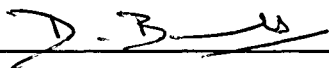


NGU Report 98.084

Ecogeochemistry Kola -
Collection of Geochemical Maps
not Presented in the Kola Atlas

REPORT

Report no.: 98.084		ISSN 0800-3416	Grading: Open	
Title: Ecogeochemistry Kola - Collection of Geochemical Maps not Presented in the Kola Atlas				
Authors: Clemens Reimann		Client: Ministry of the environment/NGU		
County: Finnmark (N-Finland, NW-Russia)		Commune:		
Map-sheet name (M=1:250.000) NONE		Map-sheet no. and -name (M=1:50.000)		
Deposit name and grid-reference:		Number of pages: 68	Price (NOK): 85,-	
		Map enclosures:		
Fieldwork carried out: 1995	Date of report: 28.04.1998	Project no.: 2590.02	Person responsible: 	
<p>Summary:</p> <p>COLLECTION OF GEOCHEMICAL MAPS NOT PRESENTED IN THE KOLA ATLAS</p> <p>This report collates over 60 further geochemical maps from the "Ecogeochemistry Kola" project. These maps were not included in the published atlas (Reimann et al., 1998) for various reasons:</p> <ul style="list-style-type: none"> ■ redundancy, e.g., the total concentrations of elements like Ca, Fe and Na were determined both by XRF and INAA (the XRF-maps are shown in the atlas) ■ data of questionable quality (e.g., all results of the water extractions of soil samples by ion chromatography (Cl^-, F^-, Br^-, NO_3^-, PO_4^{3-}, SO_4^{2-}) which were poorly reproducible) ■ elements where so many results were below detection that it was no longer possible to construct reliable colour surface maps for the atlas. Among these are Hg and Sn analysed by INAA with only 1 or two values above detection limit. <p>In general, the maps presented here should be used with great care and awareness of possible data quality problems is a necessity. The main reason for presenting these maps is for documentation purposes to give easy access to these data. The sampling, analytical and mapping techniques used are detailed in the atlas text (Reimann et al., 1998). There is one major difference, however, between these maps and the maps presented in the atlas: for the majority of maps the class boundaries were chosen manually (based on the CDF-diagram) rather than being based on the boxplot. This is easily visible when comparing the CDF-diagram with the class boundaries. There are a few elements where all results were below detection limit (e.g. Ir in topsoil and C-horizon - see data tables in the atlas) - no maps are shown in these cases.</p>				
Keywords:	Ecogeochemistry		Kola Peninsula	
Maps	Topsoil		Humus	
Moss	B-Horizon		C-Horizon	

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REFERENCES



General overview map of the Kola Project Area. Industries include: Kirkenes: Fe mining and processing, Nikel: Ni smelting, Zapoljarniy: Ni mining and roasting, Olenegorsk: Fe mining and processing, Monchegorsk: Ni refinery, Kirovsk: open cast mining of alkaline rocks (apatite), Apatity: apatite processing plant, coal fired power plant, Kovdor: Fe mining and processing, Kandalaksha: Al smelter.



²⁴¹Am

KOLA ECOGEOCHEMISTRY Regional Mapping 1995

CKE-GTK-NGU

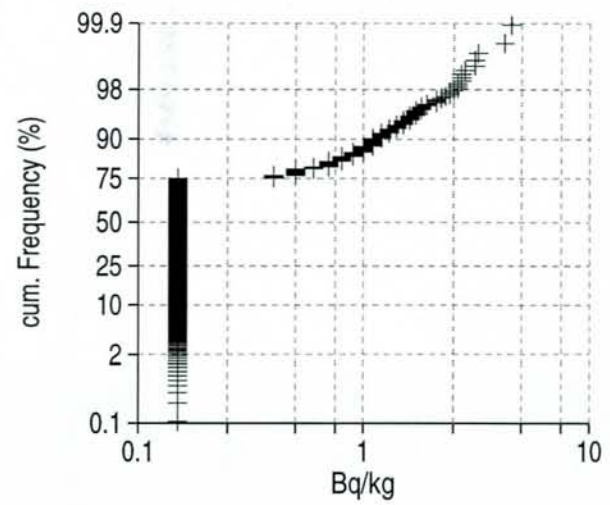
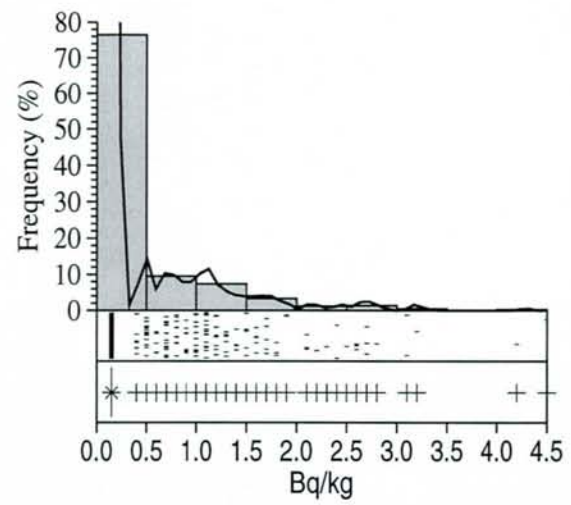
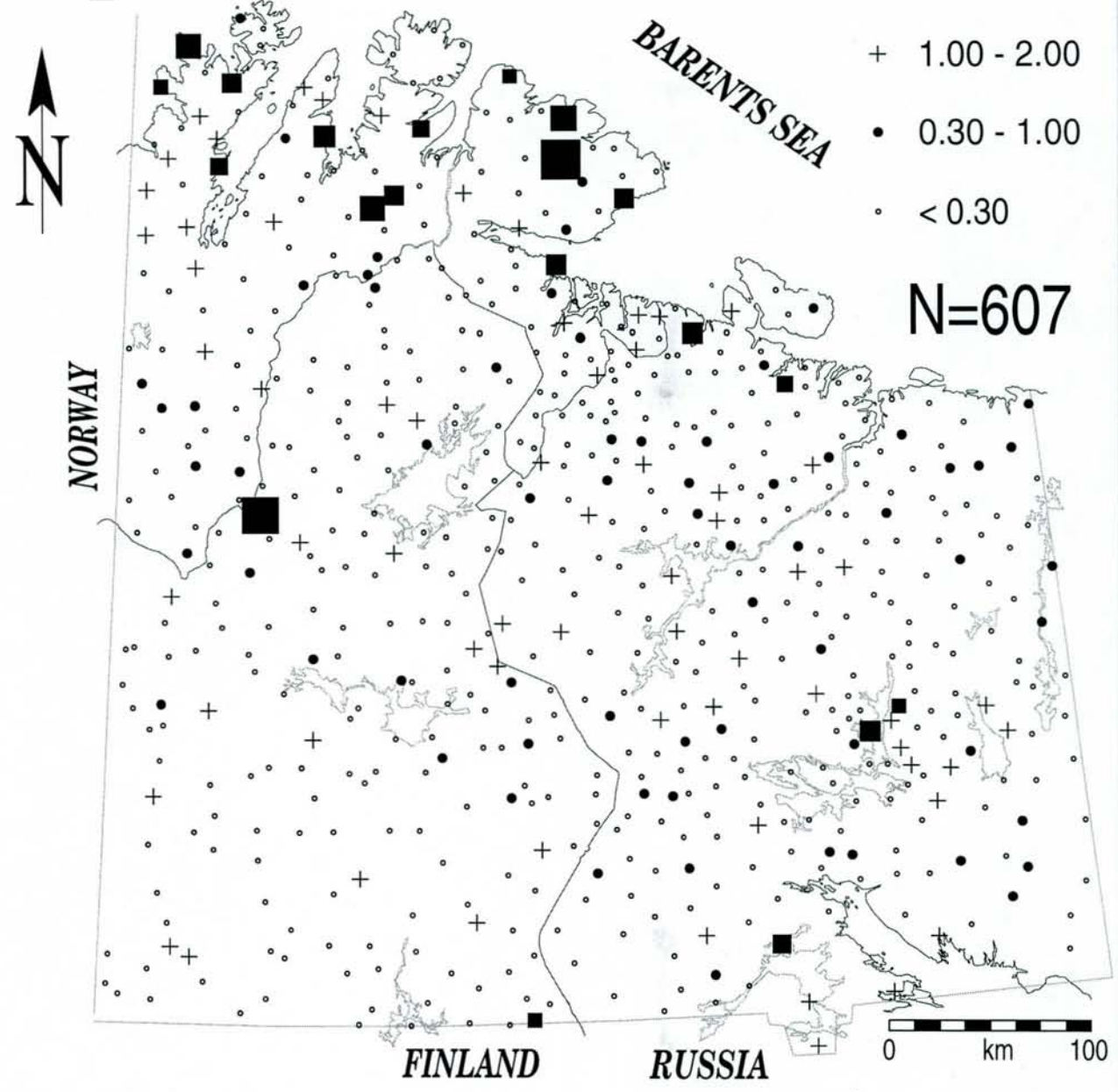
Topsoil

0-5 cm, air dried, <2mm, gamma spectrometry

Bq/kg

- 2.00 - 4.50
- + 1.00 - 2.00
- 0.30 - 1.00
- < 0.30

N=607



241-AMERICIUM IN TOPSOIL

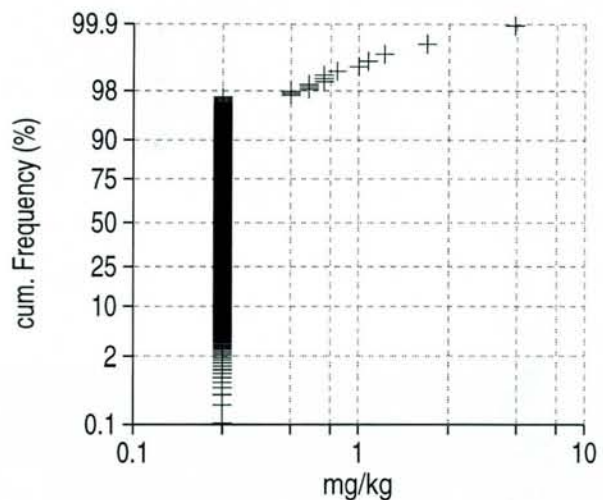
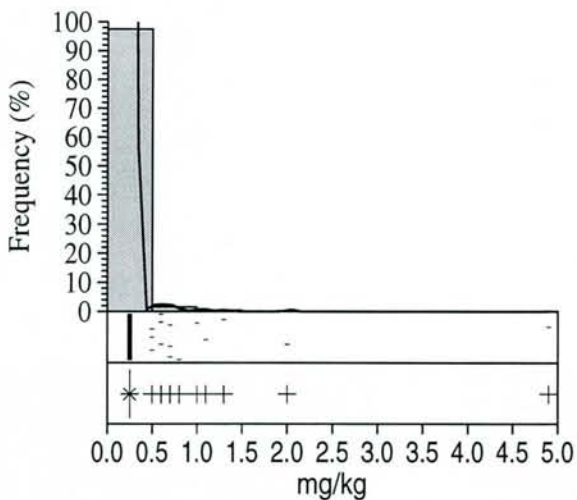
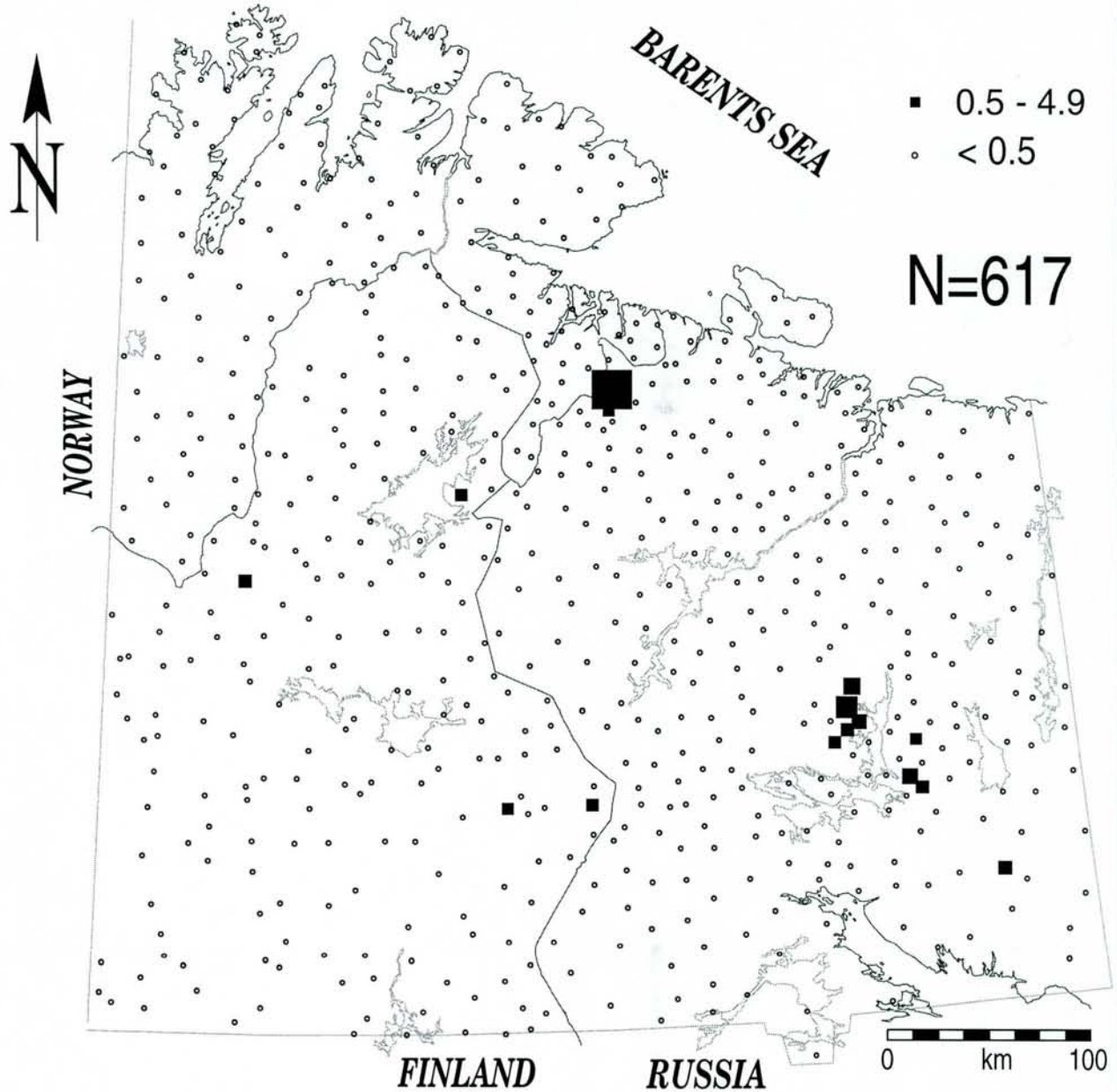


As Humus

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

mg/kg

air dried, <2 mm, 1M amm. acetate, ICP-AES



ARSENIC IN HUMUS



As Topsoil

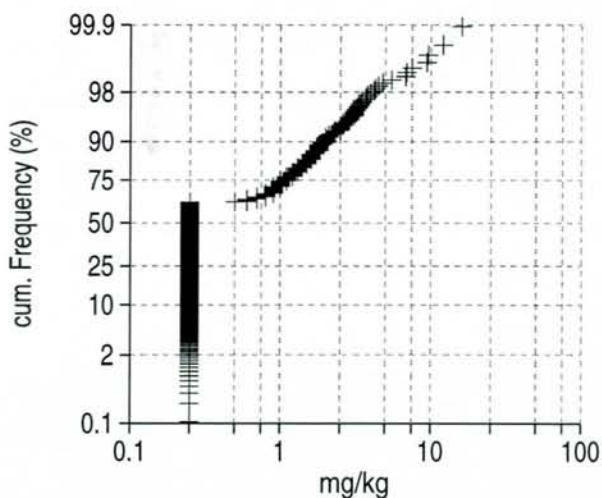
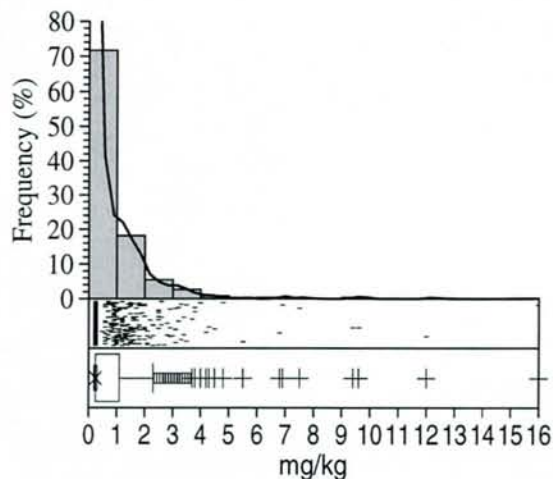
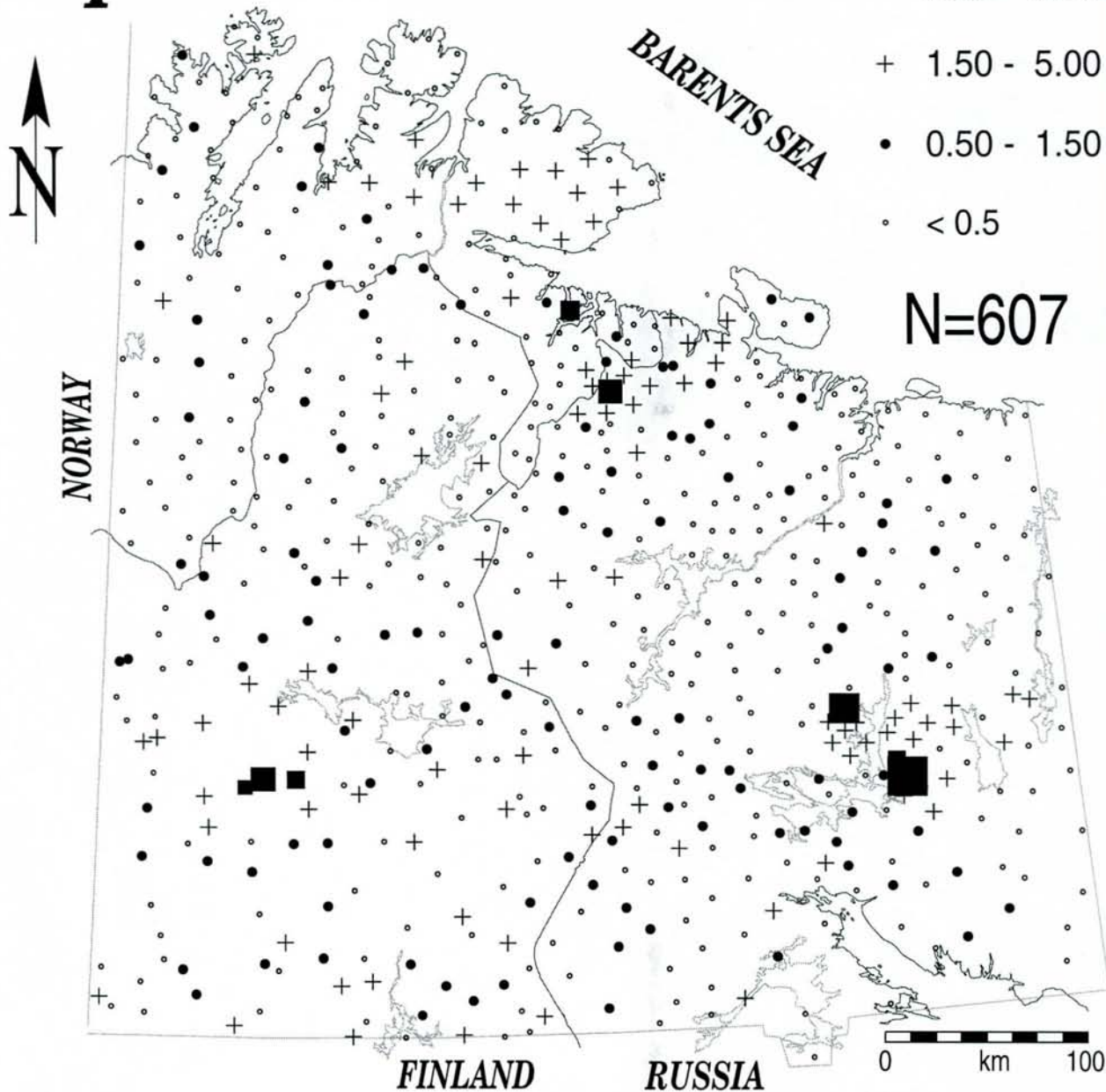
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

0-5cm, air dried, <2 mm, INAA

mg/kg

- 5.00 - 16.00
- + 1.50 - 5.00
- 0.50 - 1.50
- < 0.5

N=607



ARSENIC IN TOPSOIL



As

KOLA ECOGEOCHEMISTRY

Regional Mapping 1995

CKE-GTK-NGU

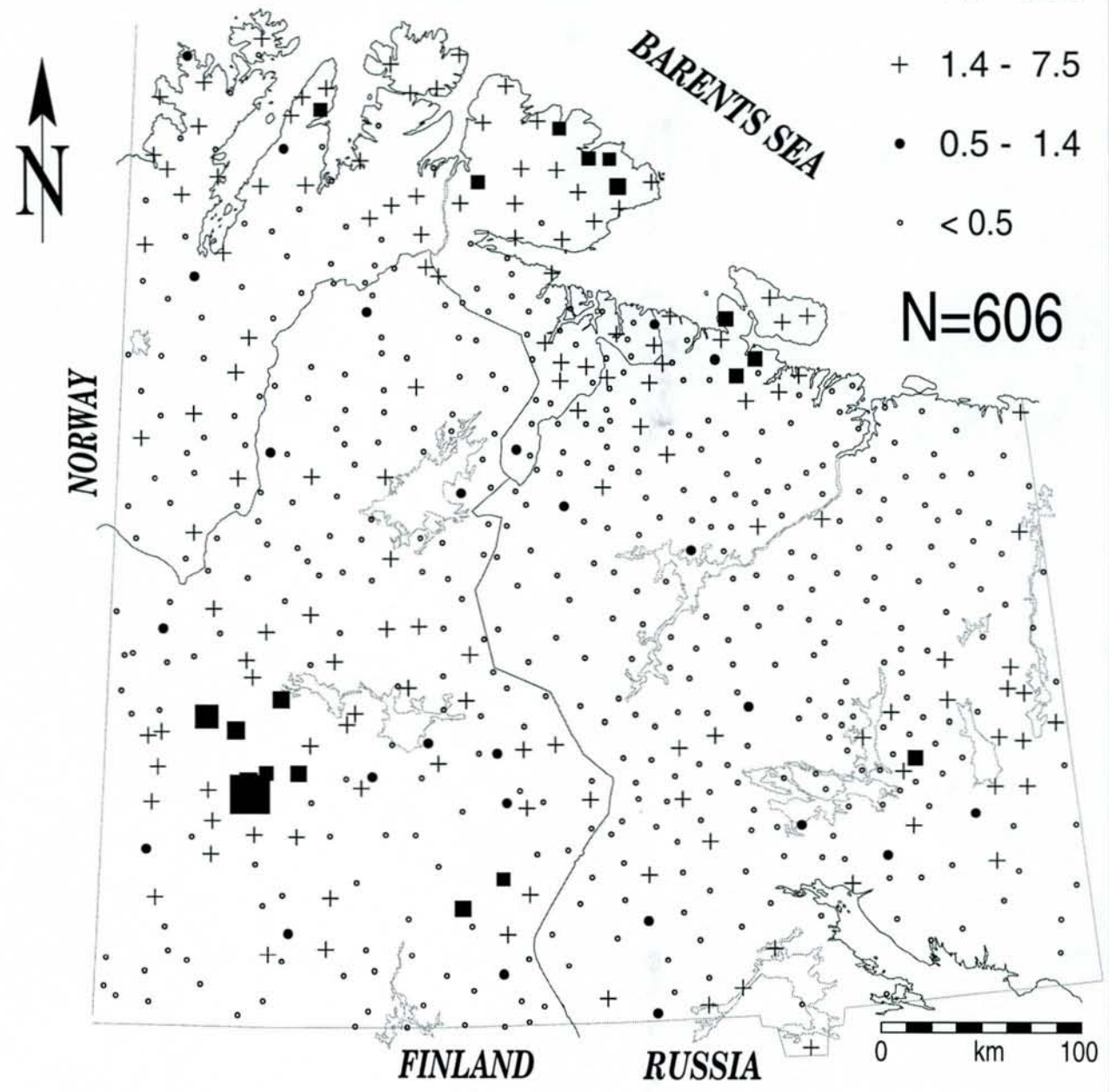
C-horizon

air dried, <2 mm, INAA

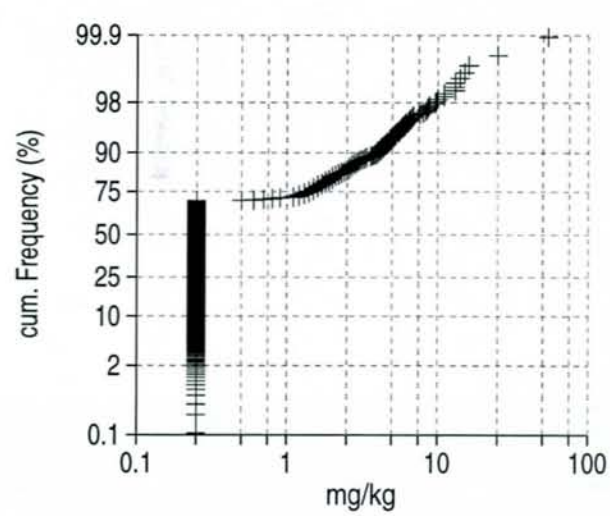
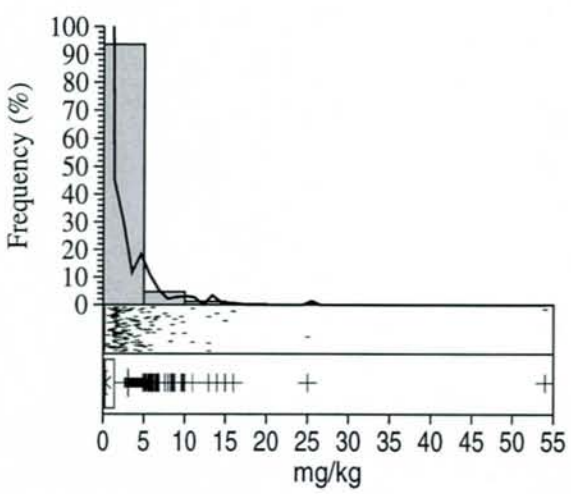
mg/kg

- 7.5 - 54.0
- + 1.4 - 7.5
- 0.5 - 1.4
- < 0.5

N=606



ARSENIC IN C-HORIZON





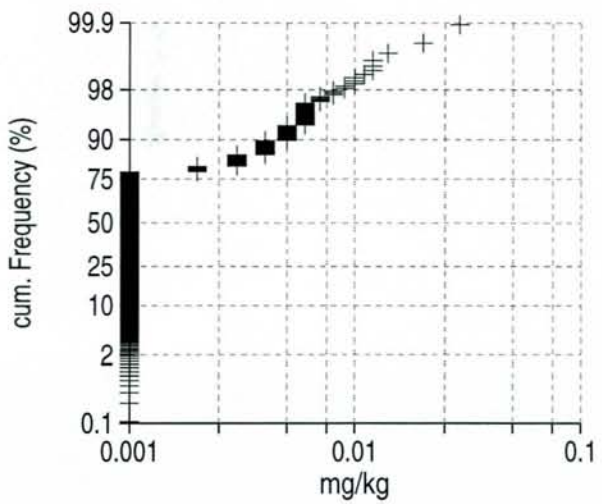
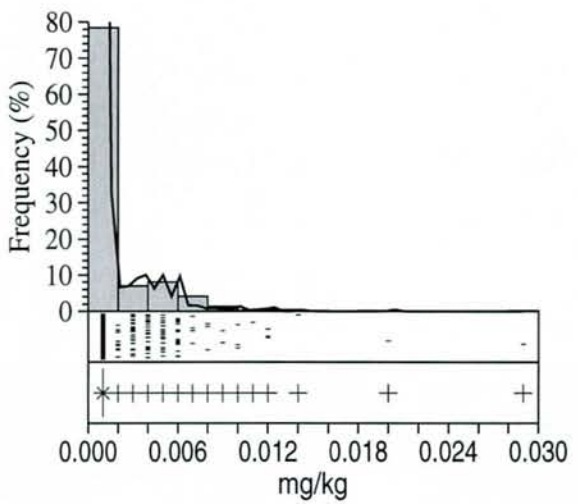
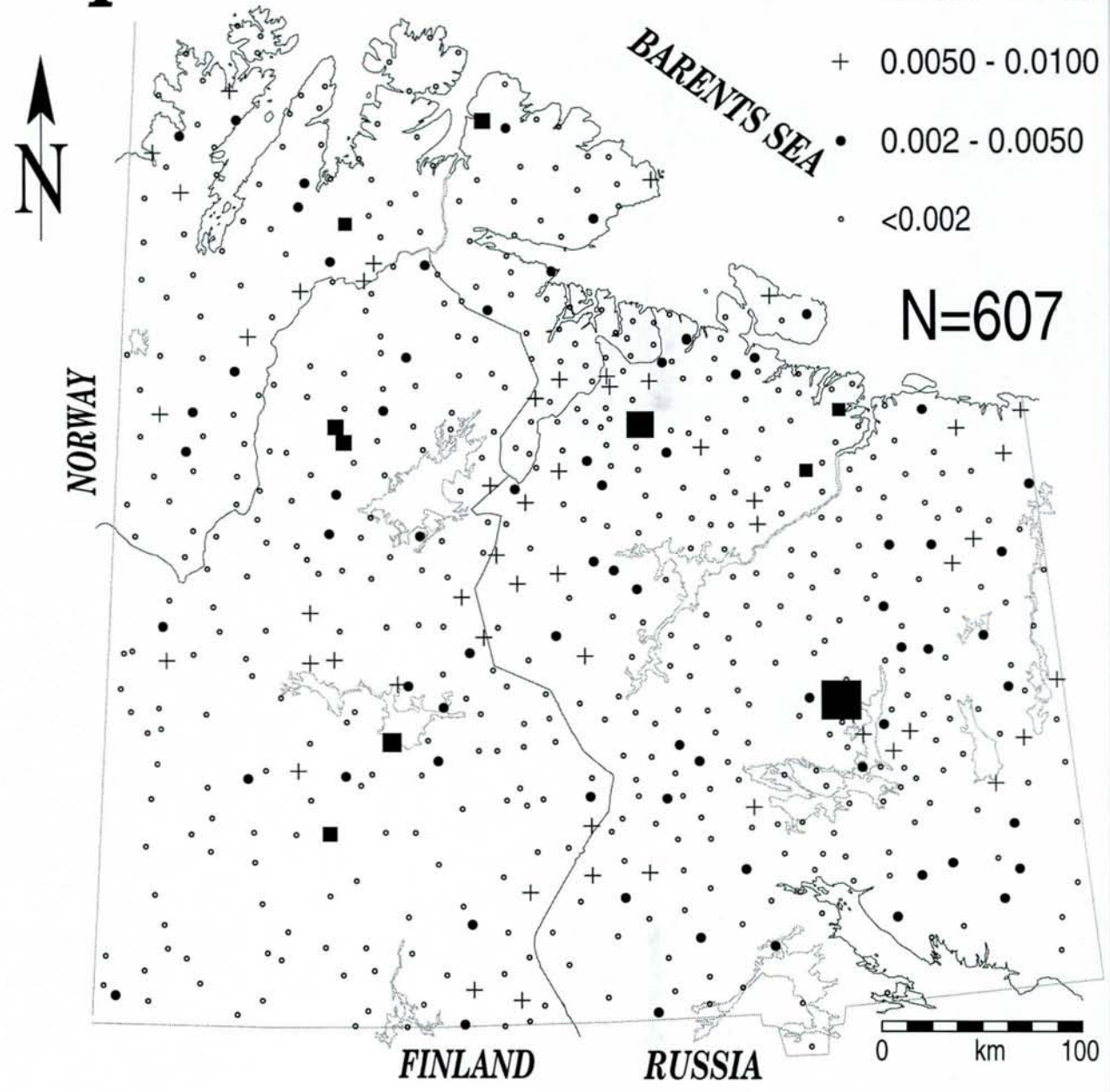
Au Topsoil

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

0-5cm, air dried, <2 mm, INAA

mg/kg

- 0.0100 - 0.0290
- + 0.0050 - 0.0100
- 0.002 - 0.0050
- <0.002



GOLD IN TOPSOIL



Au

KOLA ECOGEOCHEMISTRY

Regional Mapping 1995

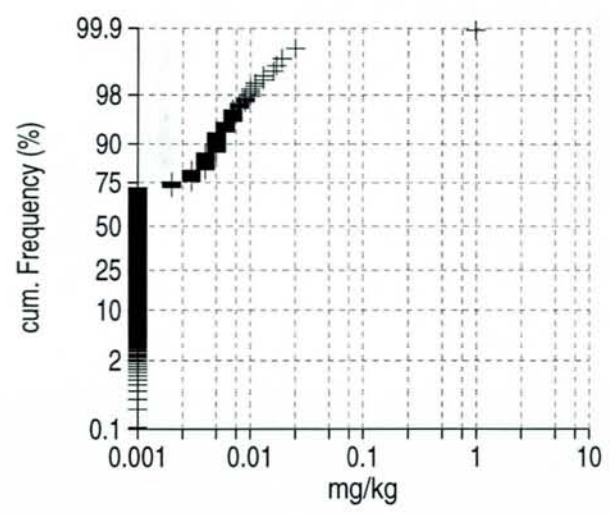
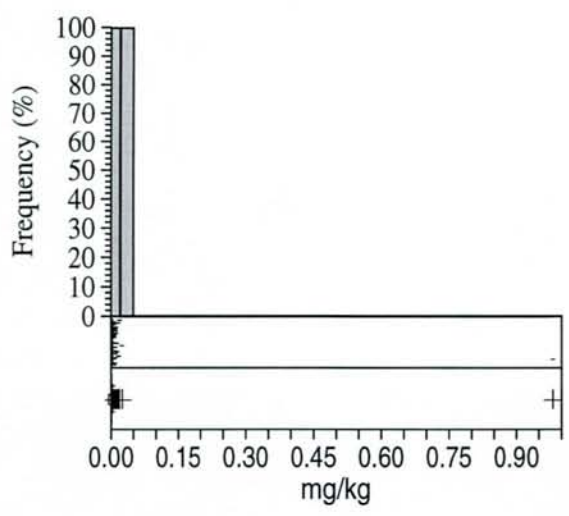
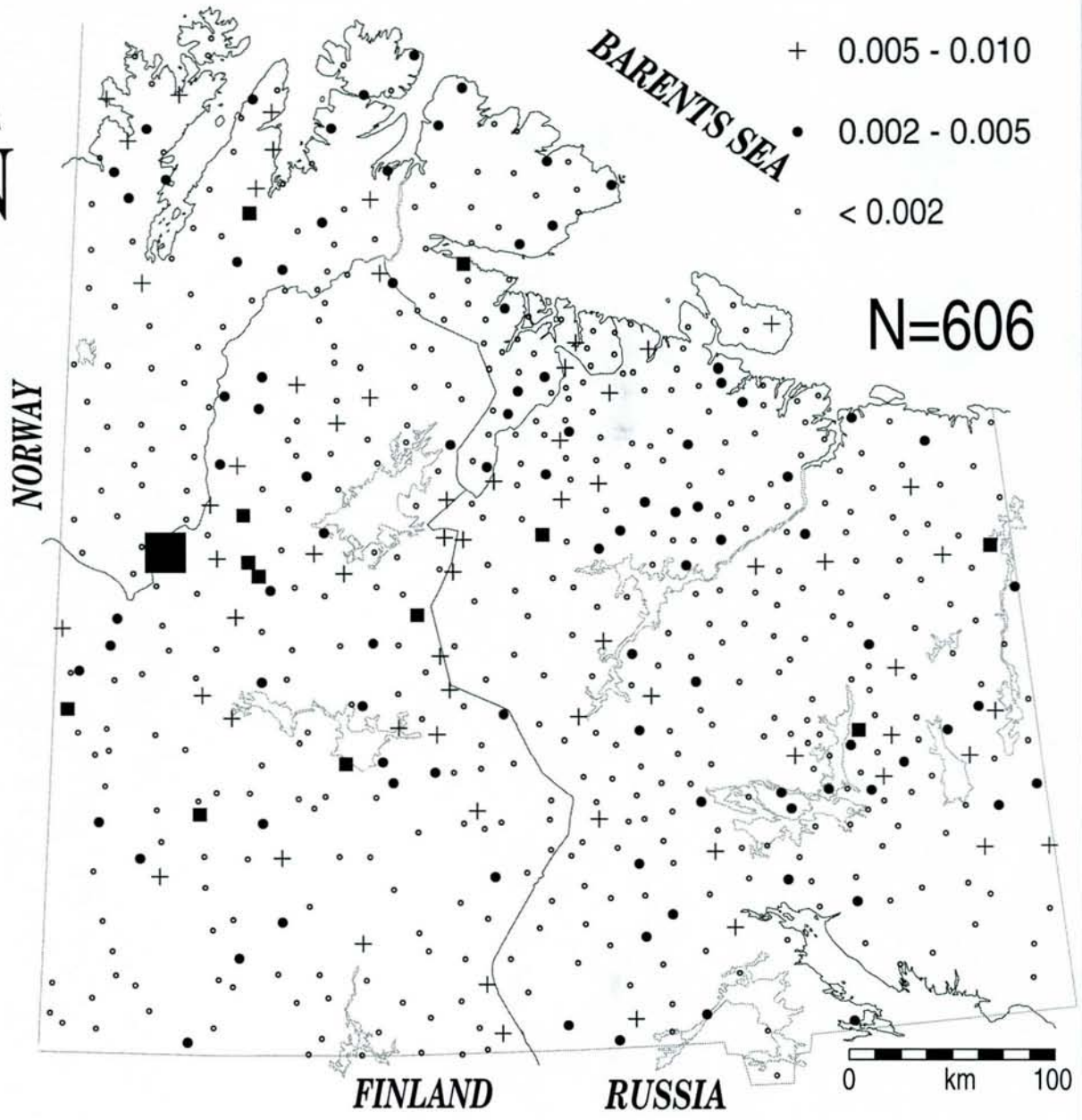
CKE-GTK-NGU

C-horizon

air dried, <2 mm, INAA

mg/kg

- 0.010 - 0.981
- + 0.005 - 0.010
- 0.002 - 0.005
- < 0.002



GOLD IN C-HORIZON

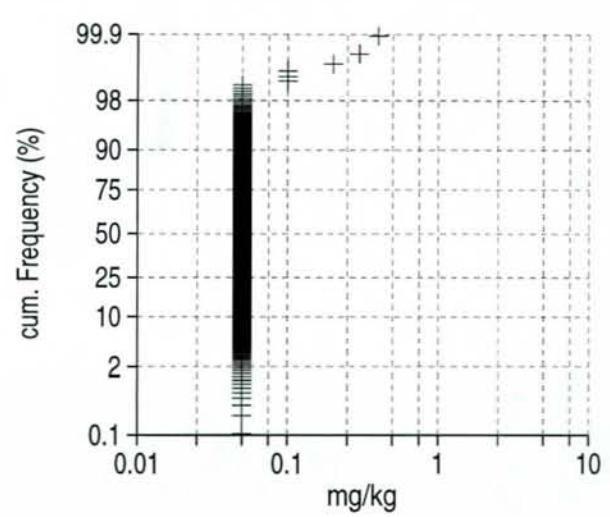
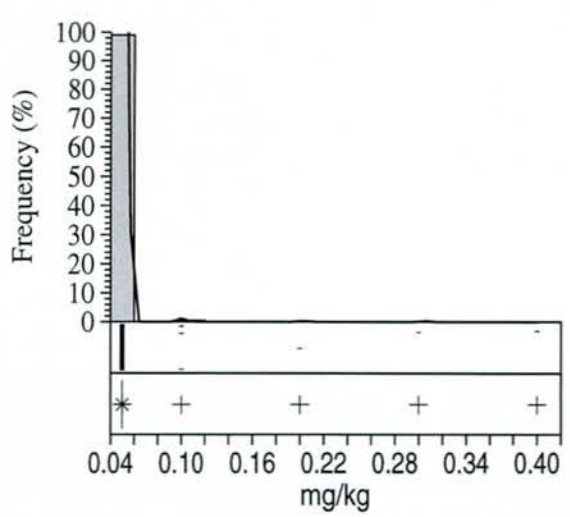
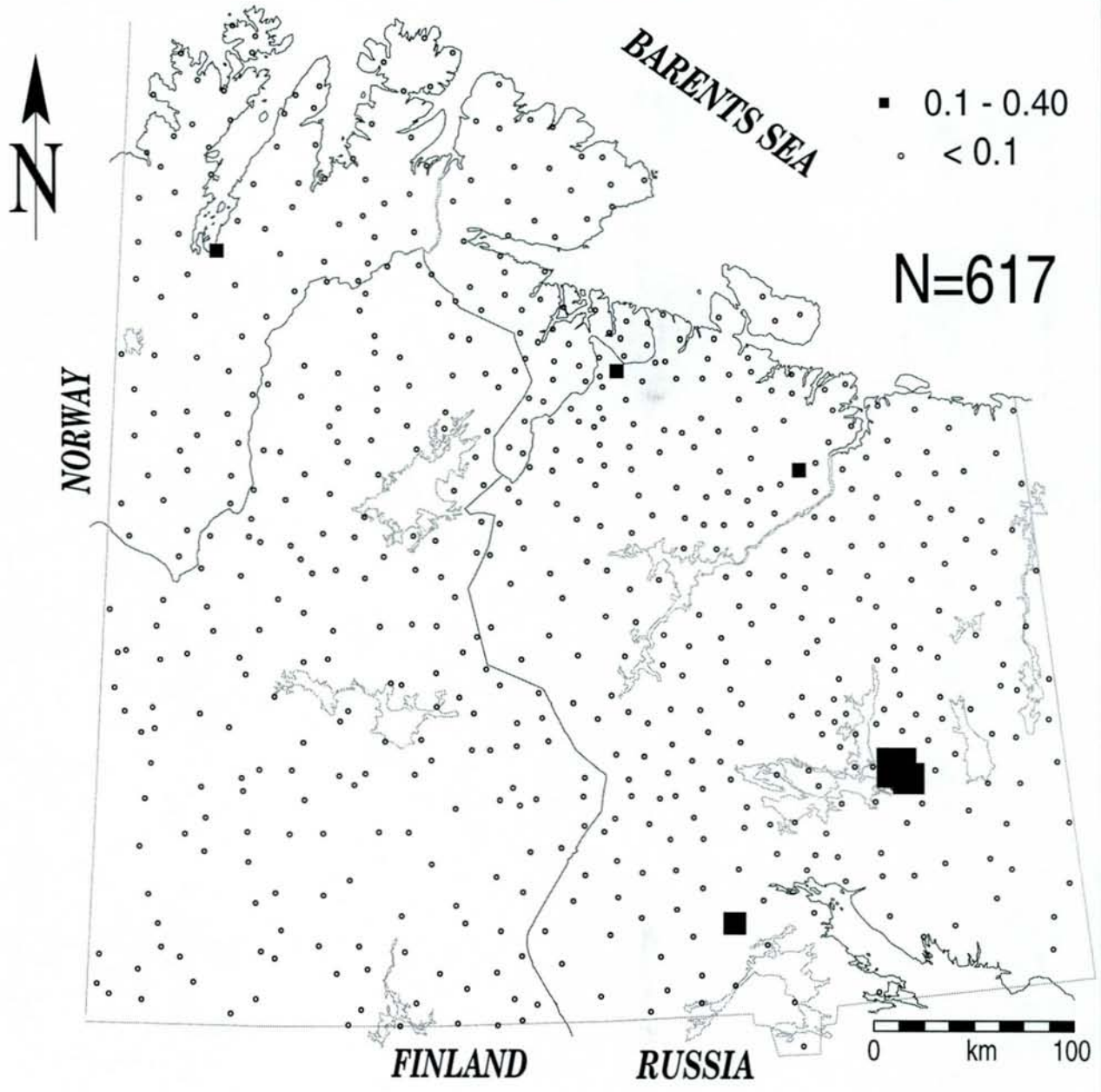


B Humus

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

mg/kg

air dried, <2 mm, 1M amm. acetate, ICP-AES



BORON IN HUMUS



B

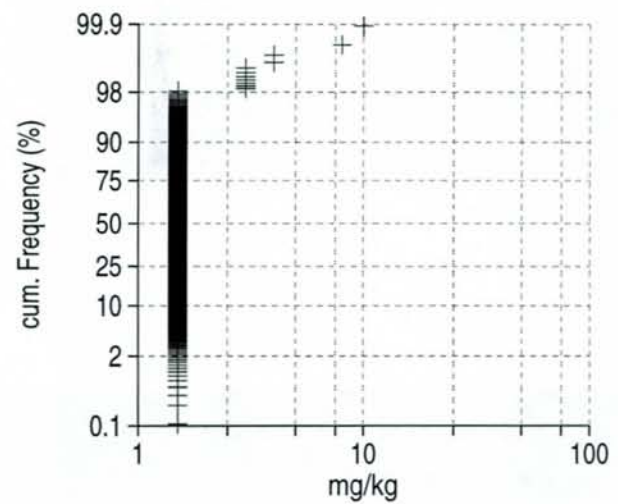
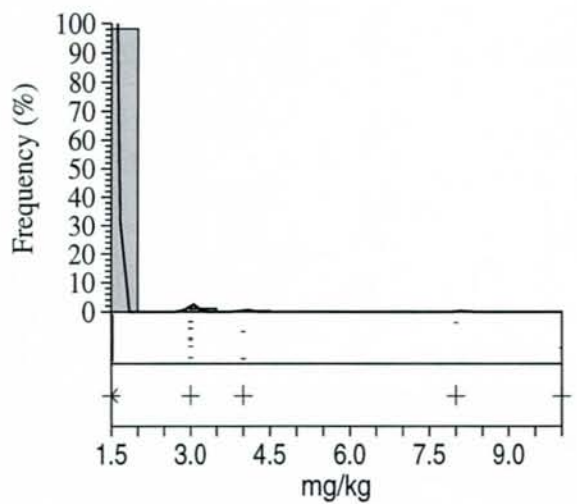
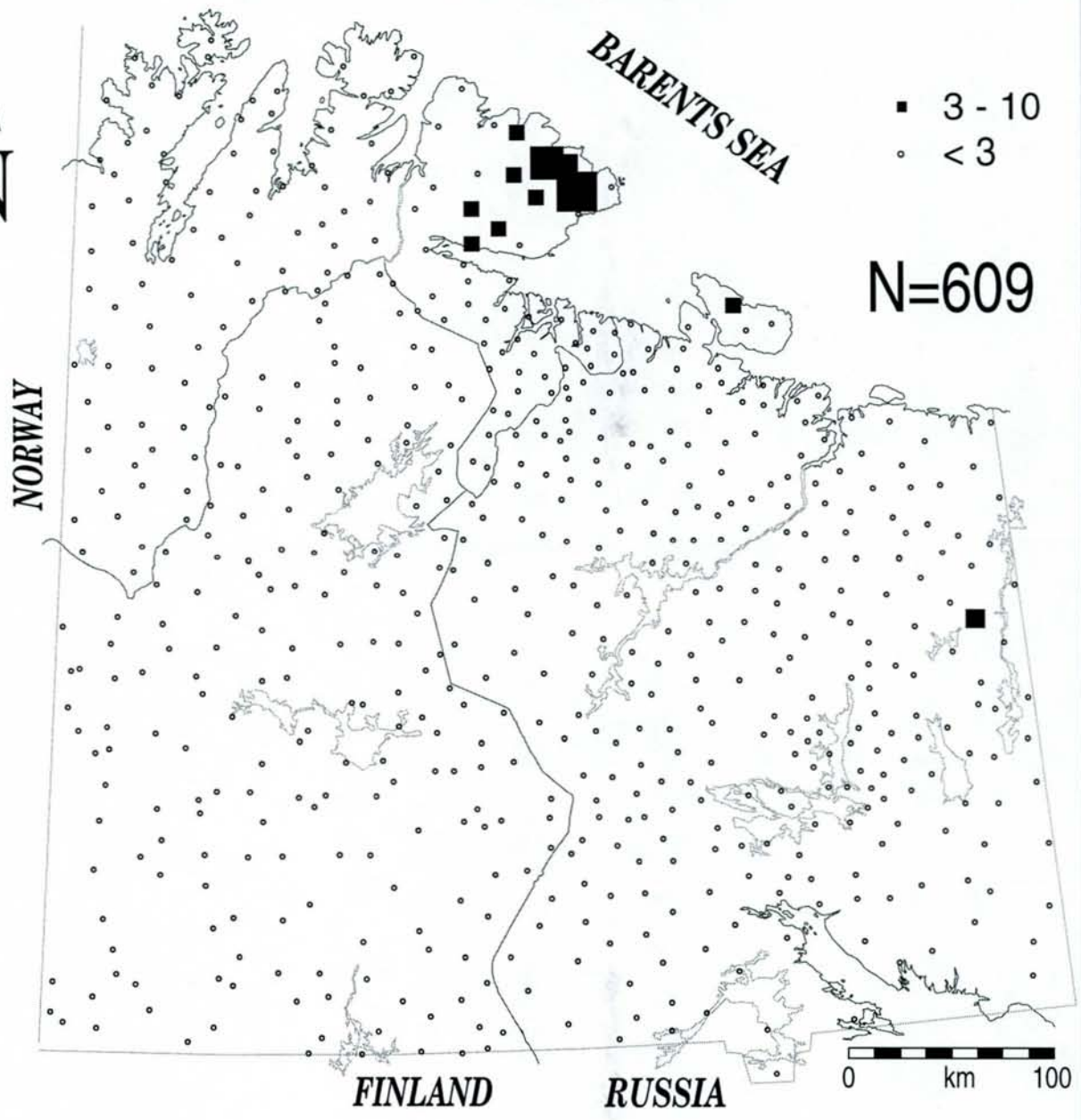
KOLA ECOGEOCHEMISTRY Regional Mapping 1995

