

PHILIPPINE SEA

LUZON

CAGAYAN PROVINCE

CODE RANGE

	A	$99\% \leq Z$ (7.06~19.48ppm)
	B	$95\% \leq Z < 99\%$ (5.27~7.02ppm)
	C	$90\% \leq Z < 95\%$ (4.57~5.27ppm)
	D	$75\% \leq Z < 90\%$ (3.16~4.55ppm)
	E	$60\% \leq Z < 75\%$ (2.22~3.16ppm)
	F	$50\% \leq Z < 60\%$ (1.74~2.22ppm)
	G	$40\% \leq Z < 50\%$ (1.33~1.73ppm)
	H	$30\% \leq Z < 40\%$ (1.08~1.33ppm)
	I	$20\% \leq Z < 30\%$ (0.89~1.08ppm)
	J	Detection Limit $\leq Z < 20\%$ (0.50~0.89ppm)
	K	Detective Limit $> Z$ (0.25~0.50ppm)
		No Sample Cell

PHILIPPINE SEA

0 10 20 30 40 50km

SCALE 1 : 1,000,000

THE MINERAL EXPLORATION  
MINERAL DEPOSITS AND TECTONICS OF  
TWO CONTRASTING GEOLOGIC ENVIRONMENTS  
IN  
THE REPUBLIC OF THE PHILIPPINES

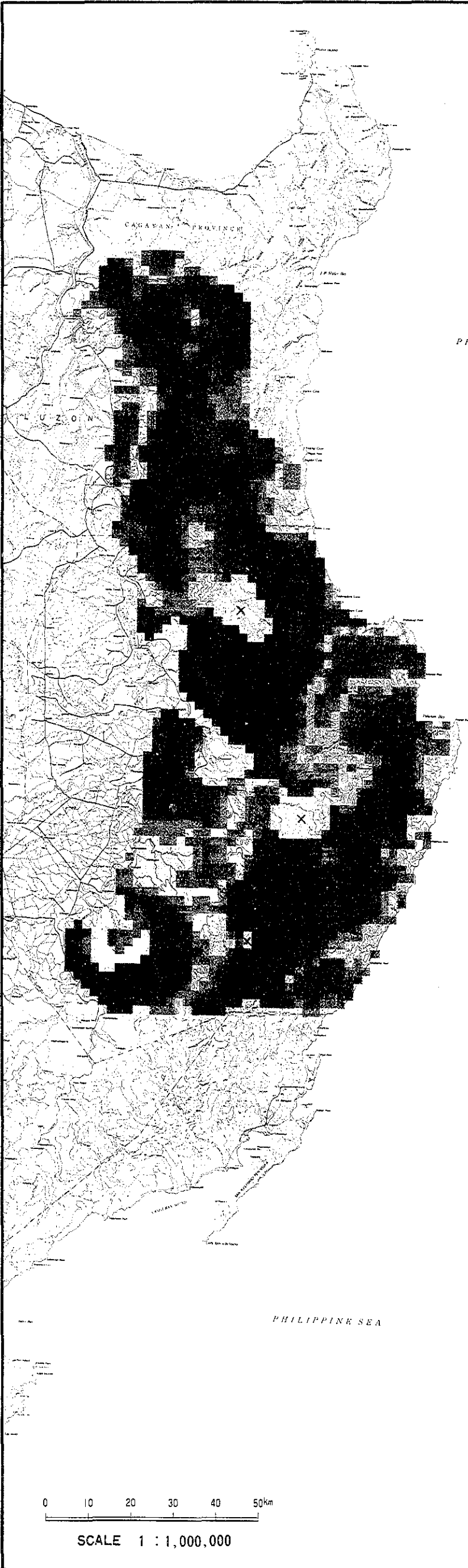
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CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

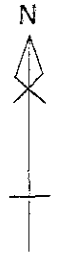
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GEOCHEMICAL ANALYSIS  
MOVING AVERAGE VALUES DISTRIBUTION  
MAP

No.4 As

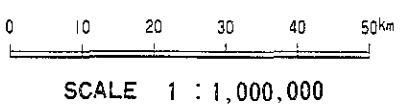


PHILIPPINE SEA



CODE	RANGE
A	$99\% \leq Z$ (2,388.21~8,839.89ppm)
B	$95\% \leq Z < 99\%$ (1,816.44~2,382.14ppm)
C	$90\% \leq Z < 95\%$ (1,591.15~1,816.35ppm)
D	$75\% \leq Z < 90\%$ (1,307.19~1,588.51ppm)
E	$60\% \leq Z < 75\%$ (1,155.49~1,306.69ppm)
F	$50\% \leq Z < 60\%$ (1,076.33~1,155.49ppm)
G	$40\% \leq Z < 50\%$ (1,009.75~1,075.66ppm)
H	$30\% \leq Z < 40\%$ (943.28~1,009.73ppm)
I	$20\% \leq Z < 30\%$ (853.14~943.08ppm)
J	Detection Limit $\leq Z < 20\%$ (403.60~853.07ppm)
K	Detective Limit $> Z$
x	No Sample Cell

PHILIPPINE SEA



THE MINERAL EXPLORATION  
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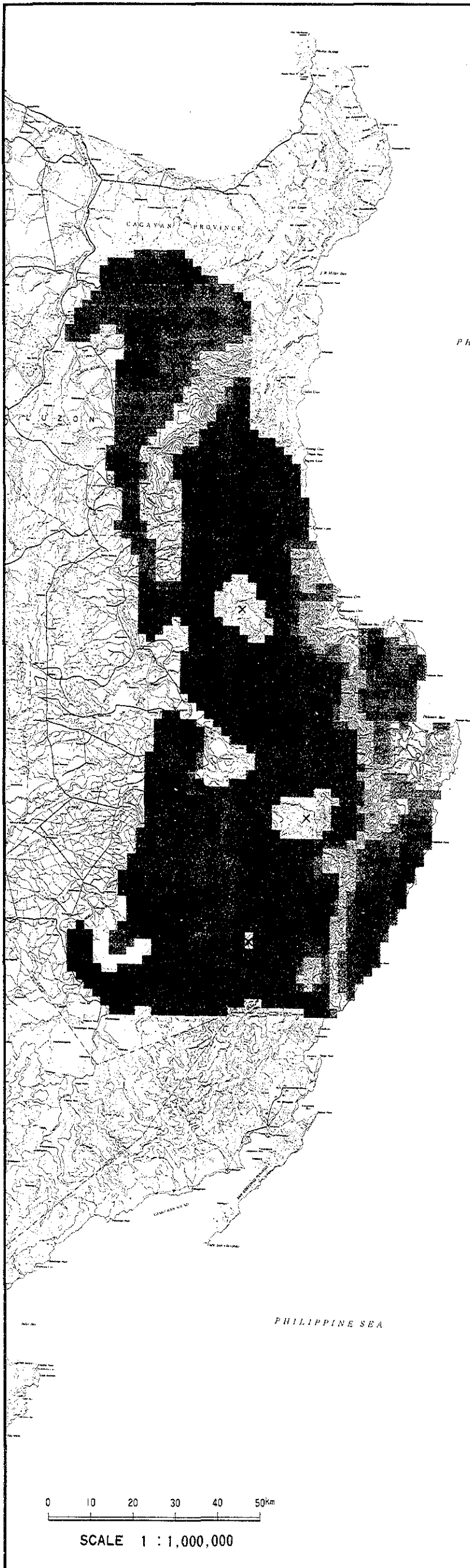
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CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

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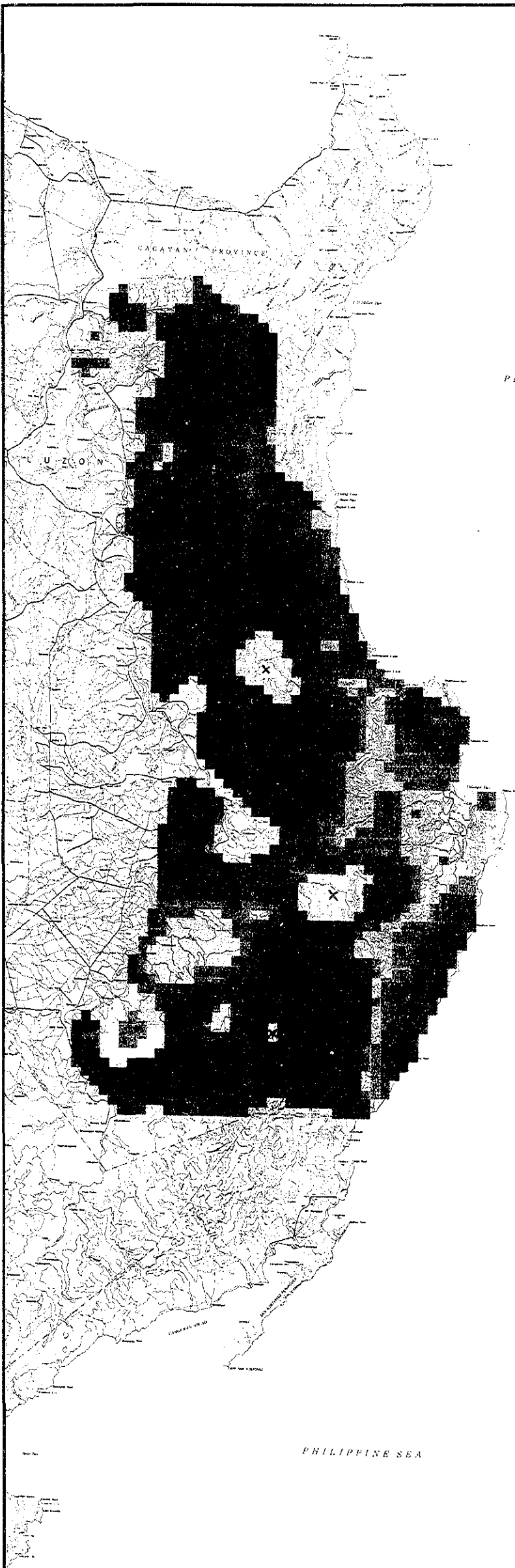
GEOCHEMICAL ANALYSIS  
MOVING AVERAGE VALUES DISTRIBUTION  
MAP

No.5 Mn



CODE	RANGE
A	99% $\leq$ Z (2,611.22~3,293.95ppm)
B	95% $\leq$ Z < 99% (1,130.25~2,606.10ppm)
C	90% $\leq$ Z < 95% (295.91~1,107.26ppm)
D	75% $\leq$ Z < 90% (32.66~295.82ppm)
E	60% $\leq$ Z < 75% (24.14~32.52ppm)
F	50% $\leq$ Z < 60% (20.15~24.14ppm)
G	40% $\leq$ Z < 50% (17.92~20.14ppm)
H	30% $\leq$ Z < 40% (16.02~17.92ppm)
I	20% $\leq$ Z < 30% (13.98~16.01ppm)
J	Detection Limit $\leq$ Z < 20% (5.65~13.98ppm)
K	Detective Limit > Z
x	No Sample Cell

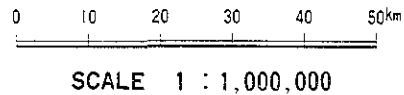
THE MINERAL EXPLORATION  
 MINERAL DEPOSITS AND TECTONICS OF  
 TWO CONTRASTING GEOLOGIC ENVIRONMENTS  
 IN  
 THE REPUBLIC OF THE PHILIPPINES  
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 CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE  
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 GEOCHEMICAL ANALYSIS  
 MOVING AVERAGE VALUES DISTRIBUTION  
 MAP No.6 Ni



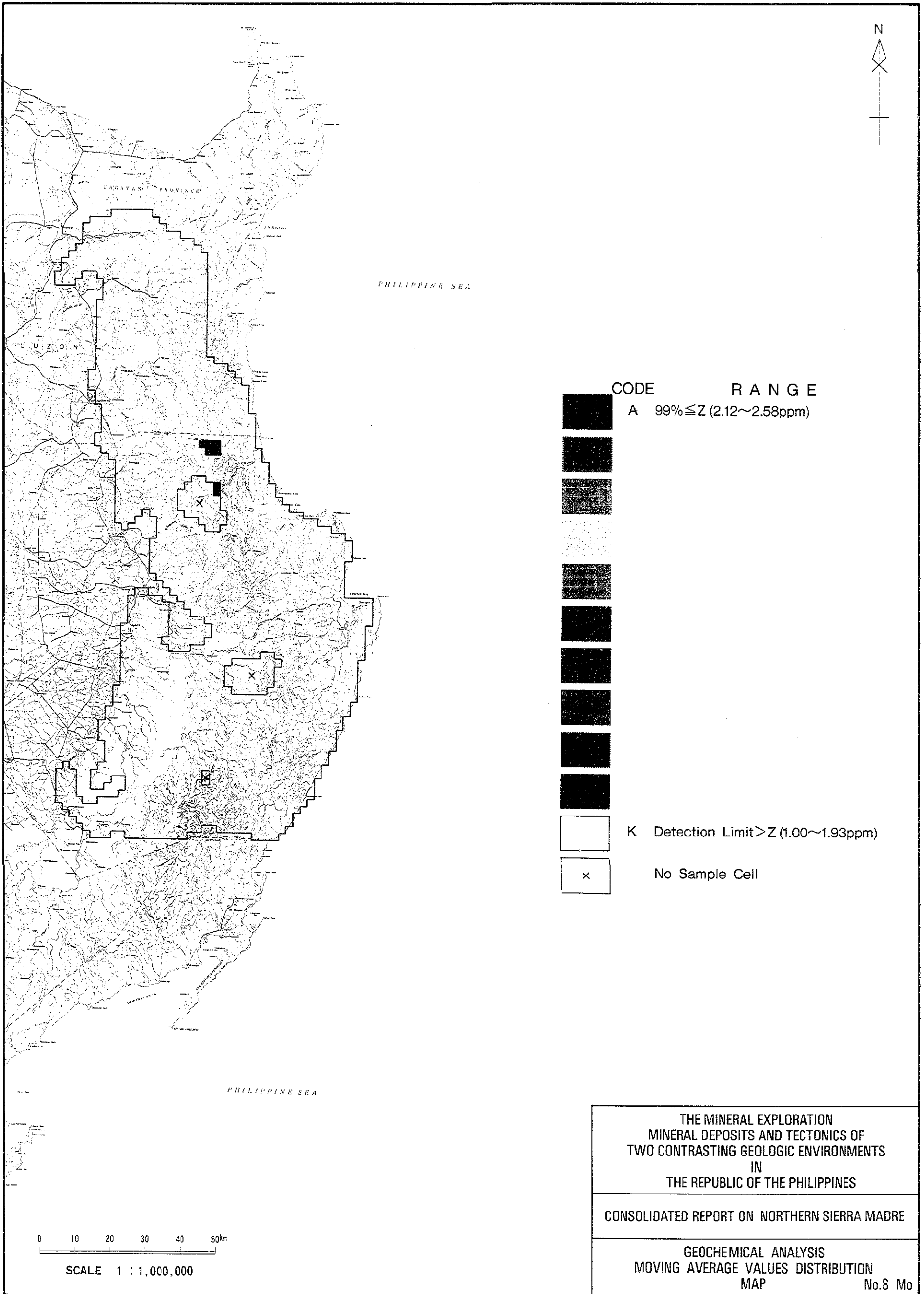
PHILIPPINE SEA

PHILIPPINE SEA

CODE	RANGE
A	99% $\leq$ Z (168.71~244.92ppm)
B	95% $\leq$ Z < 99% (88.53~168.05ppm)
C	90% $\leq$ Z < 95% (45.44~88.48ppm)
D	75% $\leq$ Z < 90% (31.24~45.38ppm)
E	60% $\leq$ Z < 75% (27.44~31.19ppm)
F	50% $\leq$ Z < 60% (25.67~27.44ppm)
G	40% $\leq$ Z < 50% (23.79~25.66ppm)
H	30% $\leq$ Z < 40% (21.41~23.76ppm)
I	20% $\leq$ Z < 30% (19.05~21.41ppm)
J	Detection Limit $\leq$ Z < 20% (6.30~19.05ppm)
K	Detection Limit > Z
X	No Sample Cell



