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GEOCHIMIE DES SEDIMENTS DE SURFACE DE LA REGION DE SULLIPEK

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SÉRIE DES MANUSCRITS BRUTS

Géochimie des sédiments de surface de la région de Sullipek

Jocelyn Henry
Pierre LaSalle

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TABLE DES MATIÈRES

INTRODUCTION	
MÉTHODOLOGIE	
ANALYSES	
PRÉSENTATION DES DONNÉES	
- Horizon B ; fraction < 80 m	
- Horizon C ; fraction < 80 m	
- Horizon C ; fraction < 230 m	
- Horizon C ; 230 m < fraction < 35 m	
INTERPRÉTATION DES RÉSULTATS	
FIGURES	
1- Localisation de la région échantillonnée	
2- Localisation des sites de l'échantillonnage	
TABLEAUX (1 à 4)	
- Statistiques de base pour chaque fraction analysée .	
CARTES (1:80 000)	
- 126 cartes géochimiques	

INTRODUCTION

Ce projet, dont l'exécution sur le terrain était sous la direction de Luc Chauvin, avait pour but de déterminer si les sédiments de surface (saprolite, ou till saprolitique) reflétaient un certain degré de dispersion glaciaire à partir des affleurements de l'auréole de la mine de Sullipek (Fig. 1). En effet, si les sédiments de surface ne sont que le résultat de la désintégration du socle rocheux sur place et qu'il n'y a aucun transport glaciaire parce que le glacier en était à base froide (cold base ice), les anomalies chimiques ne seront pas étirées à partir de Sullipek vers le sud-est, direction générale du dernier écoulement glaciaire. Si, au contraire, le matériel saprolitique a été transporté et de ce fait est devenu un till saprolitique, les anomalies géochimiques seront étirées dans la direction de l'écoulement glaciaire.

MÉTHODOLOGIE

Pour atteindre le but visé, deux types d'échantillons furent prélevés à chacun des sites de l'échantillonnage (fig. 2) : un échantillon dans l'horizon B et un échantillon dans l'horizon C. L'échantillon de l'horizon B n'a pas été analysé que pour la fraction < 80 m. L'échantillon de l'horizon C a été séparé en trois fractions par tamisage : une fraction entre 35 m (500 μ) et 230 m (63 μ); une fraction < 80 m (177 μ) et une fraction < 230 m (63 μ). La fraction entre 35 m et 230 m a été soumise aux liqueurs denses pour en extraire les minéraux lourds qui ont été identifiés au binoculaire.

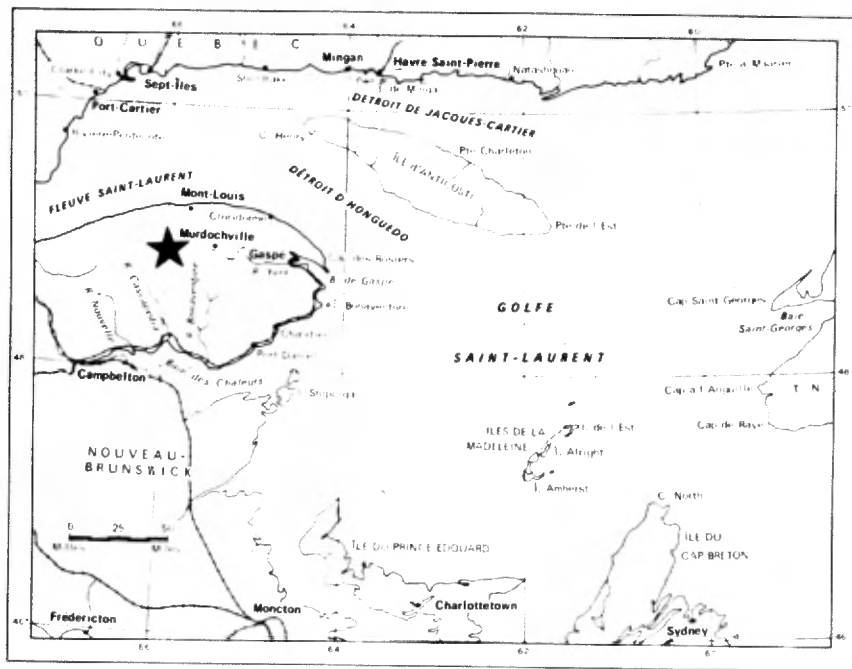
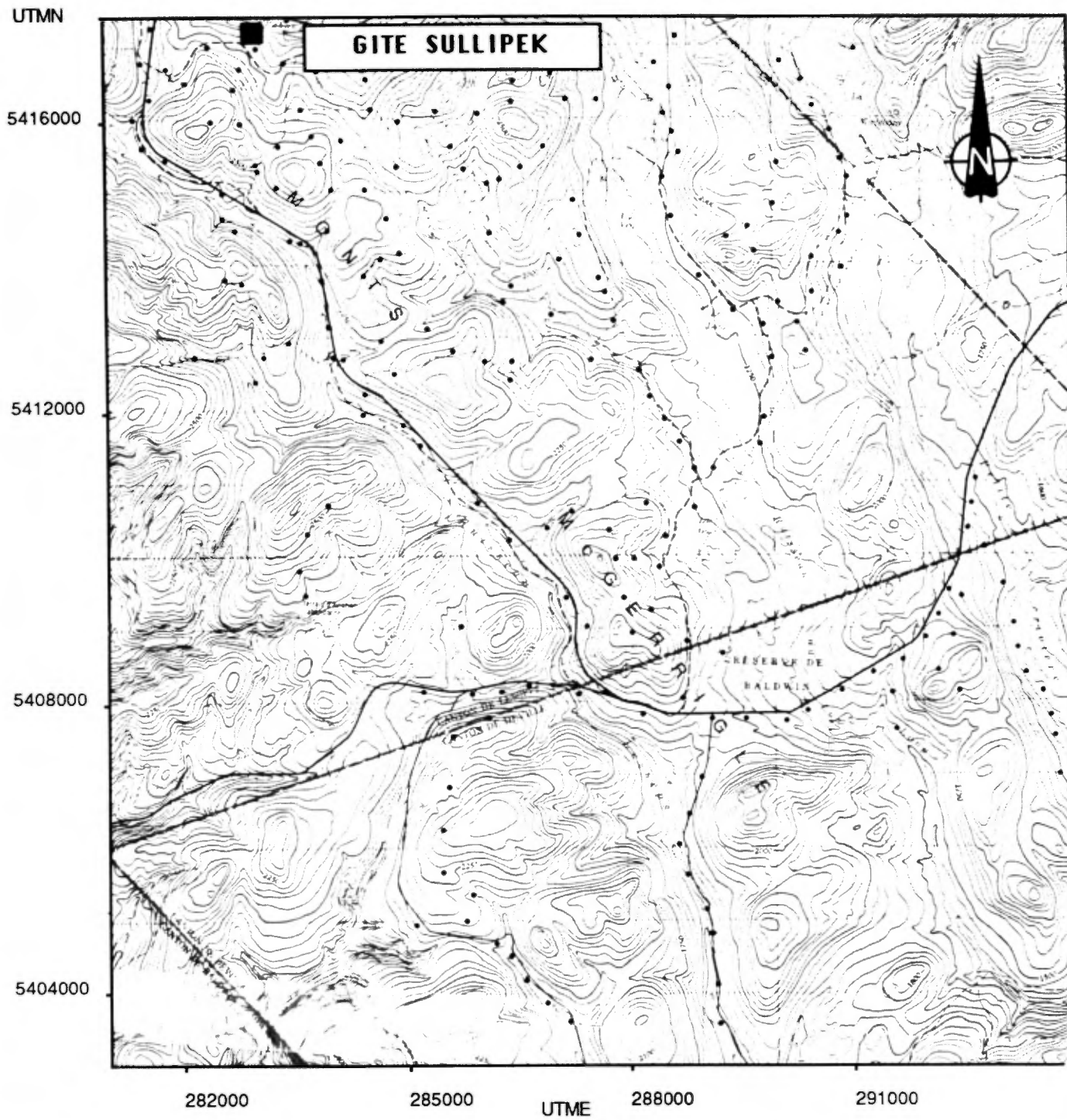


Figure 1 : Localisation de la région échantillonnée



GEOCHIMIE DES SOLS

REGION DE SULLIPEK

LOCALISATION DES SITES D'ECHANTILLONNAGE

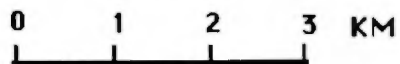


FIG. 2

ANALYSES

Toutes les fractions ont été soumises à l'analyse pour 32 éléments plus la perte au feu. Ces éléments ont été analysés par émission au plasma.

Les tableaux 1, 2, 3 et 4 présentent, pour chaque fraction, les principaux paramètres statistiques de base de chaque élément; le minimum, le maximum, la moyenne, l'écart type et le nombre d'échantillons.

Variable	Actifs	Min	Max	Intervalle	Moyenne	Écart type	Distribution
NO_ECHANT	204	43200.00	43462.00	262.00	43320.31	73.28	
UTM_EST	204	281401.00	293777.00	12376.00	287092.94	3151.95	
UTM_NOR	204	5403574.00	5417422.00	13848.00	5412262.50	3713.20	
AG	204	4.00	12.00	8.00	4.36	1.08	
AL	204	130.00	910.00	780.00	295.64	103.52	
B	204	4.00	8.00	4.00	4.15	0.56	
BA	204	17.00	167.00	150.00	51.06	24.58	
BE	204	2.00	2.00	0.00	2.00	0.00	
CA	204	2.00	86.00	84.00	10.98	12.31	
CD	204	2.00	10.00	8.00	2.60	1.20	
CE	204	7.00	156.00	149.00	31.44	20.51	
CO	204	2.00	56.00	54.00	5.09	4.17	
CR	204	11.00	101.00	90.00	29.13	10.92	
CJ	204	5.00	780.00	775.00	27.33	72.11	
EU	204	1.00	15.00	14.00	4.34	2.07	
FE	204	117.00	615.00	498.00	309.31	107.51	
k	204	6.00	55.00	49.00	22.86	8.46	
LA	204	5.00	34.00	29.00	11.04	4.21	
LI	204	3.00	28.00	25.00	9.84	4.35	
MG	204	9.00	186.00	177.00	54.62	29.05	
MN	204	54.00	894.00	840.00	229.46	130.28	
MO	204	3.00	6.00	3.00	3.03	0.26	
NA	204	2.00	10.00	8.00	3.86	1.08	
NI	204	4.00	70.00	66.00	18.52	9.13	
P	204	254.00	2607.00	2353.00	656.26	341.09	
PB	204	2.00	179.00	177.00	17.16	18.65	
PF	204	2.00	60.00	58.00	19.69	11.38	
SC	204	2.00	9.00	7.00	4.22	1.20	
SN	204	1.00	8.00	7.00	2.50	1.29	
SR	204	2.00	26.00	24.00	5.08	3.95	
TH	204	3.00	30.00	27.00	8.70	4.60	
TI	204	1.00	18.00	17.00	3.37	2.72	
V	204	10.00	76.00	66.00	25.92	9.53	
Y	204	1.00	28.00	27.00	6.59	3.92	
ZN	204	16.00	522.00	506.00	79.49	53.63	
U	200	1.00	34.00	33.00	7.26	4.14	

Tableau 1 - Statistiques de base
(horizon B, fraction < 80 m)

Variable	Actifs	Min	Max	Intervalle	Moyenne	Écart type	Distribution
NO	215	53500.00	53762.00	262.00	53622.31	72.83	
UTMEST	215	281401.00	293777.00	12376.00	287130.47	3111.53	
UTMNORD	215	5403574.00	5417422.00	13848.00	5412260.00	3721.18	
AG	215	4.00	11.00	7.00	4.90	1.38	
AL	215	93.00	627.00	534.00	206.70	64.24	
B	215	4.00	15.00	11.00	4.56	1.38	
BA	215	12.00	322.00	310.00	69.53	39.05	
BE	215	2.00	2.00	0.00	2.00	0.00	
CA	215	2.00	69.00	67.00	17.82	13.34	
CD	215	2.00	22.00	20.00	3.00	2.19	
CE	215	14.00	298.00	284.00	51.17	27.46	
CO	215	2.00	49.00	47.00	9.35	4.29	
OR	215	8.00	59.00	51.00	25.67	8.29	
CU	215	6.00	1802.00	1796.00	41.58	148.10	
EJ	215	2.00	41.00	39.00	7.20	4.34	
FE	215	60.00	559.00	499.00	230.51	62.53	
K	215	7.00	50.00	43.00	26.12	9.28	
LA	215	5.00	63.00	58.00	15.91	7.13	
LI	215	2.00	22.00	20.00	7.89	2.80	
MG	215	16.00	326.00	310.00	76.60	36.02	
MN	215	135.00	1635.00	1500.00	504.14	217.65	
MO	215	3.00	10.00	7.00	3.03	0.48	
NA	215	2.00	11.00	9.00	4.93	1.72	
NI	215	8.00	83.00	75.00	28.76	11.60	
P	215	202.00	1149.00	947.00	482.36	158.84	
PB	215	2.00	1485.00	1483.00	30.14	101.14	
PF	215	2.00	42.00	40.00	6.00	5.45	
SC	215	2.00	22.00	20.00	5.18	2.47	
SM	215	1.00	17.00	16.00	4.32	2.14	
SR	215	2.00	195.00	193.00	8.63	16.45	
TH	215	4.00	47.00	43.00	10.43	4.51	
TI	215	1.00	13.00	12.00	2.54	2.02	
V	215	5.00	69.00	64.00	22.24	8.30	
Y	215	2.00	100.00	98.00	11.51	9.27	
ZN	215	28.00	771.00	743.00	87.80	75.35	
U	207	2.00	27.00	25.00	6.68	3.38	

Tableau 2 - Statistiques de base
(Horizon C, fraction < 80 m)

Variable	Actifs	Min	Max	Intervalle	Moyenne	Écart type	Distribution
ND	215	64700.00	64962.00	262.00	64821.91	73.15	
UTMEST	215	281401.00	590731.00	309330.00	288680.12	20959.62	
UTMNORD	215	5403574.00	5417422.00	13848.00	5412248.50	3713.32	
AG	215	4.00	13.00	9.00	4.40	1.16	
AL	215	116.00	898.00	782.00	263.50	81.23	
B	215	4.00	35.00	31.00	4.66	2.58	
BA	215	14.00	453.00	439.00	87.59	53.07	
BE	215	2.00	4.00	2.00	2.01	0.14	
CA	215	4.00	89.00	85.00	29.60	16.34	
OD	215	2.00	35.00	33.00	3.61	3.05	
OE	215	16.00	373.00	357.00	68.83	36.92	
OO	215	3.00	70.00	67.00	12.49	6.56	
OR	215	19.00	162.00	143.00	50.18	18.43	
OU	215	8.00	2693.00	2685.00	68.72	221.79	
EU	215	2.00	59.00	57.00	9.48	6.27	
FE	215	100.00	558.00	458.00	275.95	70.80	
K	215	6.00	73.00	67.00	31.09	14.43	
LA	215	3.00	144.00	141.00	23.82	21.08	
LI	215	2.00	27.00	25.00	9.40	4.27	
MG	215	15.00	296.00	281.00	92.55	40.93	
MN	215	200.00	2394.00	2194.00	722.94	339.29	
MO	215	3.00	11.00	8.00	3.42	1.06	
NA	215	2.00	17.00	15.00	6.16	2.15	
NI	215	17.00	206.00	189.00	54.63	24.97	
P	215	217.00	1394.00	1177.00	573.93	184.71	
PB	215	19.00	2002.00	1983.00	84.18	147.67	
PF	215	1.00	38.00	37.00	8.53	5.98	
SC	215	2.00	29.00	27.00	6.66	3.39	
SM	215	1.00	23.00	22.00	4.66	2.80	
SR	215	3.00	41.00	38.00	10.92	6.10	
TH	215	4.00	60.00	56.00	12.74	6.43	
TI	215	1.00	15.00	14.00	3.55	2.55	
V	215	6.00	84.00	78.00	27.52	9.31	
Y	215	3.00	144.00	141.00	14.87	13.11	
ZN	215	46.00	951.00	905.00	115.84	85.86	

Tableau 3 - Statistiques de base
(Horizon C, fraction < 230 m)

Variable	Actifs	Min	Max	Intervalle	Moyenne	Écart type	Distribution
NO	215	64700.00	64962.00	262.00	64821.91	73.15	
UTMEST	215	281401.00	590731.00	309330.00	288680.12	20959.62	
UTMNORD	215	5403574.00	5417422.00	13848.00	5412248.50	3713.32	
AG	215	4.00	13.00	9.00	4.40	1.16	
AL	215	116.00	898.00	782.00	263.50	81.23	
B	215	4.00	35.00	31.00	4.66	2.58	
BA	215	14.00	453.00	439.00	87.59	53.07	
BE	215	2.00	4.00	2.00	2.01	0.14	
CA	215	4.00	89.00	85.00	29.60	16.34	
CD	215	2.00	35.00	33.00	3.61	3.09	
CE	215	16.00	373.00	357.00	68.83	36.92	
CO	215	3.00	70.00	67.00	12.49	6.56	
OR	215	19.00	162.00	143.00	50.18	18.43	
OU	215	8.00	2693.00	2685.00	68.72	221.79	
EU	215	2.00	59.00	57.00	9.48	6.27	
FE	215	100.00	558.00	458.00	275.95	70.80	
K	215	6.00	73.00	67.00	31.09	14.43	
LA	215	3.00	144.00	141.00	23.82	21.08	
LI	215	2.00	27.00	25.00	9.40	4.27	
MG	215	15.00	296.00	281.00	92.55	40.93	
MN	215	200.00	2394.00	2194.00	722.94	339.29	
MO	215	3.00	11.00	8.00	3.42	1.06	
NA	215	2.00	17.00	15.00	6.16	2.15	
NI	215	17.00	206.00	189.00	54.63	24.97	
P	215	217.00	1394.00	1177.00	573.93	184.71	
PB	215	19.00	2002.00	1983.00	84.18	147.67	
PF	215	1.00	38.00	37.00	8.53	5.98	
SC	215	2.00	29.00	27.00	6.66	3.39	
SM	215	1.00	23.00	22.00	4.66	2.80	
SR	215	3.00	41.00	38.00	10.92	6.10	
TH	215	4.00	60.00	56.00	12.74	6.43	
TI	215	1.00	15.00	14.00	3.55	2.55	
V	215	6.00	84.00	78.00	27.52	9.31	
Y	215	3.00	144.00	141.00	14.87	13.11	
ZN	215	46.00	951.00	905.00	115.84	85.86	

Tableau 4 - Statistiques de base

(Horizon C, 230 m < fraction < 35 m)

PRÉSENTATION DES DONNÉES

Pour chaque fraction analysée, les données sont représentées pour chacun des éléments sur des cartes géochimiques à l'échelle 1:80 000 accompagnée d'un histogramme. Sur ces cartes, chaque site de prélèvement est représenté par un symbole correspondant à des intervalles de teneurs pour un élément donné. La fraction < 80 m de l'horizon B et la même fraction pour l'horizon C comprennent 32 cartes chacune. Les deux autres fractions en comprennent chacune 31, l'uranium n'ayant pas été analysé.

INTERPRÉTATION DES RÉSULTATS

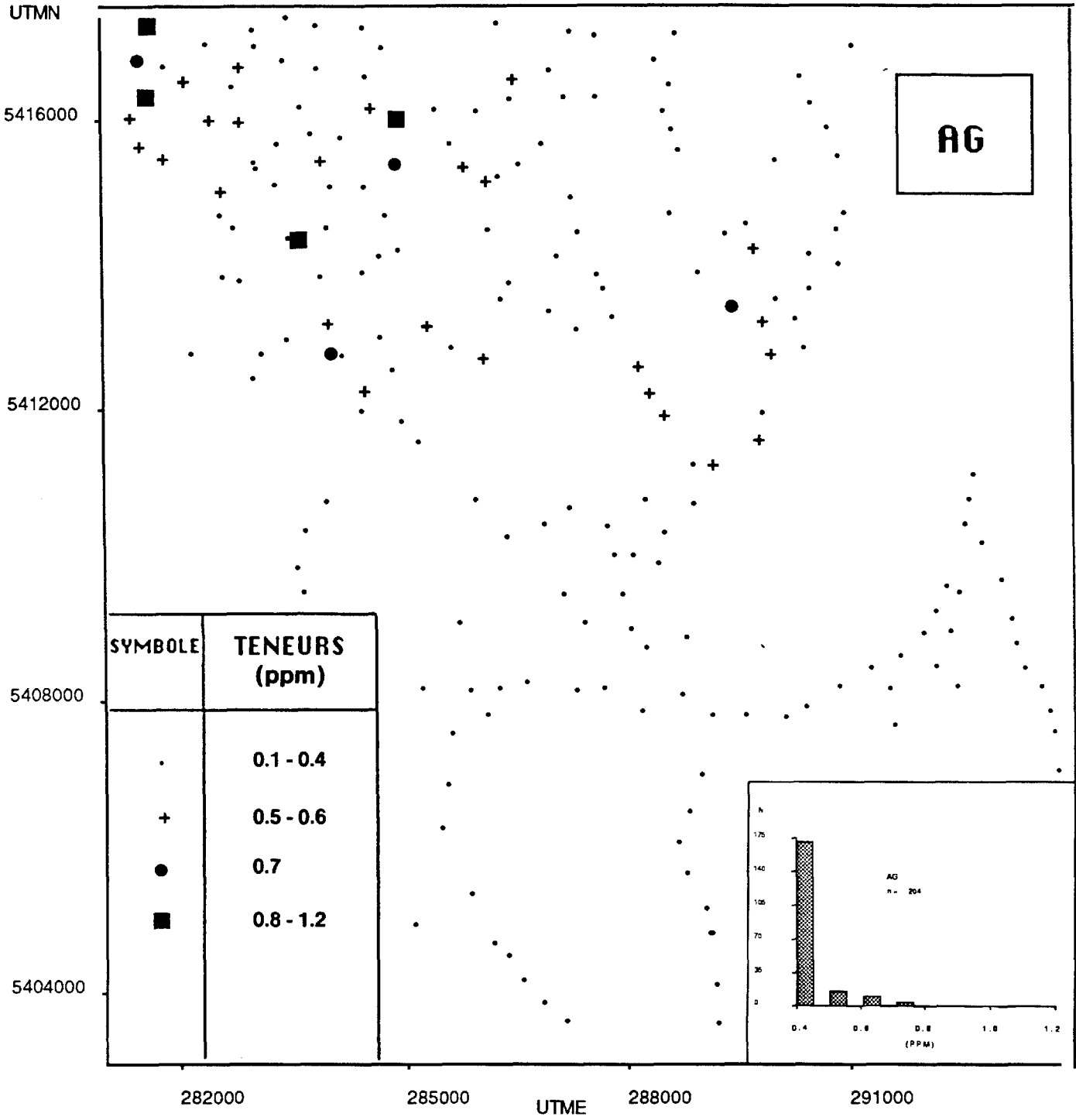
L'analyse chimique des différentes fractions, principalement la fraction lourde (230 m < fraction < 35 m), démontre une certaine dispersion des éléments vers le sud-est, ce qui est en accord avec les directions d'écoulement glaciaire. Le matériel saprolitique a donc été transporté et il est devenu un till saprolitique.

De plus, pour un élément donné, la dispersion géochimique est sensiblement la même d'une fraction par rapport à une autre. Les meilleurs exemples sont la dispersion du cuivre, du zinc, du plomb, du nickel et du thallium.

- -

CARTES

HORIZON B - Fraction < 80 m

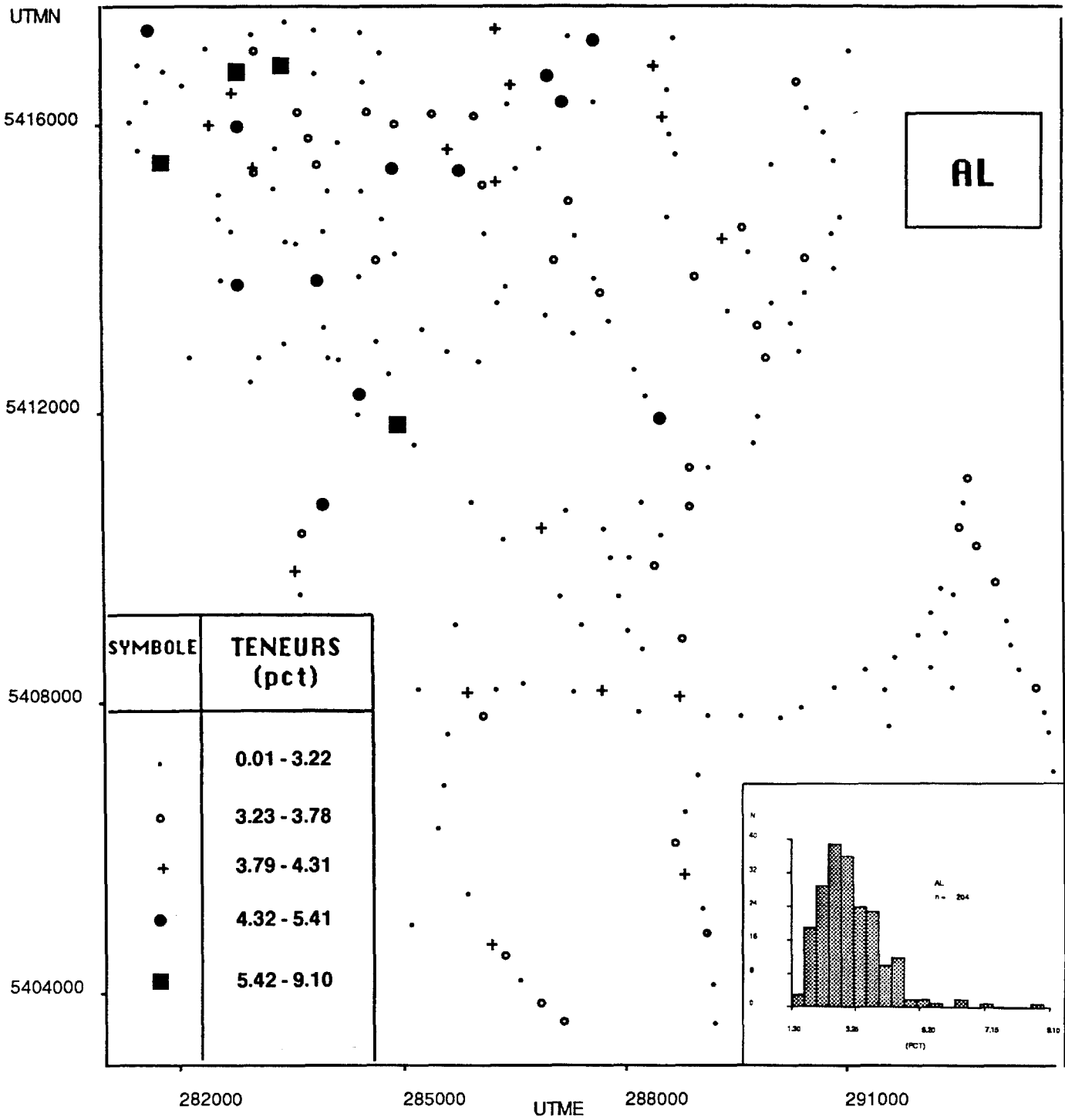


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

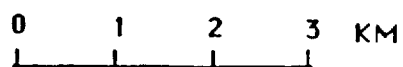


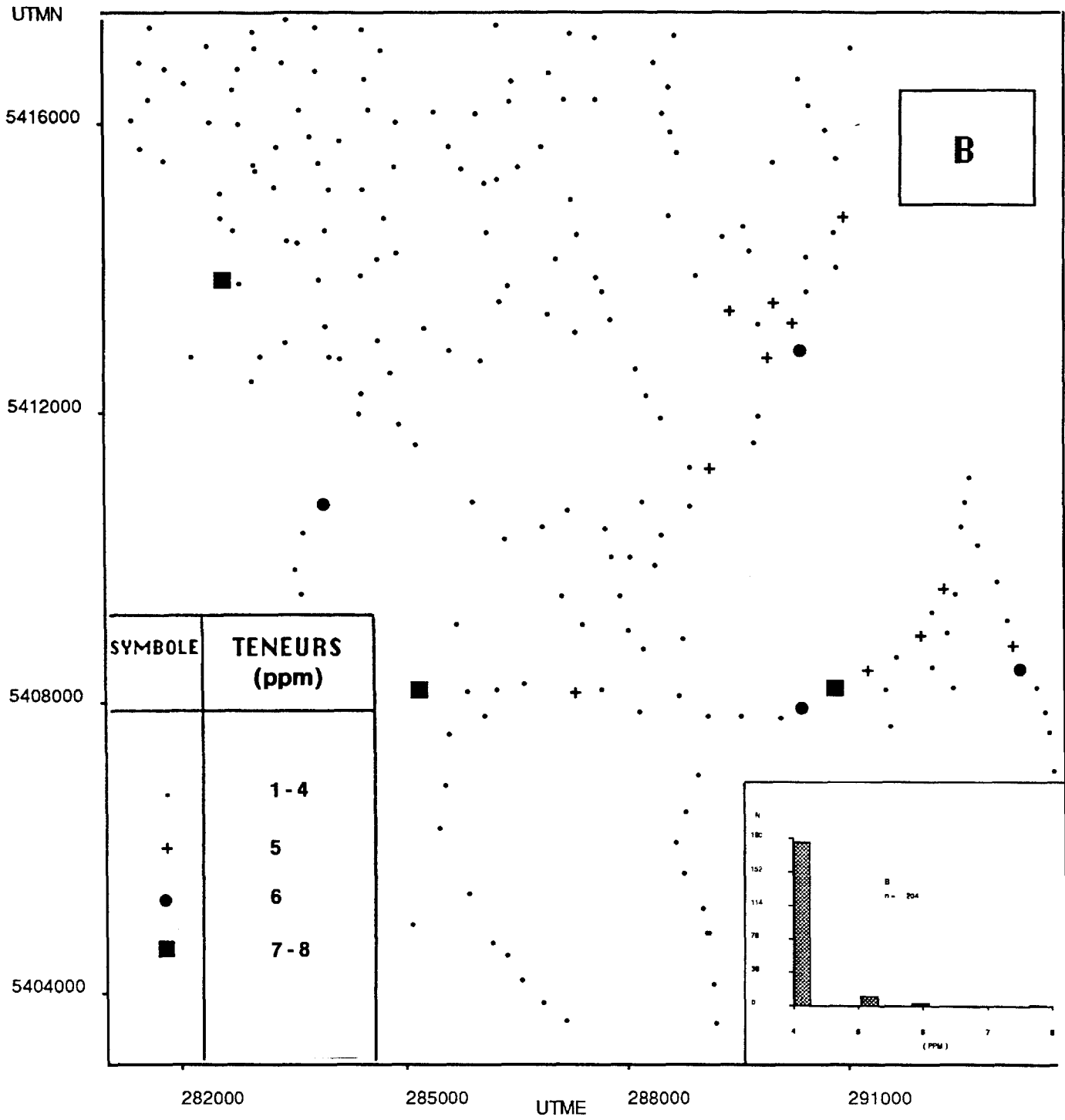


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

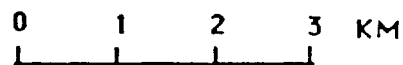


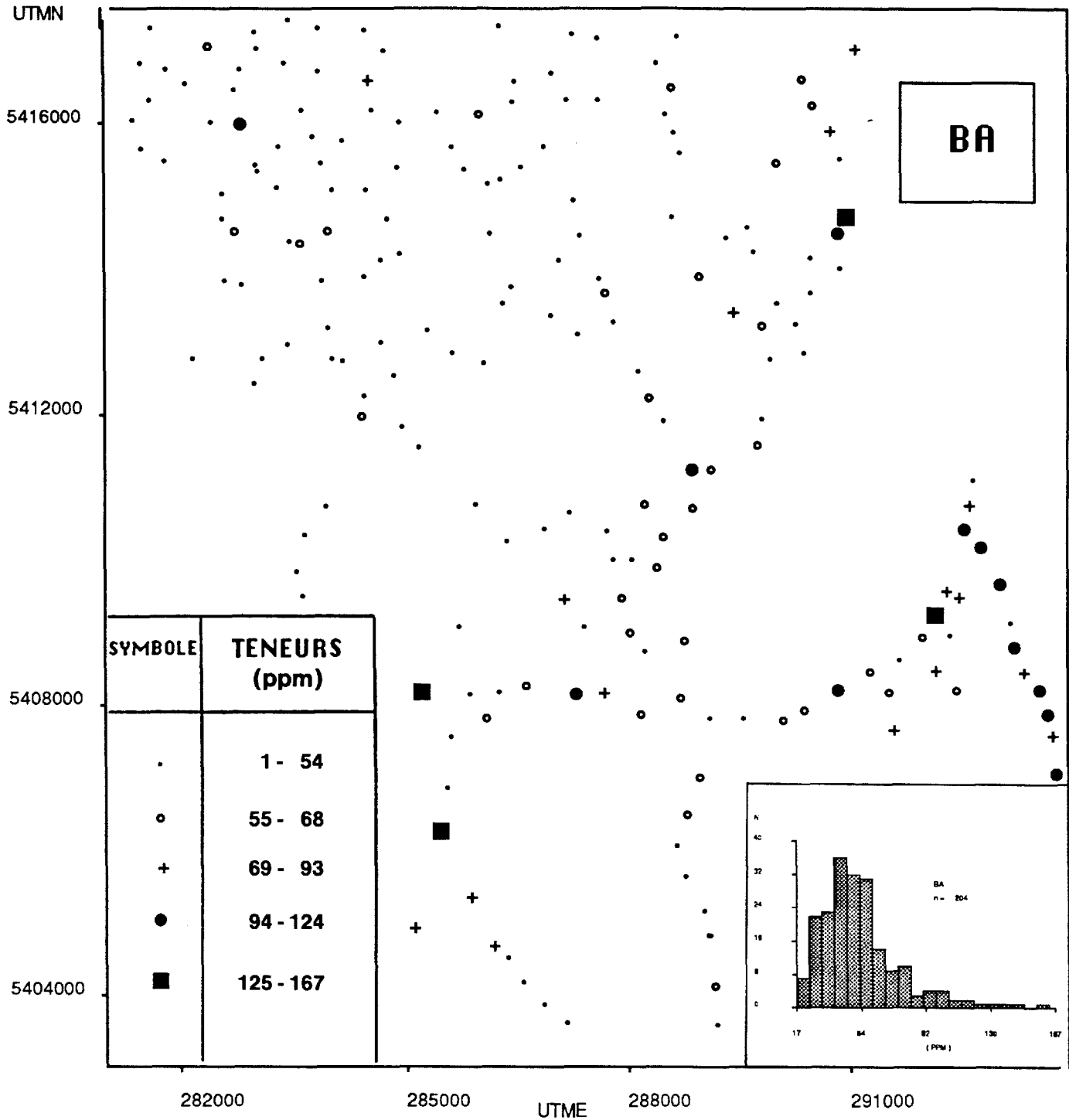


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)