CKE-GTK-NGU

mg/kg

B-horizon

air dried, <2 mm, aqua regia, ICP-AES



BORON IN B-HORIZON



B

KOLA ECOGEOCHEMISTRY Regional Mapping 1995

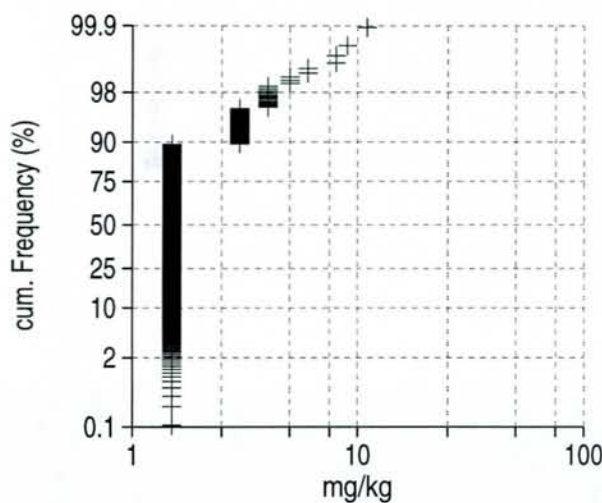
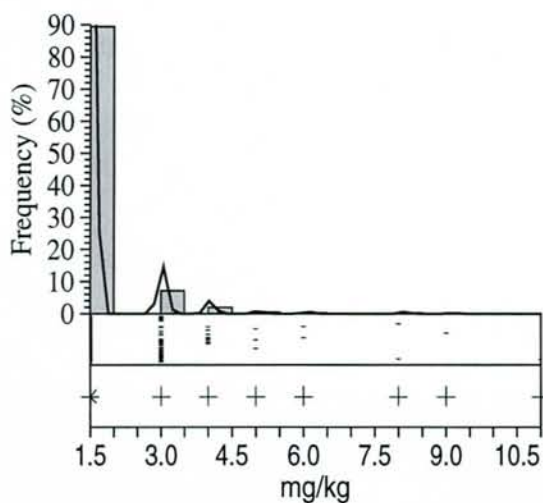
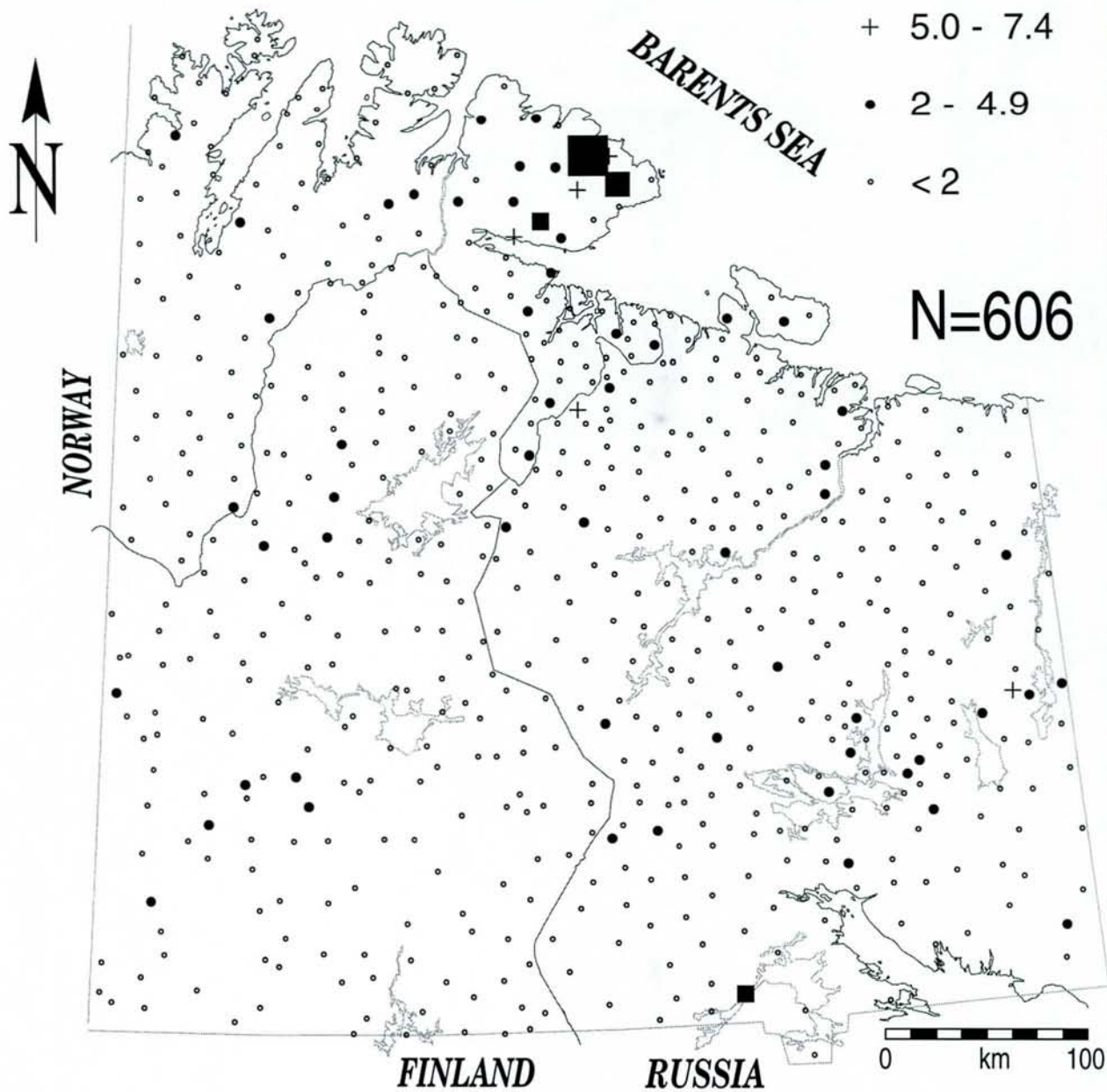
C-horizon

CKE-GTK-NGU

air dried, <2 mm, aqua regia, ICP-AES

mg/kg

- 7.5 - 11
- + 5.0 - 7.4
- 2 - 4.9
- < 2



BORON IN C-HORIZON



Be Moss

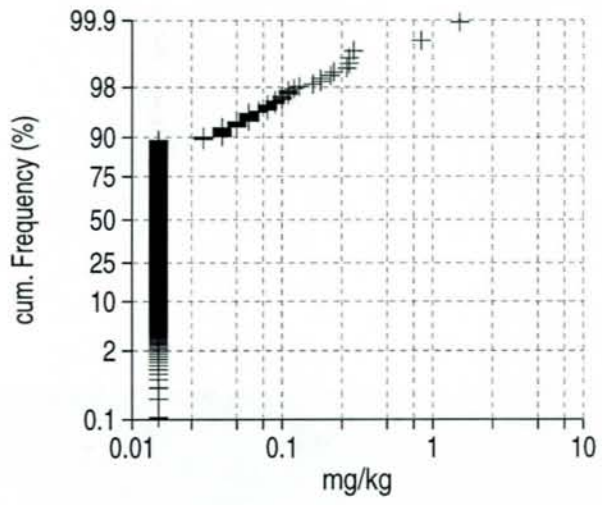
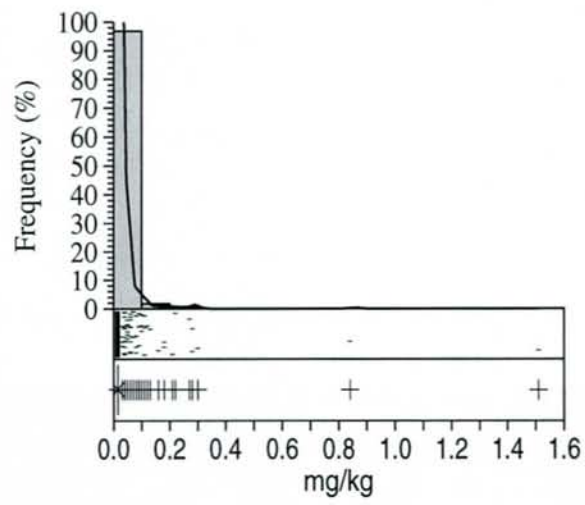
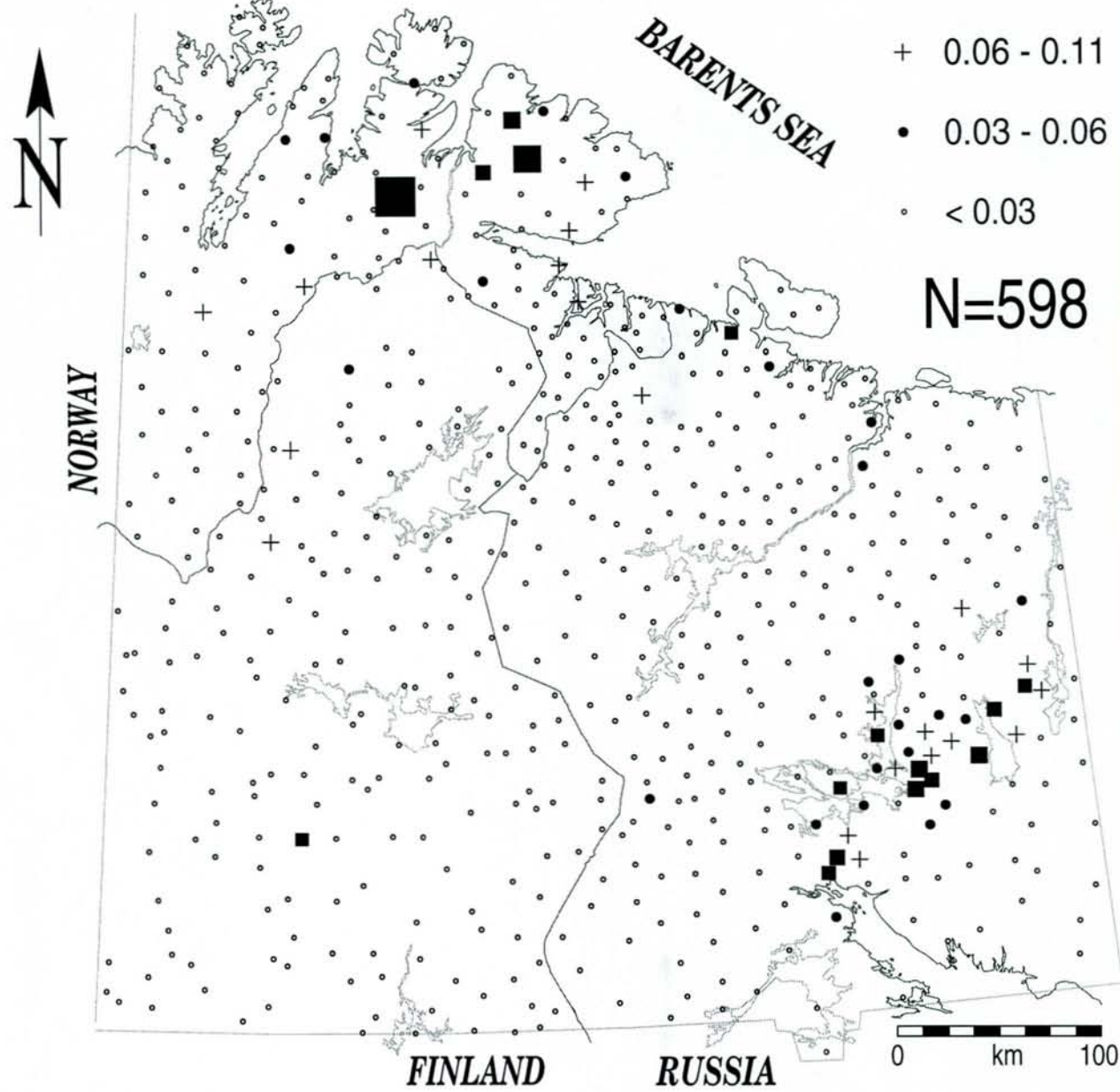
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

air dried, conc. HNO₃, ICP-AES

mg/kg

- 0.11 - 1.51
- + 0.06 - 0.11
- 0.03 - 0.06
- < 0.03

N=598



BERYLLIUM IN MOSS

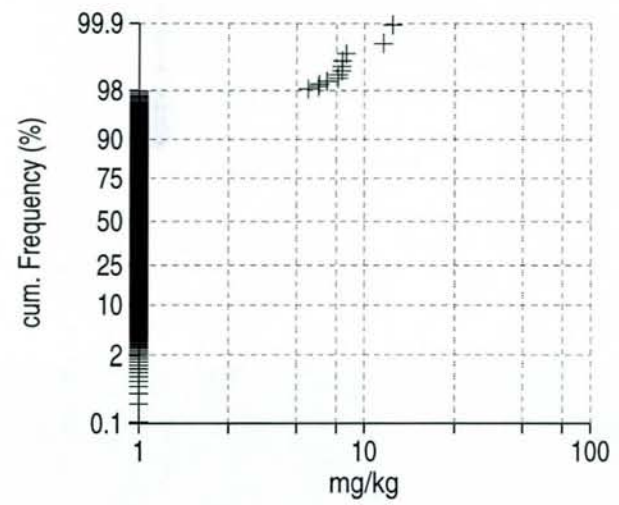
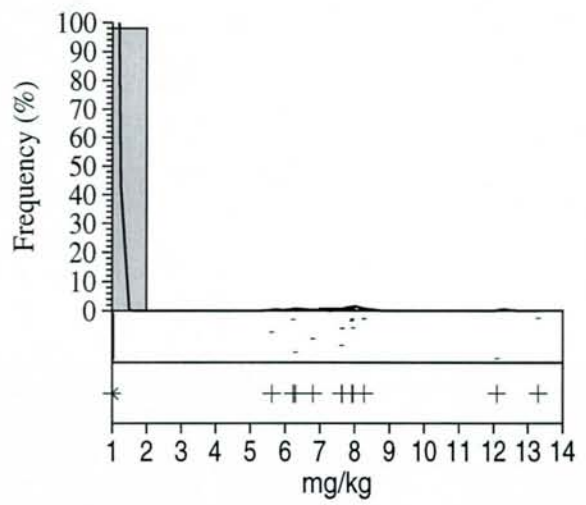
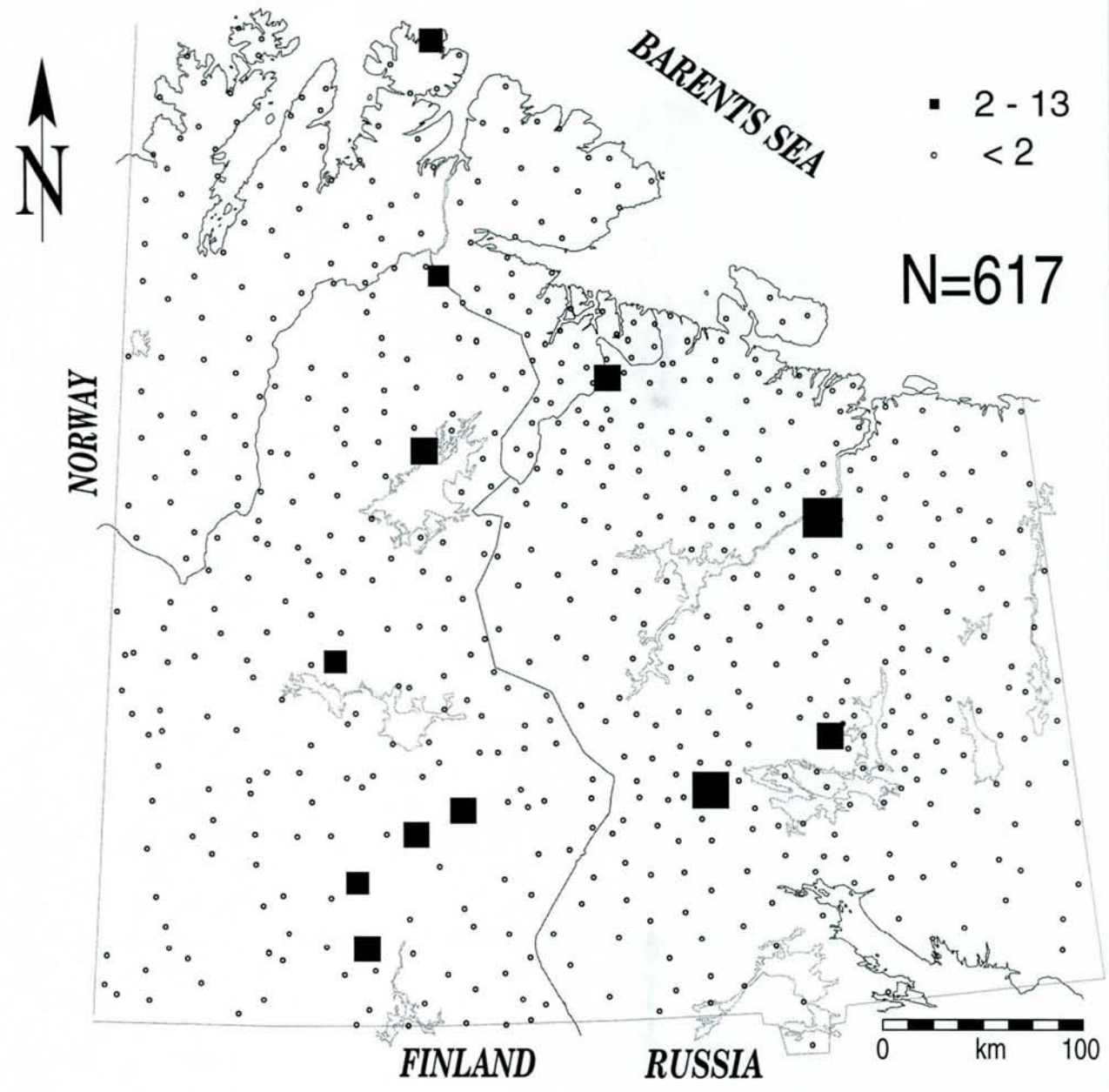


Br Humus

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

mg/kg

air dried, <2 mm, water extraction, IC



BROMIDE IN HUMUS



Br

KOLA ECOGEOCHEMISTRY

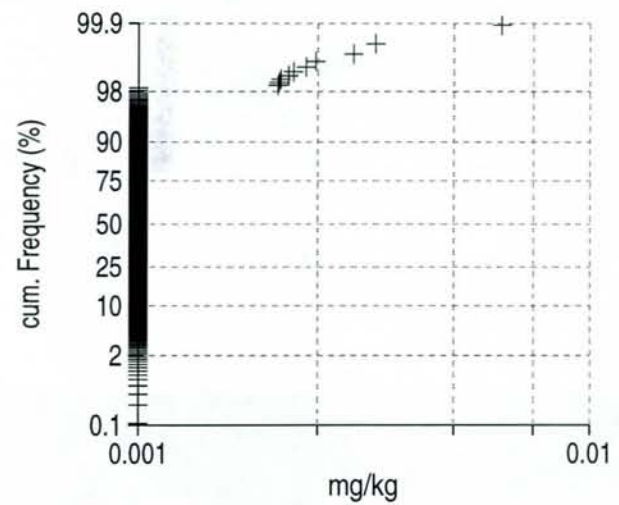
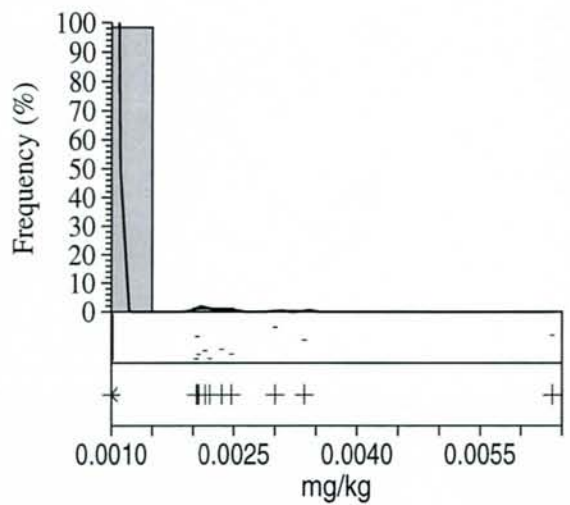
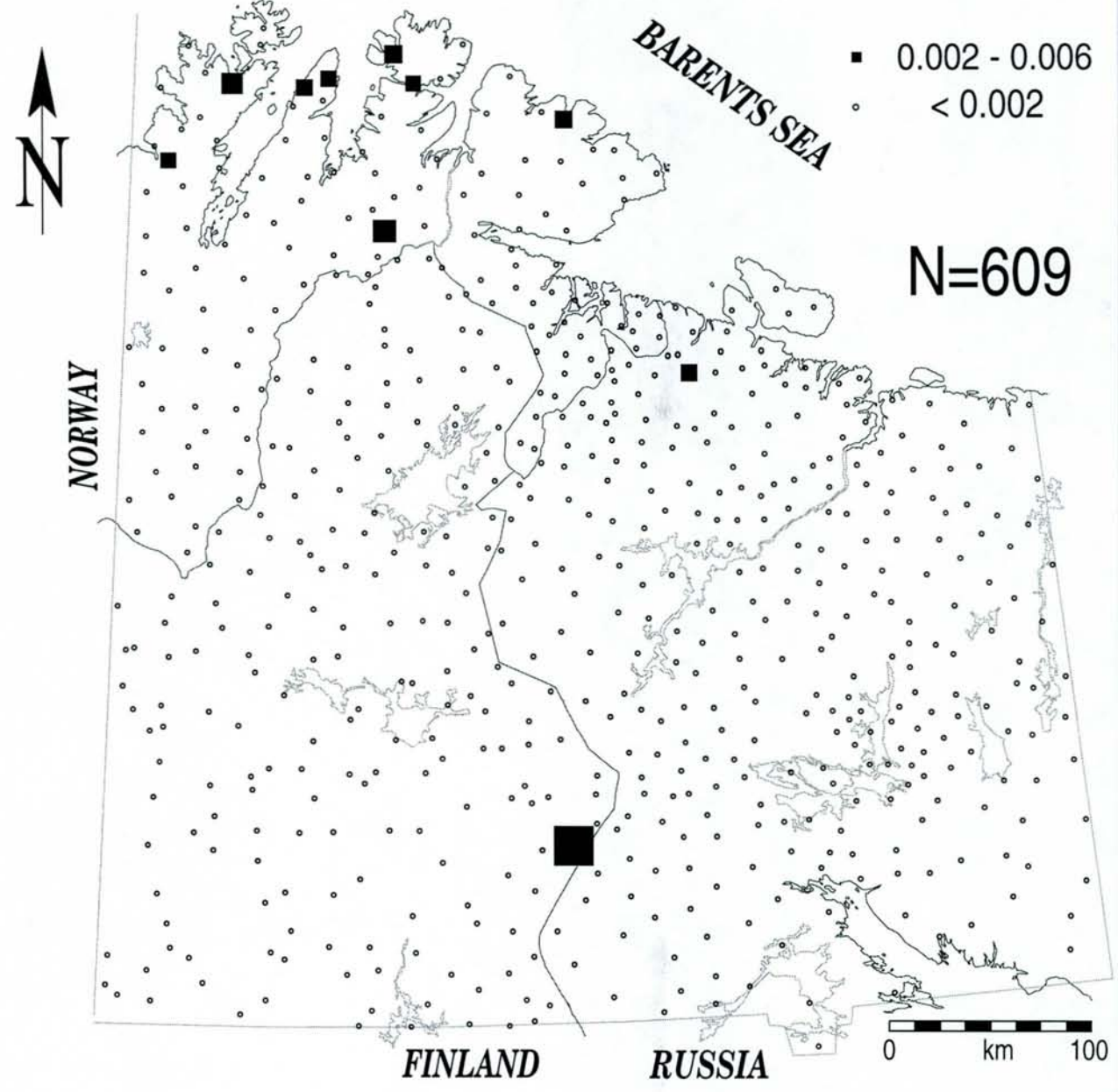
Regional Mapping 1995

CKE-GTK-NGU

mg/kg

B-horizon

air dried, <2 mm, water extraction, IC



BROMIDE IN B-HORIZON



Ca Topsoil

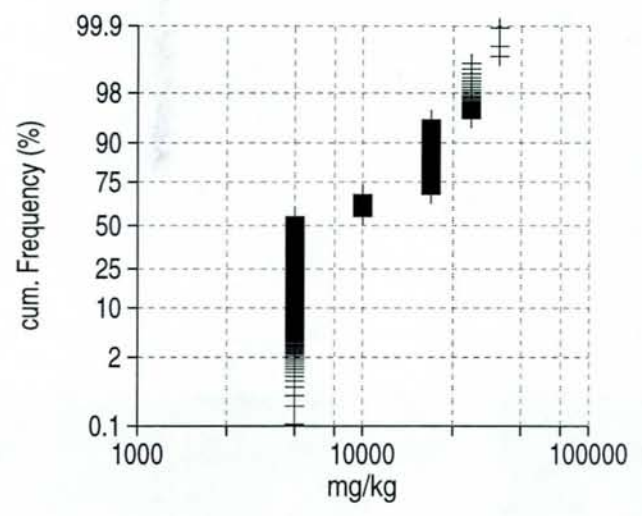
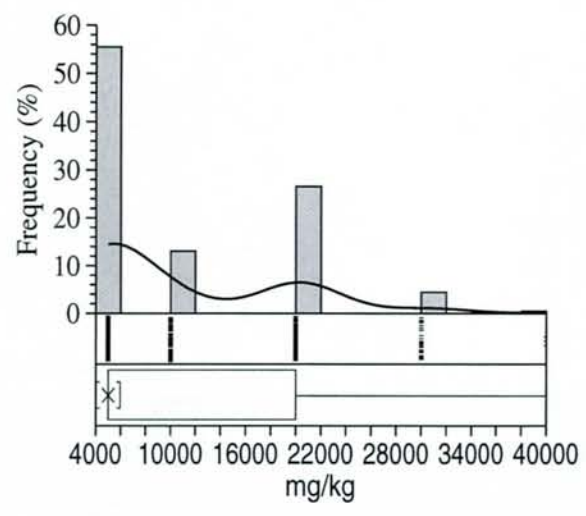
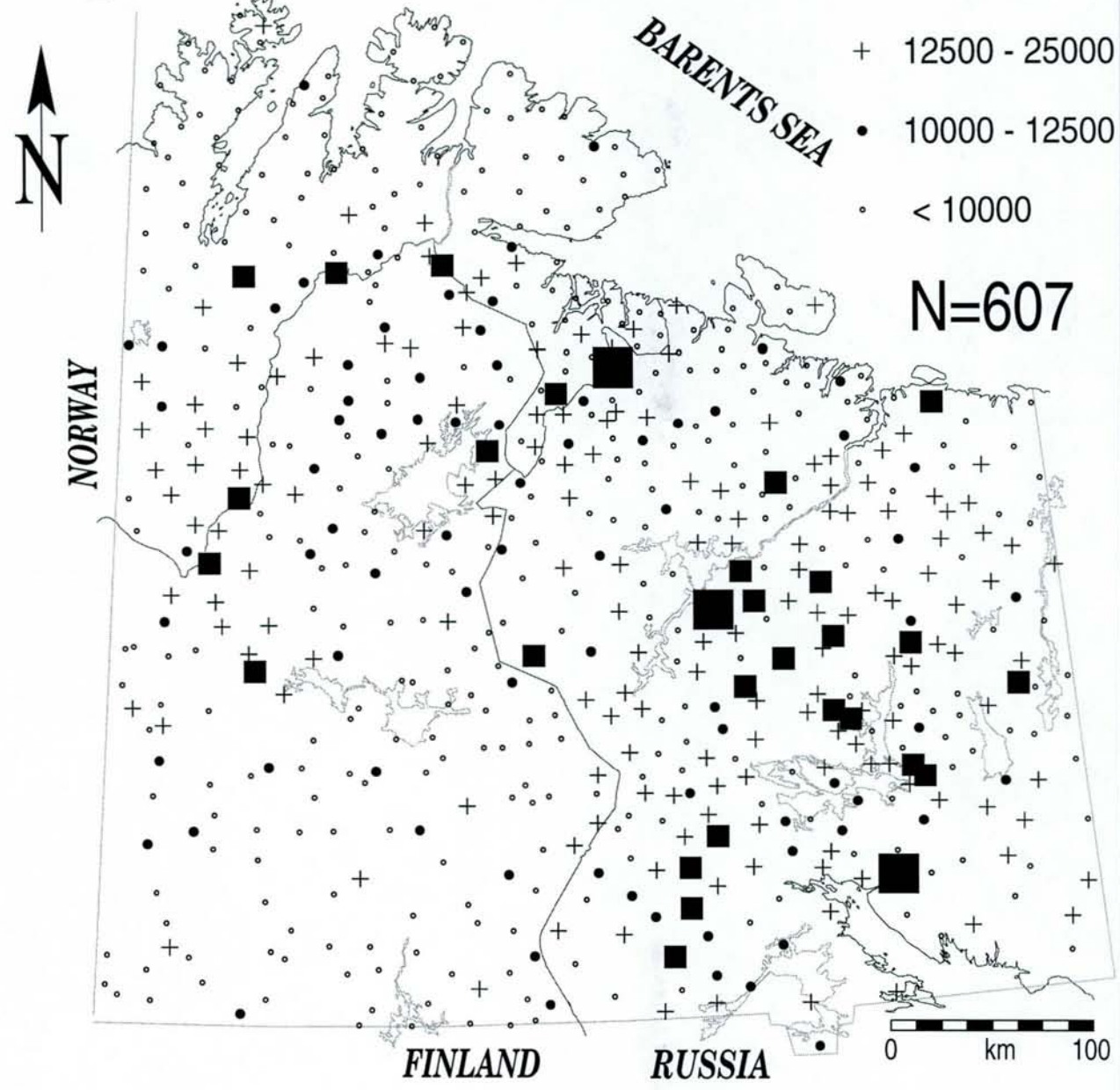
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

0-5cm, air dried, <2 mm, INAA

mg/kg

- 25000 - 40000
- + 12500 - 25000
- 10000 - 12500
- < 10000

N=607



CALCIUM IN TOPSOIL



Ca

KOLA ECOGEOCHEMISTRY

Regional Mapping 1995

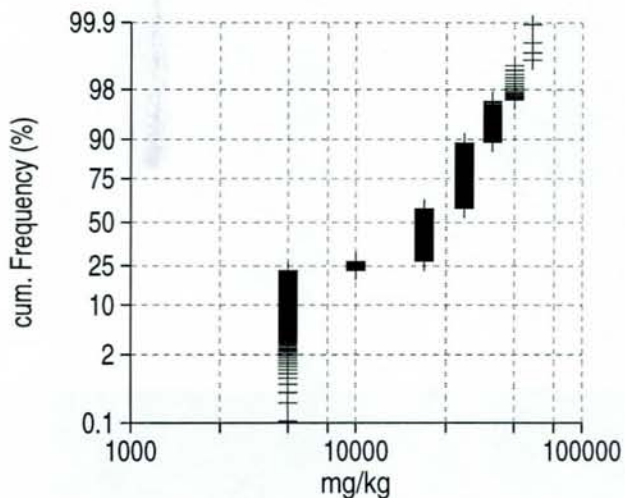
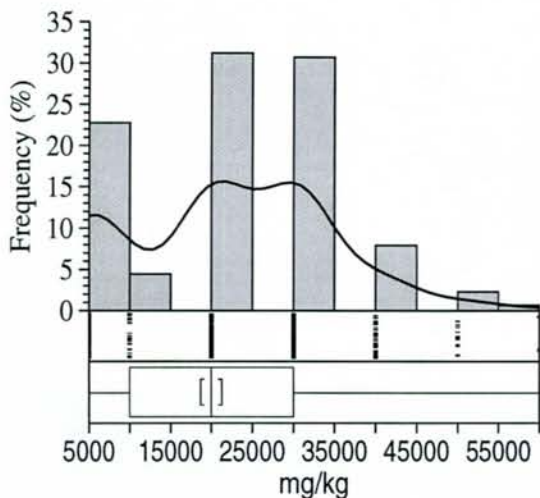
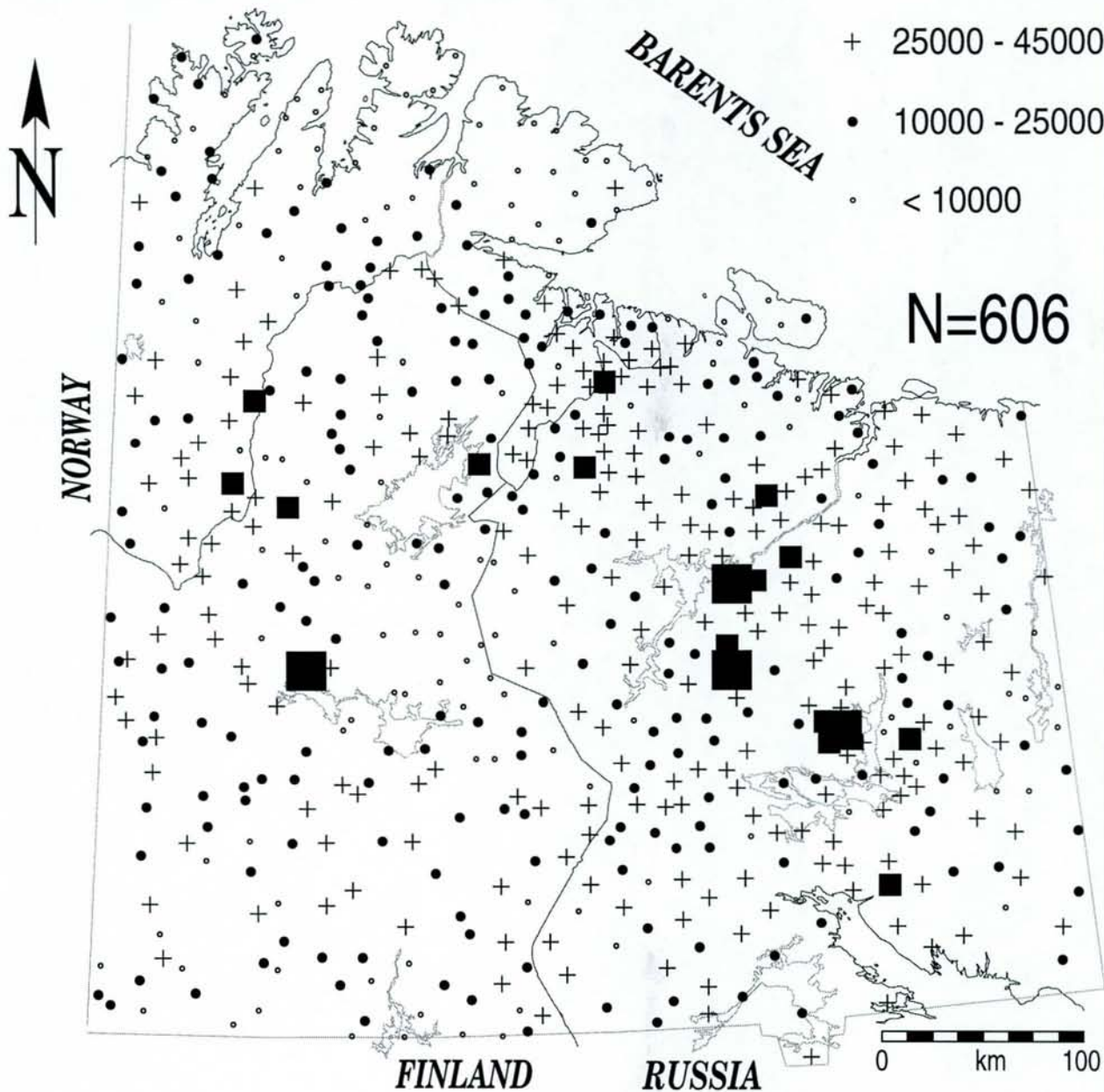
CKE-GTK-NGU

C-horizon

air dried, <2 mm, INAA

mg/kg

- 45000 - 60000
- + 25000 - 45000
- 10000 - 25000
- < 10000



CALCIUM IN C-HORIZON



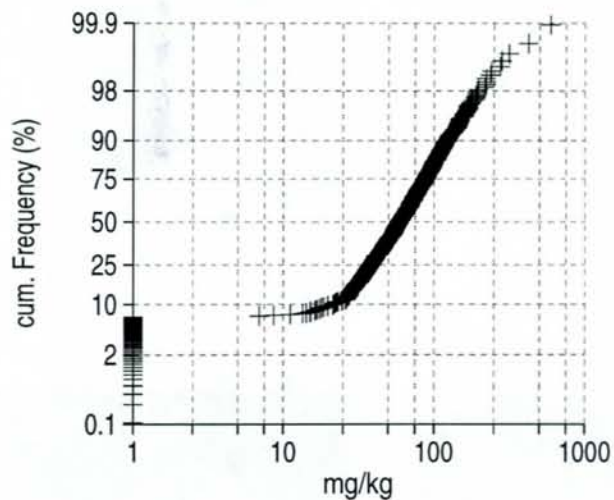
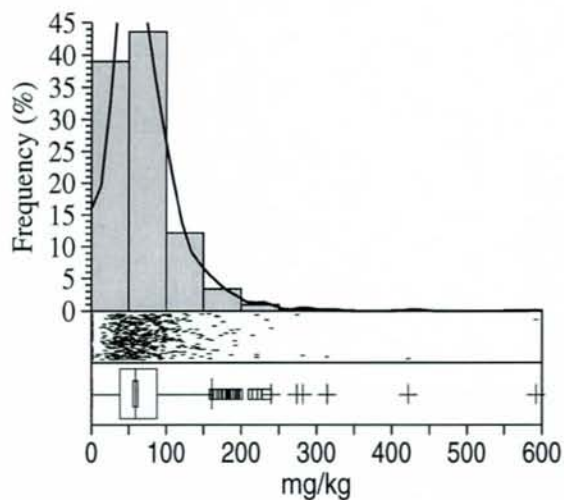
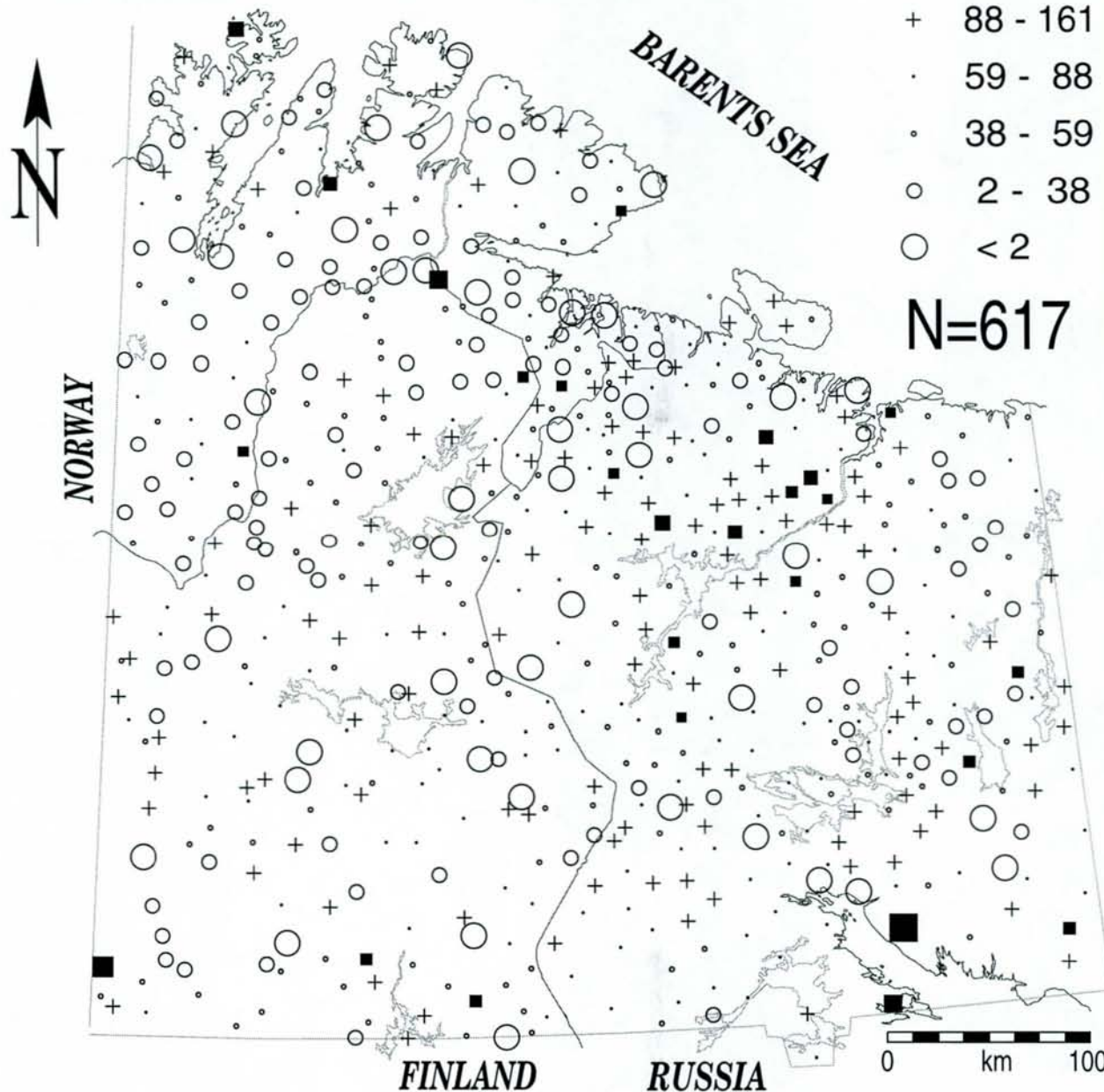
Cl Humus

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

air dried, <2 mm, water extraction, IC

- mg/kg
- 161 - 592
 - + 88 - 161
 - 59 - 88
 - 38 - 59
 - 2 - 38
 - < 2

N=617



CHLORIDE IN HUMUS



Cl

KOLA ECOGEOCHEMISTRY

Regional Mapping 1995

CKE-GTK-NGU

B-horizon

air dried, <2 mm, water extraction, IC

mg/kg

■ 0.010 - 0.016

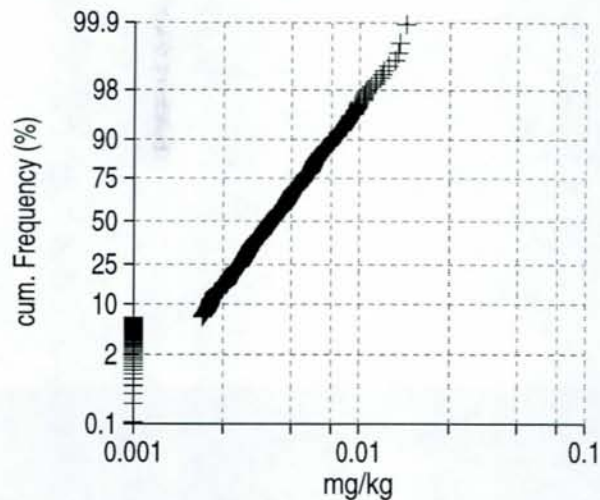
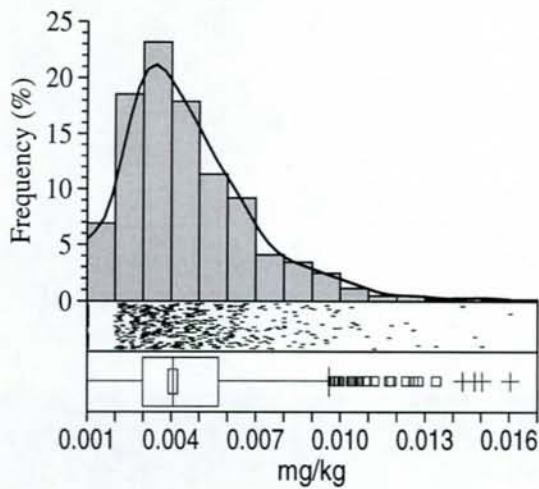
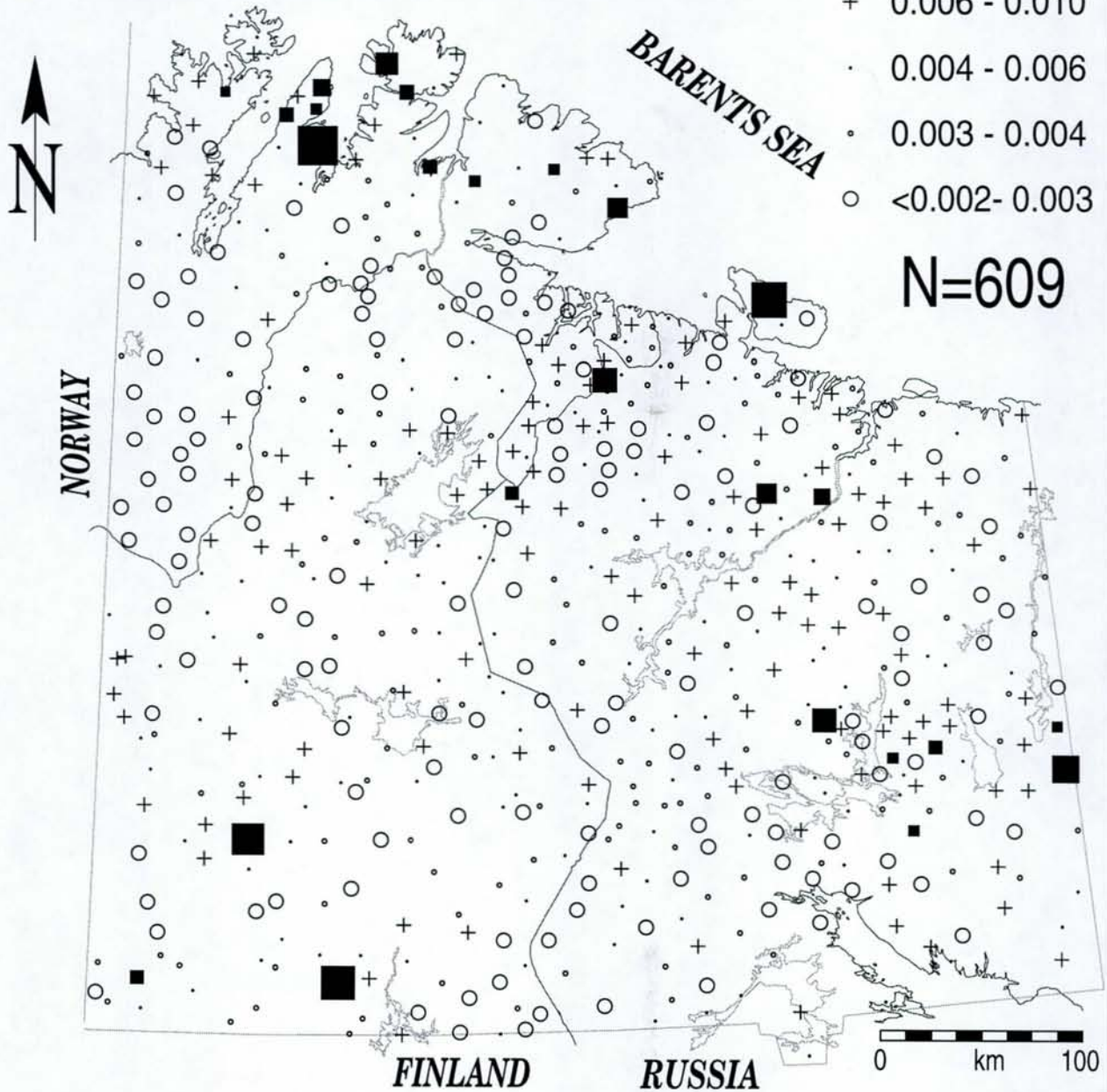
+ 0.006 - 0.010

