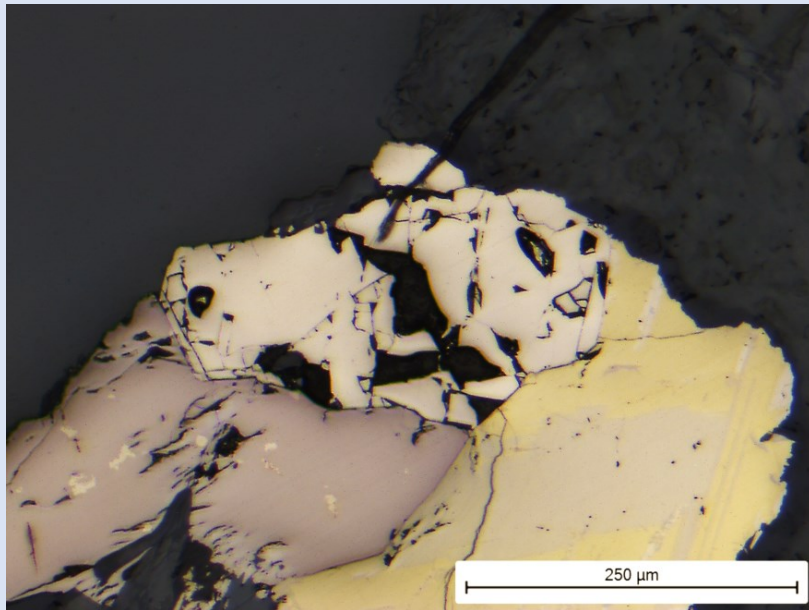
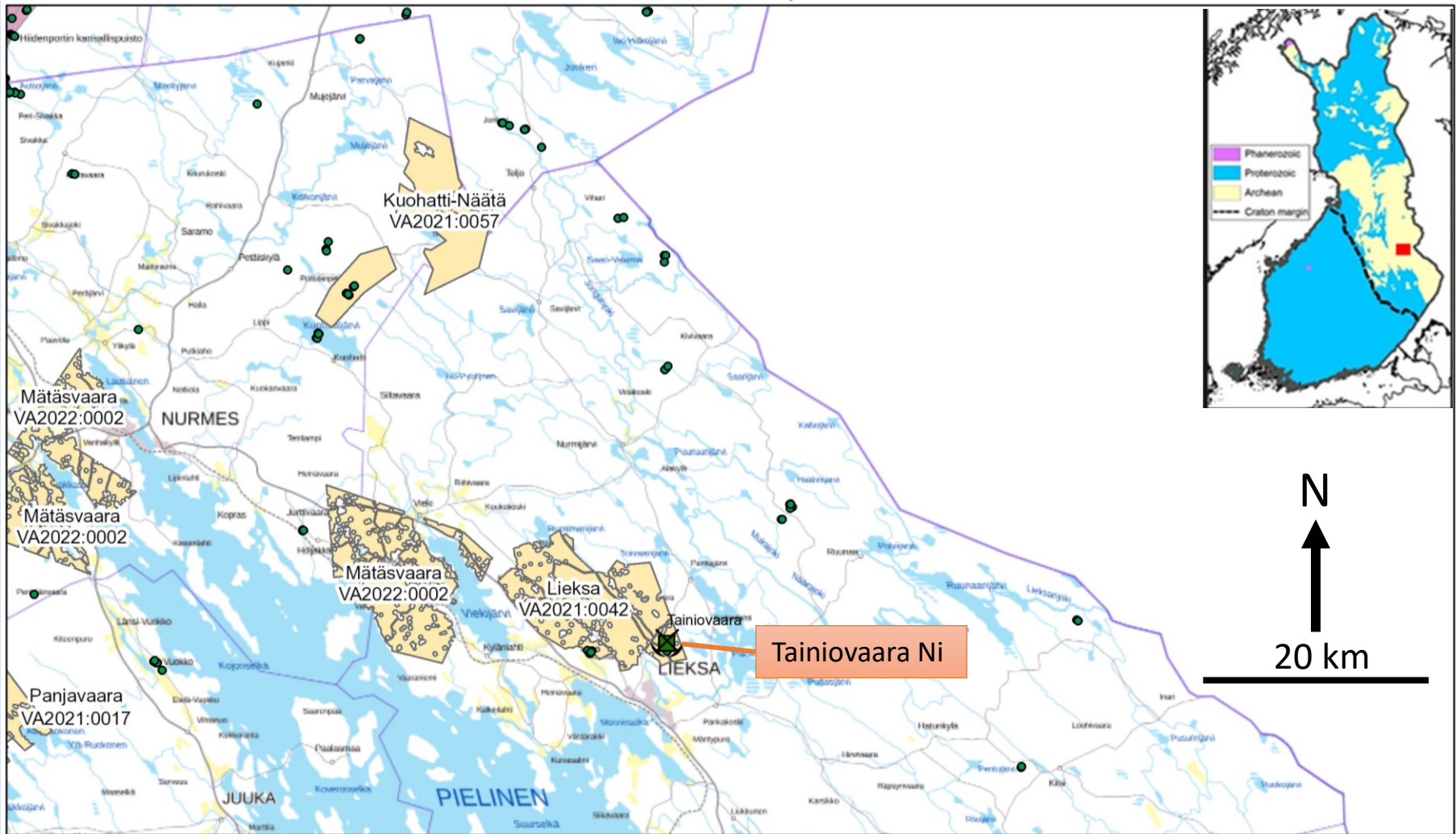