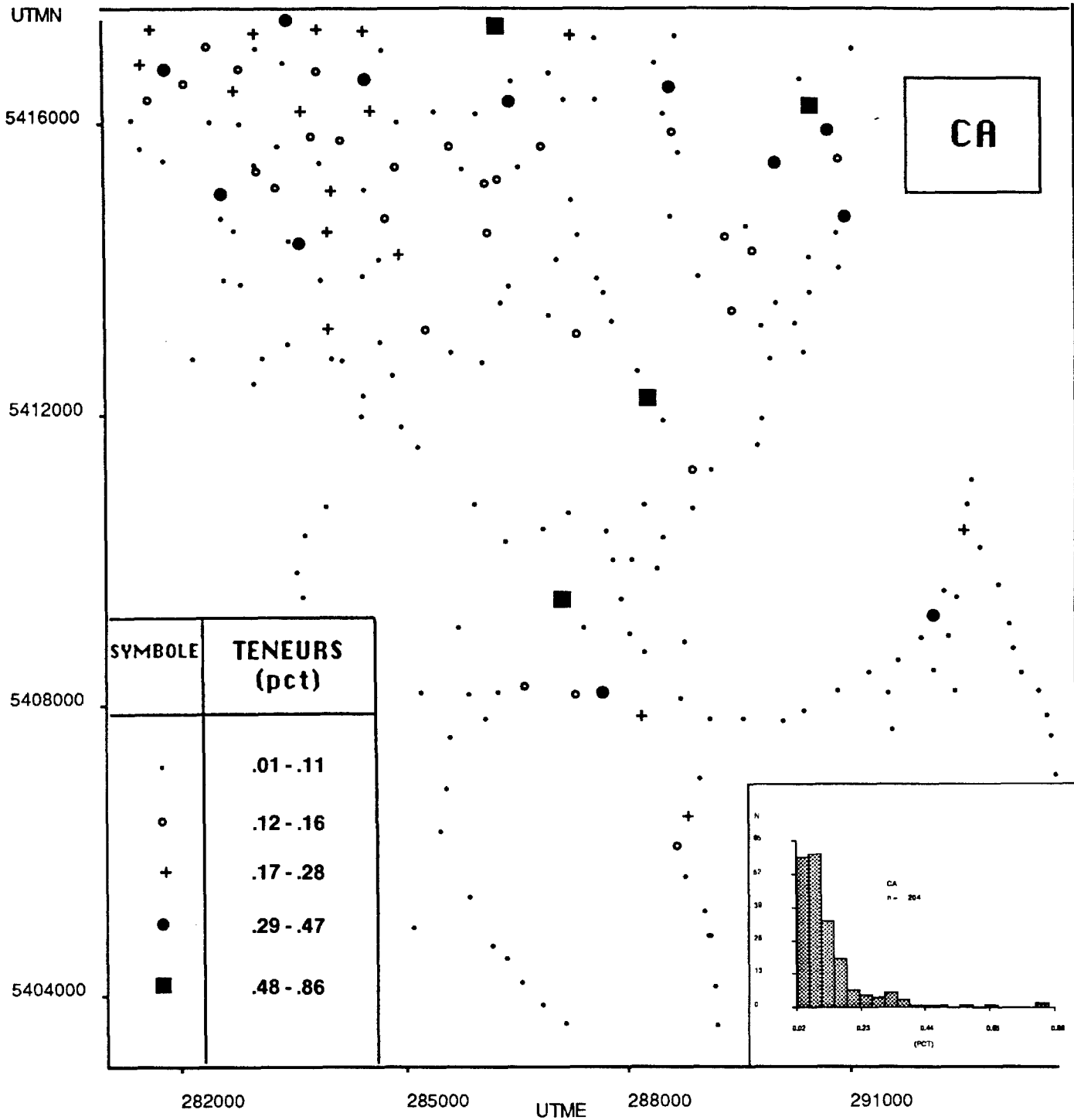


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

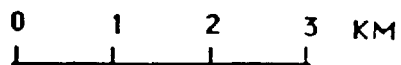


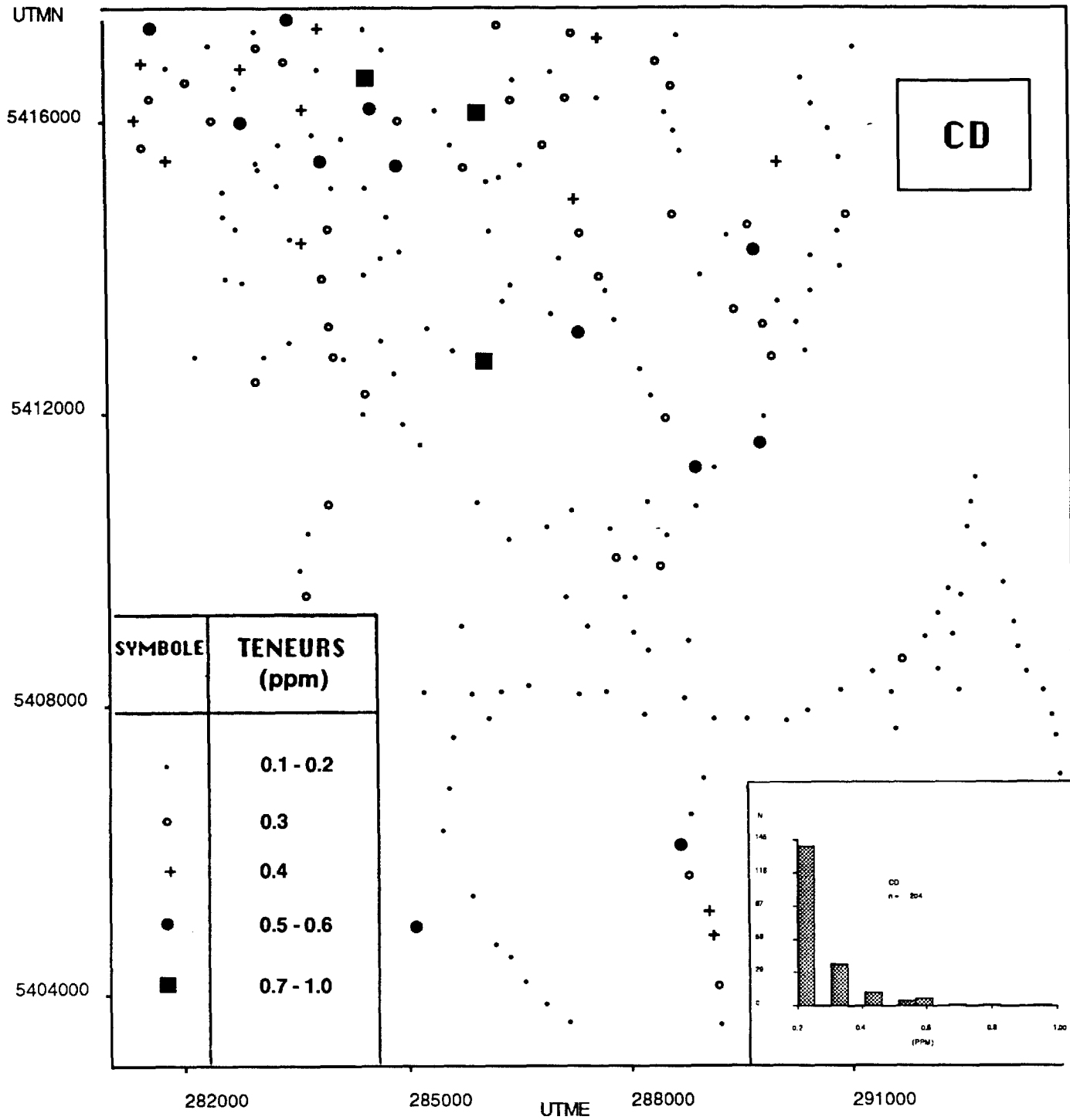


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

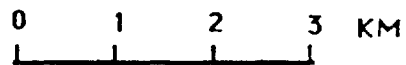


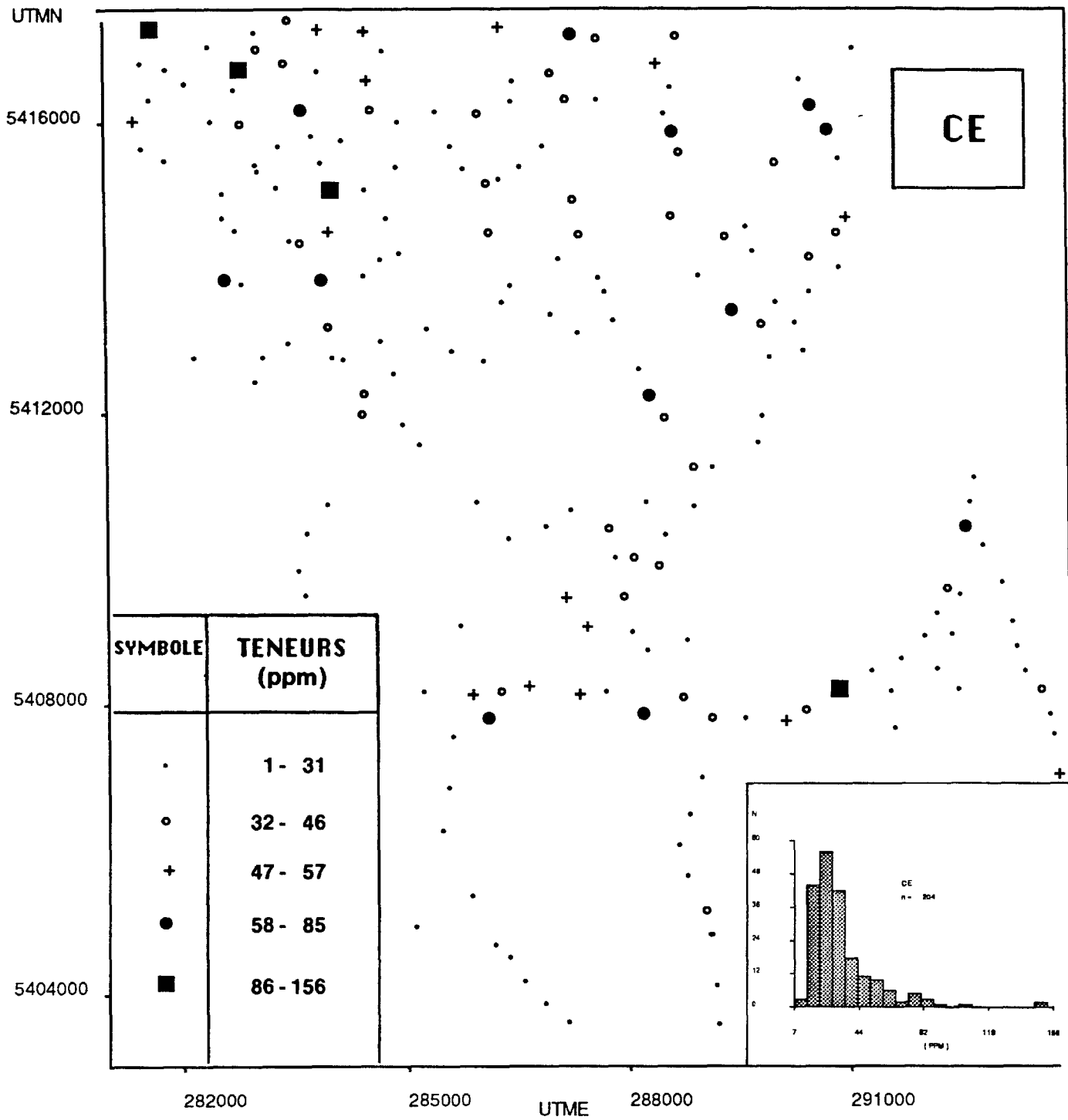


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

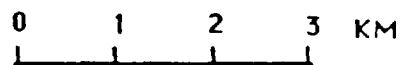


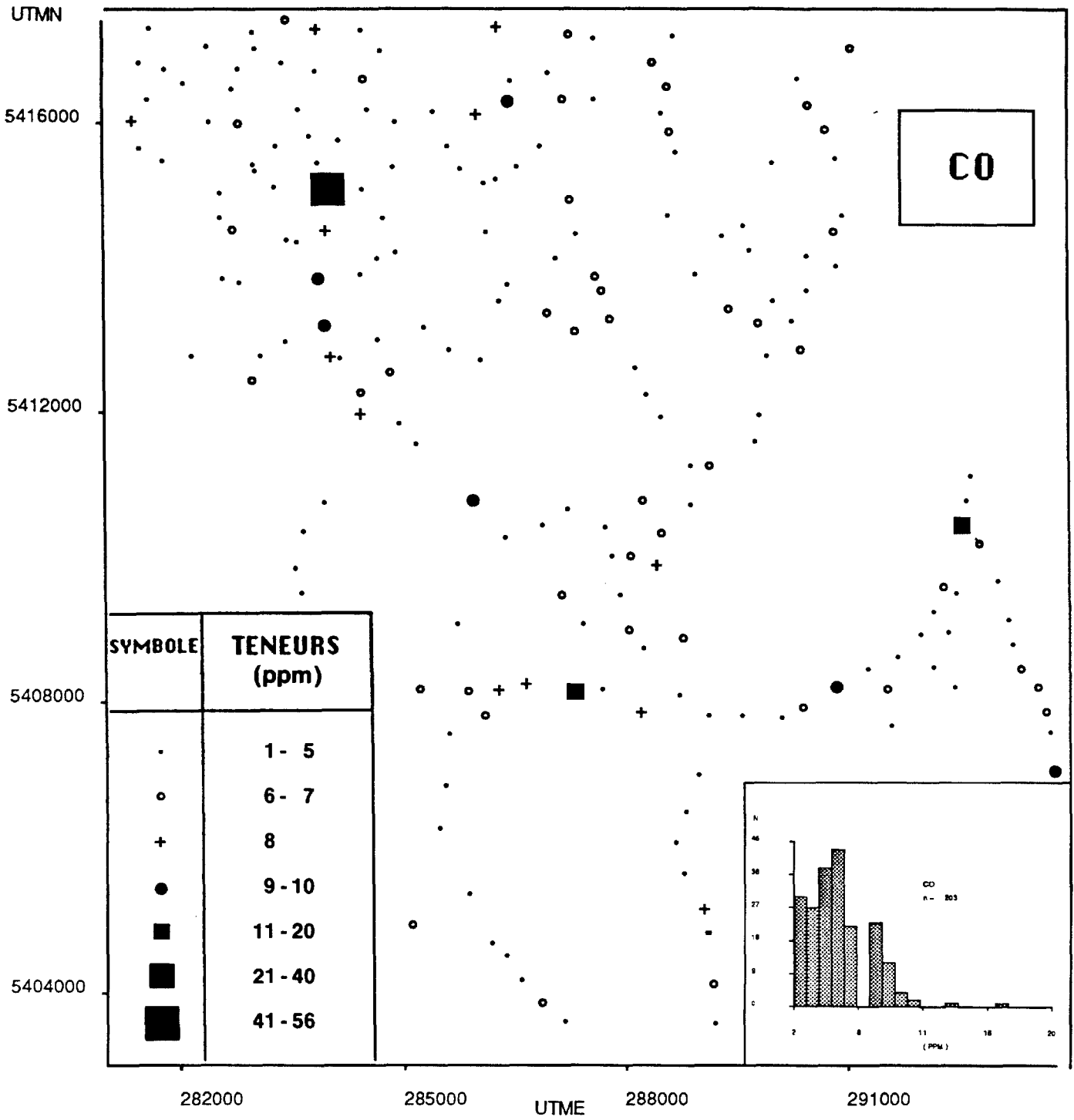


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

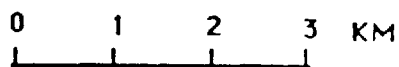


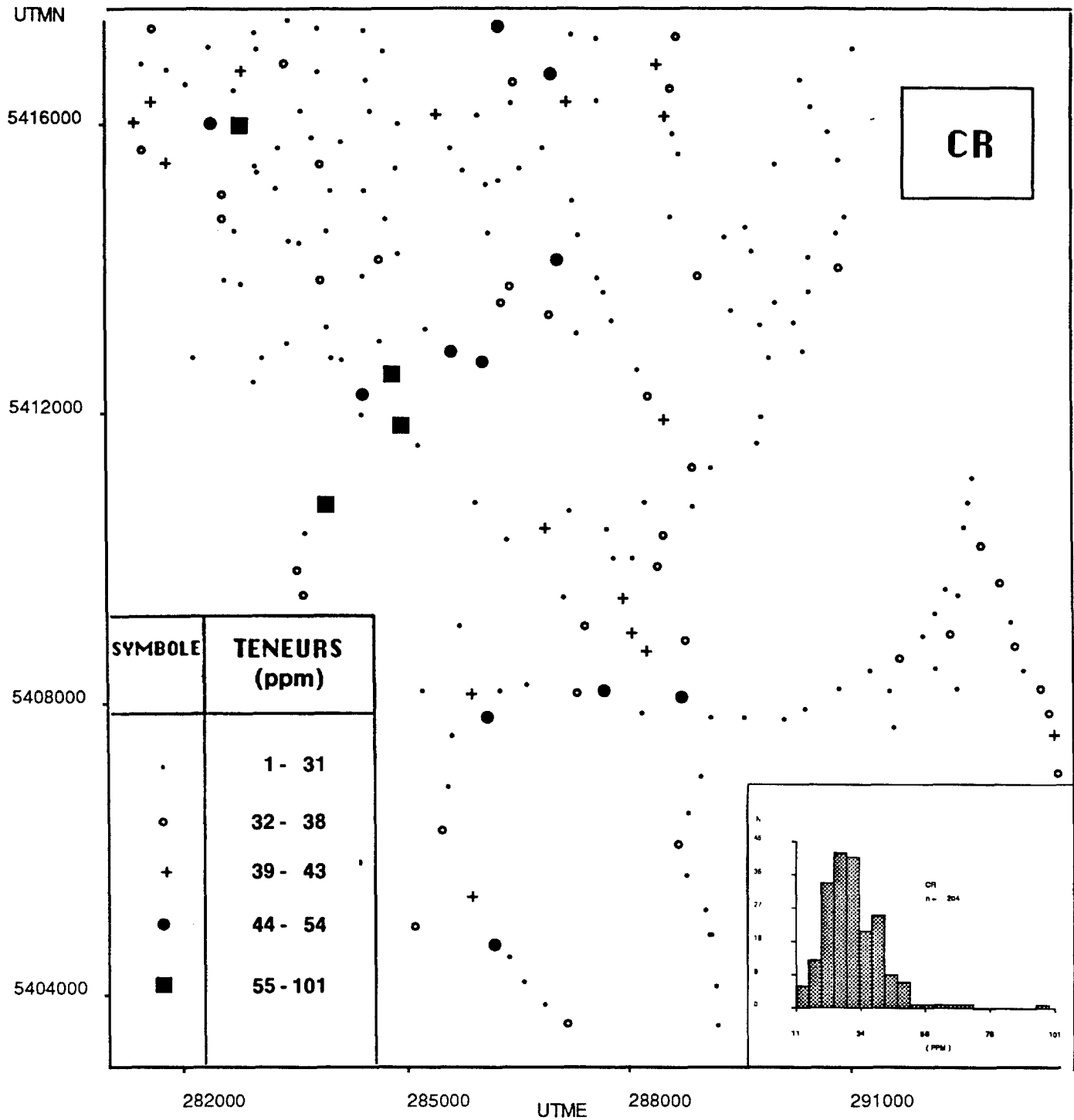


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

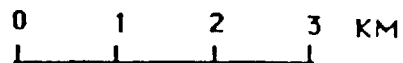


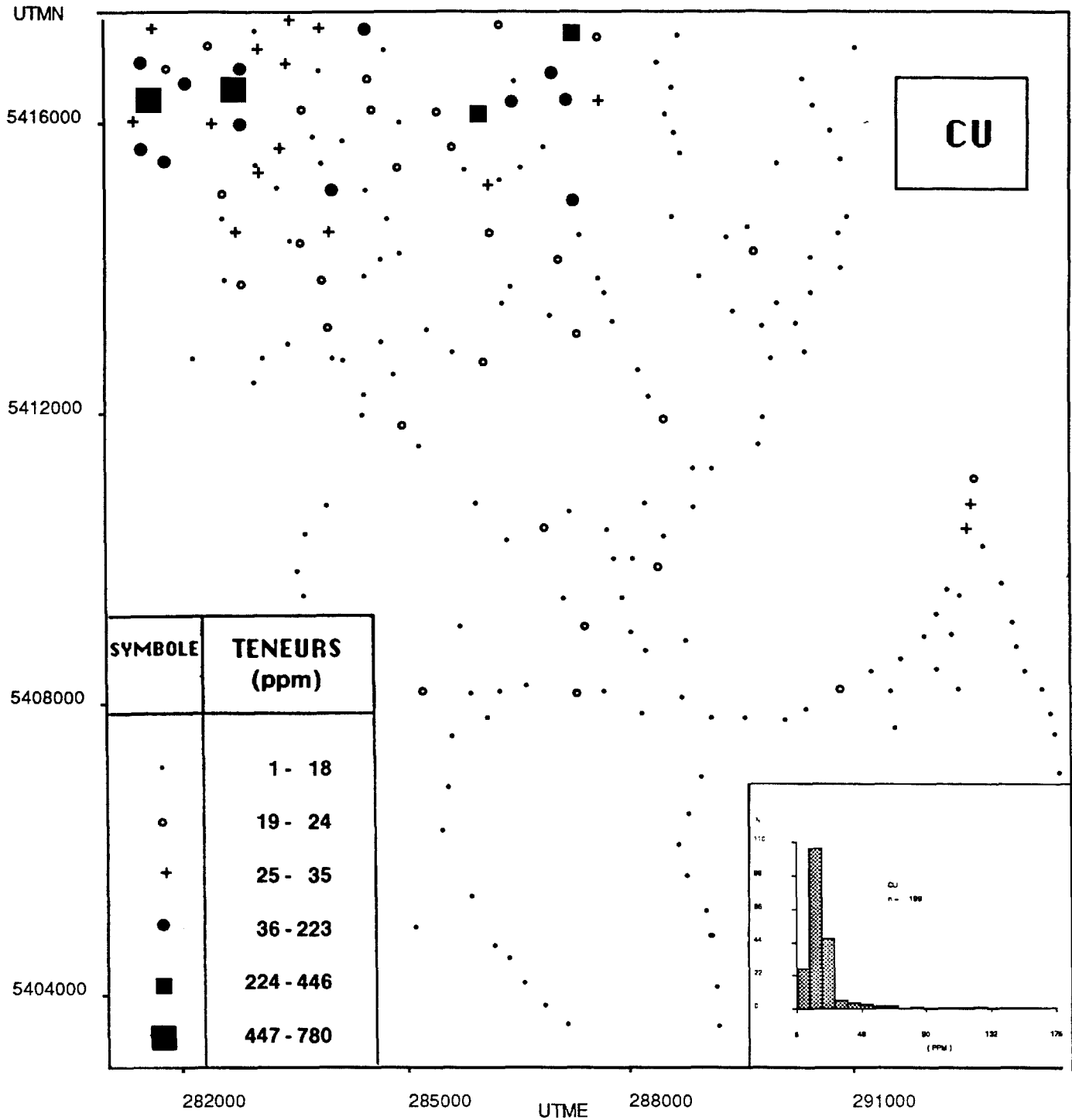


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

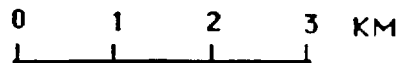


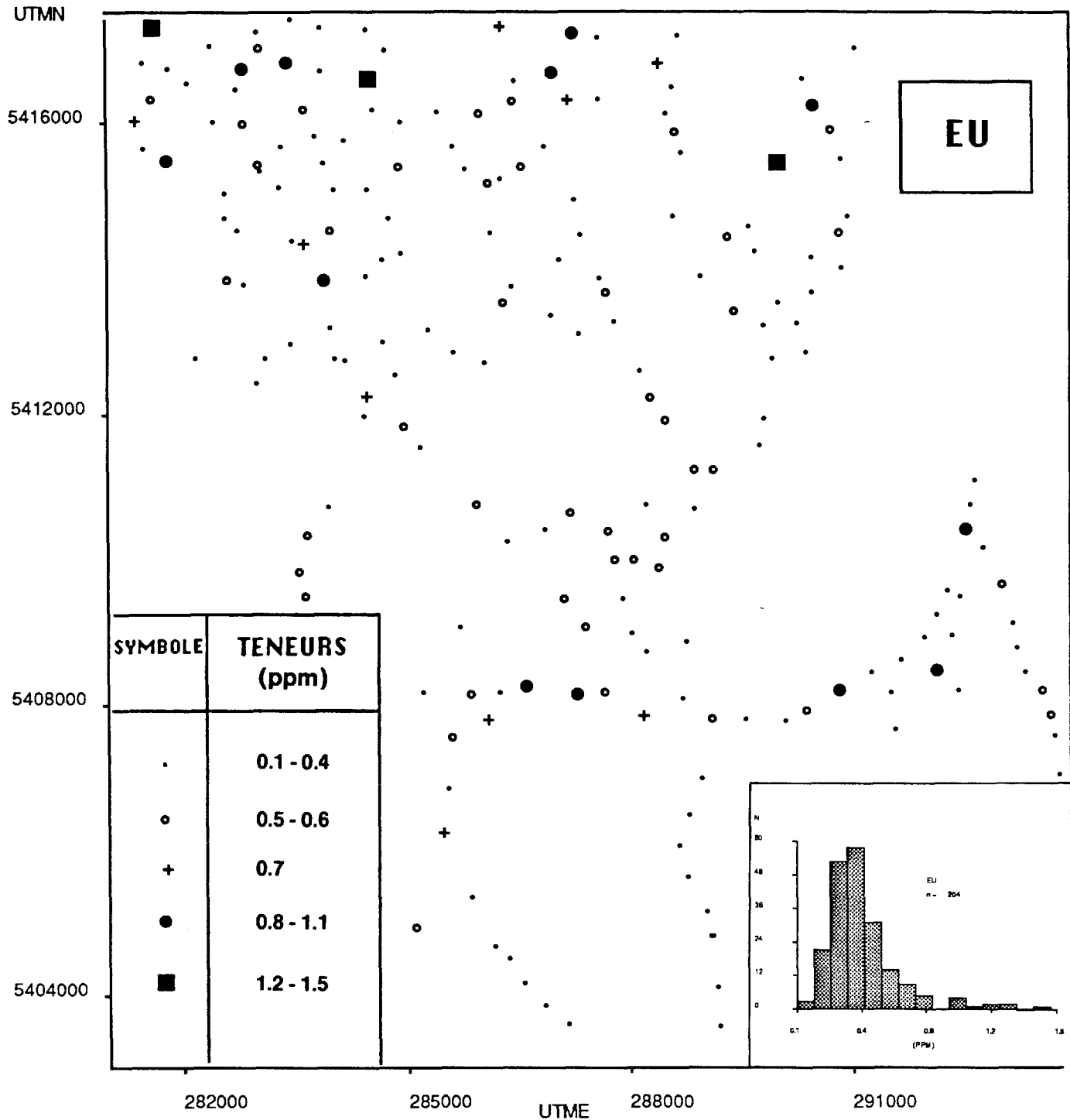


GEOCHIMIE DES SOLS

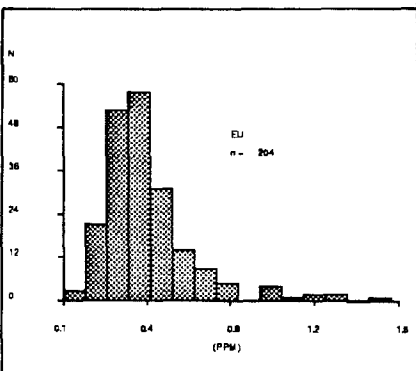
REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

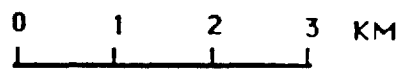


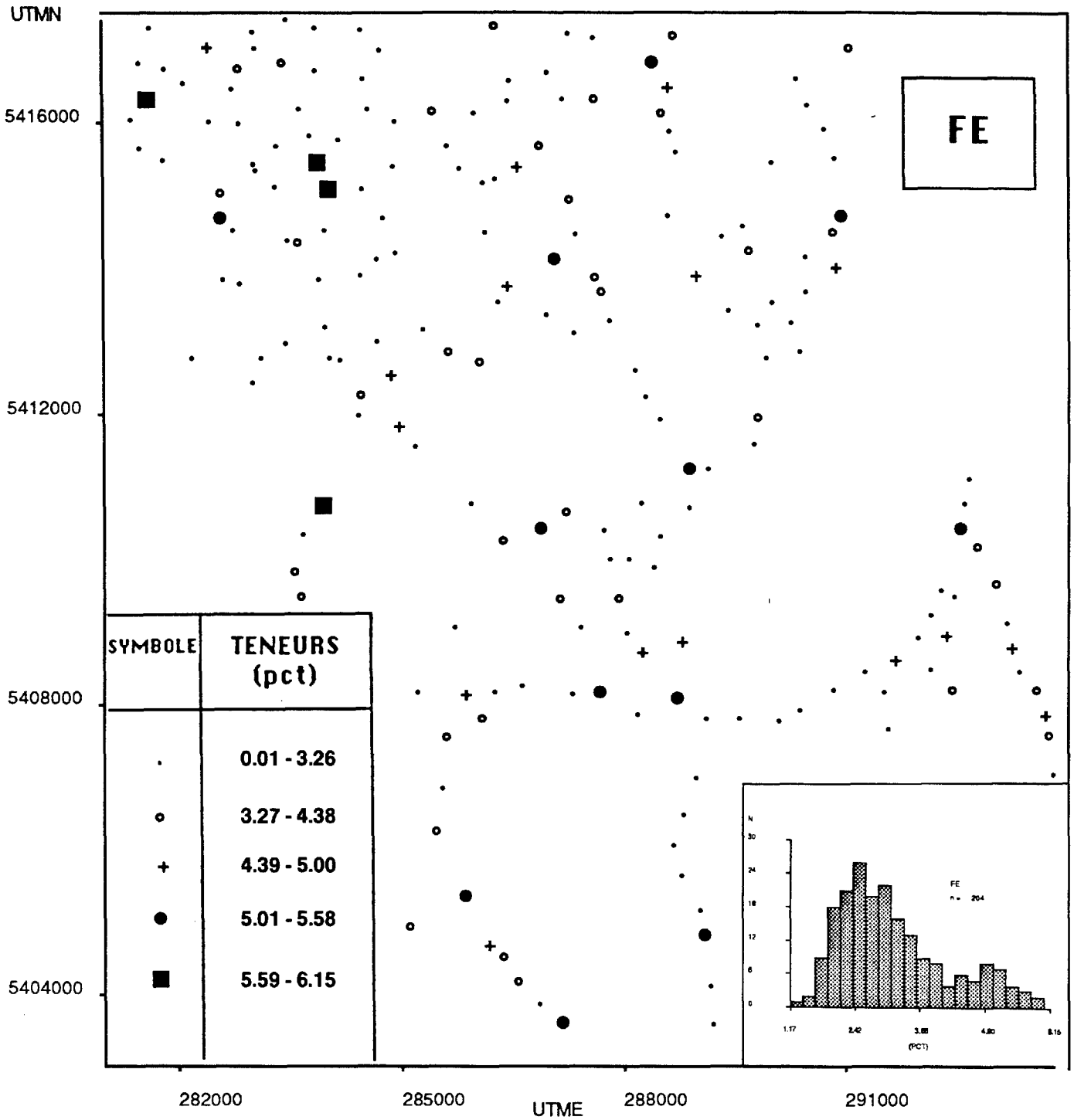


SYMBOLE	TENEURS (ppm)
.	0.1 - 0.4
o	0.5 - 0.6
+	0.7
●	0.8 - 1.1
■	1.2 - 1.5



GEOCHIMIE DES SOLS
REGION DE SULLIPEK
 (Horizon B ; fraction < 80m)