· 0.004 - 0.006

○ 0.003 - 0.004

○ <0.002- 0.003

N=609



CHLORIDE IN B-HORIZON



Cl

KOLA ECOGEOCHEMISTRY Regional Mapping 1995

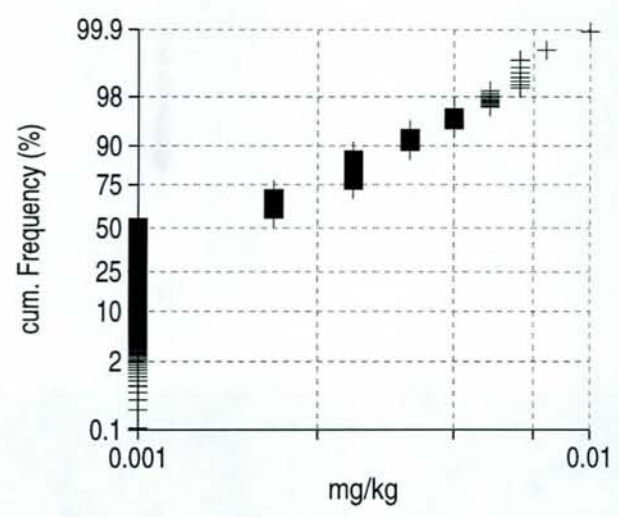
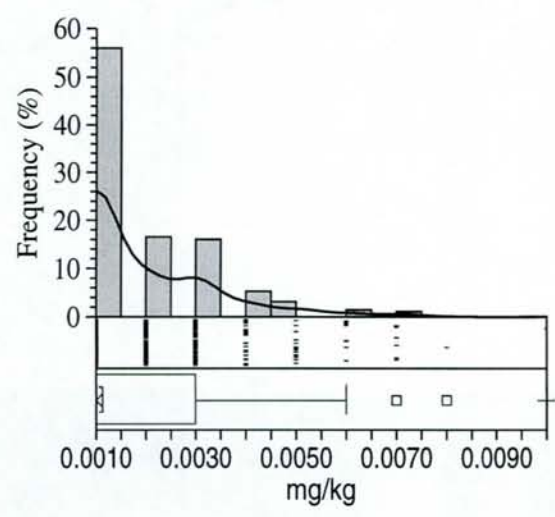
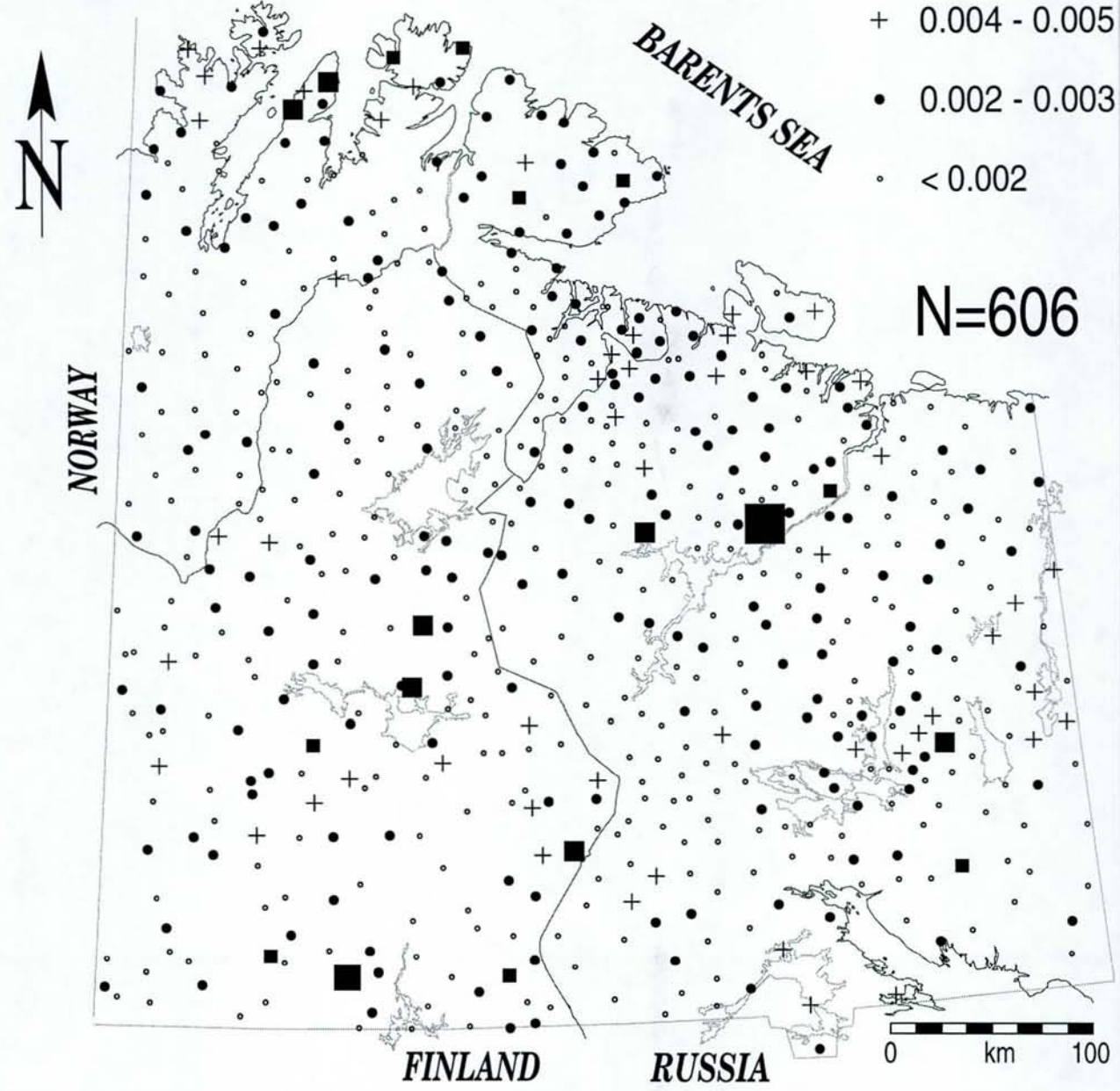
C-horizon

CKE-GTK-NGU

air dried, <2 mm, water extraction, IC

mg/kg

- 0.006 - 0.010
- + 0.004 - 0.005
- 0.002 - 0.003
- < 0.002



CHLORIDE IN C-HORIZON



Cs Topsoil

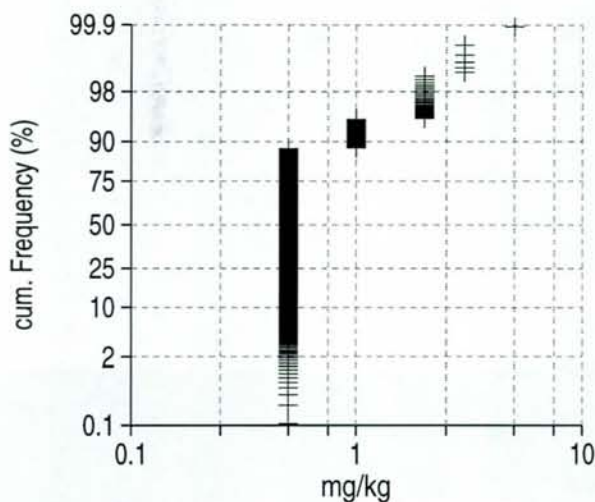
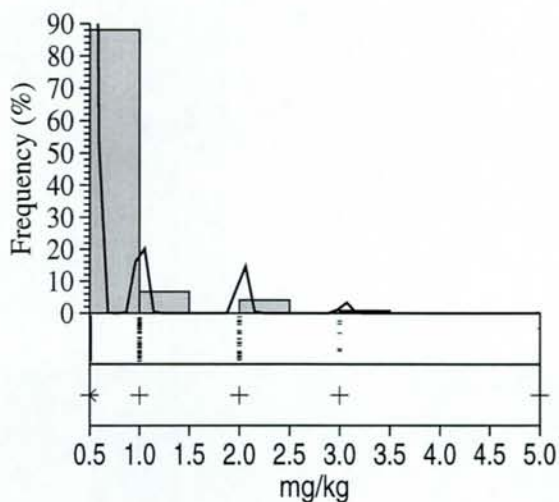
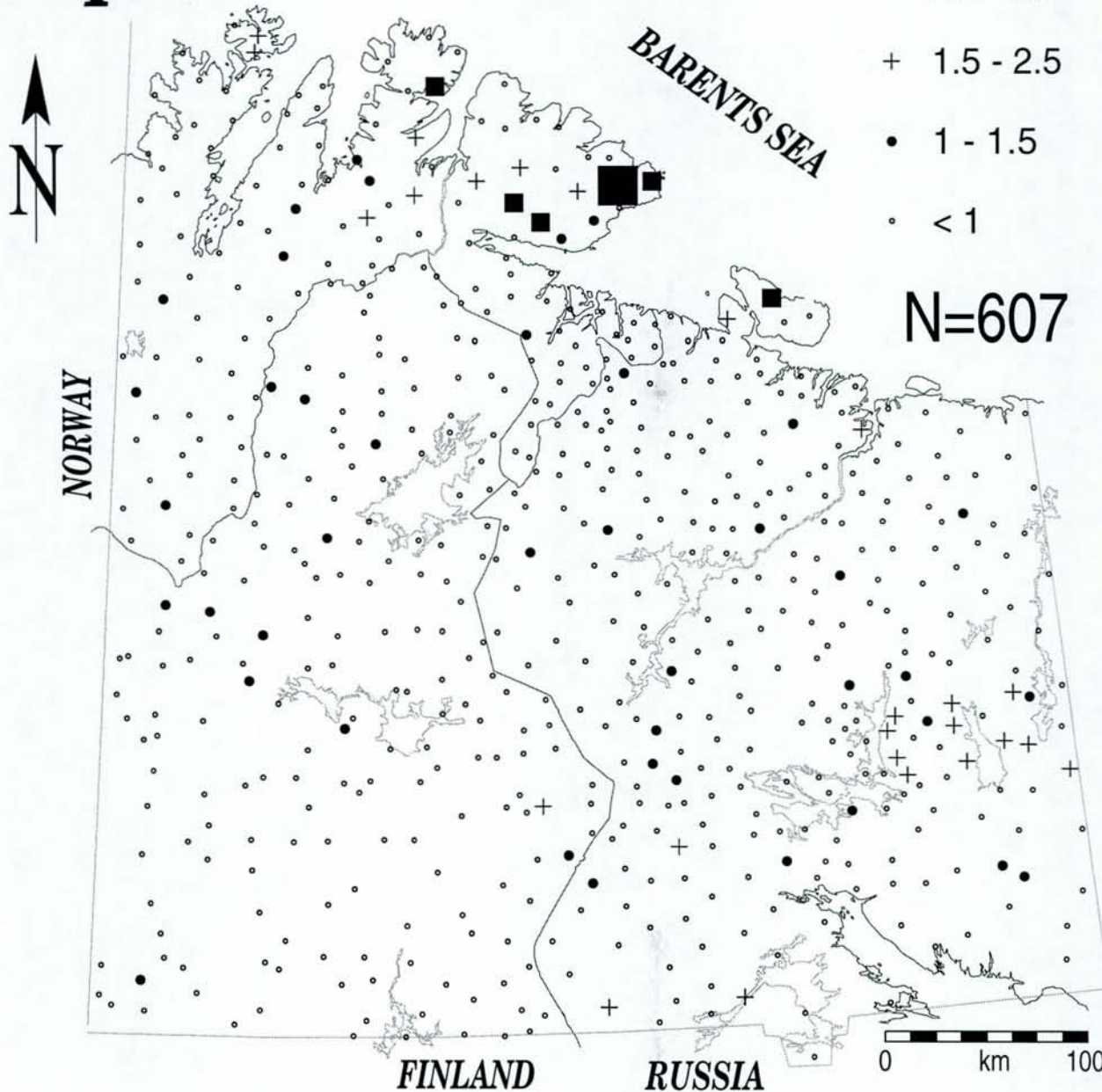
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

0-5cm, air dried, <2 mm, INAA

mg/kg

- 2.5 - 5.0
- + 1.5 - 2.5
- 1 - 1.5
- < 1

N=607



CESIUM IN TOPSOIL

¹³⁴Cs

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995

CKE-GTK-NGU



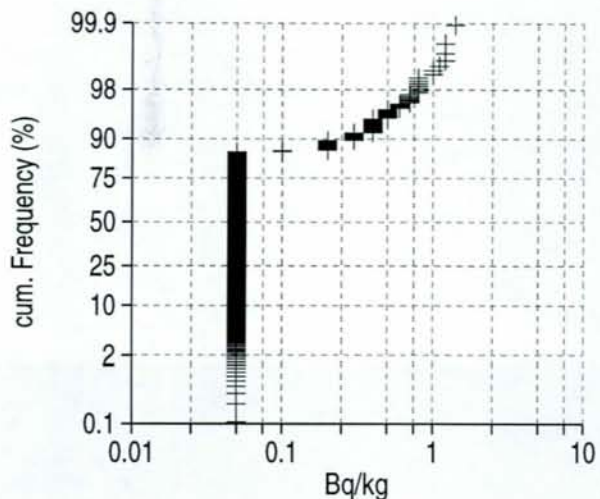
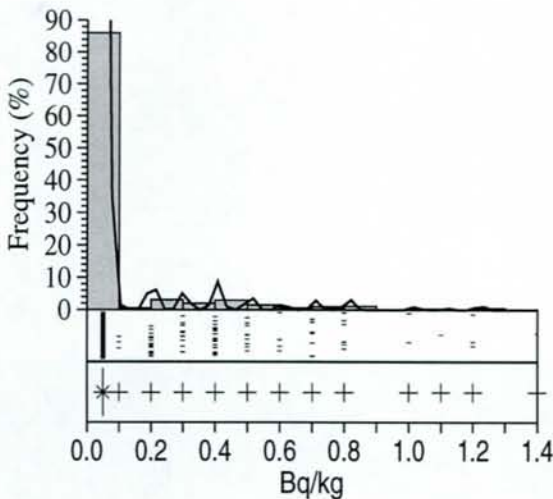
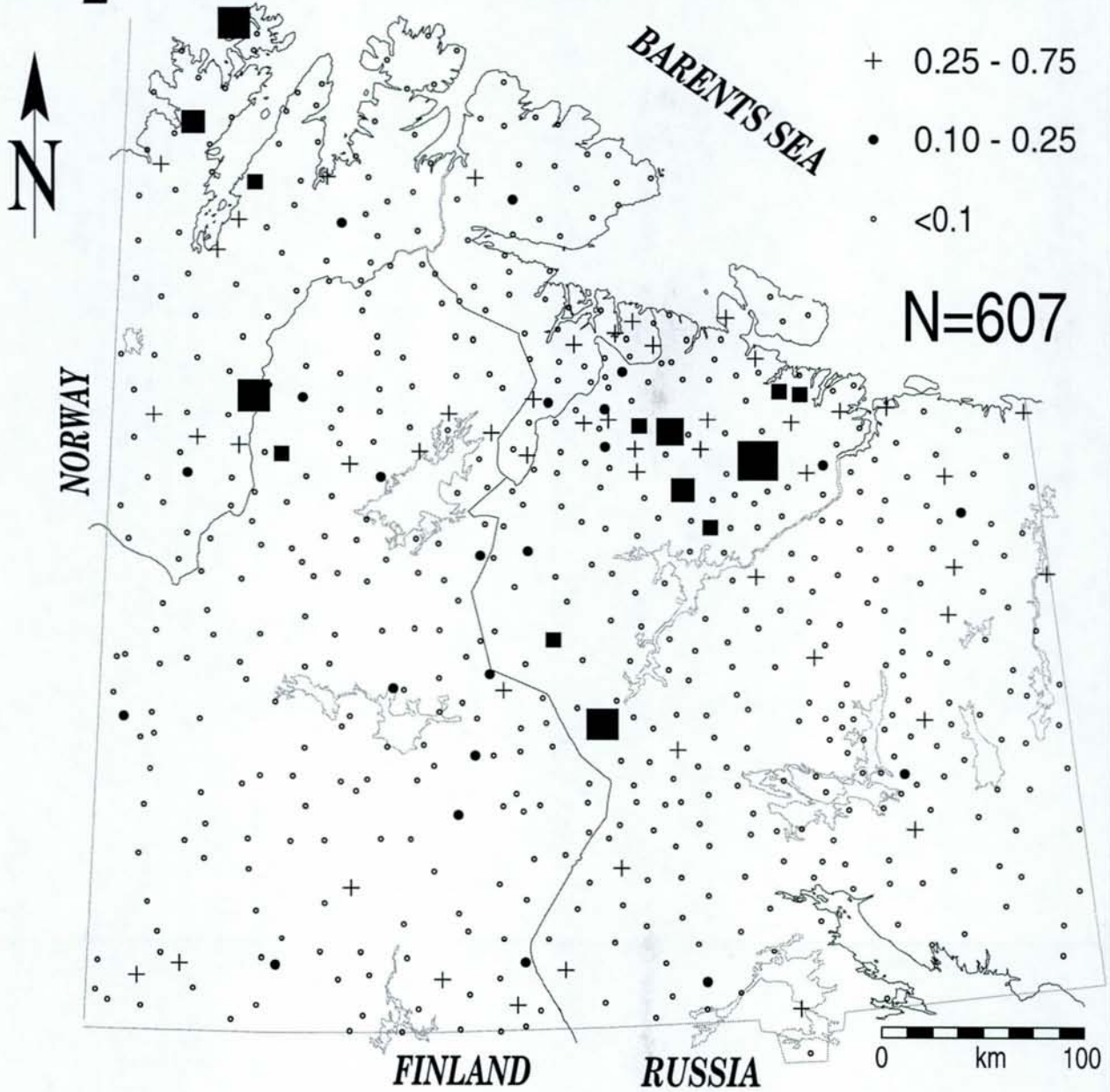
Topsoil

0-5 cm, air dried, <2mm, gamma spectrometry

Bq/kg

- 0.75 - 1.40
- + 0.25 - 0.75
- 0.10 - 0.25
- <0.1

N=607



134-CESIUM IN TOPSOIL



Cs

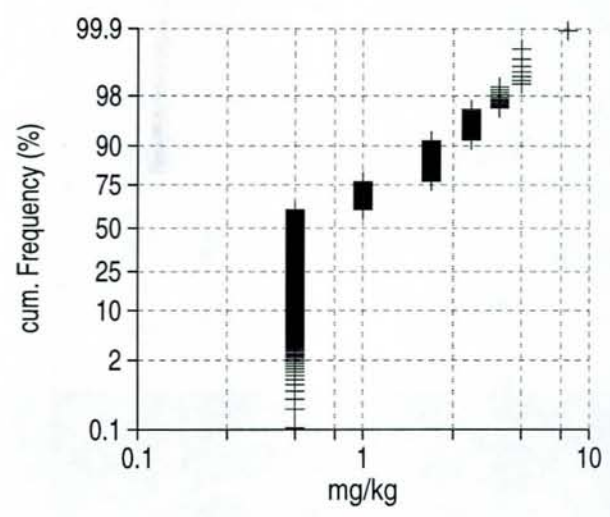
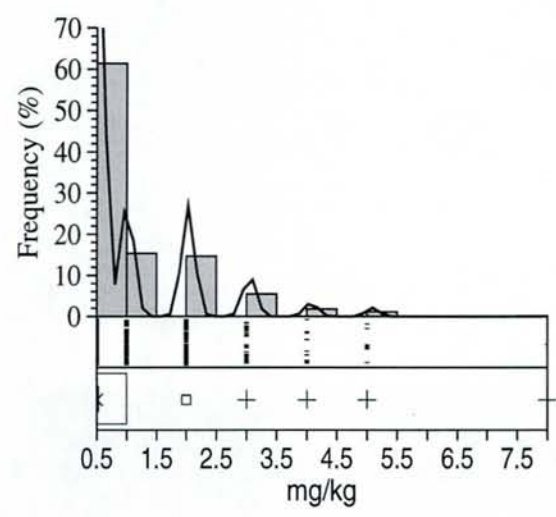
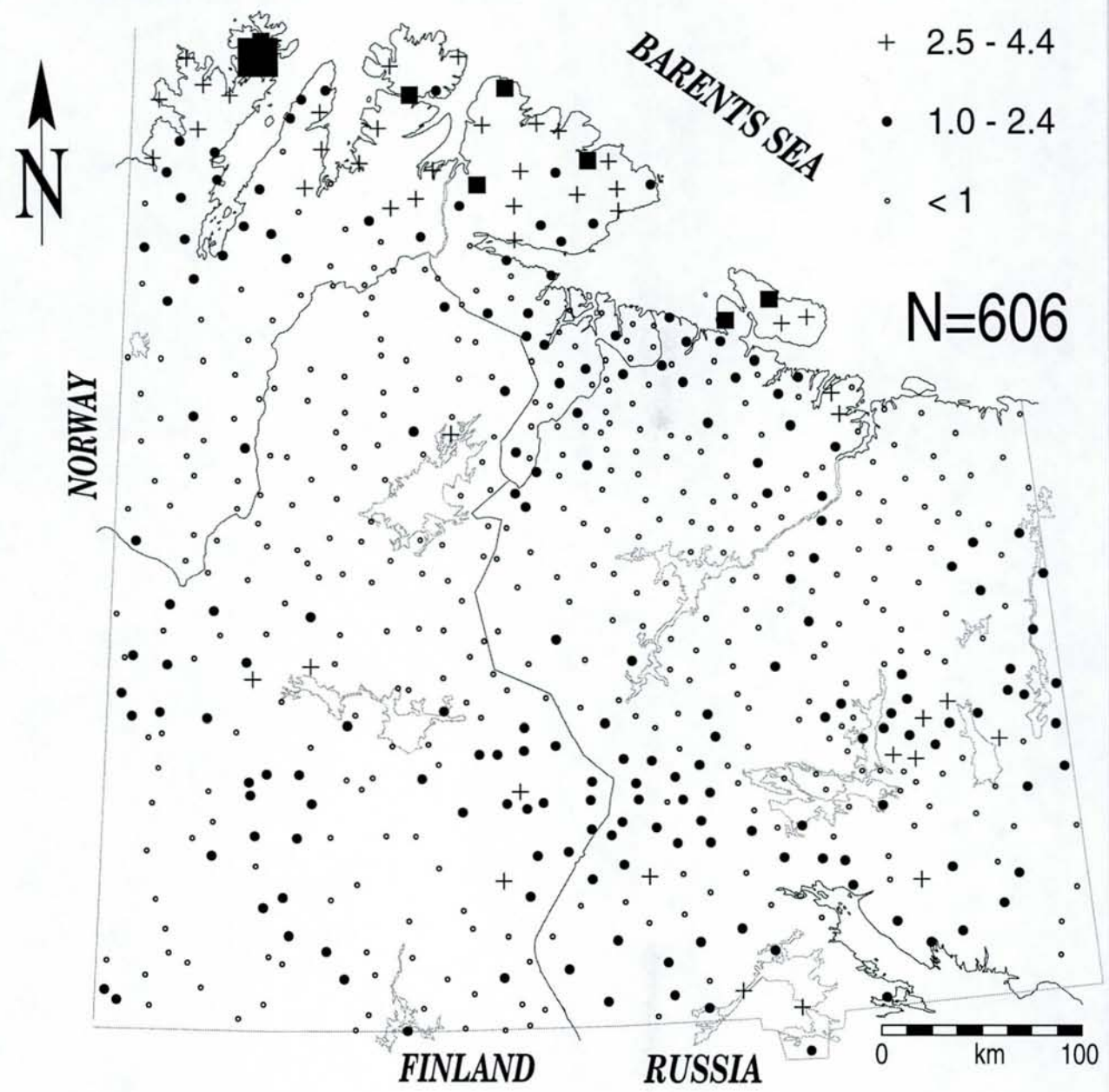
KOLA ECOGEOCHEMISTRY Regional Mapping 1995

C-horizon

CKE-GTK-NGU
air dried, <2 mm, INAA

- mg/kg
- 4.5 - 8.0
 - + 2.5 - 4.4
 - 1.0 - 2.4
 - < 1

N=606



CESIUM IN C-HORIZON



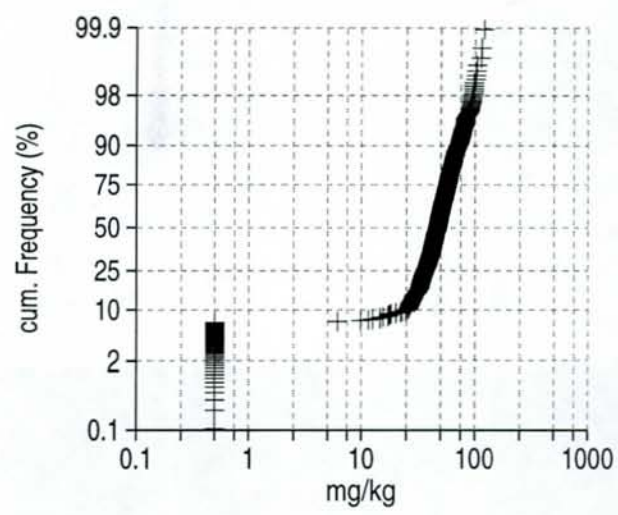
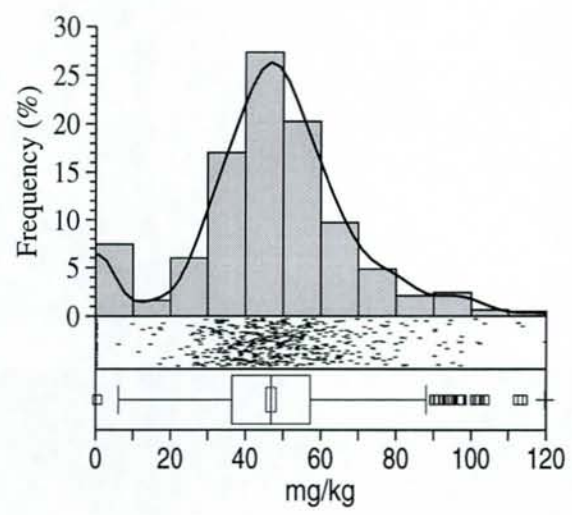
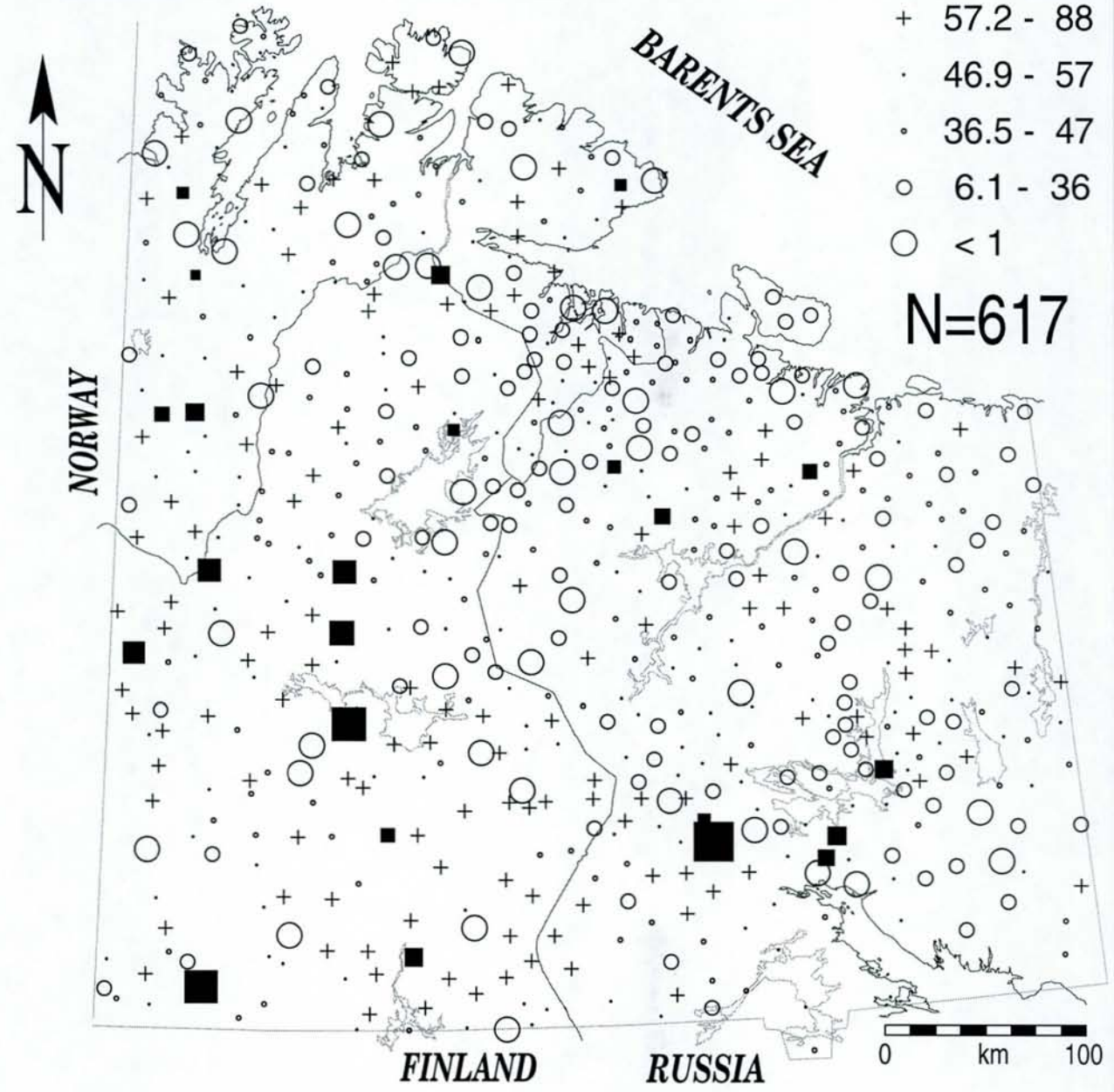
F Humus

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

air dried, <2 mm, water extraction, IC

- mg/kg
- 88.0 - 120
 - + 57.2 - 88
 - 46.9 - 57
 - 36.5 - 47
 - 6.1 - 36
 - < 1

N=617



FLUORIDE IN HUMUS



F

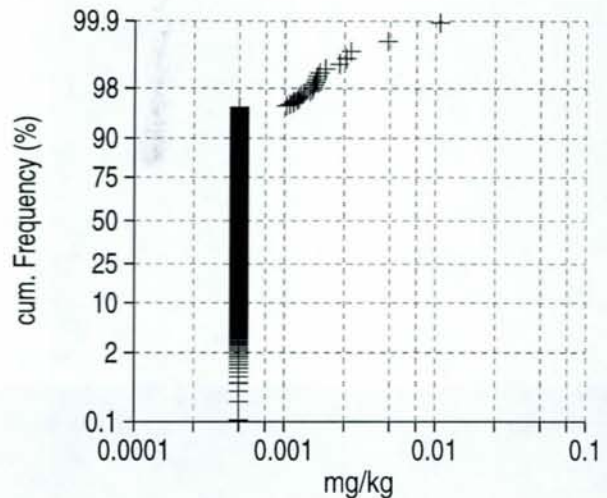
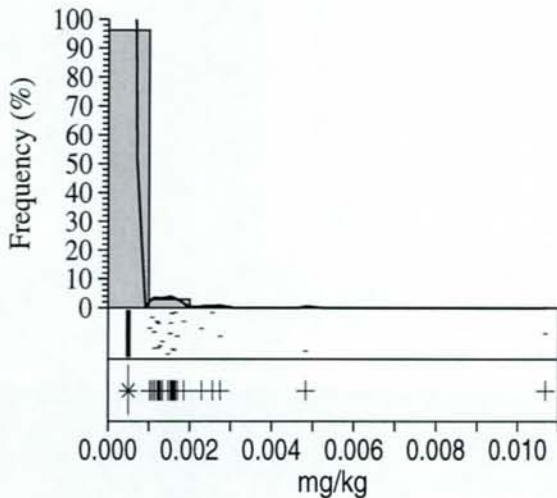
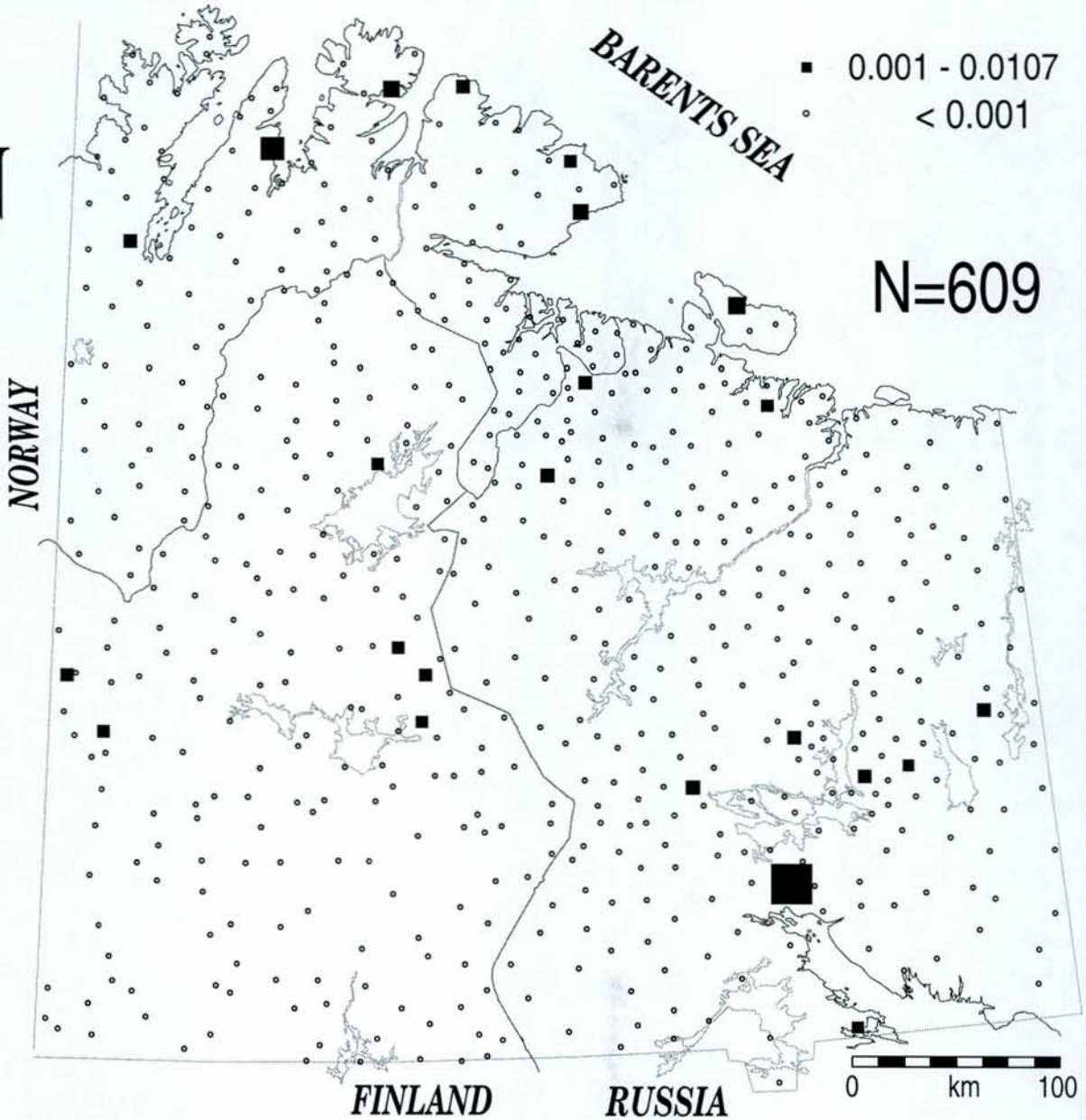
KOLA ECOGEOCHEMISTRY Regional Mapping 1995

CKE-GTK-NGU

mg/kg

B-horizon

air dried, <2 mm, water extraction, IC



FLUORIDE IN B-HORIZON



F

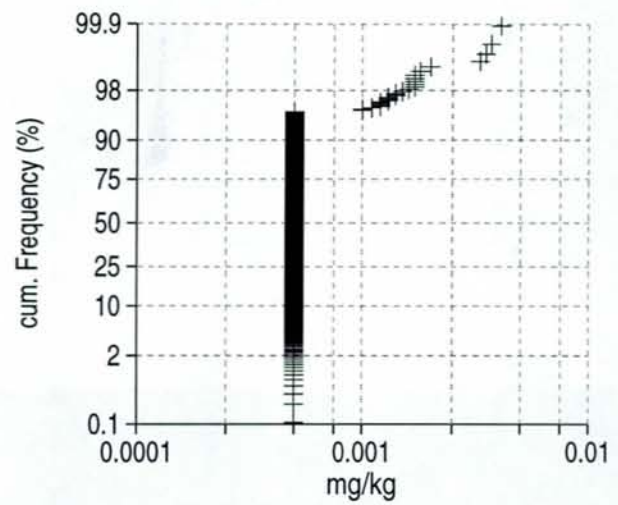
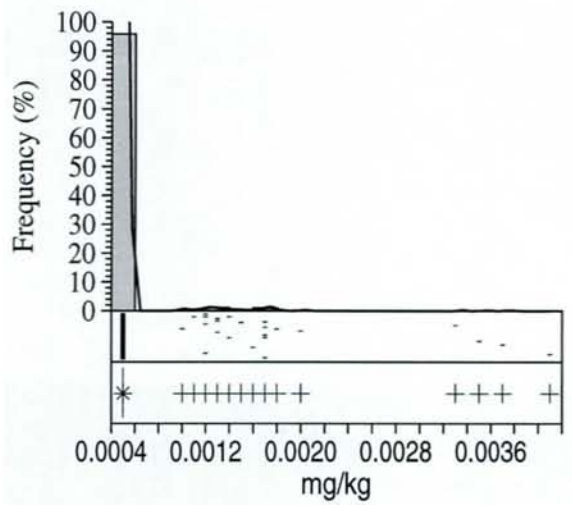
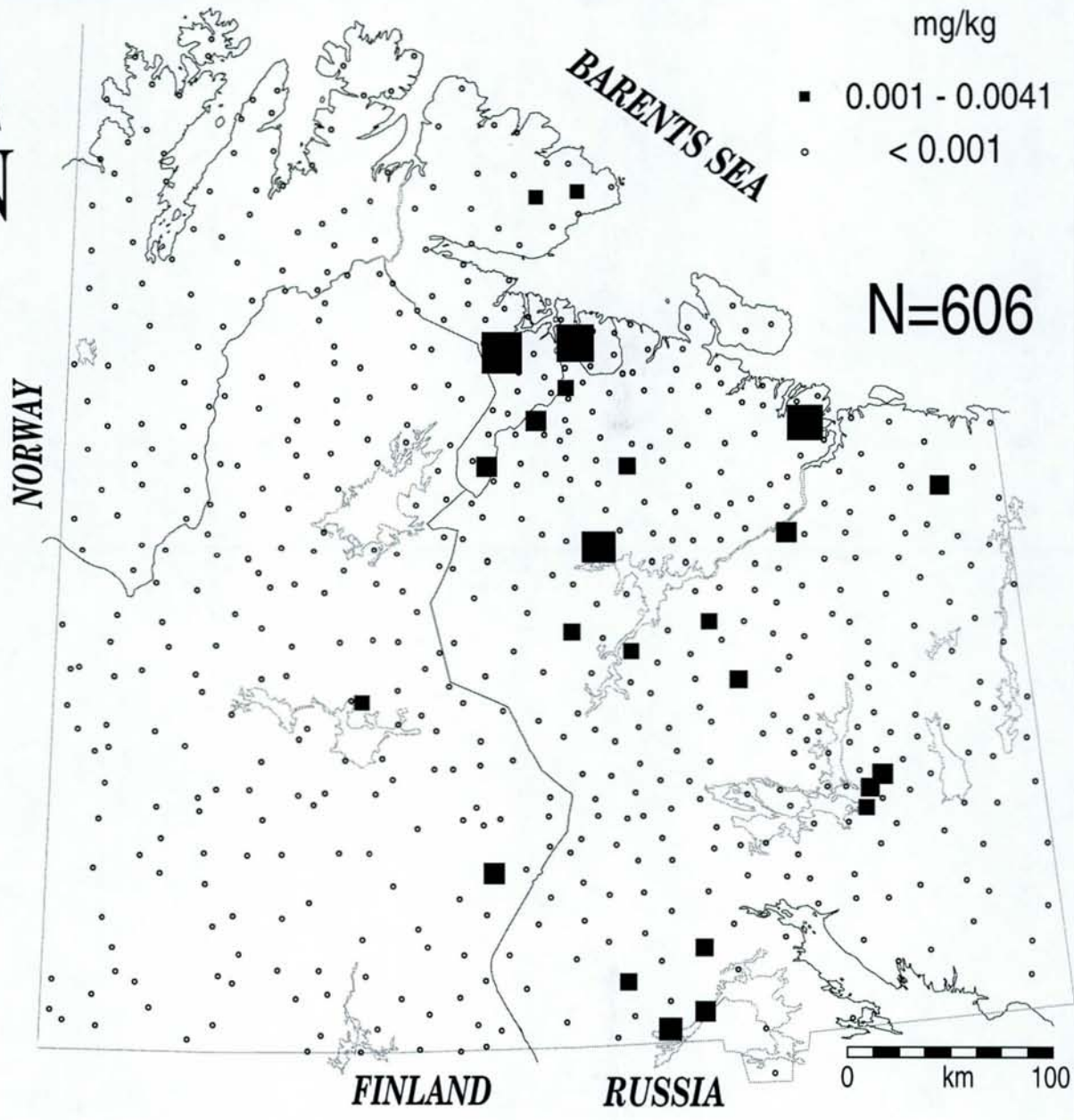
KOLA ECOGEOCHEMISTRY Regional Mapping 1995 CKE-GTK-NGU

C-horizon

air dried, <2 mm, water extraction, IC

mg/kg

- 0.001 - 0.0041
- < 0.001



FLUORIDE IN C-HORIZON



Fe

KOLA ECOGEOCHEMISTRY

Regional Mapping 1995

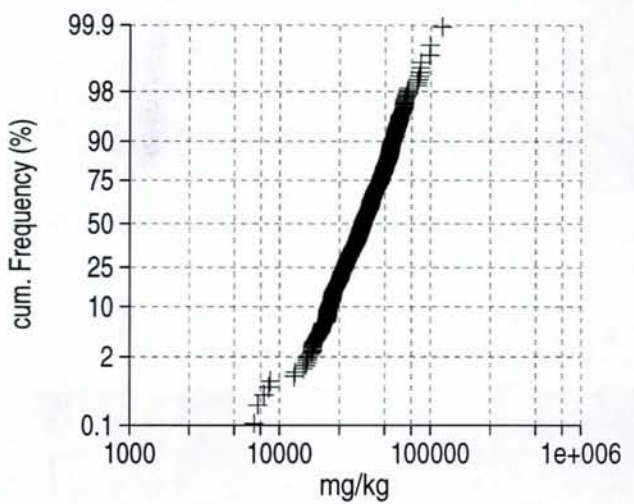
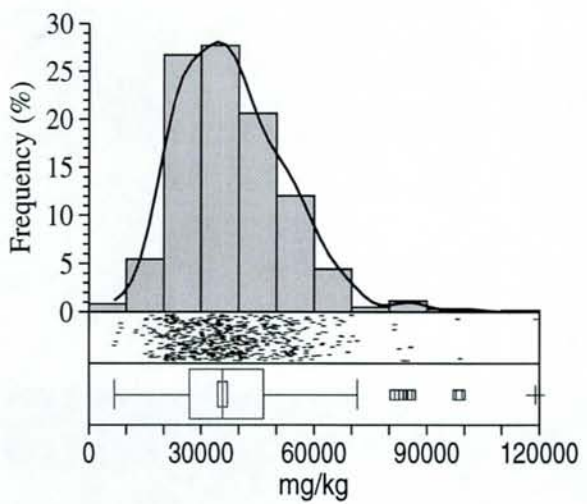
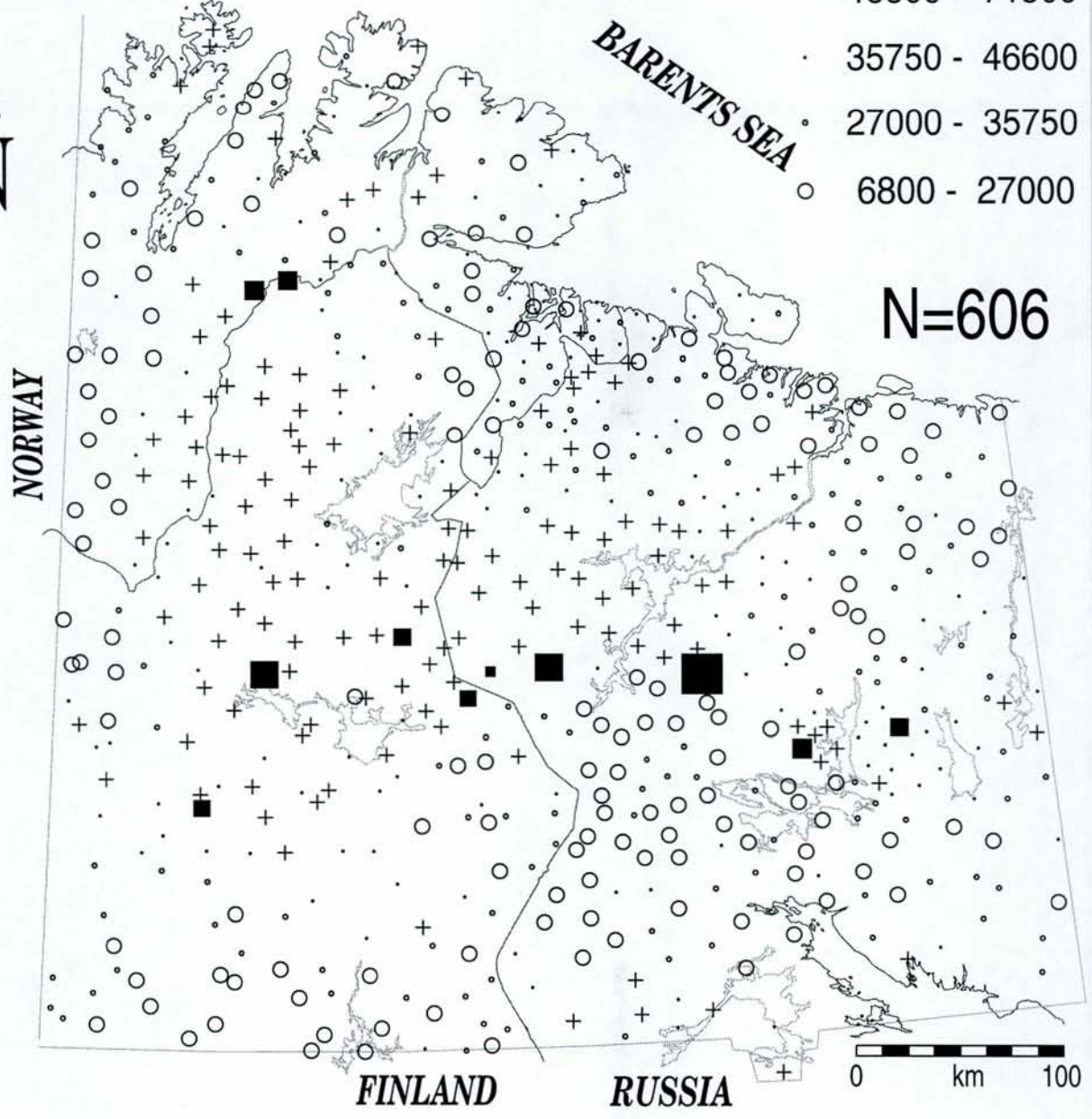
CKE-GTK-NGU

