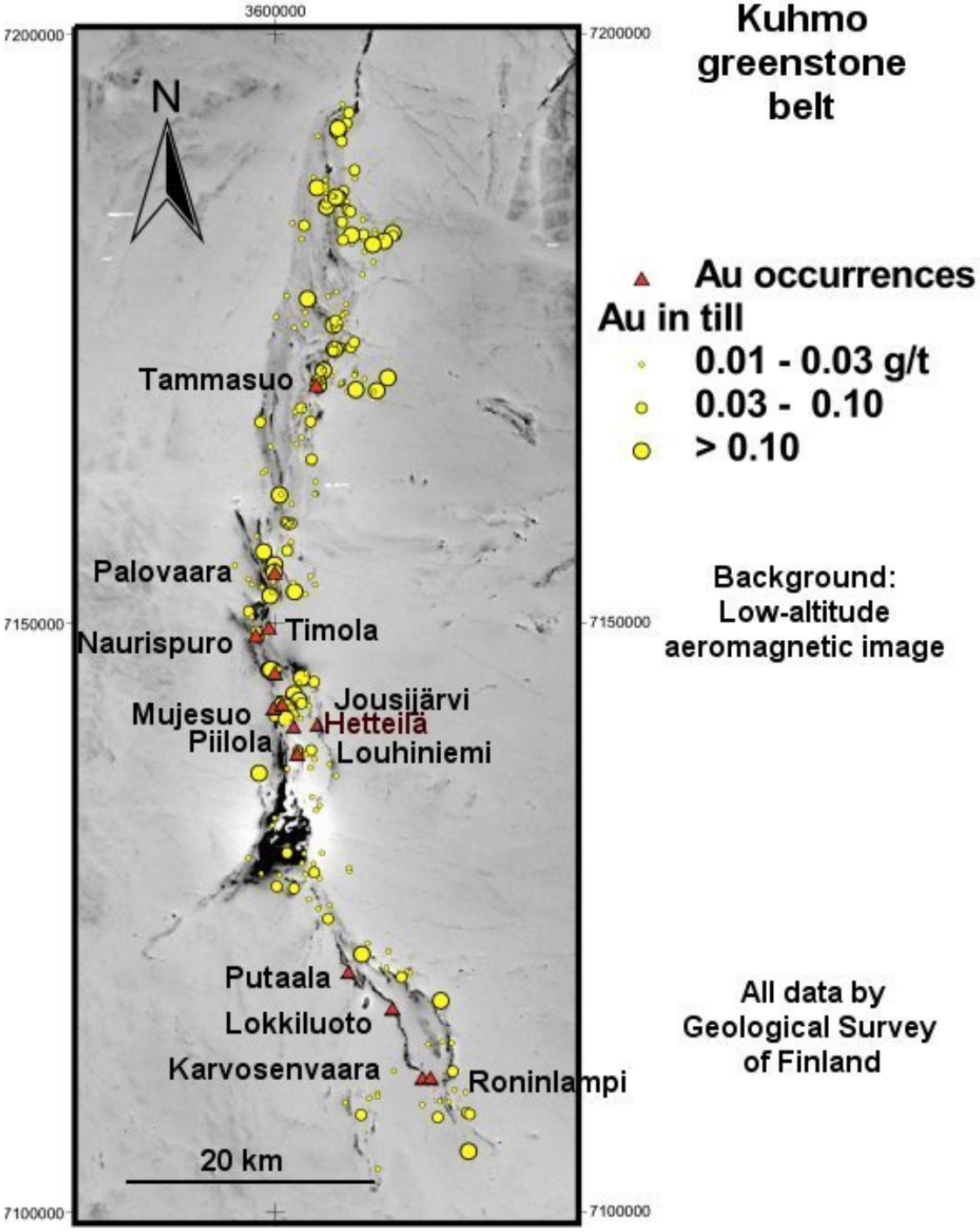
1990-2001	regional geochemistry	Markku Tenhola	geochemical anomaly	1, 2
	Greenstone belt-wide till-geochemical survey with 16 samples per one square kilometre			

1988-1988	regional geology	NA	geochemical anomaly	
	Country-wide till-geochemical survey with one sample per 4 sq.km			

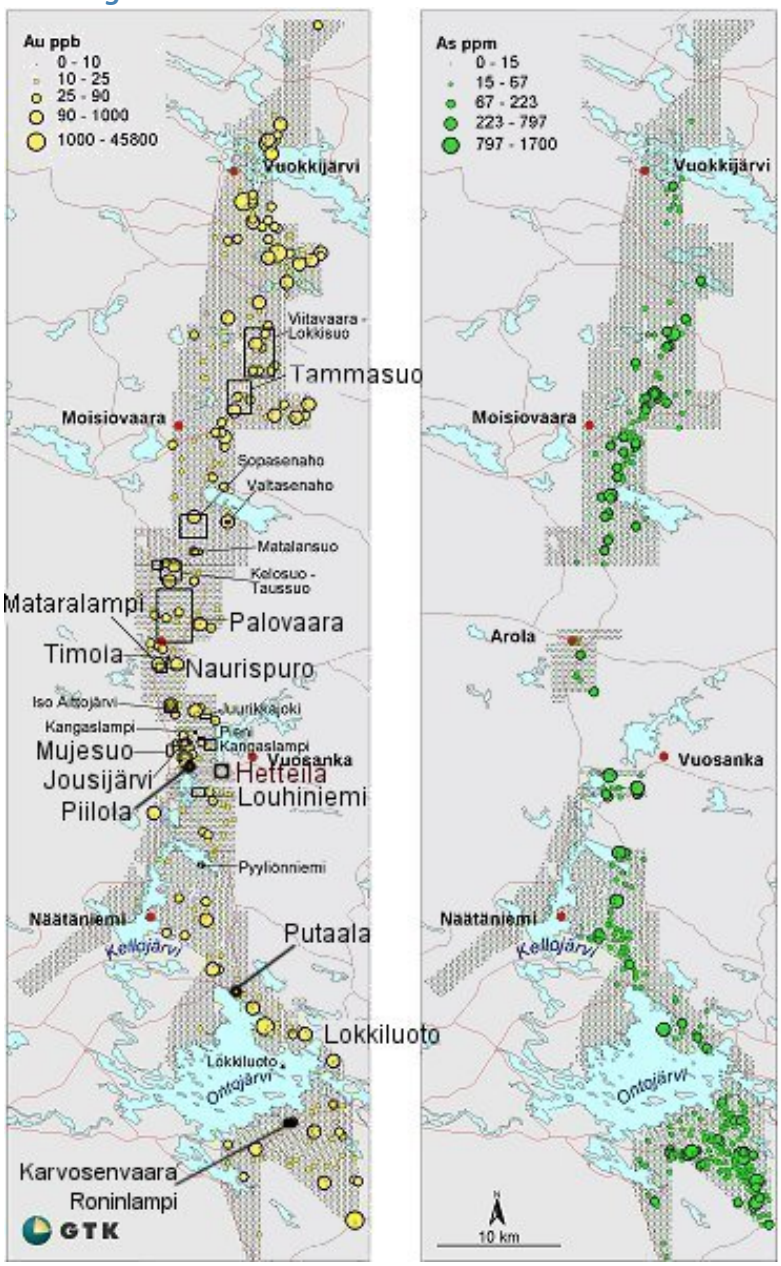
1988-1988	regional geochemistry	Markku Tenhola	geochemical anomaly	2
	Country-wide till-geochemical survey			