Nurmes-Lieksa Ni-Cu-Co-(PGE) Targets, Finland



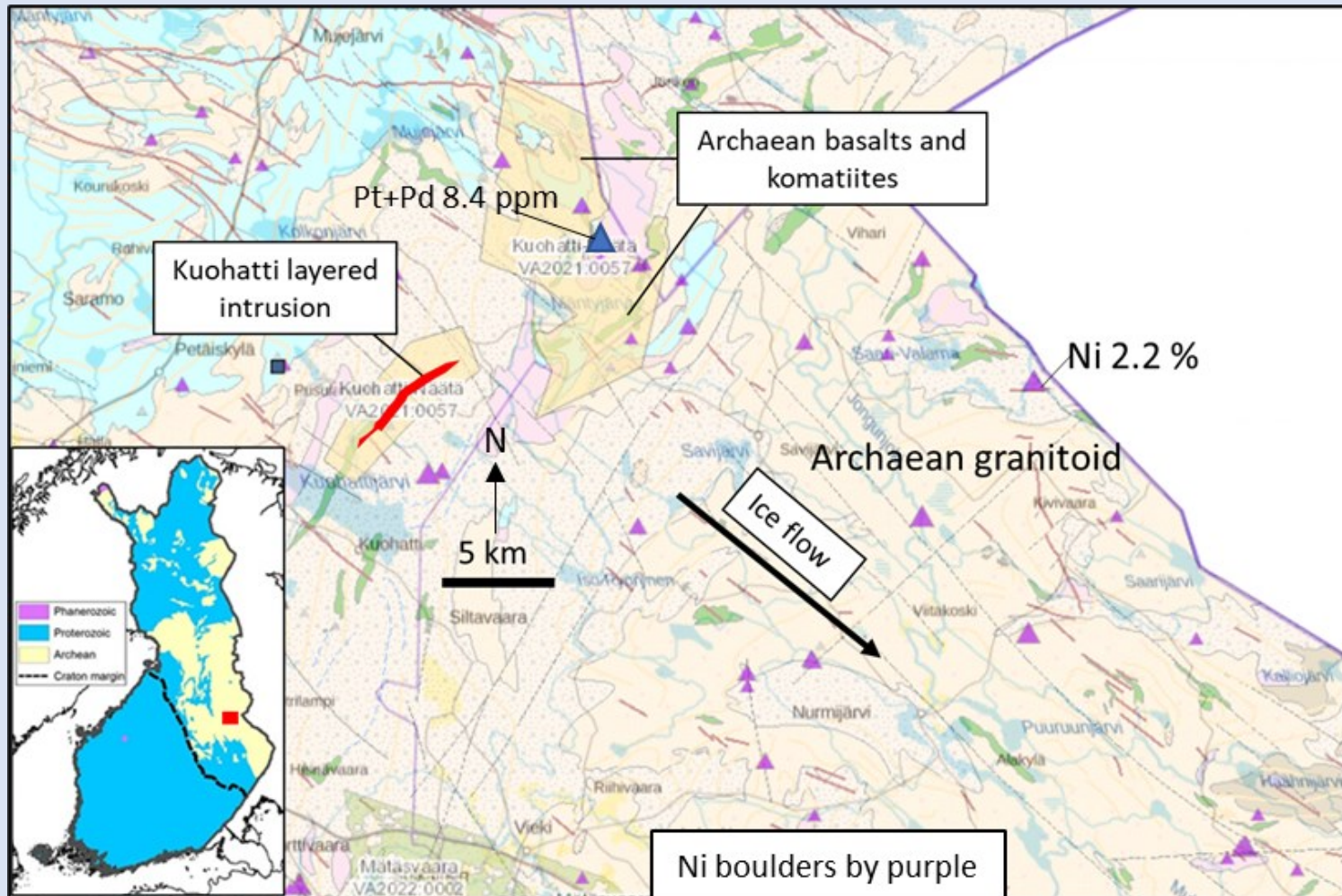
Nurmes-Lieksa Ni-Cu-Co- (PGE) Targets

- Archaean komatiites occur in eastern Finland, in the Nurmes-Lieksa region, hosting also nickel deposits like [Tainiovaara](#) in Lieksa
- Ni-rich boulders up to 2.2 % Ni have been found in the past, still without the known bedrock source, pointing out the nickel potential of the area.
- Another economically interested formation, potential for Ni-Cu-Co and PGEs + Au, is the Kuohatti mafic-ultramafic layered intrusion, studied with bedrock mapping, lithogeochemistry, geophysics and some drilling by the Geological Survey of Finland during 2000's and 2010's.



The Kuohatti-Näätä reservation area held by Suomen Malmitutkimus Oy is located northeast of Nurmes Town. Other Companies' reservation areas are also shown west of Lieksa. Historical drilling sites are indicated by green dots. Map produced from GTK MDaE map server 27 June 2022.

Kuohatti-Näätä reservation (light brown in the map) includes the Kuohatti layered intrusion and Archaean basalt belts with komatiites, both with limited exploration. Ni-rich komatiite boulders up to 2.2 % Ni have been found down ice in the past, still without the known bedrock source, pointing out the nickel potential of the area. One gabbro boulder has 8.4 ppm Pt+Pd. Local gold-bearing (2-3 g/t) boulders in the contact zone of basalts-komatiites and metasediments suggest that the zone is gold-enriched.



Kuohatti layered intrusion

The Kuohatti target is a 5 x 0.4 km subvertical layered intrusion. It consists mainly of gabbroic rocks - leucocratic gabbro, gabbro and anorthosite. Ultramafic rocks include pyroxenite, peridotite and tremolite-chlorite schist (Sorsa 2017, GTK map). The latter includes sulphide-rich parts intersected by GTK drilling but assayed only sporadically. One Co-rich boulder (0.26 % Co, 0.70 % Cu, 0.33 ppm Au) has been found above the intrusion, which might originate from the sulphide-rich tremolite-chlorite schist. Gold values up to 0.8 ppm were assayed also from gabbro (0.5 m drill core sample) in the petrological study by the Geological Survey of Finland (GTK).

Based on the present assay data the highest potential seems to be in cobalt and gold with some copper. Recent drill core assaying yielded two significant intersections indicating Co-Au enrichment at Kuohatti:

BH R9: 5.15 m (from 98.70 m) @ 161 ppm Co, 0.48 ppm Au and 368 ppm Cu.

Including 1.0 m (from 100.70 m) @ 1.72 ppm Au and 0.9 m (from 102.40 m) @ 544 ppm Co.