C-horizon

air dried, <2 mm, INAA

mg/kg

- 71500 - 119000
- + 46600 - 71500
- 35750 - 46600
- 27000 - 35750
- 6800 - 27000



IRON IN C-HORIZON

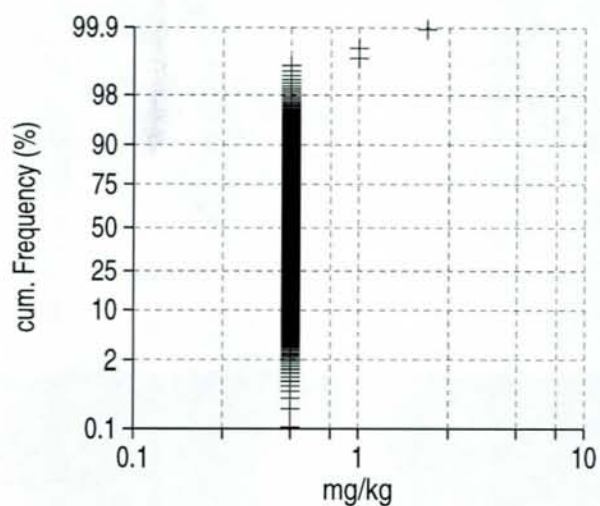
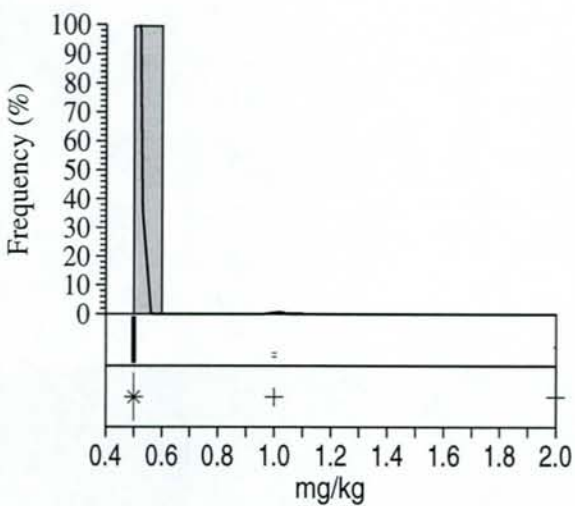
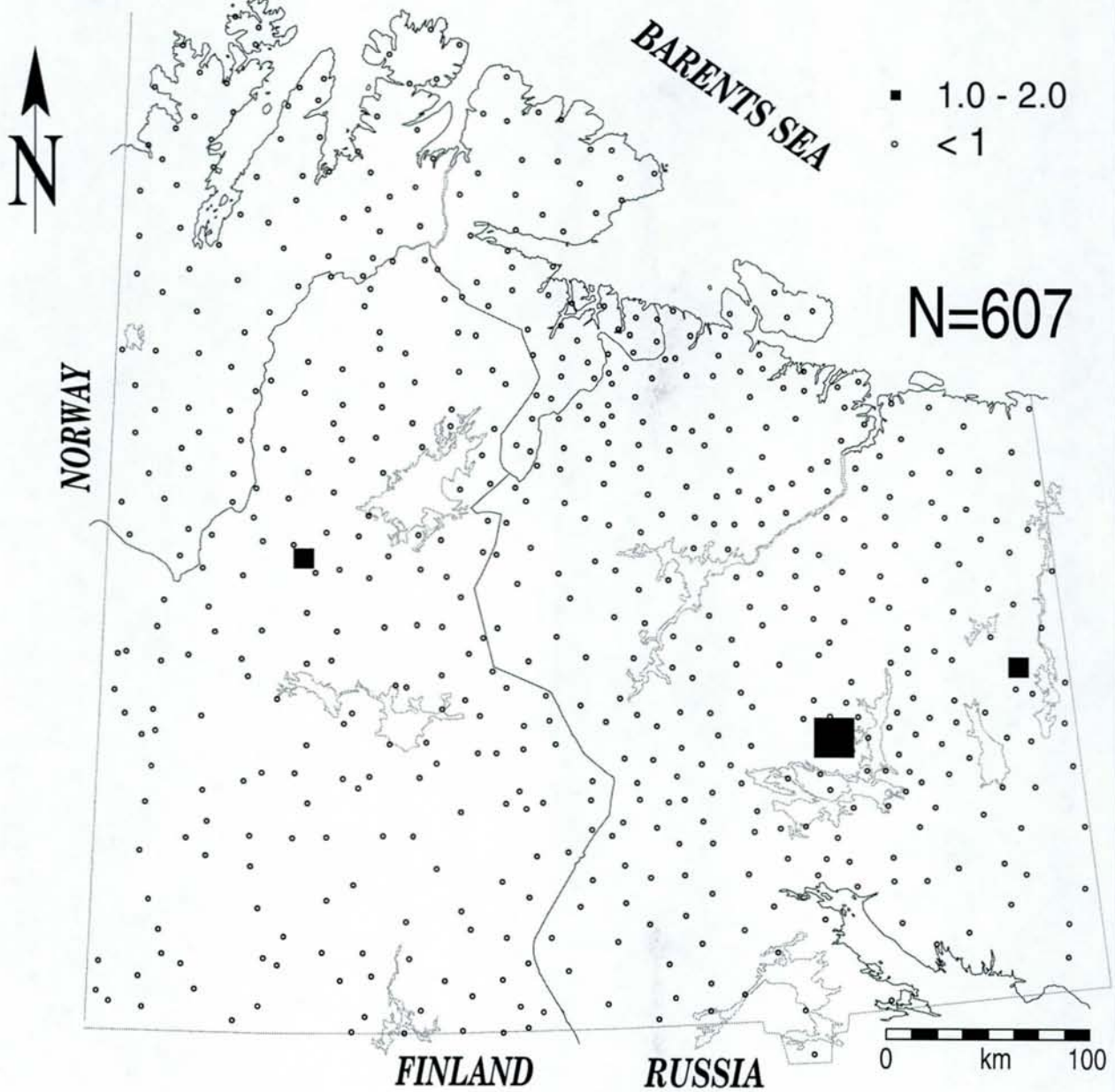


Hg Topsoil

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

mg/kg

0-5cm, air dried, <2 mm, INAA



MERCURY IN TOPSOIL



Hg

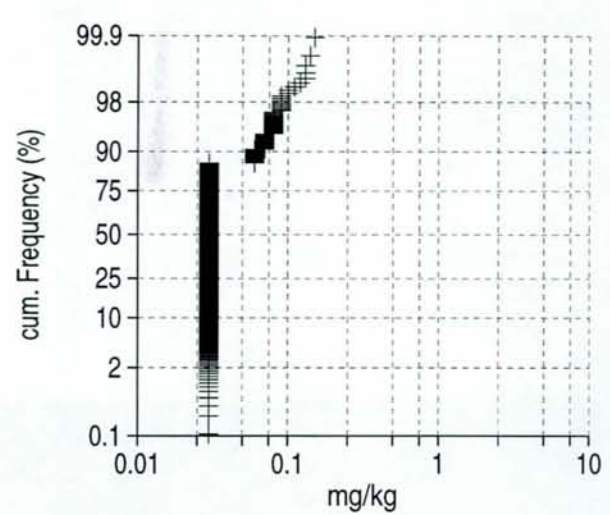
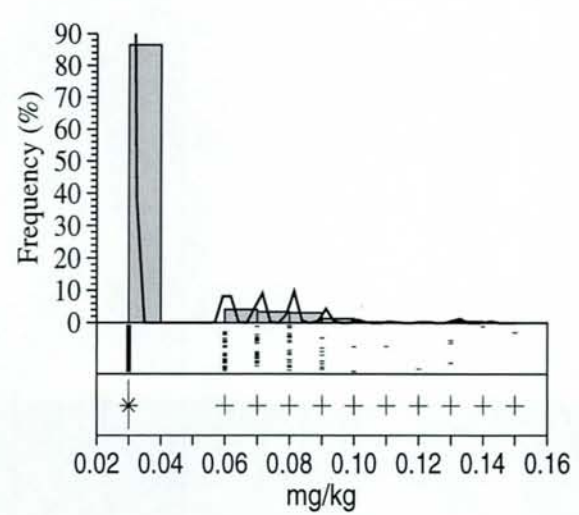
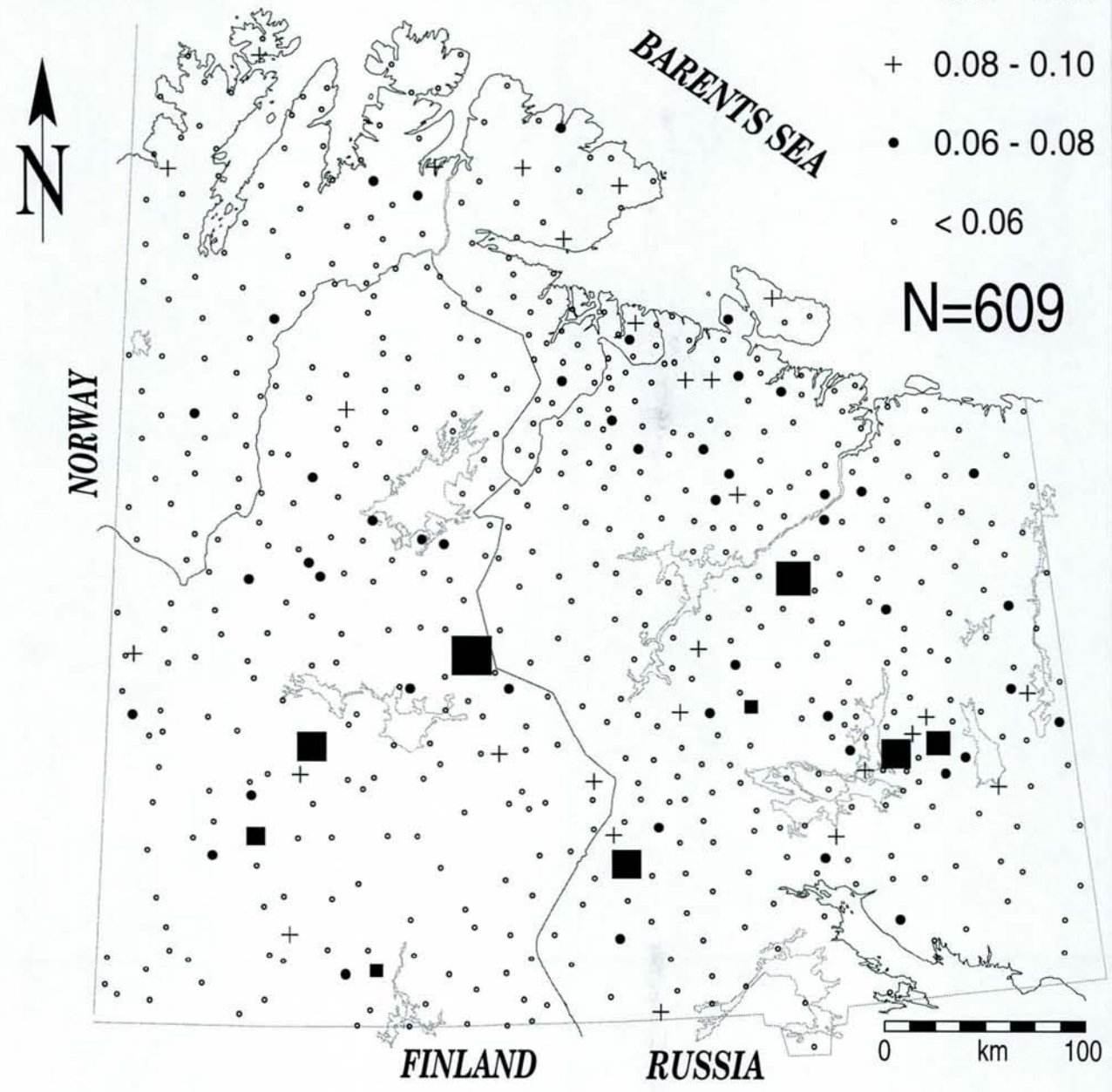
B-horizon

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

mg/kg

- 0.10 - 0.15
- + 0.08 - 0.10
- 0.06 - 0.08
- < 0.06

N=609



MERCURY IN C-HORIZON

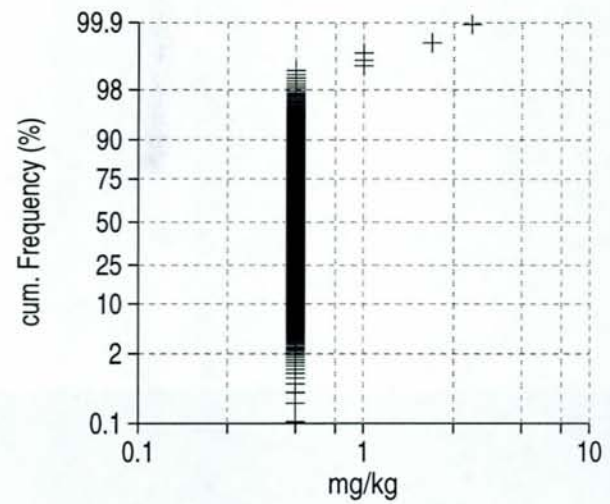
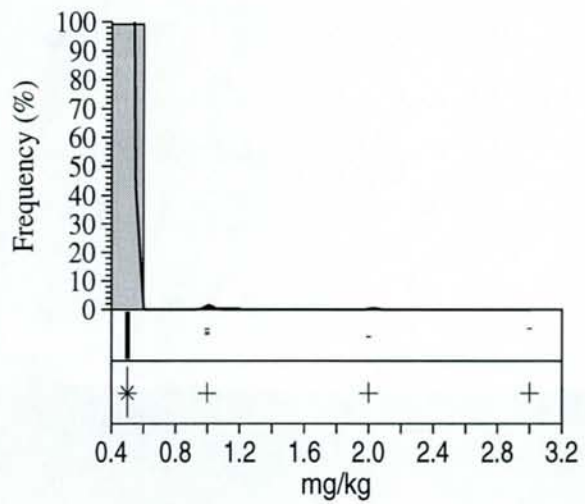
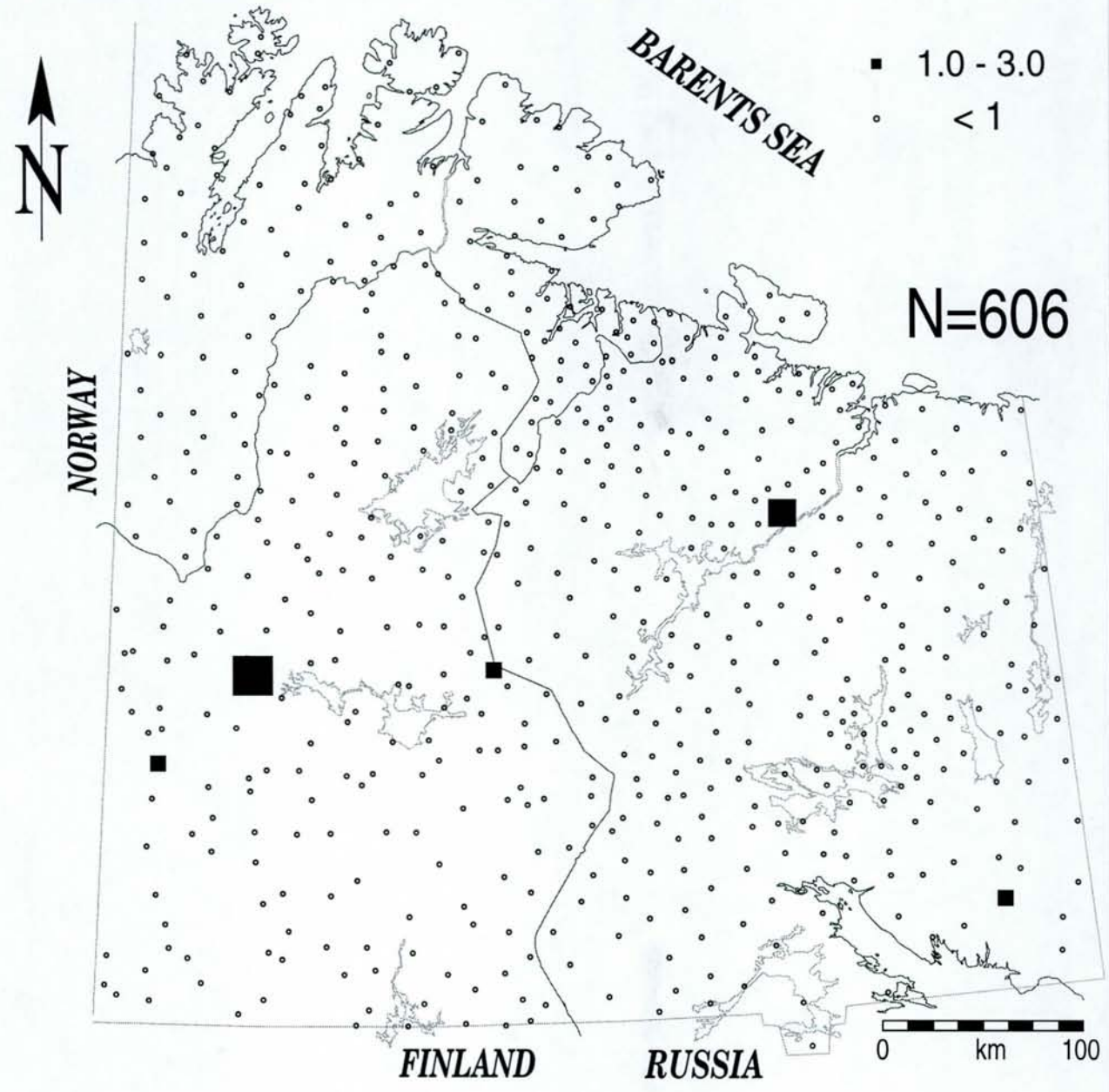


Hg C-horizon

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

mg/kg

air dried, <2 mm, INAA



MERCURY IN C-HORIZON

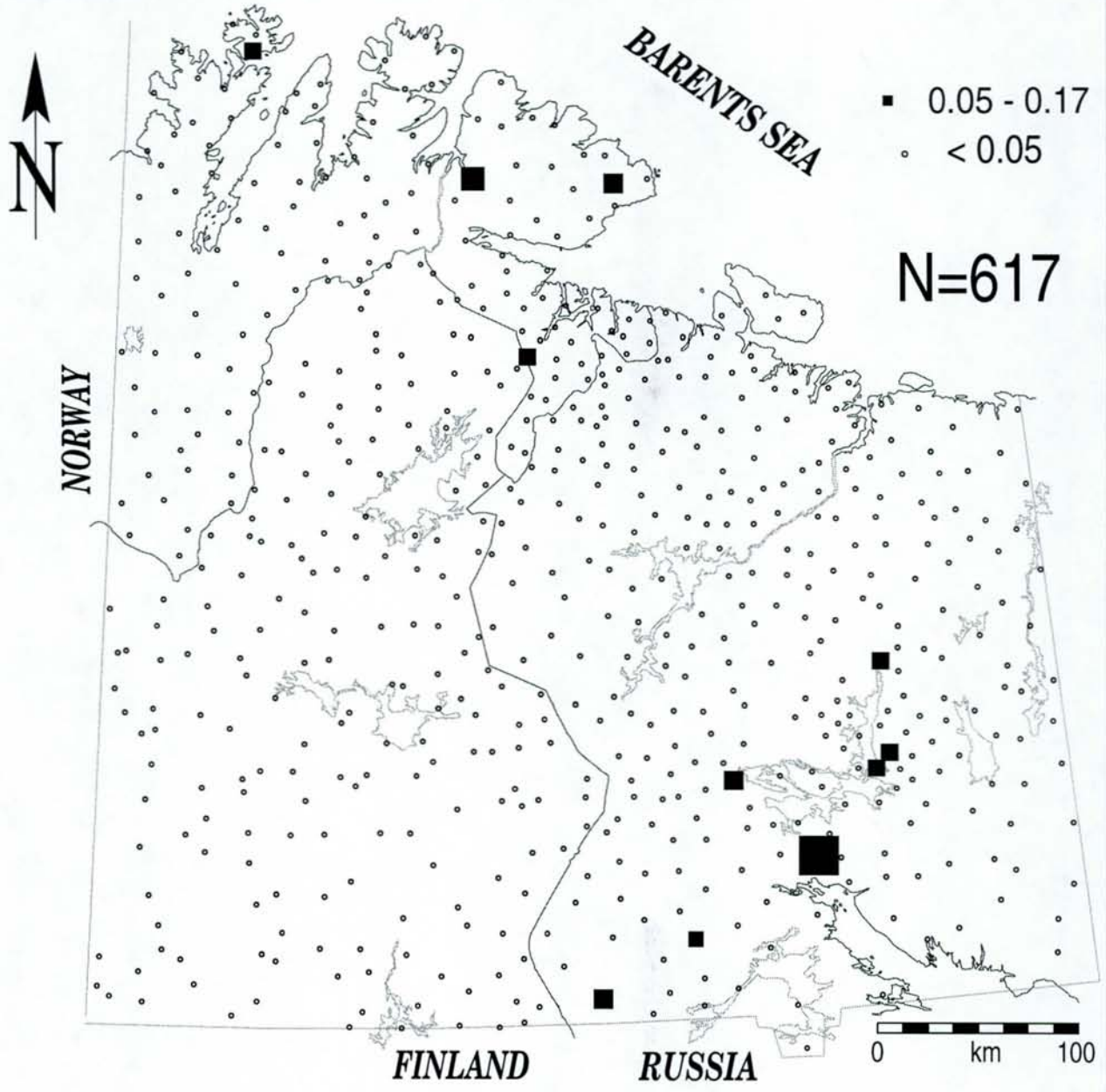


Li Humus

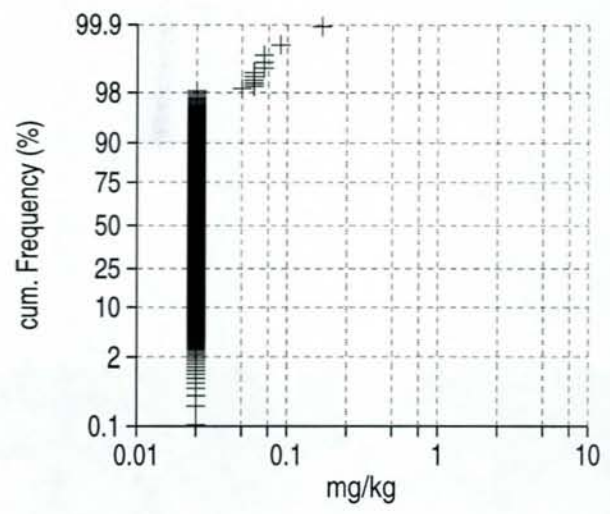
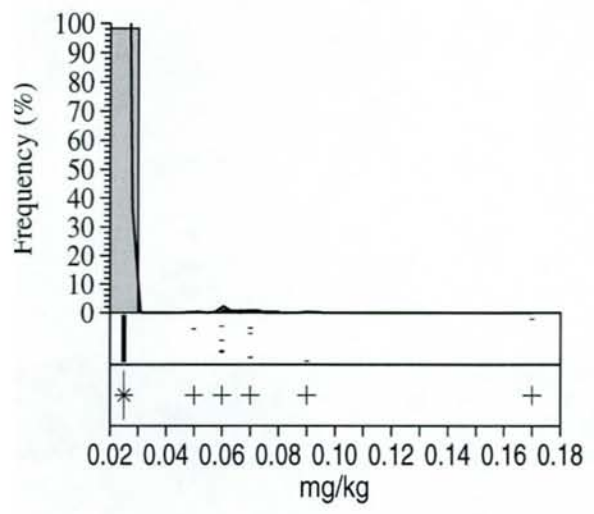
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

mg/kg

air dried, <2 mm, 1M amm. acetate, ICP-AES



LITHIUM IN HUMUS



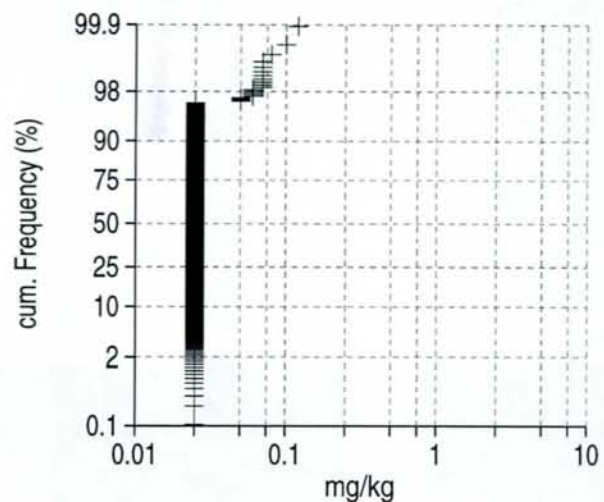
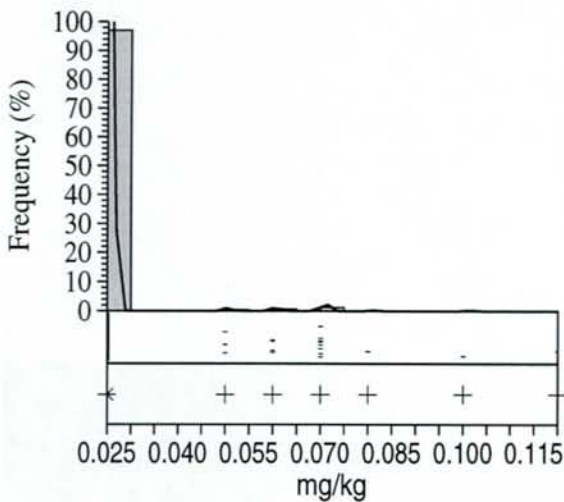
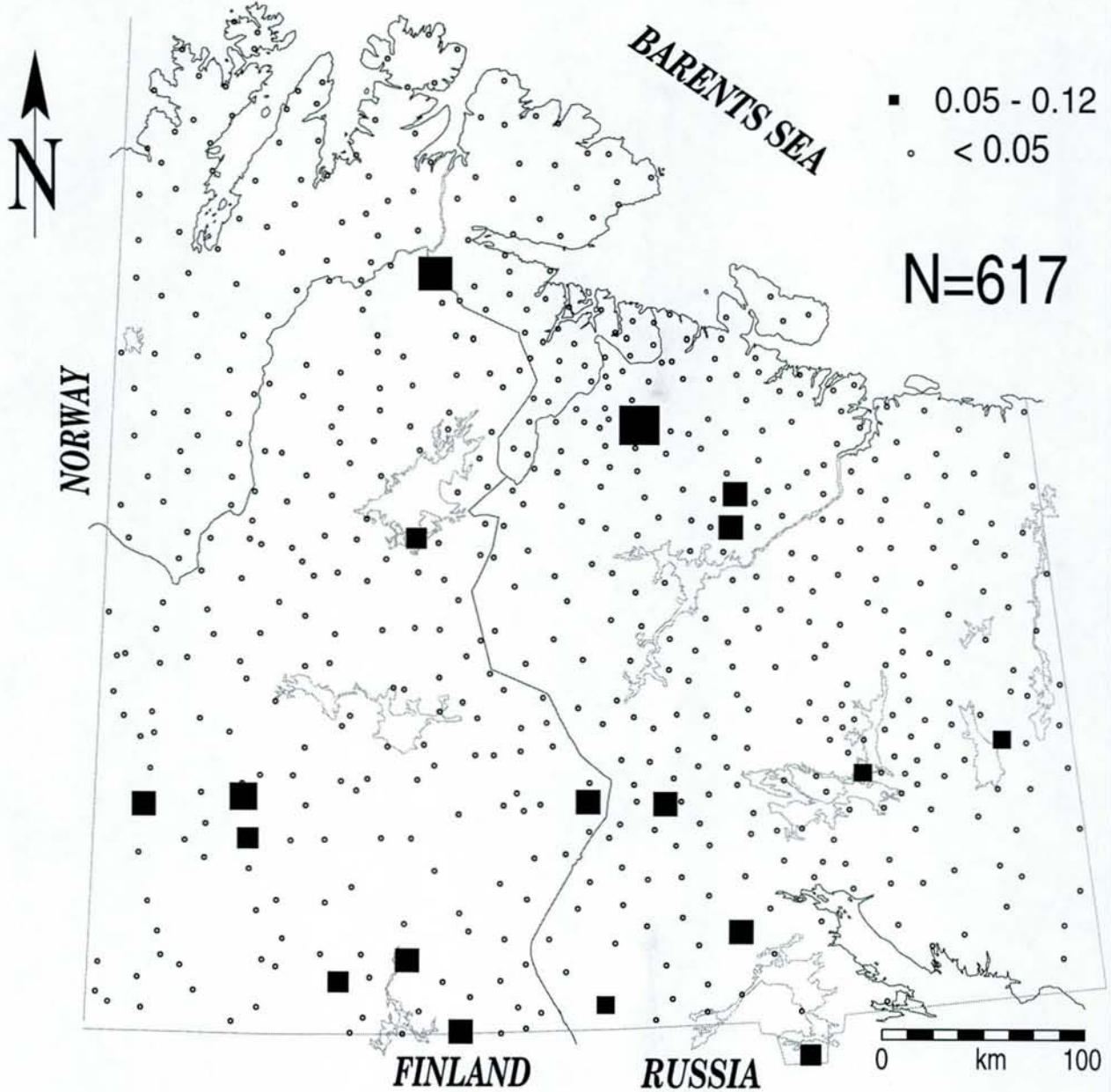


Mo Humus

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

mg/kg

air dried, <2 mm, 1M amm. acetate, ICP-AES



MOLYBDENUM IN HUMUS



Mo

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

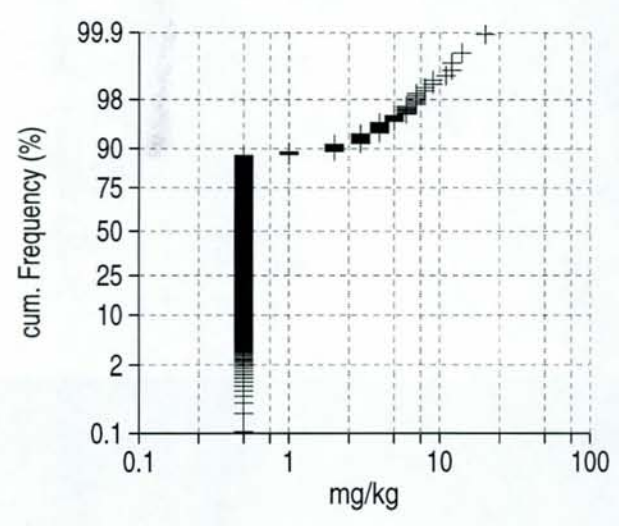
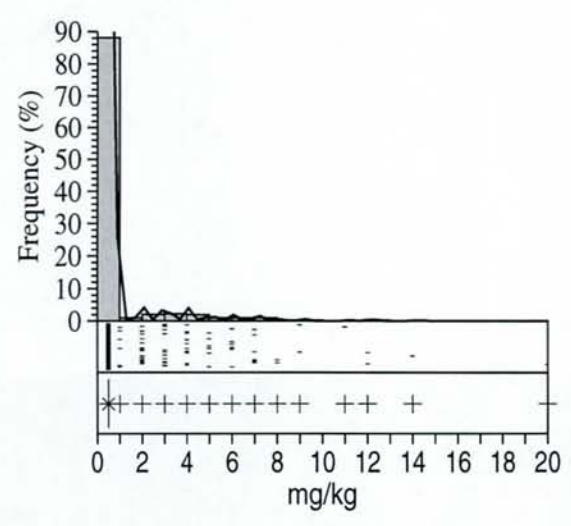
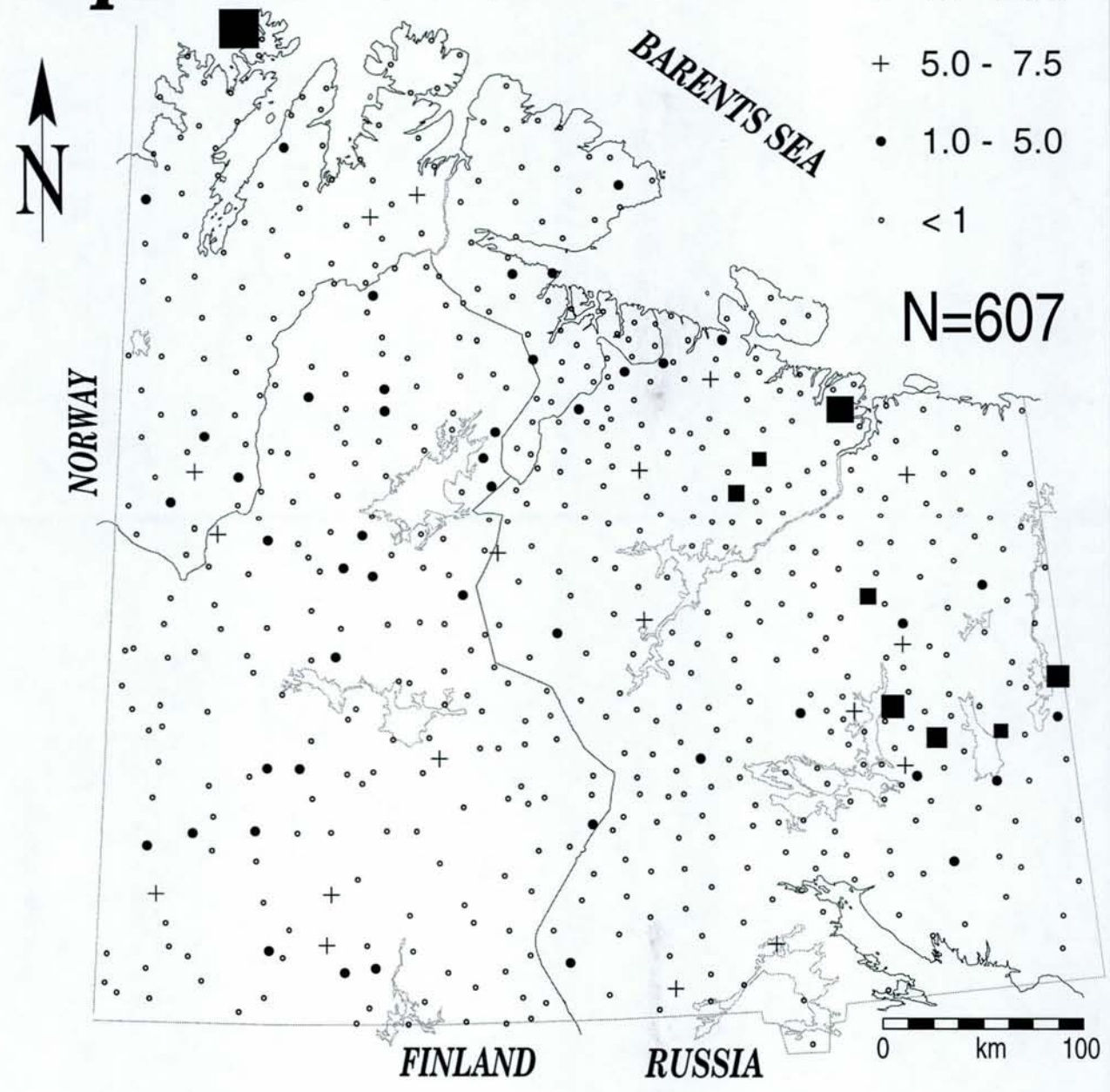
Topsoil

0-5cm, air dried, <2 mm, INAA

mg/kg

- 7.5 - 20.0
- + 5.0 - 7.5
- 1.0 - 5.0
- < 1

N=607



MOLYBDENUM IN TOPSOIL



Mo

KOLA ECOGEOCHEMISTRY

Regional Mapping 1995

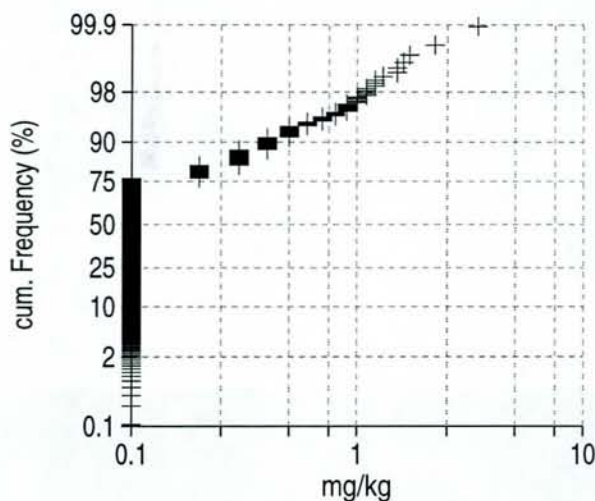
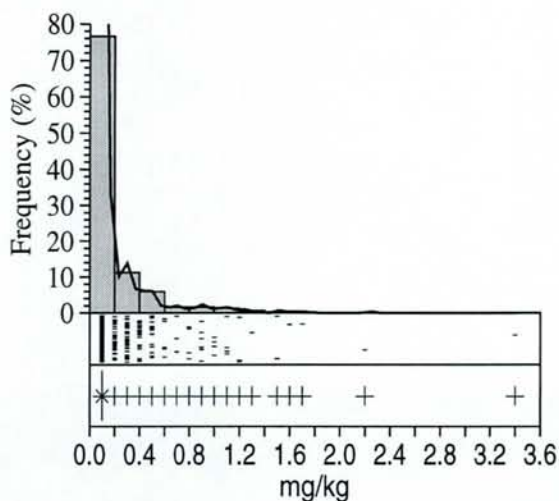
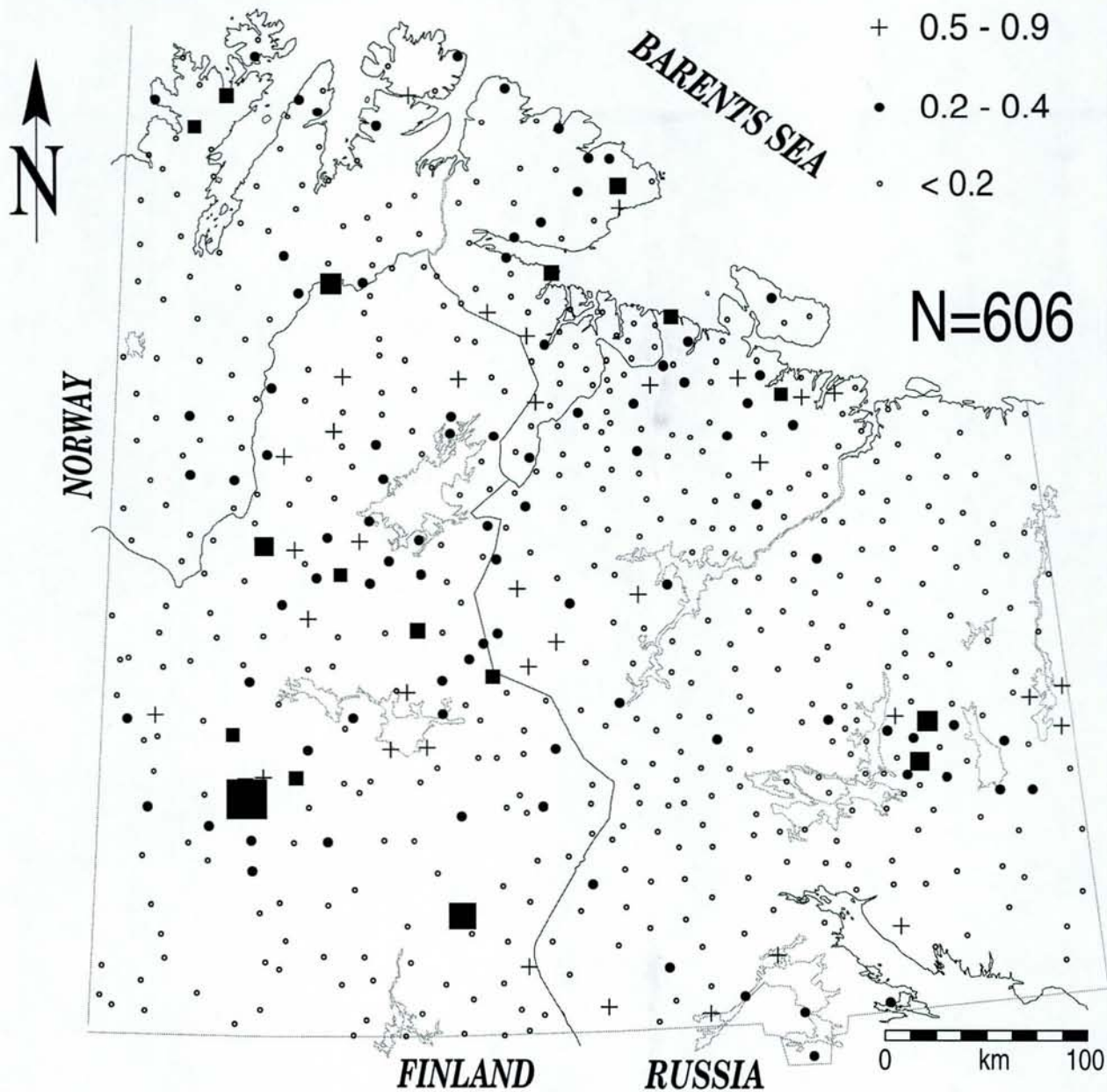
CKE-GTK-NGU

C-horizon

air dried, <2 mm, aqua regia, ICP-AES

mg/kg

- 1.0 - 3.4
- + 0.5 - 0.9
- 0.2 - 0.4
- < 0.2



MOLYBDENUM IN C-HORIZON



Mo

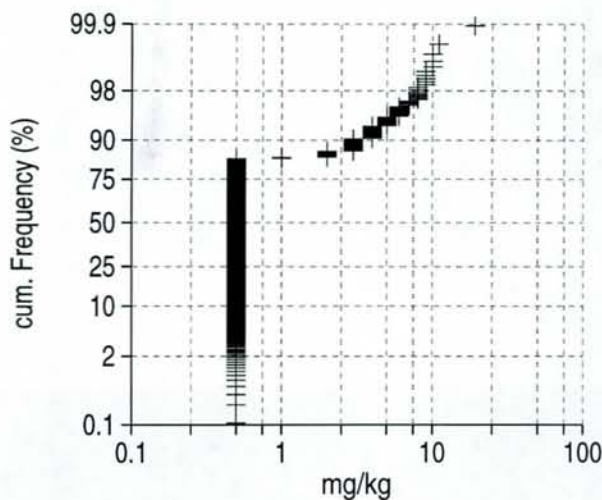
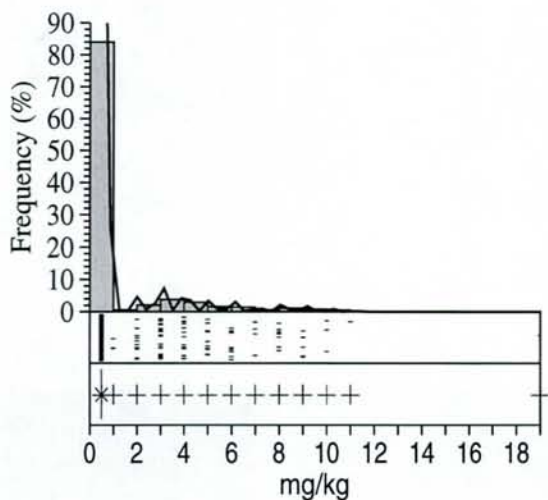
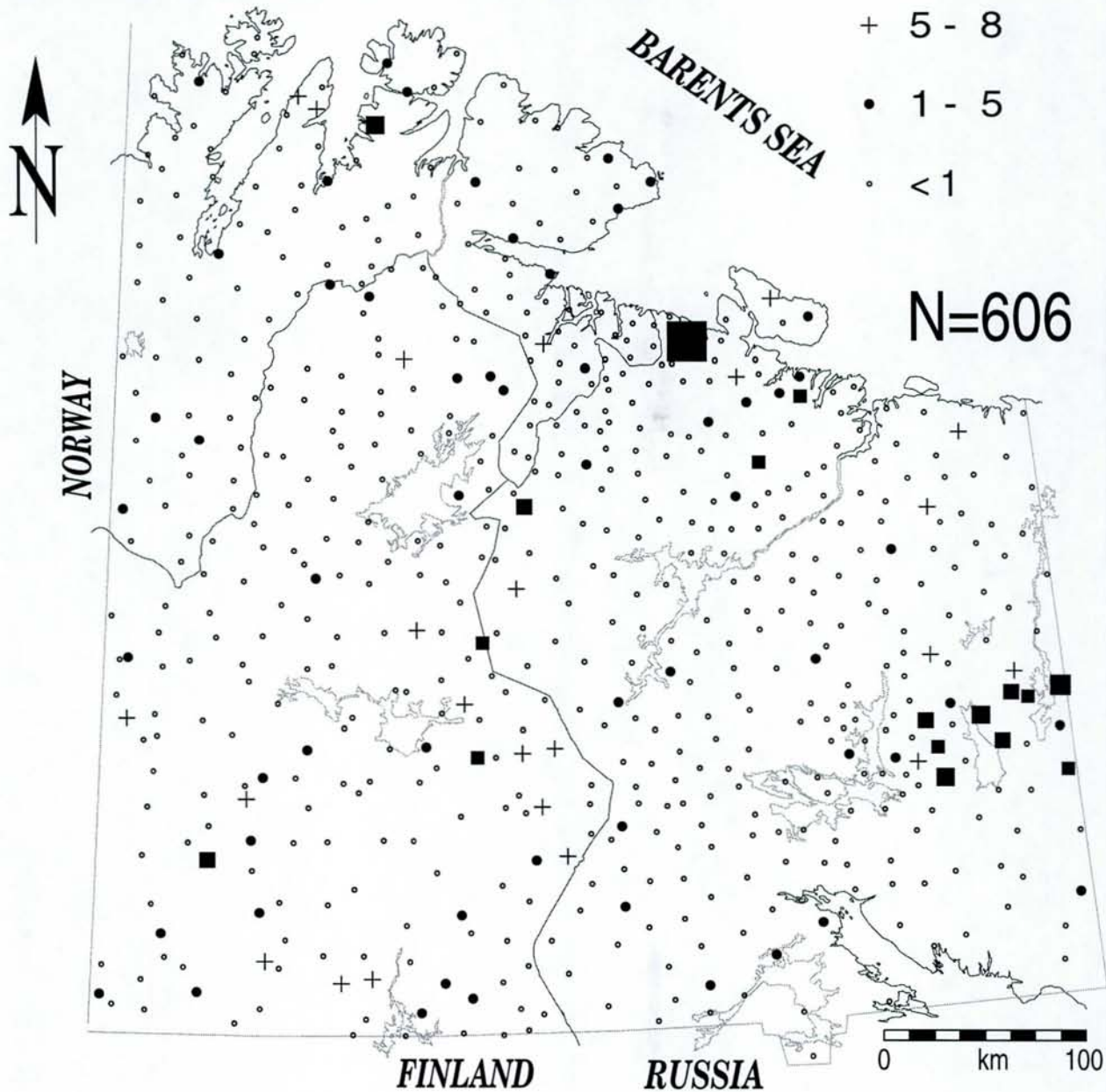
KOLA ECOGEOCHEMISTRY Regional Mapping 1995