Figures

Kuhmo greenstone belt aeromagnetic image, gold in till, and the known gold occurrences:



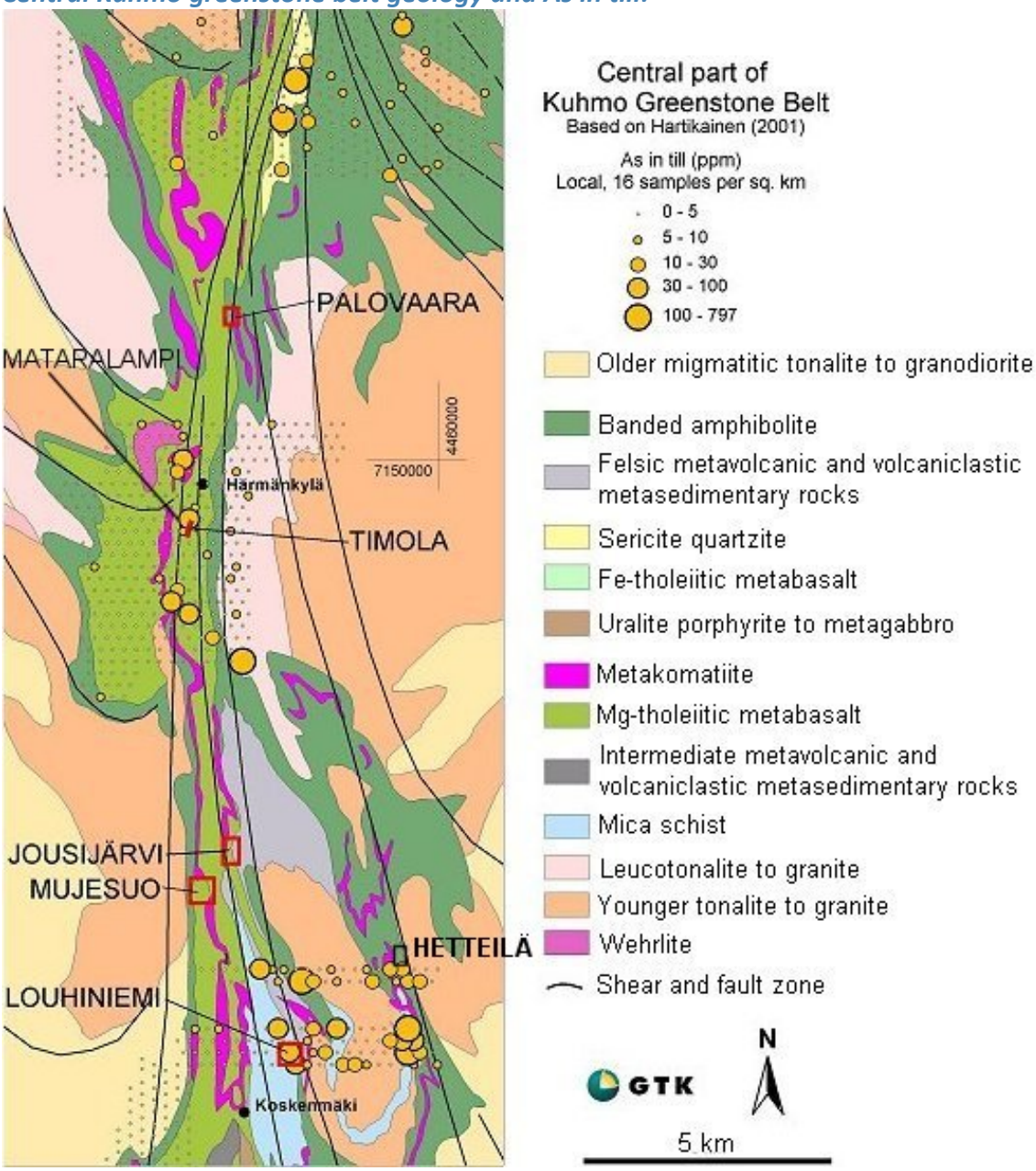
Kuhmo greenstone belt Au and As in till:



Kuhmo greenstone belt

As (ppm) and Au (ppb) in till
(Luukkonen et al. 2002)

Central Kuhmo greenstone belt geology and As in till:



GEOLOGY

Host rock: Banded ironstones, Komatiite, Amphibolite
Wall rock: Porphyry

Banded ironstones (Host rock)

Rock type: Host rock
Proportion: major
Grain size: NA
Color: NA
References: 1
Comments: The occurrence is in a 5-9 m thick sulphidic BIF unit and banded amphibolite in a sequence of metasedimentary and tholeiitic to komatiitic metavolcanic rocks, near a NNW-trending shear zone.

Metamorphic description:

Other minerals:

Mineral	Proportion	Mineral texture
Amphibole	major	
Garnet	minor	
Magnetite	major	
Quartz	major	

Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	greenschist metamorphic facies	low metamorphic grade	NA		
Comments: Amphibole-garnet-quartz-magnetite-sulphides.					

Geological age:

Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:
Archean (4000-2500 Ma)	2500-4000		N

Komatiite (Host rock)

Rock type: Host rock
Proportion: minor
Grain size: NA
Color: NA
References: 1
Comments: The occurrence is in a 5-9 m thick sulphidic BIF unit and banded amphibolite in a sequence of metasedimentary and tholeiitic to komatiitic metavolcanic rocks.

Metamorphic description:

Other minerals:

Mineral	Proportion	Mineral texture
Biotite	minor	
Chlorite	minor	
Tremolite	major	

Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	greenschist metamorphic facies	low metamorphic grade	NA		
Comments: Tremolite-biotite-chlorite.					

Geological age:

Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:
Archean (4000-2500 Ma)	2500-4000		N

Amphibolite (Host rock)

Rock type: Host rock
Proportion: minor
Grain size: NA
Color: NA
References: 1
Comments: The occurrence is in a 5-9 m thick sulphidic BIF unit and banded amphibolite in a sequence of metasedimentary and tholeiitic to komatiitic metavolcanic rocks.