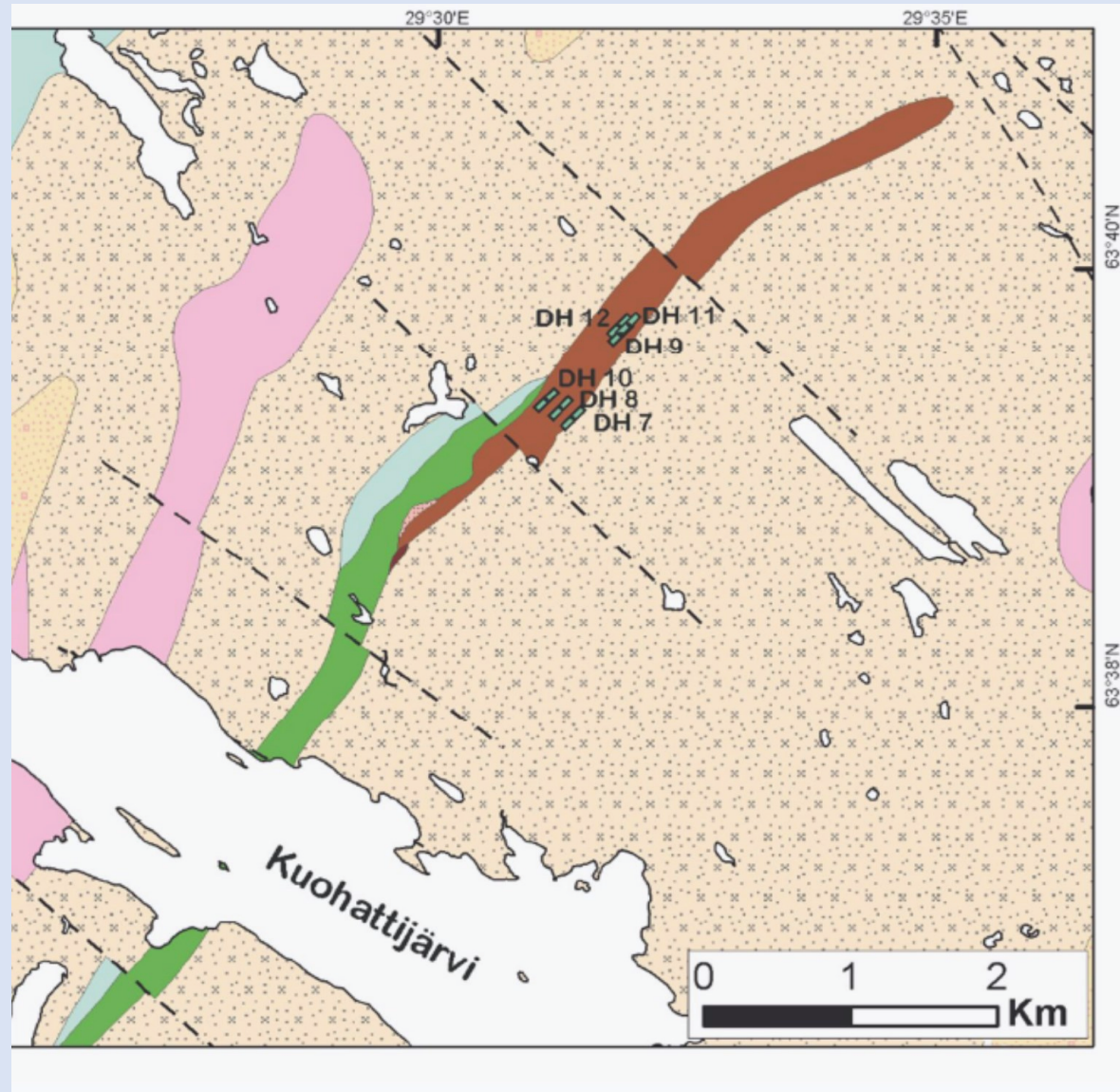
BH R12: 2.0 m (from 86.55 m) @ 434 ppm Co, 0.82 ppm Au and 699 ppm Cu.

BH R11 also has elevated Co, Au and Cu values (Au \leq 0.12 ppm), BH R10 has elevated Au contents (\leq 0.17 ppm)

True width is estimated to be 70-80 % from the intercept.