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 CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE  
 -----  
 GEOCHEMICAL ANALYSIS  
 MOVING AVERAGE VALUES DISTRIBUTION  
 MAP No.7 Co



CODE            R A N G E  
 A    99% ≤ Z (2.12~2.58ppm)



K    Detection Limit > Z (1.00~1.93ppm)

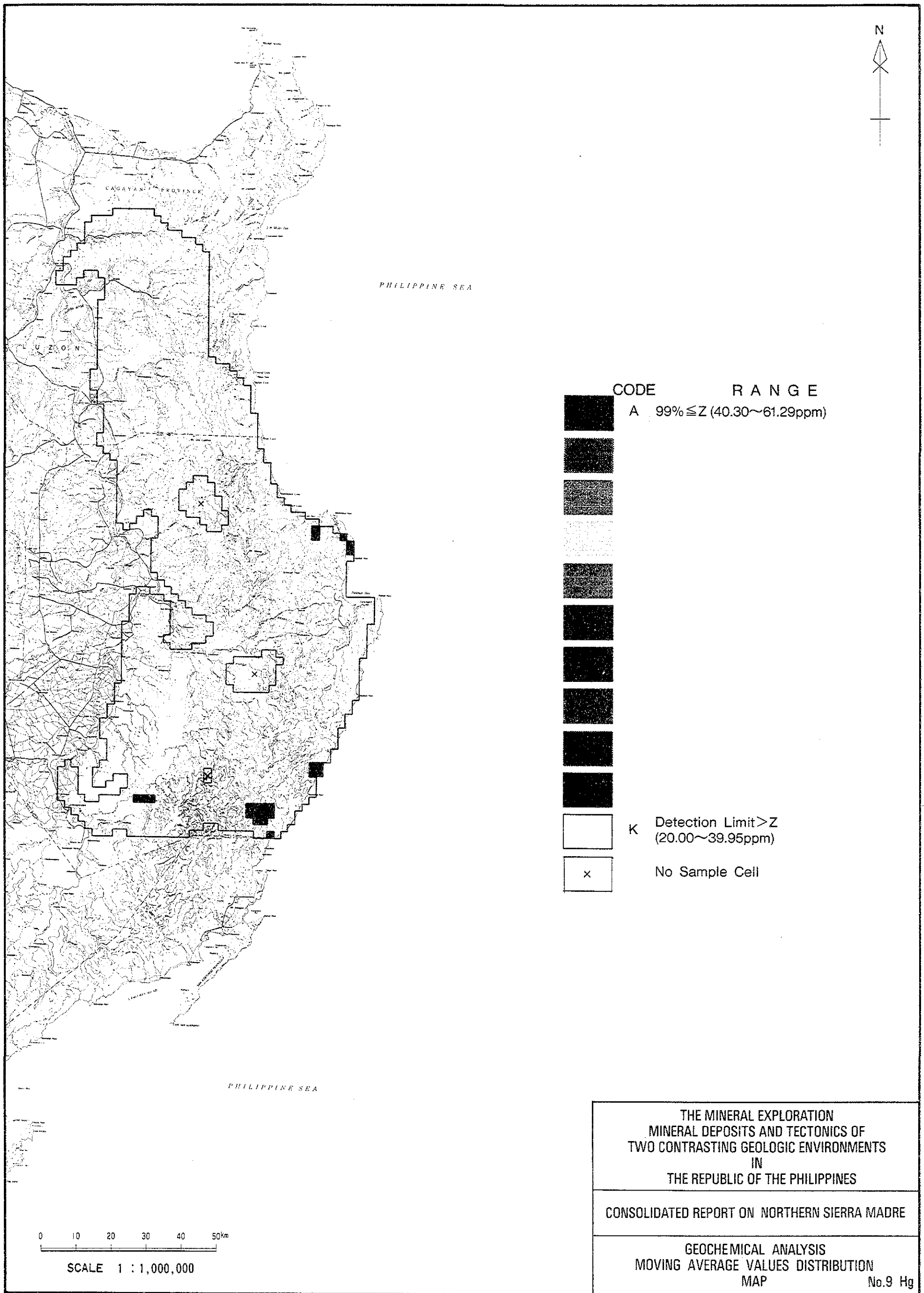
x    No Sample Cell

THE MINERAL EXPLORATION  
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 THE REPUBLIC OF THE PHILIPPINES

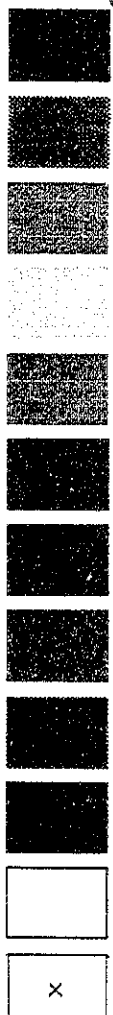
CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

GEOCHEMICAL ANALYSIS  
 MOVING AVERAGE VALUES DISTRIBUTION  
 MAP

No. 8 Mo



CODE            R A N G E  
 A    99% ≤ Z (40.30~61.29ppm)



K    Detection Limit > Z  
 (20.00~39.95ppm)

X    No Sample Cell

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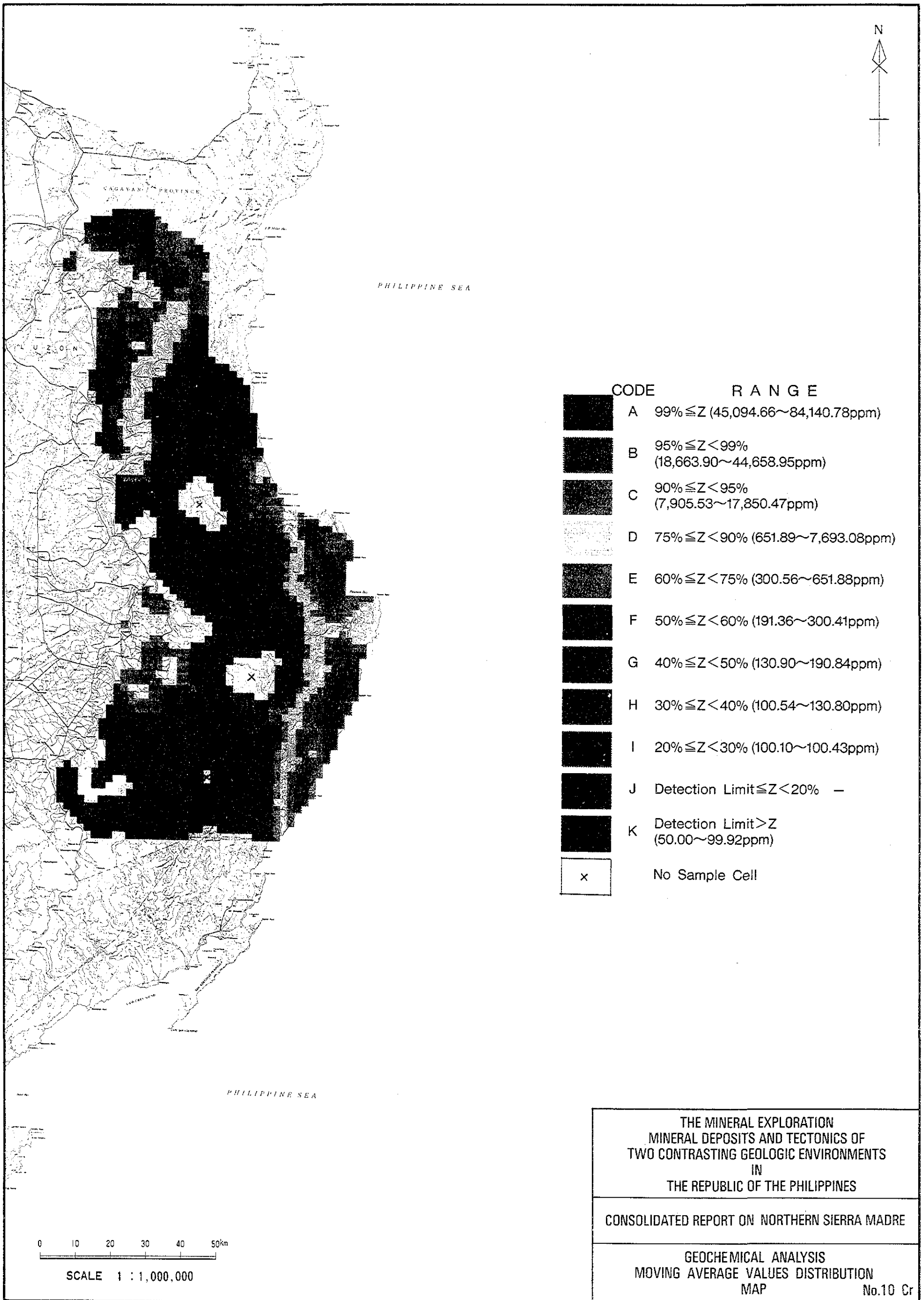
CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

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GEOCHEMICAL ANALYSIS  
 MOVING AVERAGE VALUES DISTRIBUTION  
 MAP

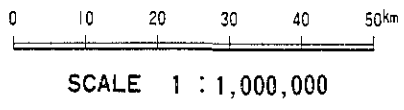
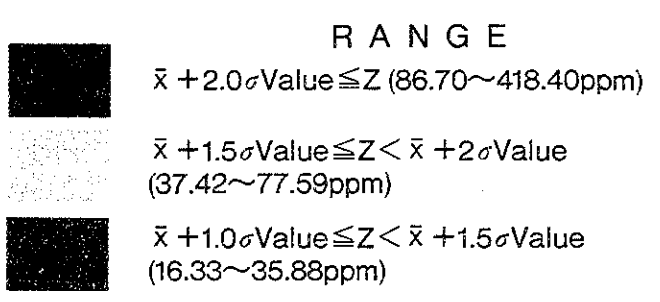
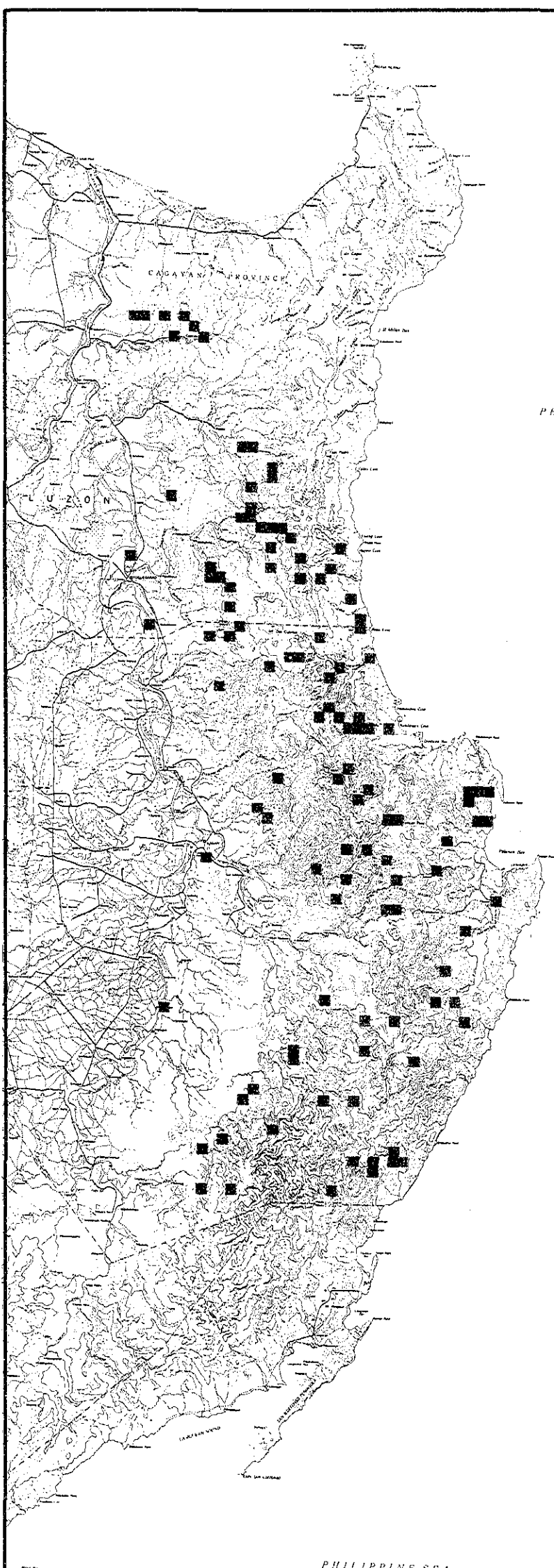
No.9 Hg