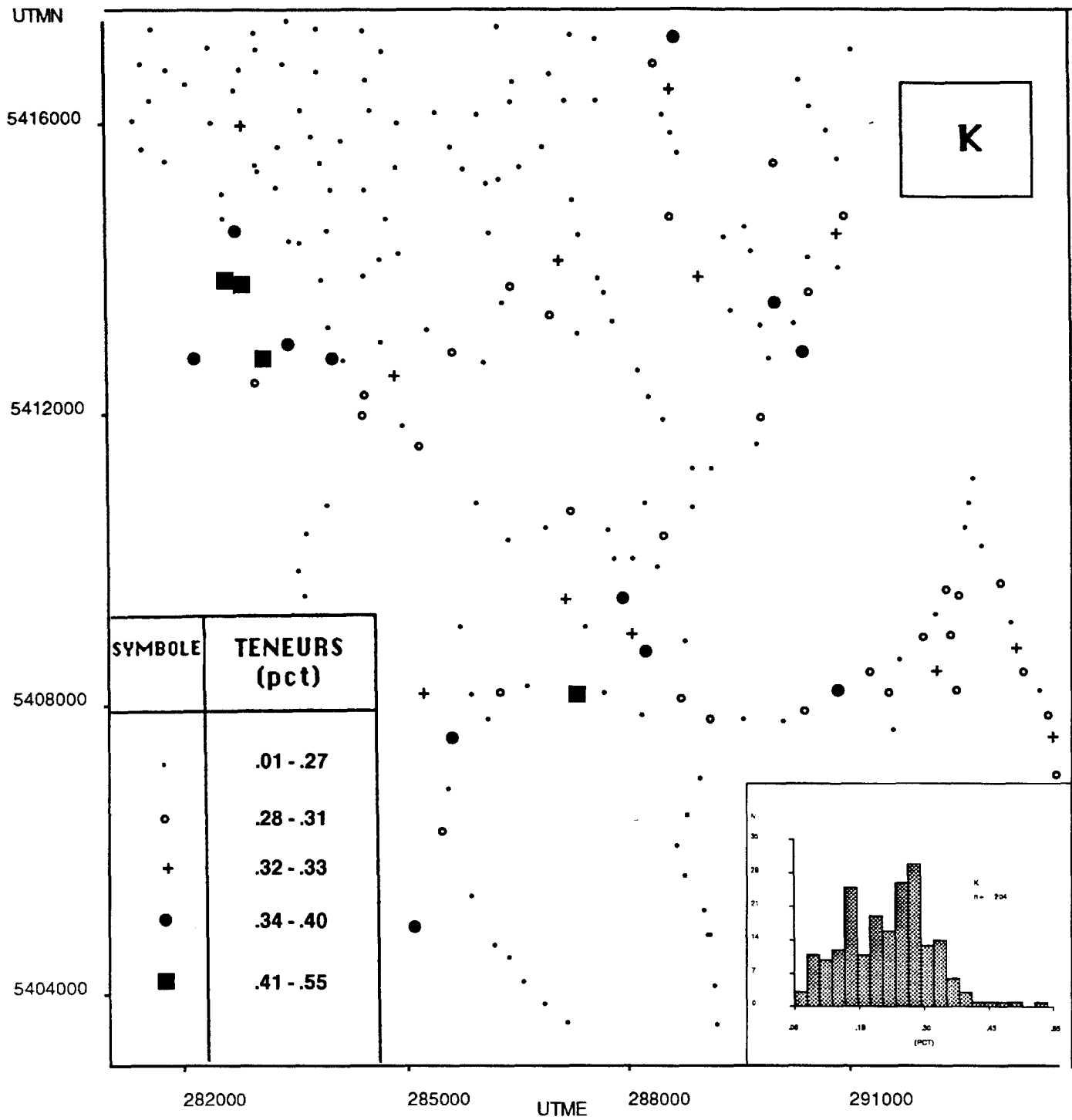


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

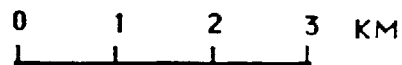


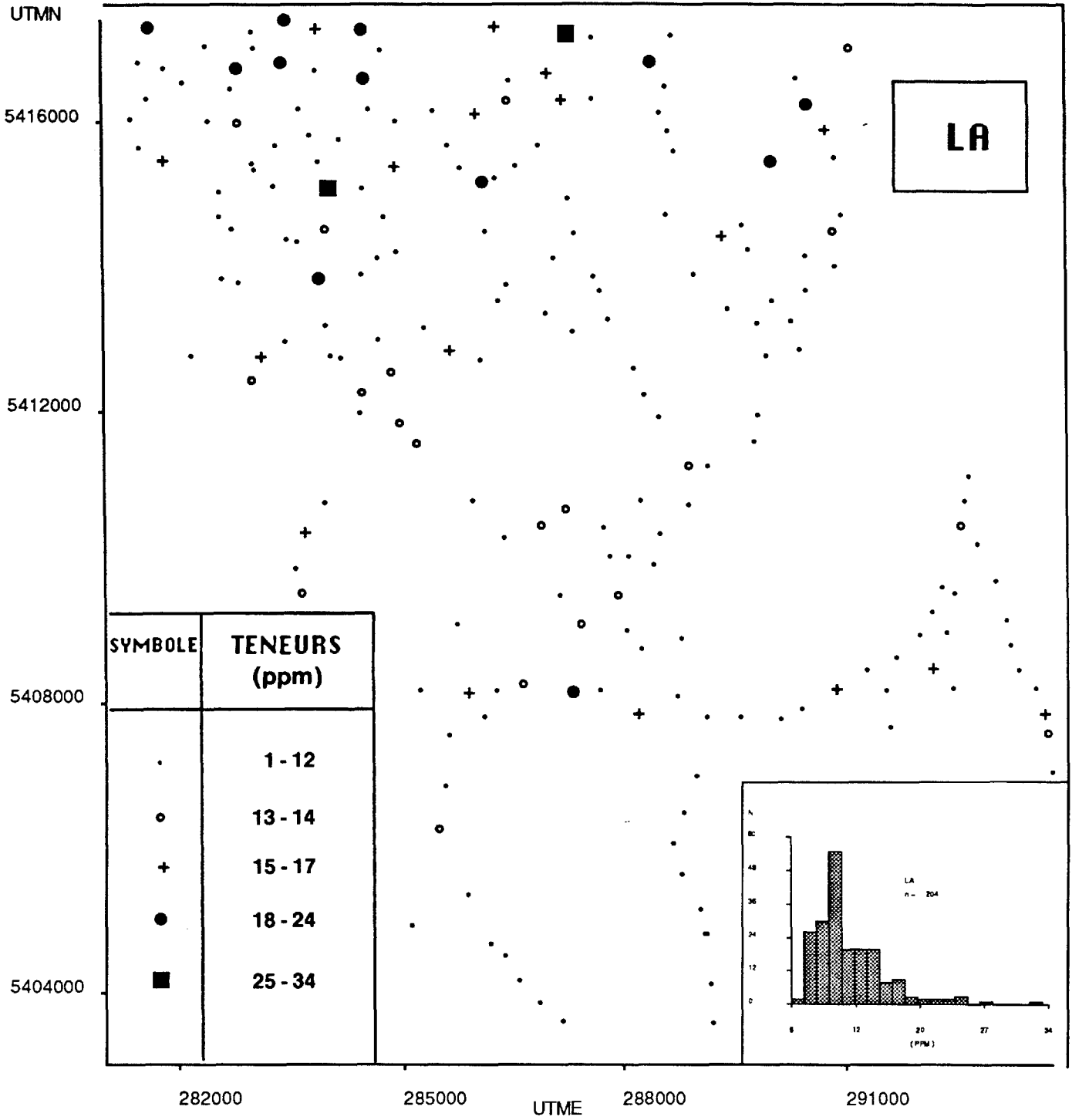


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

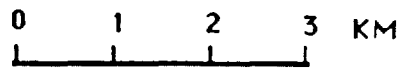


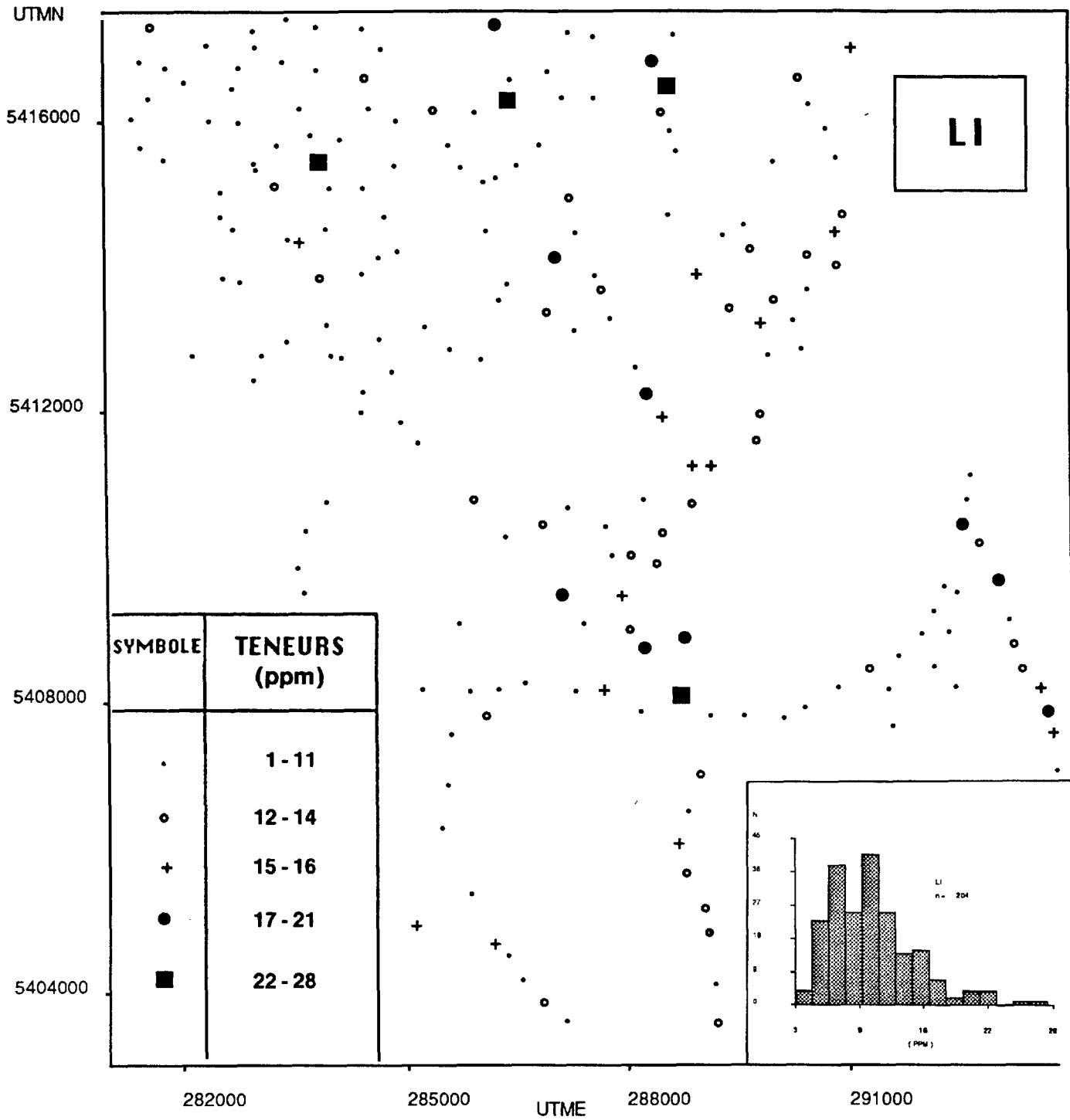


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

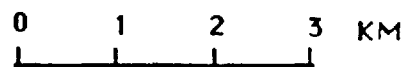


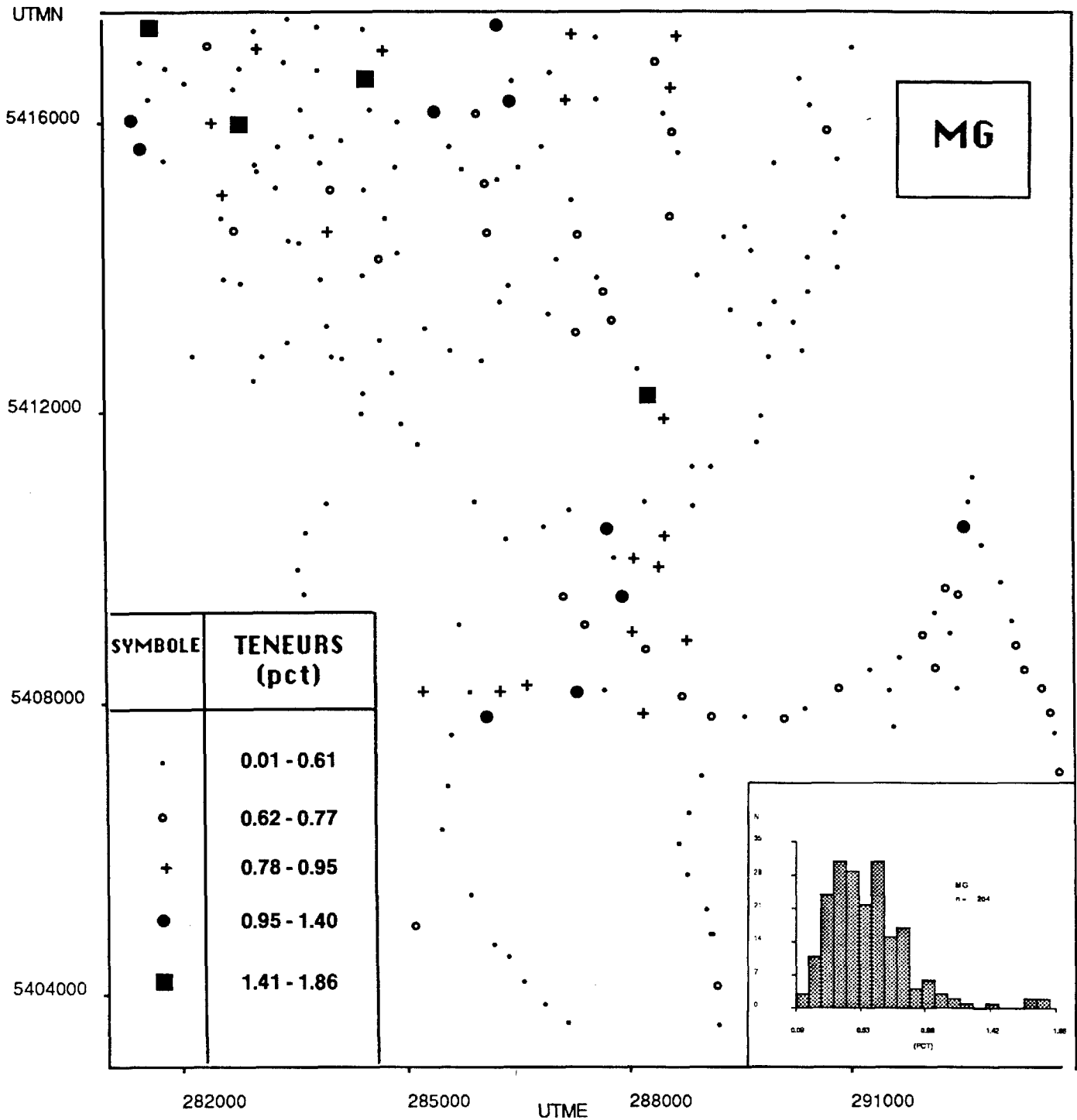


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

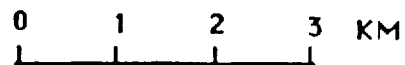


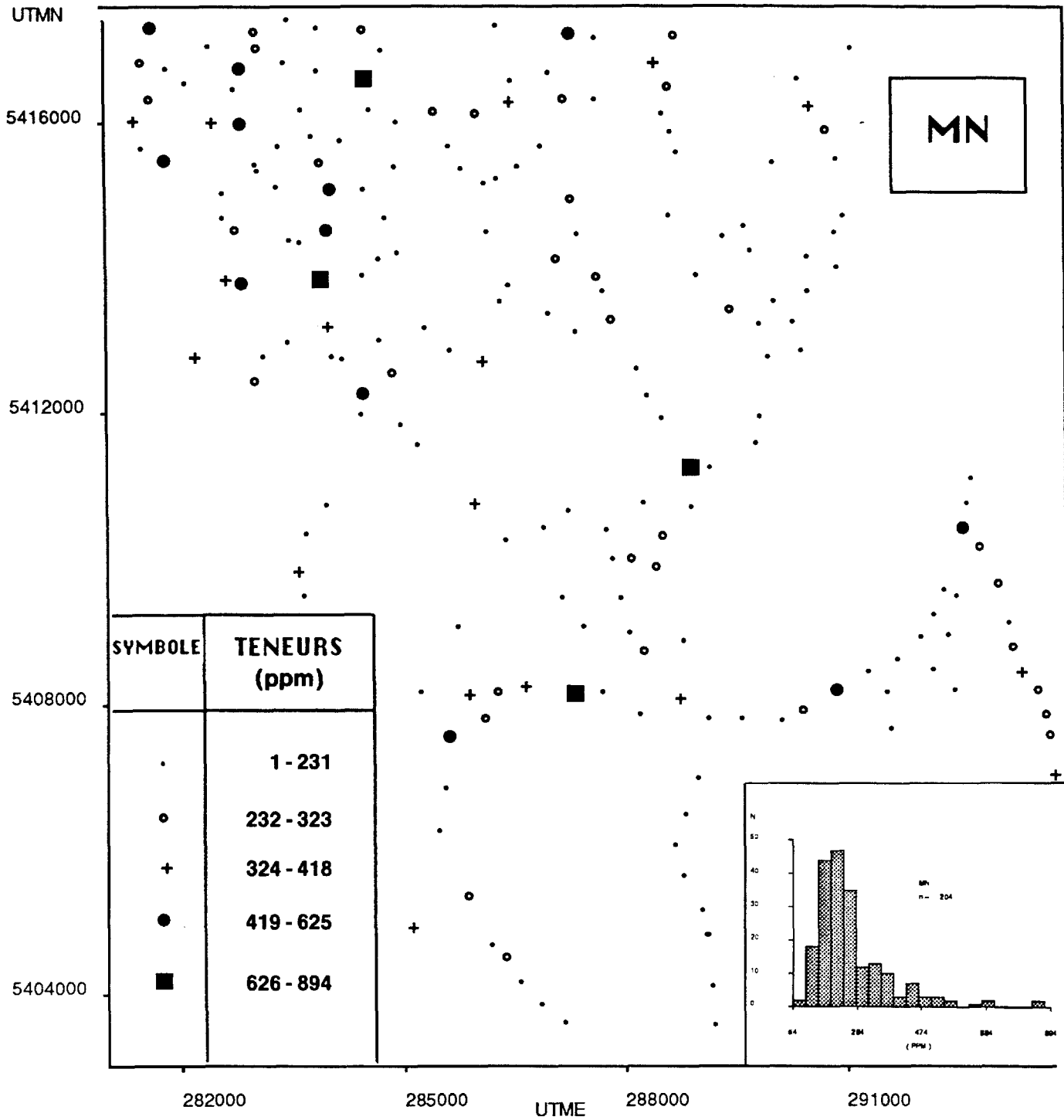


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

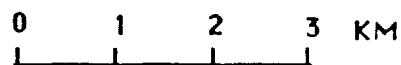


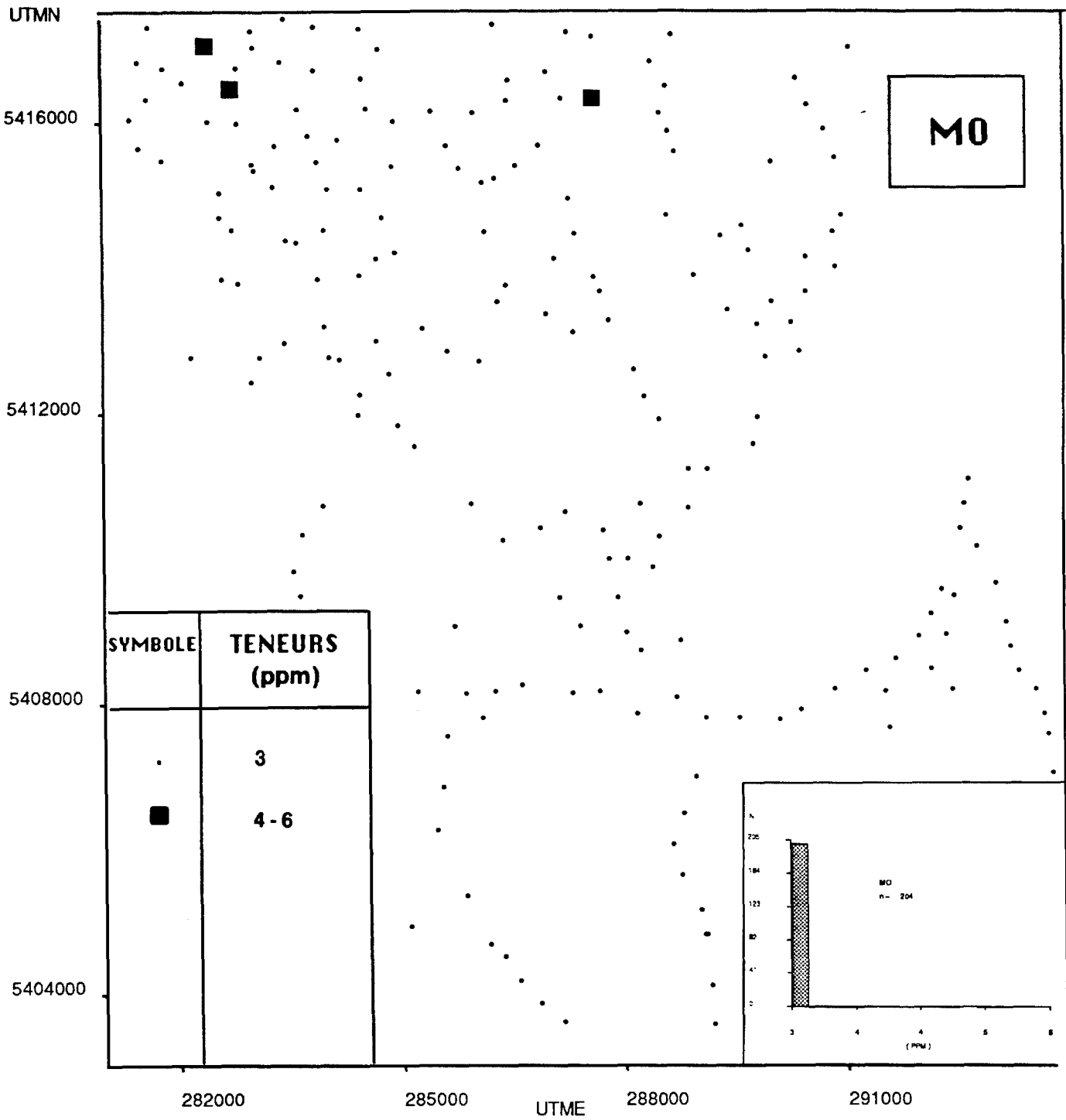


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

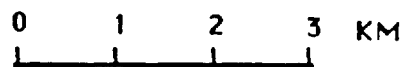


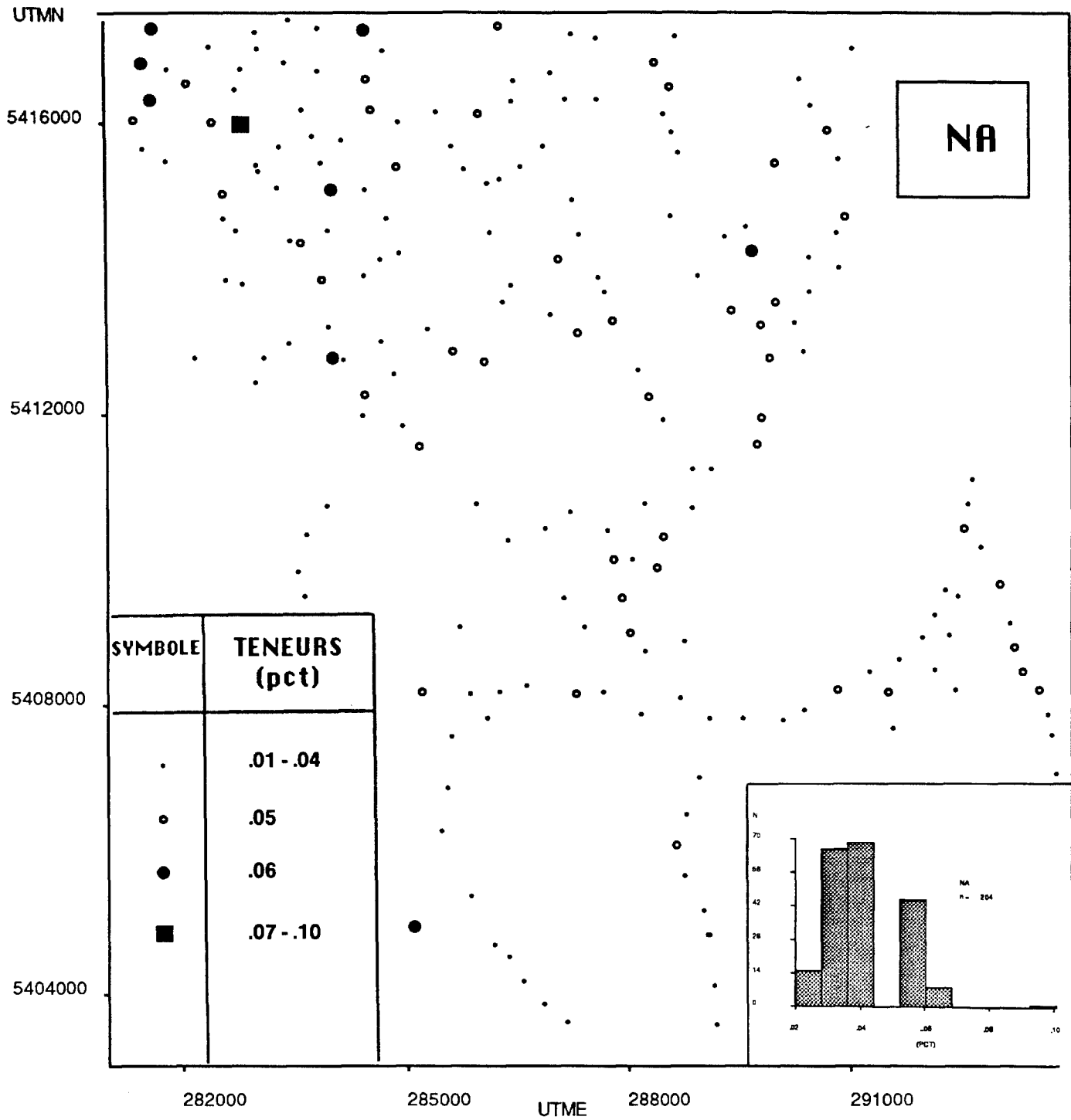


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

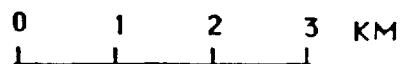


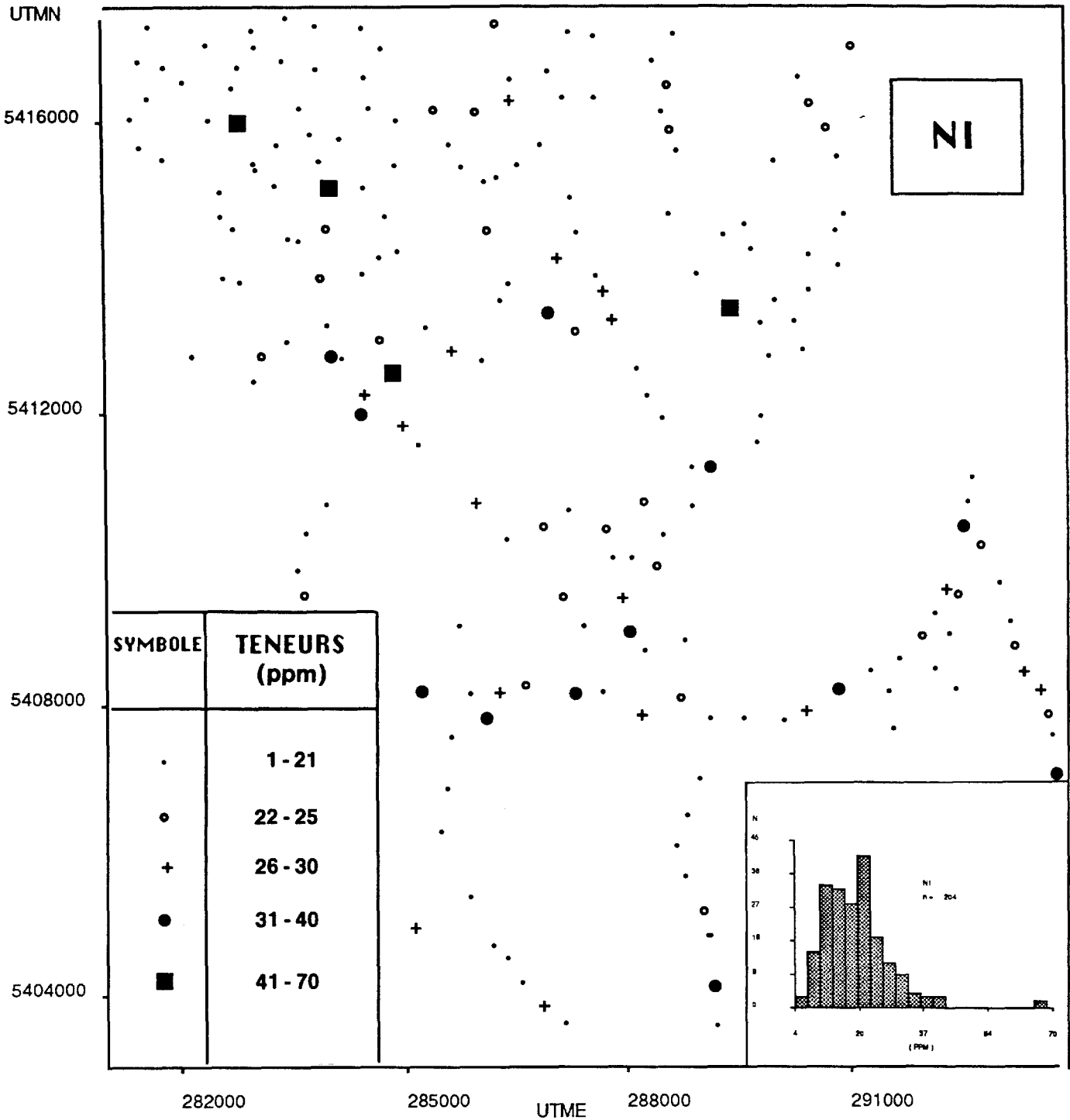


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

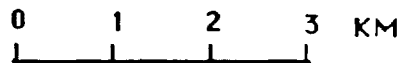


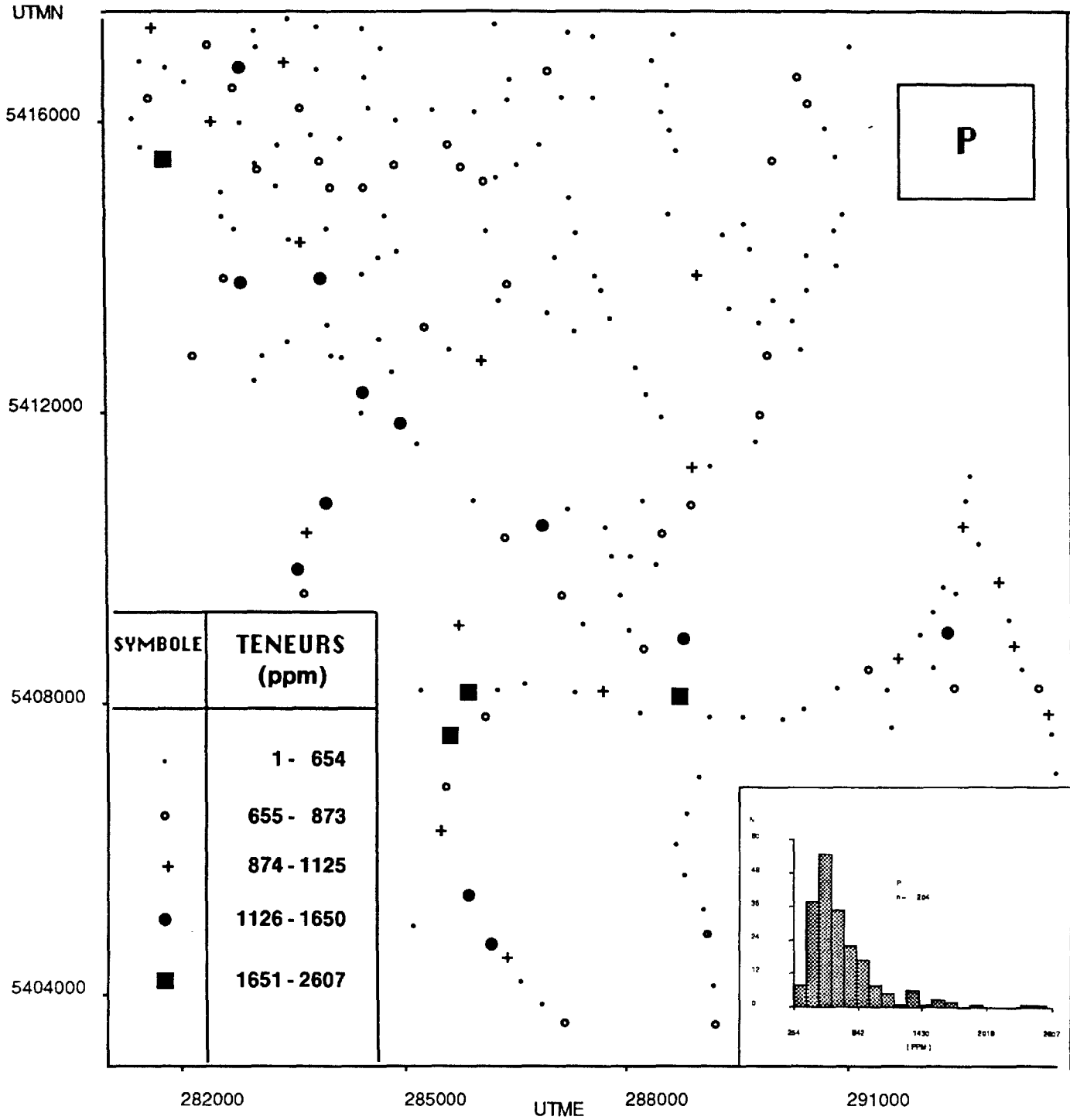