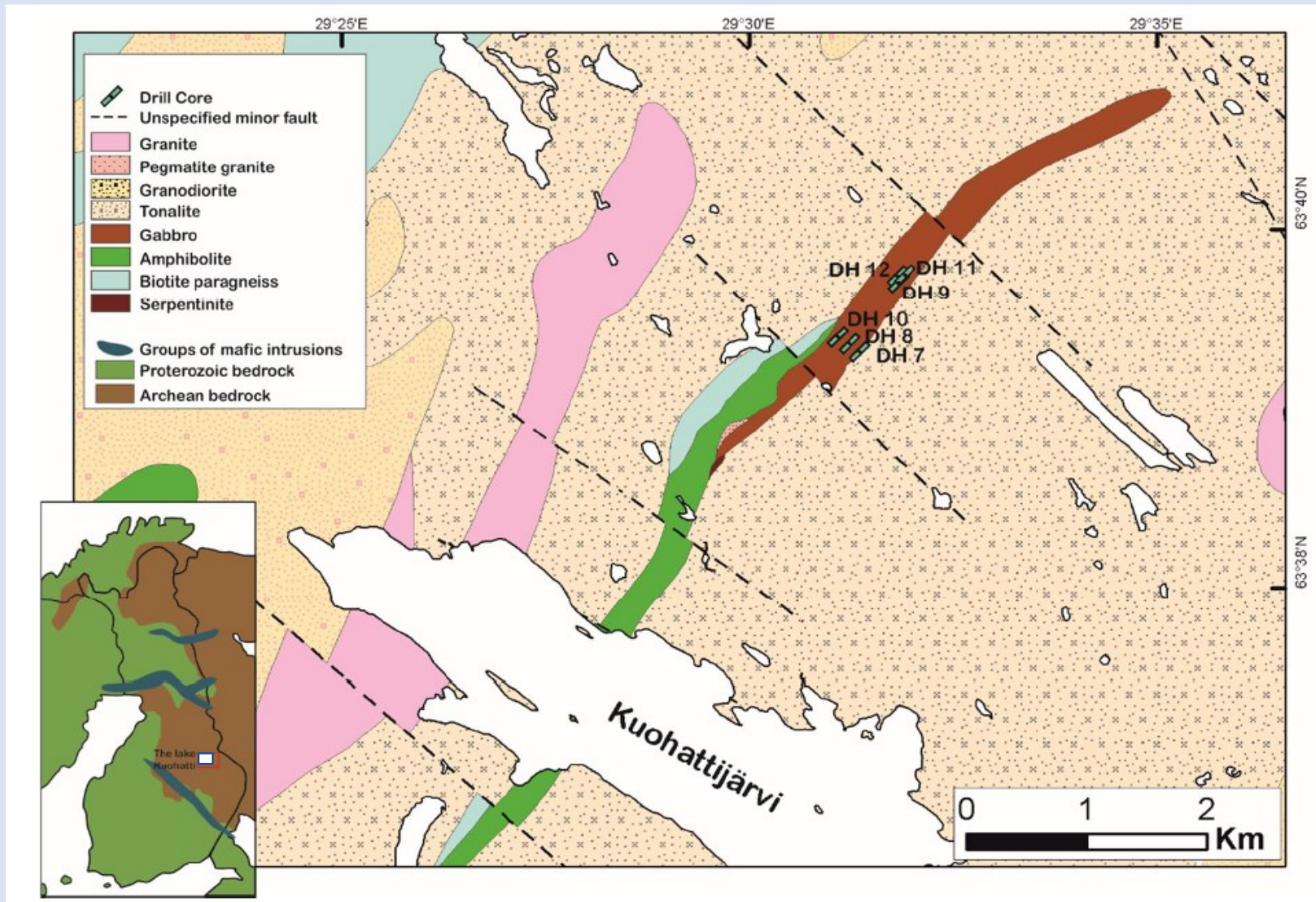
Next steps for the Kuohatti study

- Compilation of the existing geodata into 3D form
- Review of the outcrops within the intrusion area
- Exploration license application
- Geophysical ground/Drone surveys
- Drilling