0    10    20    30    40    50km  
 SCALE 1 : 1,000,000



付図-2-3 (No.1~No.10) ハイパスフィルター異常値分布図  
(1/1,000,000)





THE MINERAL EXPLORATION  
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THE REPUBLIC OF THE PHILIPPINES

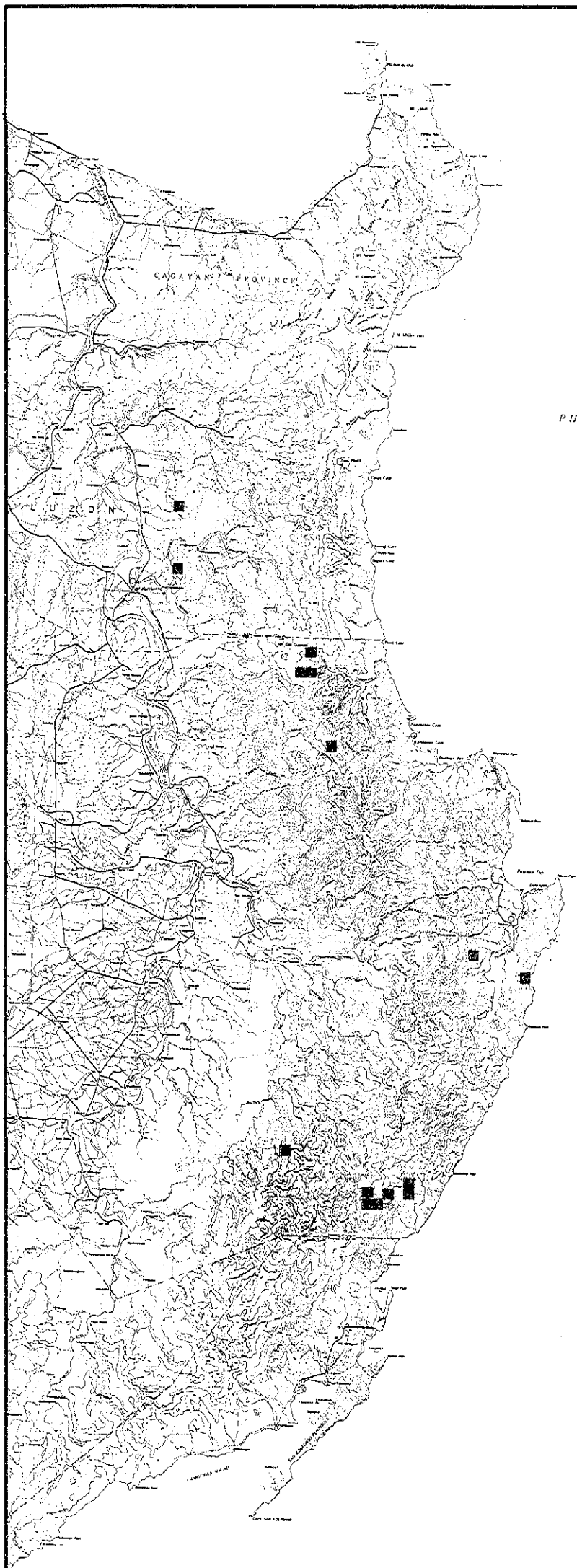
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CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

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GEOCHEMICAL ANALYSIS  
HIGH-PASS FILTER VALUES  
DISTRIBUTION MAP

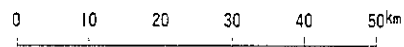
No.1 Cu



PHILIPPINE SEA

PHILIPPINE SEA

RANGE	
	$\bar{x} + 2.0\sigma \text{Value} \leq Z$ (54.87~54.87ppm)
	$\bar{x} + 1.5\sigma \text{Value} \leq Z < \bar{x} + 2.0\sigma \text{Value}$ (20.64~36.17ppm)
	$\bar{x} + 1.0\sigma \text{Value} \leq Z < \bar{x} + 1.5\sigma \text{Value}$ (5.04~13.55ppm)



SCALE 1 : 1,000,000

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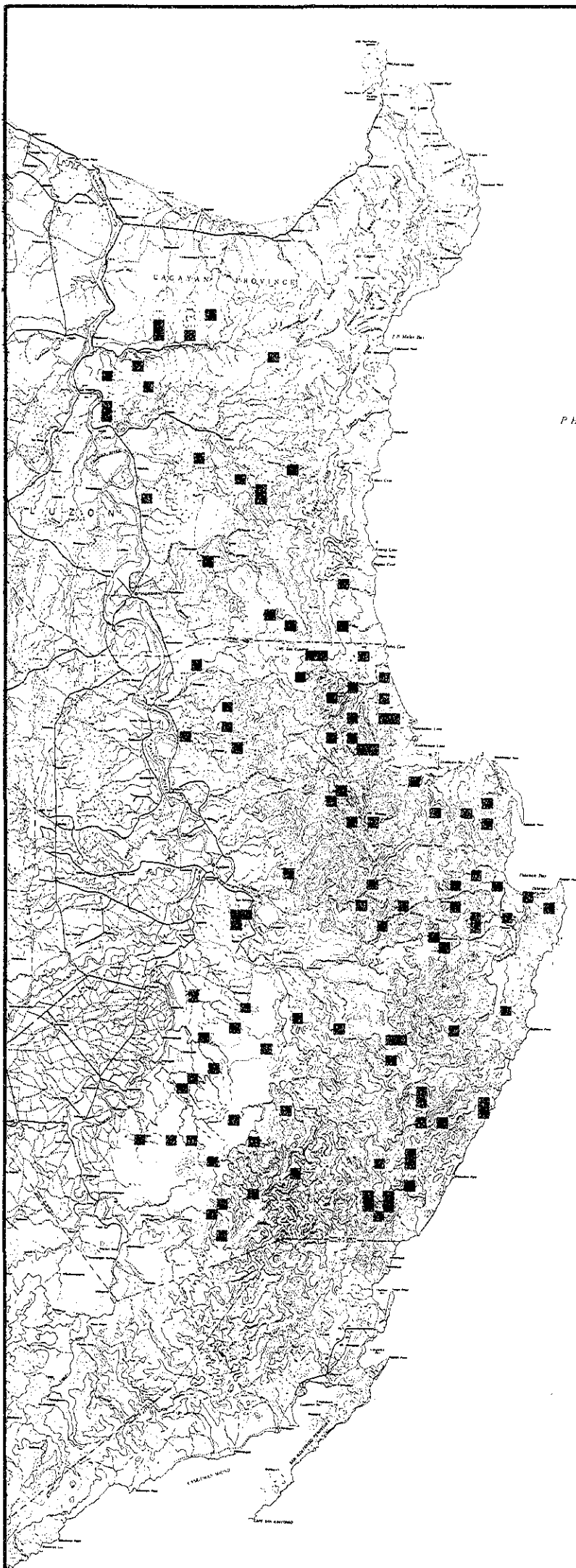
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CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

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GEOCHEMICAL ANALYSIS  
HIGH-PASS FILTER VALUES  
DISTRIBUTION MAP

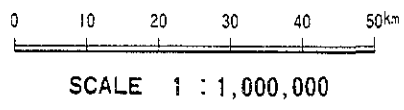
No.2 Pb



PHILIPPINE SEA

PHILIPPINE SEA

RANGE	
	$\bar{x} + 2.0\sigma \text{Value} \leq Z$ (198.89~1,199.81ppm)
	$\bar{x} + 1.5\sigma \text{Value} \leq Z < \bar{x} + 2.0\sigma \text{Value}$ (81.18~178.86ppm)
	$\bar{x} + 1.0\sigma \text{Value} \leq Z < \bar{x} + 1.5\sigma \text{Value}$ (35.90~79.99ppm)



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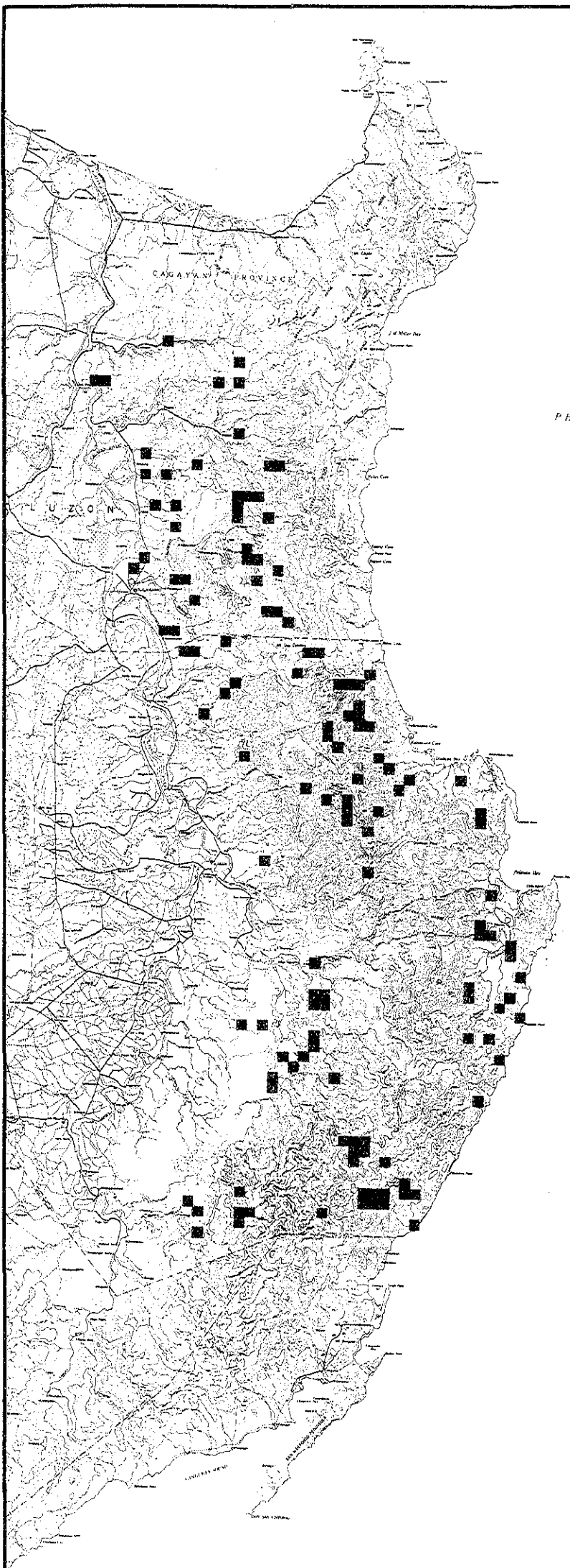
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CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

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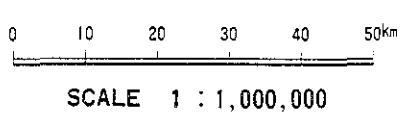
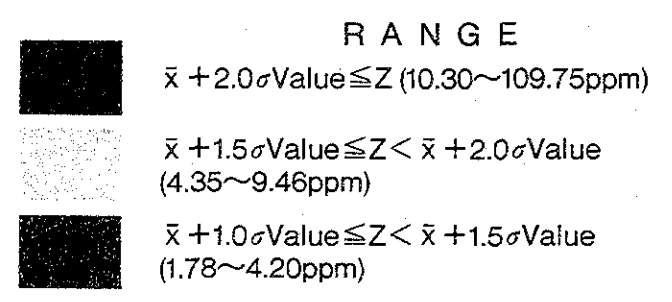
GEOCHEMICAL ANALYSIS  
HIGH-PASS FILTER VALUES  
DISTRIBUTION MAP

No.3 Zn



PHILIPPINE SEA

PHILIPPINE SEA

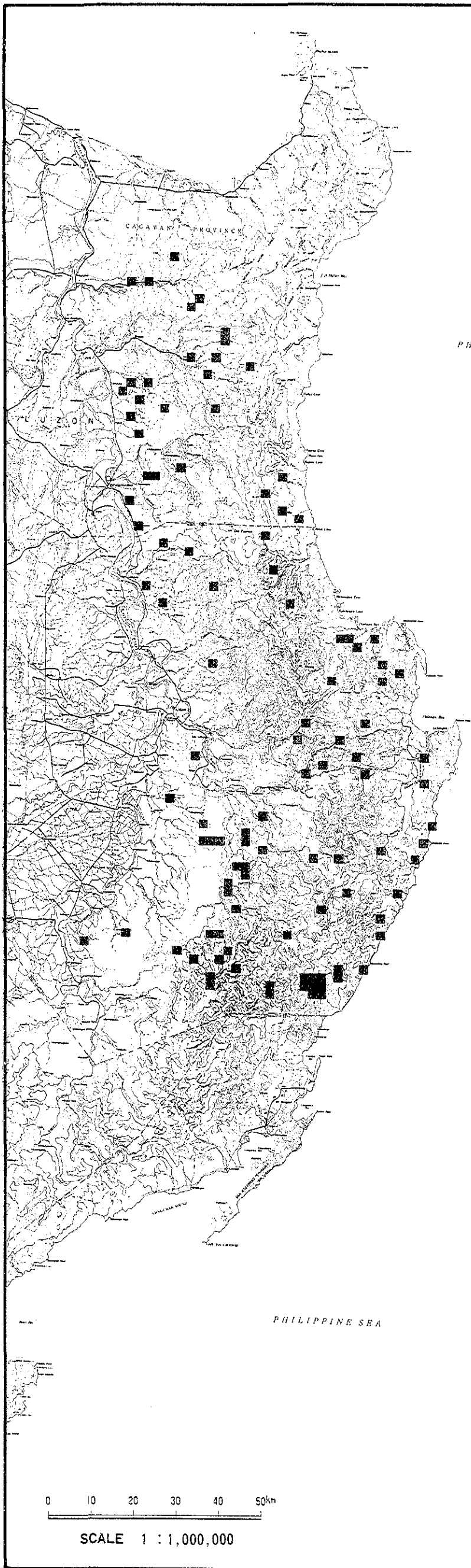


THE MINERAL EXPLORATION  
MINERAL DEPOSITS AND TECTONICS OF  
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CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