Metamorphic description:

Type:	Facies:	Degree:	Relation to mineralization:	Min P- Max P (kbar)	MIn T- Max T (°C)
Regional	greenschist metamorphic facies	low metamorphic grade	NA		

Geological age:

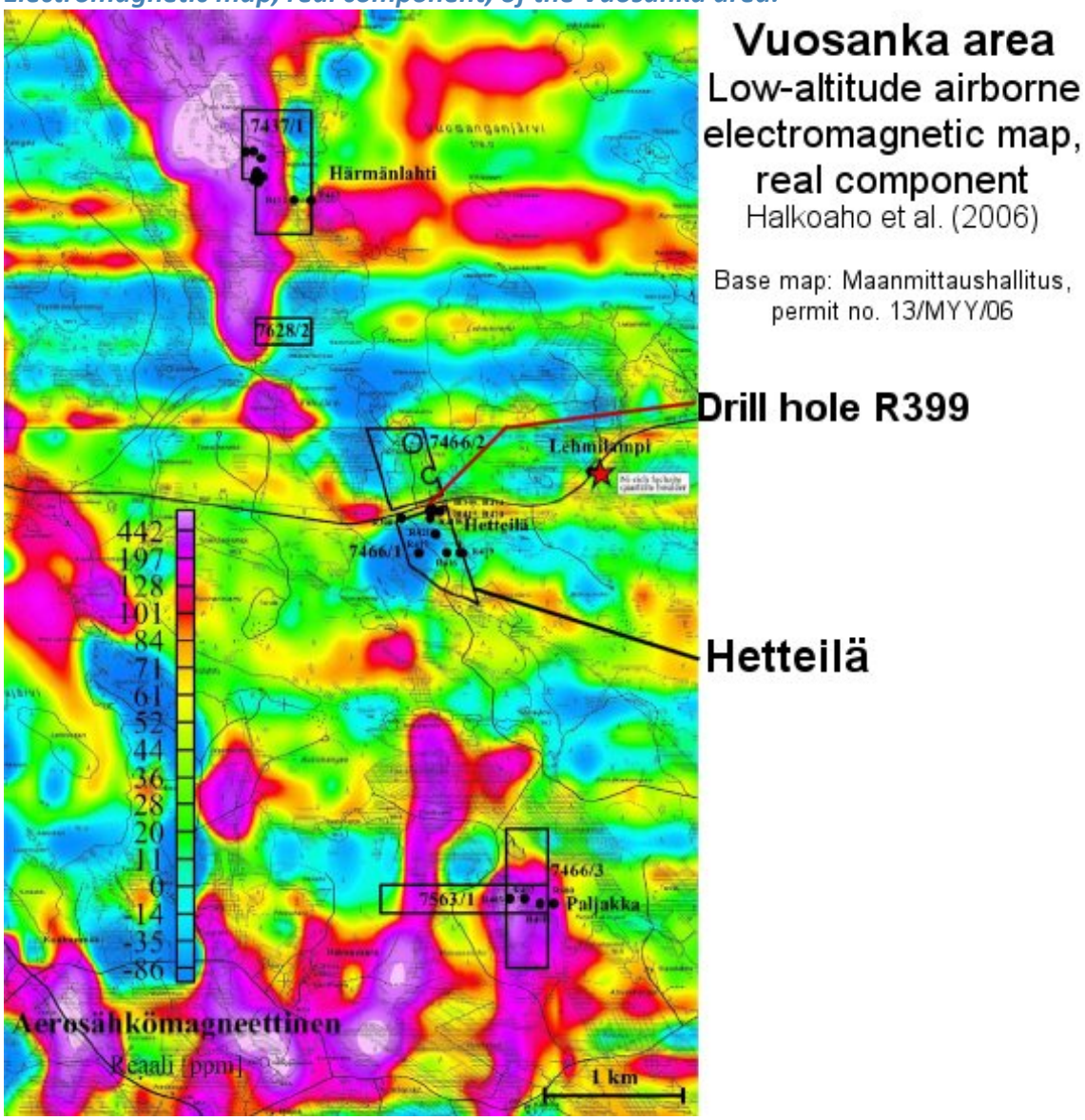
Geological era:	Max age - Minage (Ma):	Inferred age (Ma):	Age of mineralization:
Archean (4000-2500 Ma)	2500-4000		N

Porphyry (Wall rock)

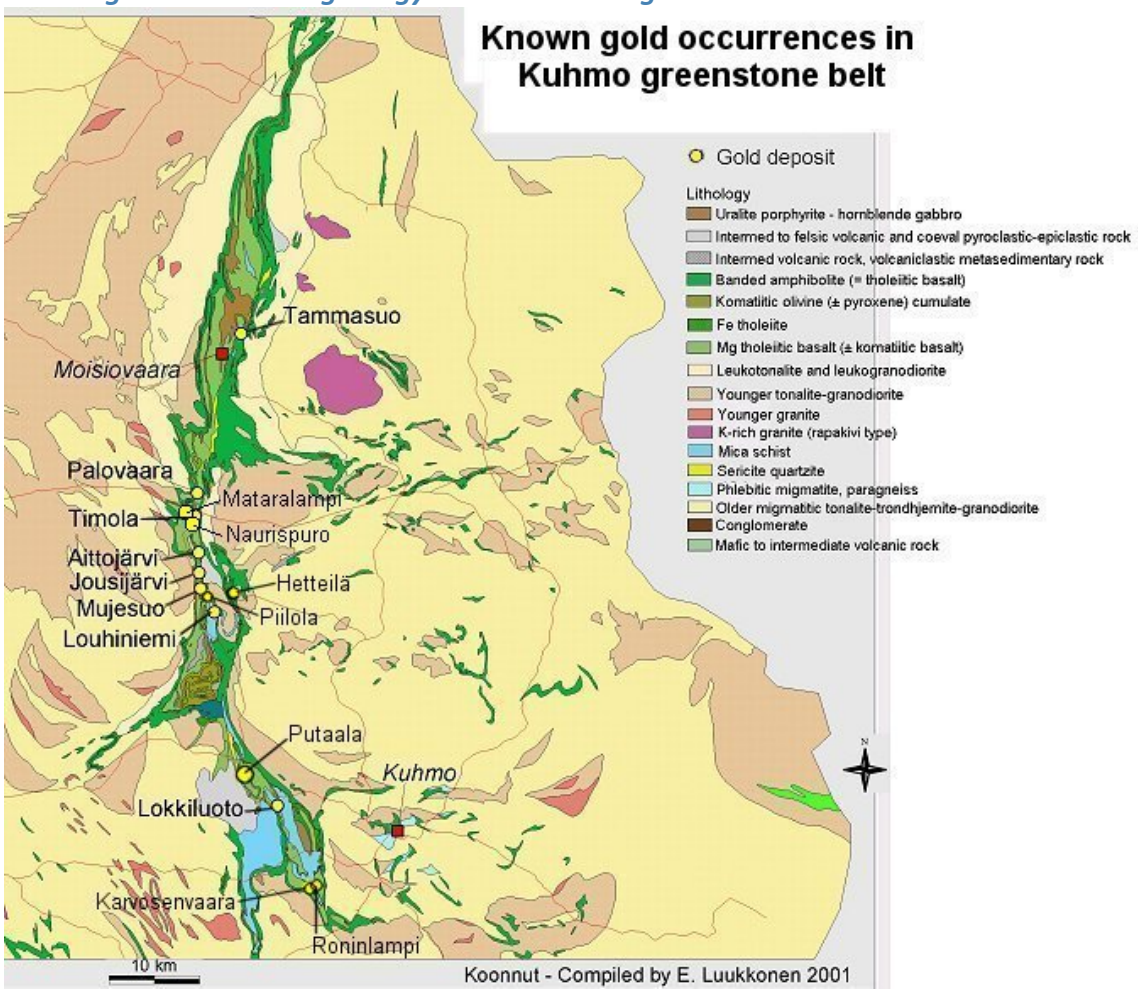
Rock type: Wall rock
Comments: Narrow granitic and tonalitic dykes witin the hosting sequence