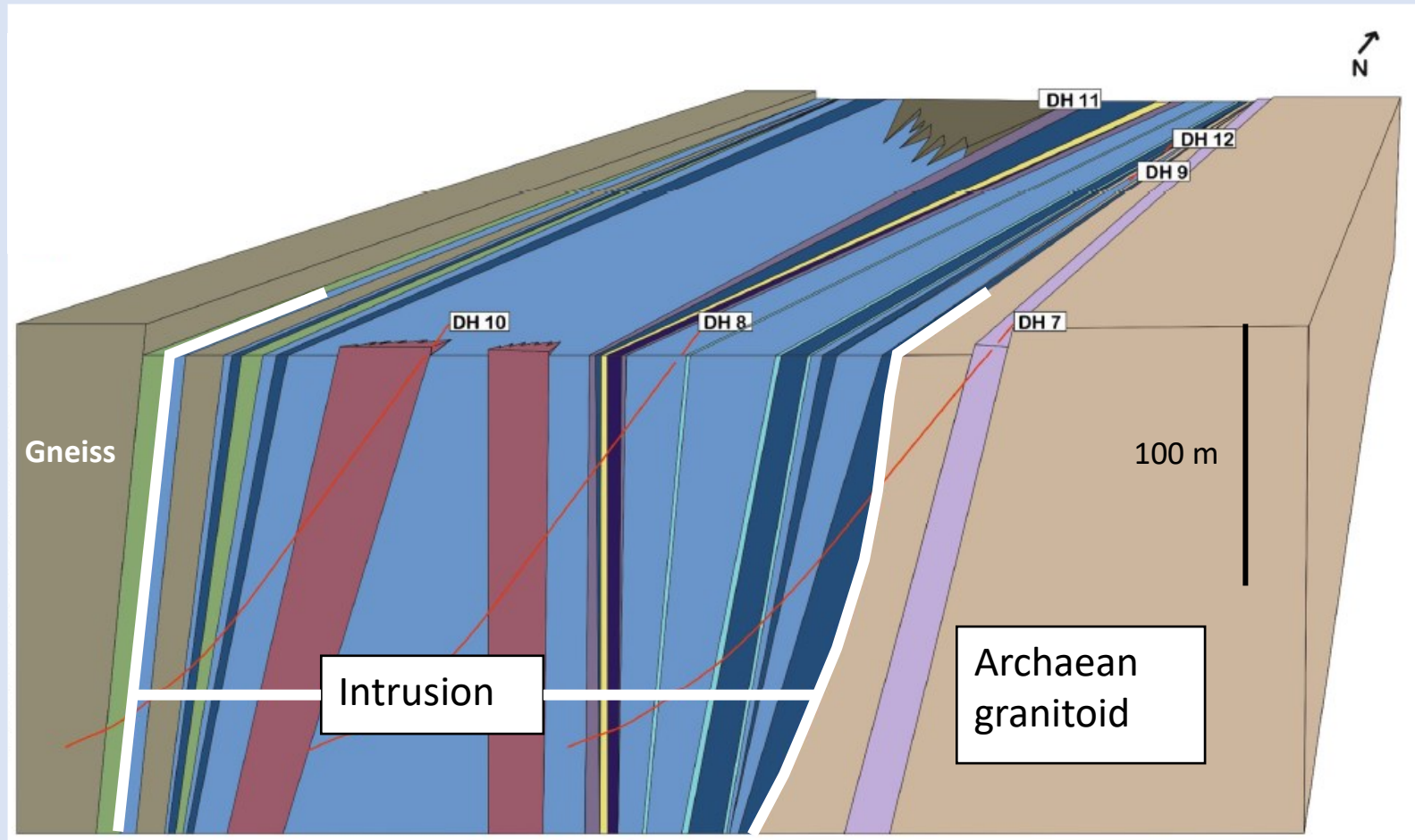


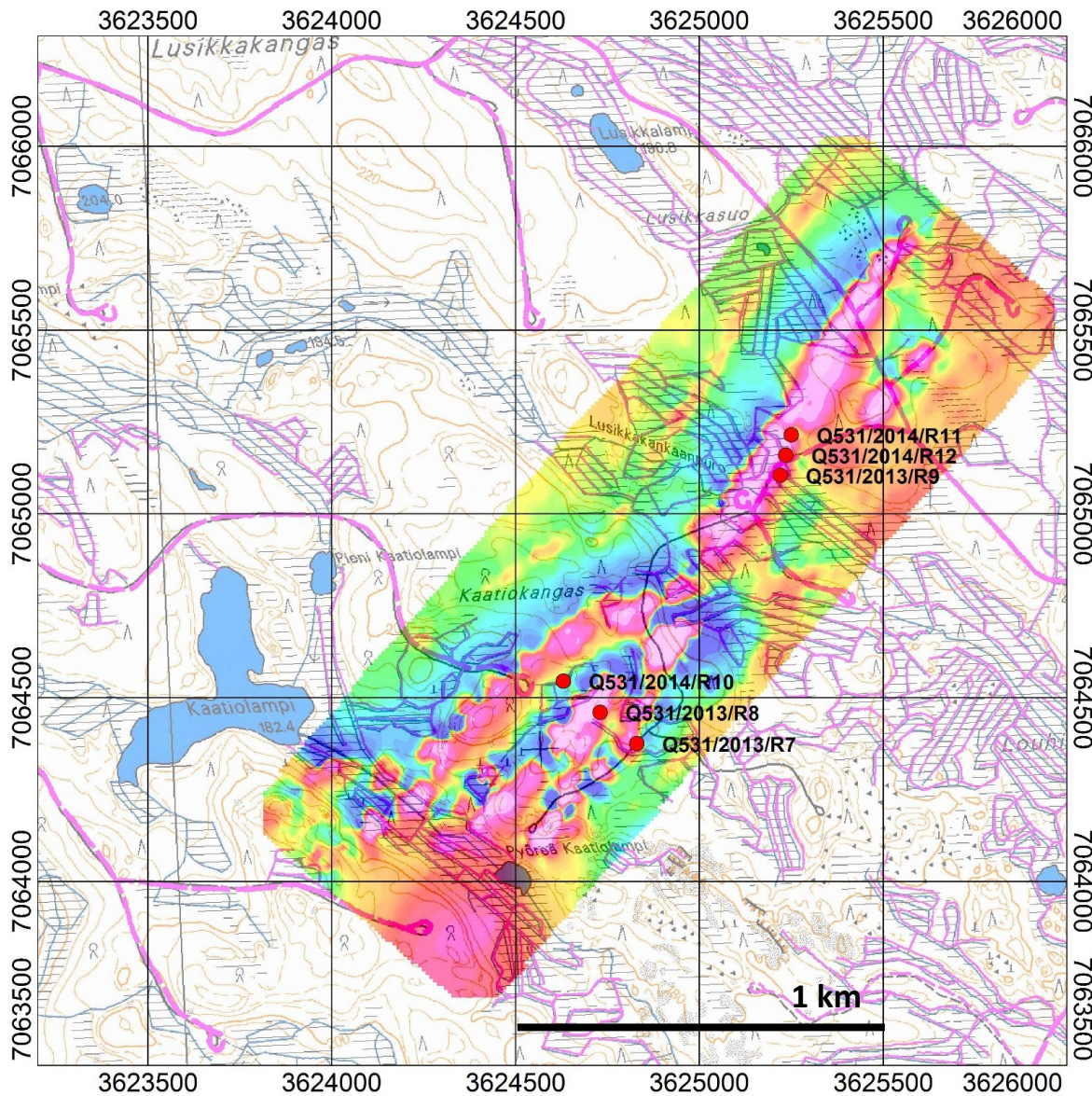
Lithological map of the Kuohatti intrusion area

(from Sorsa 2017)