C-horizon

CKE-GTK-NGU
air dried, <2 mm, INAA

mg/kg

- 8 - 19
- + 5 - 8
- 1 - 5
- <1



MOLYBDENUM IN C-HORIZON



N03

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

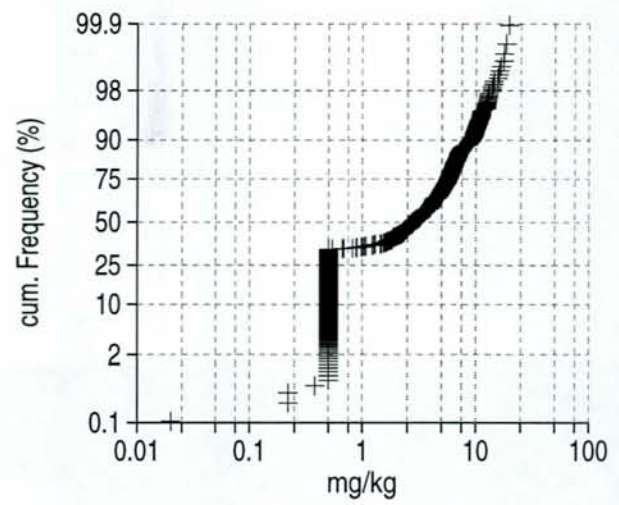
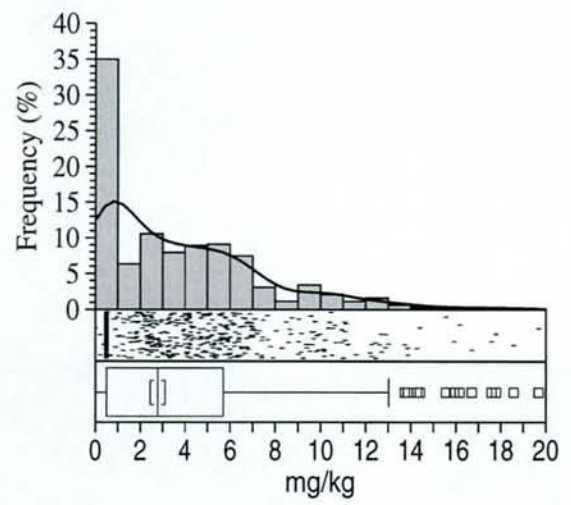
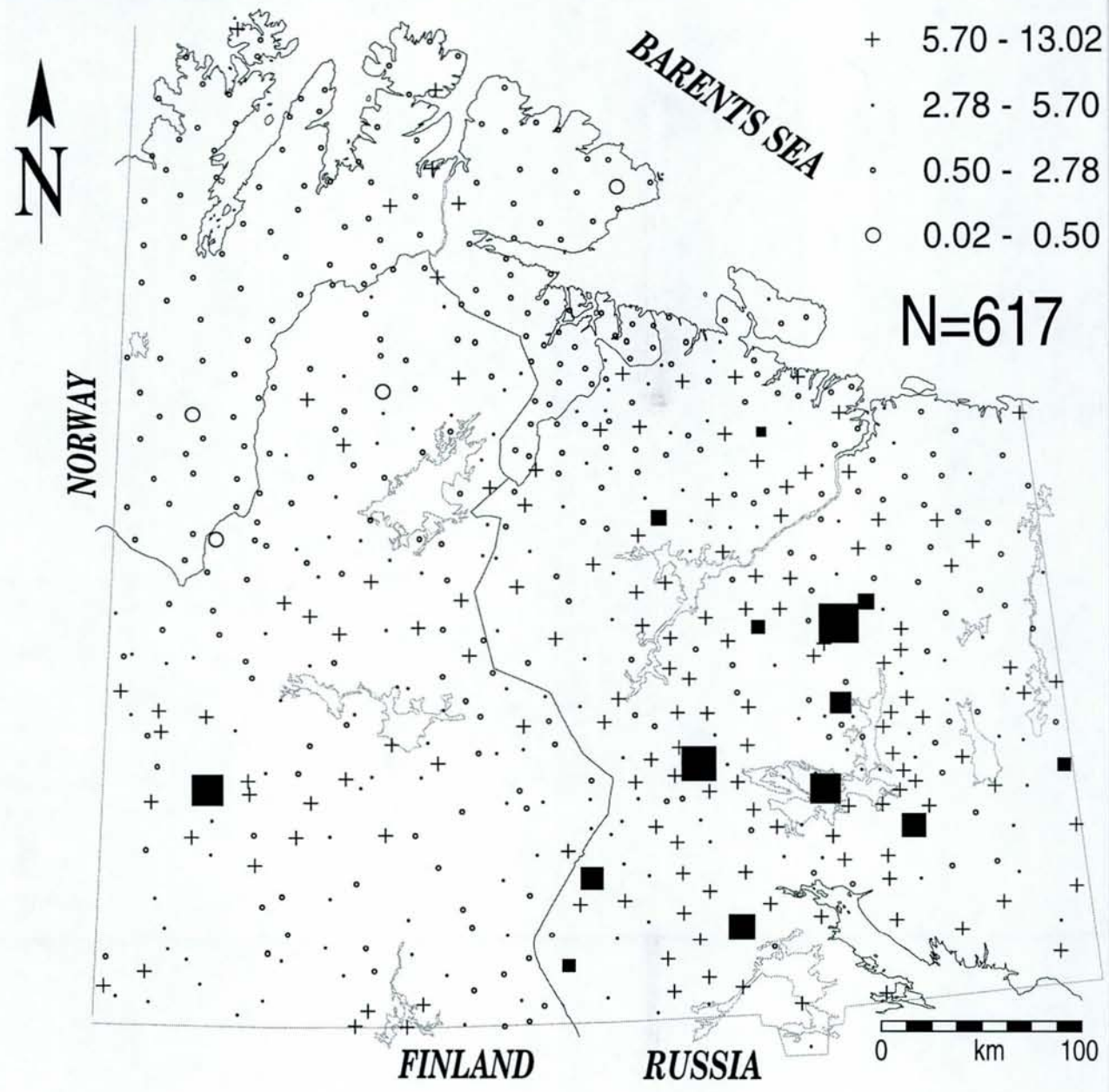
Humus

air dried, <2 mm, water extraction, IC

mg/kg

- 13.02 - 19.68
- + 5.70 - 13.02
- 2.78 - 5.70
- 0.50 - 2.78
- 0.02 - 0.50

N=617



NITRATE IN HUMUS



N03

KOLA ECOGEOCHEMISTRY Regional Mapping 1995

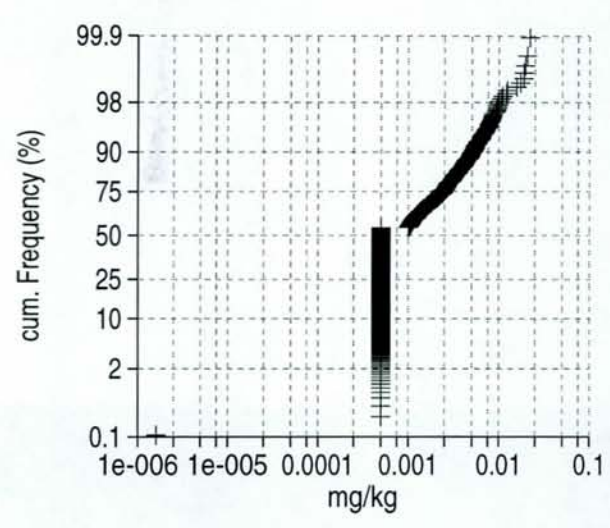
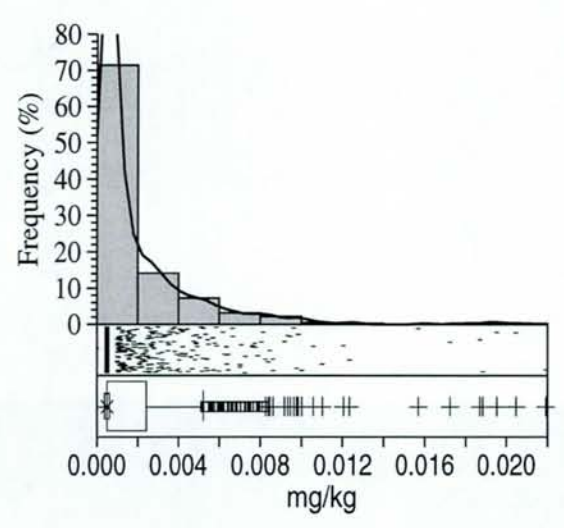
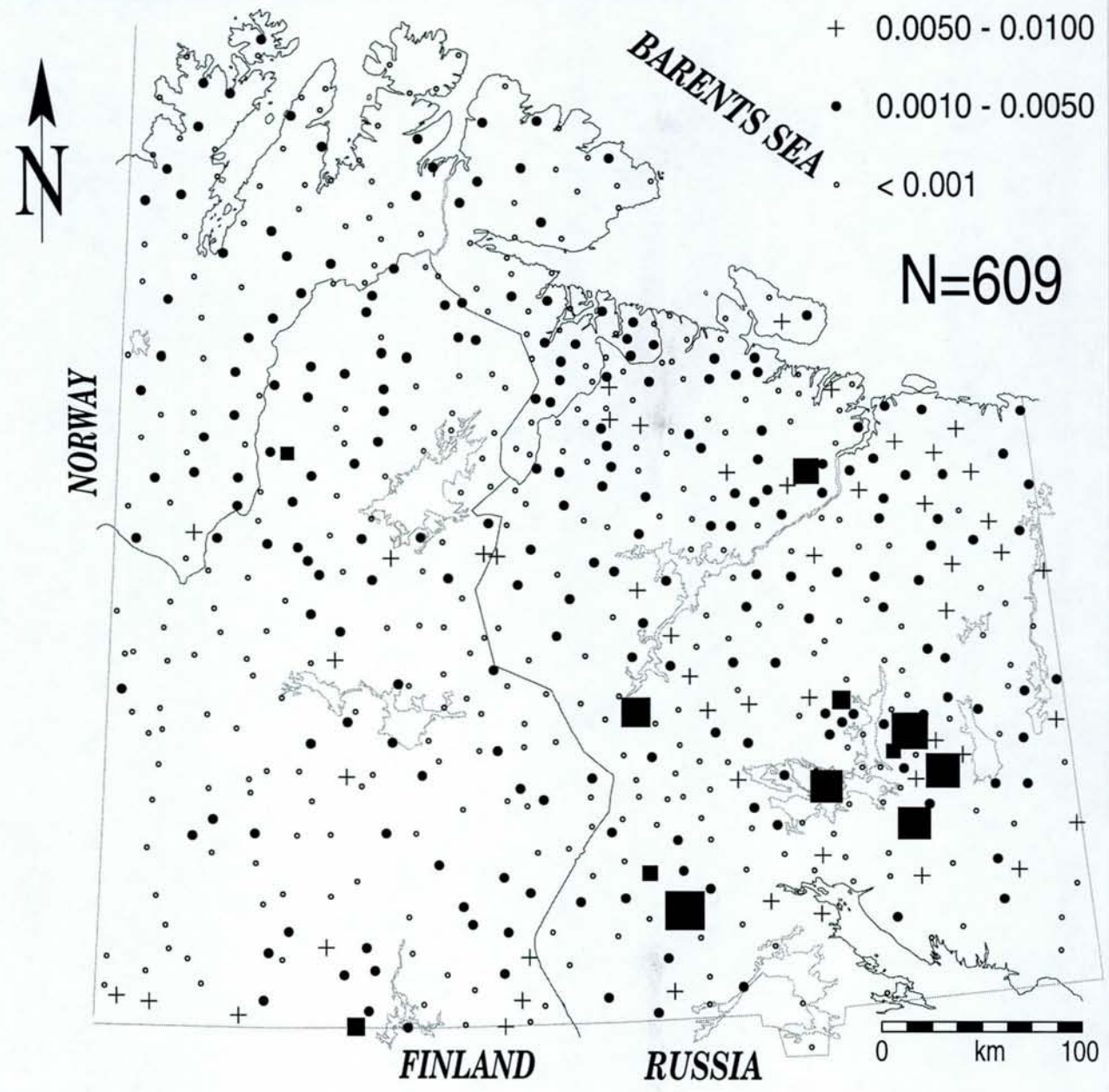
B-horizon

CKE-GTK-NGU

air dried, <2 mm, water extraction, IC

mg/kg

- 0.0100 - 0.0220
- + 0.0050 - 0.0100
- 0.0010 - 0.0050
- < 0.001



NITRATE IN B-HORIZON



N03

KOLA ECOGEOCHEMISTRY Regional Mapping 1995

CKE-GTK-NGU

C-horizon

air dried, <2 mm, water extraction, IC

mg/kg

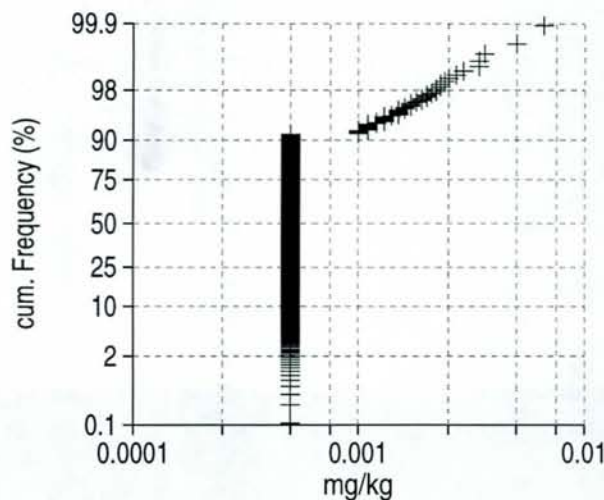
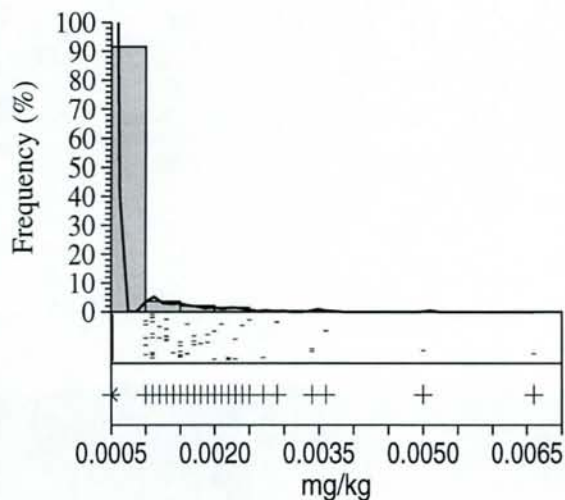
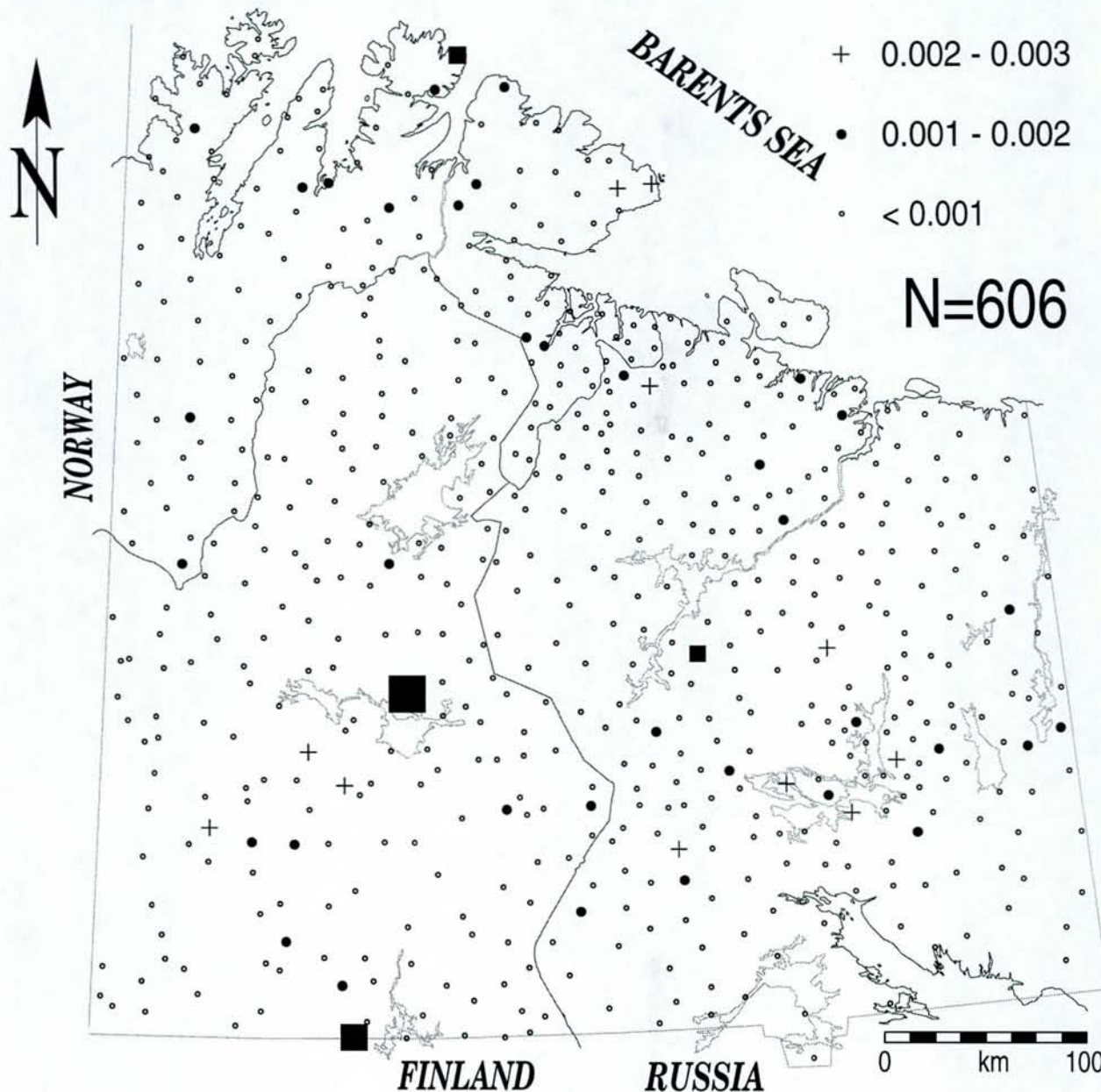
■ 0.003 - 0.007

+ 0.002 - 0.003

● 0.001 - 0.002

○ < 0.001

N=606



NITRATE IN C-HORIZON



Na C-horizon

KOLA ECOGEOCHEMISTRY

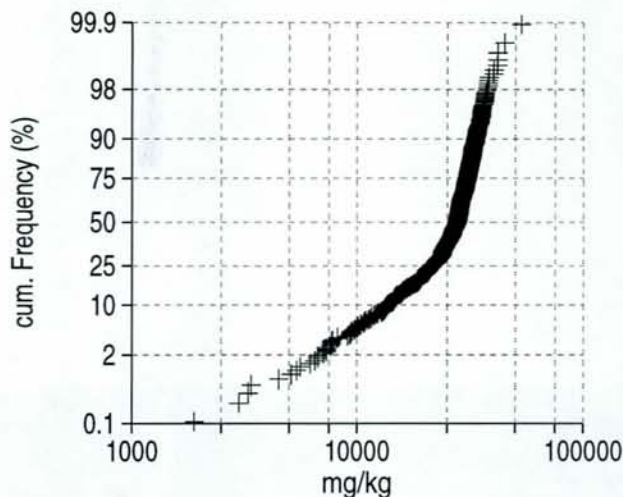
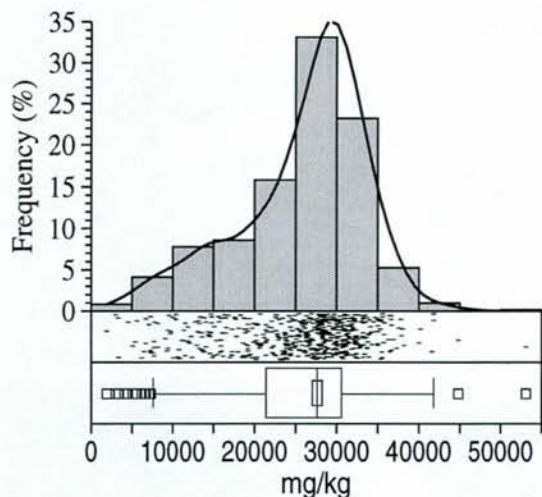
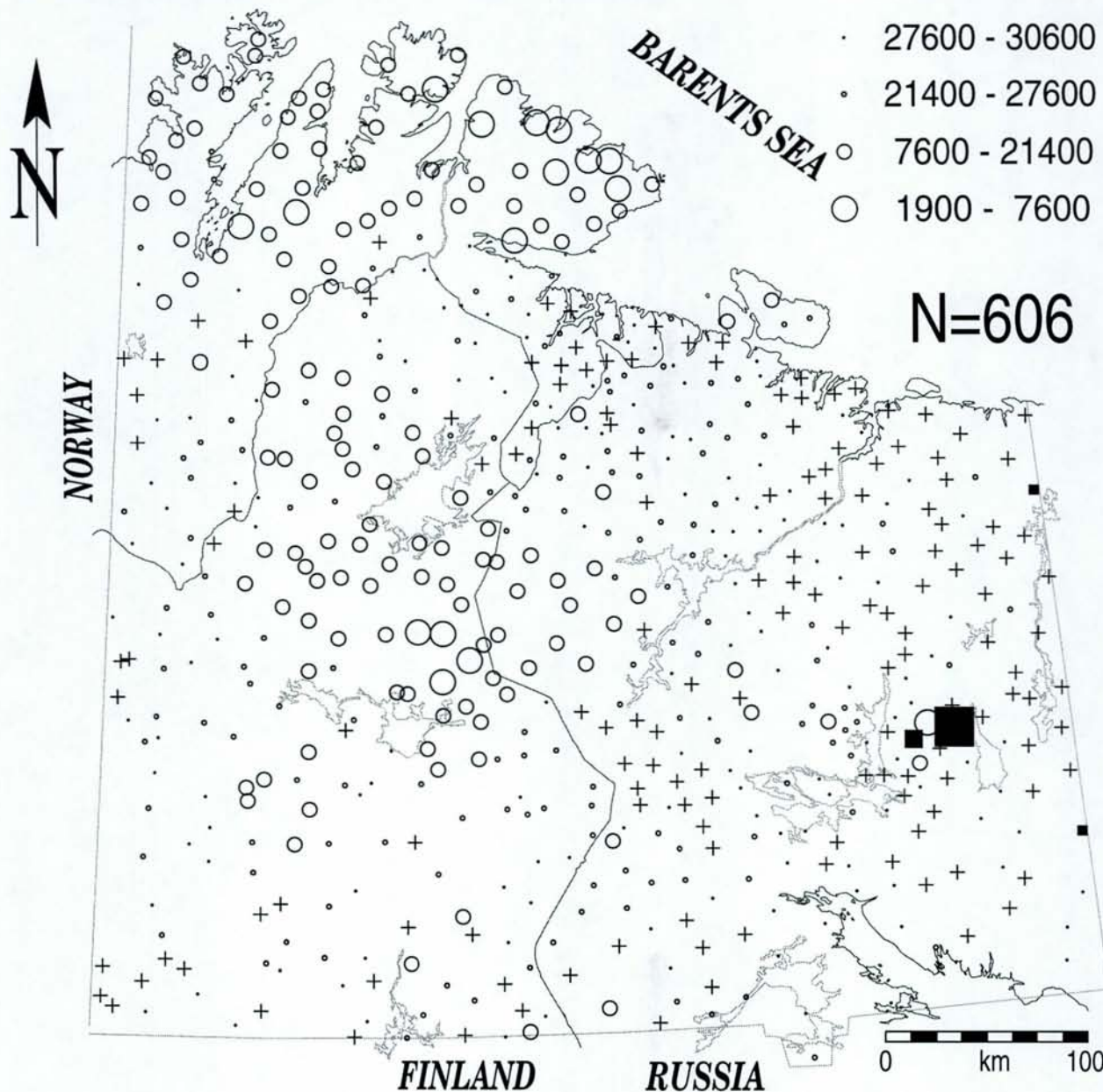
Regional Mapping 1995

CKE-GTK-NGU

air dried, <2 mm, INAA

- mg/kg
- 41800 - 53100
 - + 30600 - 41800
 - 27600 - 30600
 - 21400 - 27600
 - 7600 - 21400
 - 1900 - 7600

N=606



SODIUM IN C-HORIZON



Ni Topsoil

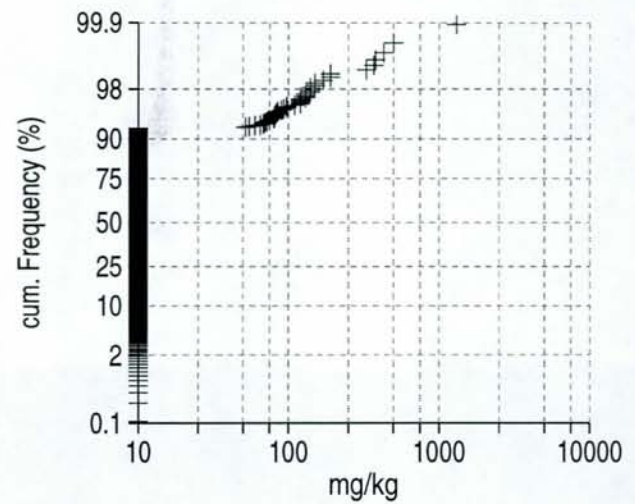
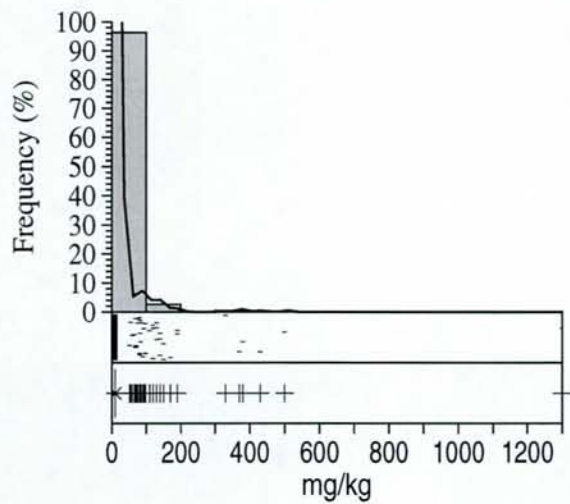
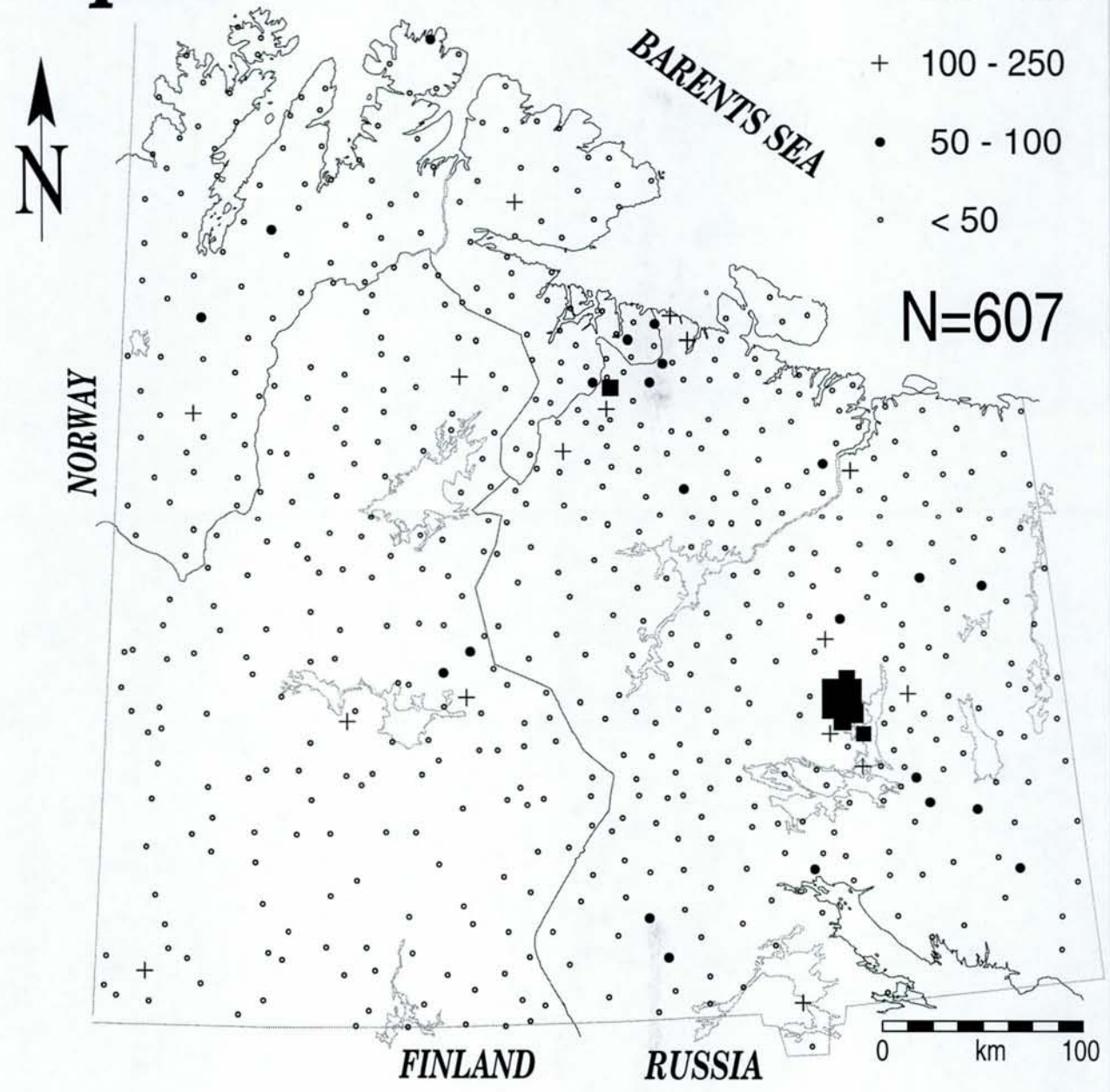
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

0-5cm, air dried, <2 mm, INAA

mg/kg

- 250 - 1300
- + 100 - 250
- 50 - 100
- < 50

N=607



NICKEL IN TOPSOIL



Ni

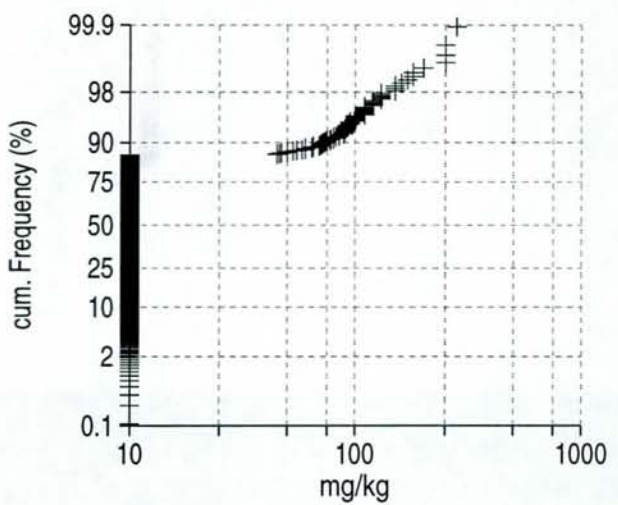
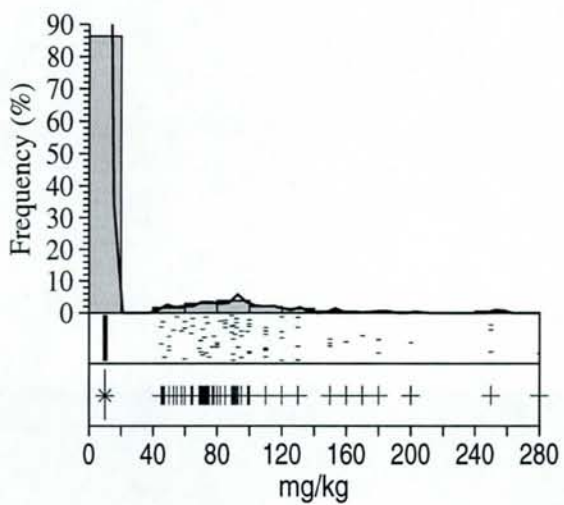
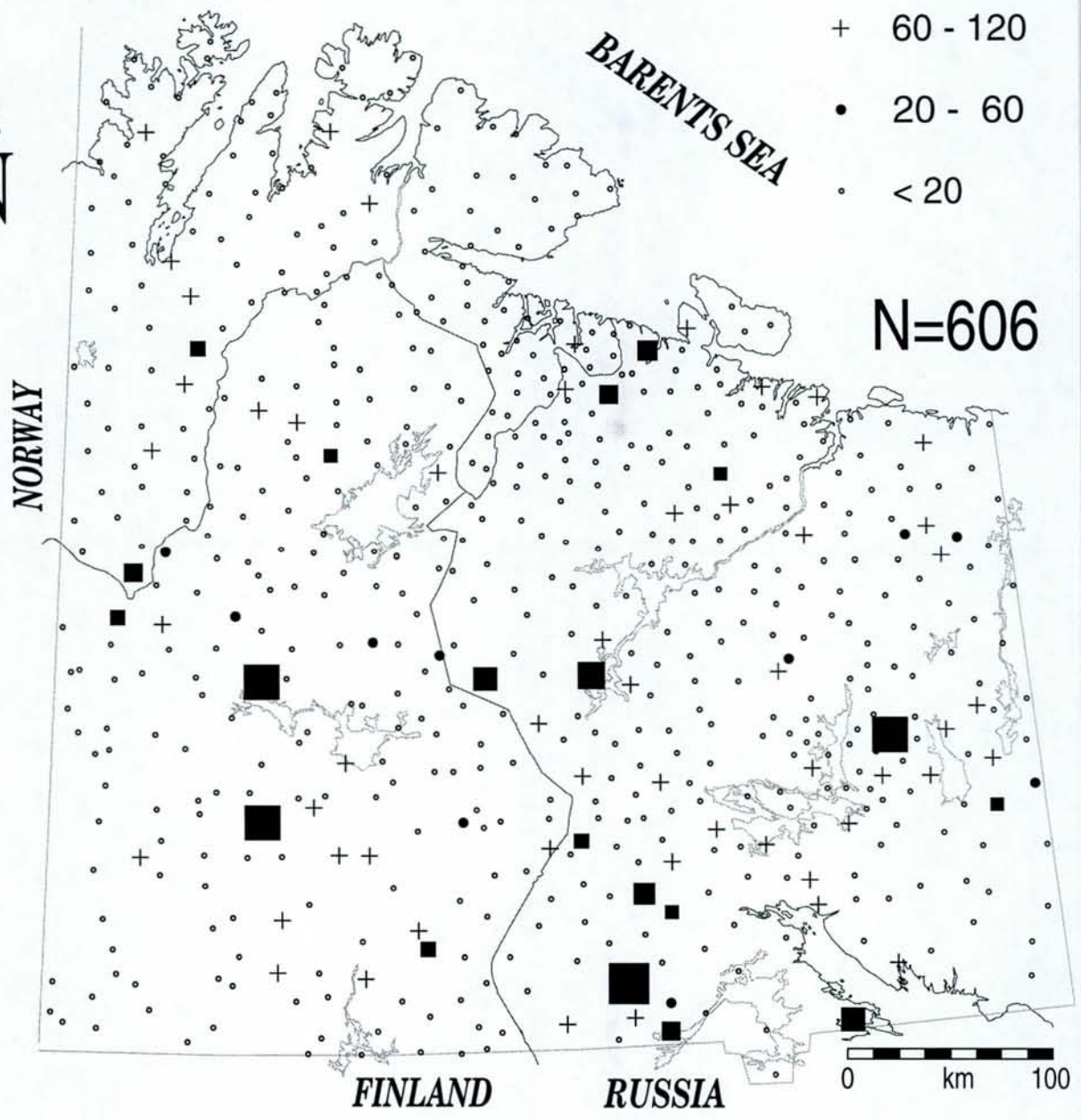
KOLA ECOGEOCHEMISTRY Regional Mapping 1995

C-horizon

CKE-GTK-NGU
air dried, <2 mm, INAA

mg/kg

- 120 - 280
- + 60 - 120
- 20 - 60
- < 20



NICKEL IN C-HORIZON



P04

KOLA ECOGEOCHEMISTRY Regional Mapping 1995

CKE-GTK-NGU

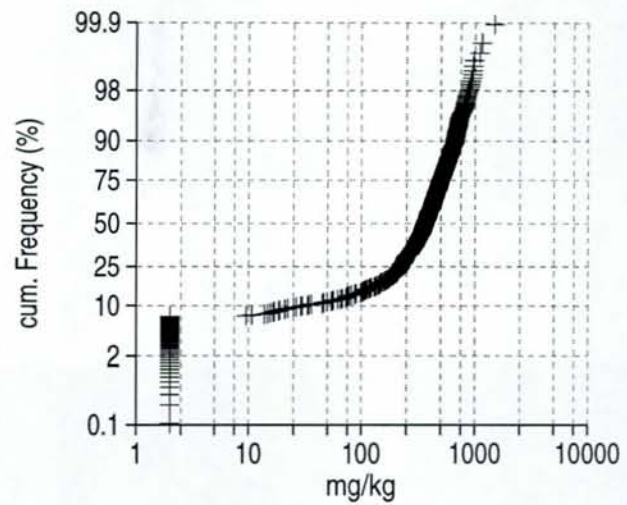
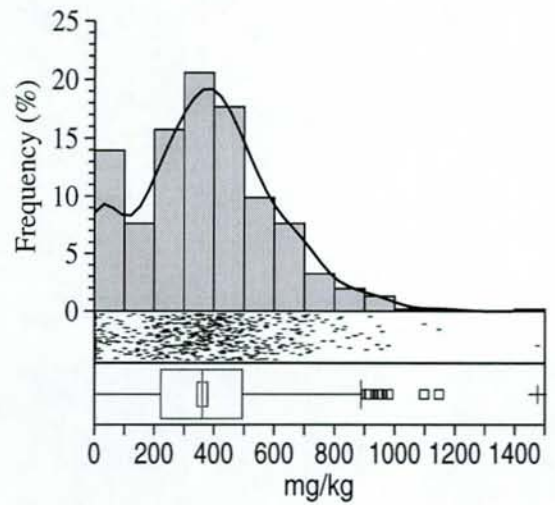
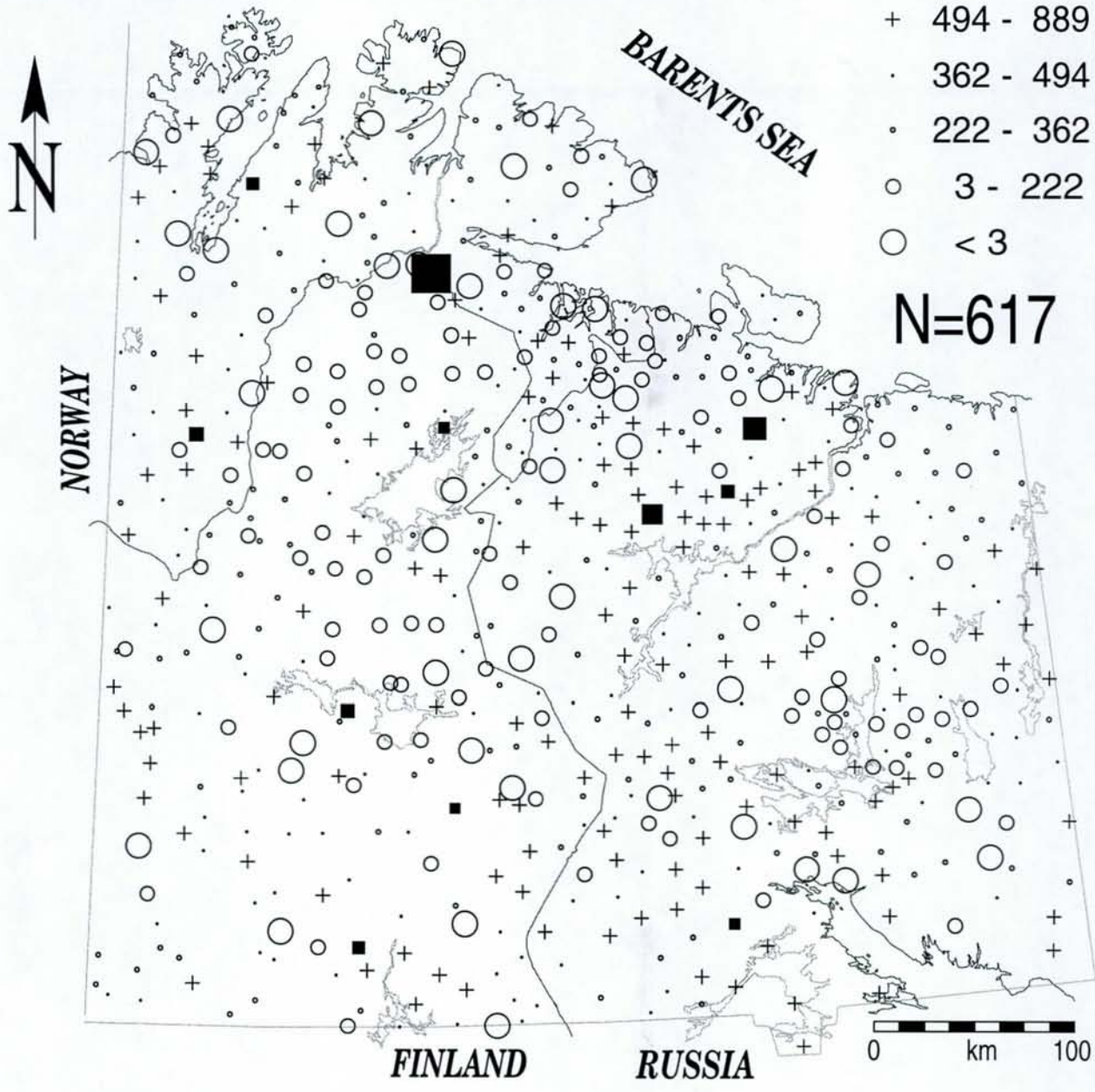
Humus

air dried, <2 mm, water extraction, IC

mg/kg

- 889 - 1477
- + 494 - 889
- 362 - 494
- 222 - 362
- 3 - 222
- < 3

N=617



PHOSPHATE IN HUMUS



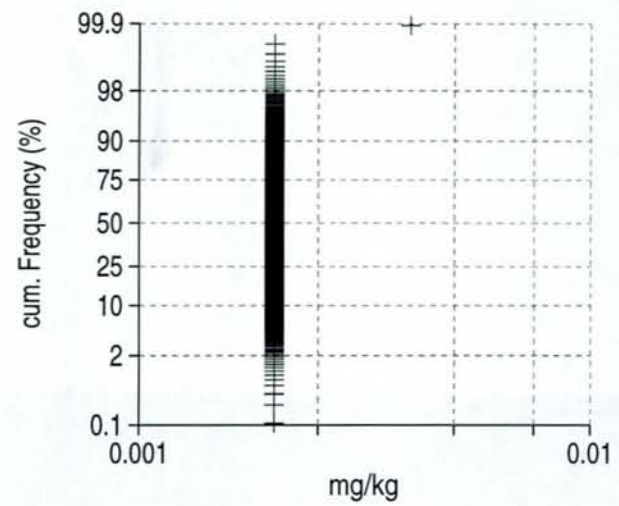
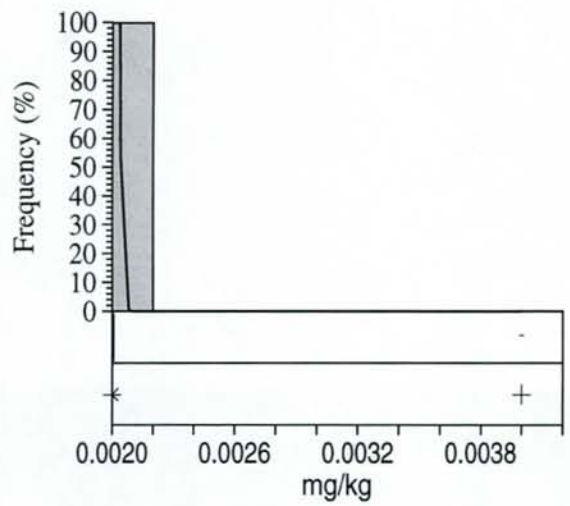
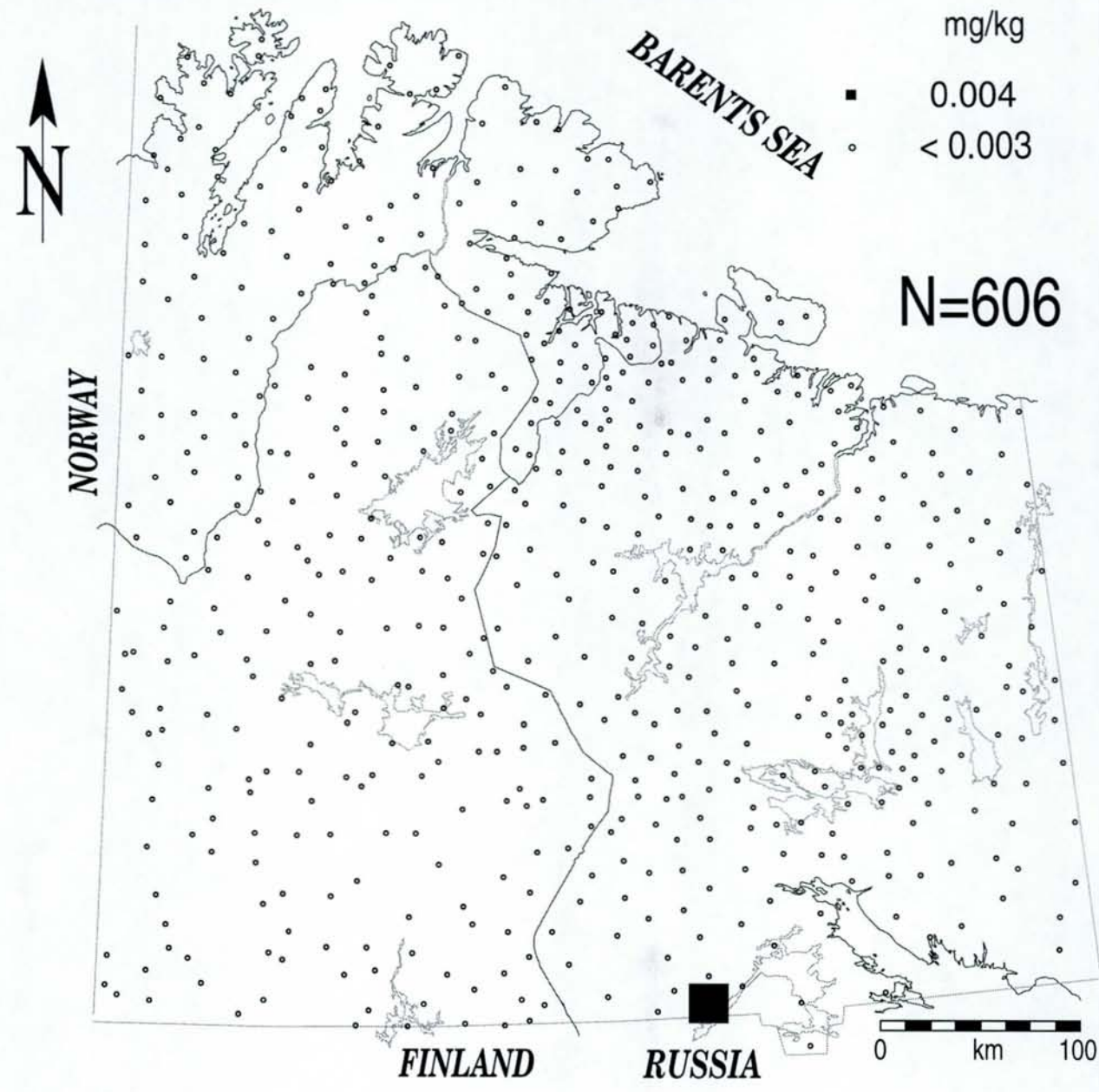
P04