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

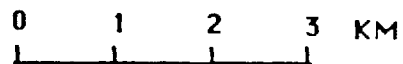


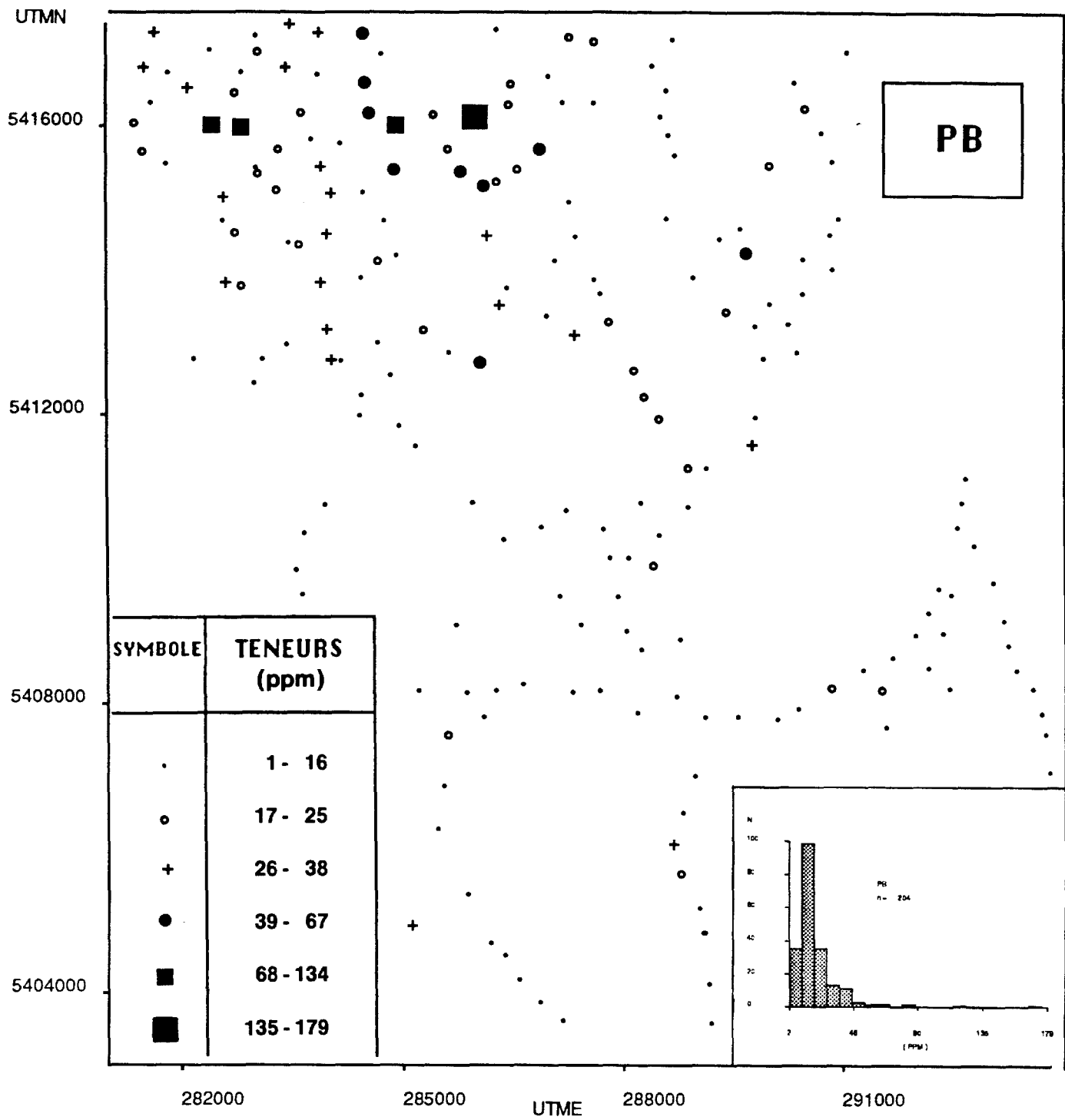


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

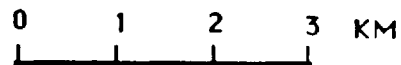


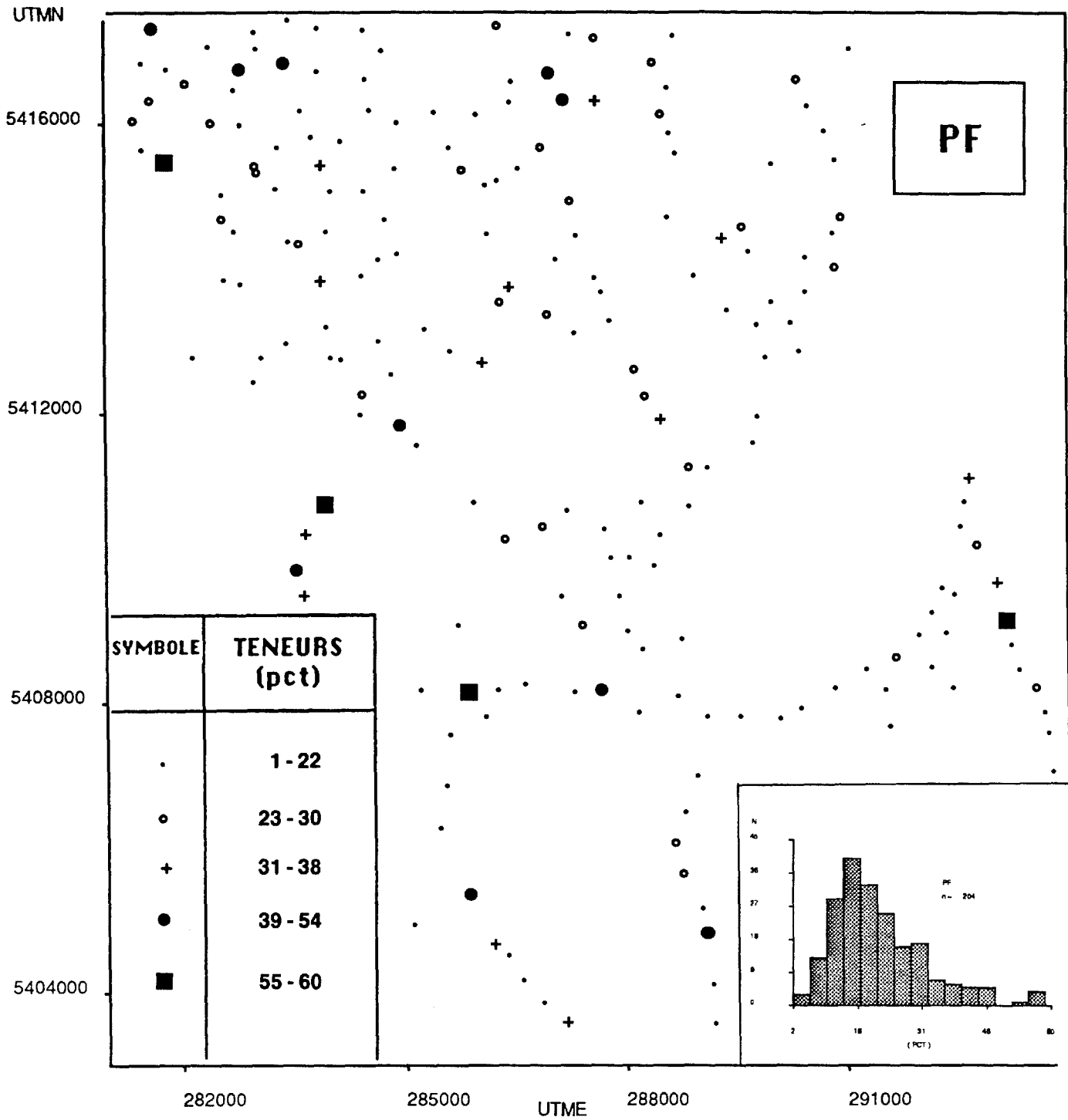


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

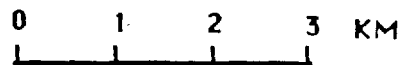


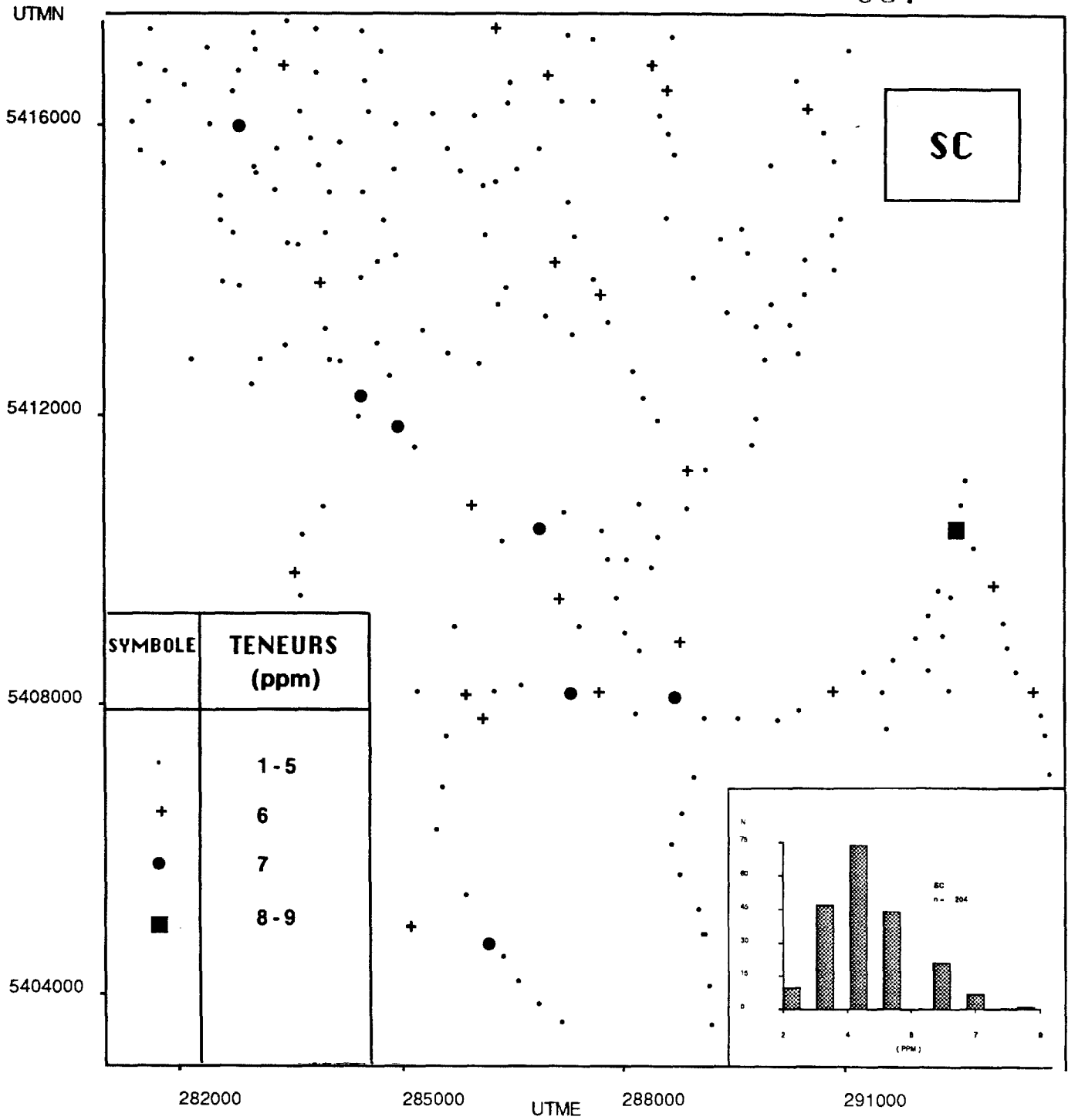


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

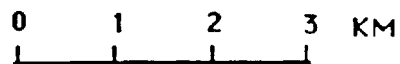


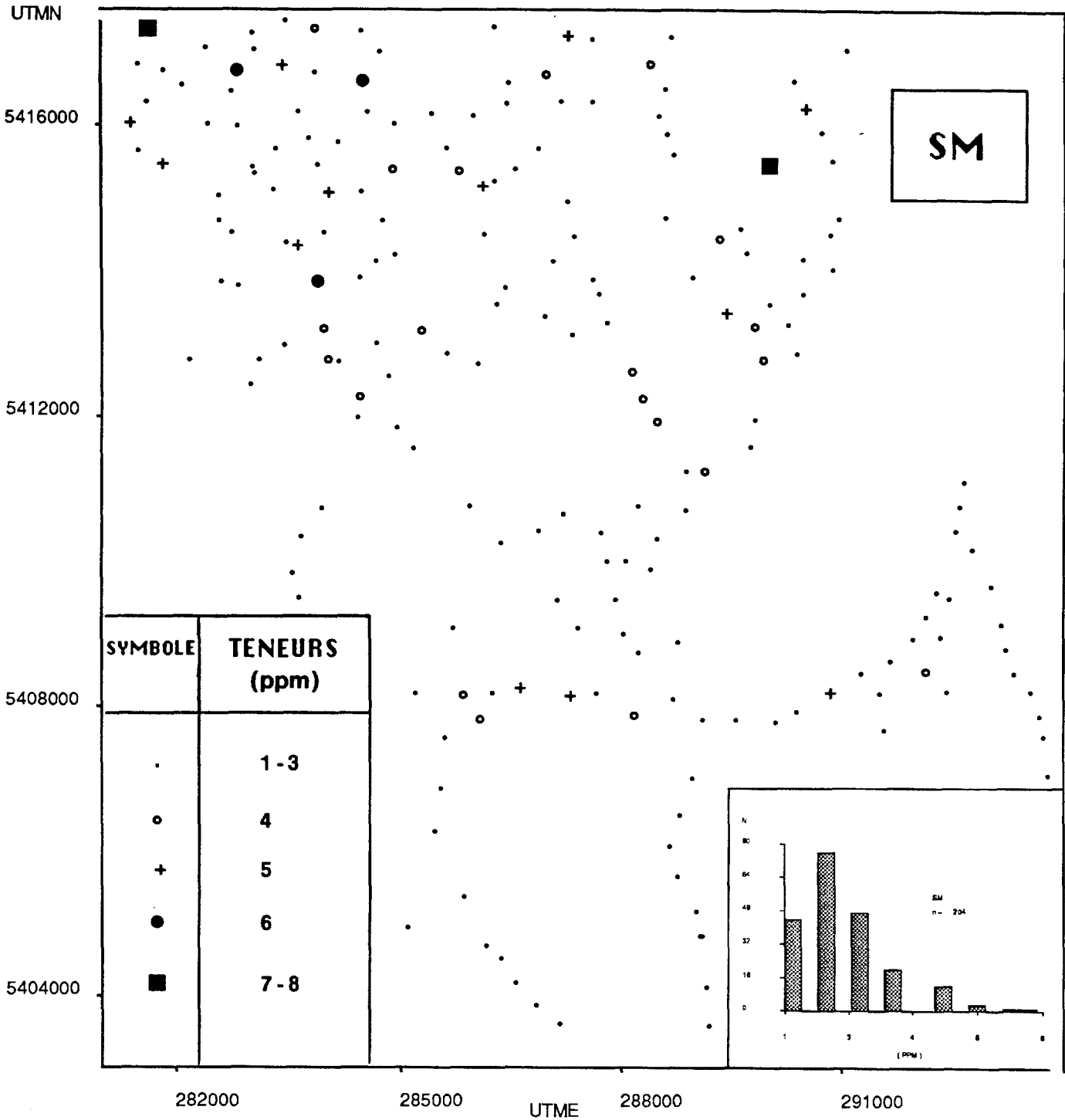


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

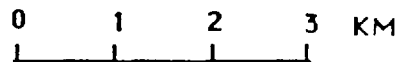


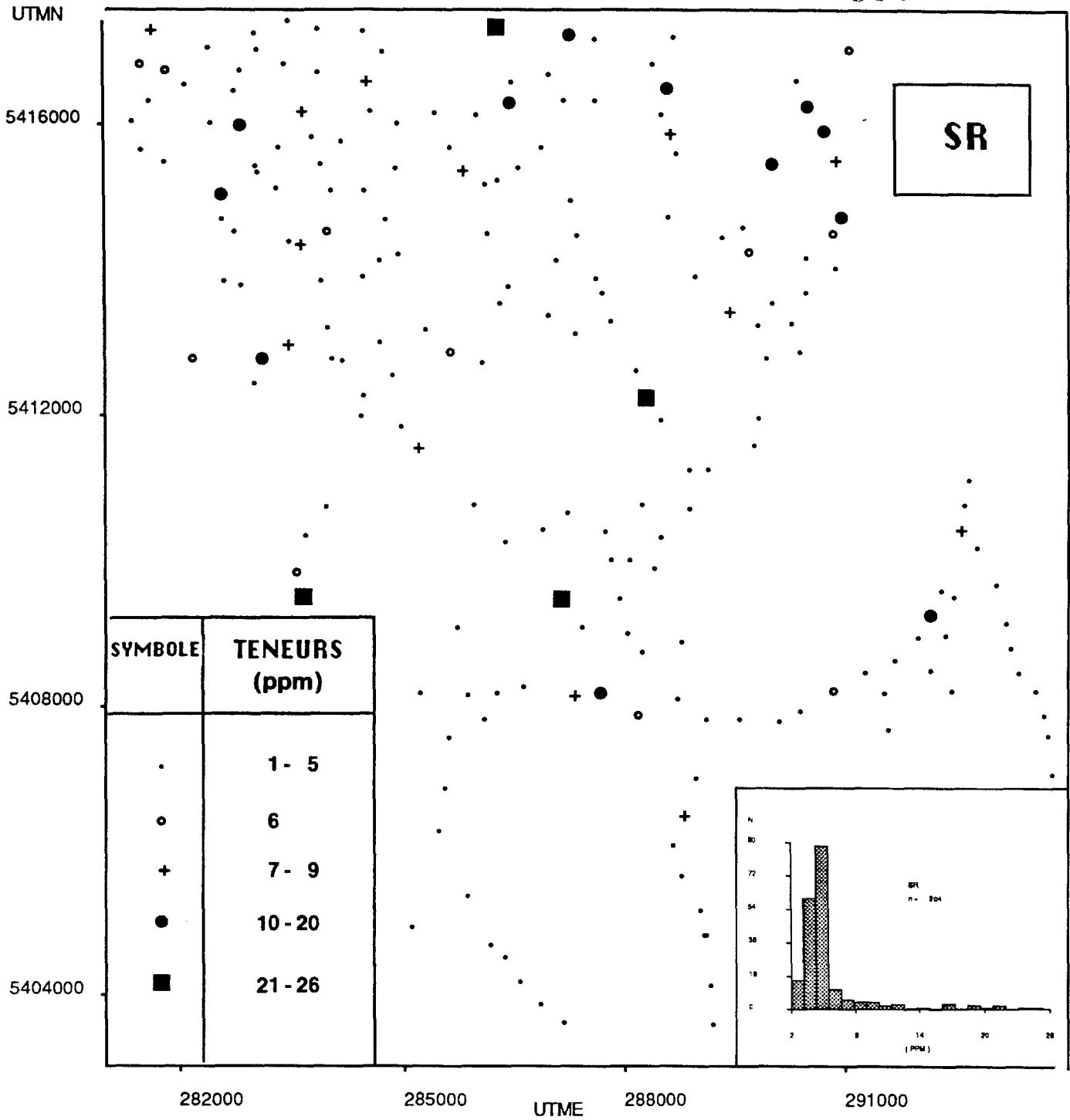


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)



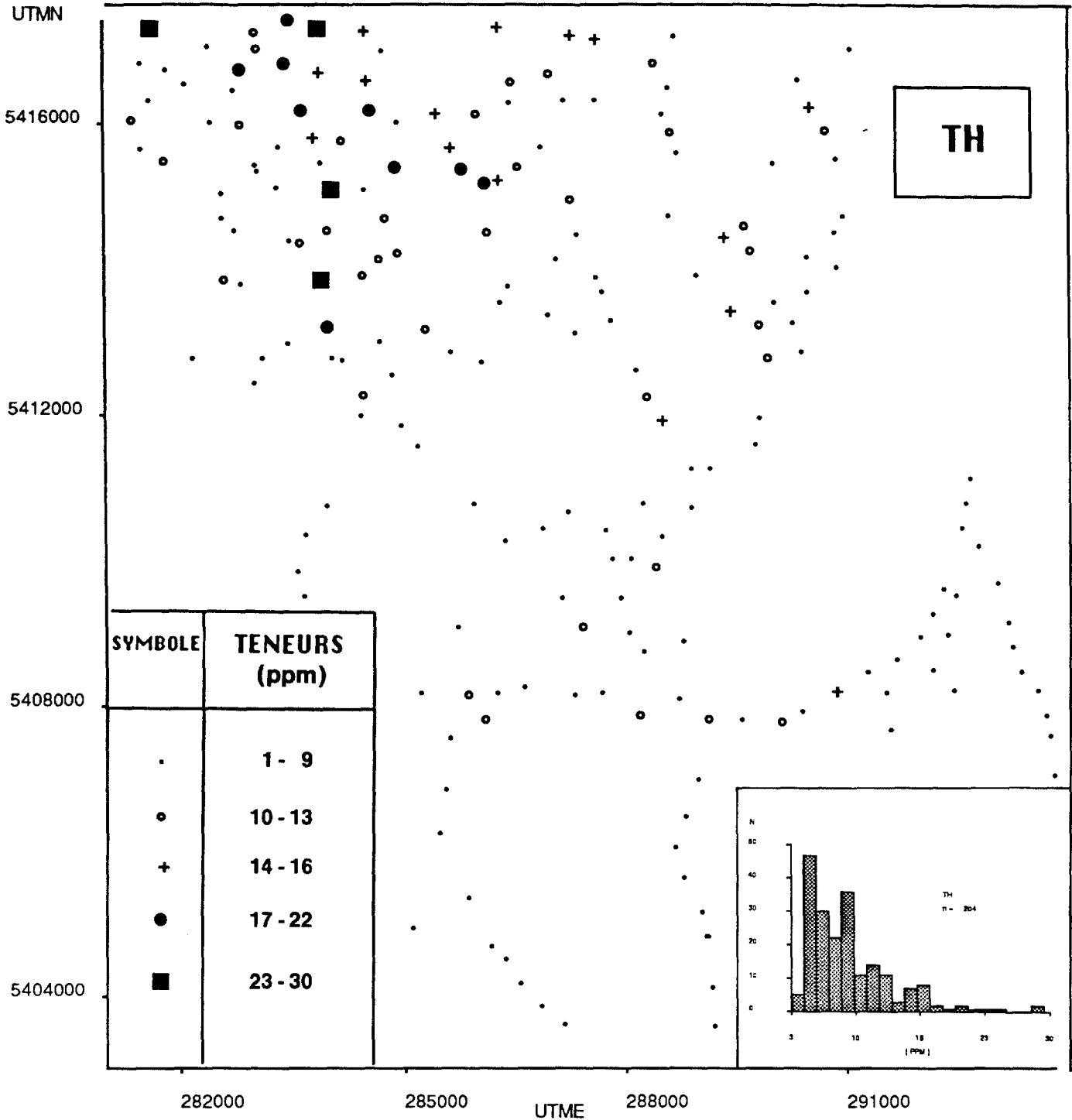


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

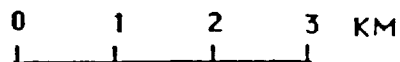


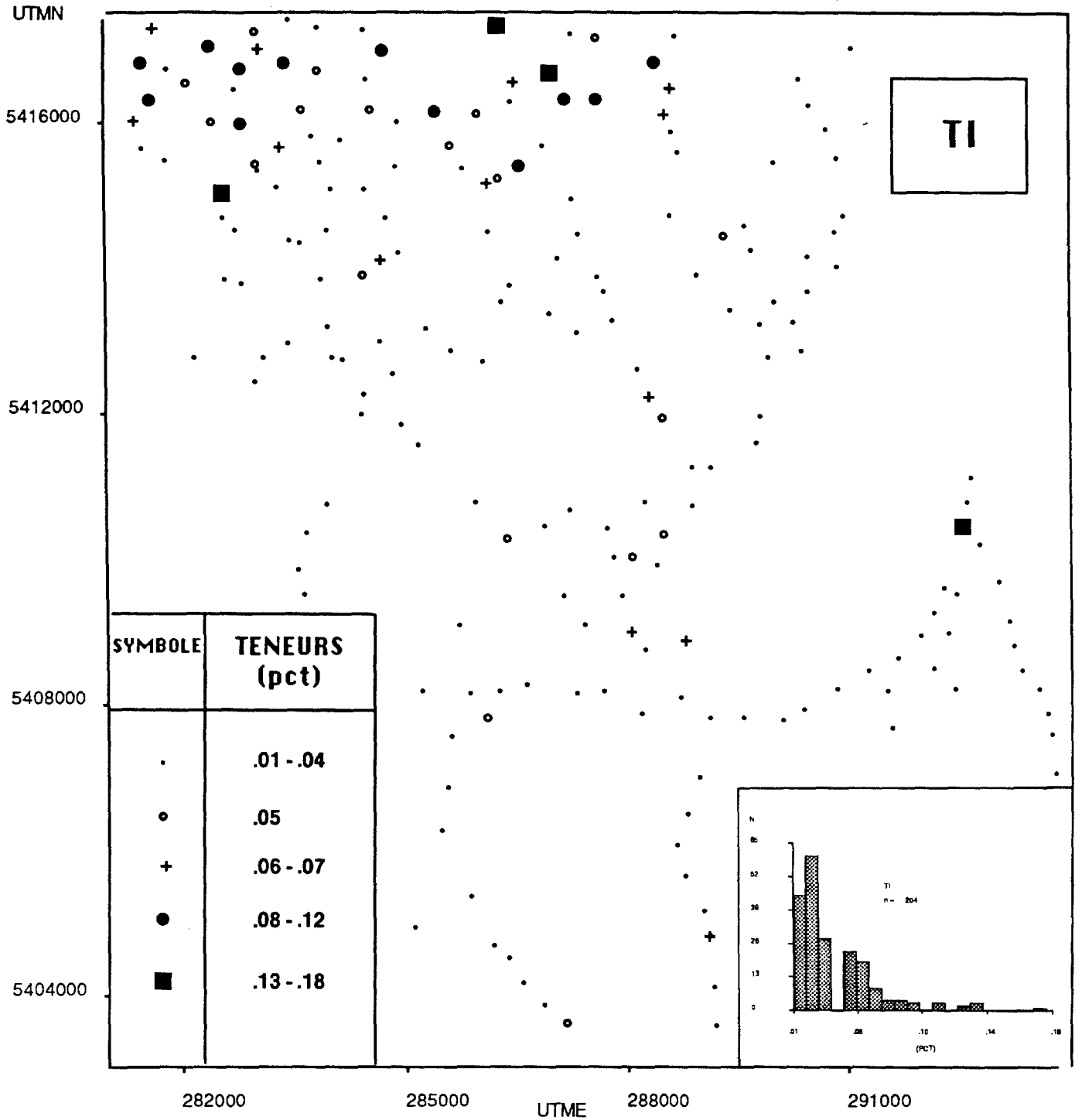


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

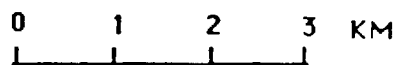


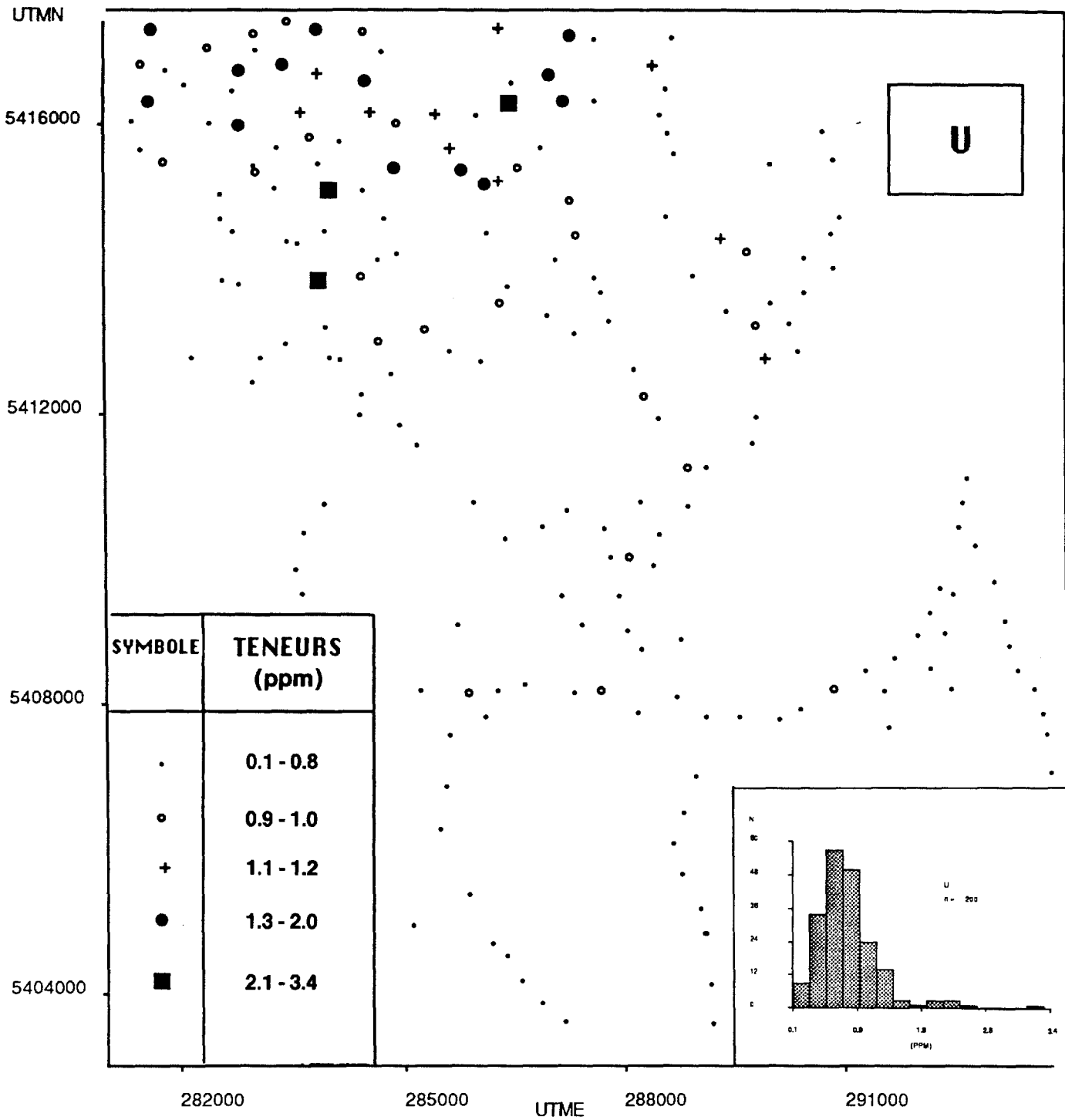


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)