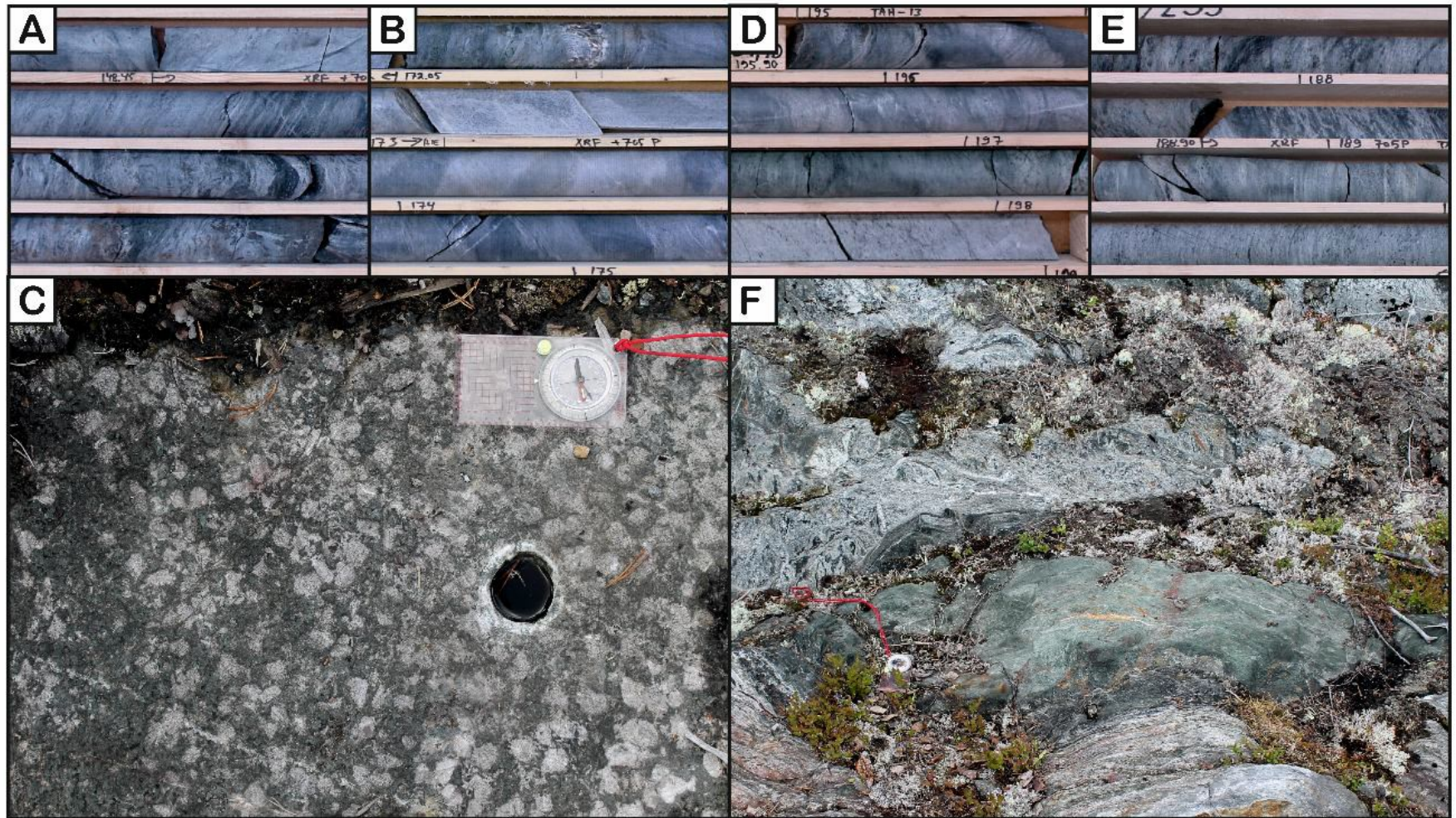
Schematic model for the Kuohatti layered intrusion (modified from Sorsa 2017)





Magnetic ground survey (GTK, purple=maximum) from the southern end of the Kuohatti intrusion with a distinct positive anomaly on the intrusion. Drill hole locations marked (from Sorsa 2017).

Rock types from the Kuohatti intrusion



A) Leucocratic gabbro from DH 7, B) Anorthosite from DH 7, C) Plagioclase phenocryst filled gabbro in outcrop, D) Pyroxenite from DH 7, E) Peridotite from DH 7 and F) Tremolite-chlorite schist and gabbro in outcrop. Modified from Sorsa (2017)



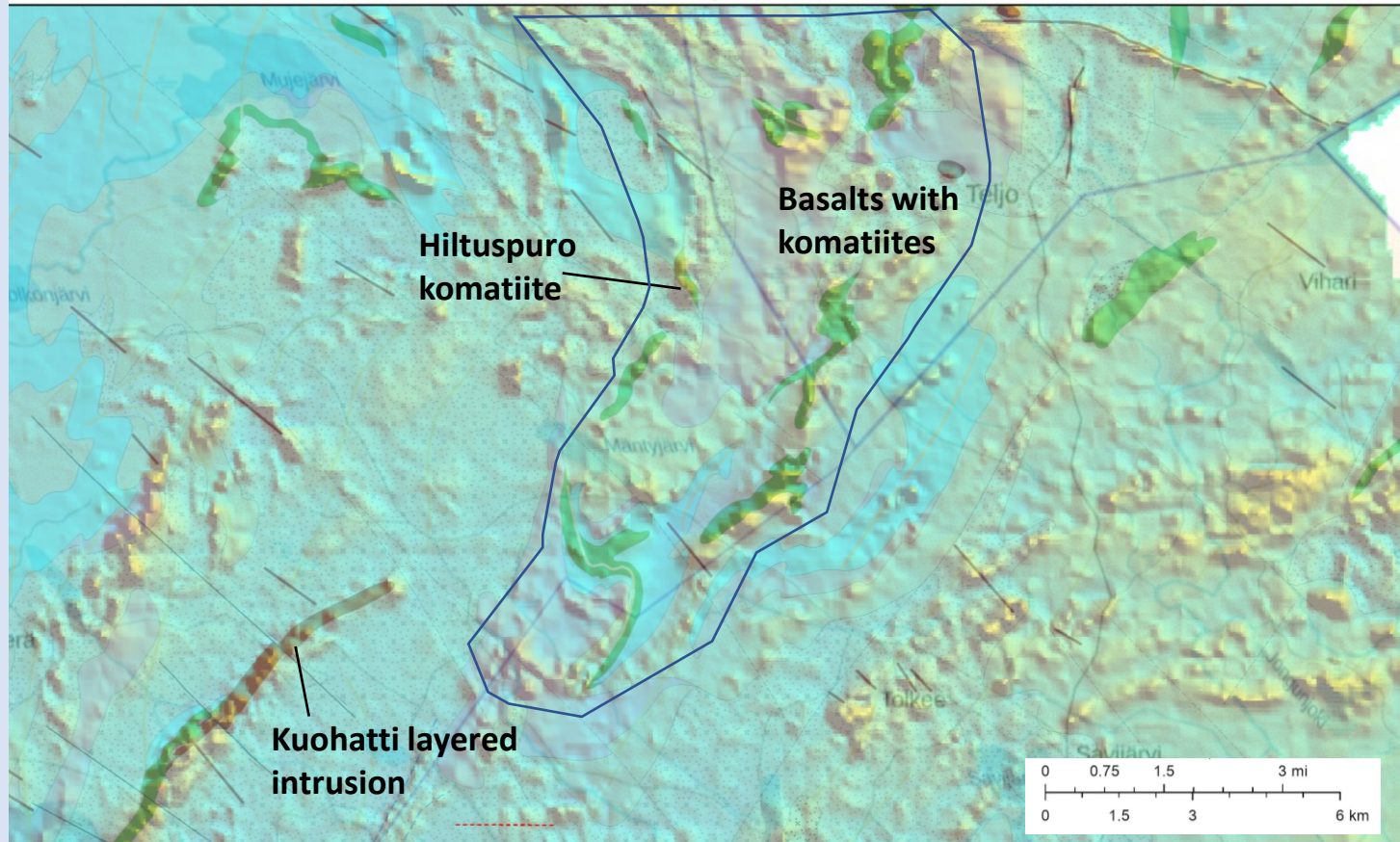
Pyrrhotite-pyrite rich chlorite schist in drill core at Kuohatti