GEOCHEMICAL ANALYSIS  
HIGH-PASS FILTER VALUES  
DISTRIBUTION MAP

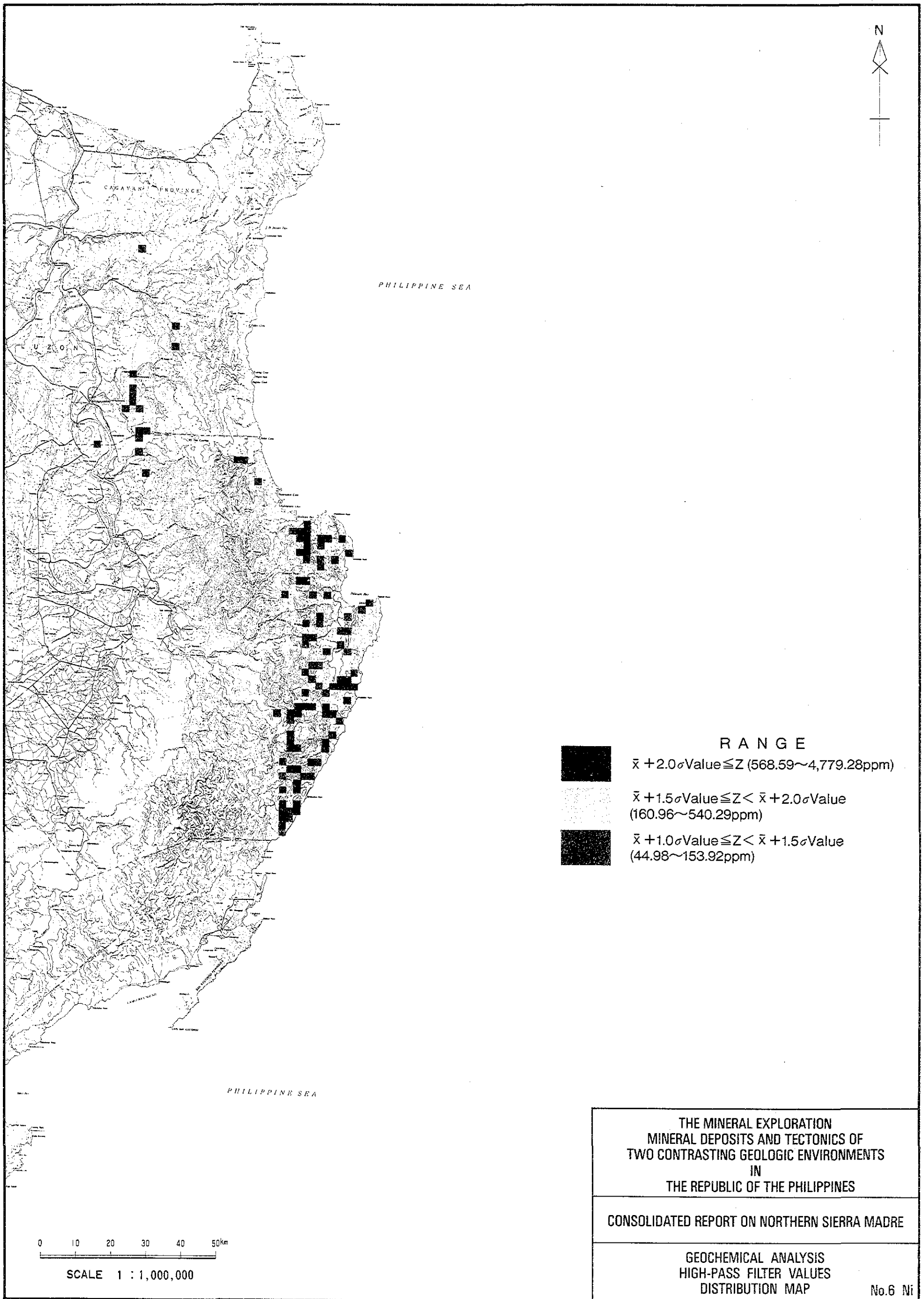
No.4 As



- R A N G E**
- $\bar{x} + 2.0\sigma \text{Value} \leq Z$  (2,237.41~30,530.01ppm)
  - $\bar{x} + 1.5\sigma \text{Value} \leq Z < \bar{x} + 2.0\sigma \text{Value}$   
 (827.38~1,674.84ppm)
  - $\bar{x} + 1.0\sigma \text{Value} \leq Z < \bar{x} + 1.5\sigma \text{Value}$   
 (378.31~802.91ppm)

THE MINERAL EXPLORATION MINERAL DEPOSITS AND TECTONICS OF TWO CONTRASTING GEOLOGIC ENVIRONMENTS IN THE REPUBLIC OF THE PHILIPPINES
CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE
GEOCHEMICAL ANALYSIS HIGH-PASS FILTER VALUES DISTRIBUTION MAP

No.5 Mn



PHILIPPINE SEA

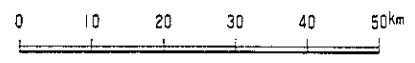
CAGAYAN PROVINCE

LUZON

PHILIPPINE SEA

**RANGE**

- $\bar{x} + 2.0\sigma \text{Value} \leq Z$  (568.59~4,779.28ppm)
- $\bar{x} + 1.5\sigma \text{Value} \leq Z < \bar{x} + 2.0\sigma \text{Value}$  (160.96~540.29ppm)
- $\bar{x} + 1.0\sigma \text{Value} \leq Z < \bar{x} + 1.5\sigma \text{Value}$  (44.98~153.92ppm)



SCALE 1 : 1,000,000

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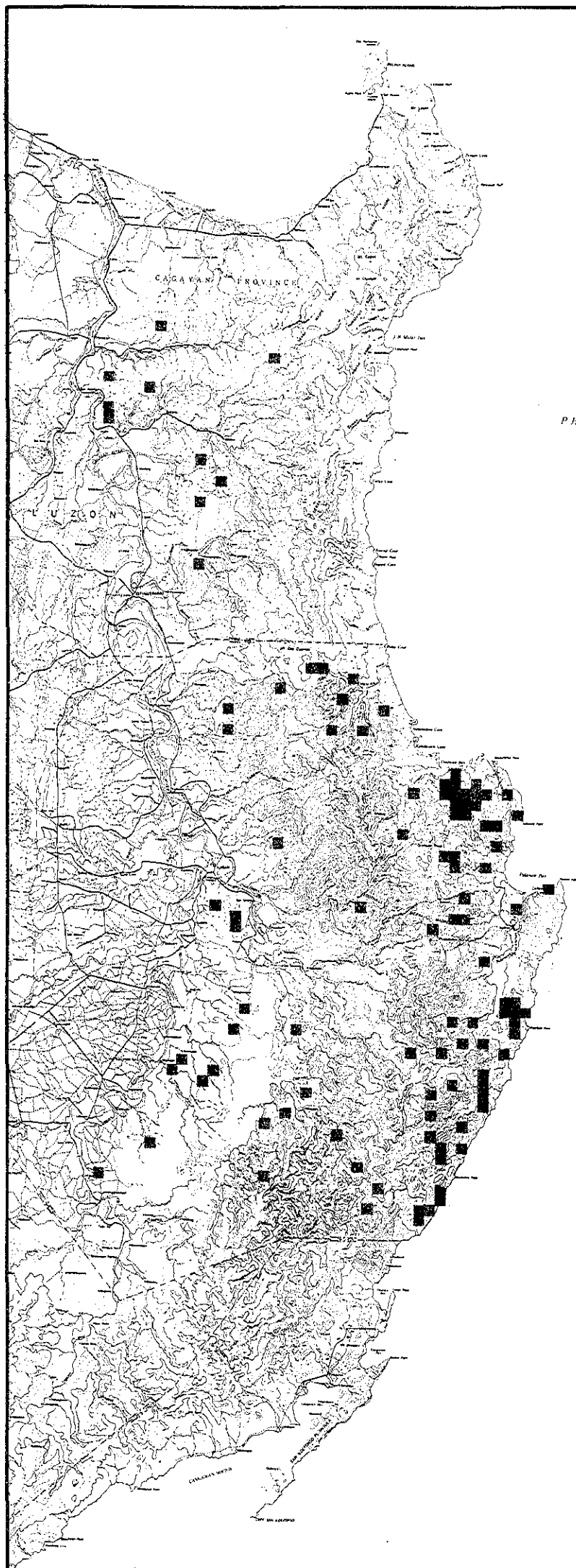
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GEOCHEMICAL ANALYSIS  
HIGH-PASS FILTER VALUES  
DISTRIBUTION MAP

No.6 Ni

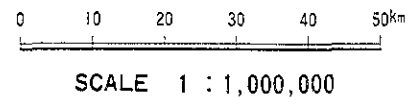




PHILIPPINE SEA

PHILIPPINE SEA

- R A N G E**
- $\bar{x} + 2.0\sigma \text{Value} \leq Z$  (53.95~318.86ppm)
  - $\bar{x} + 1.5\sigma \text{Value} \leq Z < \bar{x} + 2.0\sigma \text{Value}$  (22.84~49.98ppm)
  - $\bar{x} + 1.0\sigma \text{Value} \leq Z < \bar{x} + 1.5\sigma \text{Value}$  (10.09~22.37ppm)



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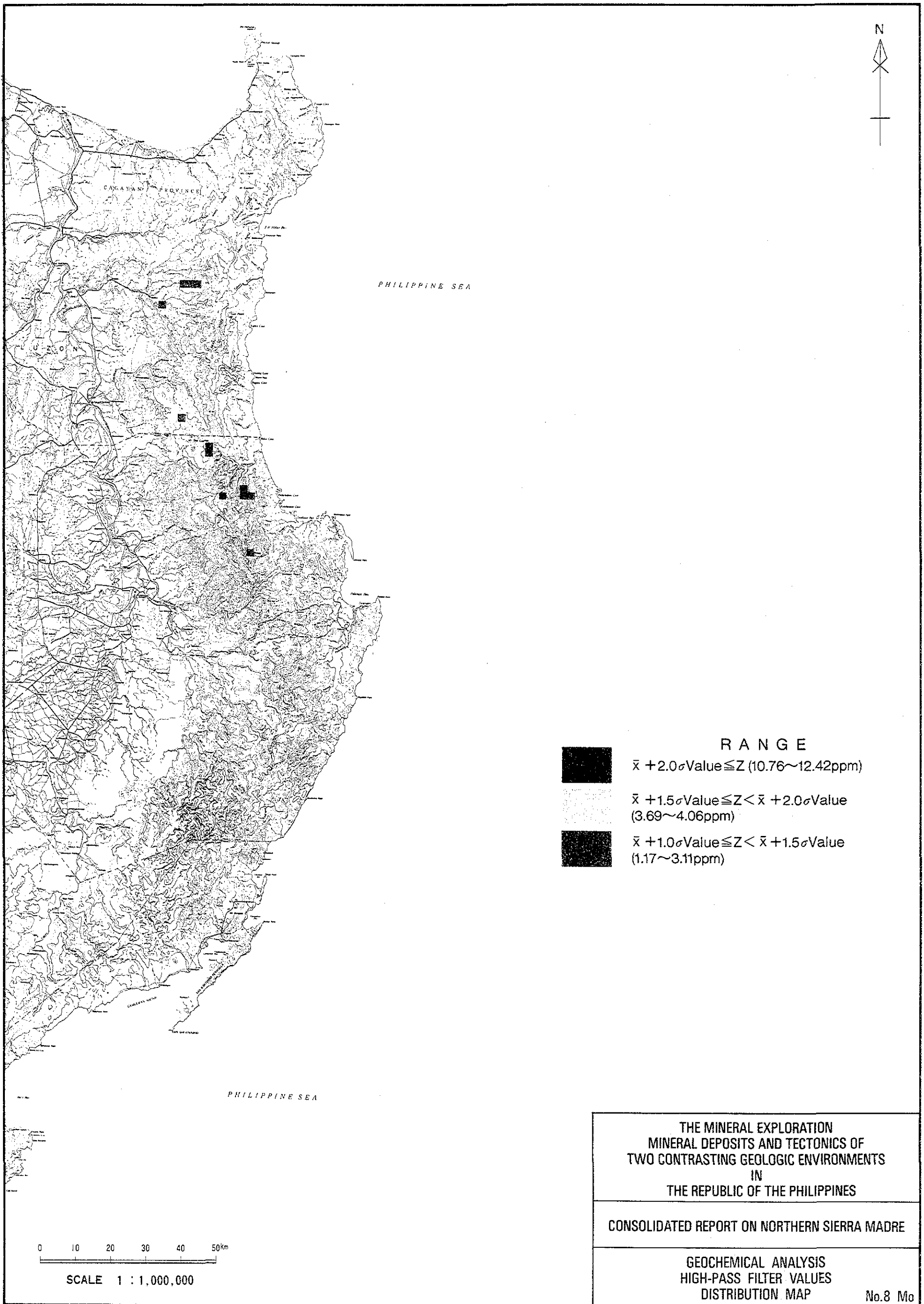
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CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

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GEOCHEMICAL ANALYSIS  
HIGH-PASS FILTER VALUES  
DISTRIBUTION MAP

No.7 Co



PHILIPPINE SEA

CAGAYAN PROVINCE

ILOCOS

**RANGE**

- $\bar{x} + 2.0\sigma \text{Value} \leq Z$  (10.76~12.42ppm)
- $\bar{x} + 1.5\sigma \text{Value} \leq Z < \bar{x} + 2.0\sigma \text{Value}$  (3.69~4.06ppm)
- $\bar{x} + 1.0\sigma \text{Value} \leq Z < \bar{x} + 1.5\sigma \text{Value}$  (1.17~3.11ppm)