KOLA ECOGEOCHEMISTRY Regional Mapping 1995

C-horizon

CKE-GTK-NGU

air dried, <2 mm, water extraction, IC



PHOSPHATE IN C-HORIZON



S04 Humus

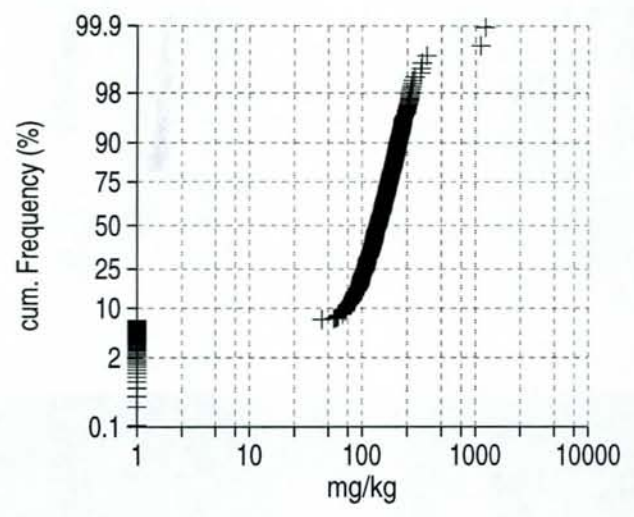
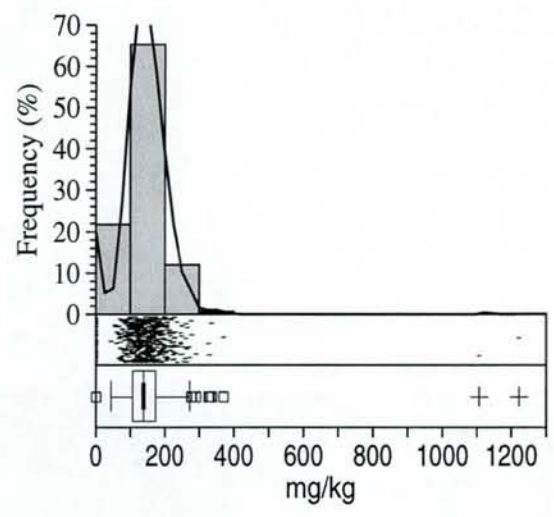
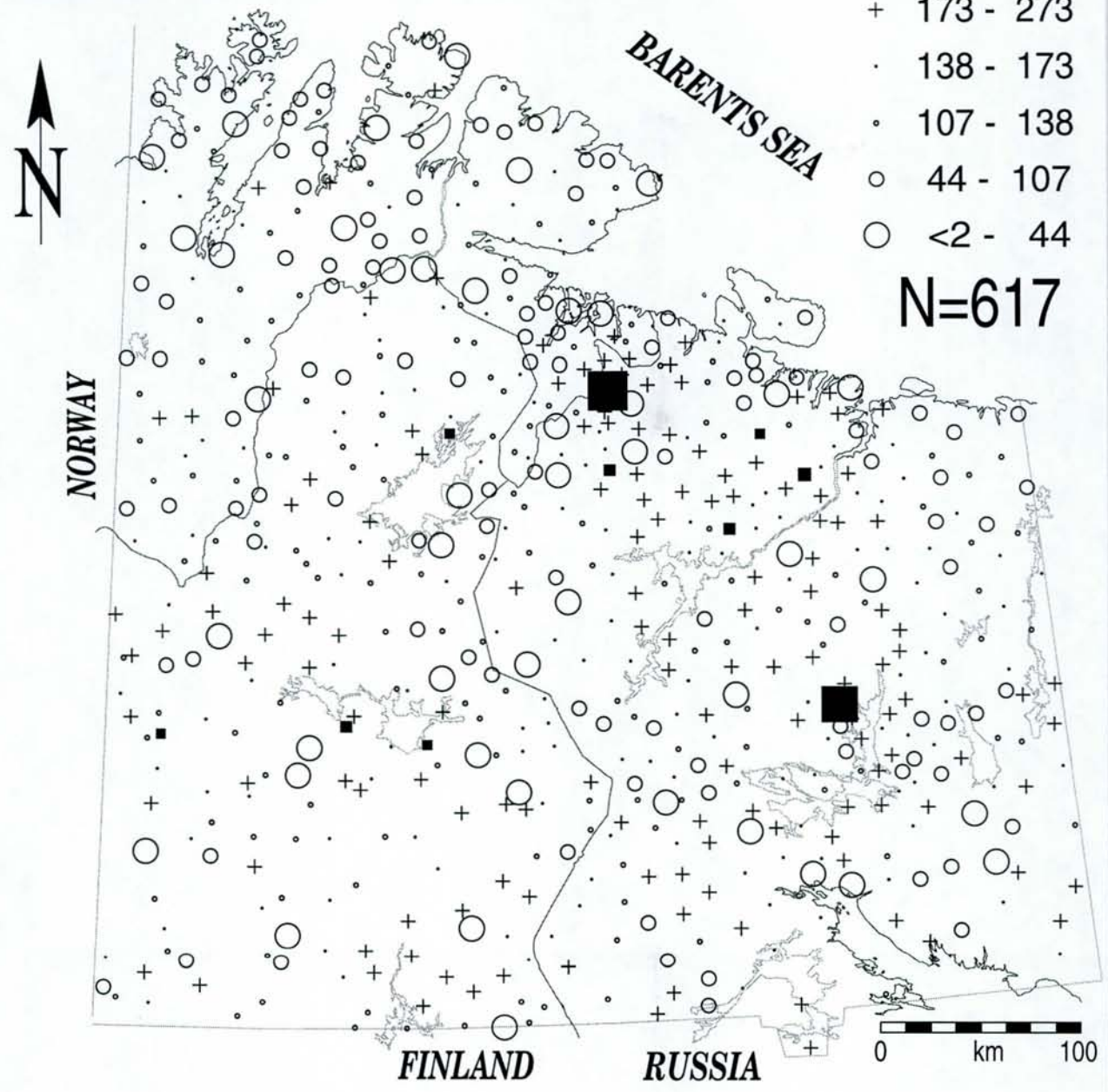
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

air dried, <2 mm, water extraction, IC

mg/kg

- 273 - 1222
- + 173 - 273
- 138 - 173
- 107 - 138
- 44 - 107
- <2 - 44

N=617



SULFATE IN HUMUS



S04 B-horizon

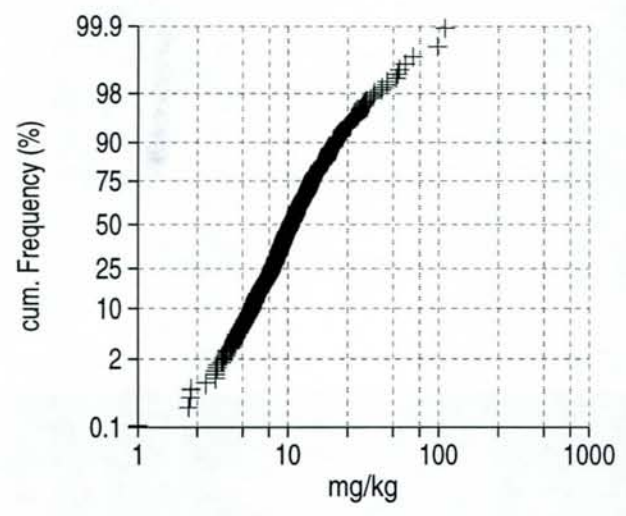
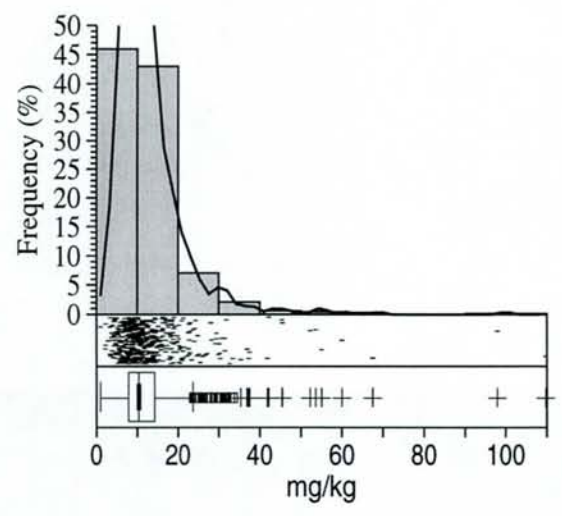
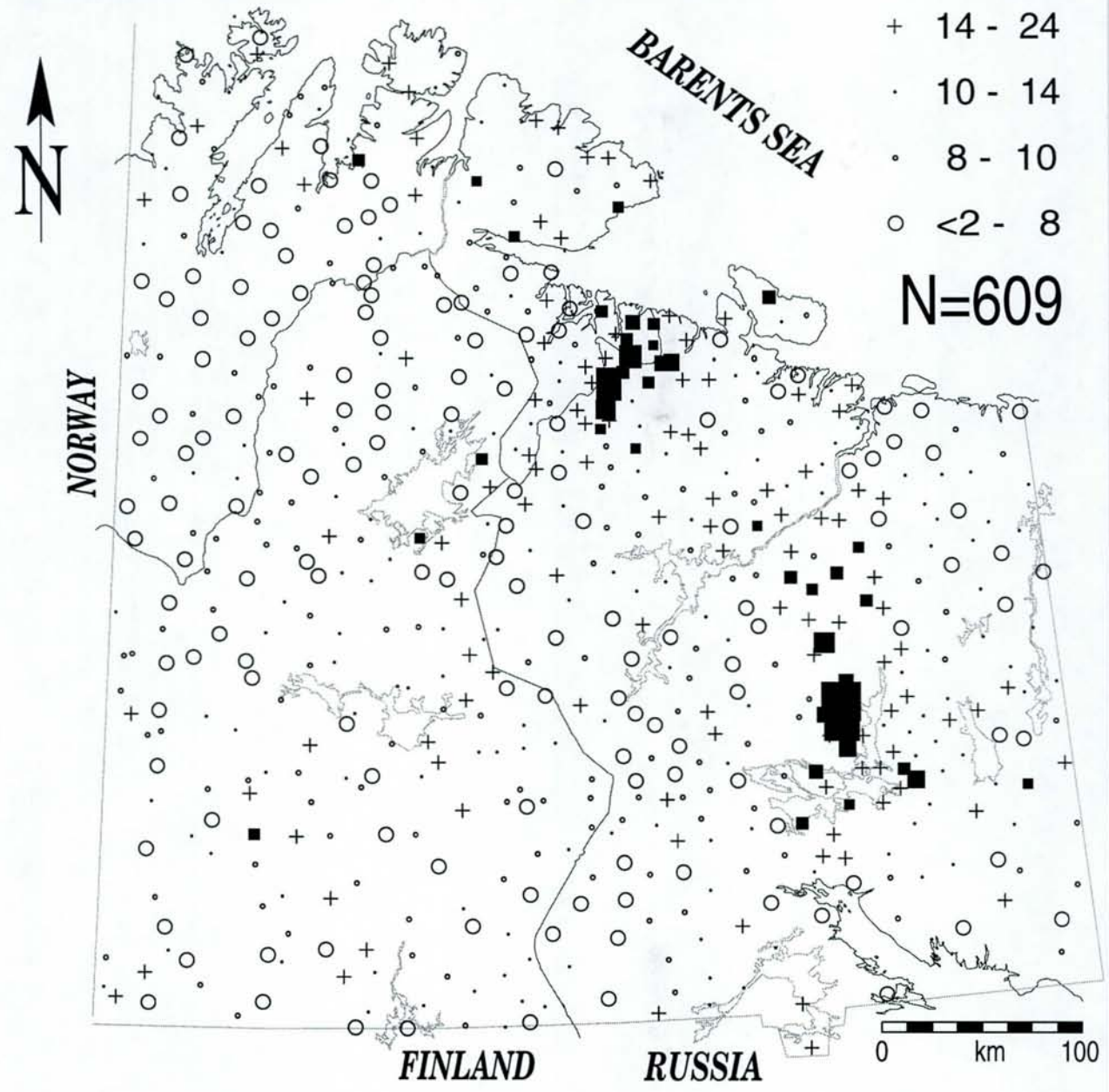
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

air dried, <2 mm, water extraction, IC

mg/kg

- 24 - 110
- + 14 - 24
- 10 - 14
- 8 - 10
- <2 - 8

N=609



SULFATE IN B-HORIZON



S04

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995

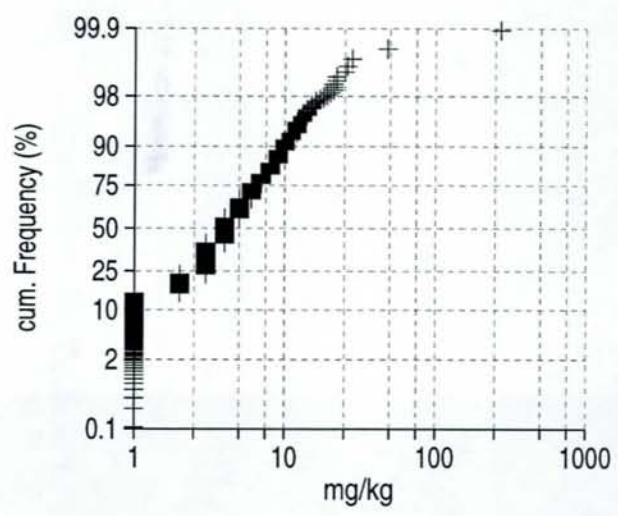
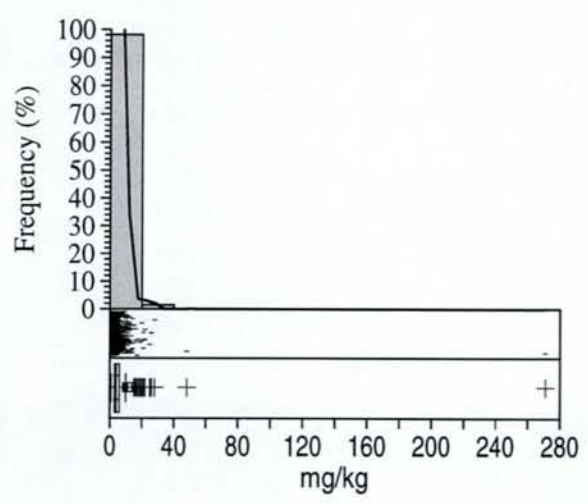
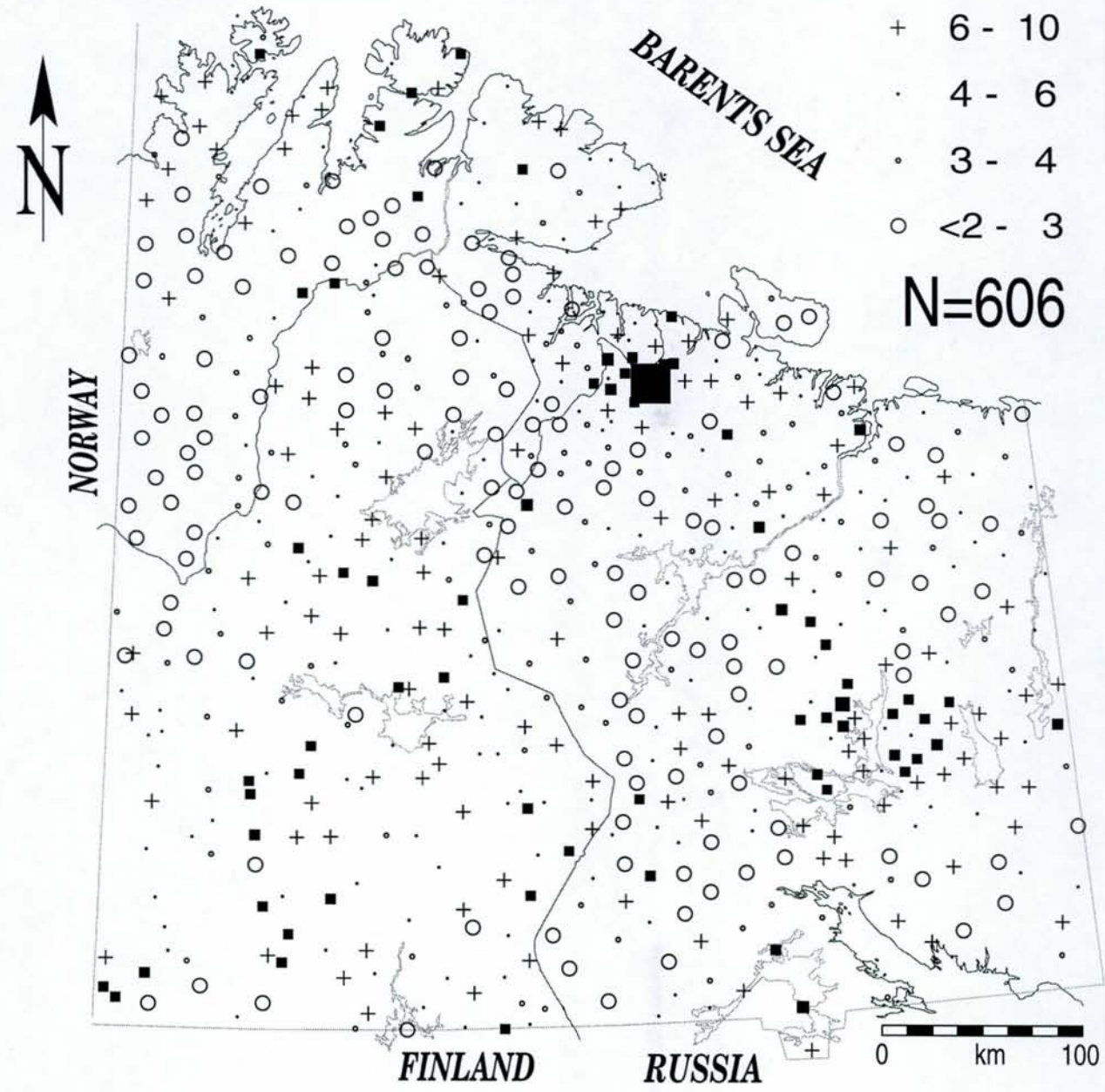
C-horizon

CKE-GTK-NGU
air dried, <2 mm, water extraction, IC

mg/kg

- 10 - 271
- + 6 - 10
- 4 - 6
- 3 - 4
- <2 - 3

N=606



SULFATE IN C-HORIZON

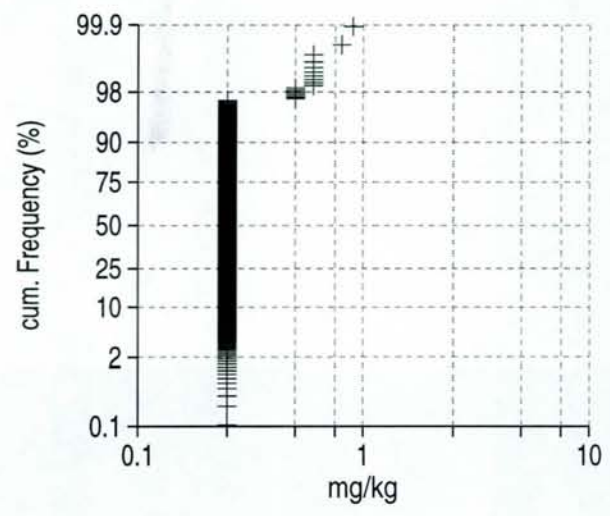
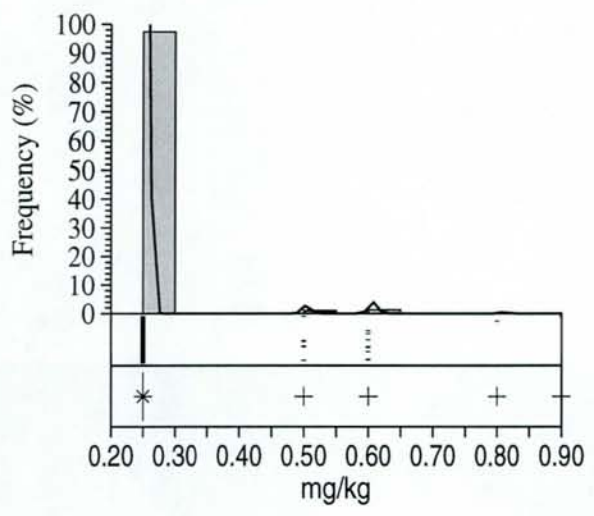
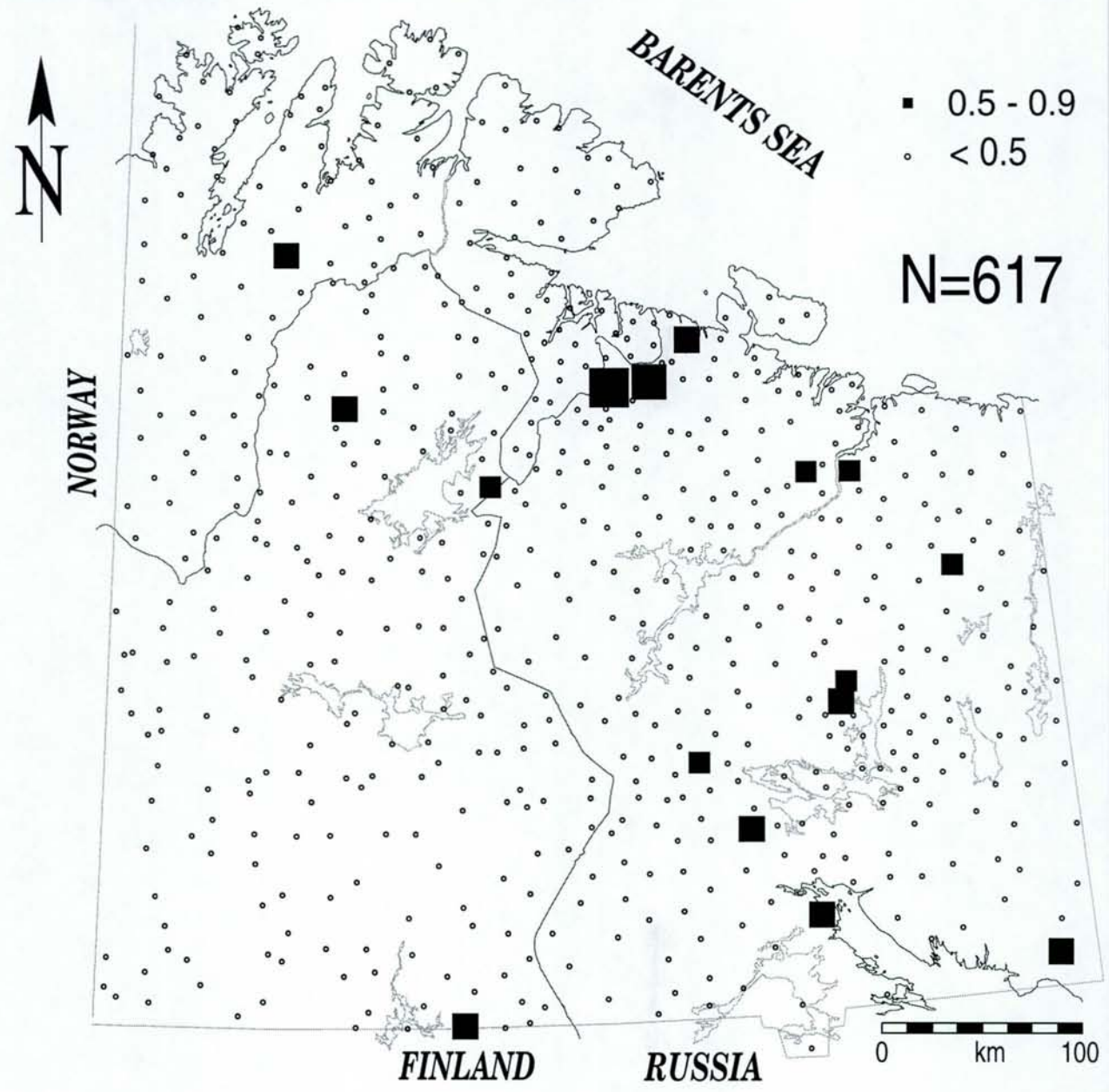


Sb Humus

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

mg/kg

air dried, <2 mm, 1M amm. acetate, ICP-AES



ANTIMONY IN HUMUS



Sb

KOLA ECOGEOCHEMISTRY Regional Mapping 1995 CKE-GTK-NGU

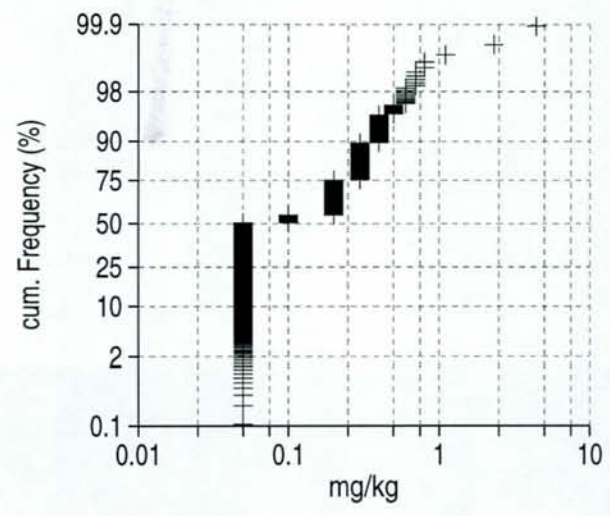
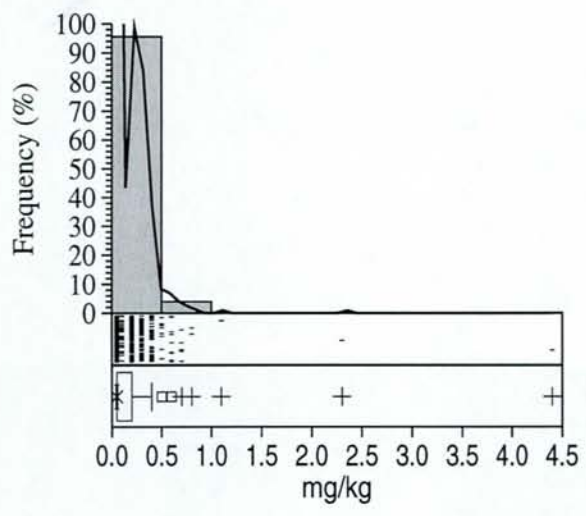
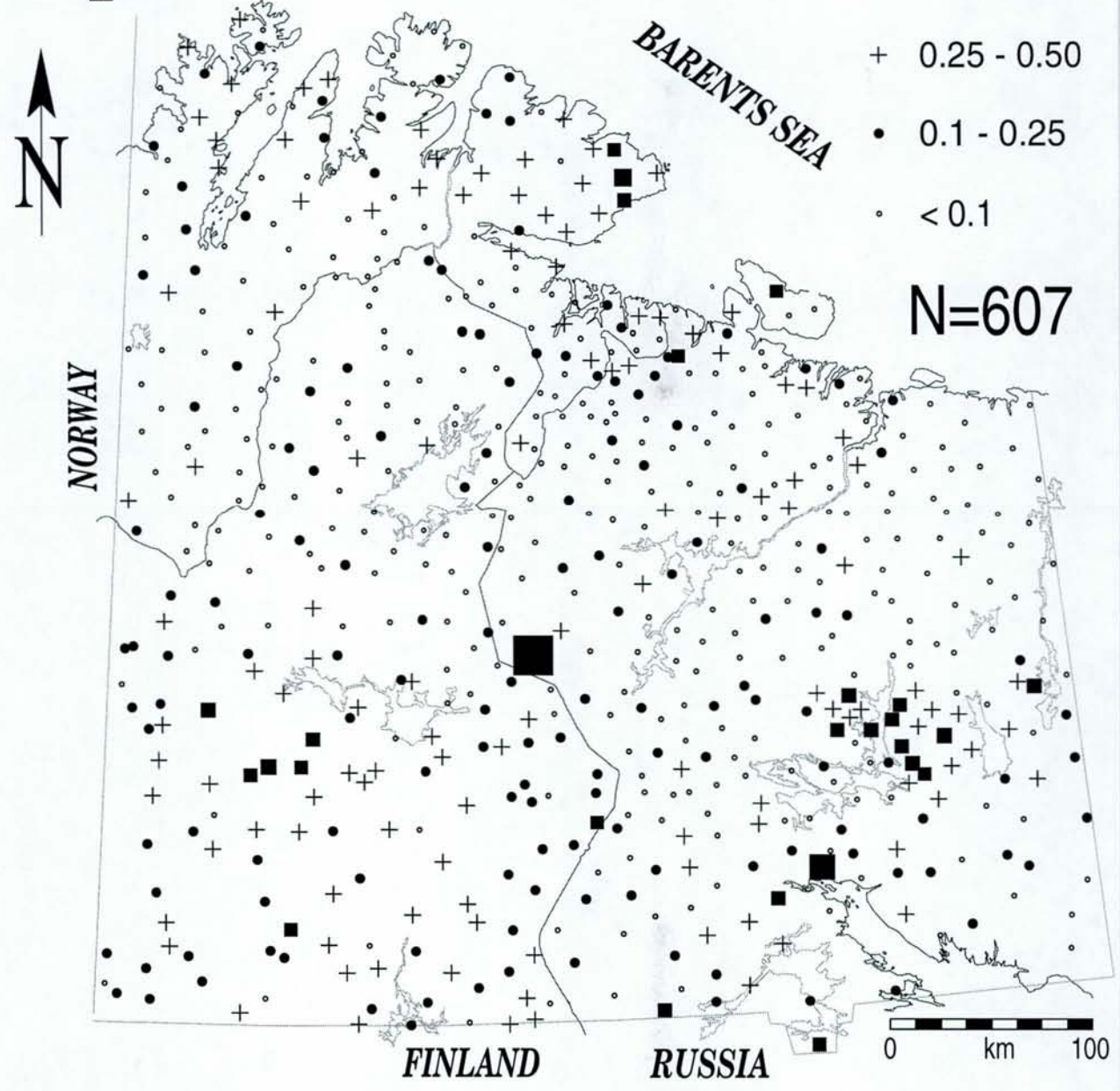
Topsoil

0-5cm, air dried, <2 mm, INAA

mg/kg

- 0.50 - 4.40
- + 0.25 - 0.50
- 0.1 - 0.25
- < 0.1

N=607



ANTIMONY IN TOPSOIL

Sb

KOLA ECOGEOCHEMISTRY

Regional Mapping 1995

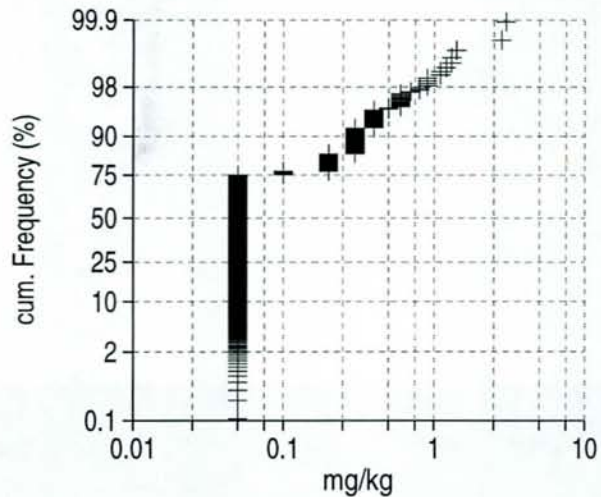
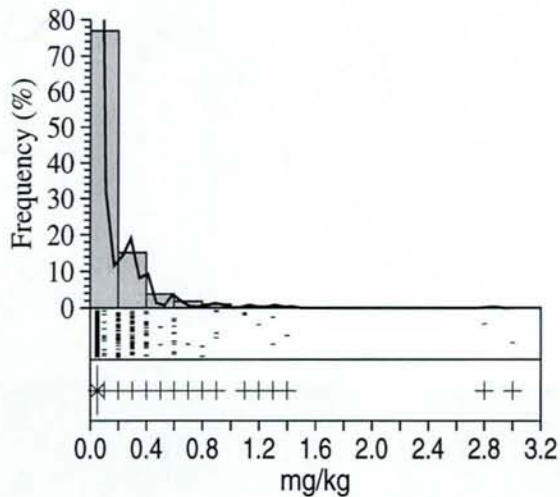
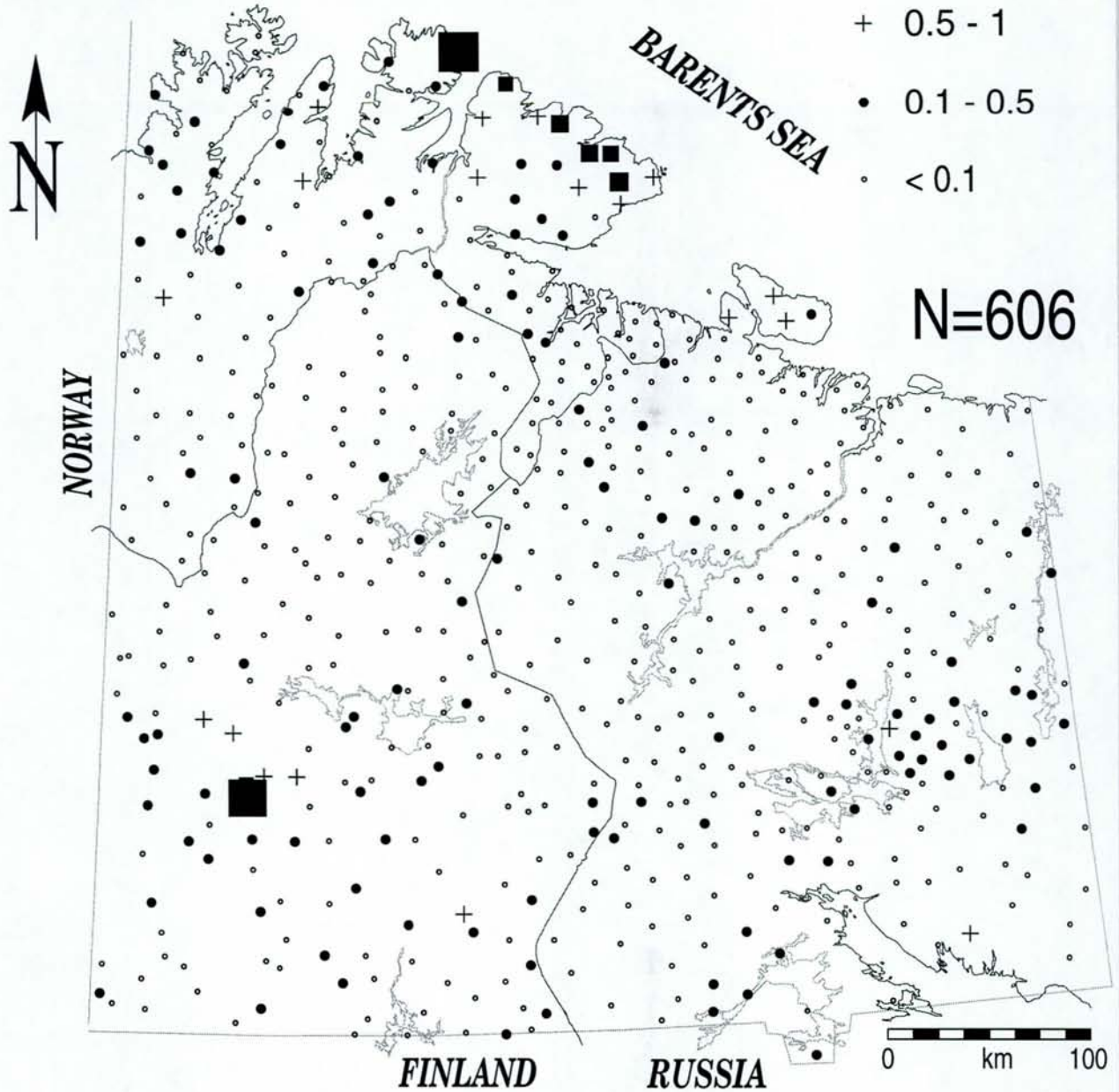
CKE-GTK-NGU

mg/kg

C-horizon

air dried, <2 mm, INAA

- 1 - 3
- + 0.5 - 1
- 0.1 - 0.5
- < 0.1



ANTIMONY IN C-HORIZON



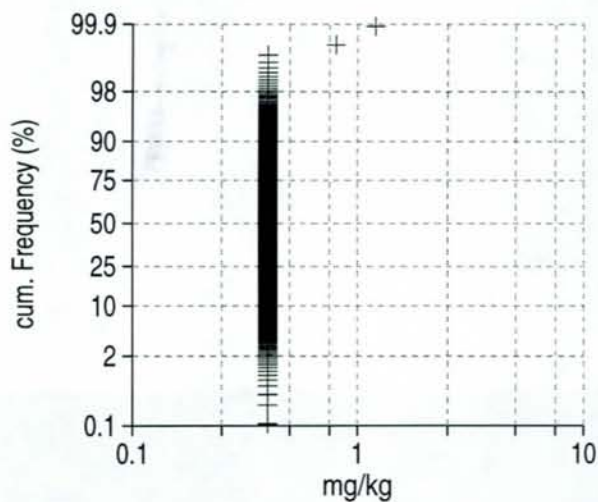
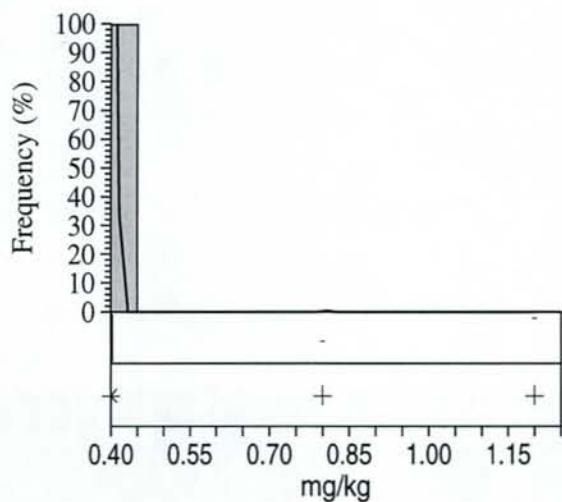
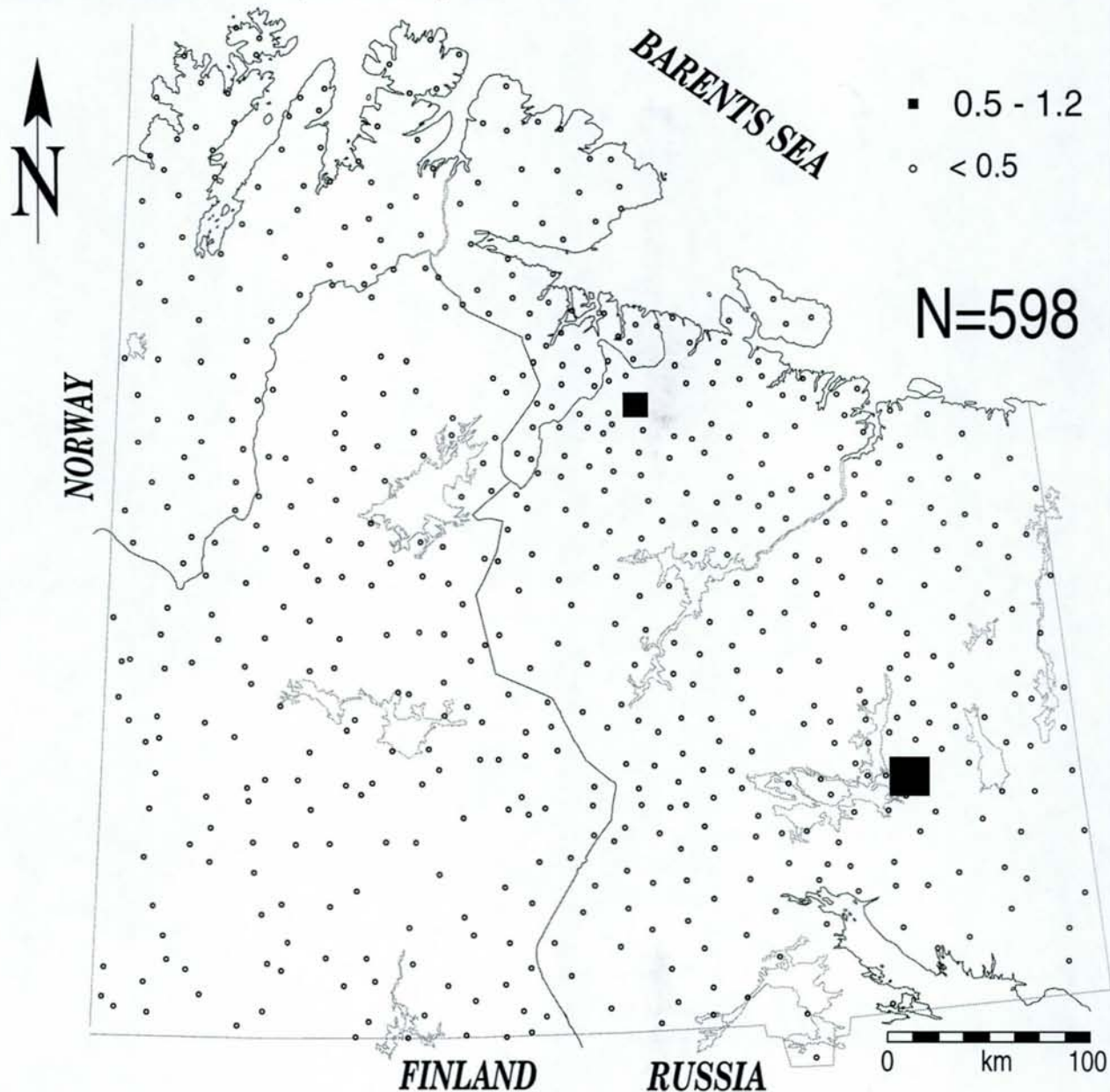