BH R12: 87.55 – 88.55m, 626 ppm Co, 1.15 ppm Au



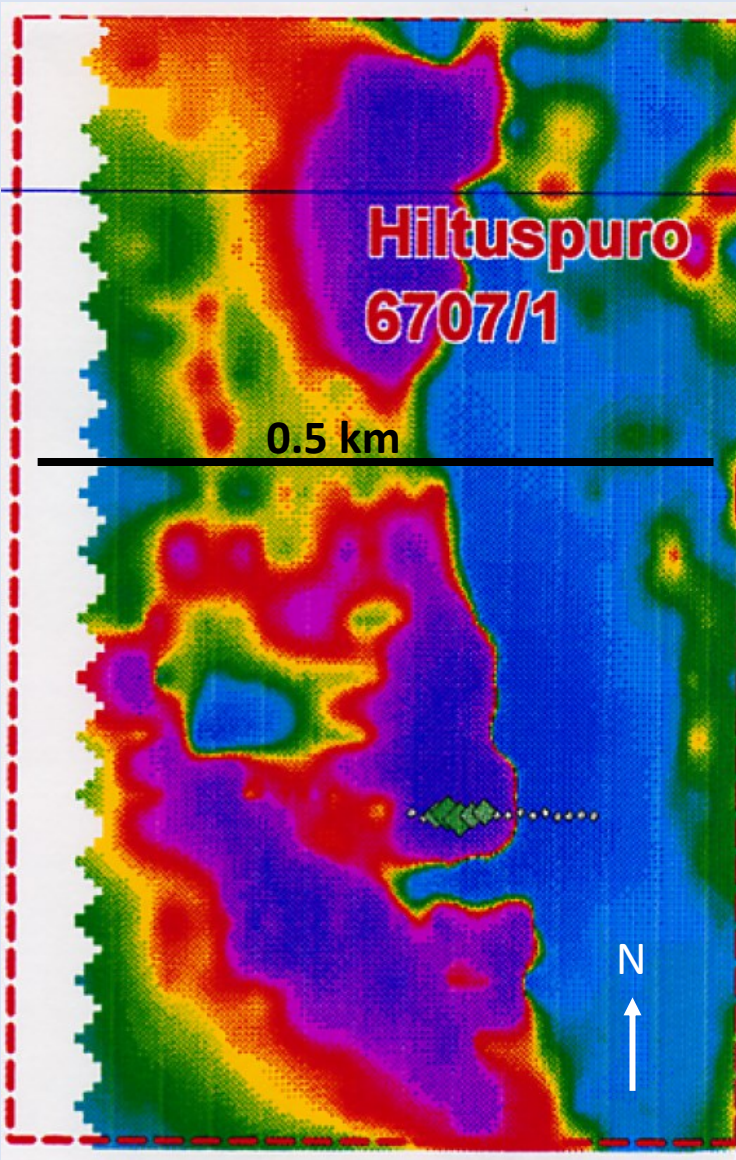
Näätävaara komatiite belt

Komatiites are found with the basalts shown by green in the combined airborne magnetic and lithological map below. Komatiites occur as lenses, which are traceable by the positive magnetic anomalies.



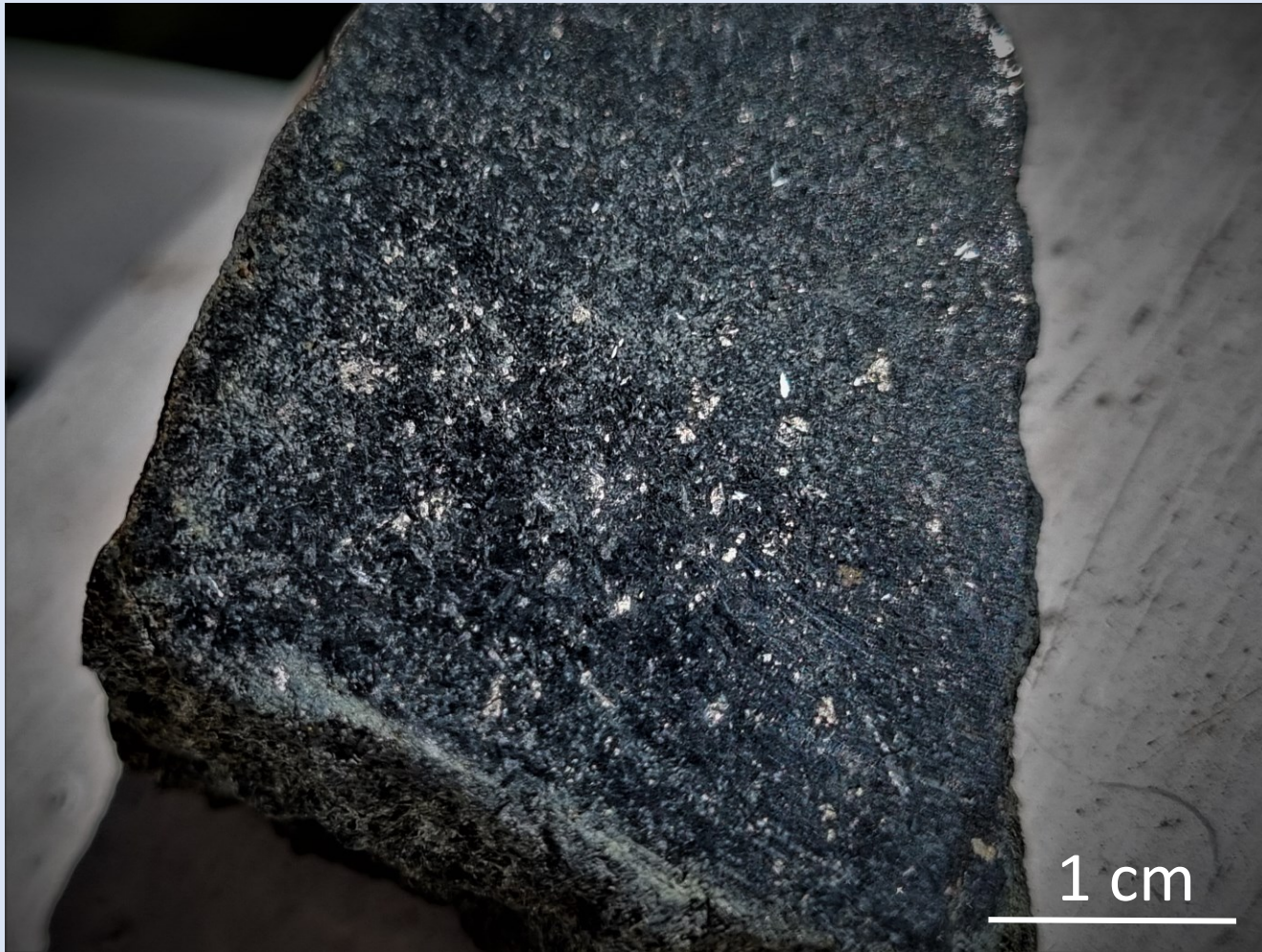
Map produced from the GTK MDaE map server 29 June 2022