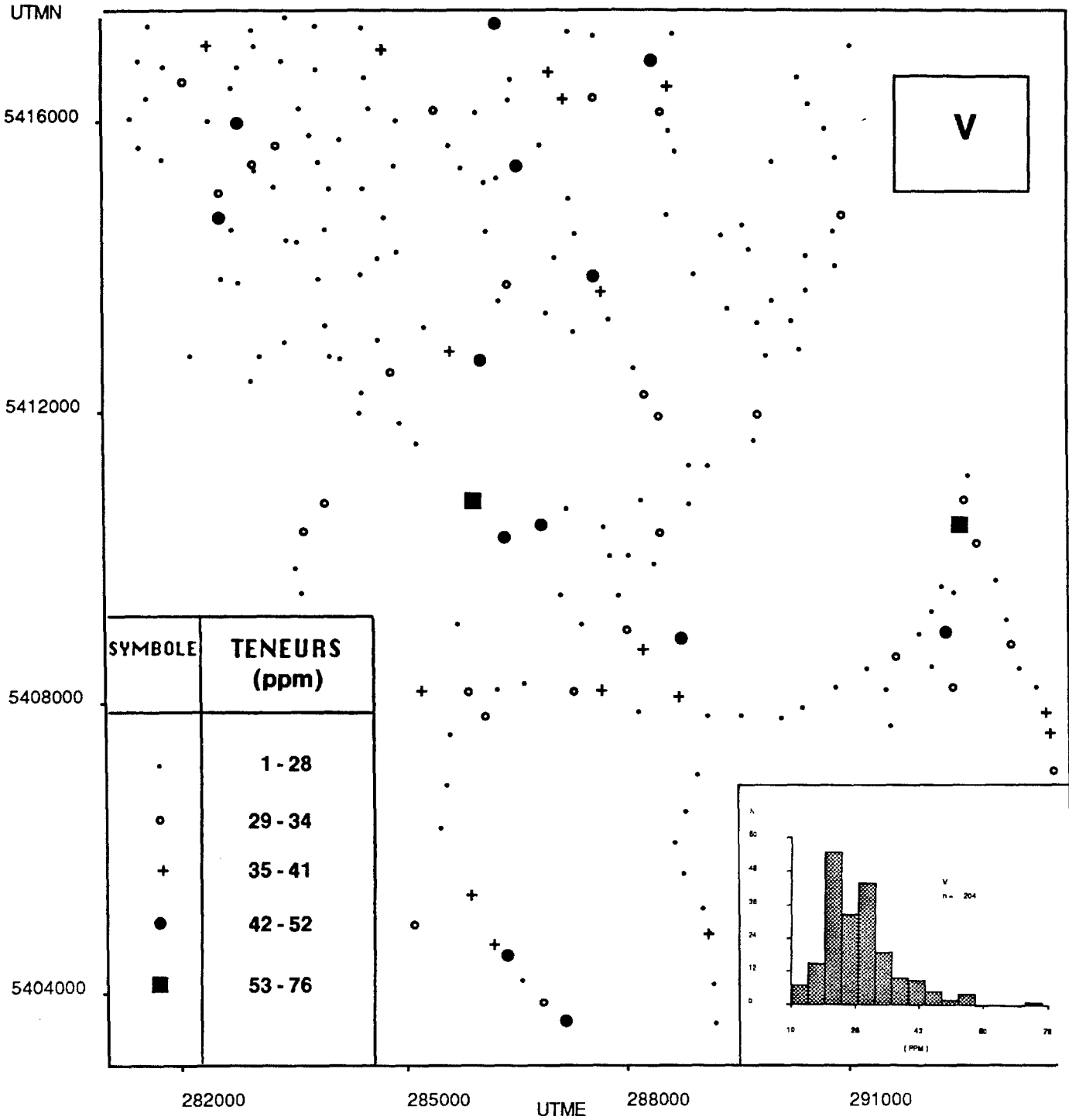


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

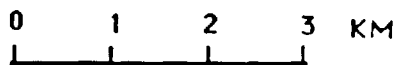


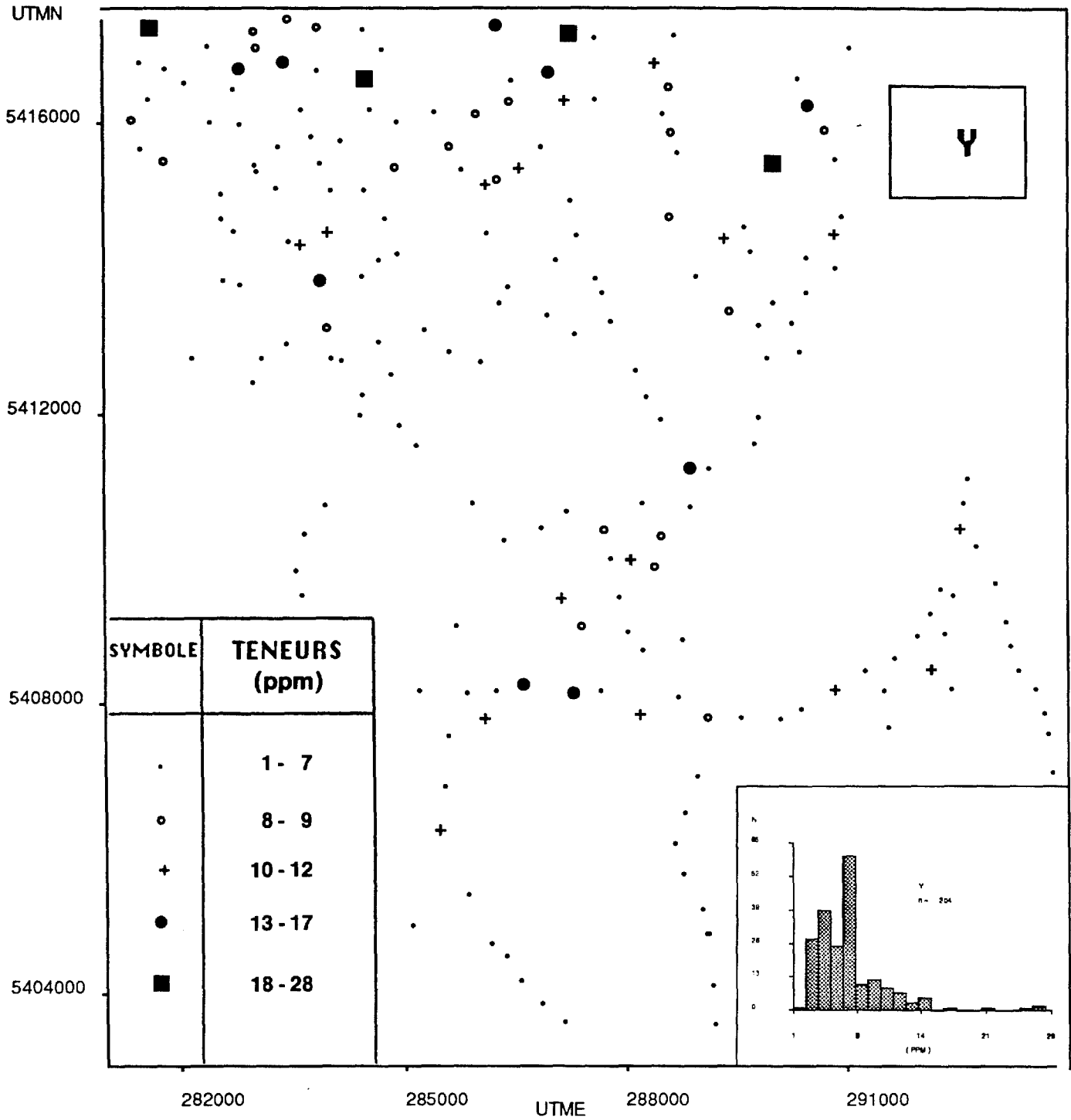


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

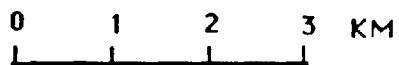


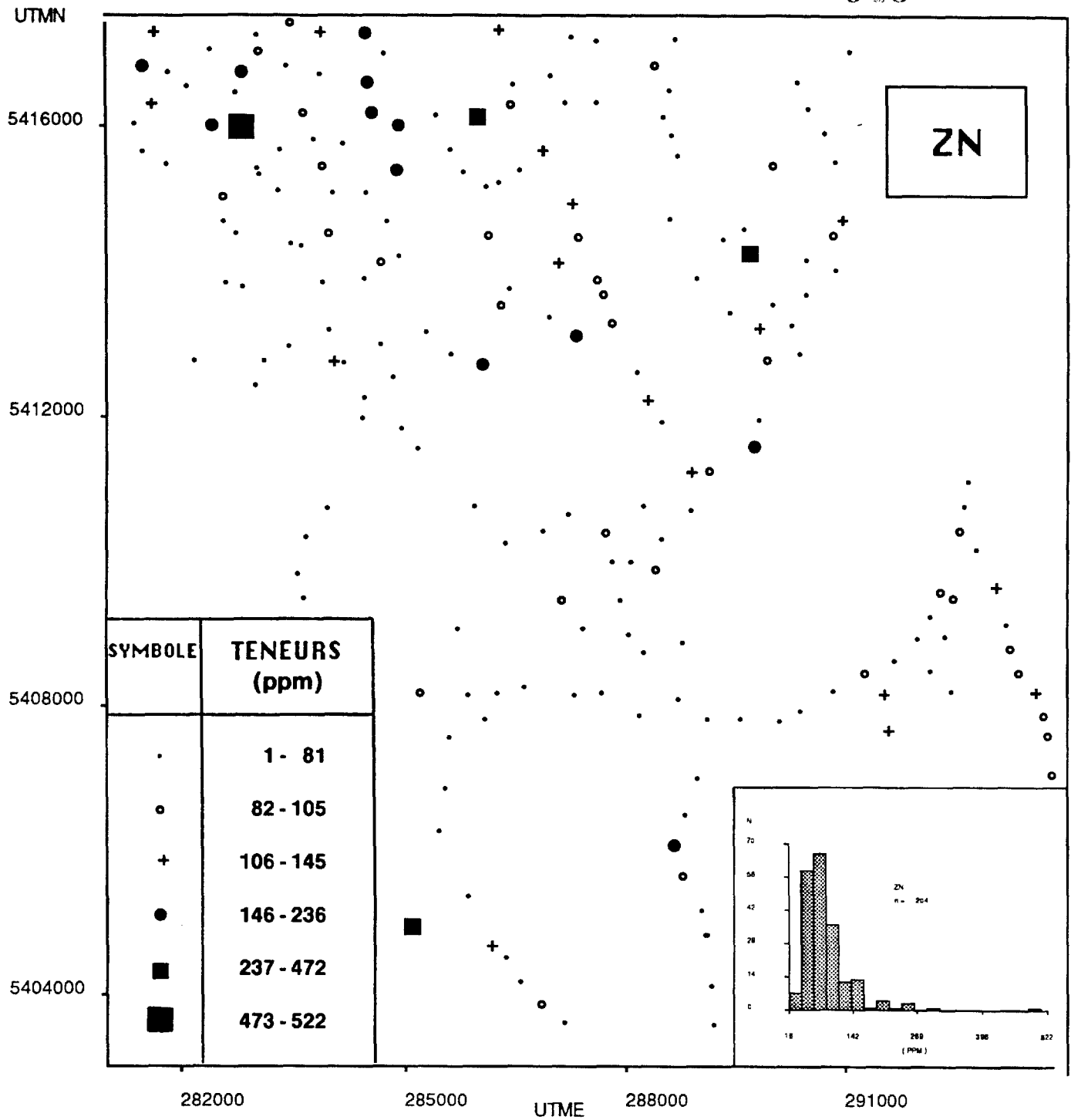


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon B ; fraction < 80m)

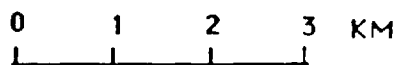




GEOCHIMIE DES SOLS

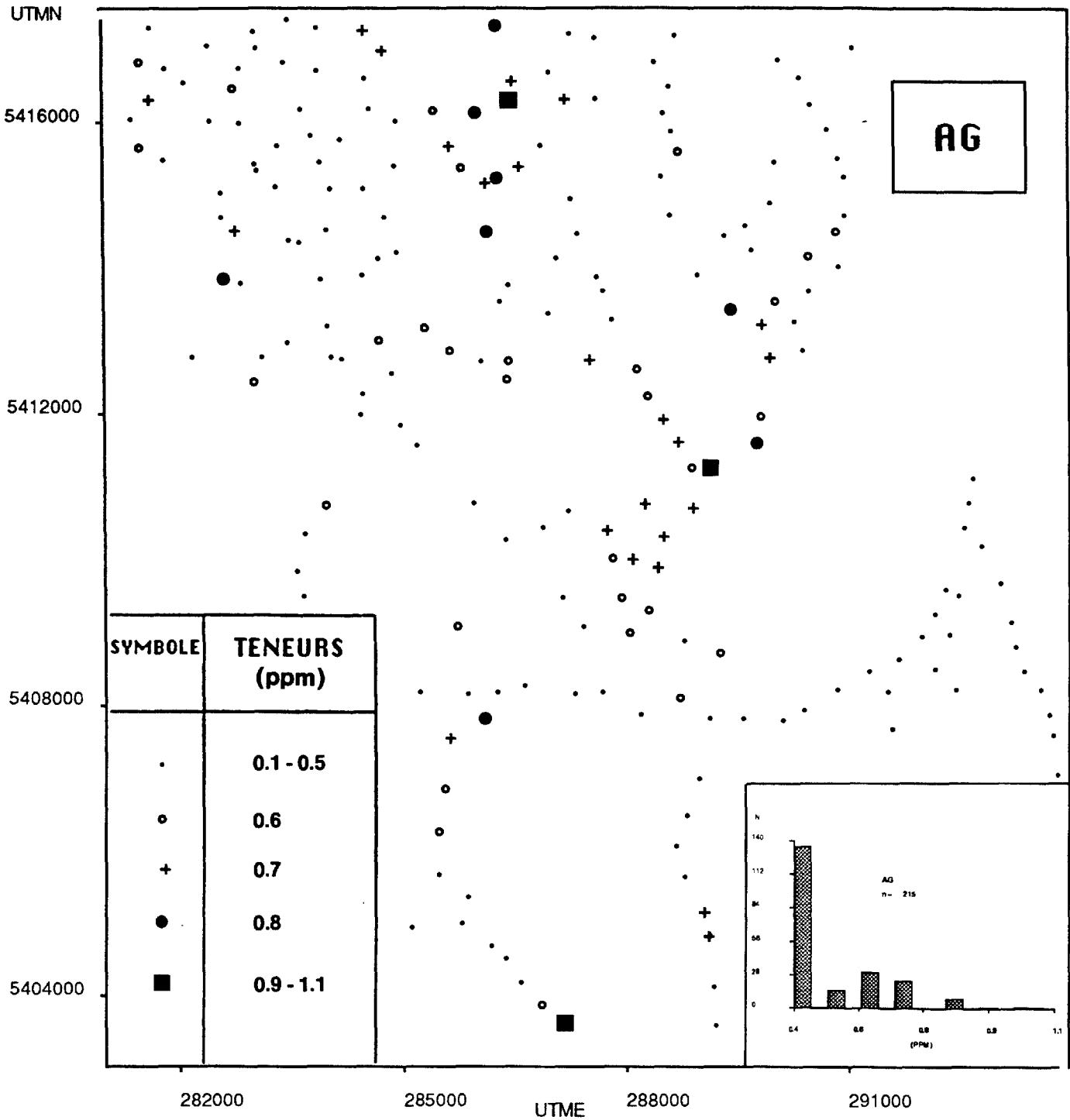
REGION DE SULLIPEK

(Horizon B ; fraction < 80m)



CARTES

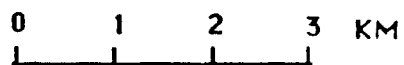
HORIZON C - Fraction < 80 m

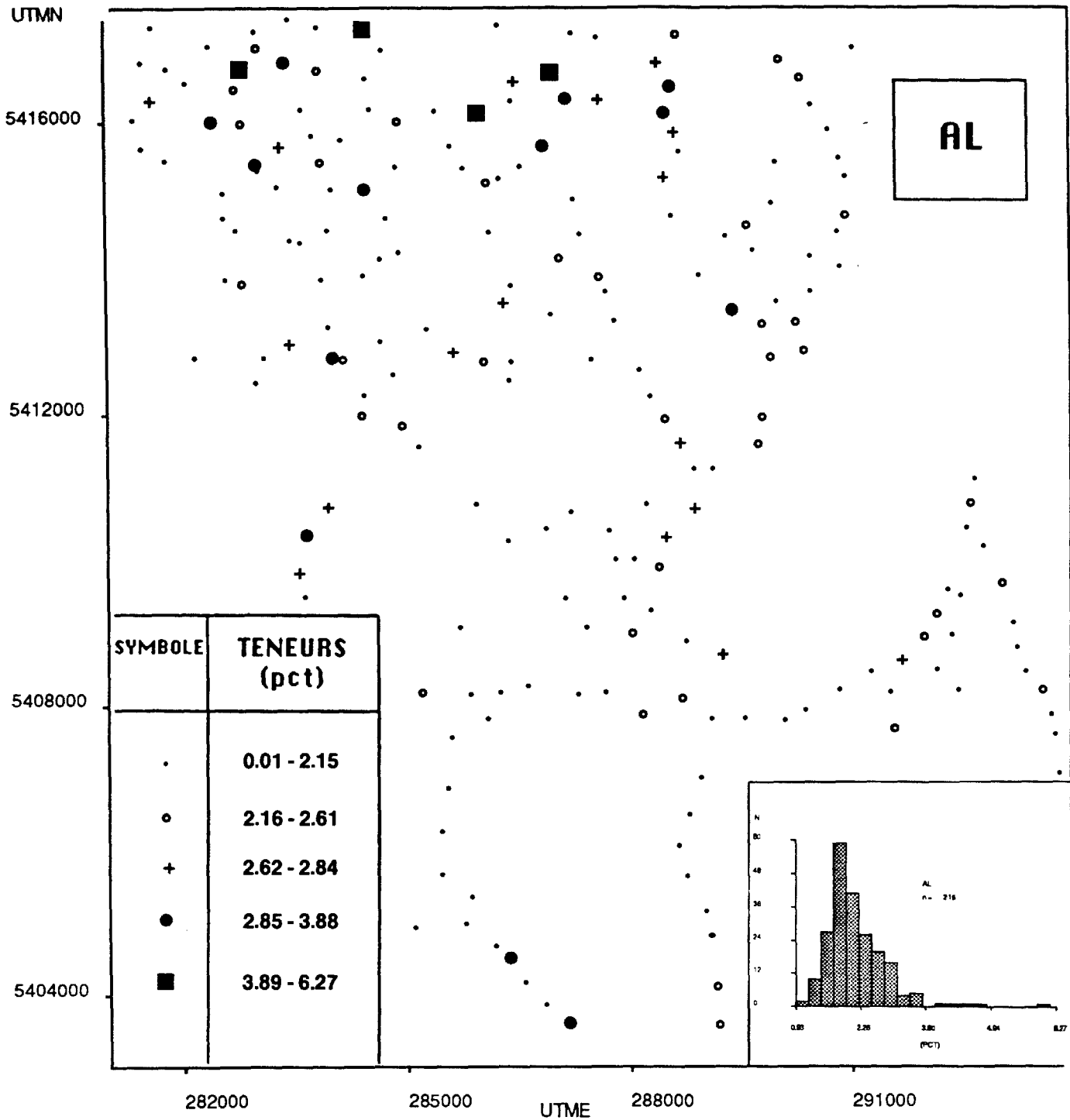


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction <80 m)

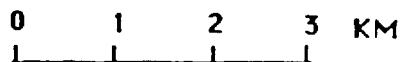


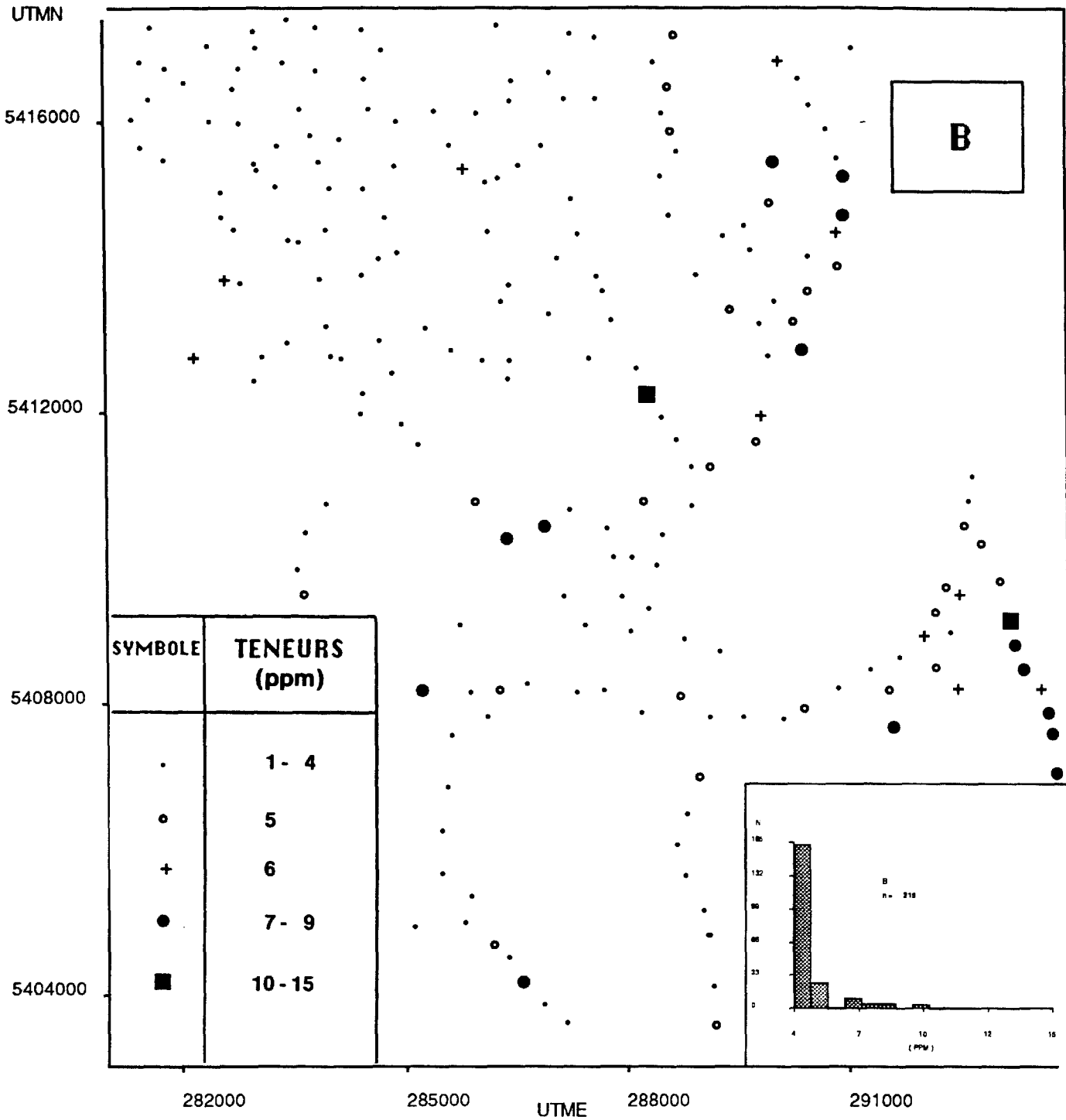


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction <80 m)

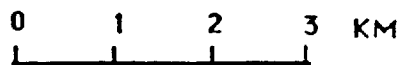


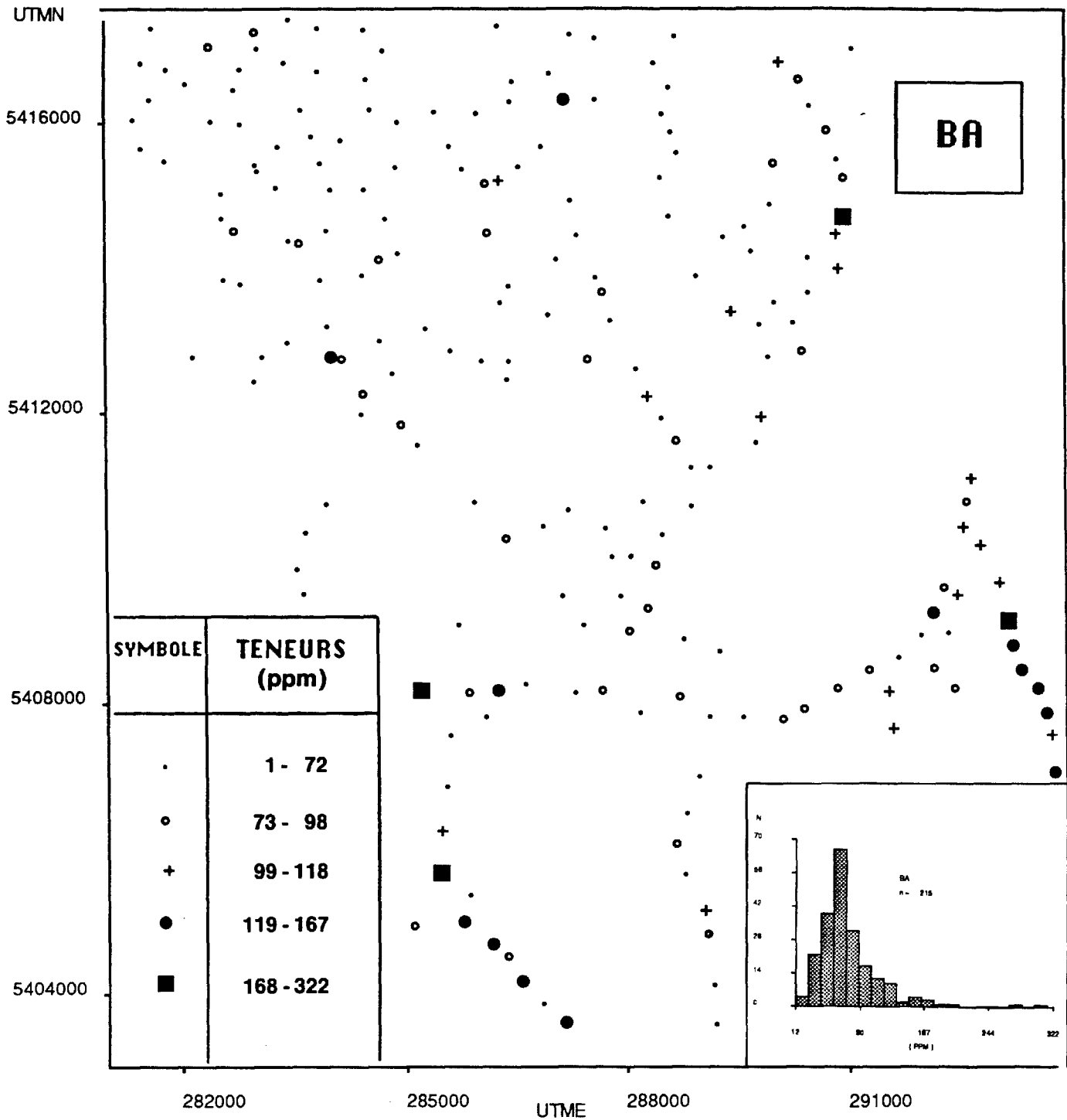


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

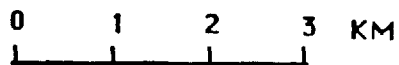


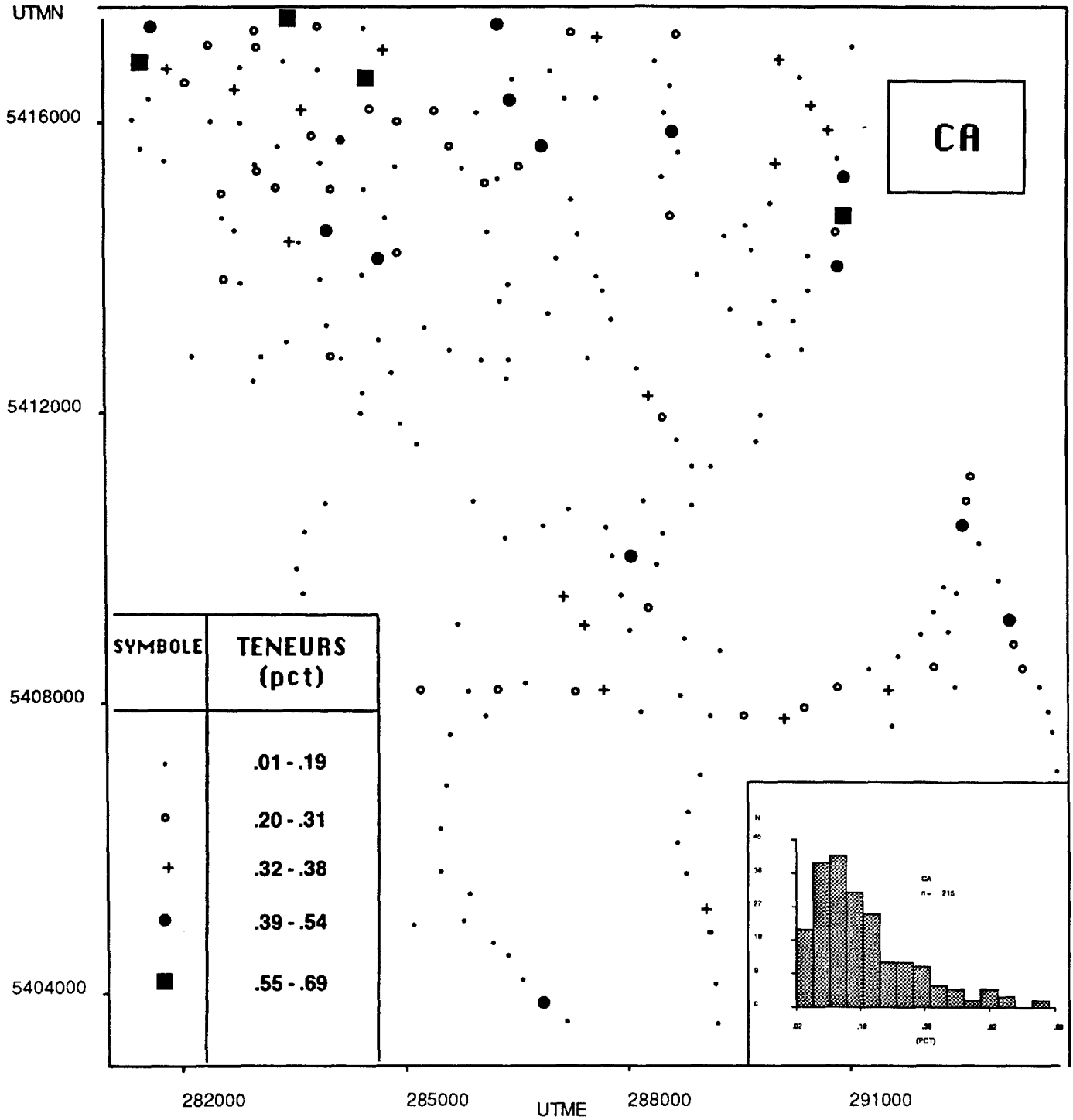


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

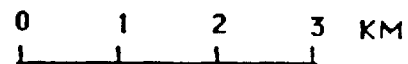


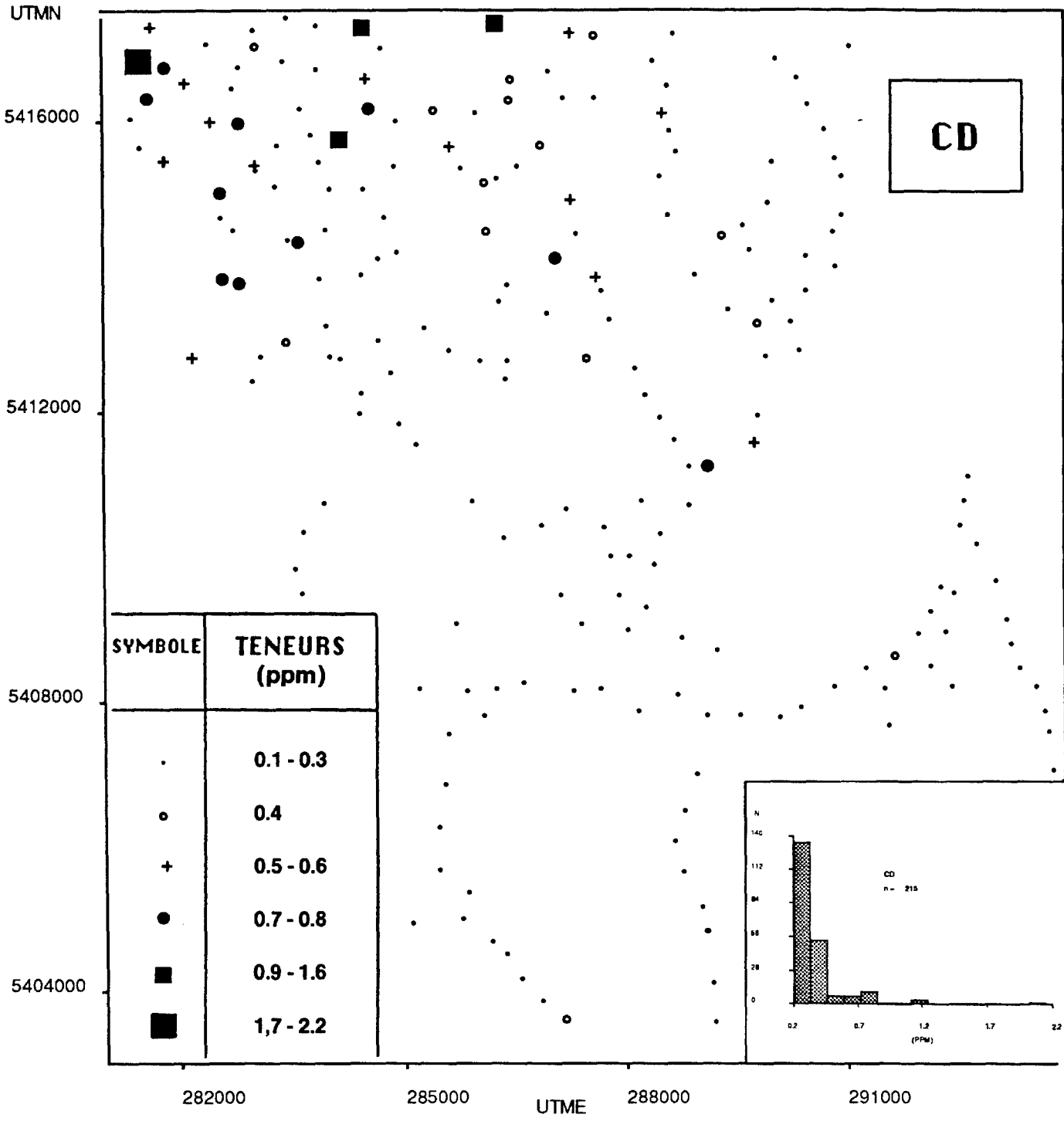


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction <80 m)