PHILIPPINE SEA

0 10 20 30 40 50km

SCALE 1 : 1,000,000

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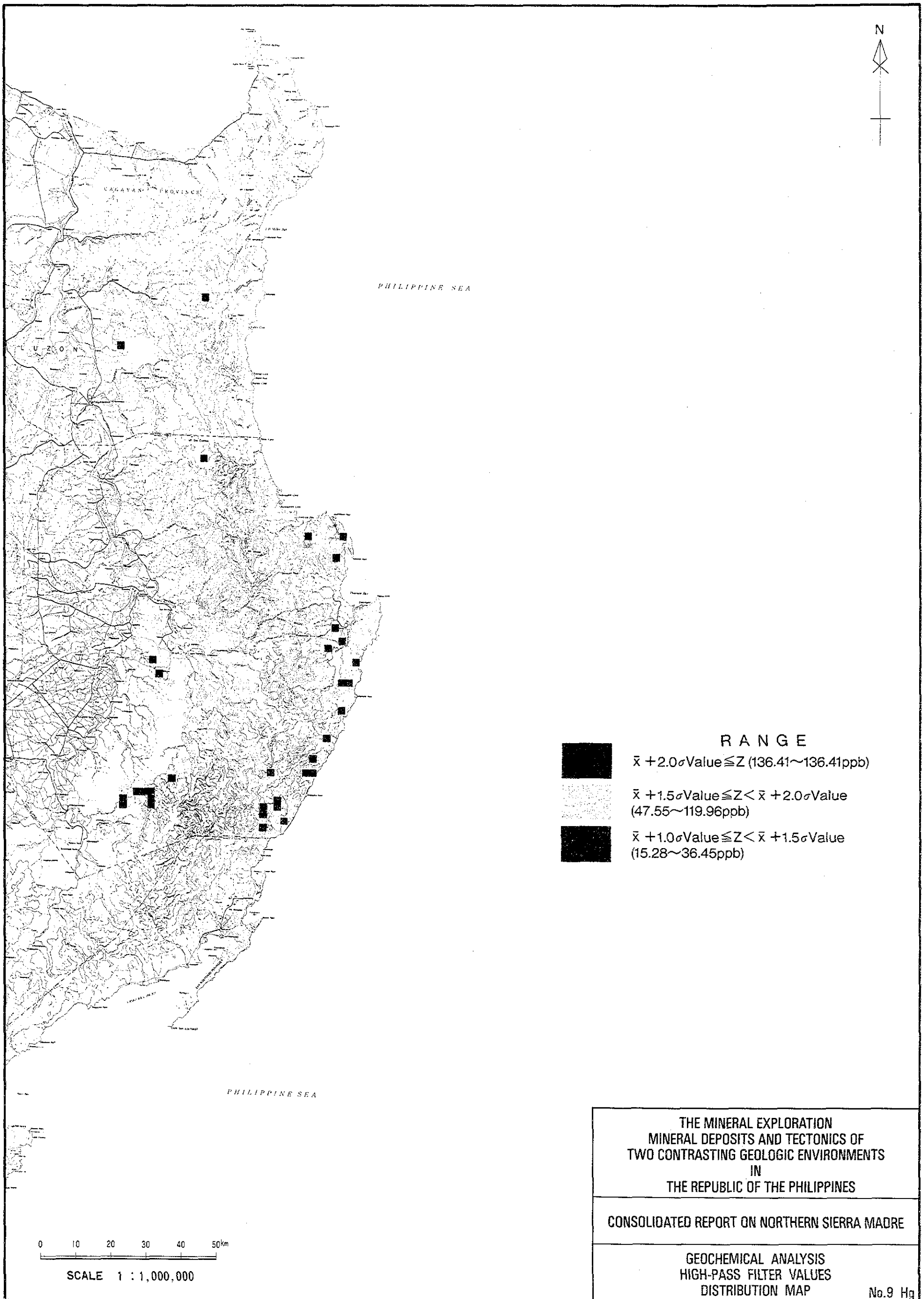
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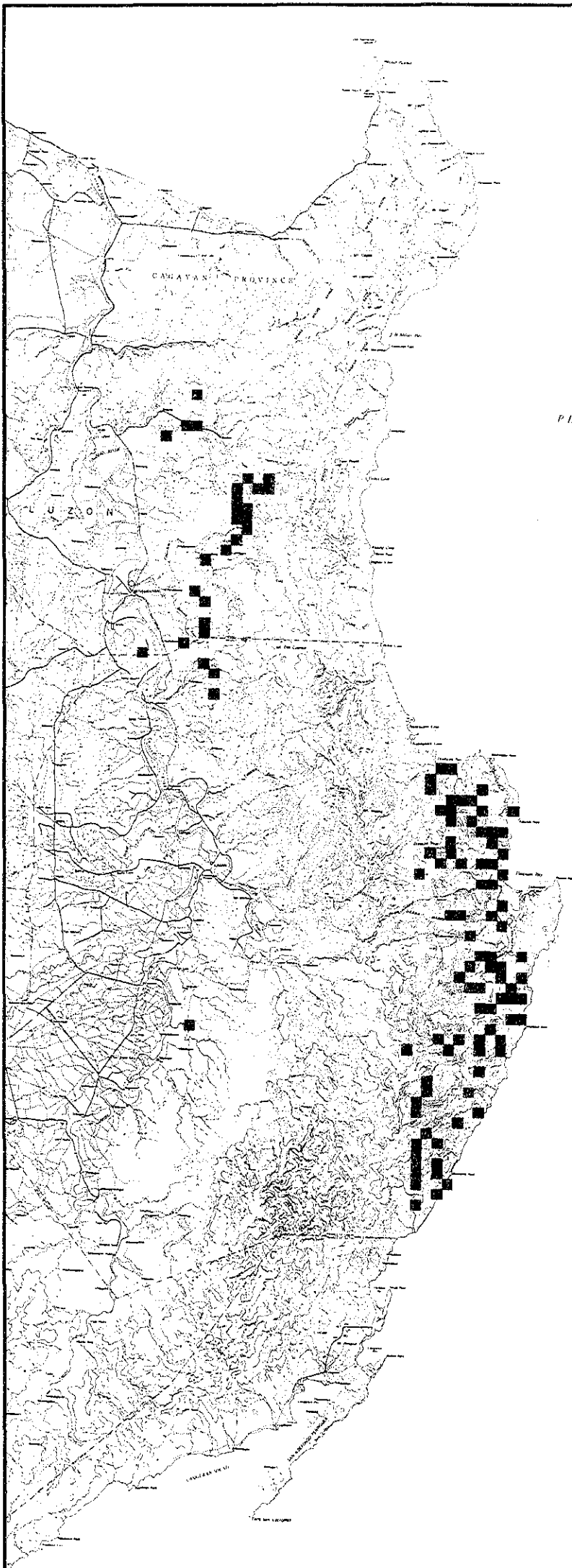
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GEOCHEMICAL ANALYSIS  
HIGH-PASS FILTER VALUES  
DISTRIBUTION MAP




No.8 Mo

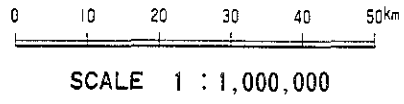






**R A N G E**

	$\bar{x} + 2.0\sigma \text{Value} \leq Z$ (27,358.05~99,698.08ppm)
	$\bar{x} + 1.5\sigma \text{Value} \leq Z < \bar{x} + 2.0\sigma \text{Value}$ (6,546.65~24,155.11ppm)
	$\bar{x} + 1.0\sigma \text{Value} \leq Z < \bar{x} + 1.5\sigma \text{Value}$ (1,618.80~6,381.48ppm)



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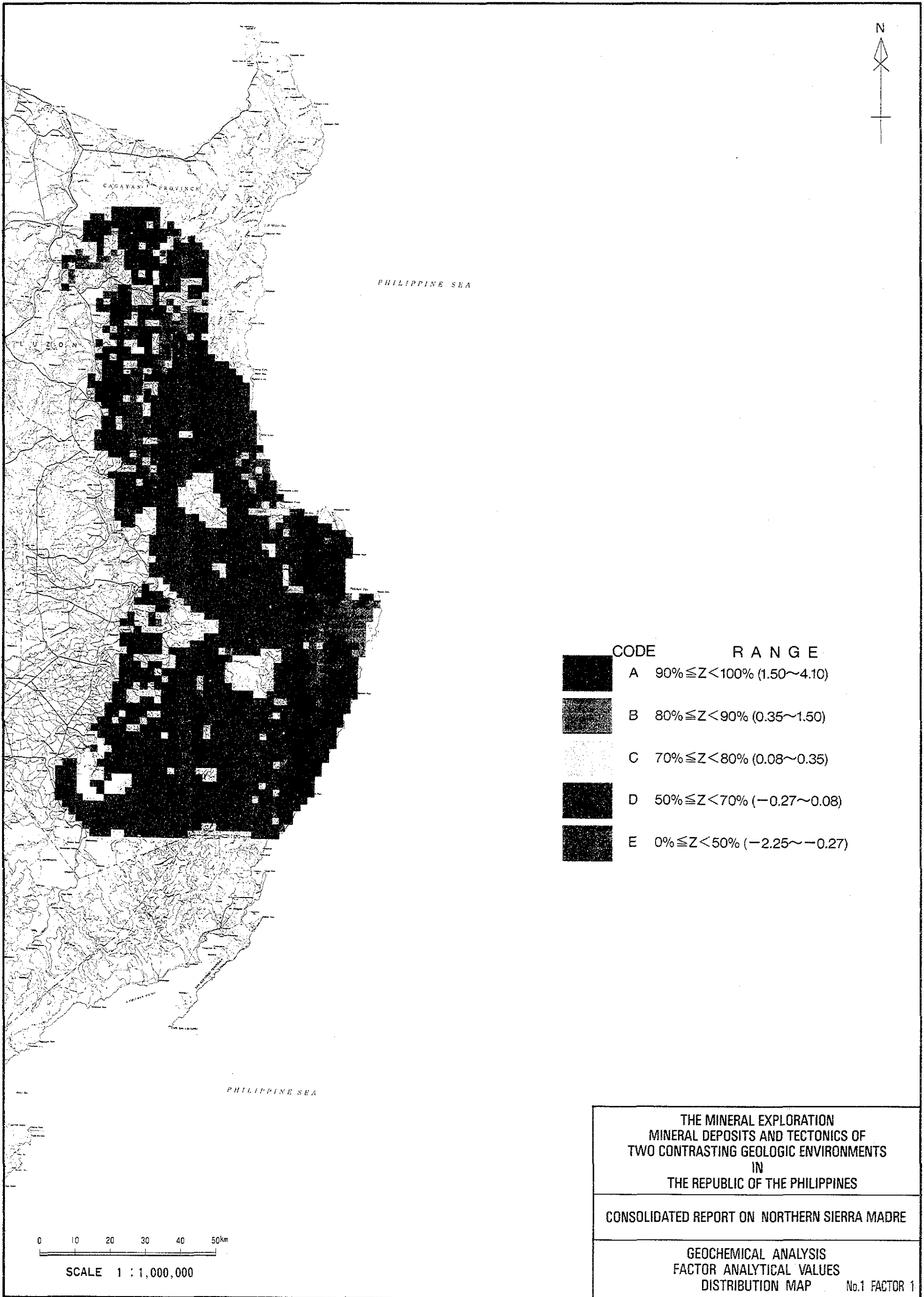
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GEOCHEMICAL ANALYSIS  
HIGH-PASS FILTER VALUES  
DISTRIBUTION MAP

No.10 Cr

付図-2-4 (No.1~No.5) 多変量解析(因子分析) 因子得点分布図  
(1/1,000,000)



PHILIPPINE SEA

PHILIPPINE SEA

CODE	RANGE
A	$90\% \leq Z < 100\%$ (1.50~4.10)
B	$80\% \leq Z < 90\%$ (0.35~1.50)
C	$70\% \leq Z < 80\%$ (0.08~0.35)
D	$50\% \leq Z < 70\%$ (-0.27~0.08)
E	$0\% \leq Z < 50\%$ (-2.25~-0.27)

0 10 20 30 40 50km  
SCALE 1 : 1,000,000

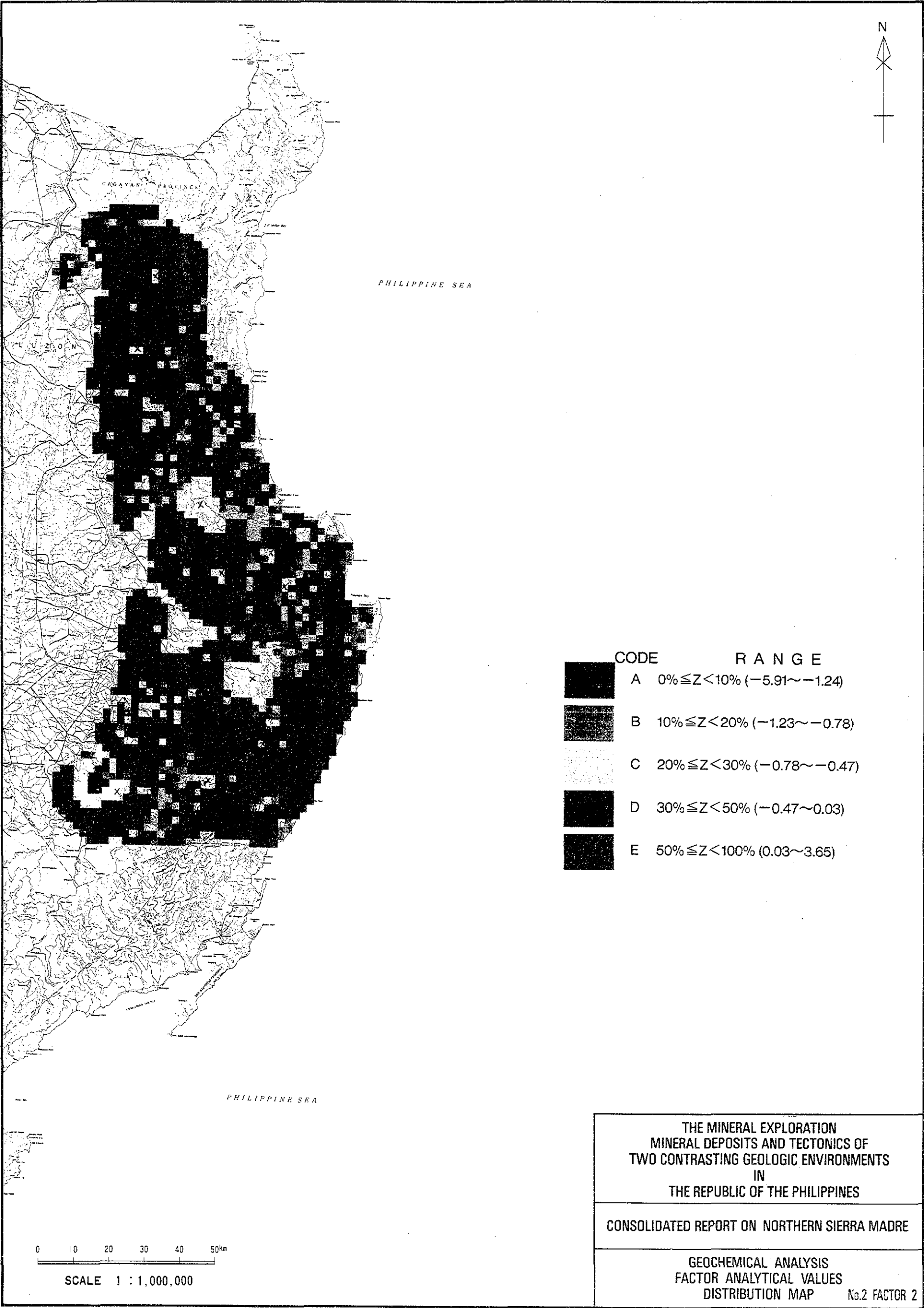
THE MINERAL EXPLORATION  
MINERAL DEPOSITS AND TECTONICS OF  
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THE REPUBLIC OF THE PHILIPPINES