Figures

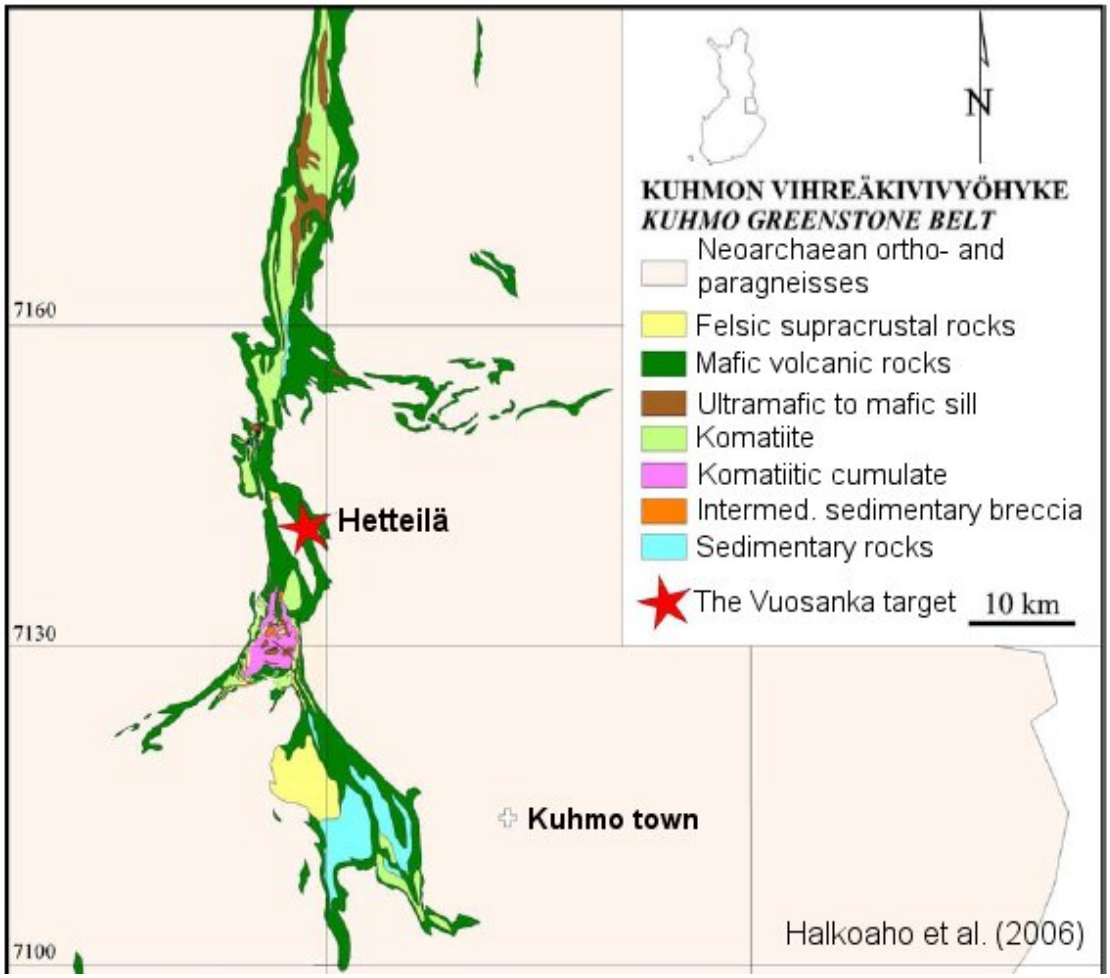
Electromagnetic map, real component, of the Vuosanka area:



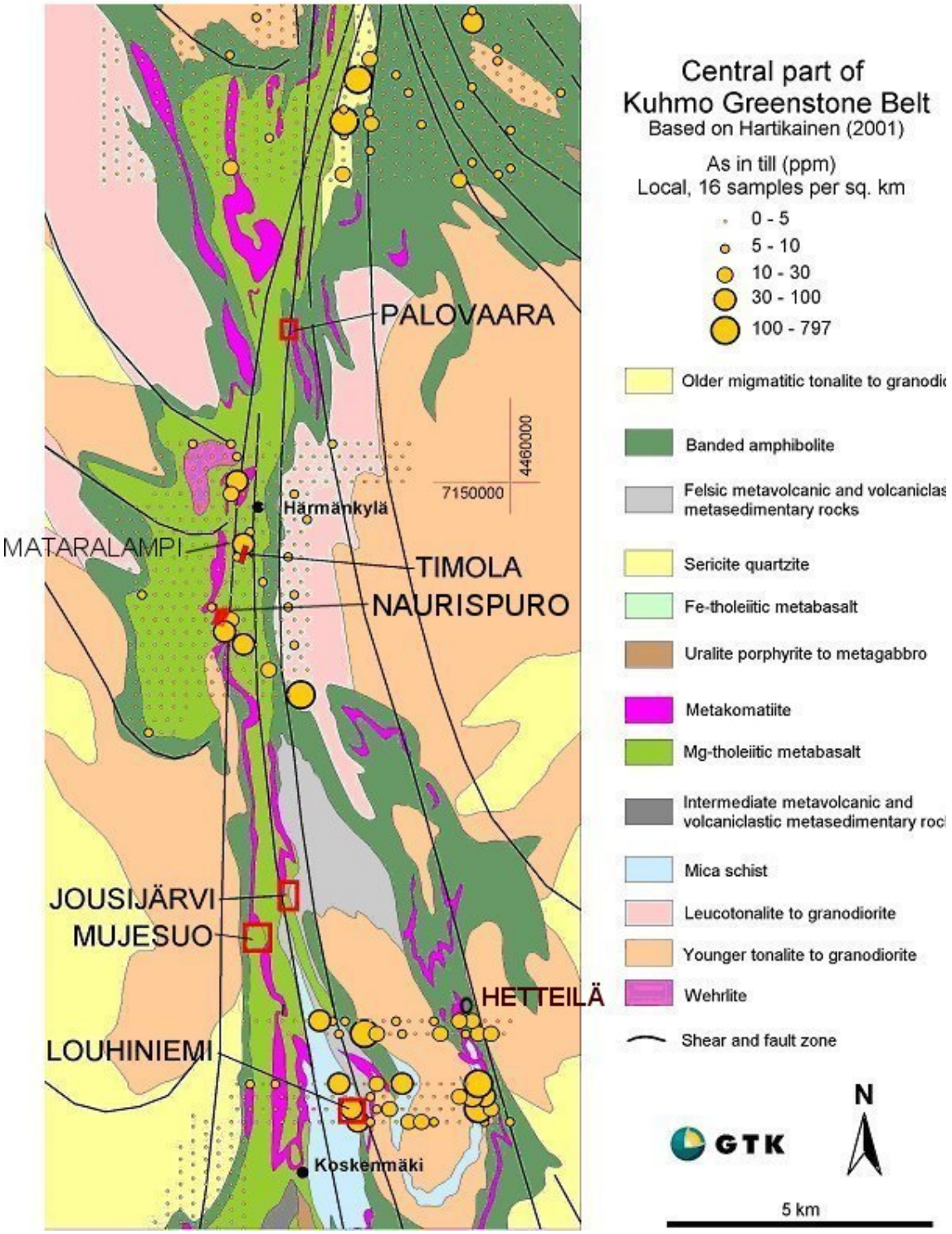
Kuhmo greenstone belt geology and the known gold occurrences:



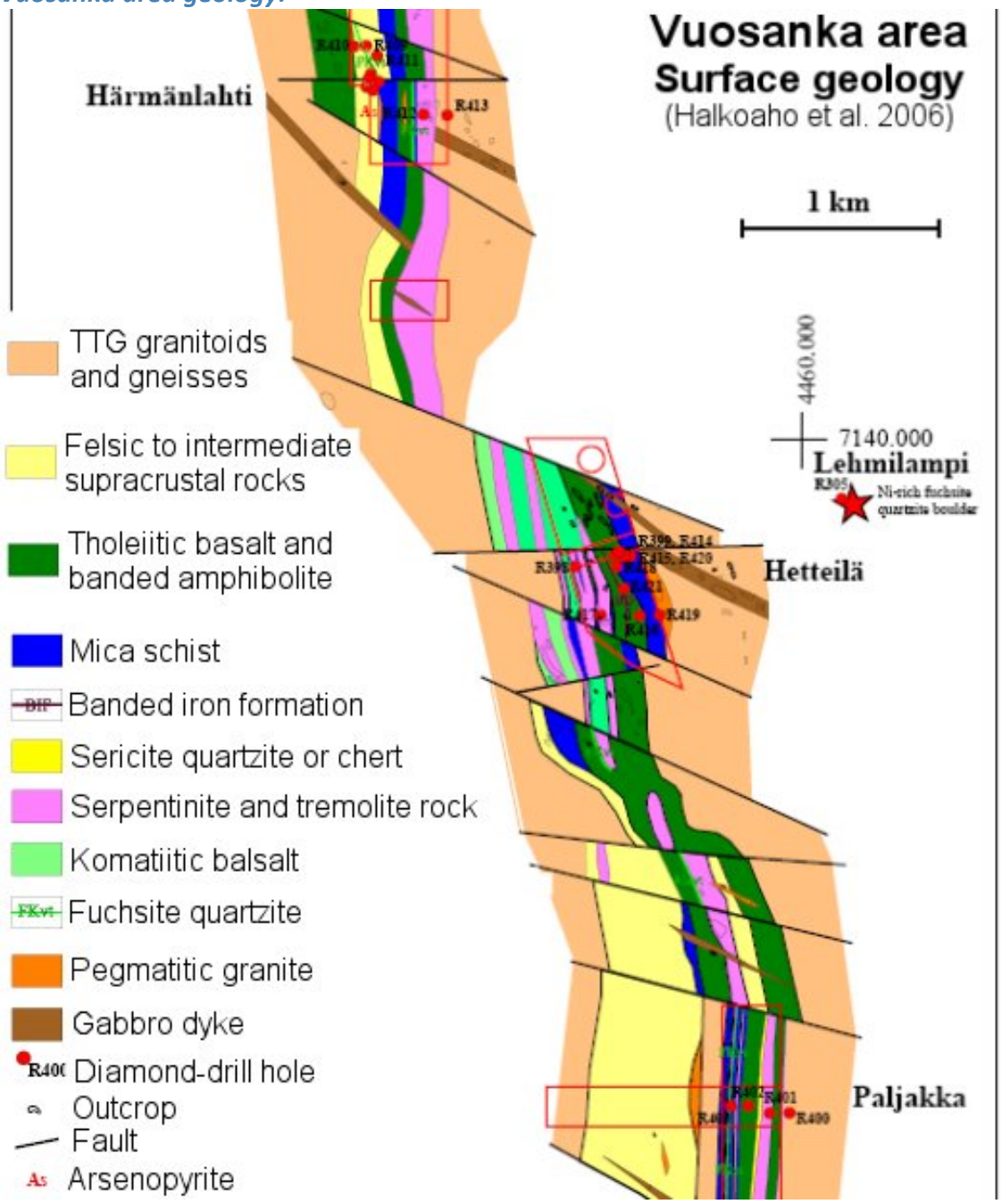
Location of the hetteilä occurrence in the Kuhmo greenstone belt:



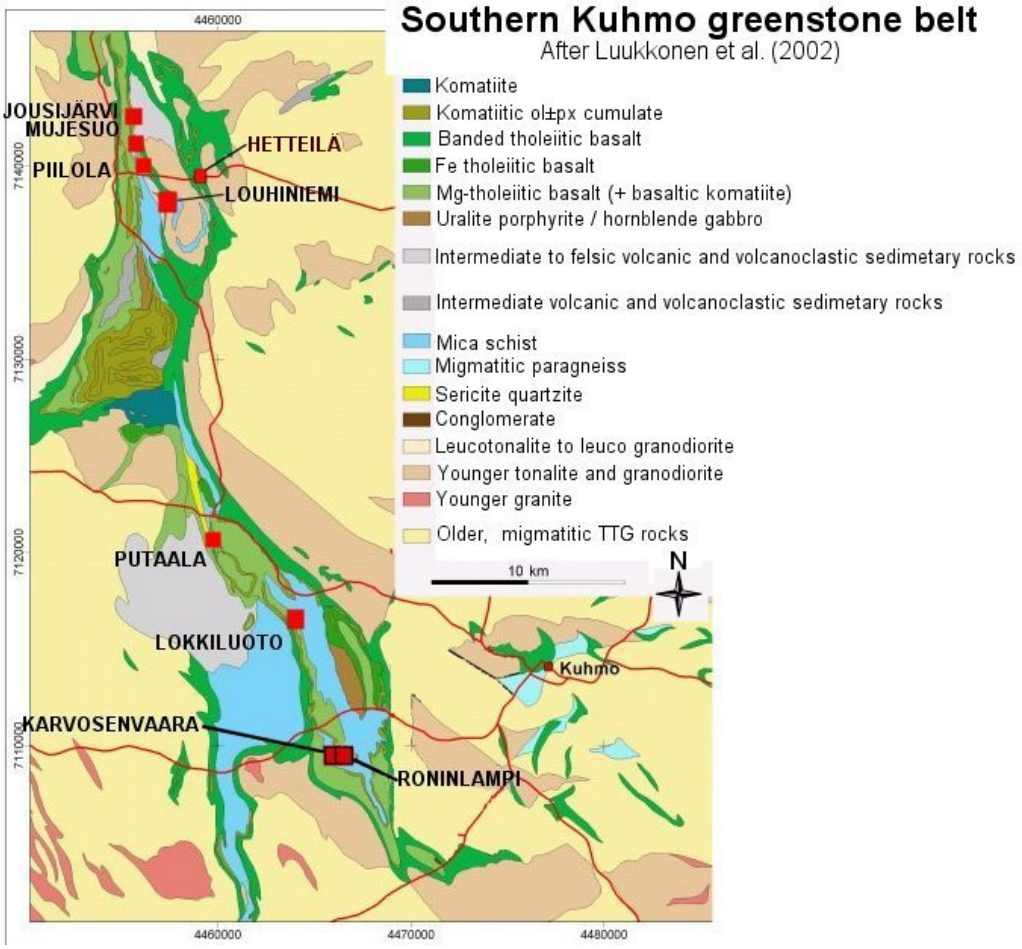
Central Kuhmo greenstone belt geology and gold in basal till:



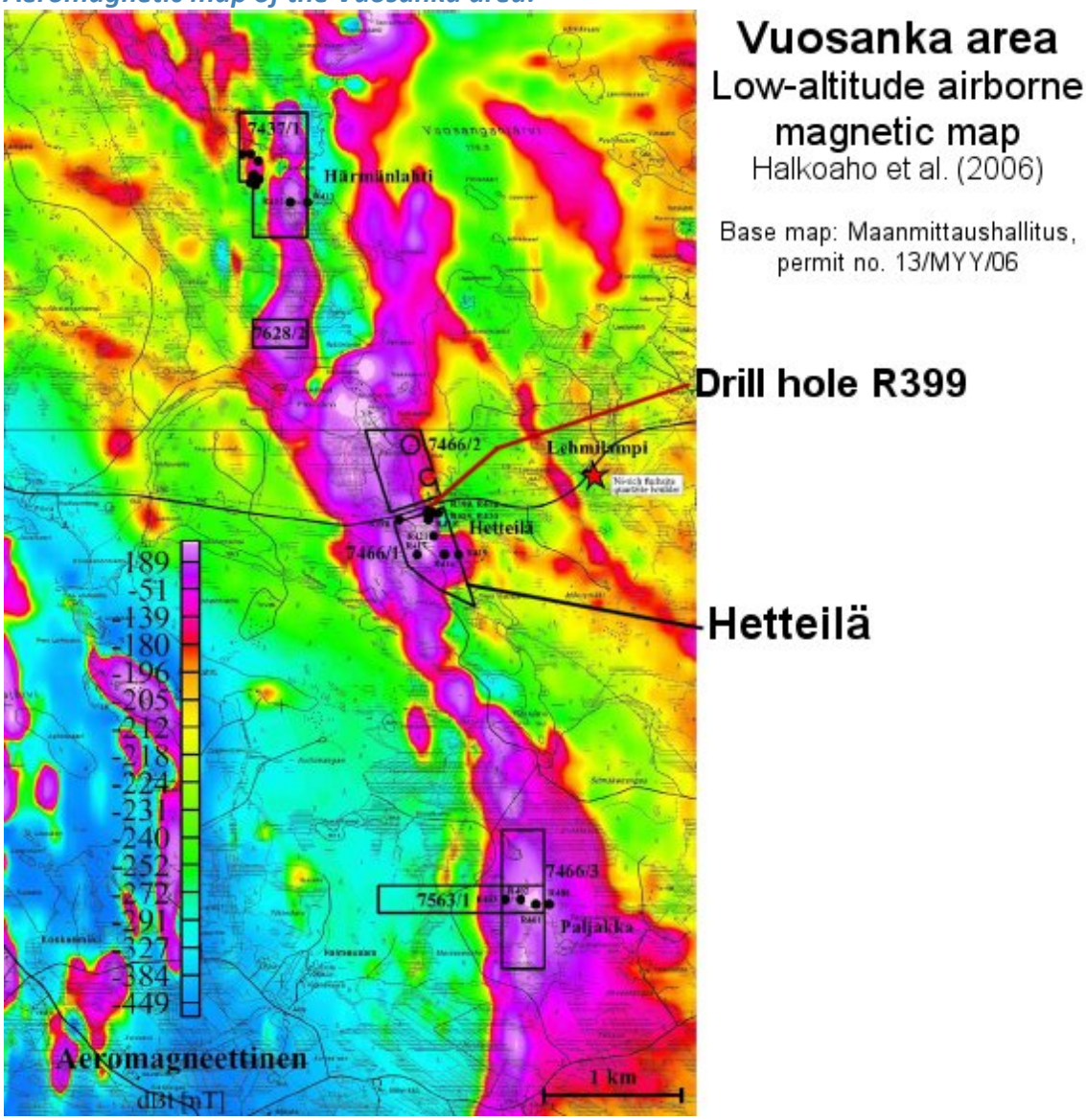
Vuosanka area geology:



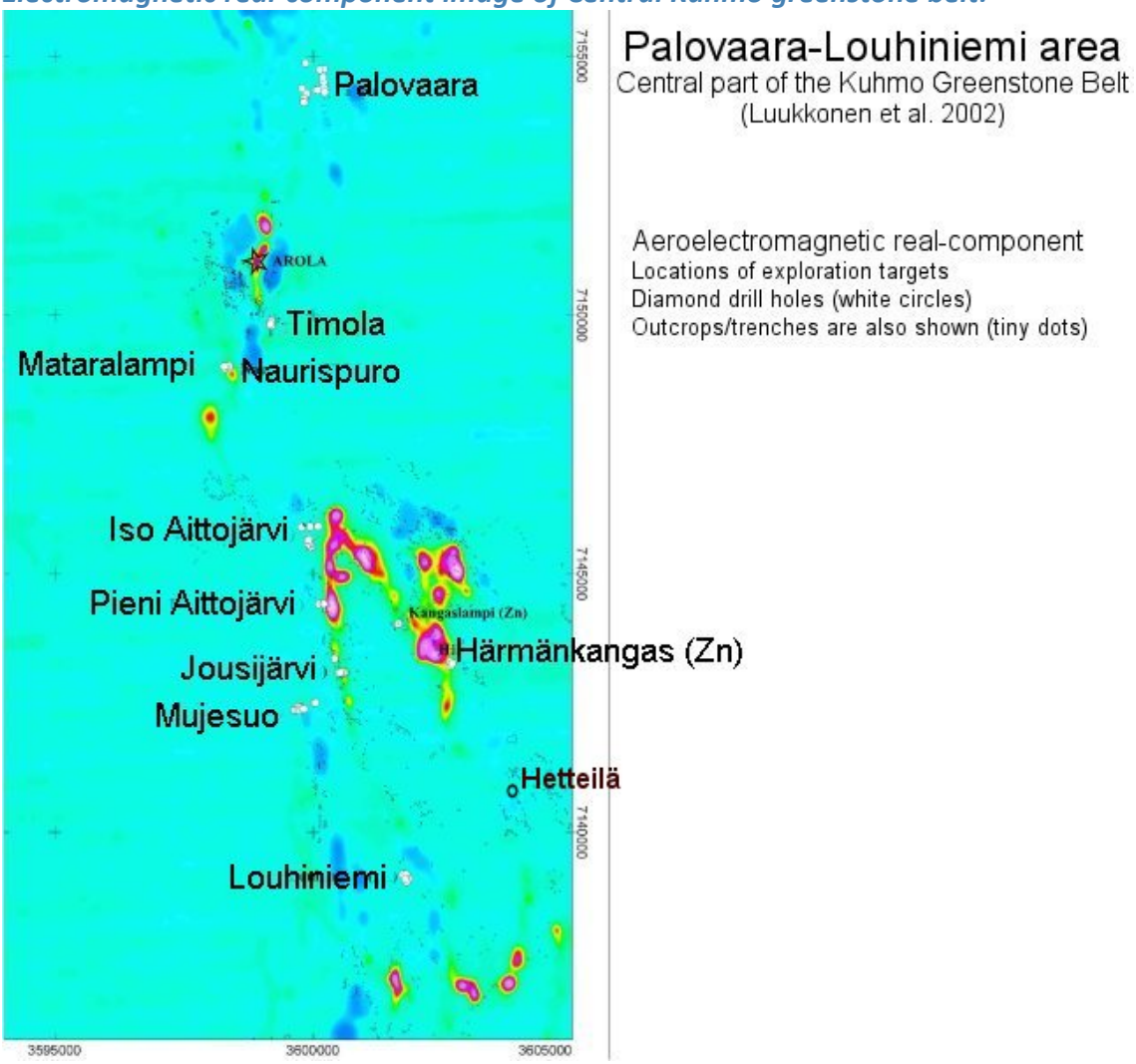
Southern part of Kuhmo greenstone belt geology and the known gold occurrences:



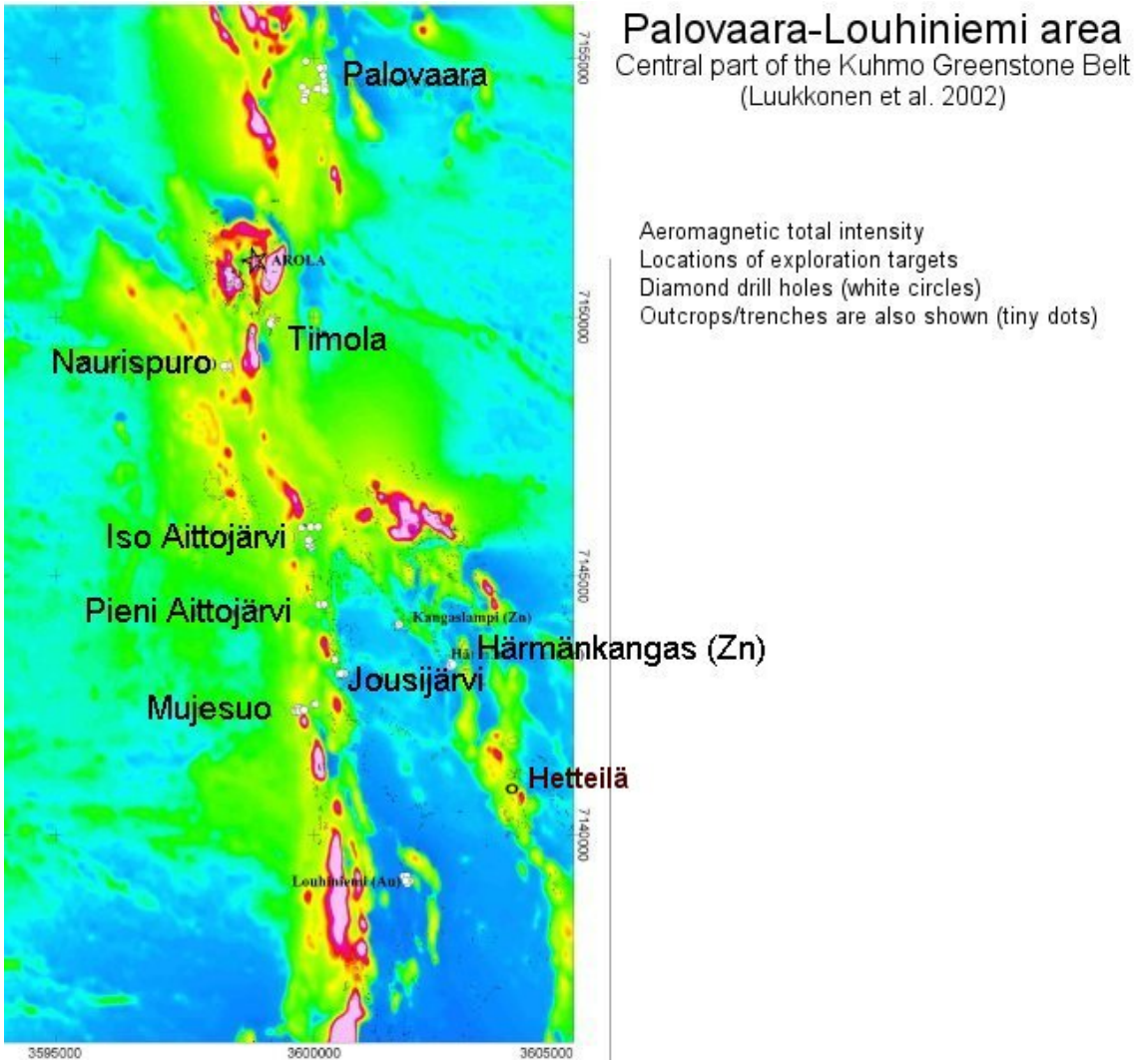
Aeromagnetic map of the Vuosanka area:



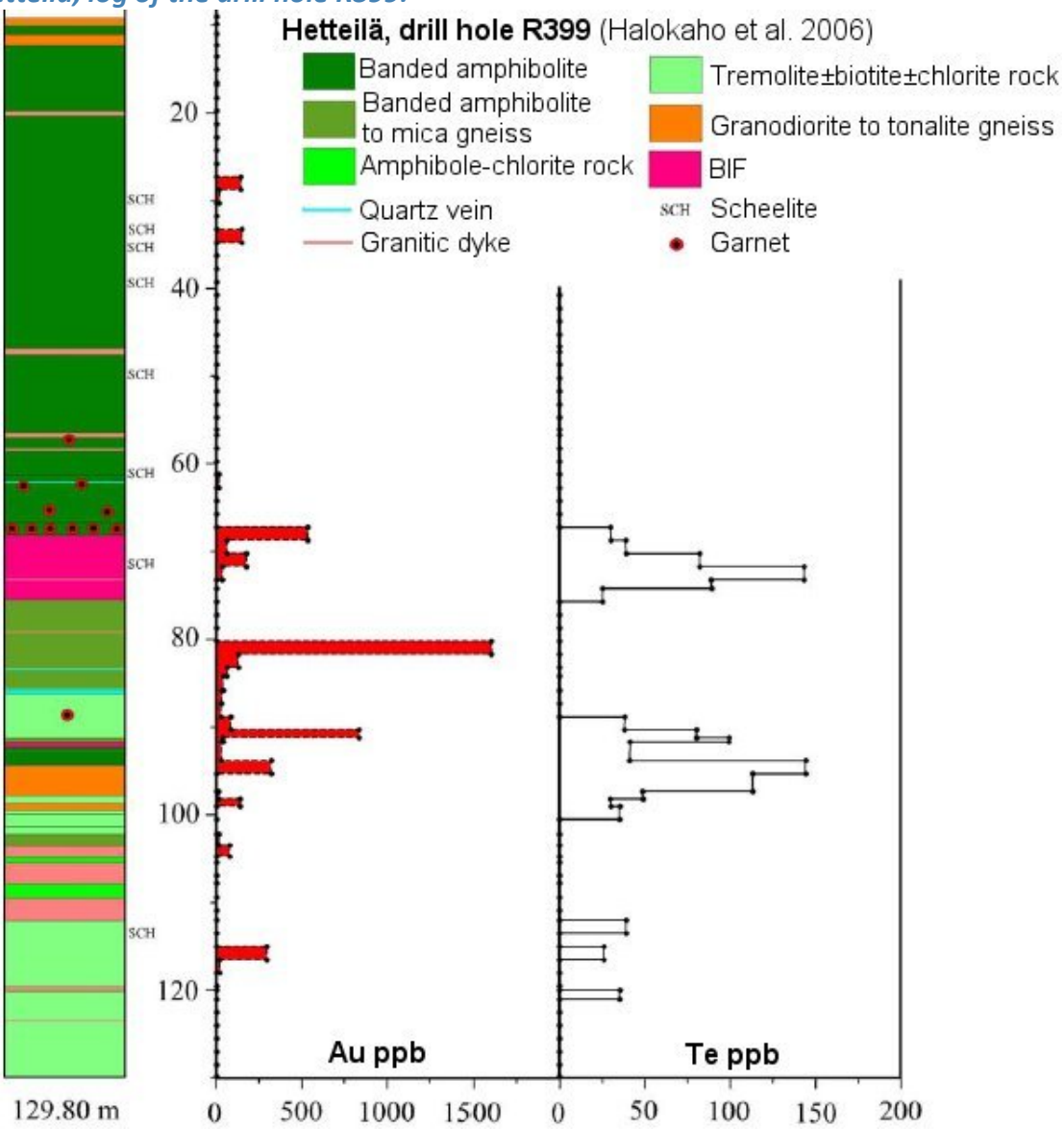
Electromagnetic real-component image of Central Kuhmo greenstone belt:



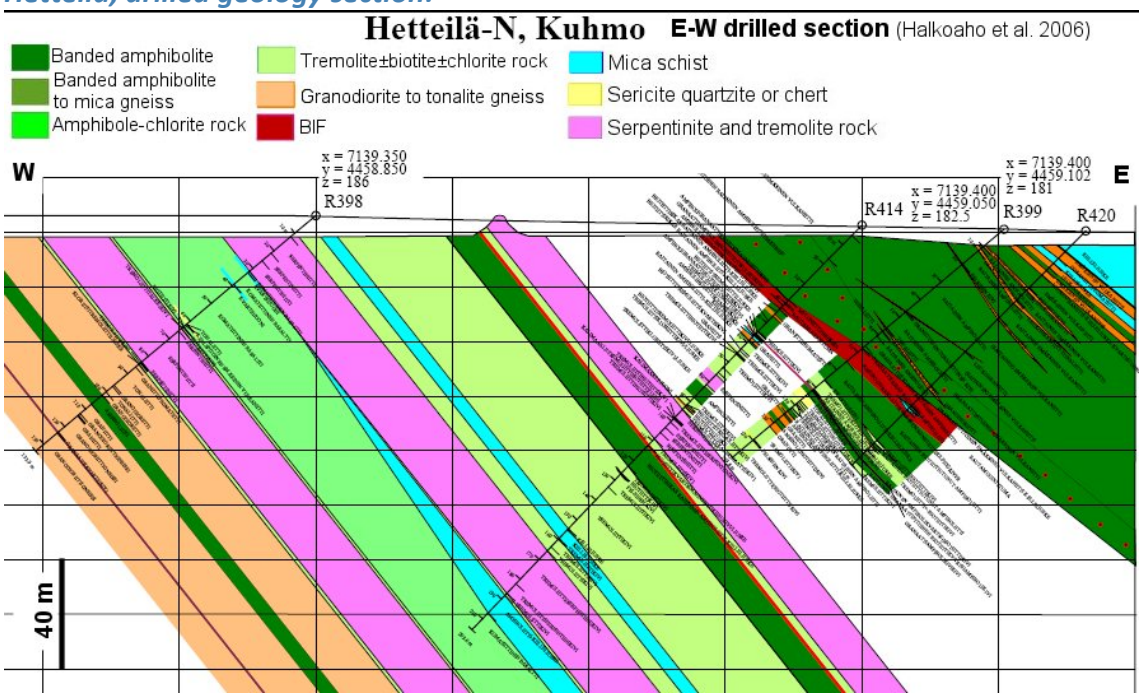
Aeromagnetic image of Central Kuhmo greenstone belt:



Hetteilä, log of the drill hole R399:



Hetteilä, drilled geology section:



REFERENCES

1. Halkoaho, T., Niskanen, M. & Pietikäinen, K. 2006. A reserch report of nickel studies concerning the claims Härmälahti 1 and 2 (register numbers of claims: 7437/1 and 7628/2), Hetteilä 1 and 2 (7466/1 and 7466/2), and Paljakka 1 and 2 (7466/3 and 7563/1) in Kuhmo during years 2002-2003. Geological Survey of Finland, Report M06/4412/2006/2/10. 17 p. (English summary)
http://tupa.gtk.fi/raportti/valtaus/m06_4412_2006_2_10.pdf

2. 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

3. Luukkonen, E., Pajunen, M. & Poutiainen, M. 1992. Kuhmo-Suomussalmen alueen arkeeisen kallioperän rakenne-evoluutio ja Au-aiheet. In: E. Ekdahl (ed.) Suomen kallioperän kehitys ja raaka-ainevarat. Vuorimiesyhdistys, Sarja B, 51, 11-12. (in Finnish)

4. 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.