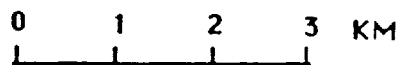


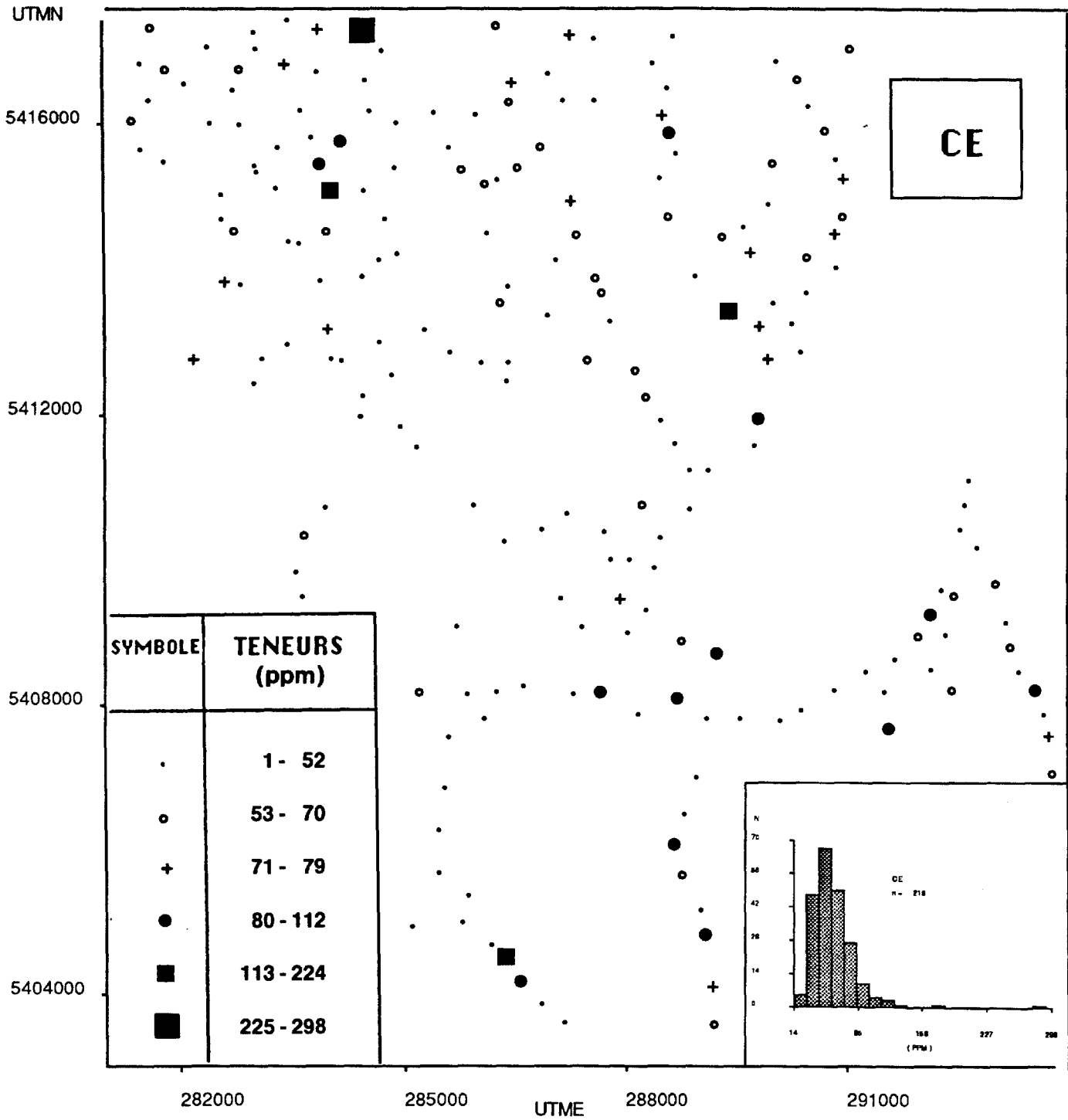


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

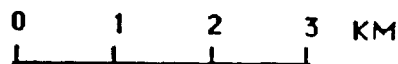


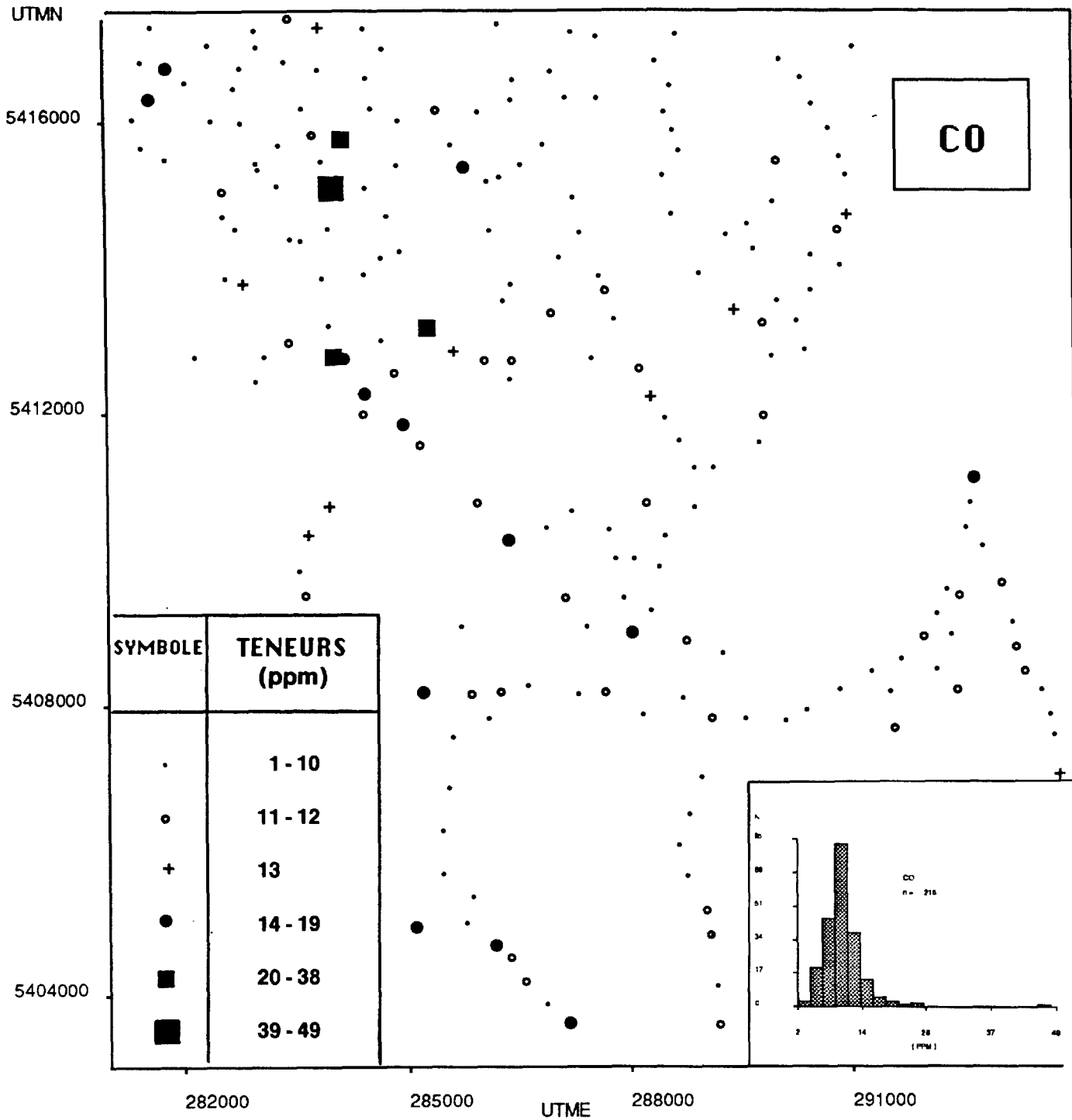


GEOCHIMIE DES SOLS

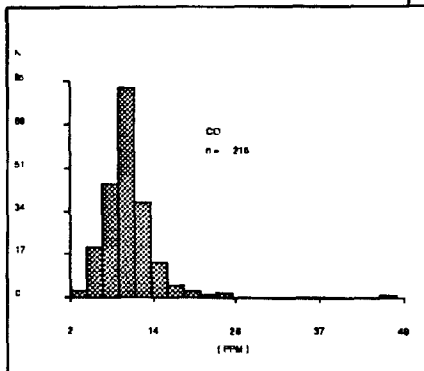
REGION DE SULLIPEK

(Horizon C; fraction < 80 m)





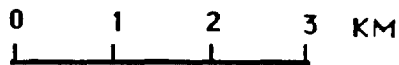
SYMBOLE	TENEURS (ppm)
.	1 - 10
○	11 - 12
+	13
●	14 - 19
■	20 - 38
■	39 - 49

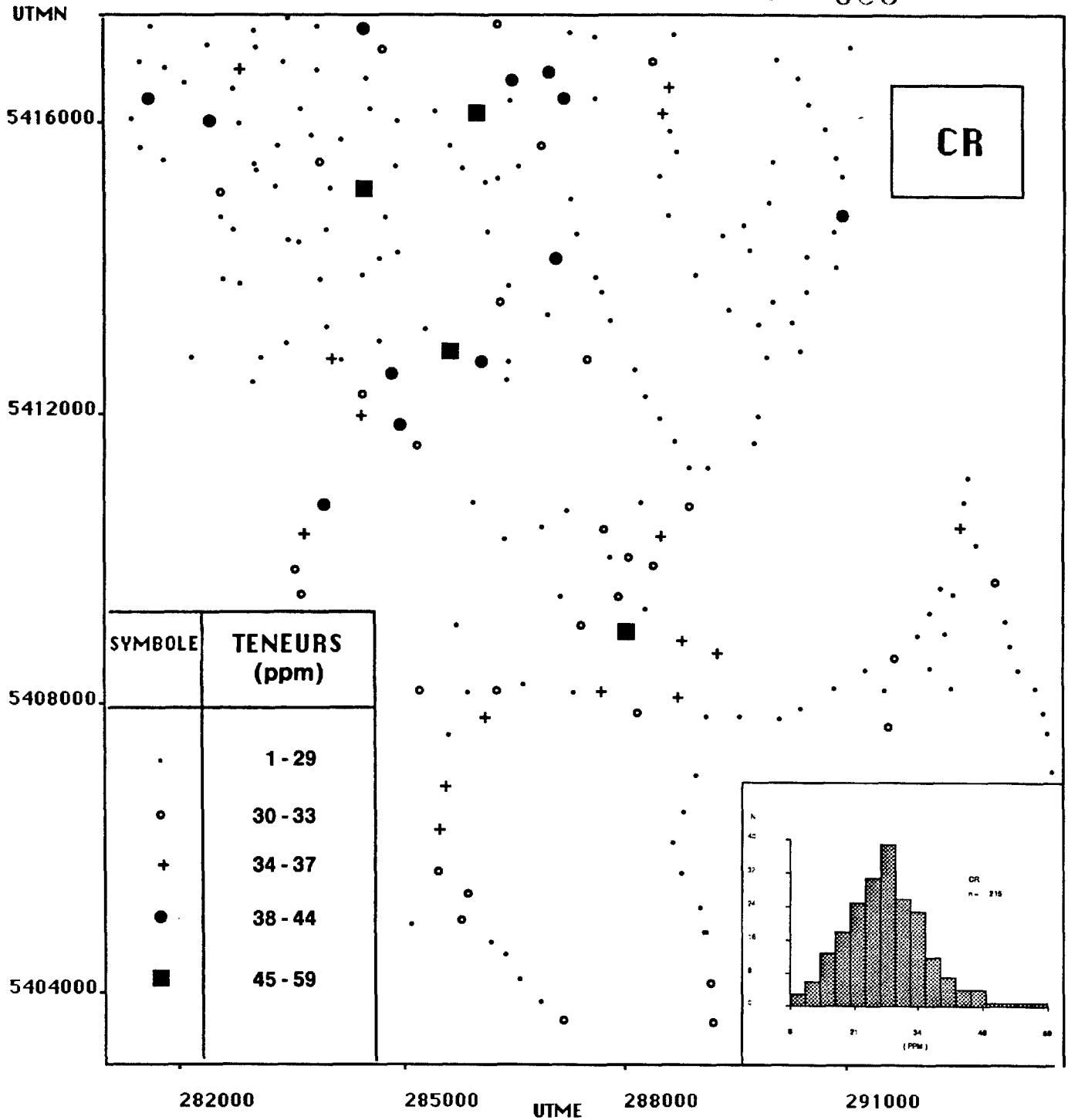


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

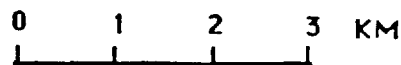


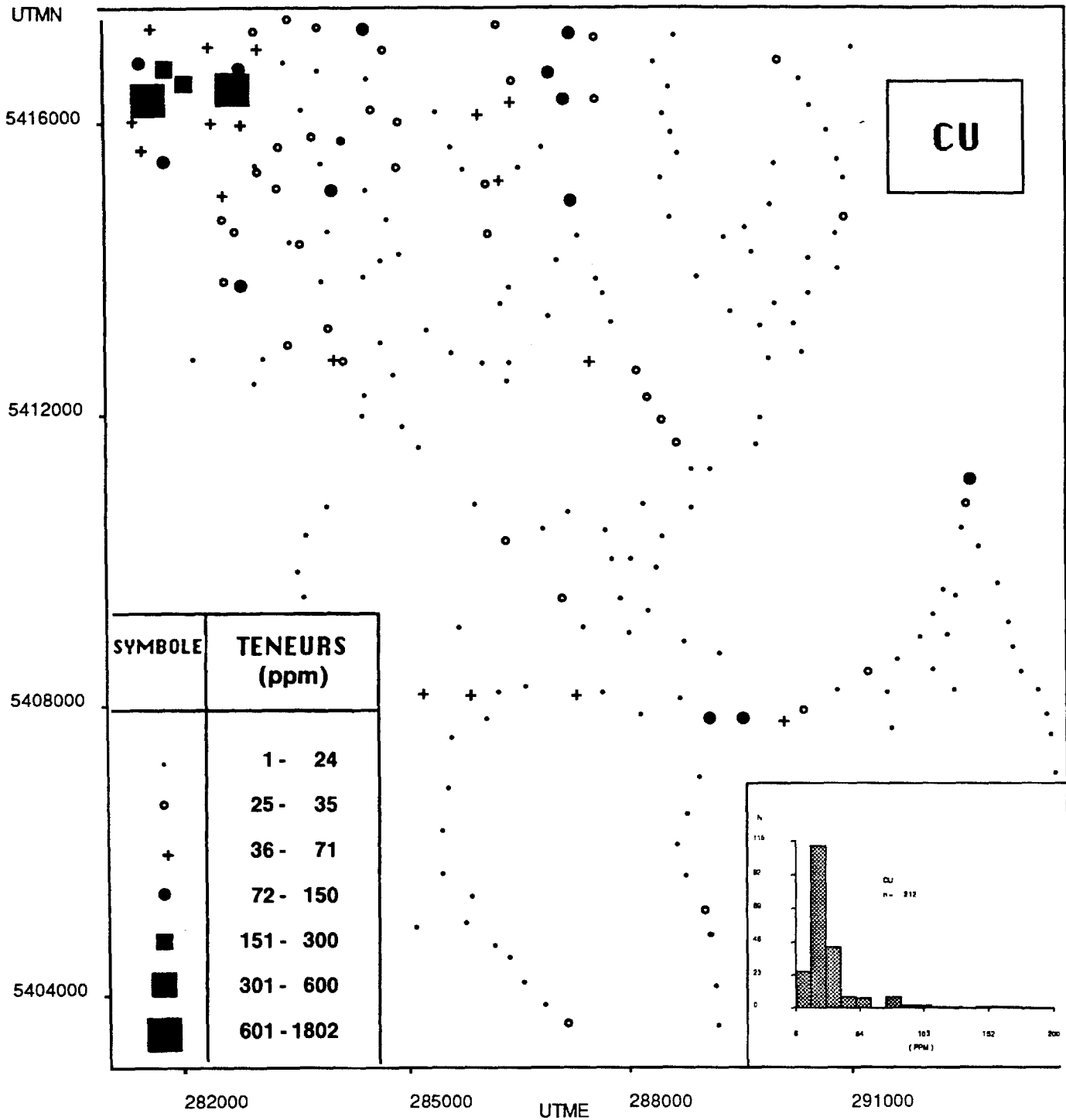


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

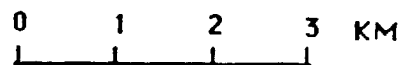


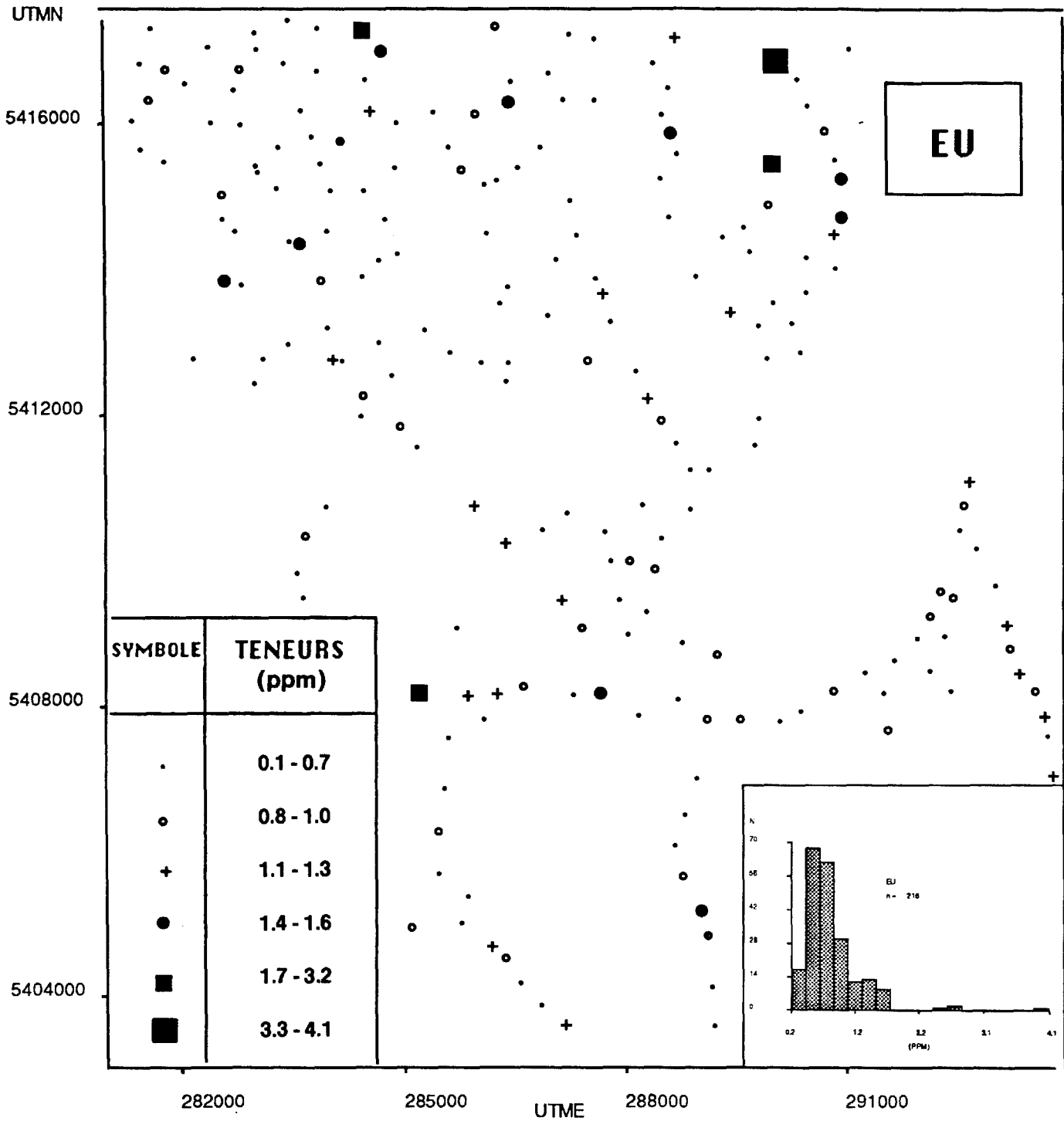


GEOCHIMIE DES SOLS

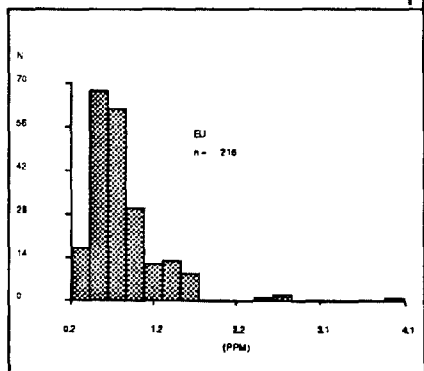
REGION DE SULLIPEK

(Horizon C; fraction <80 m)





SYMBOLE	TENEURS (ppm)
.	0.1 - 0.7
○	0.8 - 1.0
+	1.1 - 1.3
●	1.4 - 1.6
■	1.7 - 3.2
■	3.3 - 4.1

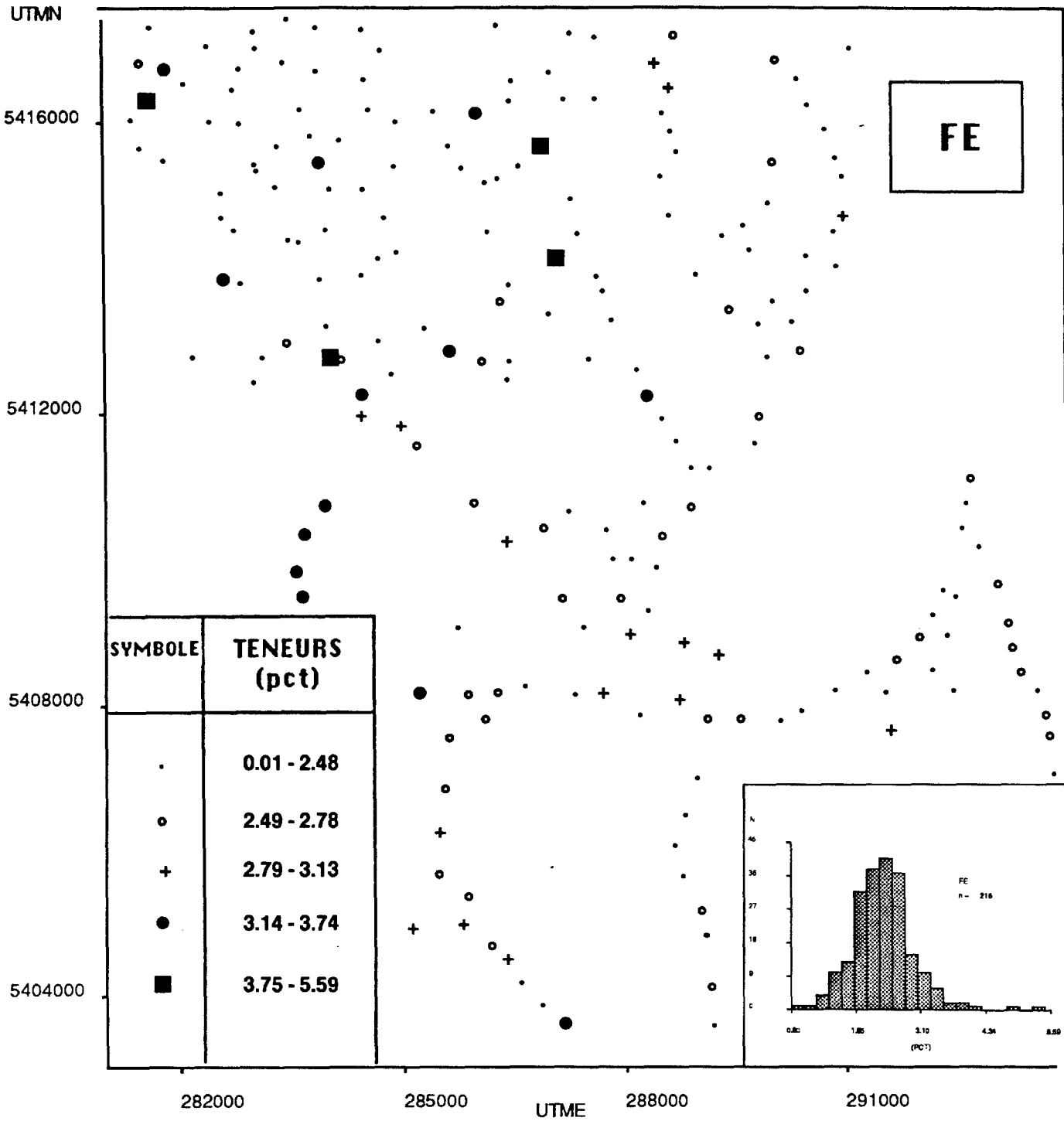


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)