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CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

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GEOCHEMICAL ANALYSIS  
FACTOR ANALYTICAL VALUES  
DISTRIBUTION MAP No.1 FACTOR 1



PHILIPPINE SEA

CAGAYAN PROVINCE

LUZON

PHILIPPINE SEA

CODE	RANGE
A	$0\% \leq Z < 10\%$ (-5.91 ~ -1.24)
B	$10\% \leq Z < 20\%$ (-1.23 ~ -0.78)
C	$20\% \leq Z < 30\%$ (-0.78 ~ -0.47)
D	$30\% \leq Z < 50\%$ (-0.47 ~ 0.03)
E	$50\% \leq Z < 100\%$ (0.03 ~ 3.65)

0 10 20 30 40 50km  
SCALE 1 : 1,000,000

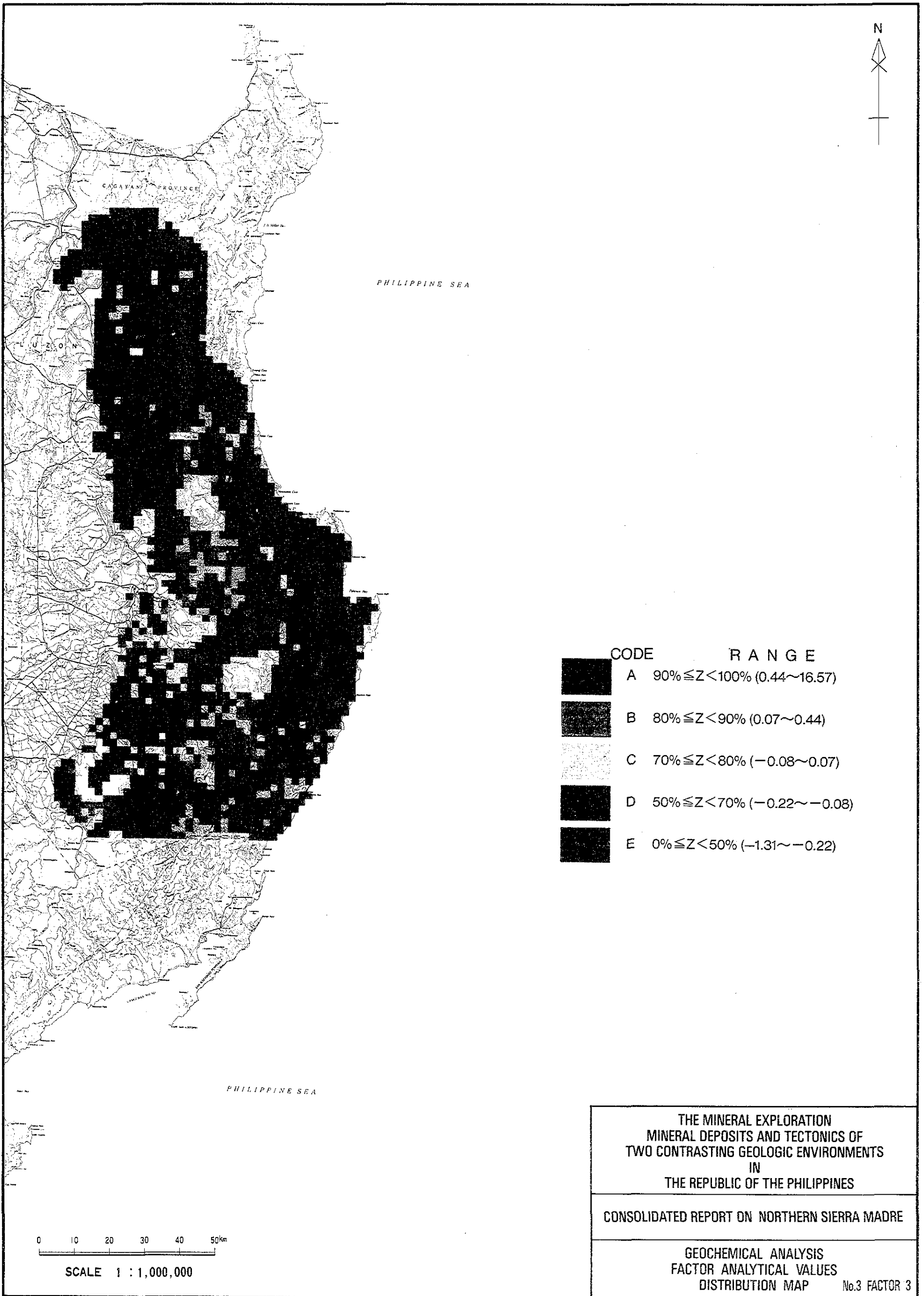
THE MINERAL EXPLORATION  
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CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

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GEOCHEMICAL ANALYSIS  
FACTOR ANALYTICAL VALUES  
DISTRIBUTION MAP No.2 FACTOR 2



PHILIPPINE SEA

PHILIPPINE SEA

CODE	RANGE
A	$90\% \leq Z < 100\%$ (0.44~16.57)
B	$80\% \leq Z < 90\%$ (0.07~0.44)
C	$70\% \leq Z < 80\%$ (-0.08~0.07)
D	$50\% \leq Z < 70\%$ (-0.22~-0.08)
E	$0\% \leq Z < 50\%$ (-1.31~-0.22)

0 10 20 30 40 50km  
SCALE 1 : 1,000,000

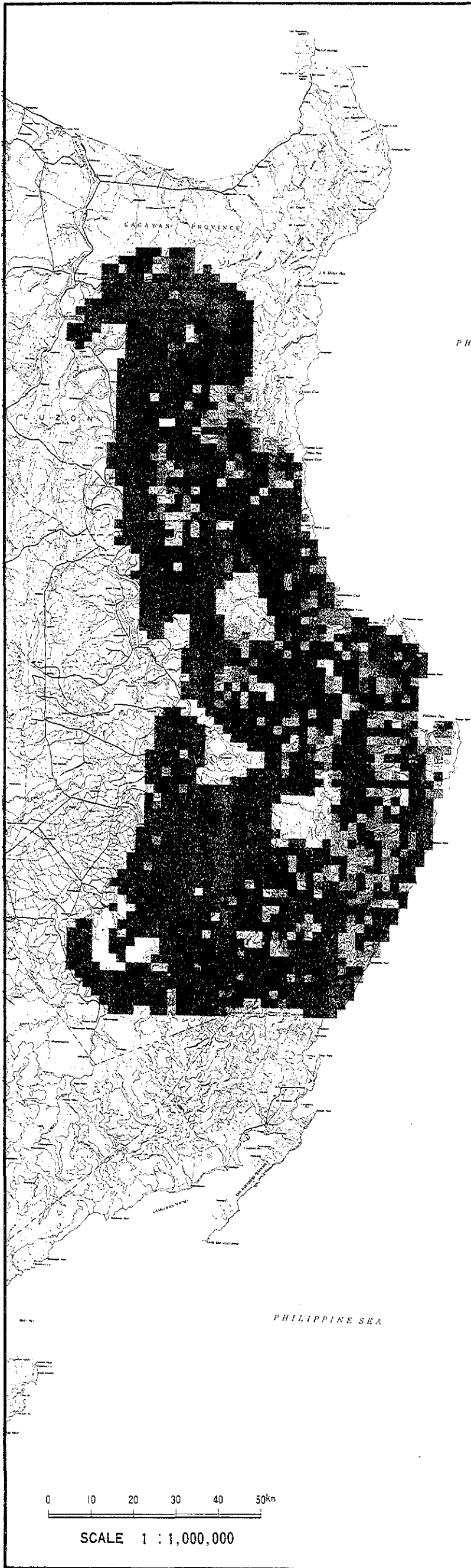
THE MINERAL EXPLORATION  
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CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

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GEOCHEMICAL ANALYSIS  
FACTOR ANALYTICAL VALUES  
DISTRIBUTION MAP No.3 FACTOR 3



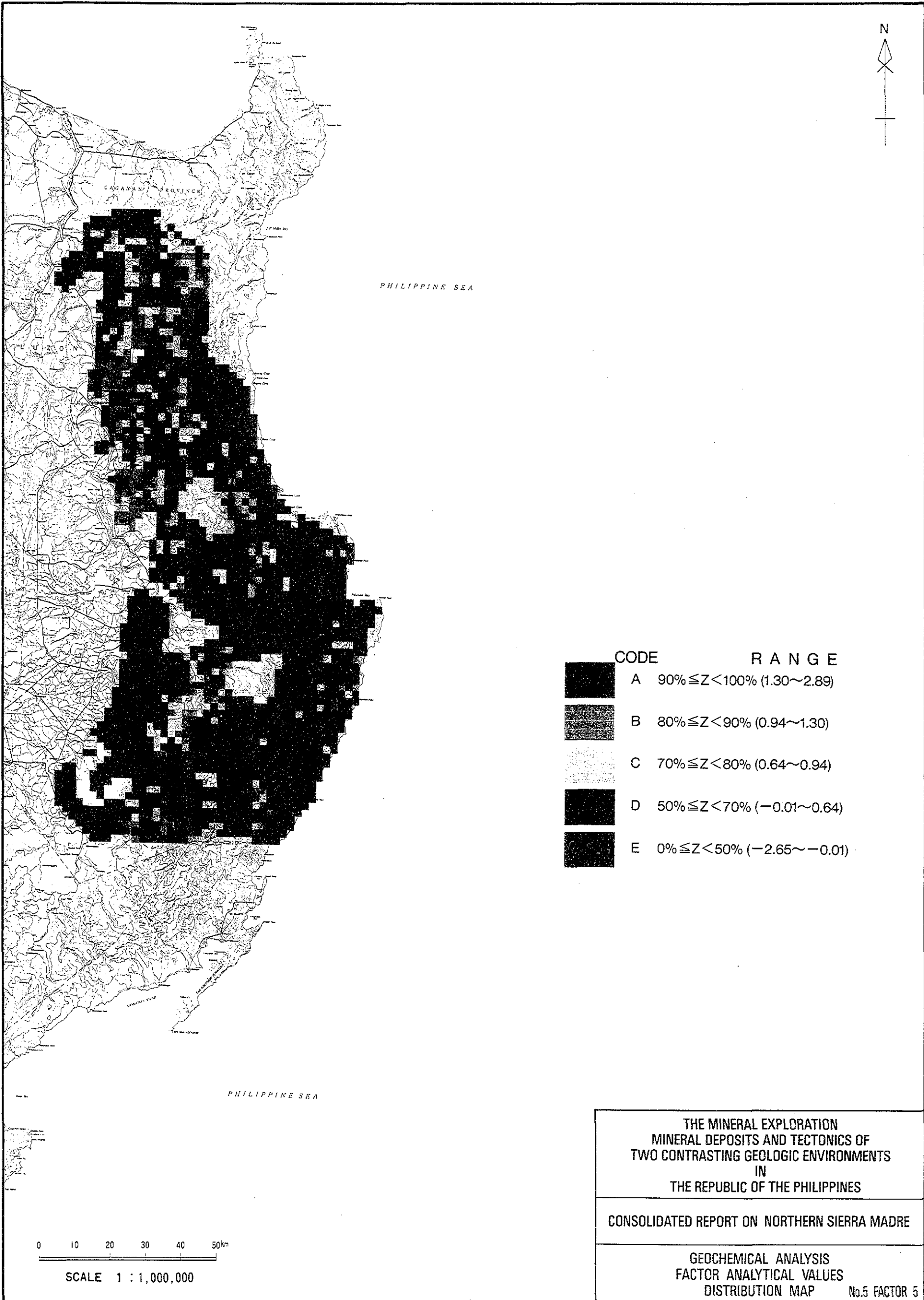
CODE	RANGE
A	$0\% \leq Z < 10\%$ (-17.51 ~ -0.15)
B	$10\% \leq Z < 20\%$ (-0.15 ~ -0.05)
C	$20\% \leq Z < 30\%$ (-0.05 ~ 0.02)
D	$30\% \leq Z < 50\%$ (0.02 ~ 0.13)
E	$50\% \leq Z < 100\%$ (0.13 ~ 1.35)

THE MINERAL EXPLORATION  
MINERAL DEPOSITS AND TECTONICS OF  
TWO CONTRASTING GEOLOGIC ENVIRONMENTS  
IN  
THE REPUBLIC OF THE PHILIPPINES

CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

GEOCHEMICAL ANALYSIS  
FACTOR ANALYTICAL VALUES  
DISTRIBUTION MAP

No.4 FACTOR 4



PHILIPPINE SEA

PHILIPPINE SEA

CODE	RANGE
A	90% ≤ Z < 100% (1.30 ~ 2.89)
B	80% ≤ Z < 90% (0.94 ~ 1.30)
C	70% ≤ Z < 80% (0.64 ~ 0.94)
D	50% ≤ Z < 70% (-0.01 ~ 0.64)
E	0% ≤ Z < 50% (-2.65 ~ -0.01)

0 10 20 30 40 50 km  
SCALE 1 : 1,000,000

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GEOCHEMICAL ANALYSIS  
FACTOR ANALYTICAL VALUES  
DISTRIBUTION MAP No.5 FACTOR 5