Se Moss

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

mg/kg

air dried, conc. HNO₃, ICP-AES



SELENIUM IN MOSS



Se Humus

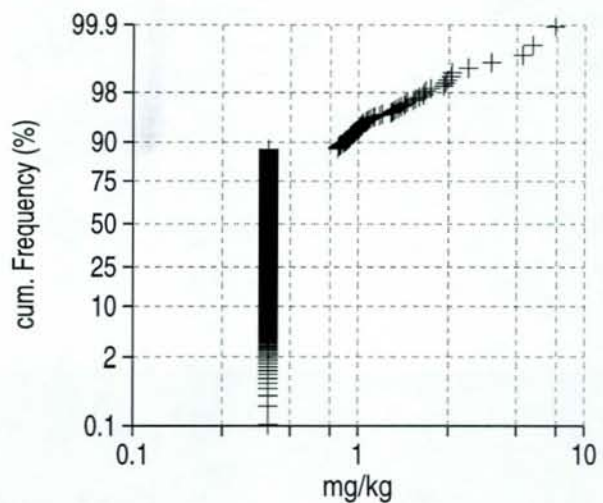
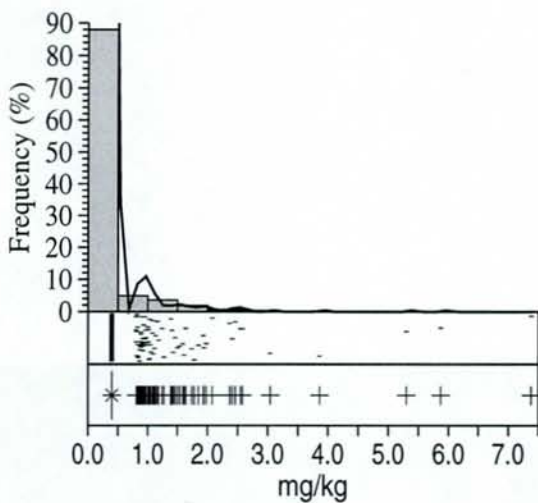
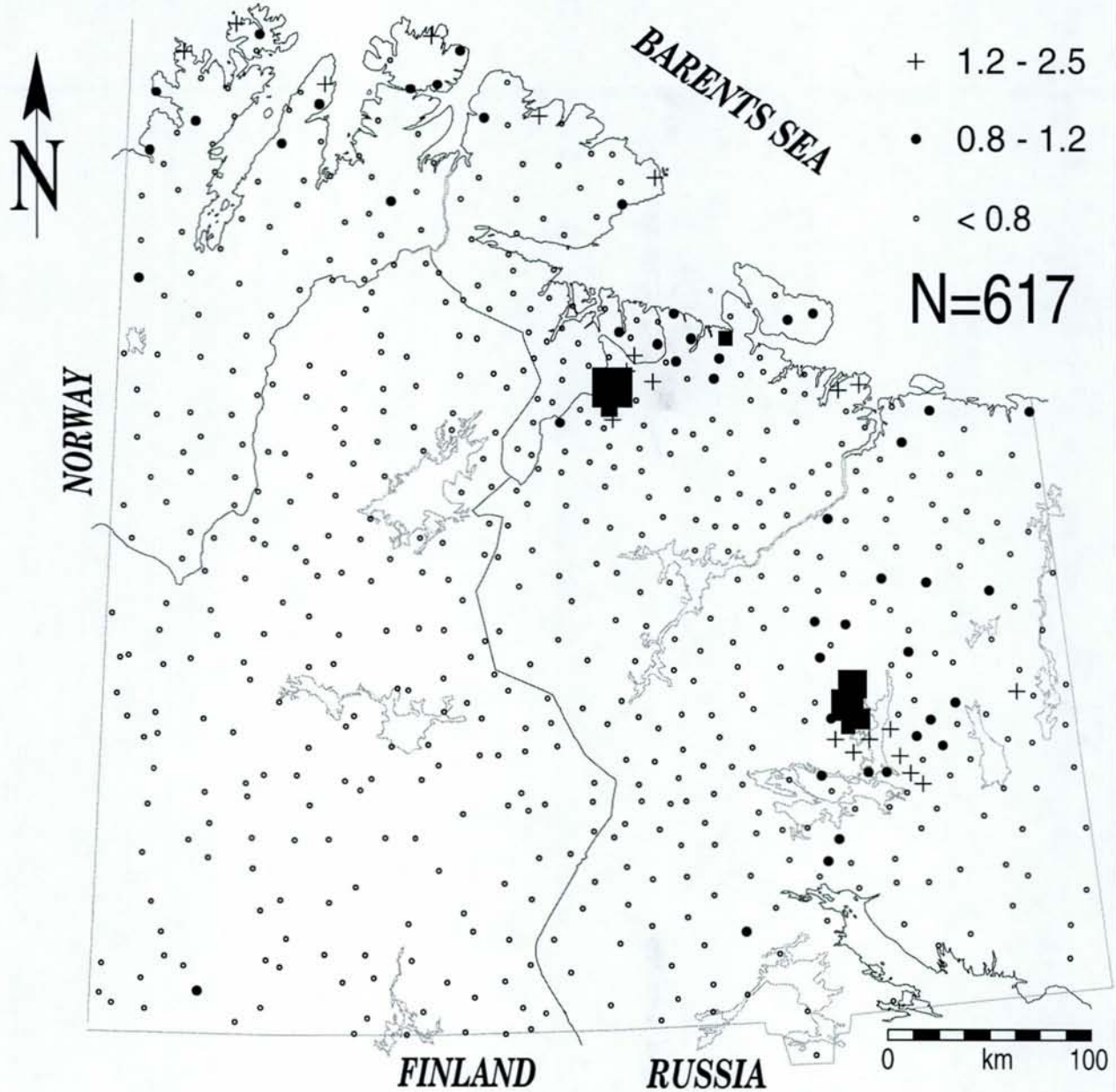
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

air dried, <2 mm, conc. HNO₃, ICP-MS

mg/kg

- 2.5 - 7.4
- + 1.2 - 2.5
- 0.8 - 1.2
- < 0.8

N=617



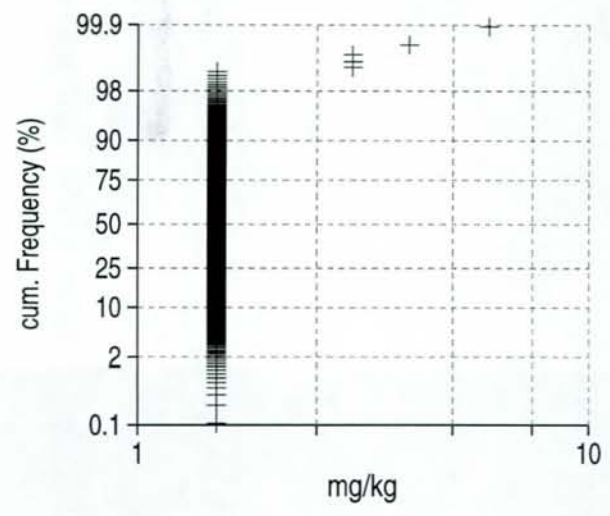
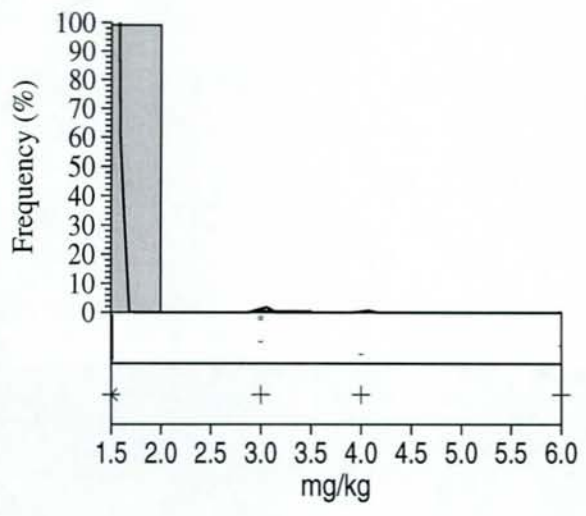
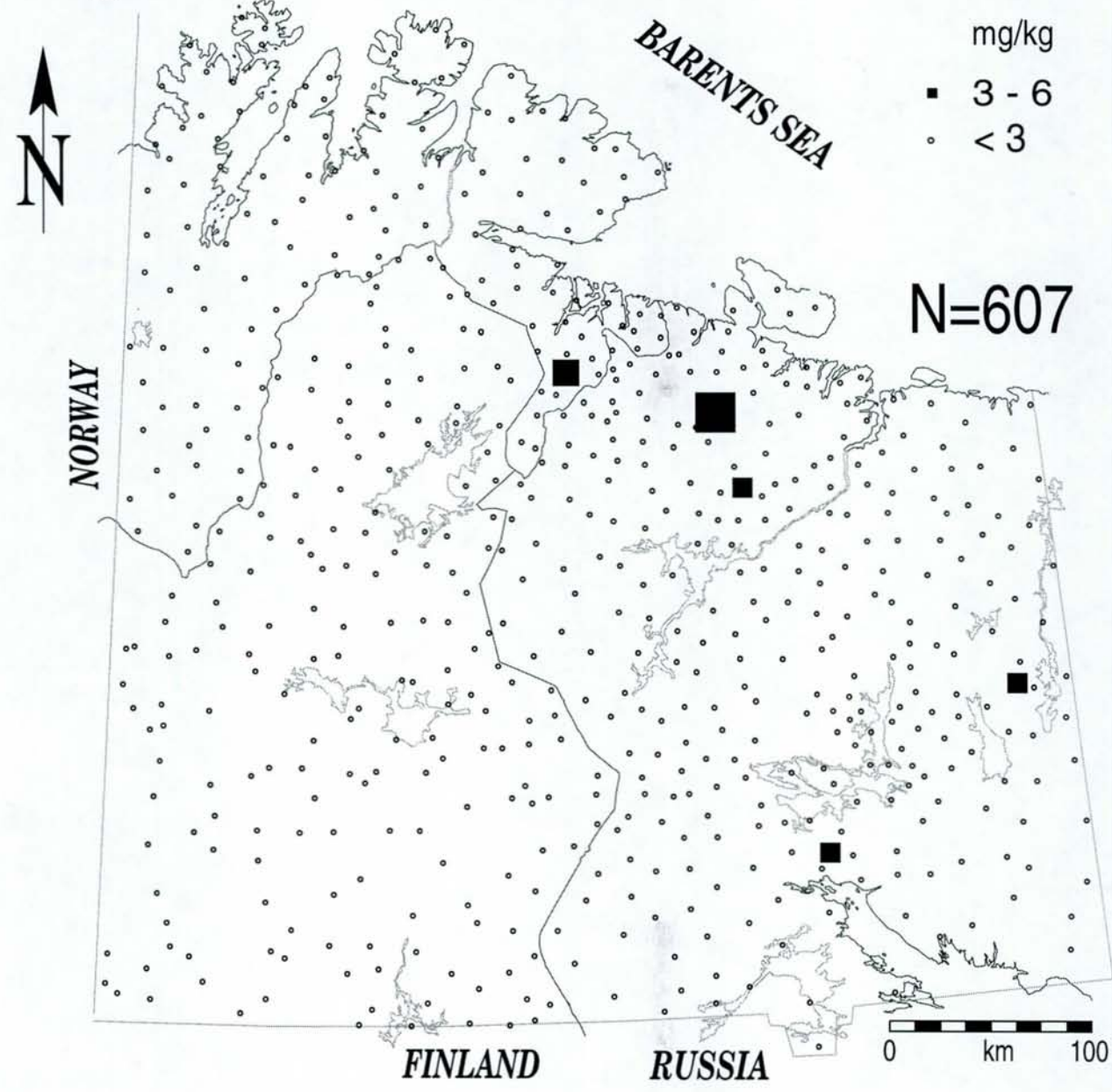
SELENIUM IN HUMUS



Se Topsoil

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

0-5cm, air dried, <2 mm, INAA



SELENIUM IN TOPSOIL

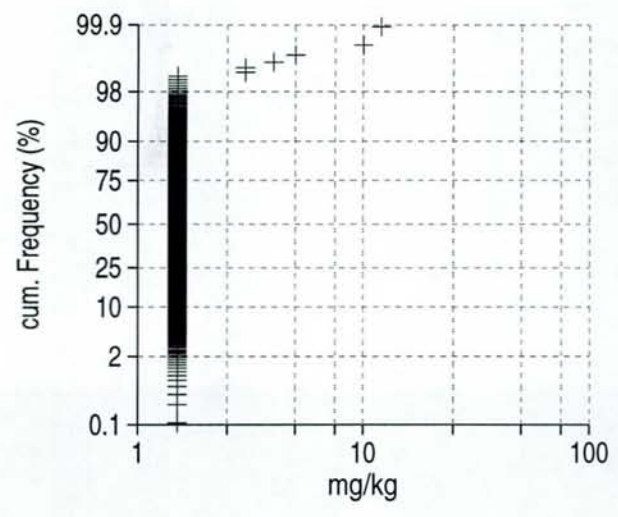
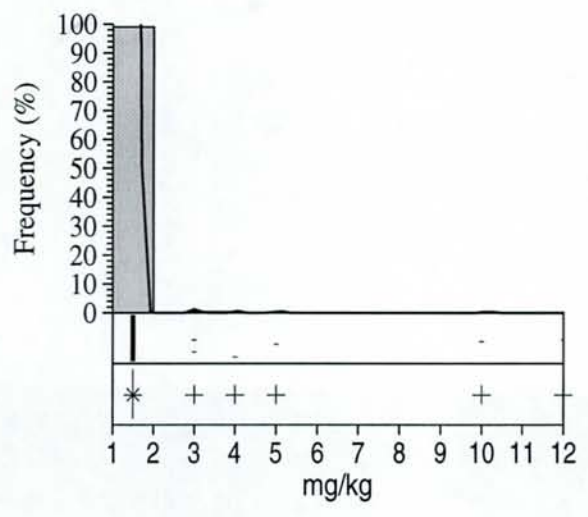
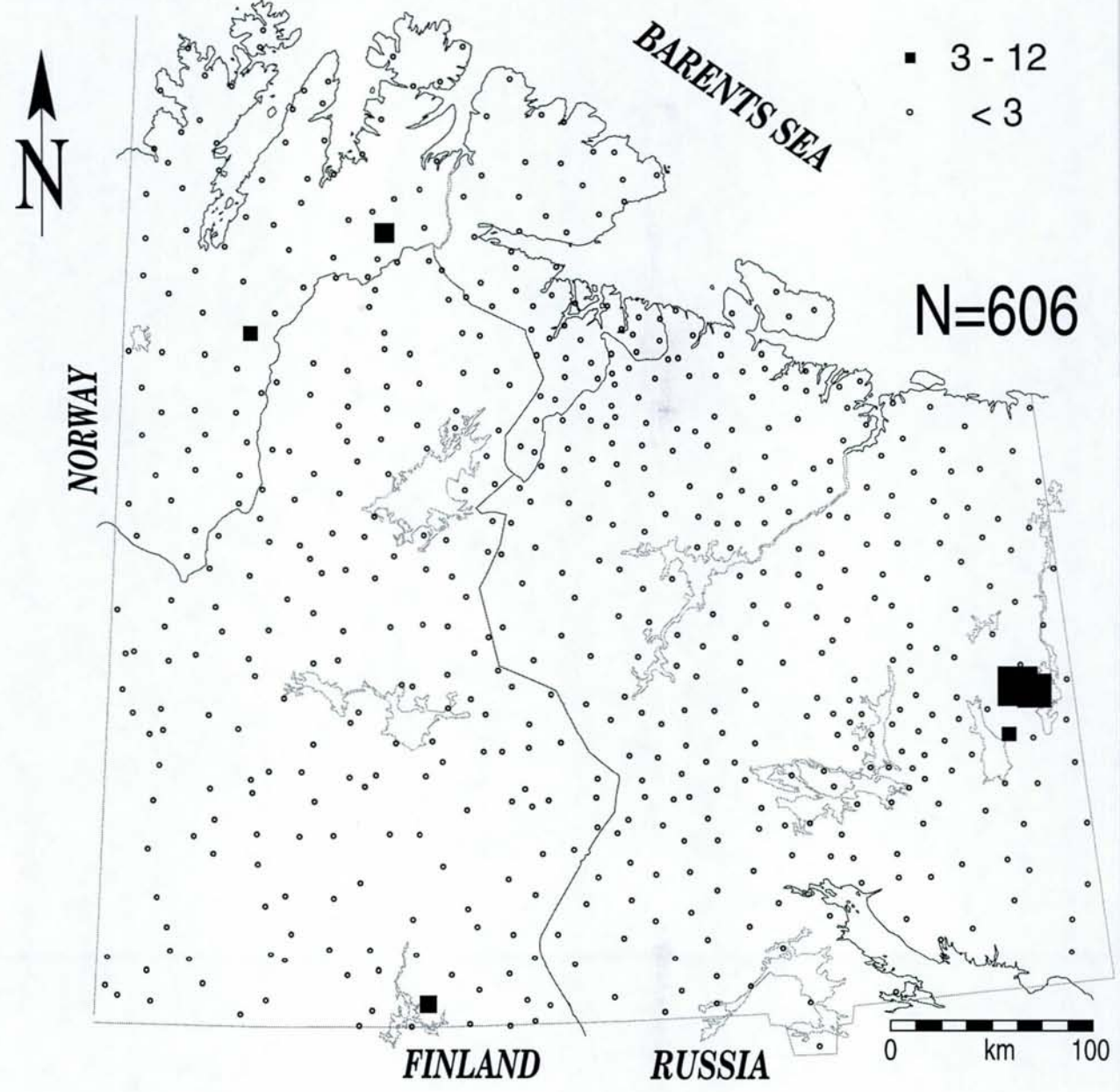


Se C-horizon

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

mg/kg

air dried, <2 mm, INAA



SELENIUM IN C-HORIZON

Sc Moss

KOLA ECOGEOCHEMISTRY Regional Mapping 1995 CKE-GTK-NGU

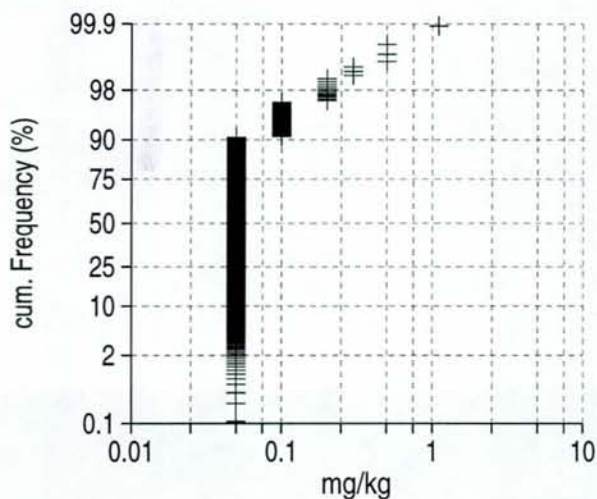
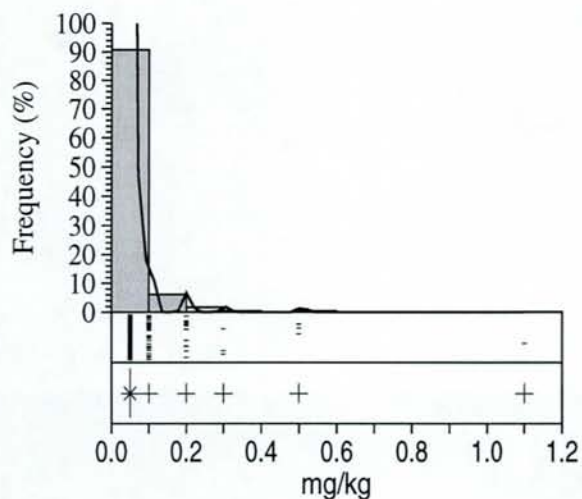
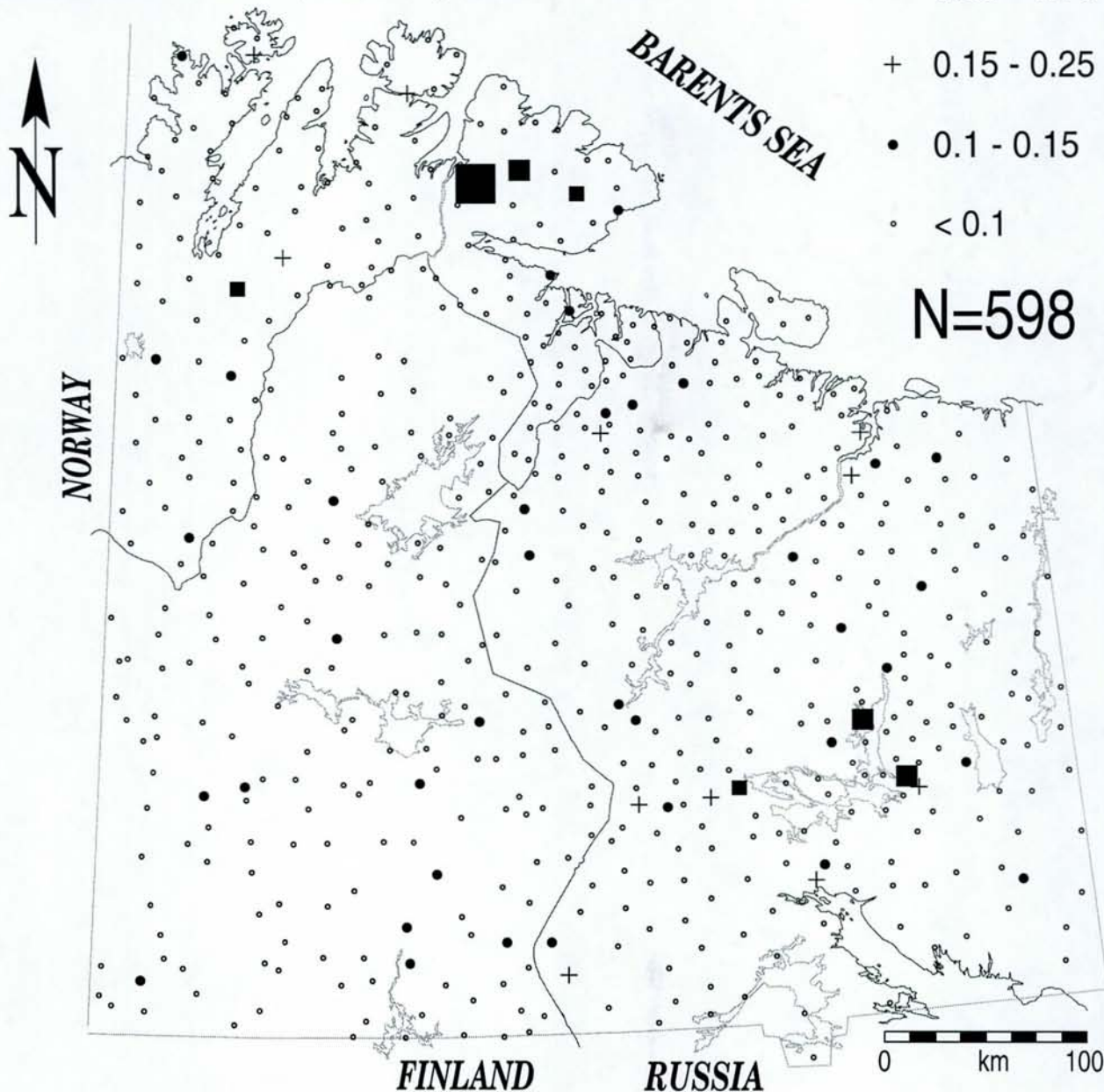


air dried, conc. HNO₃, ICP-AES

mg/kg

- 0.25 - 1.10
- + 0.15 - 0.25
- 0.1 - 0.15
- < 0.1

N=598



SCANDIUM IN MOSS



Si B-horizon

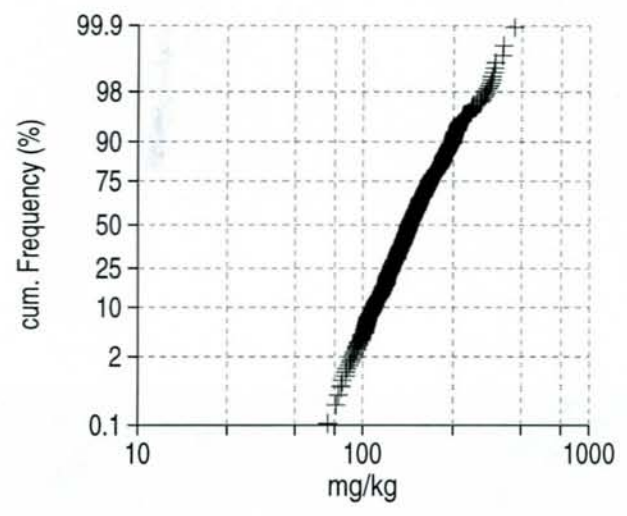
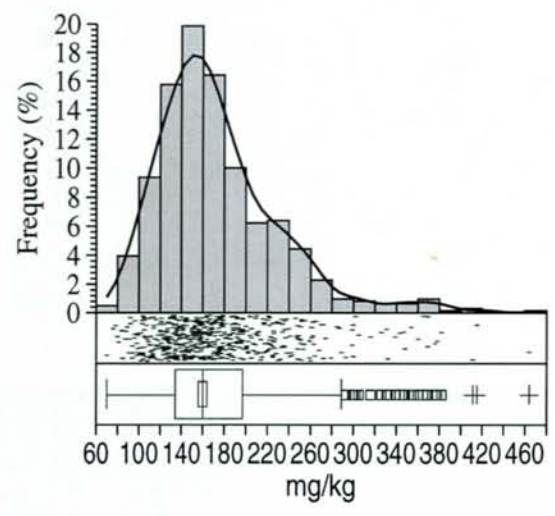
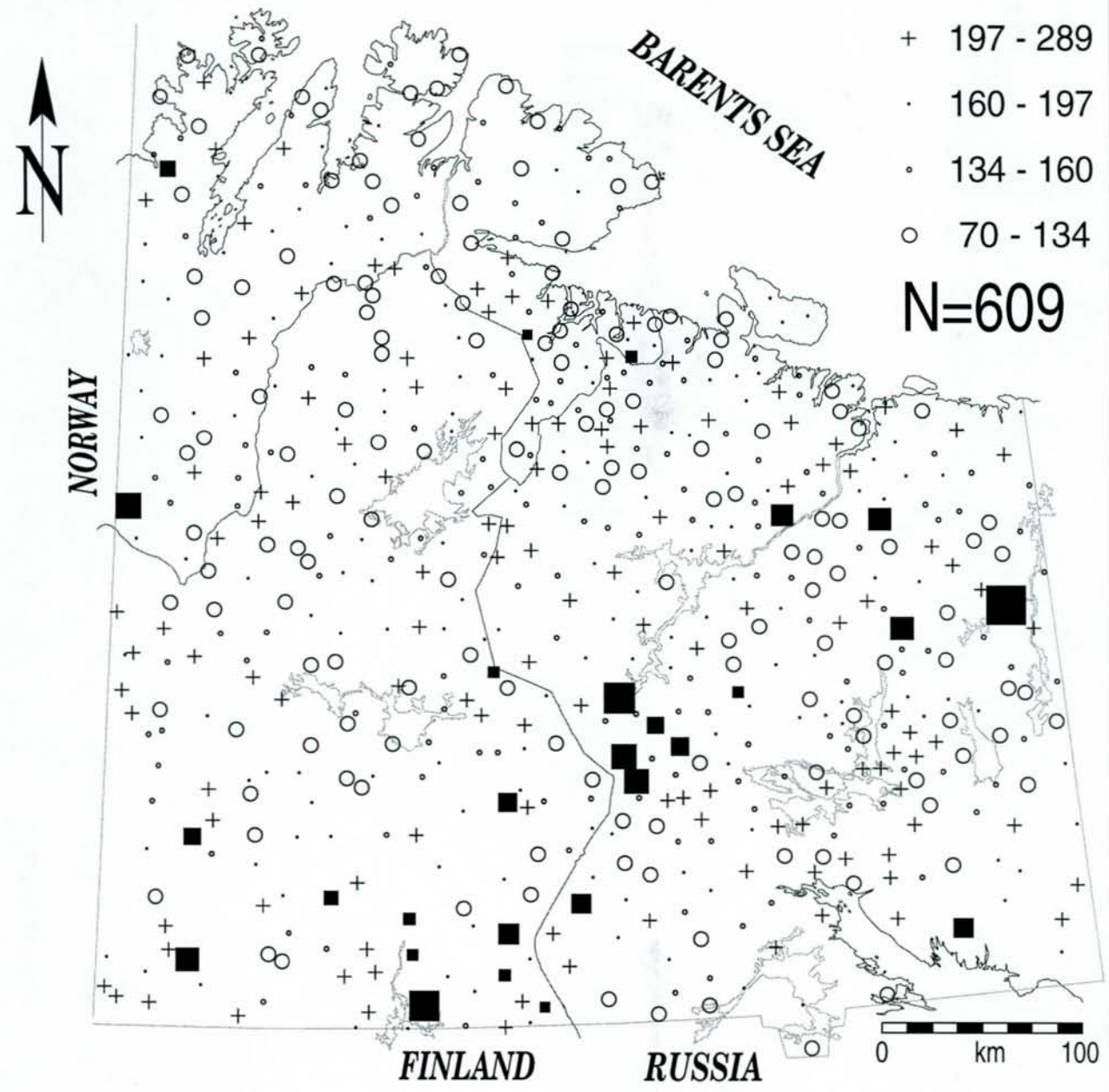
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

air dried, <2 mm, aqua regia, ICP-AES

mg/kg

- 289 - 464
- + 197 - 289
- 160 - 197
- 134 - 160
- 70 - 134

N=609



SILICON IN B-HORIZON

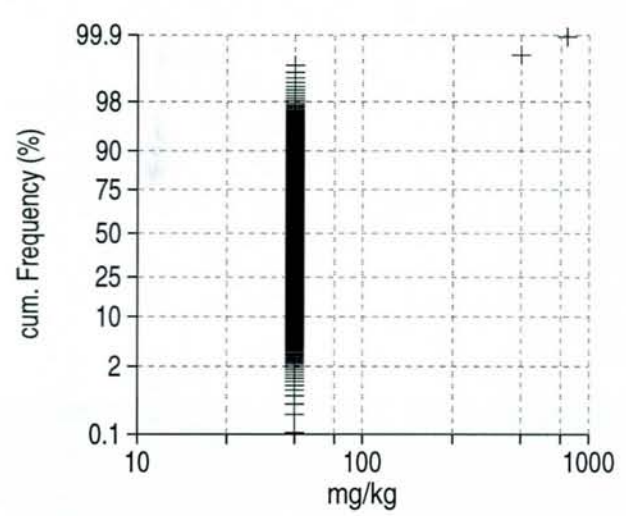
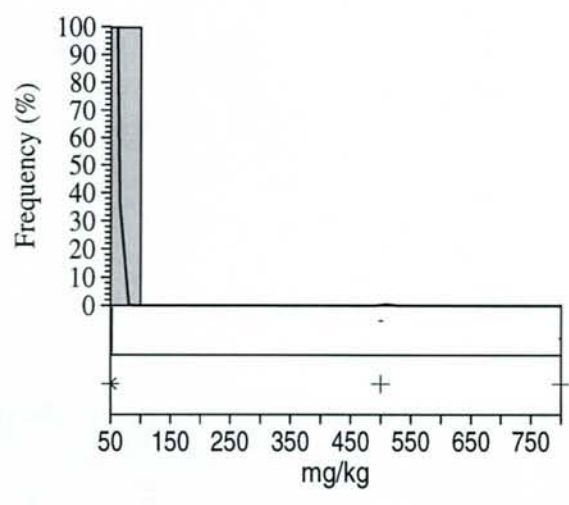
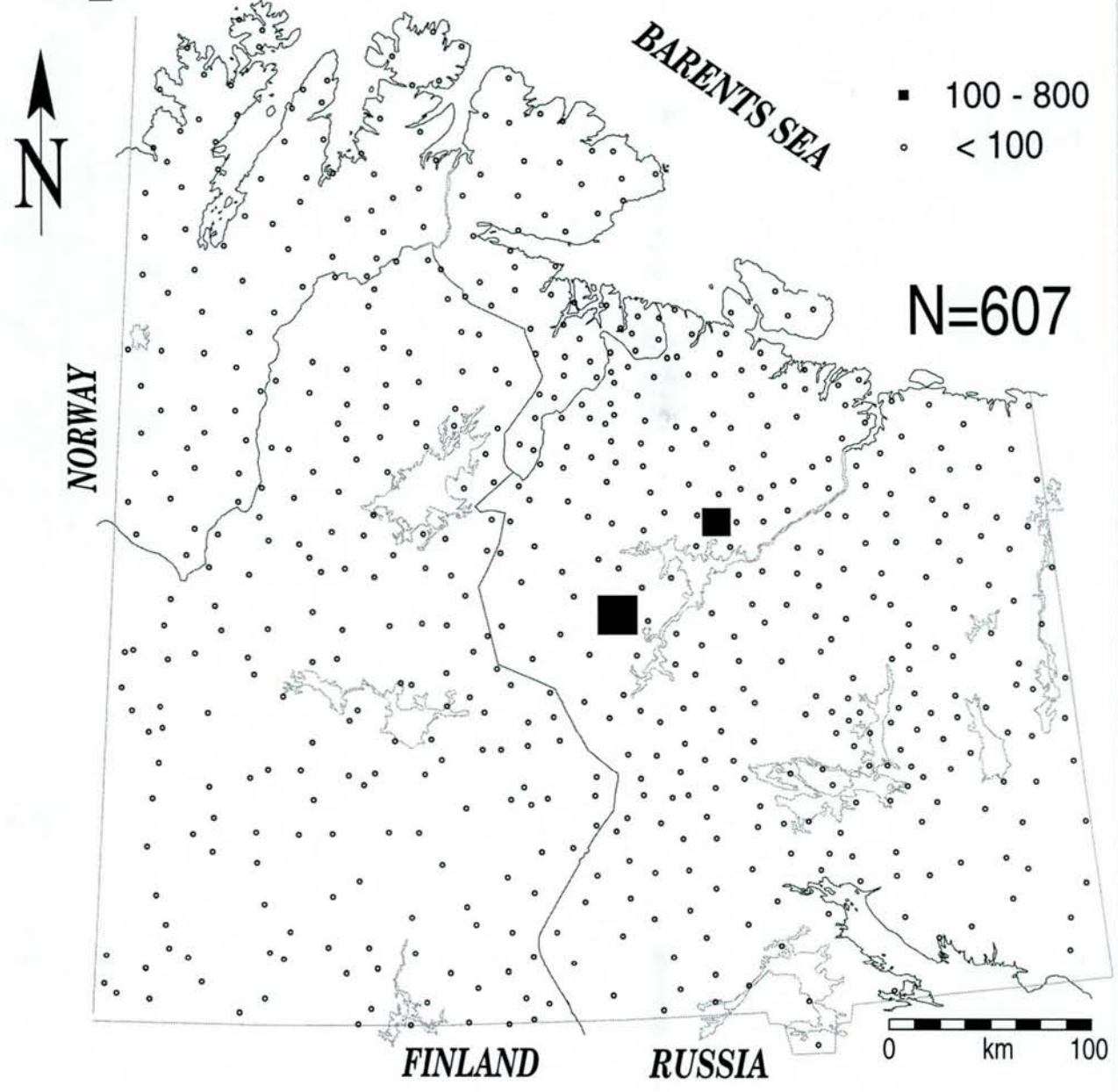


Sn Topsoil

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

mg/kg

0-5cm, air dried, <2 mm, INAA



TIN IN TOPSOIL



Sn

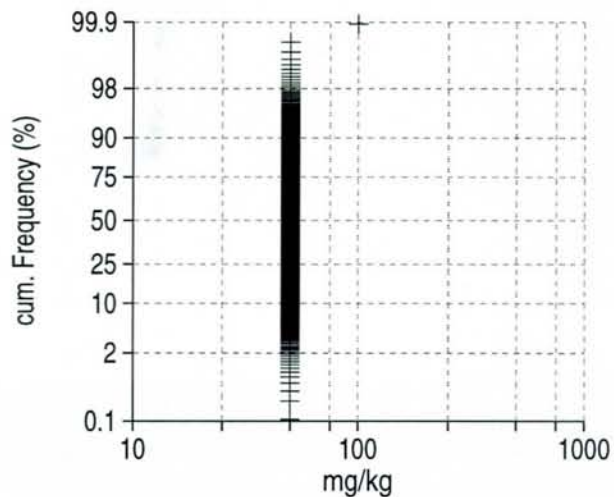
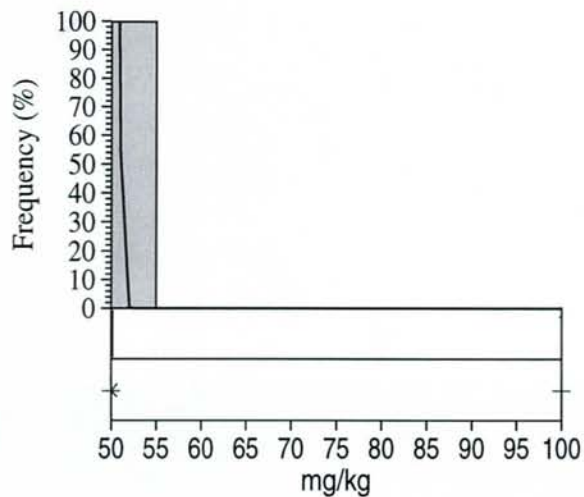
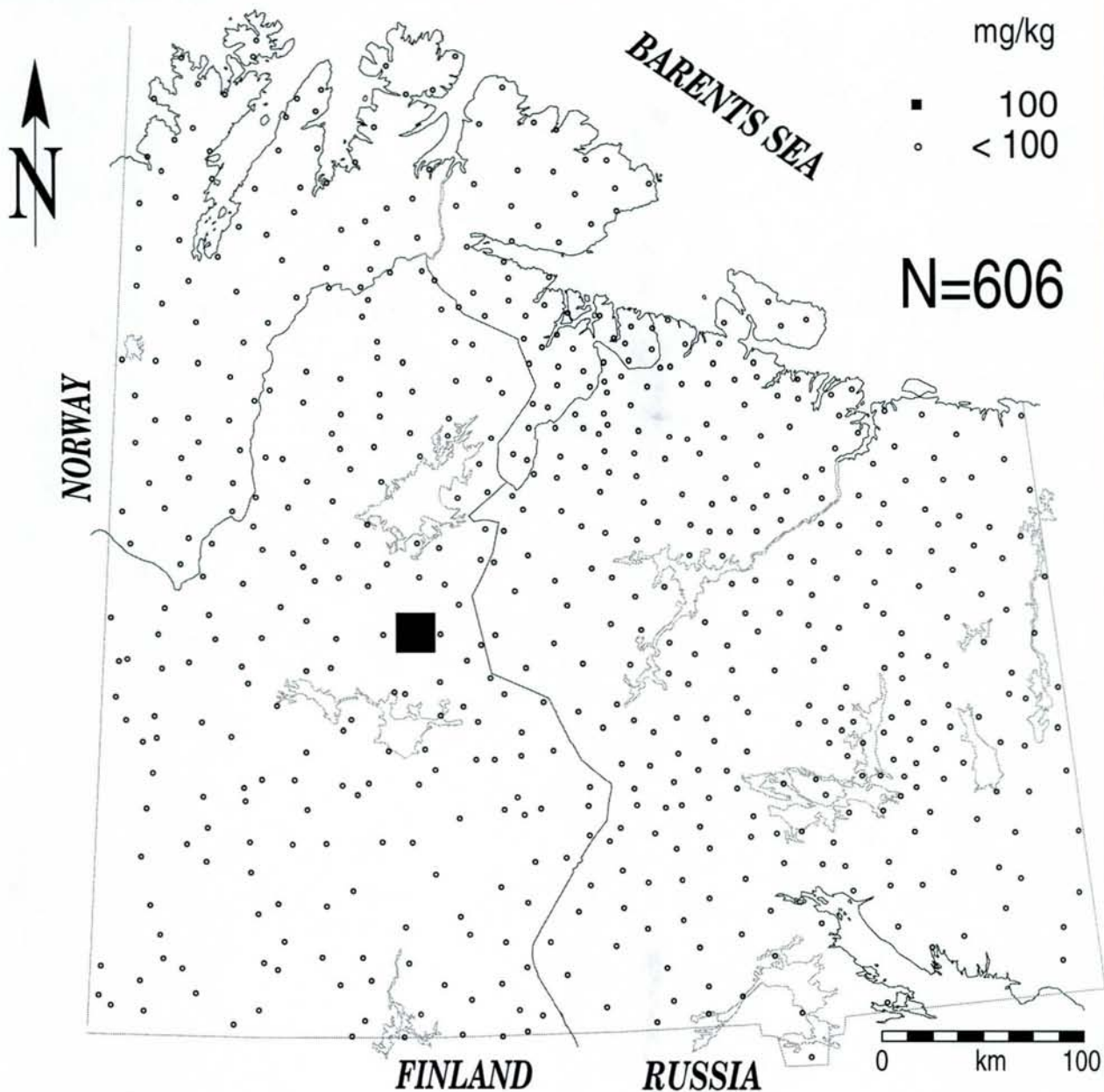
KOLA ECOGEOCHEMISTRY

Regional Mapping 1995

CKE-GTK-NGU

C-horizon

air dried, <2 mm, INAA



TIN IN C-HORIZON



Sr Topsoil

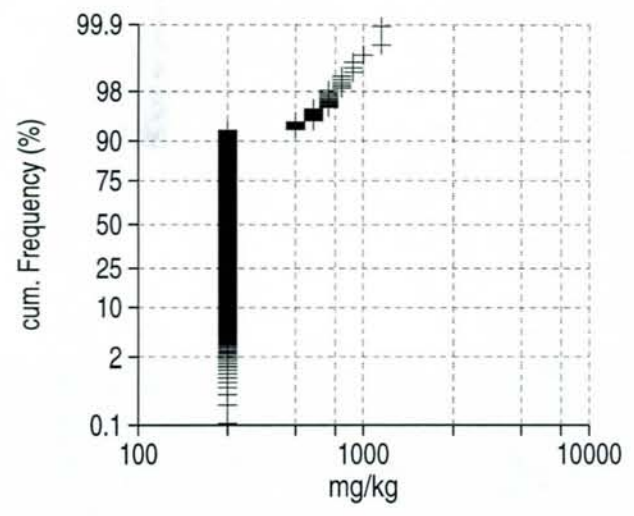
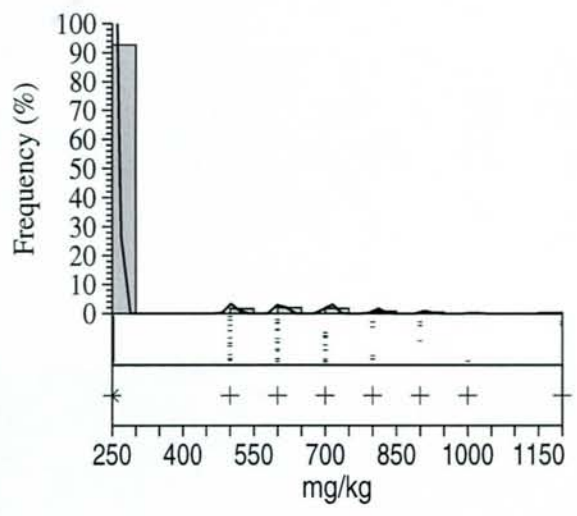
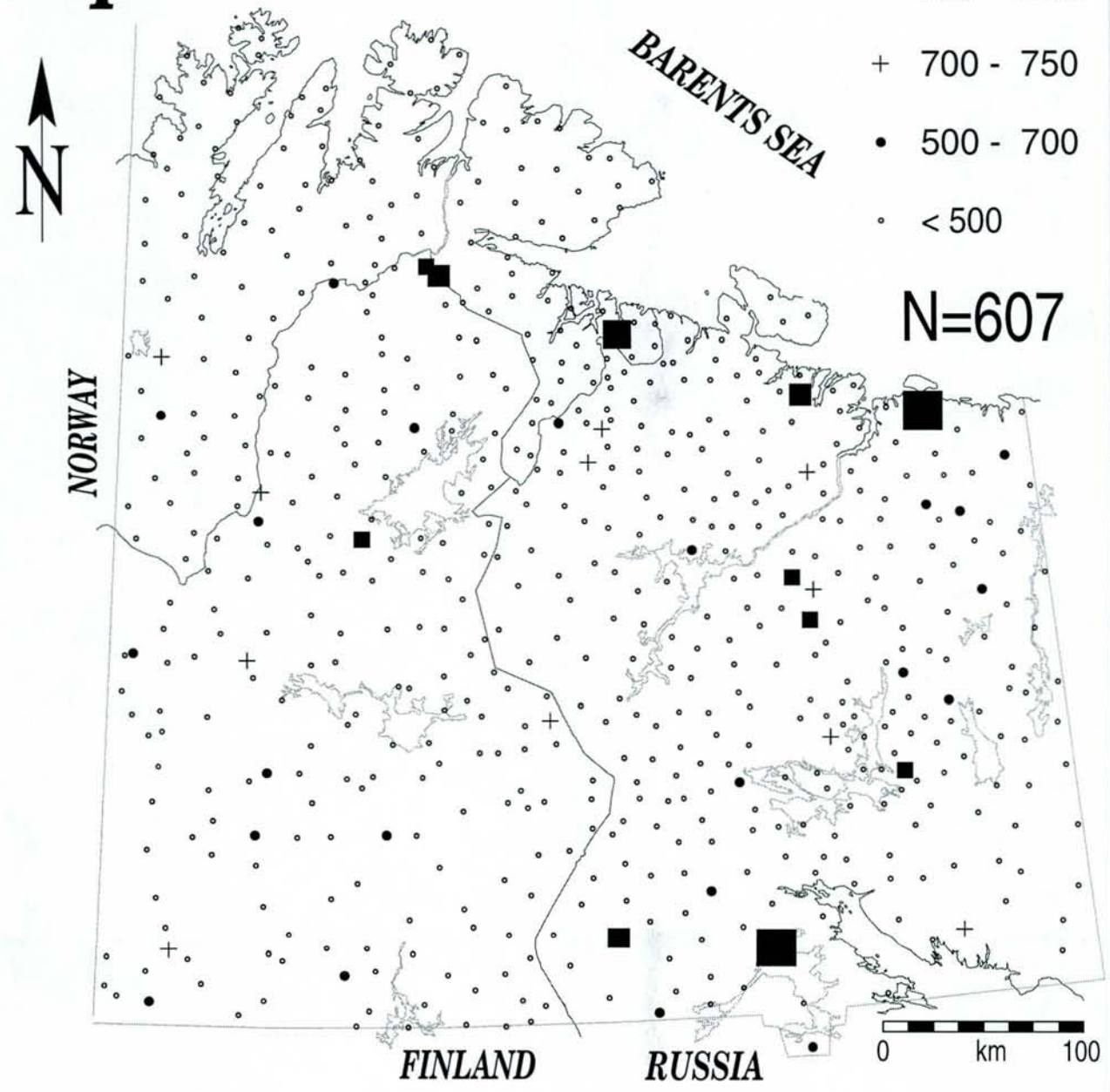
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

0-5cm, air dried, <2 mm, INAA

mg/kg

- 750 - 1200
- + 700 - 750
- 500 - 700
- < 500

N=607



STRONTIUM IN TOPSOIL



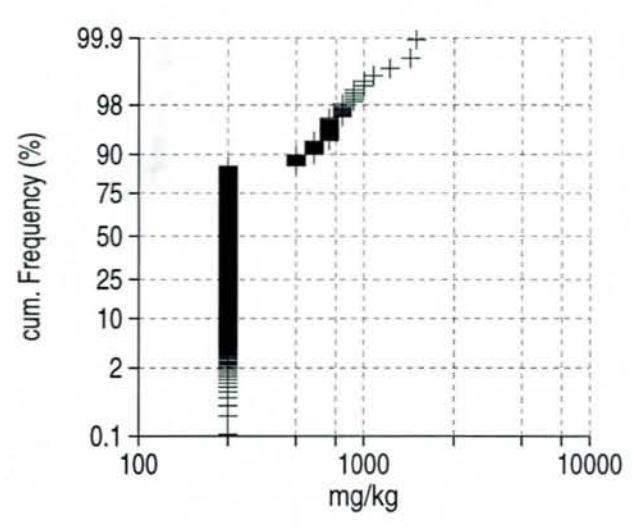
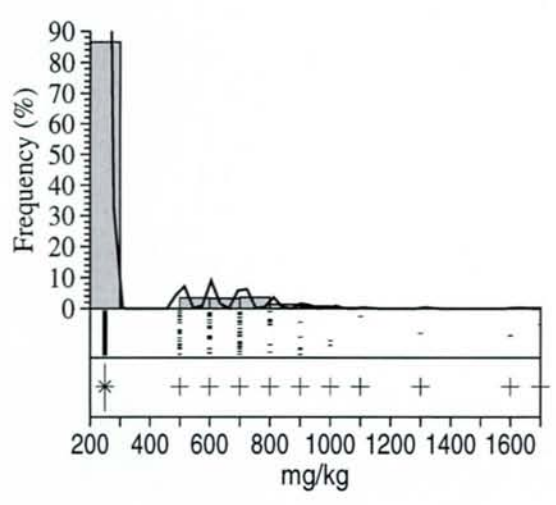
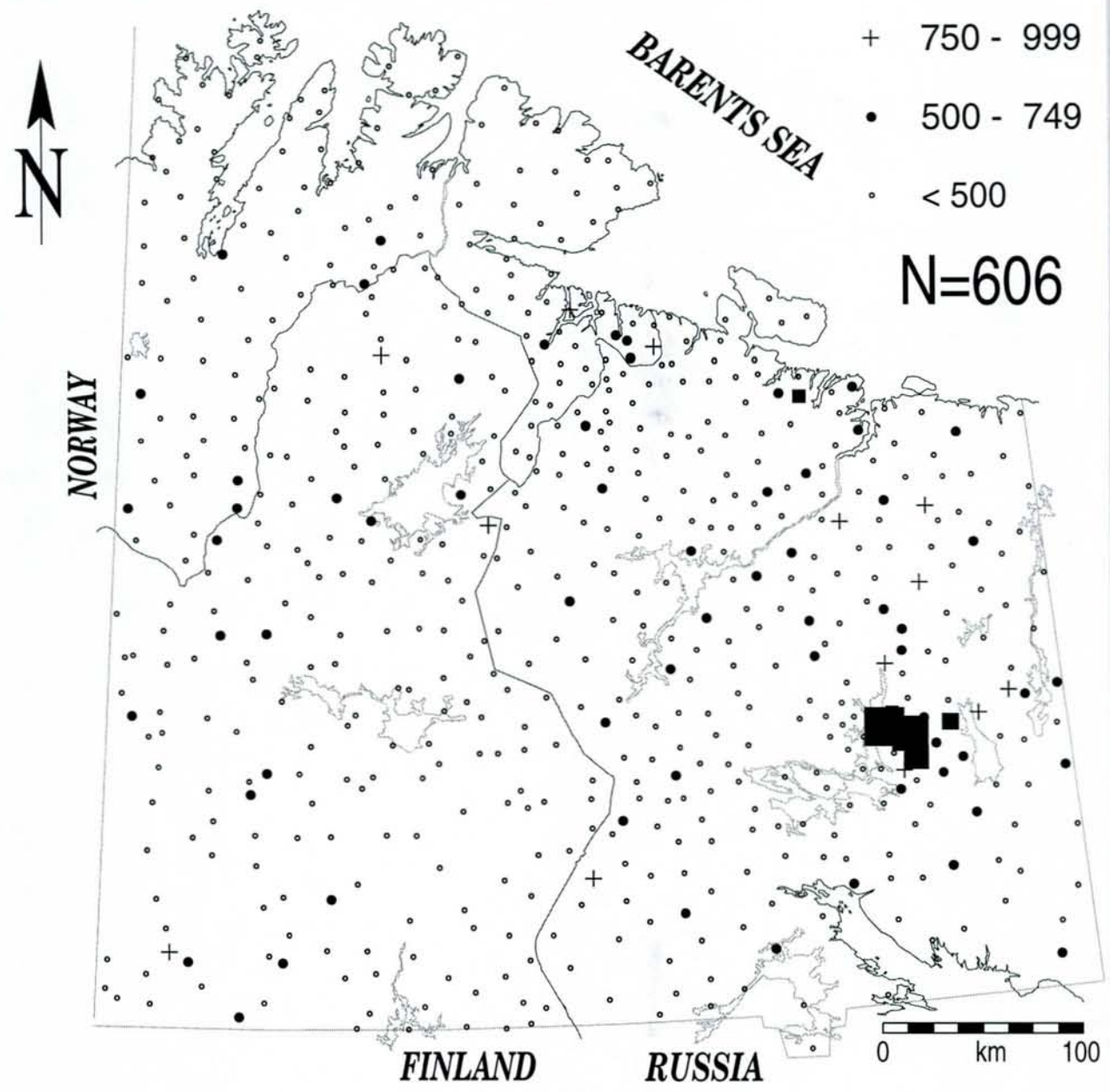
Sr C-horizon

KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

air dried, <2 mm, INAA

- mg/kg
- 1000 - 1700
 - + 750 - 999
 - 500 - 749
 - < 500

N=606



STRONTIUM IN C-HORIZON



Ta Topsoil

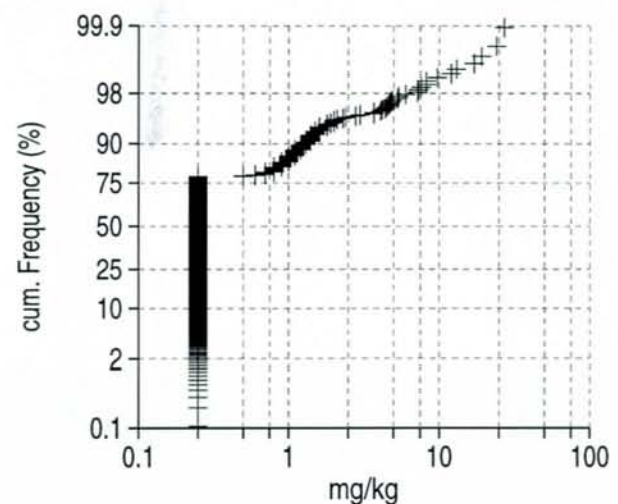
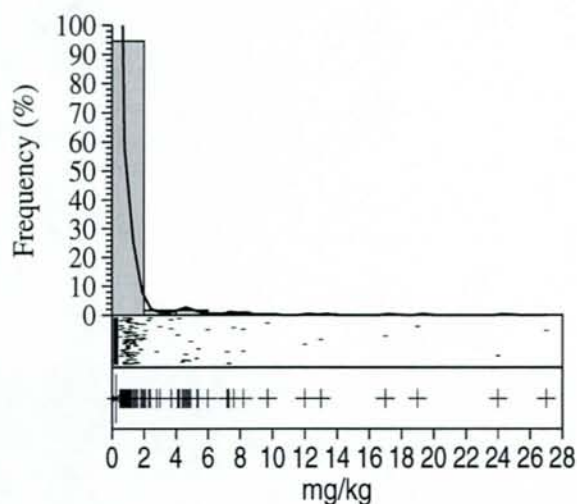
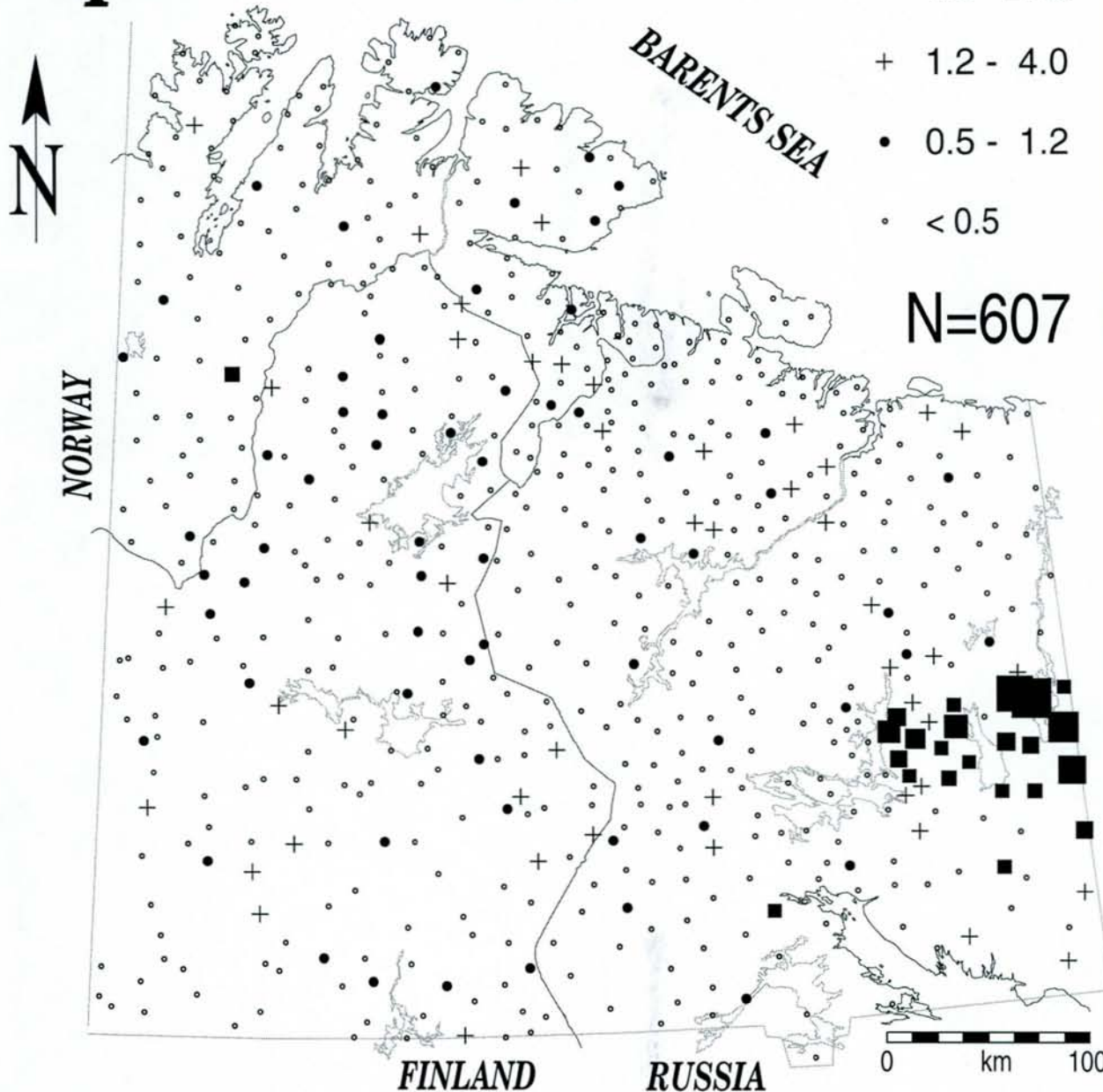
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

0-5cm, air dried, <2 mm, INAA

mg/kg

- 4.0 - 27.0
- + 1.2 - 4.0
- 0.5 - 1.2
- < 0.5

N=607



TANTALUM IN TOPSOIL



Ta

KOLA ECOGEOCHEMISTRY

Regional Mapping 1995

CKE-GTK-NGU

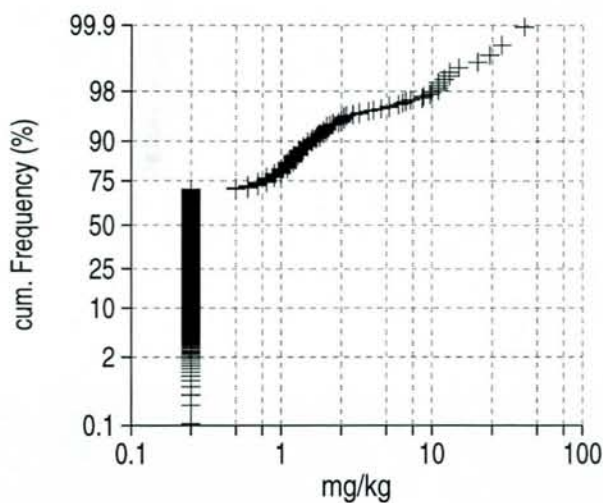
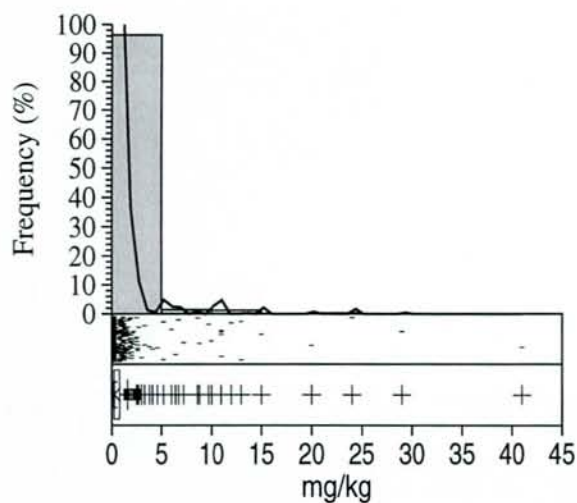
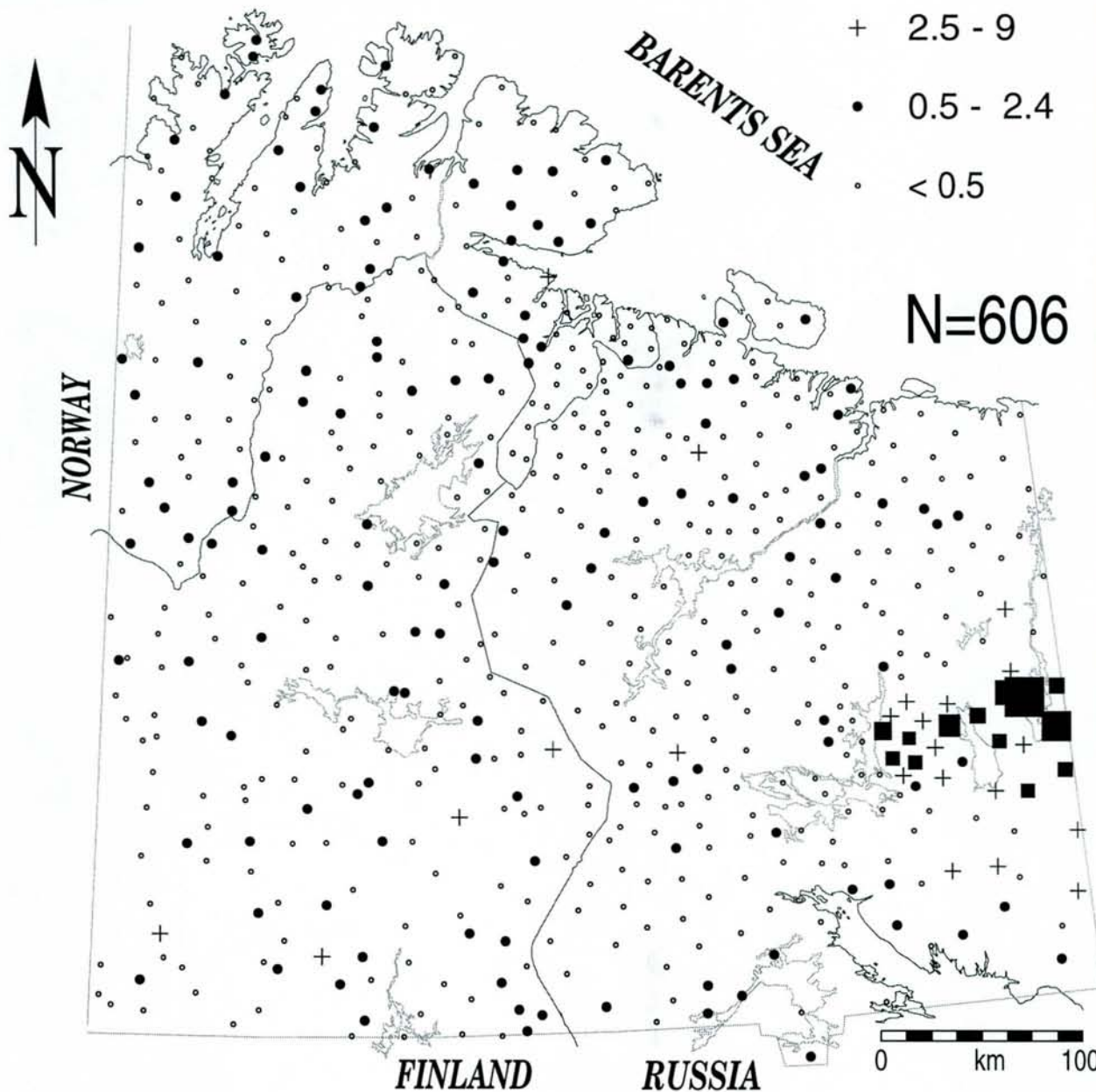
C-horizon

air dried, <2 mm, INAA

mg/kg

- 10 - 41
- + 2.5 - 9
- 0.5 - 2.4
- < 0.5

N=606



TANTALUM IN C-HORIZON



Tb Topsoil

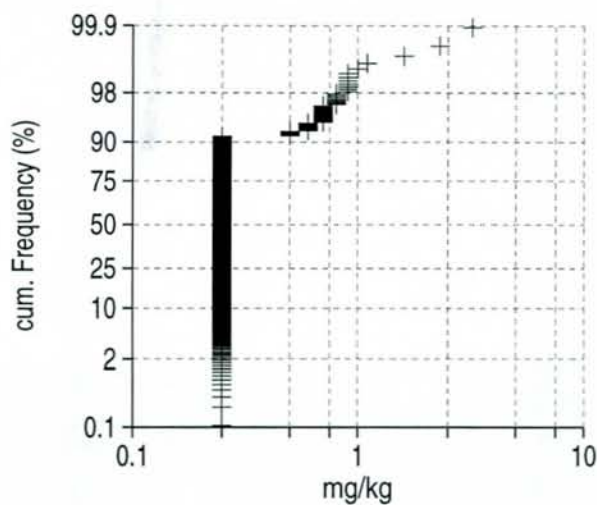
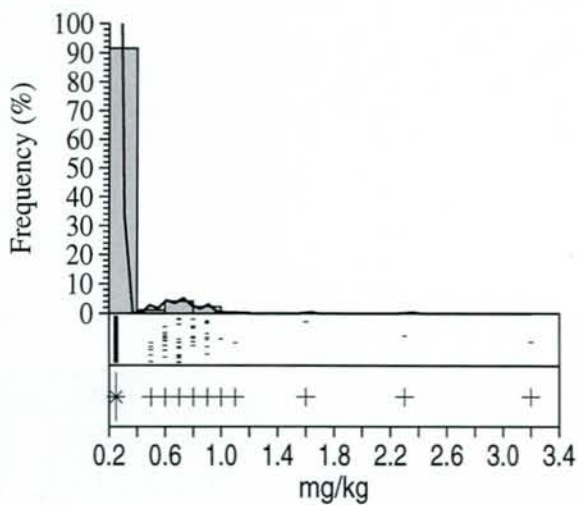
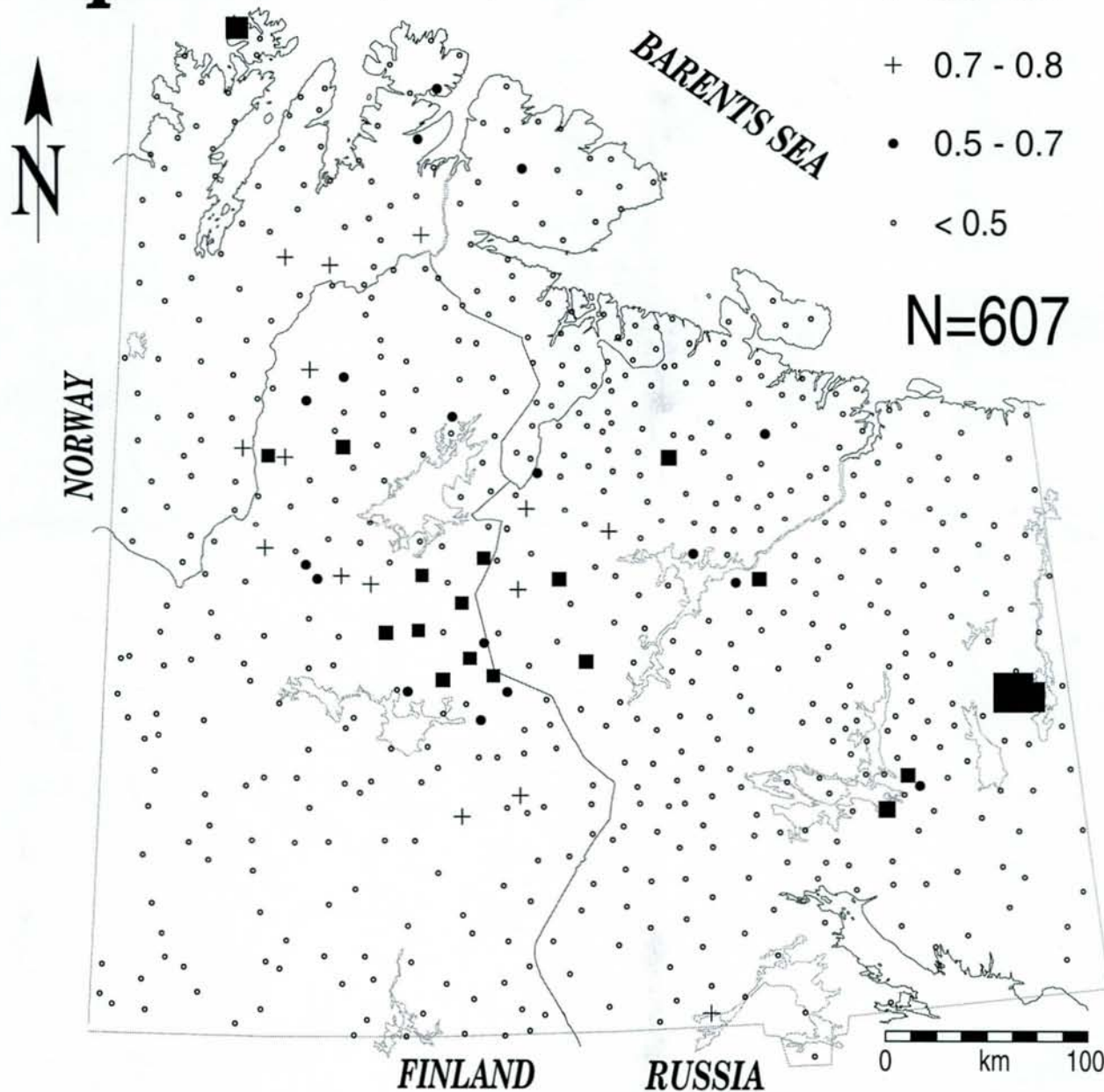
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

0-5cm, air dried, <2 mm, INAA

mg/kg

- 0.8 - 3.2
- + 0.7 - 0.8
- 0.5 - 0.7
- < 0.5

N=607



TERBIUM IN TOPSOIL



Tb

KOLA ECOGEOCHEMISTRY

Regional Mapping 1995

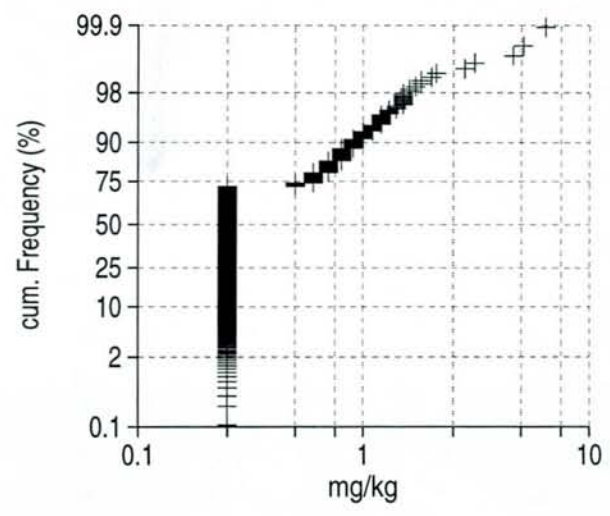
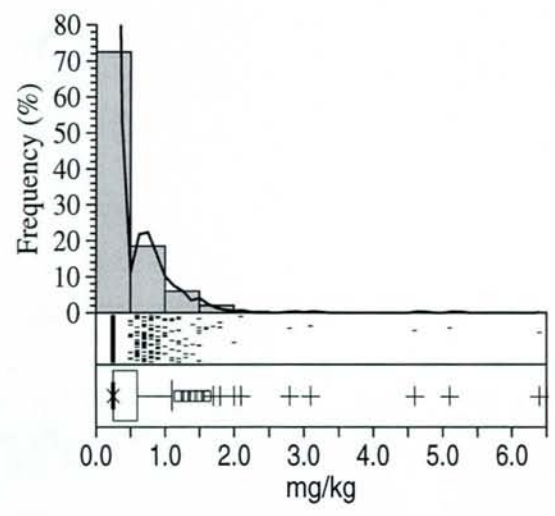
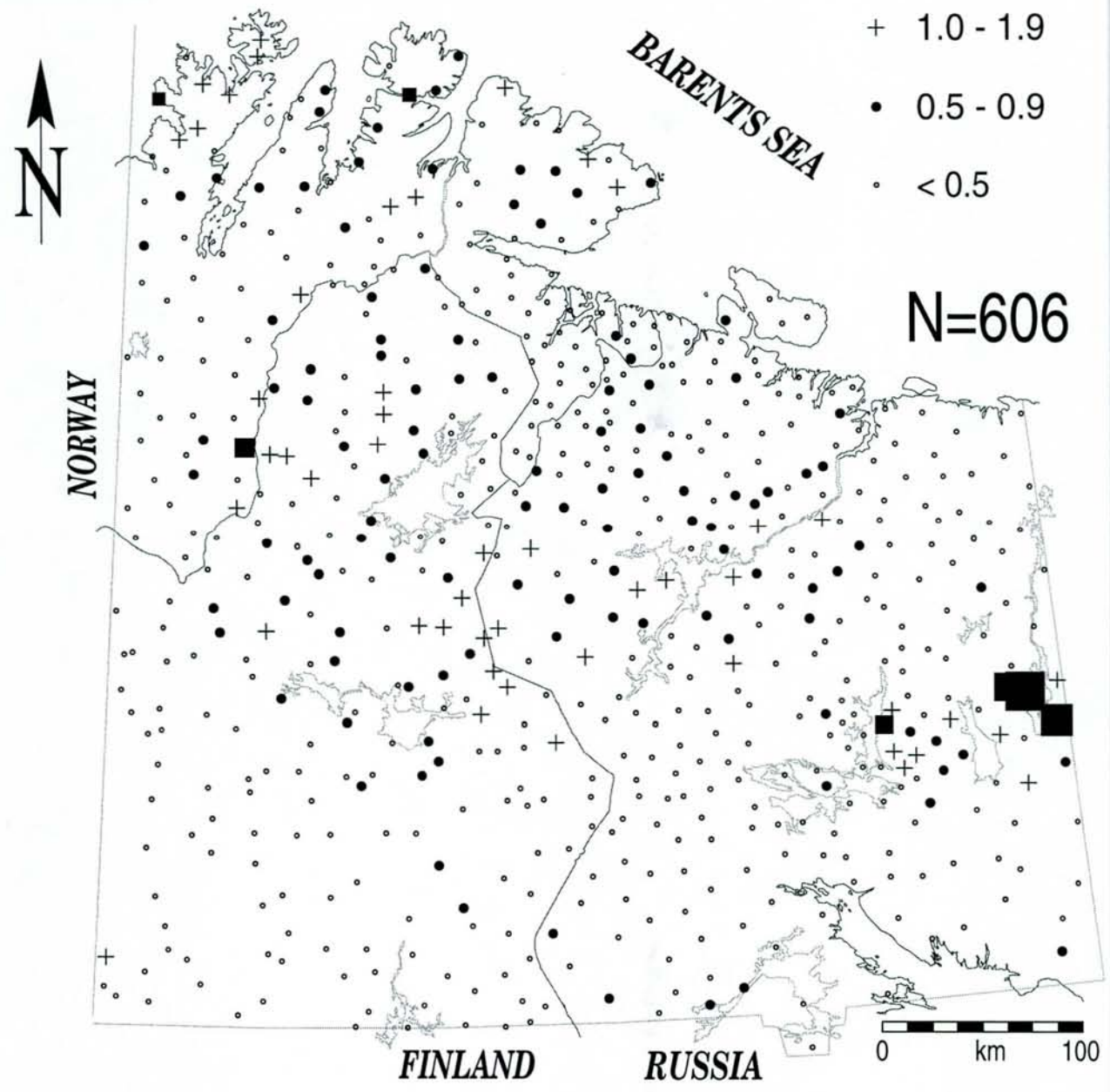
CKE-GTK-NGU

C-horizon

air dried, <2 mm, INAA

mg/kg

- 2.0 - 6.4
- + 1.0 - 1.9
- 0.5 - 0.9
- < 0.5



TERBIUM IN C-HORIZON



U Topsoil

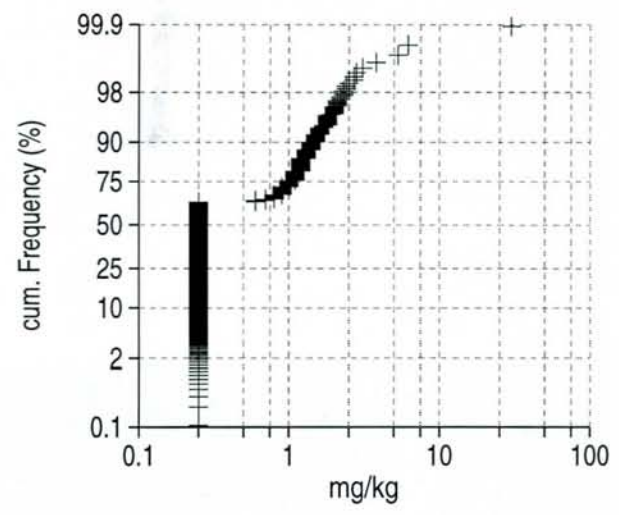
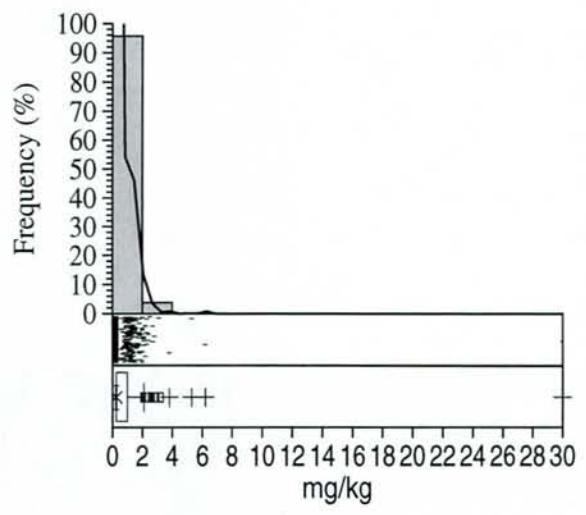
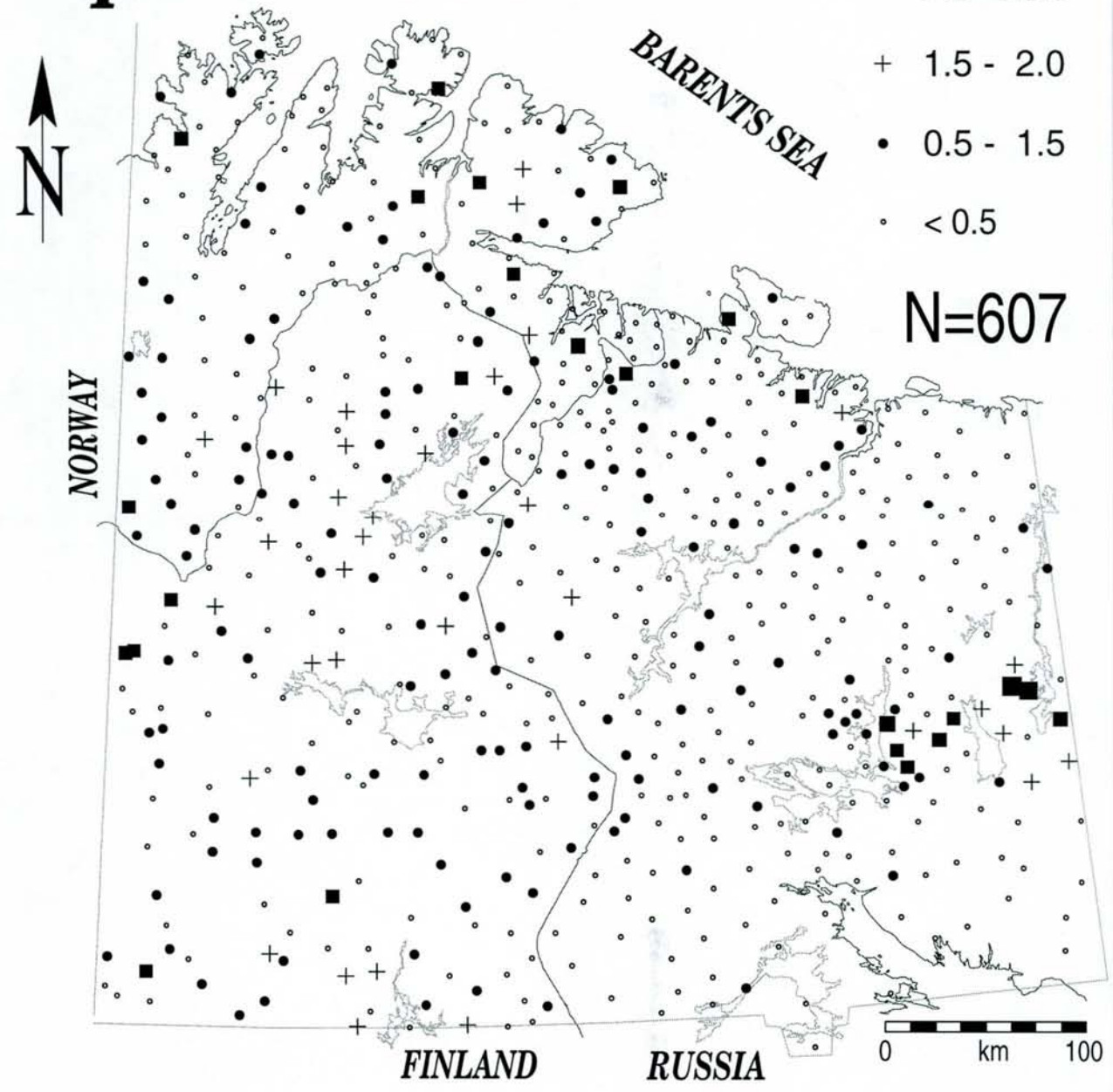
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

0-5cm, air dried, <2 mm, INAA

mg/kg

- 2.0 - 20.0
- + 1.5 - 2.0
- 0.5 - 1.5
- < 0.5

N=607



URANIUM IN TOPSOIL



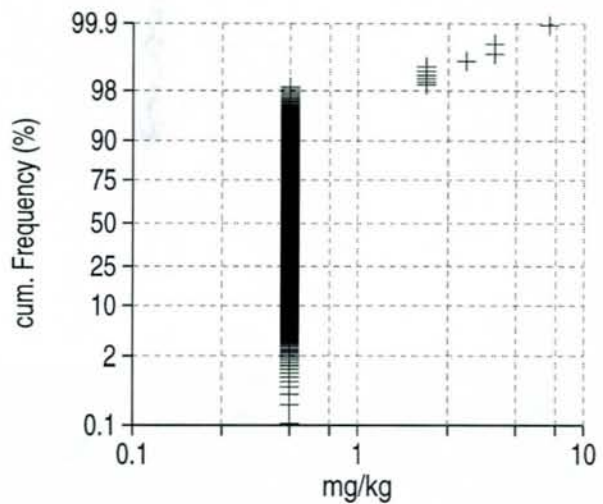
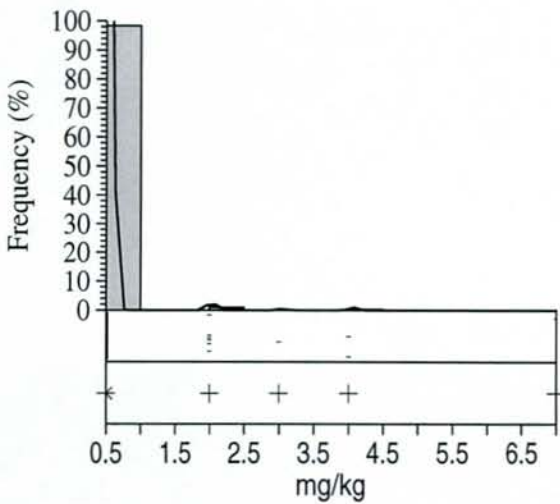
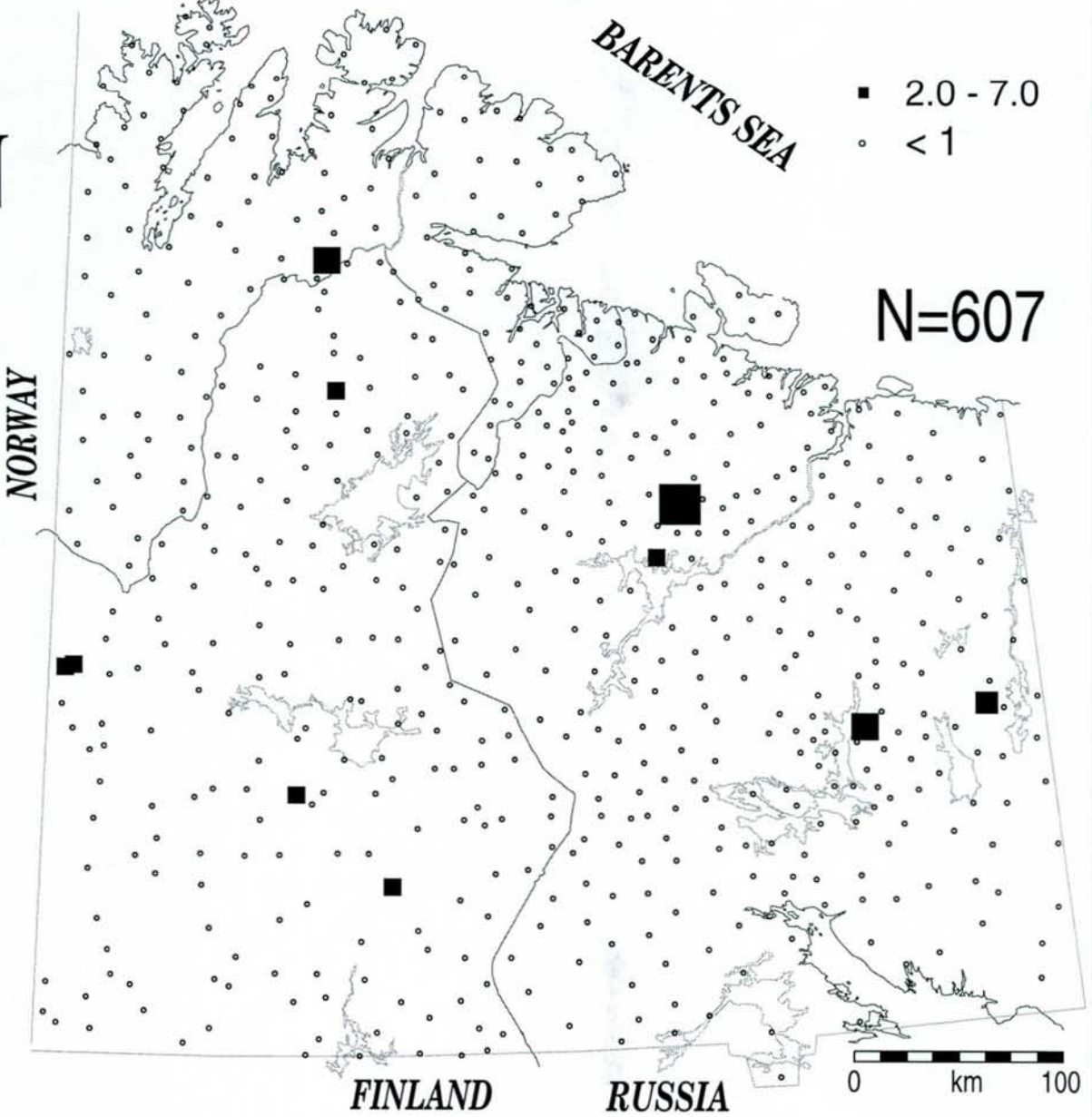
W

KOLA ECOGEOCHEMISTRY Regional Mapping 1995 CKE-GTK-NGU

mg/kg

Topsoil

0-5cm, air dried, <2 mm, INAA



TUNGSTEN IN TOPSOIL



W

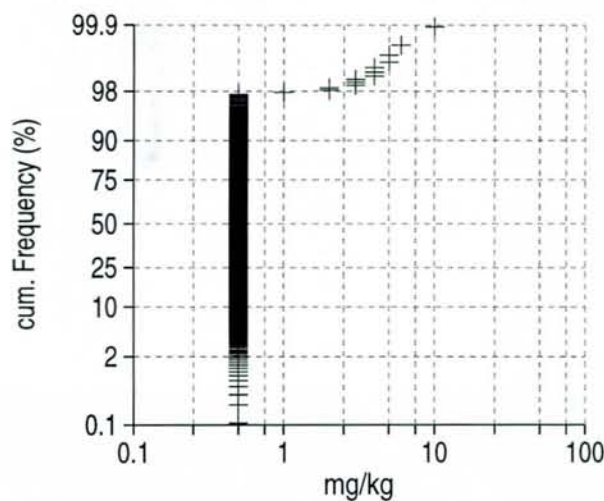
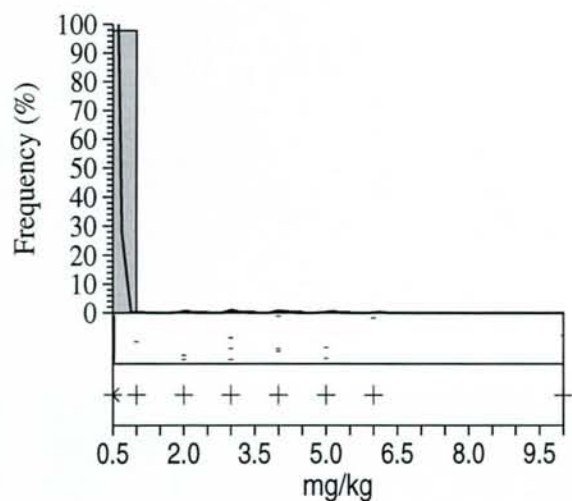
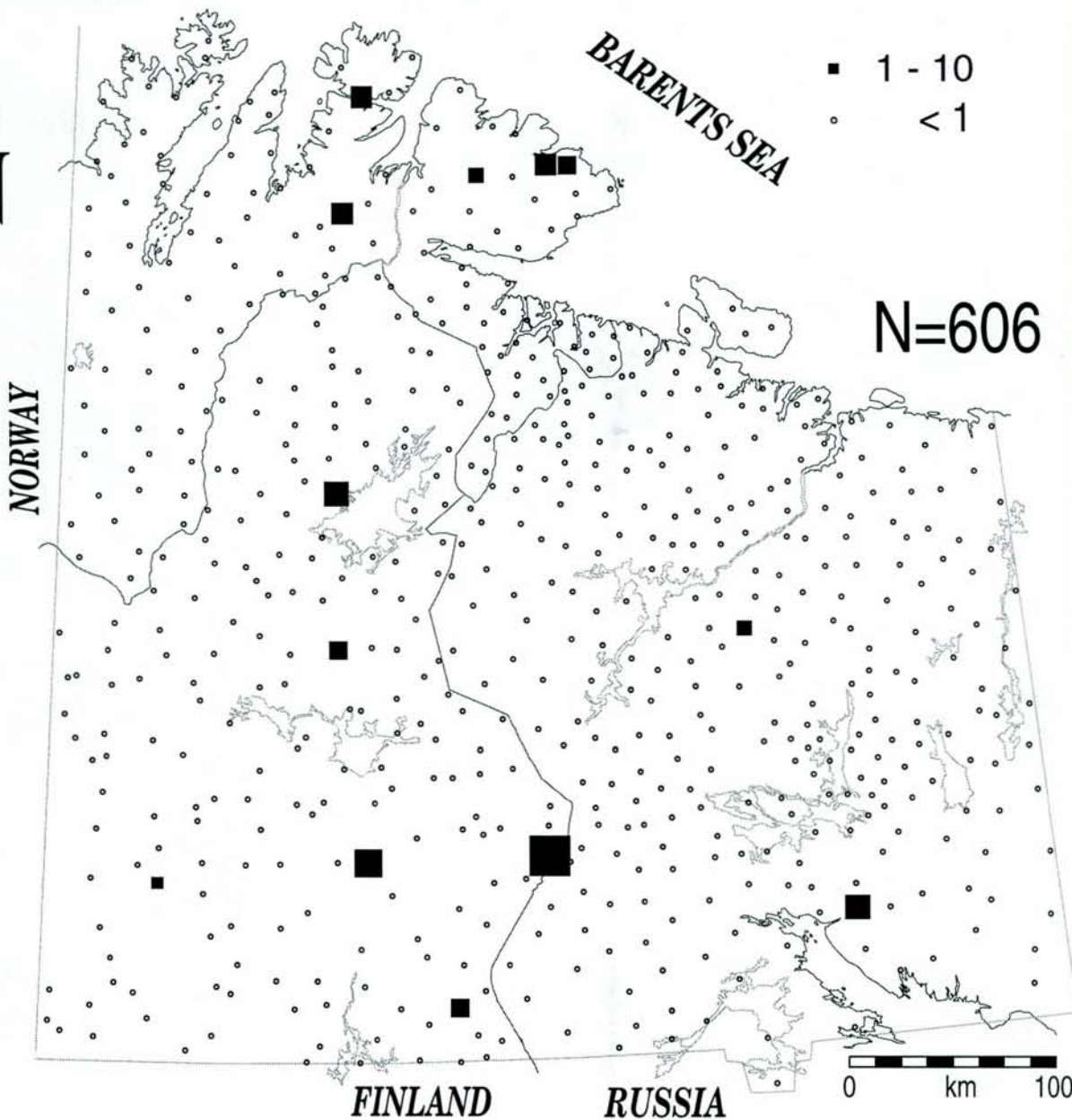
KOLA ECOGEOCHEMISTRY Regional Mapping 1995

mg/kg

C-horizon

CKE-GTK-NGU

air dried, <2 mm, INAA



TUNGSTEN IN C-HORIZON



Zn Topsoil

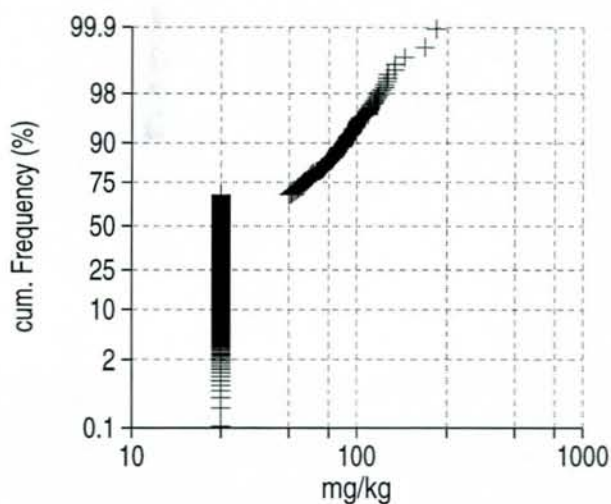
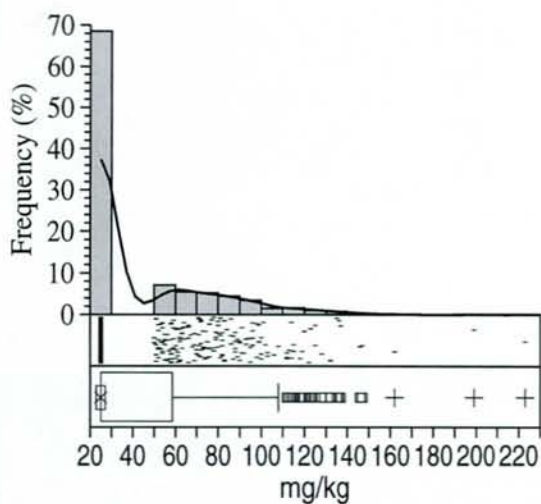
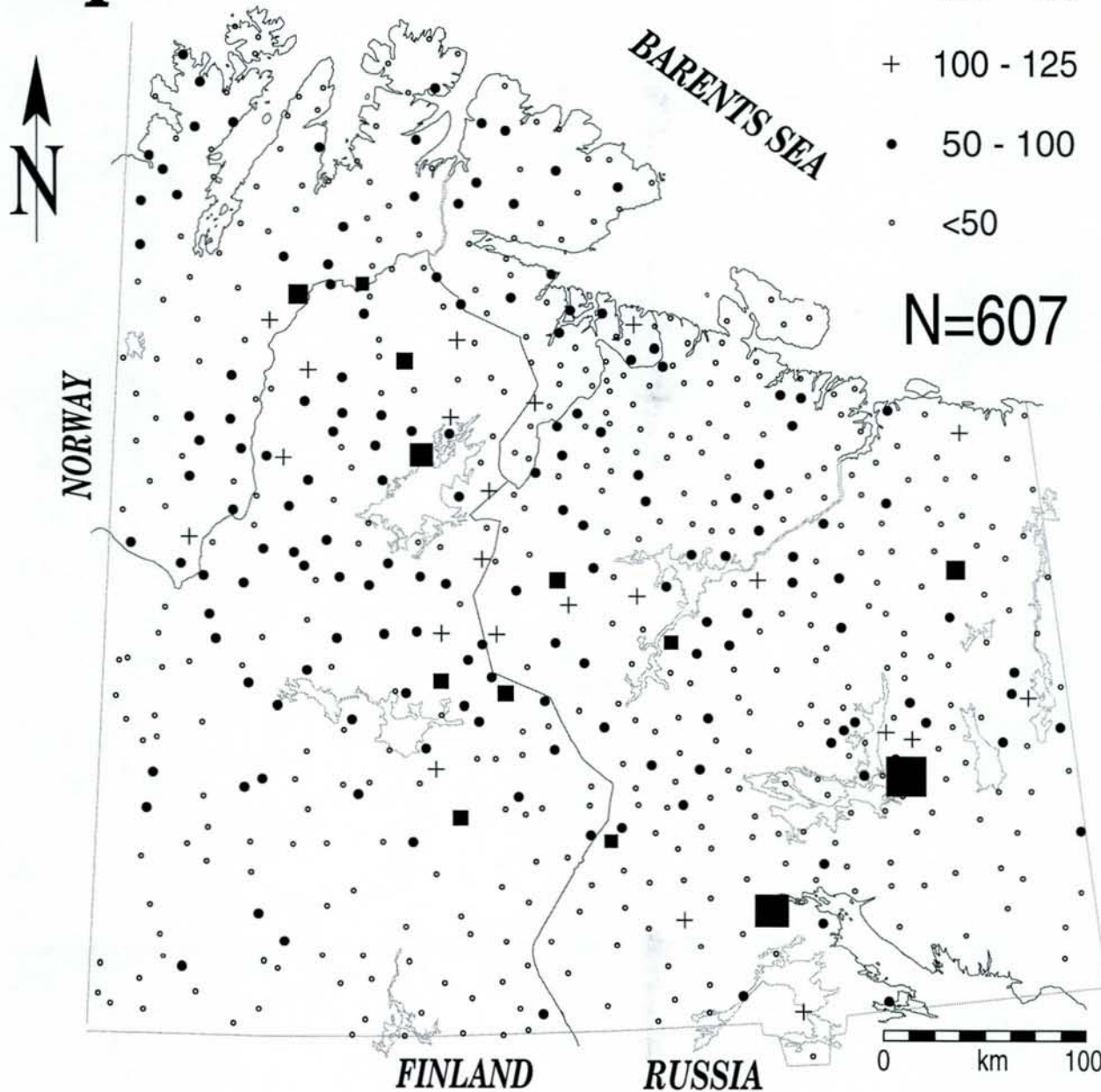
KOLA ECOGEOCHEMISTRY
Regional Mapping 1995
CKE-GTK-NGU

0-5cm, air dried, <2 mm, INAA

mg/kg

- 125 - 223
- + 100 - 125
- 50 - 100
- <50

N=607



ZINC IN TOPSOIL

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