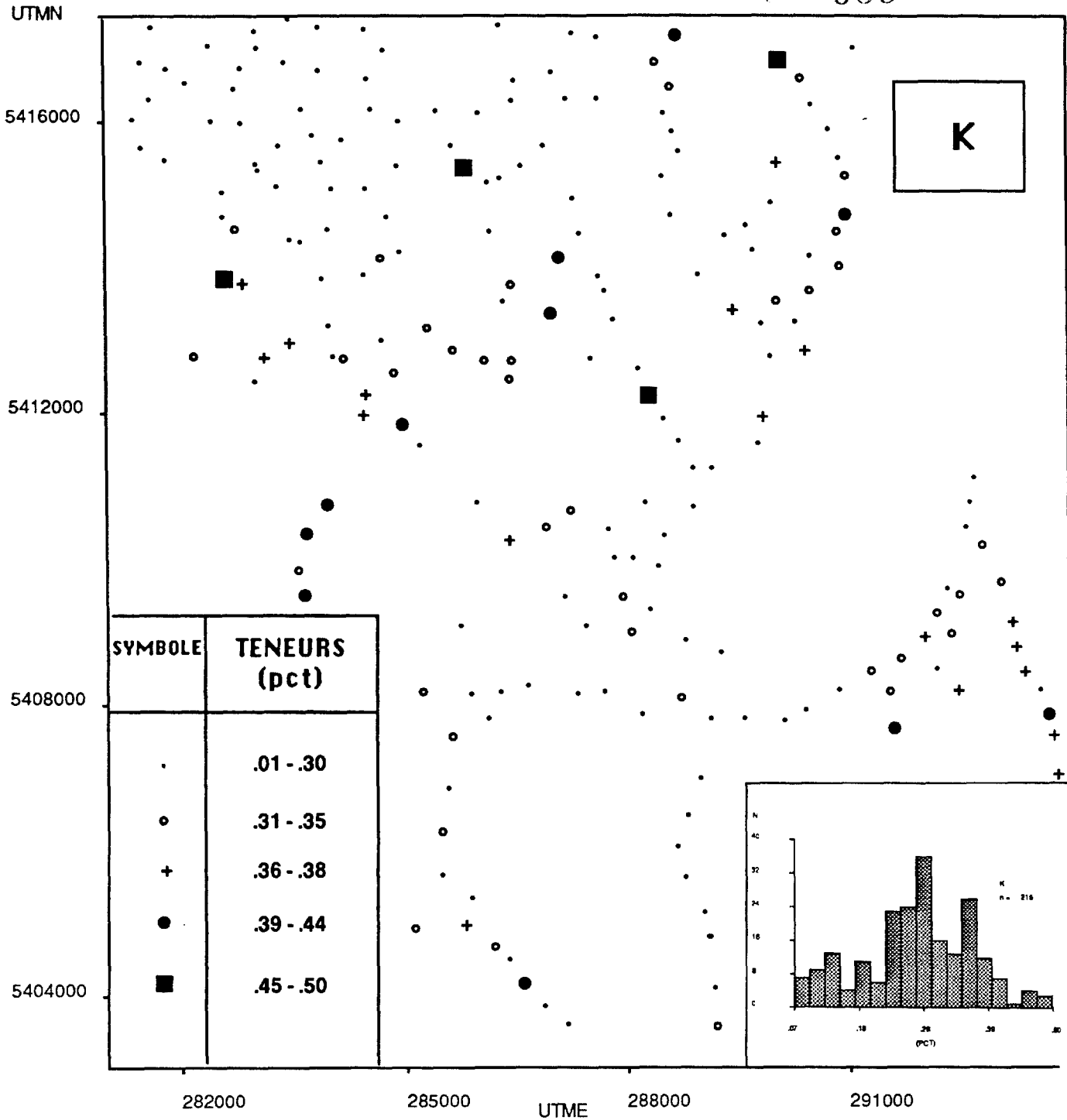


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

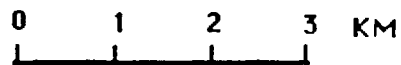


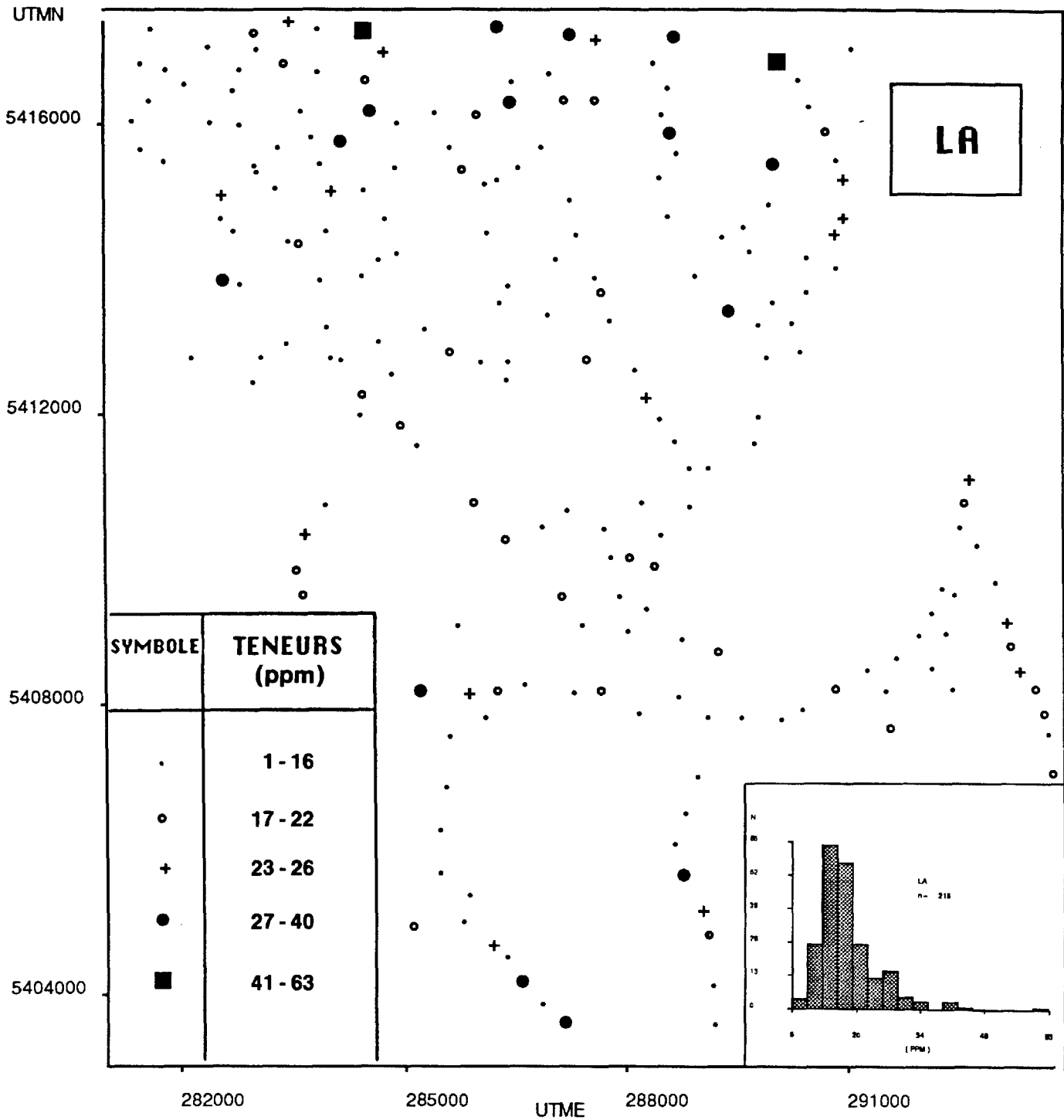


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

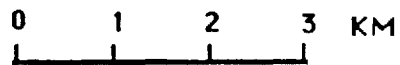


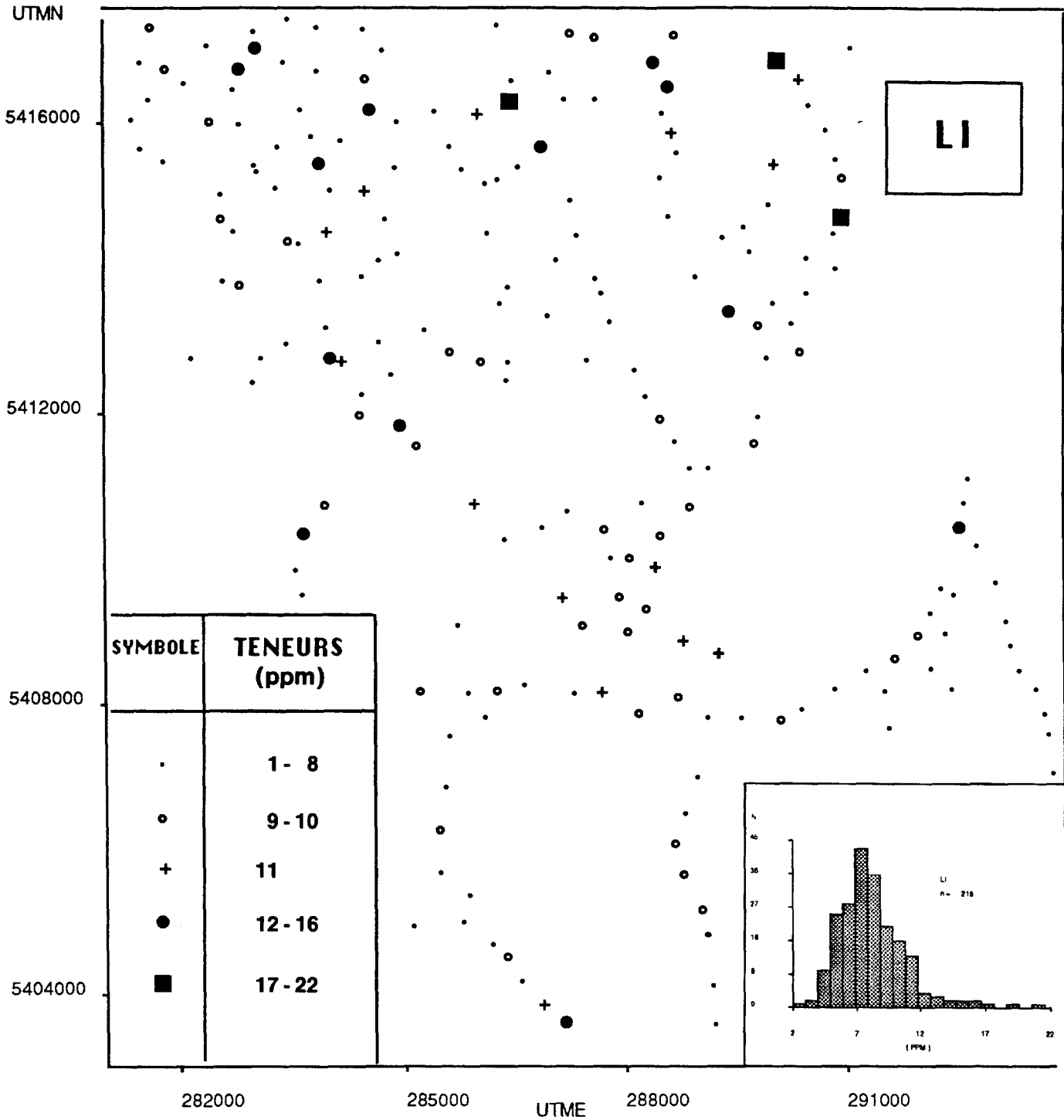


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

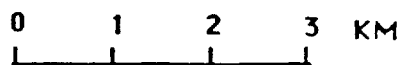


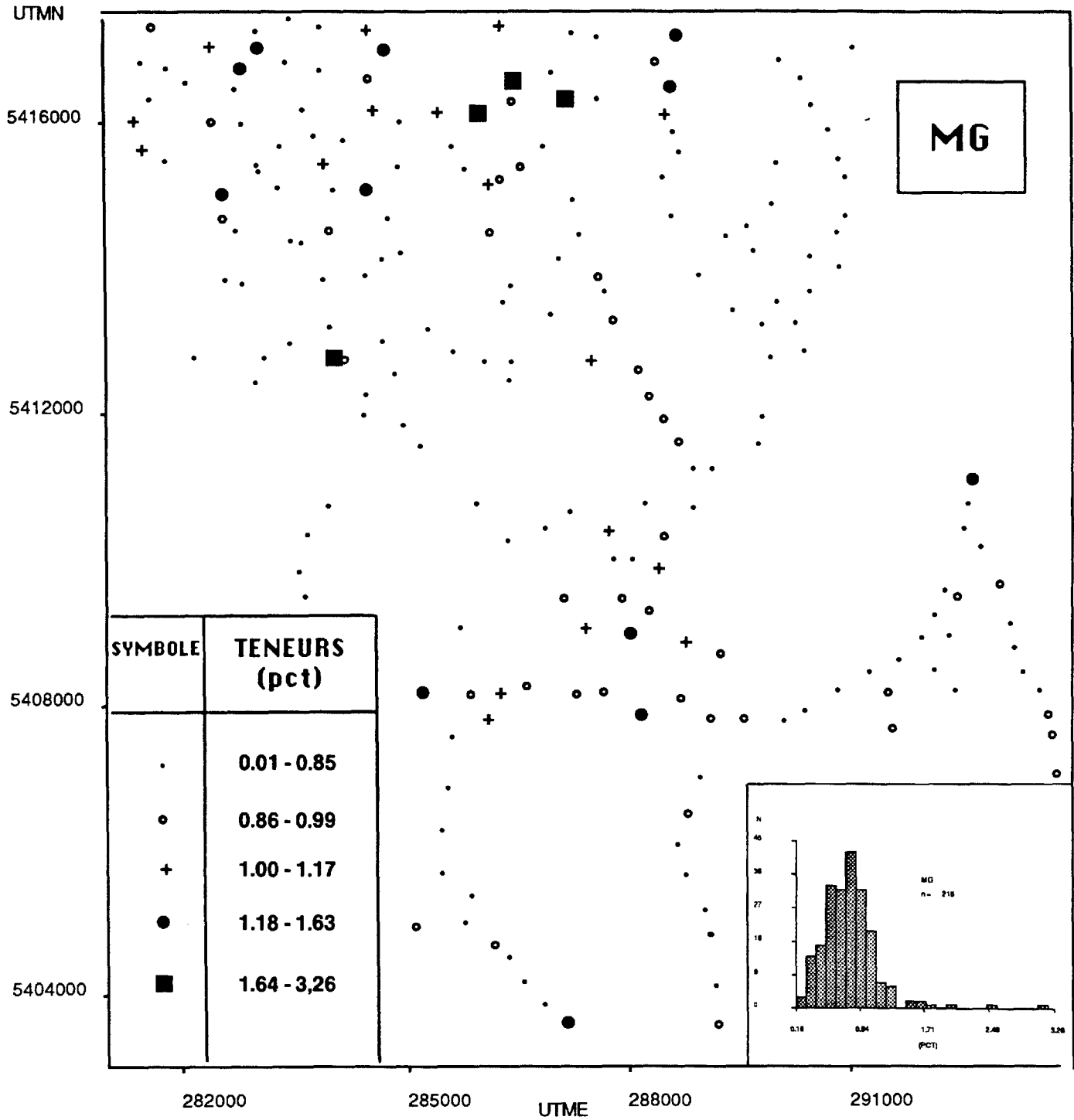


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)



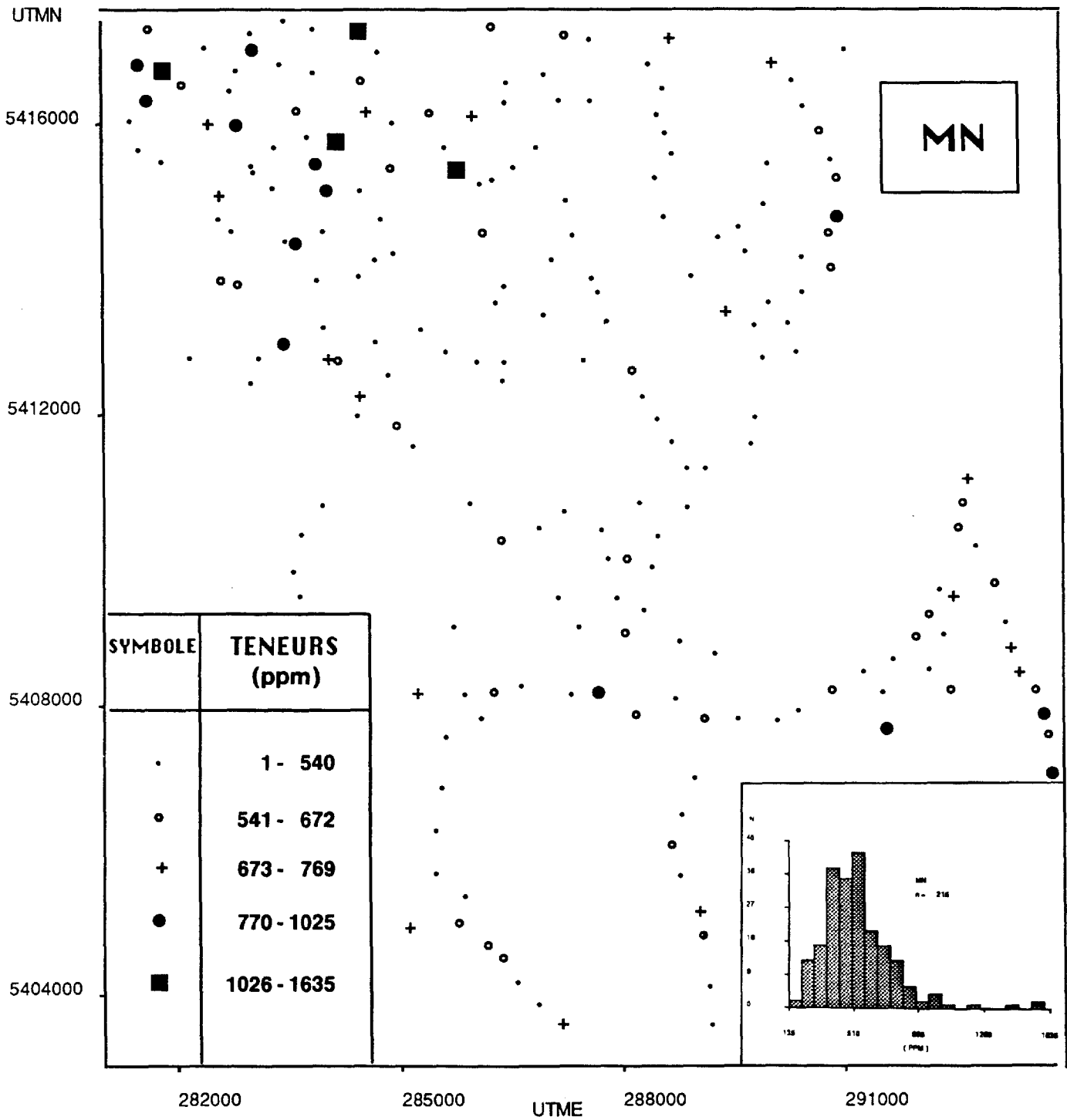


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

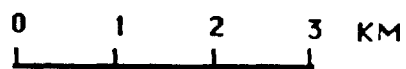


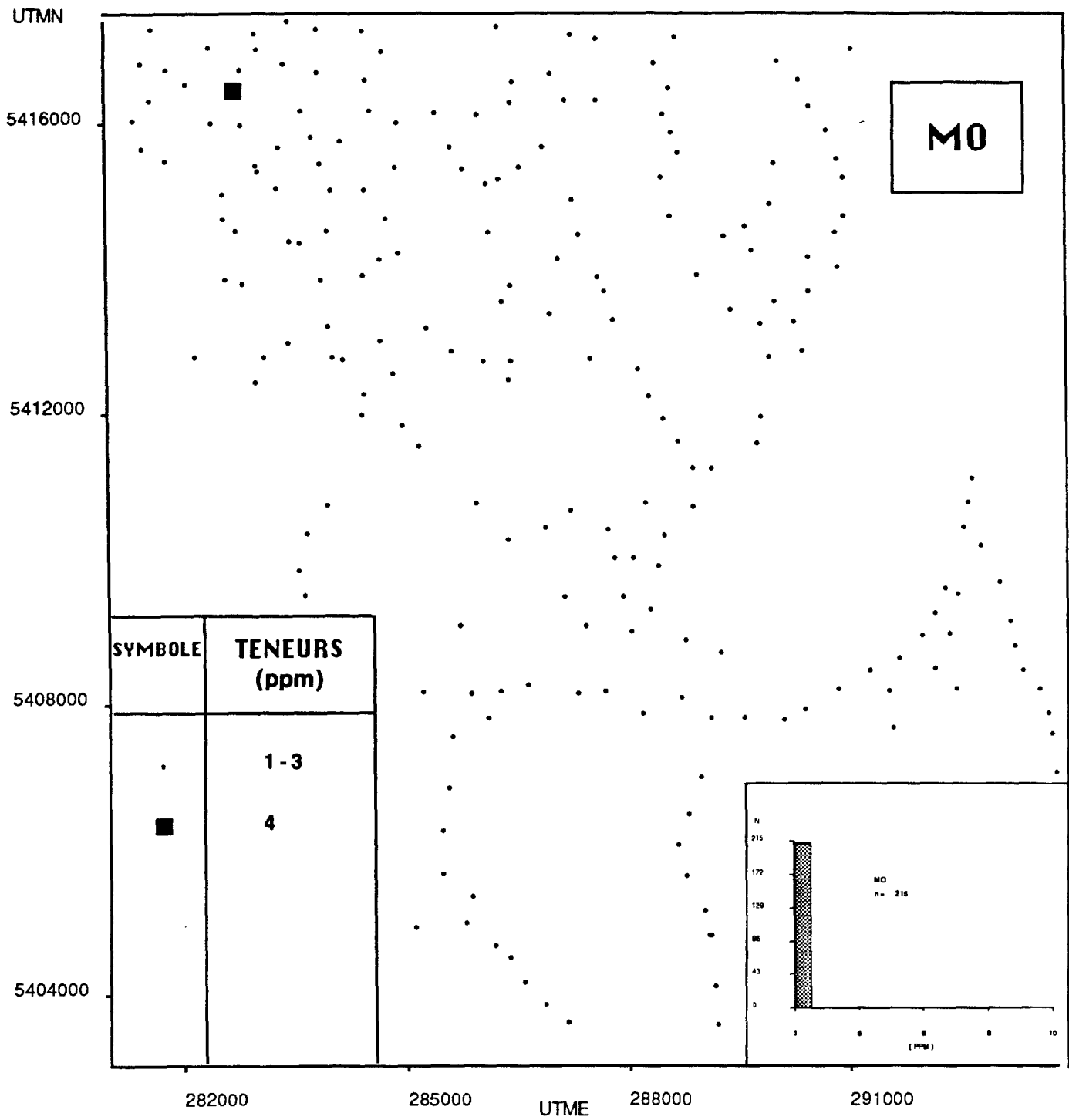


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)





GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)



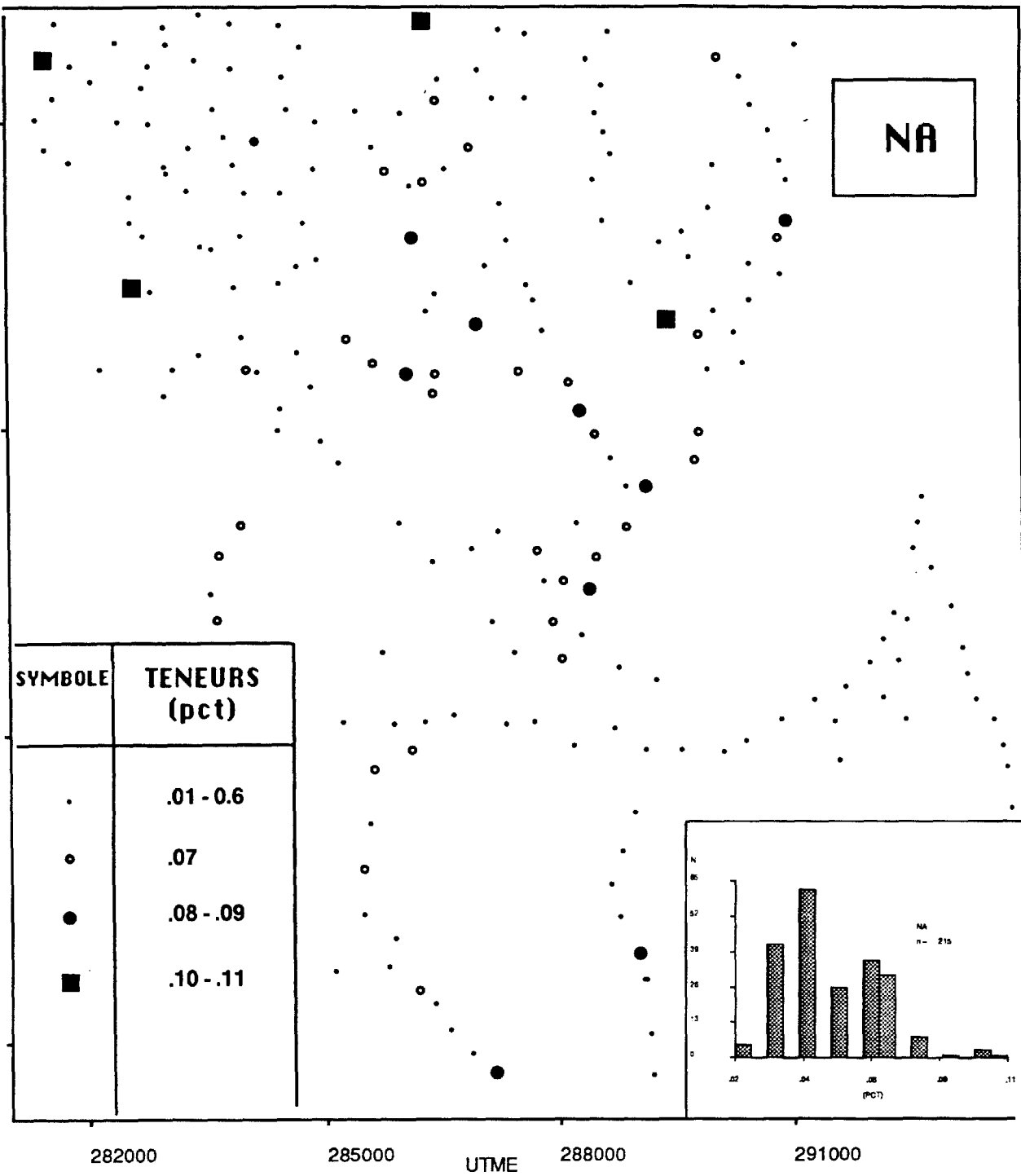
UTMN

5416000

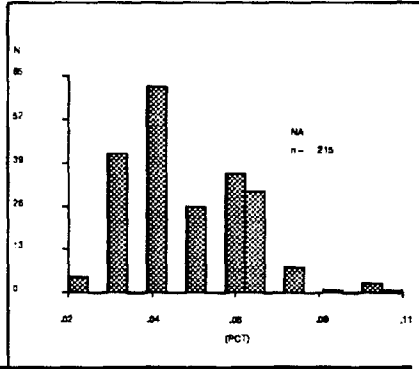
5412000

5408000

5404000



SYMBOLE	TENEURS (pct)
.	.01 - .06
○	.07
●	.08 - .09
■	.10 - .11



282000

285000

UTME

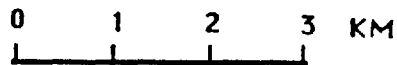
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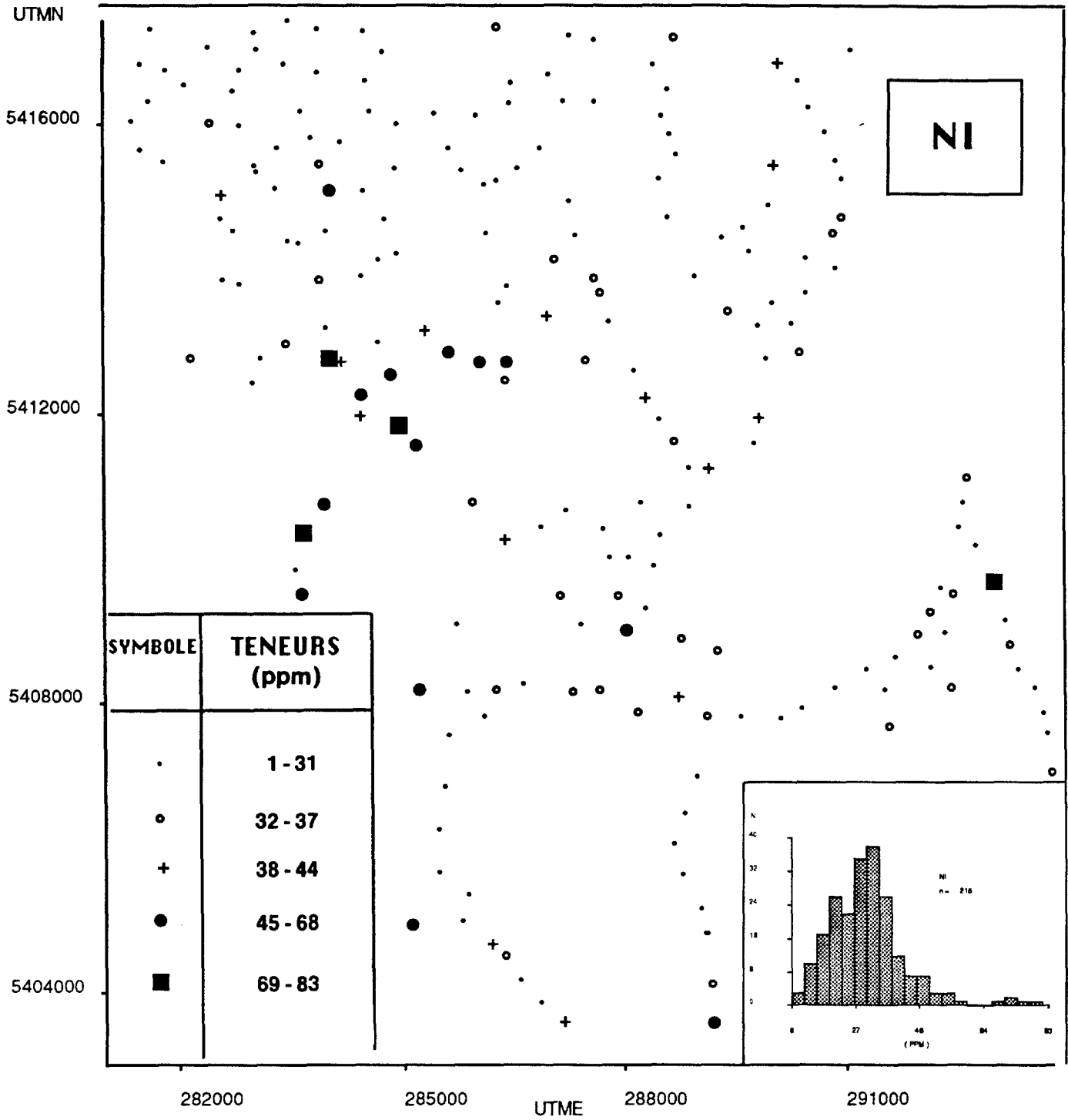
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GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