付図－3 重鉍物パンニング試料の異常値分布図 (1/1,000,000)

付図－4 重鉍物パンニング試料の主要重鉍物重量比分布図  
(1/1,000,000)

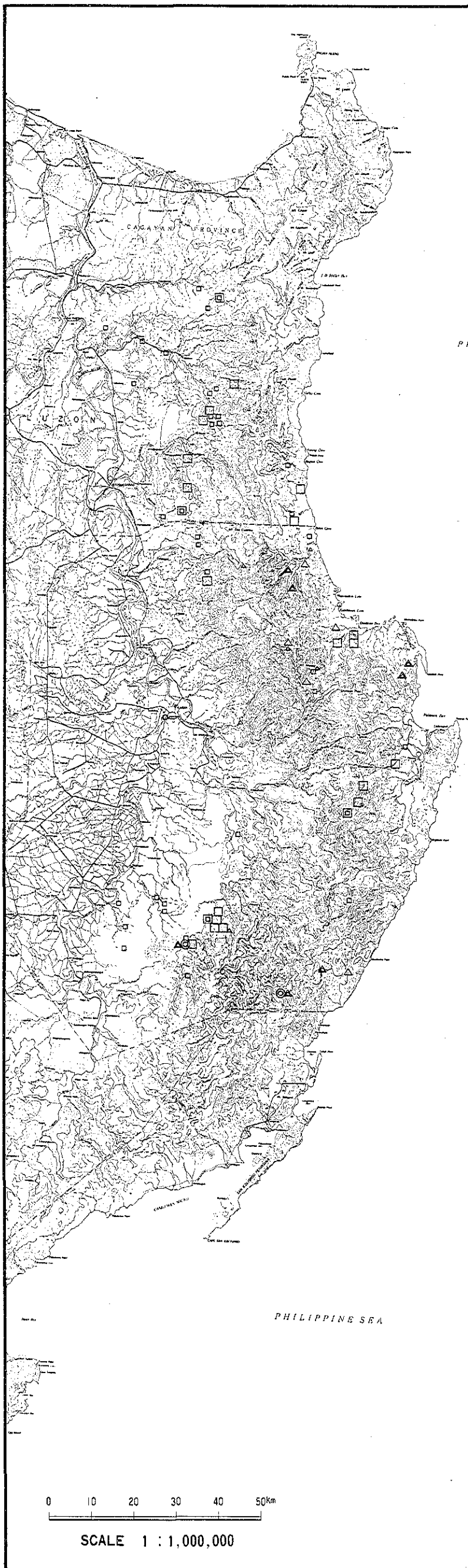
付図－5 重力のブーゲー異常分布図 (1/1,000,000)

付図－6 リニアメント解析図 (1/1,000,000)

付図－7 鉍徴地位置図 (鉍徴地一覧表添付) (1/1,000,000)

付図－8 既存データインデックス図 (1/1,000,000)

付図－9 探査有望地と鉍徴地の関係図 (1/1,000,000)



PHILIPPINE SEA

PHILIPPINE SEA



Au (ppb)	
⊙	$2603.6 \leq Au$
○	$856.9 \leq Au < 2603.6$
◦	$282 \leq Au < 856.9$

Ag (ppb)	
▲	$447.8 \leq Ag$
△	$286.8 \leq Ag < 447.8$
△	$183.6 \leq Ag < 286.8$

Ga (ppm)	
⊠	$27.2 \leq Ga$
□	$22.3 \leq Ga < 27.2$
◻	$18.2 \leq Ga < 22.3$

0 10 20 30 40 50km  
SCALE 1 : 1,000,000

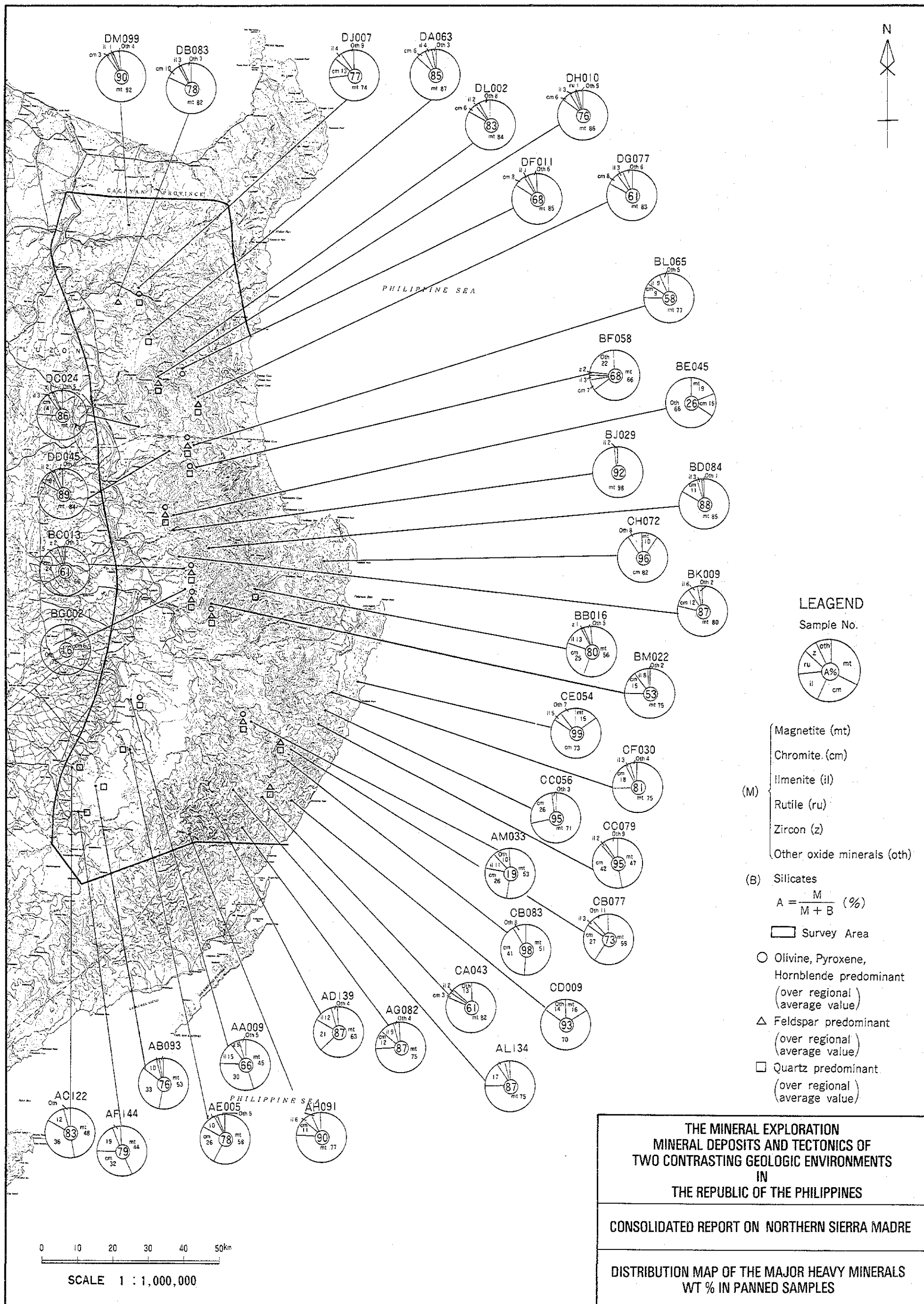
THE MINERAL EXPLORATION  
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CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE

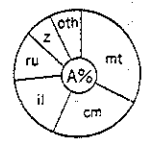
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DISTRIBUTION MAP OF ANOMALOUS  
VALUES IN PANNED SAMPLES



**LEAGEND**

Sample No.



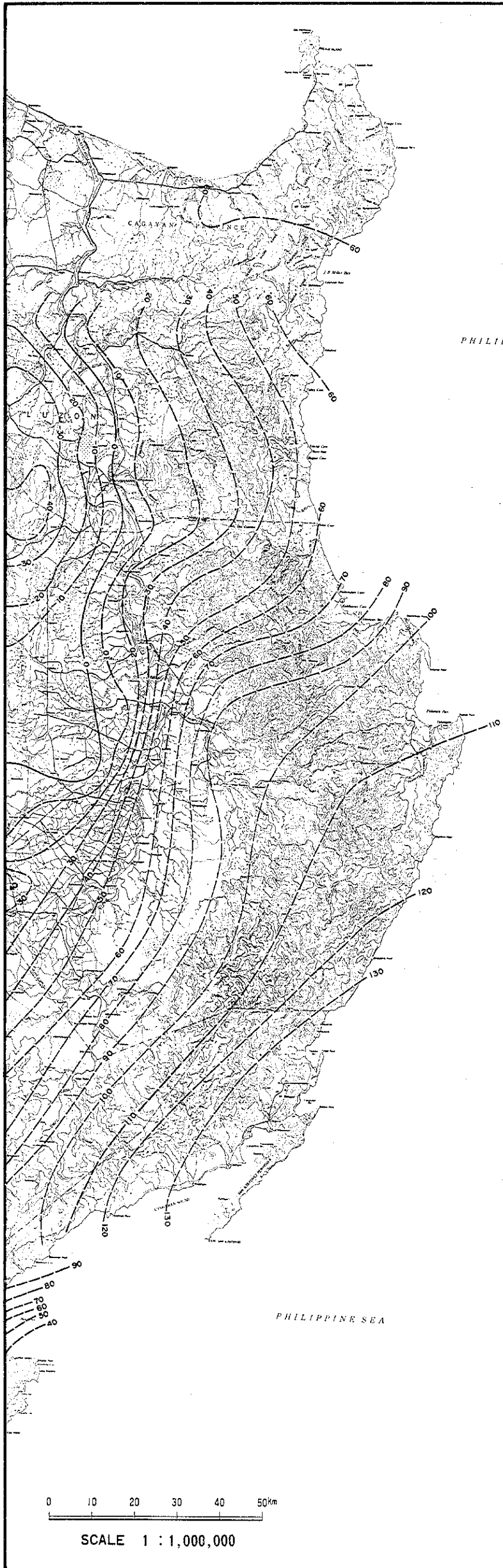
- (M) Magnetite (mt)
- Chromite (cm)
- Ilmenite (il)
- Rutile (ru)
- Zircon (z)
- Other oxide minerals (oth)
- (B) Silicates
- $A = \frac{M}{M + B} (\%)$
- Survey Area
- Olivine, Pyroxene, Hornblende predominant (over regional) (average value)
- △ Feldspar predominant (over regional) (average value)
- Quartz predominant (over regional) (average value)

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**DISTRIBUTION MAP OF THE MAJOR HEAVY MINERALS  
WT % IN PANNED SAMPLES**

0 10 20 30 40 50km  
**SCALE 1 : 1,000,000**



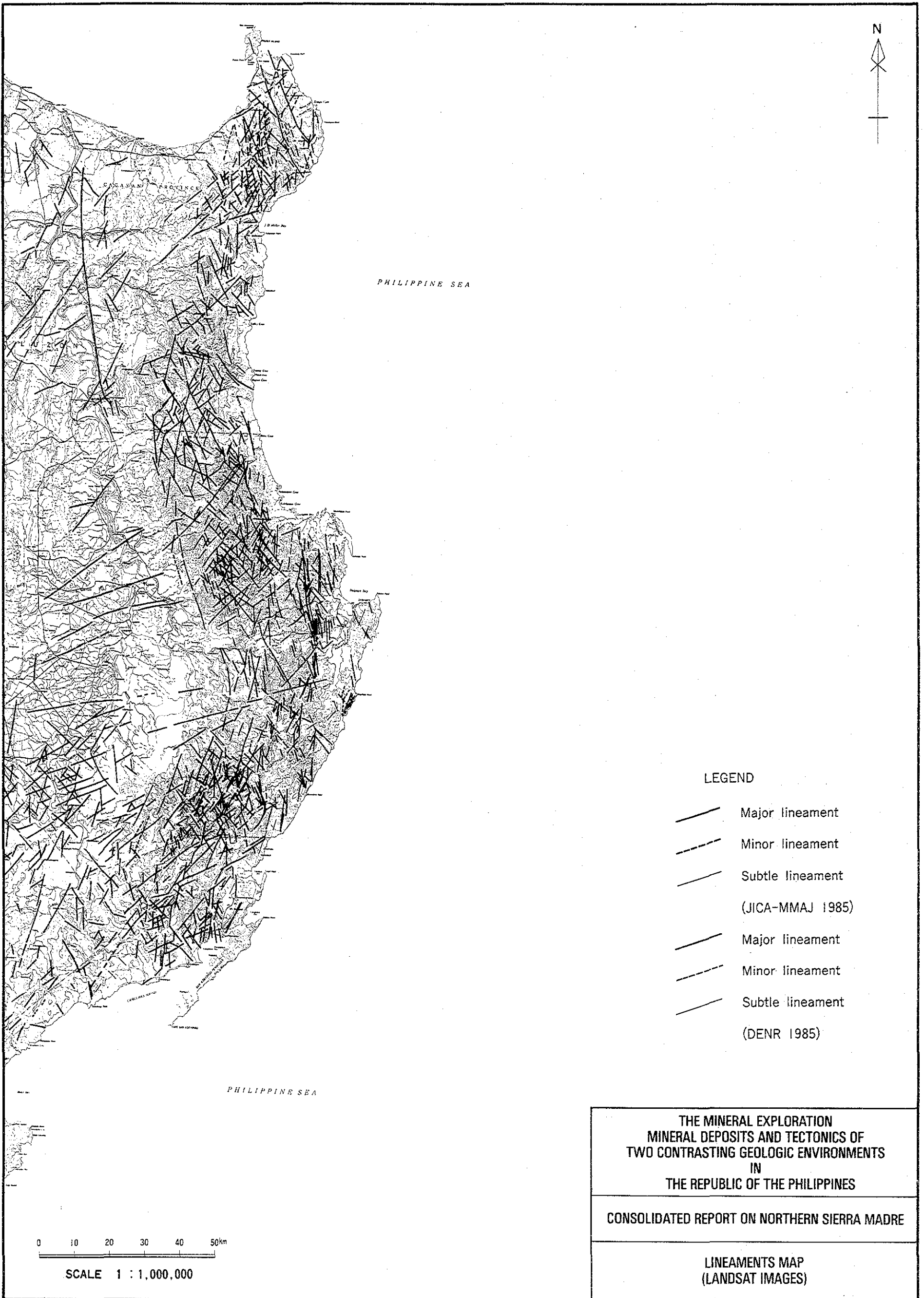
LEGEND

- Bouguer Gravity
- - - Contour (milligal)