Näätävaara komatiite belt



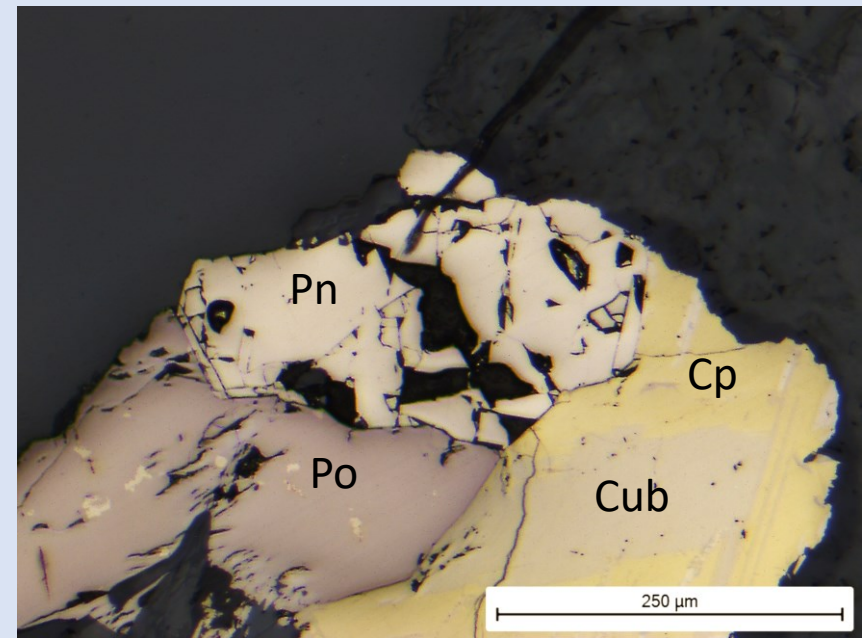
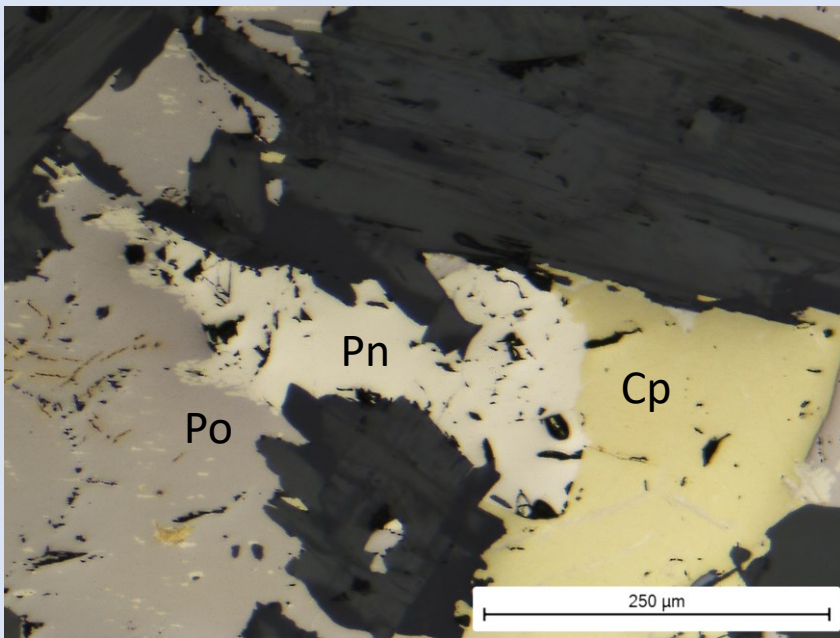
- The Hiltuspuro komatiite target was studied by Outokumpu Oy during 1990's with geological mapping, geophysics and one geochemical sampling line
- Komatiite (serpentinite) lenses cause distinct positive magnetic anomalies, also indicating the W-NW dip of the lenses

Ground magnetic map on the Hiltuspuro komatiite target (purple = maximum). From Outokumpu Oy [Report](#).



Piece from a local komatiite boulder (amphibole rock) with fine-grained sulphide dissemination at Näätävaara. Sample Näätävaara_3. Boulder assay 0.17 % Ni, 0.12 % Cu, 0.015 % Co, 1.6 % S, 24.6 % MgO(vf).

The occurrence of pentlandite as grains in the sulphide fraction suggests a nickel sulphide ore formation has taken place in the komatiite .



Pyrrhotite-pentlandite-chalcopyrite assemblages in Näätävaara_3 sample.