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COMPILED GRAVIMETRIC MAP  
 (BOUGUER ANOMALIES)



PHILIPPINE SEA

PHILIPPINE SEA

LEGEND

-  Major lineament
-  Minor lineament
-  Subtle lineament
- (JICA-MMAJ 1985)
-  Major lineament
-  Minor lineament
-  Subtle lineament
- (DENR 1985)

0 10 20 30 40 50km

SCALE 1 : 1,000,000

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**LINEAMENTS MAP  
 (LANDSAT IMAGES)**

## 鉅徵地一覽表

### Northern Sierra Madre

#### 1) Cagayuan

<u>Metallics</u>		<u>Nonmetallics</u>	
② Broaderth & Magdengal	Fe	① San Vicente, Santa Ana	Ls
③ Lal-lo	Mn	⑧ Angang	Cly
④ APEX	Fe	⑨ Liwan	Cly
⑤ Marina Mines	Fe	⑫ Makatay	Gyp
⑥ Mayonga Mining Co., Ltd.	Fe		
⑦ Camalaniugan	Fe		
⑩ Sanchez Mira	Fe		
⑪ Calaveria	Fe		
⑬ FE VA Mining Co,	Fe		
⑭ Casablangan	Cu		
⑮ Dinacdacan	Cu		
⑯ Capisayan West	Fe		
⑰ Capisayan east	Fe		

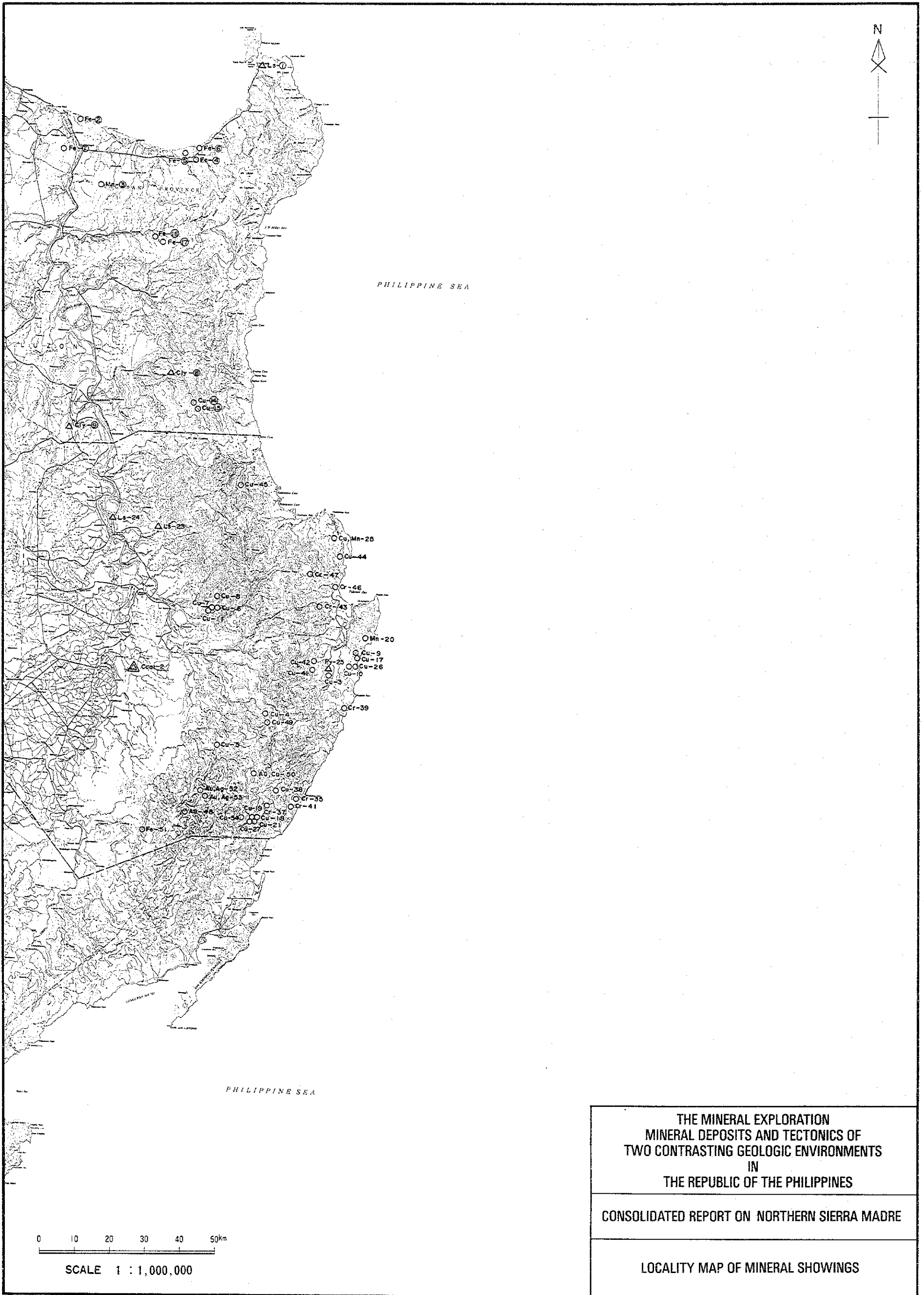
#### LEGEND

metallic	nonmetallic	
⊙	△	: Operating mine
○	△	: Explored, Developed, Prospect or Indication

<u>nonmetallics</u>			
Ls	: Limestone	Py	: Pyrite
Cly	: Clay	Coal	: Coal
Gyp	: Gypsum		

#### 2) Isabela

<u>Metallics</u>		<u>Nonmetallics</u>	
1. Cordon, Marian Copper Deposits	Cu	34. Cas chrome Wasayan I	Cr
2. Diwed	Cu	35. Cas chroma Wasayan II	Cr
4. Agar	Cu	36. _____	
5. Calabasa	Cu	37. Dinapiqui	Cu
6. Menuma	Cu	38. Dimatatno	Cu
7. Saigot	Cu	39. Dikapisan	Cr
8. Ilagan	Cu	40. _____	
9. Dikadiaoan	Cu	41. Giwed	Cu
10. Disawat No. 2	Cu	42. Diudenan	Cu
11. Isabela	Cu	43. Debenelang	Cr
12. J-Group of Claims	Cu	44. Lacson	Cu
13. Marian Group of Claims	Cu	45. Bolos River	Cu
14. Ilut	Cu	46. Diskad	Cr
15. Kimmaldero	Cu	47. Dilacnadinom	Cr
16. Diadi	Cu	48. Disudo Creek	Au, Cu
17. Disawit	Cu	49. Dina Creek	Cu
18. Black Rock Mining Corp.	Cu	50. Diwagao	Au, Cu
19. Diwakawal	Cu	51. Dicamay River	Fe
20. Dicavatuel	Mn	52. Ilagan River	Au, Ag
21. Black Rock Mining Corp.	Mn	53. Diden River	Au, Ag
22. San Luis	Cu	54. Palig Creek	Cu, Ag
26. Kanaipang Hill	Cu		
27. Black Rock Ming Corp.	Cu		
28. Bicobian	Cu, Mn		
29. Cordon	Cu		
30. Marian	Cu		
31. Caguilingan	Cu		
32. Olympus Mineral & Exploration Co.	Cu		
33. Emmy & M Claim of Vulcan Ind'l & Mining Corp.	Cu		

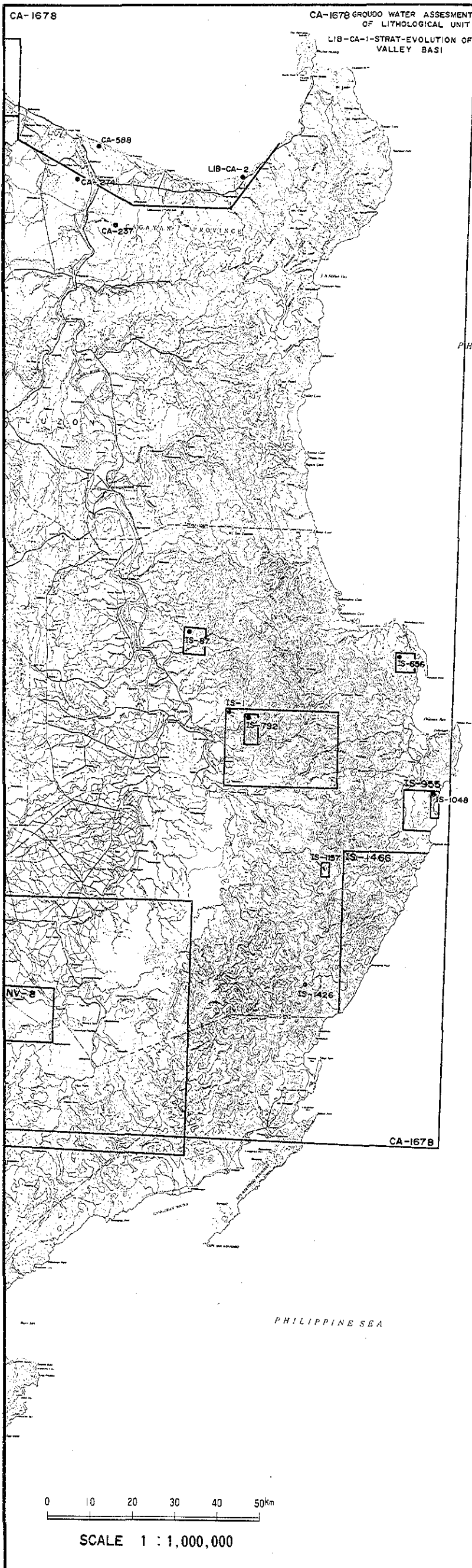


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LOCALITY MAP OF MINERAL SHOWINGS





PHILIPPINE SEA

PHILIPPINE SEA

**LEGEND**

- 1. Detailed or Semi-Detailed Survey
  - : Geological Survey  
(including geochemical, geophysical and/or three dimensional physical sampling in some cases)
- 2. Reconnaissance or Regional Survey
  - : Geological Survey
  - ▨ : Geological-Geochemical Survey
  - ▤ : Geological-Geophysical Survey

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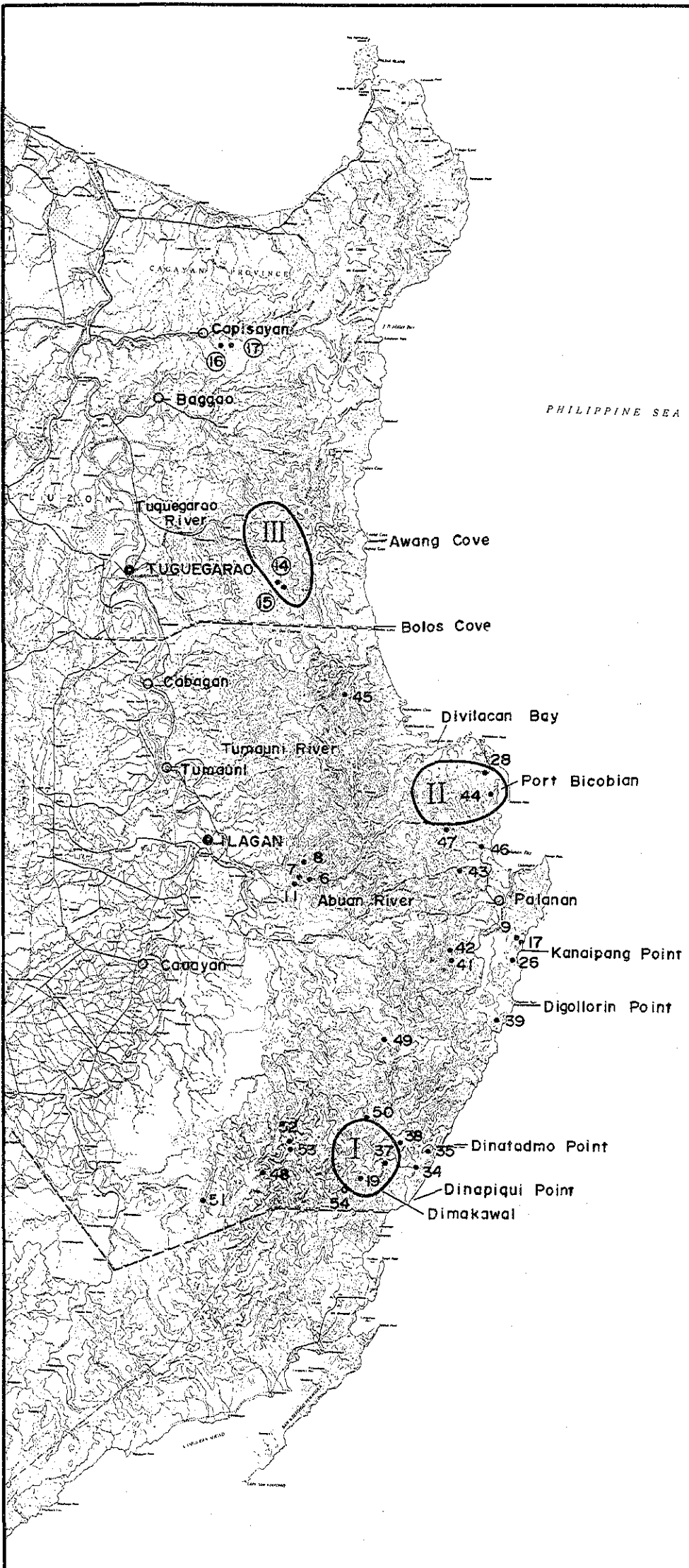
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**CONSOLIDATED REPORT ON NORTHERN SIERRA MADRE**

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**INDEX MAP OF EXISTING DATA REGARDING SURVEY  
WORKS OF THE AREA**





LEGEND

- 51 : Locality of investigated mineral showing
- II : Promising Area

0 10 20 30 40 50km  
 SCALE 1 : 1,000,000

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---

RELATION MAP BETWEEN PROMISING  
 AREA AND MINERAL SHOWINGS LOCALITIES