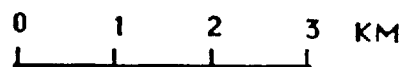


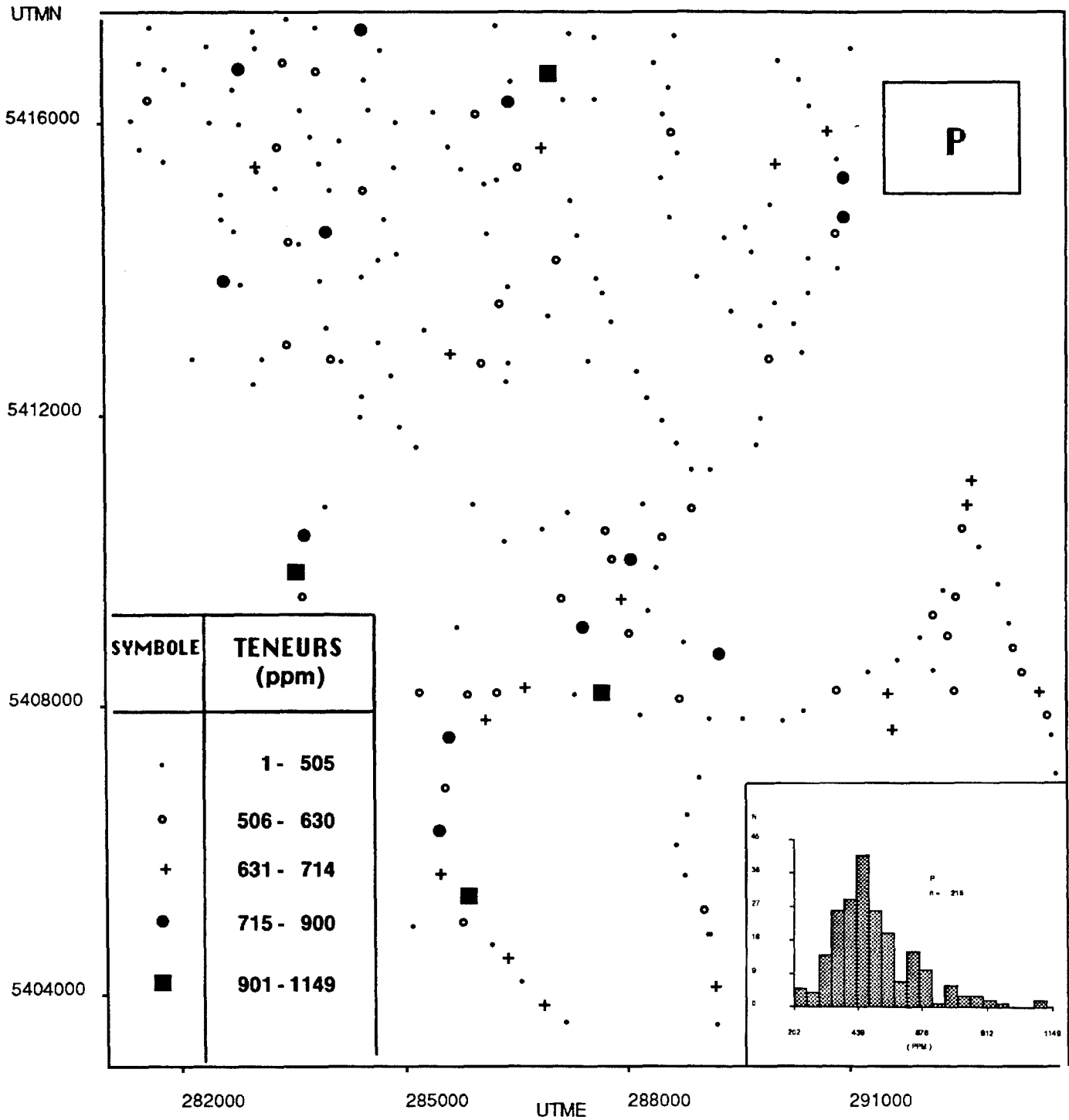


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

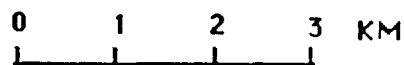


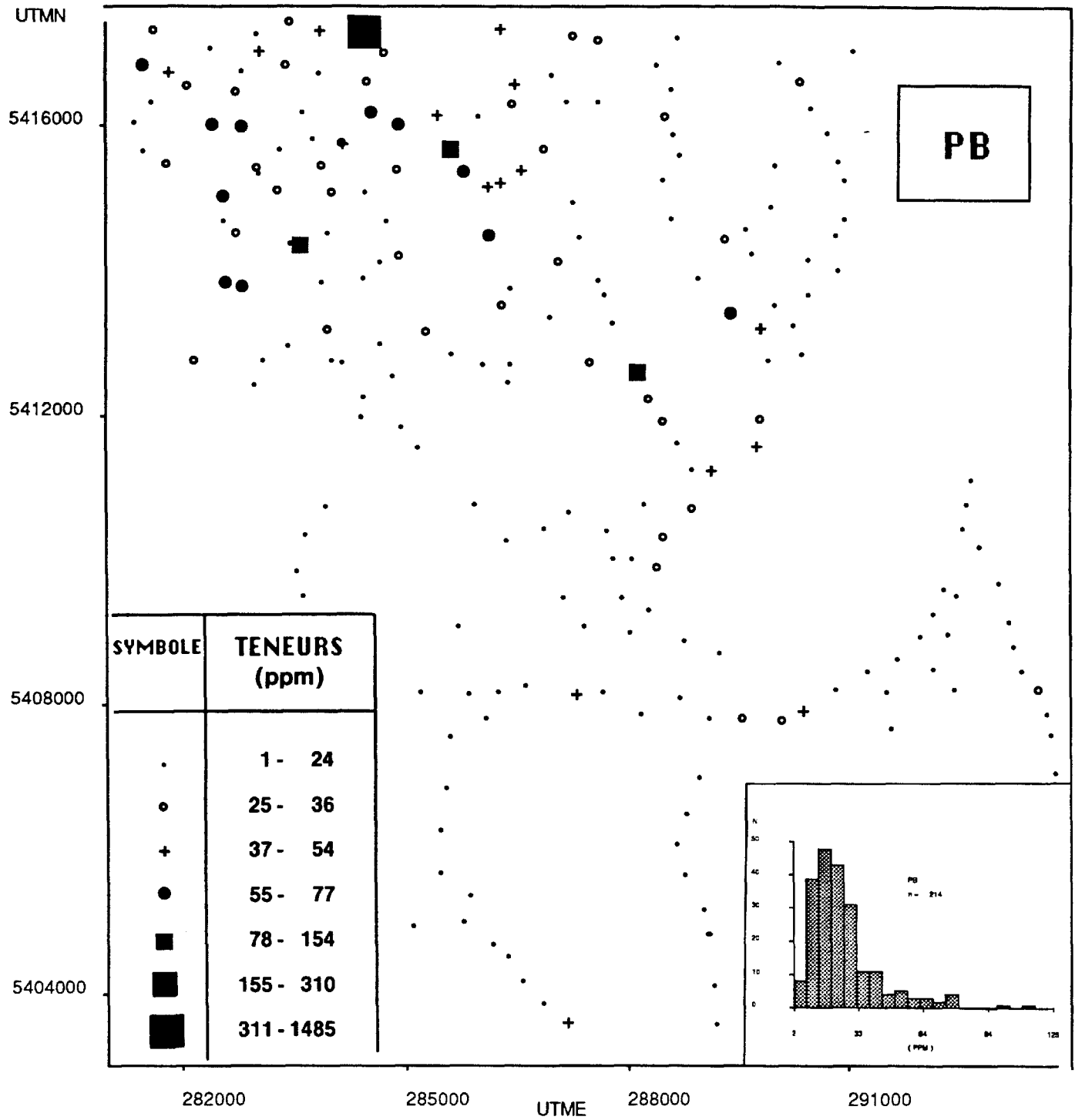


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

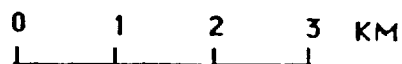


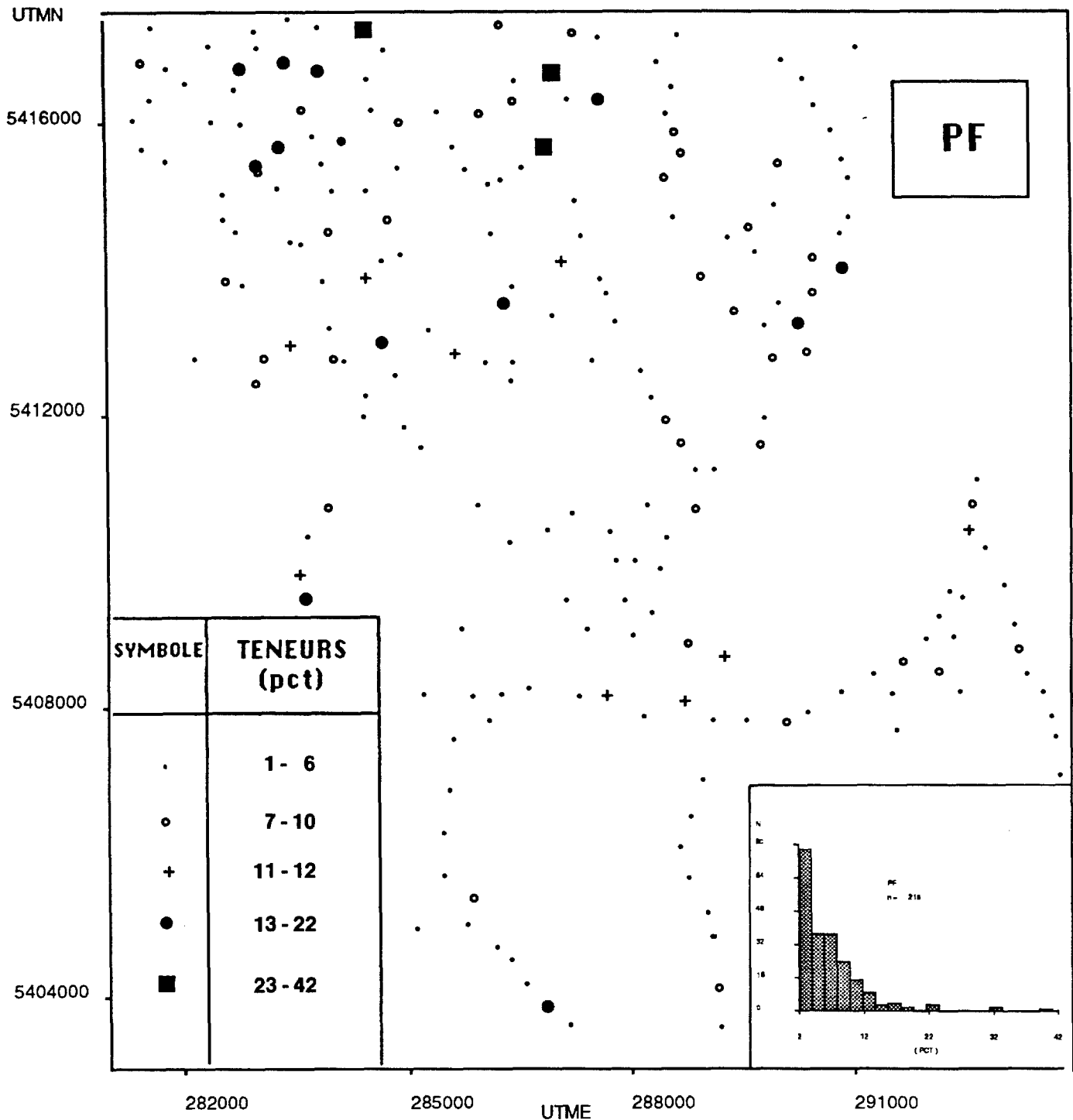


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

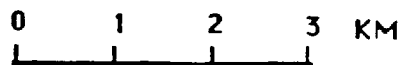


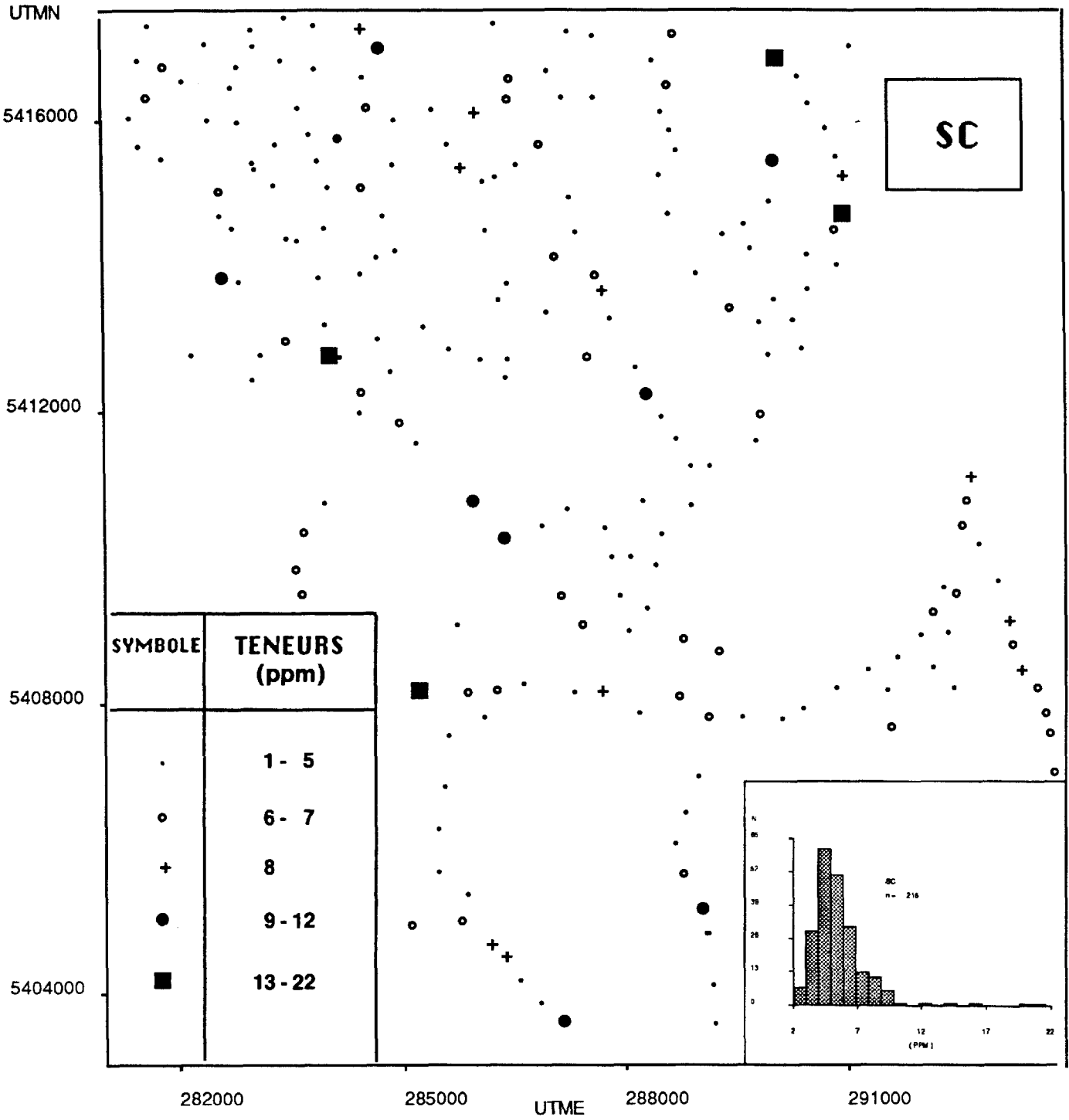


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

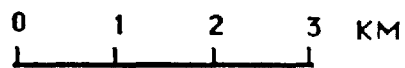


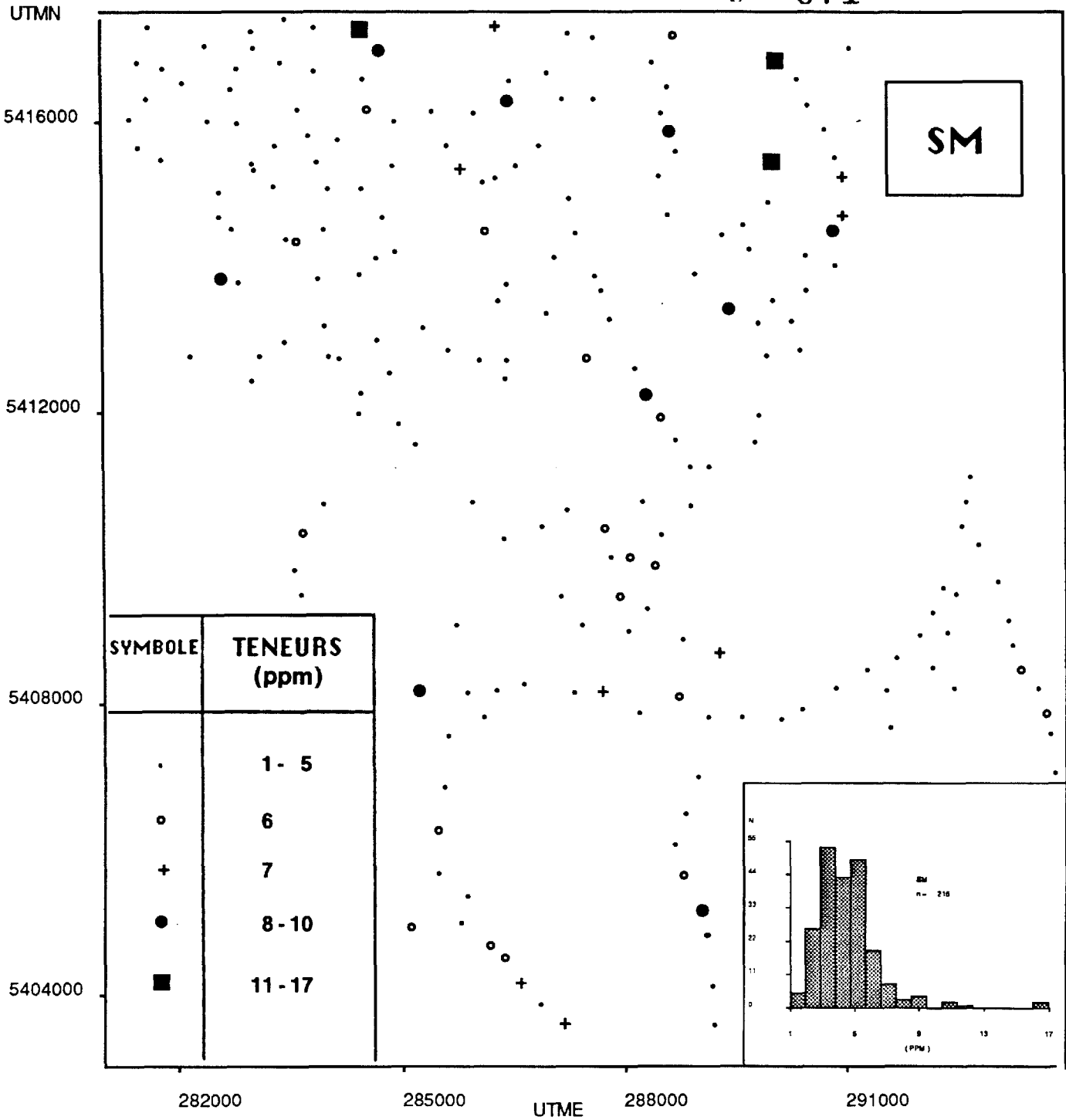


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

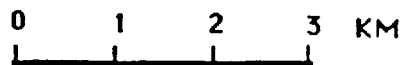


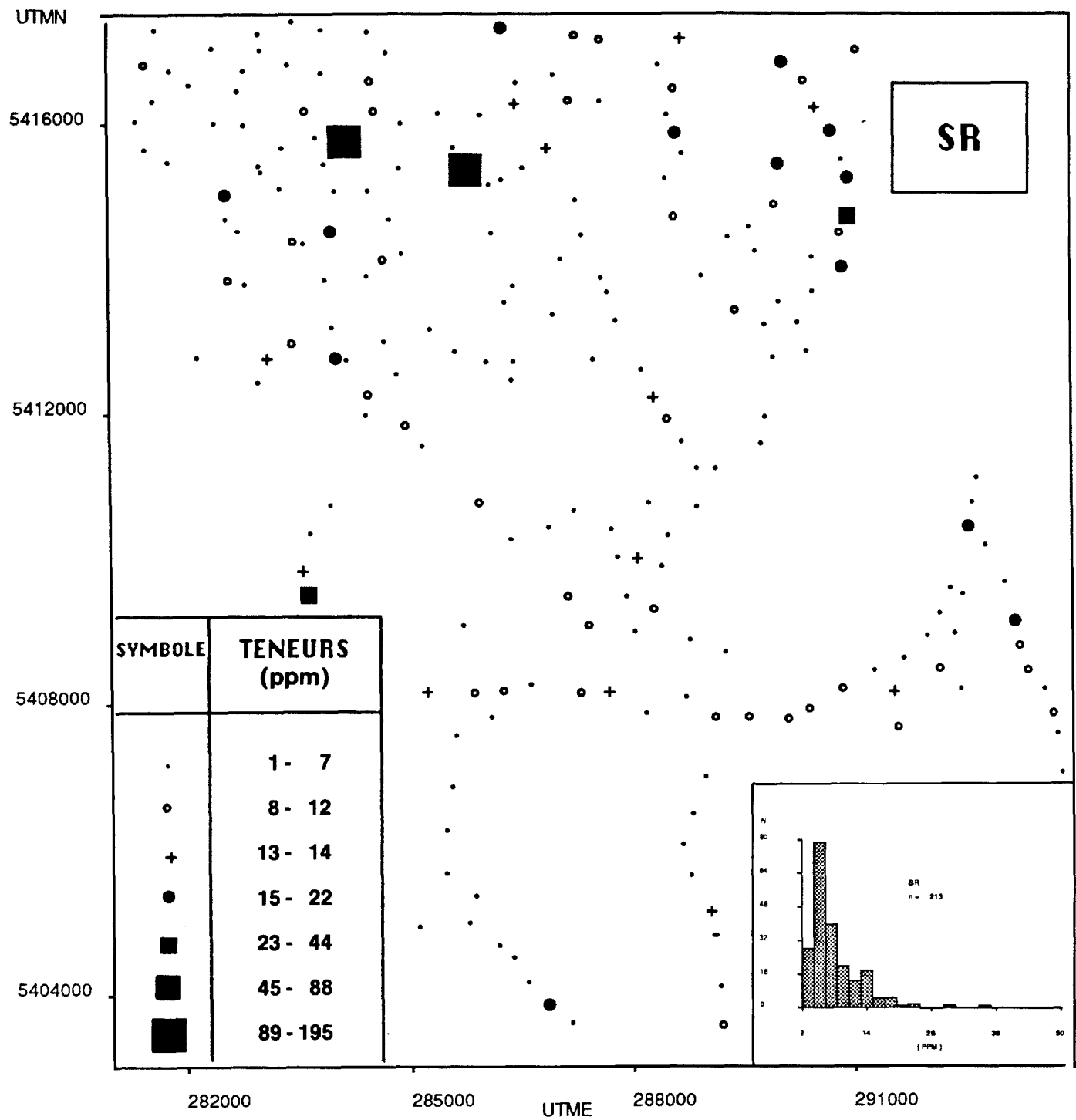


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

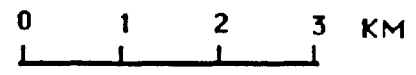


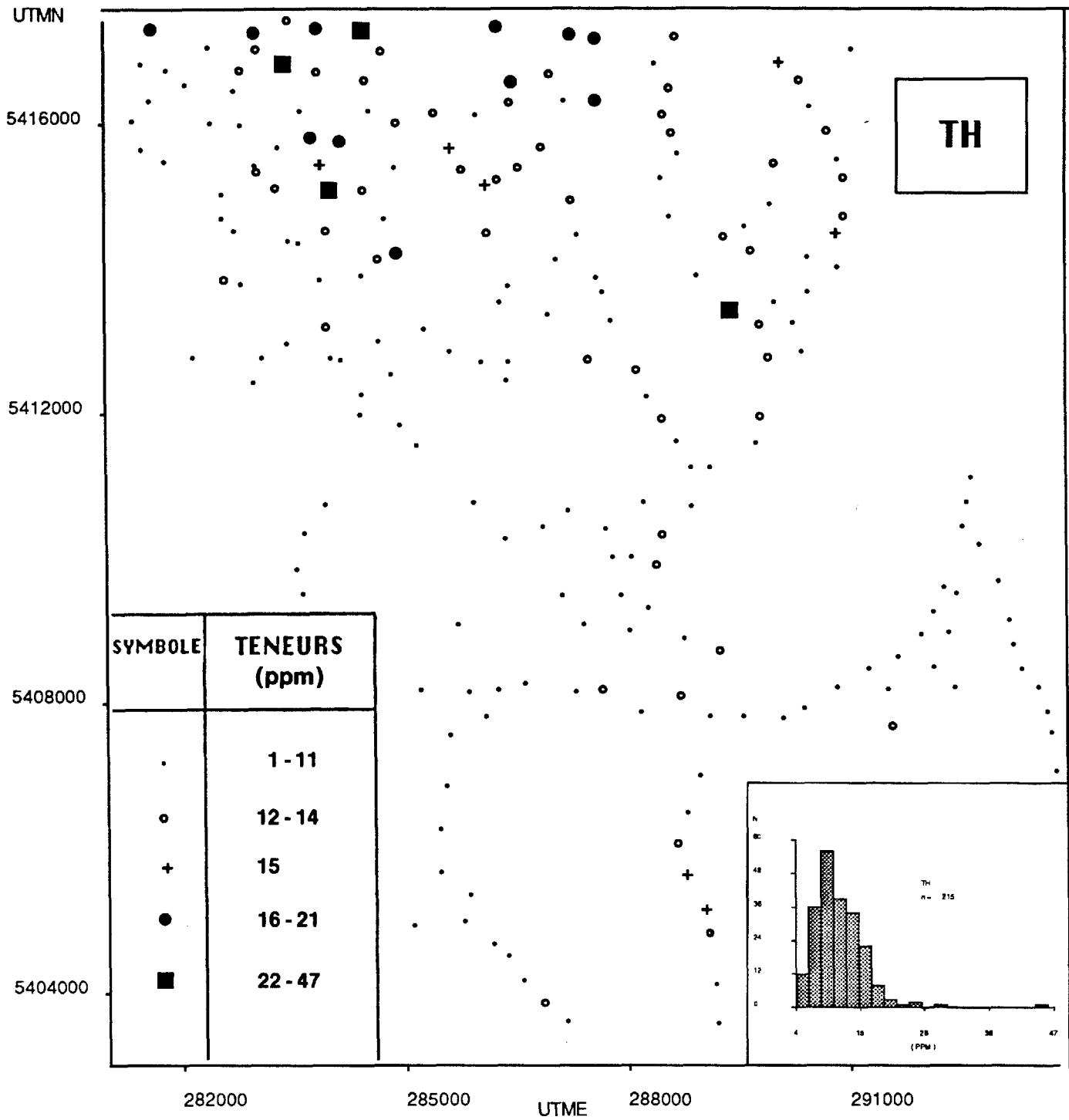


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)



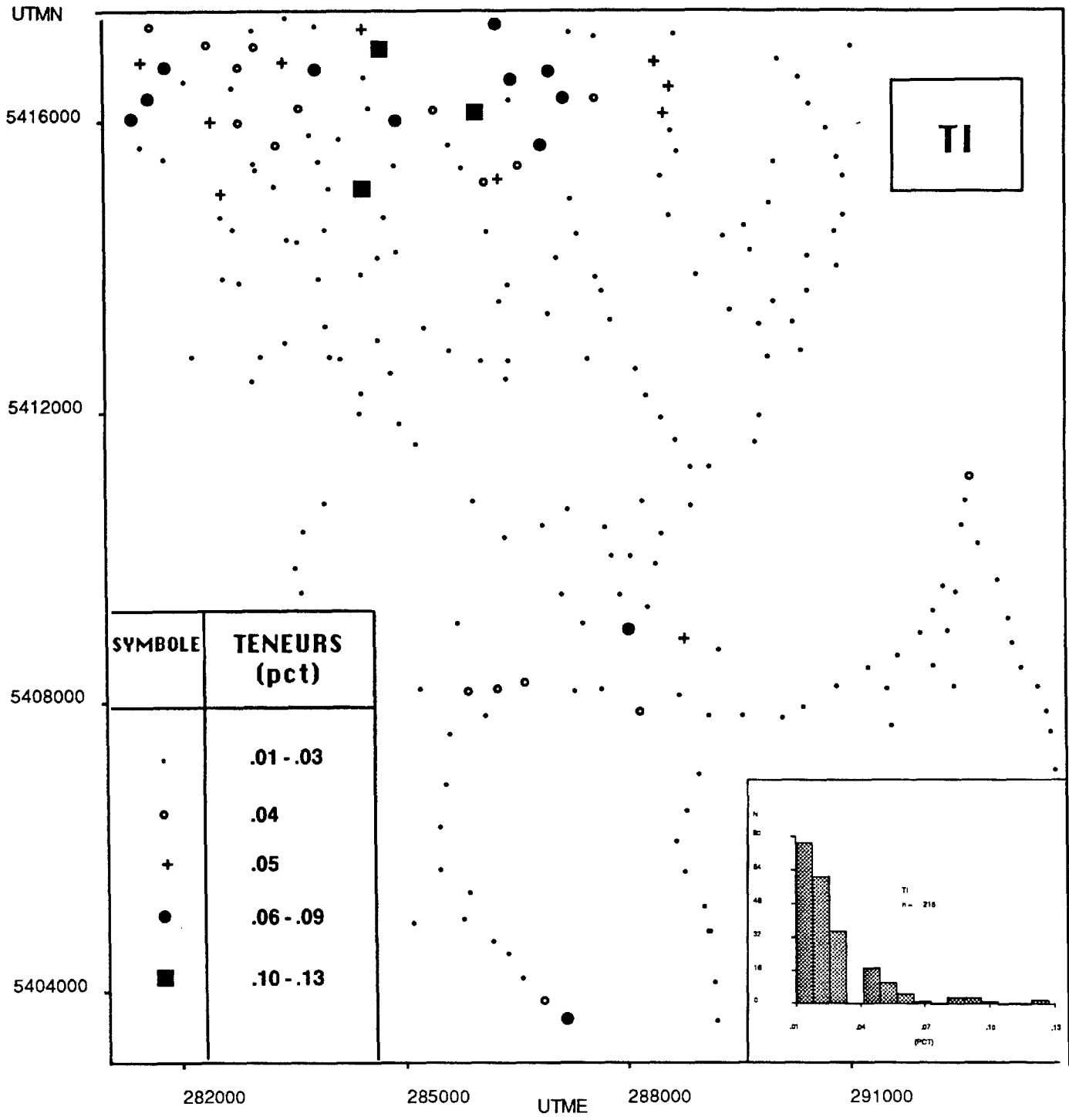


GEOCHIMIE DES SOLS

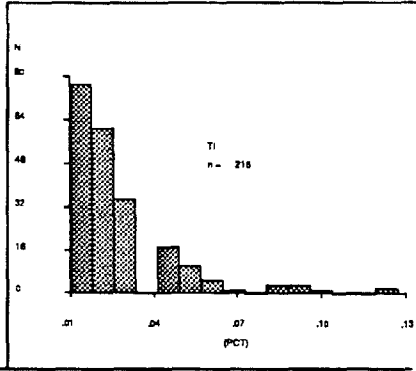
REGION DE SULLIPEK

(Horizon C; fraction < 80 m)





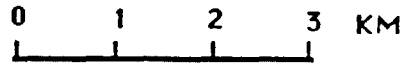
SYMBOLE	TENEURS (pct)
.	.01 - .03
o	.04
+	.05
●	.06 - .09
■	.10 - .13

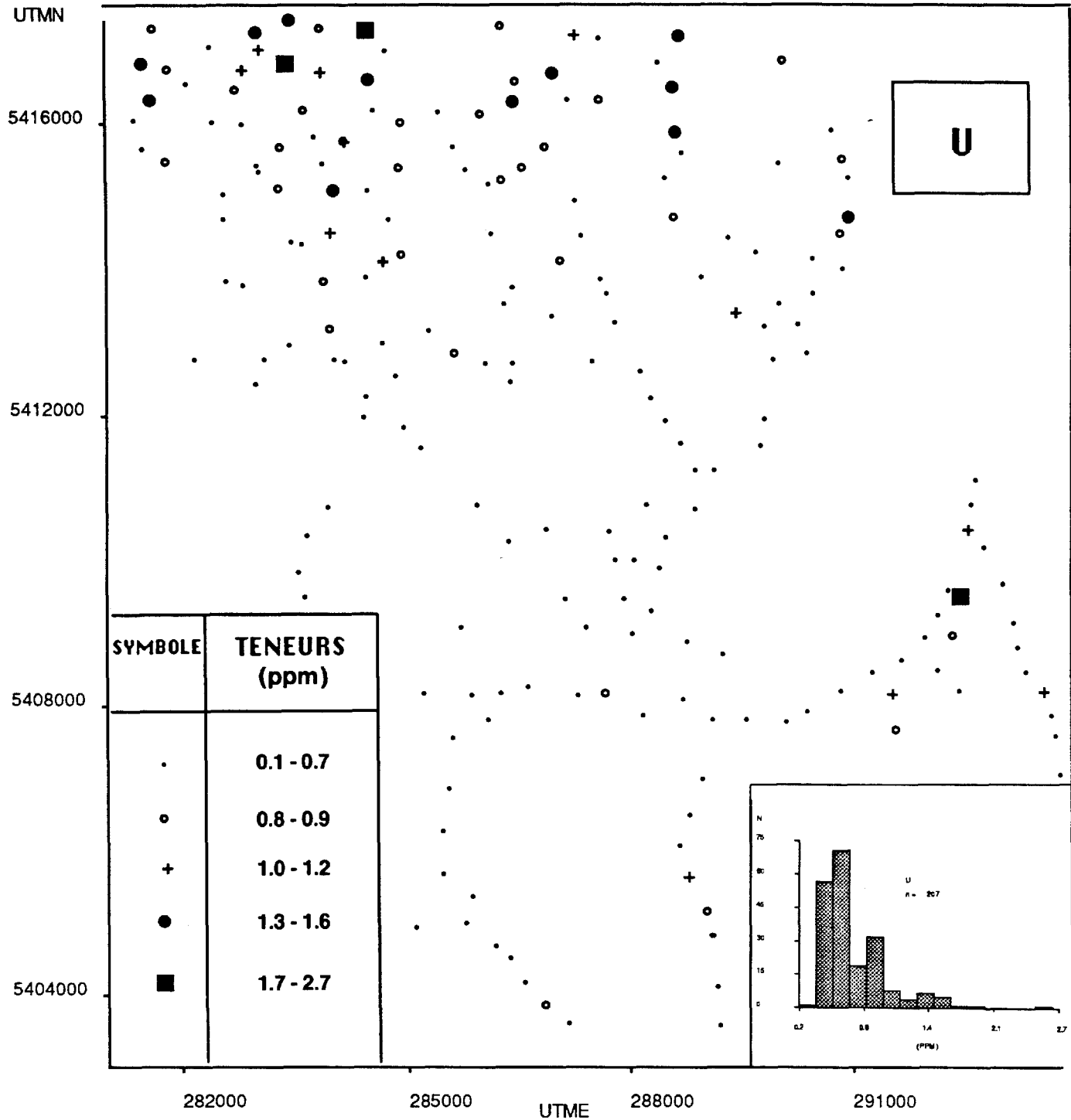


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)



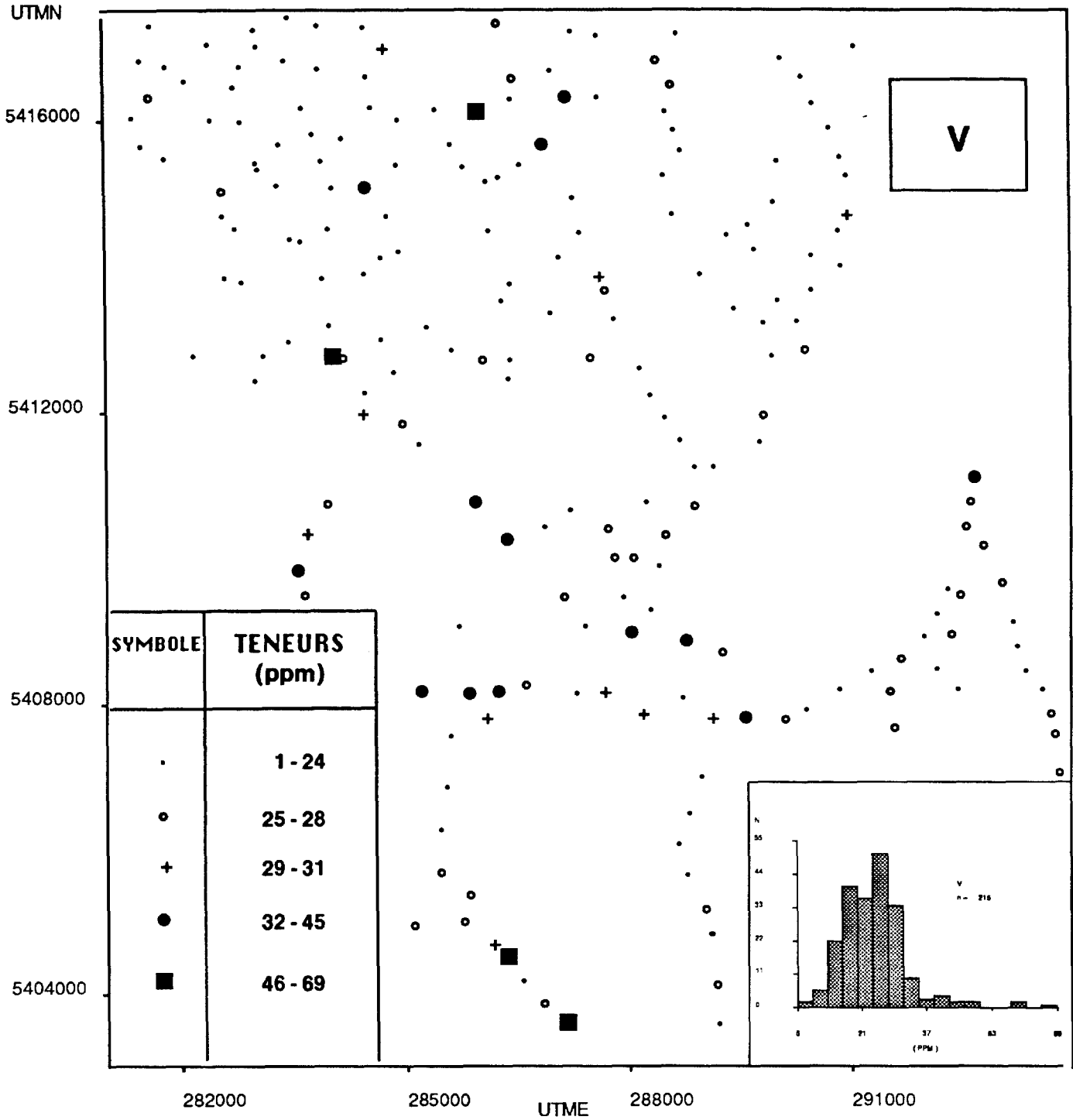


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

0 1 2 3 KM

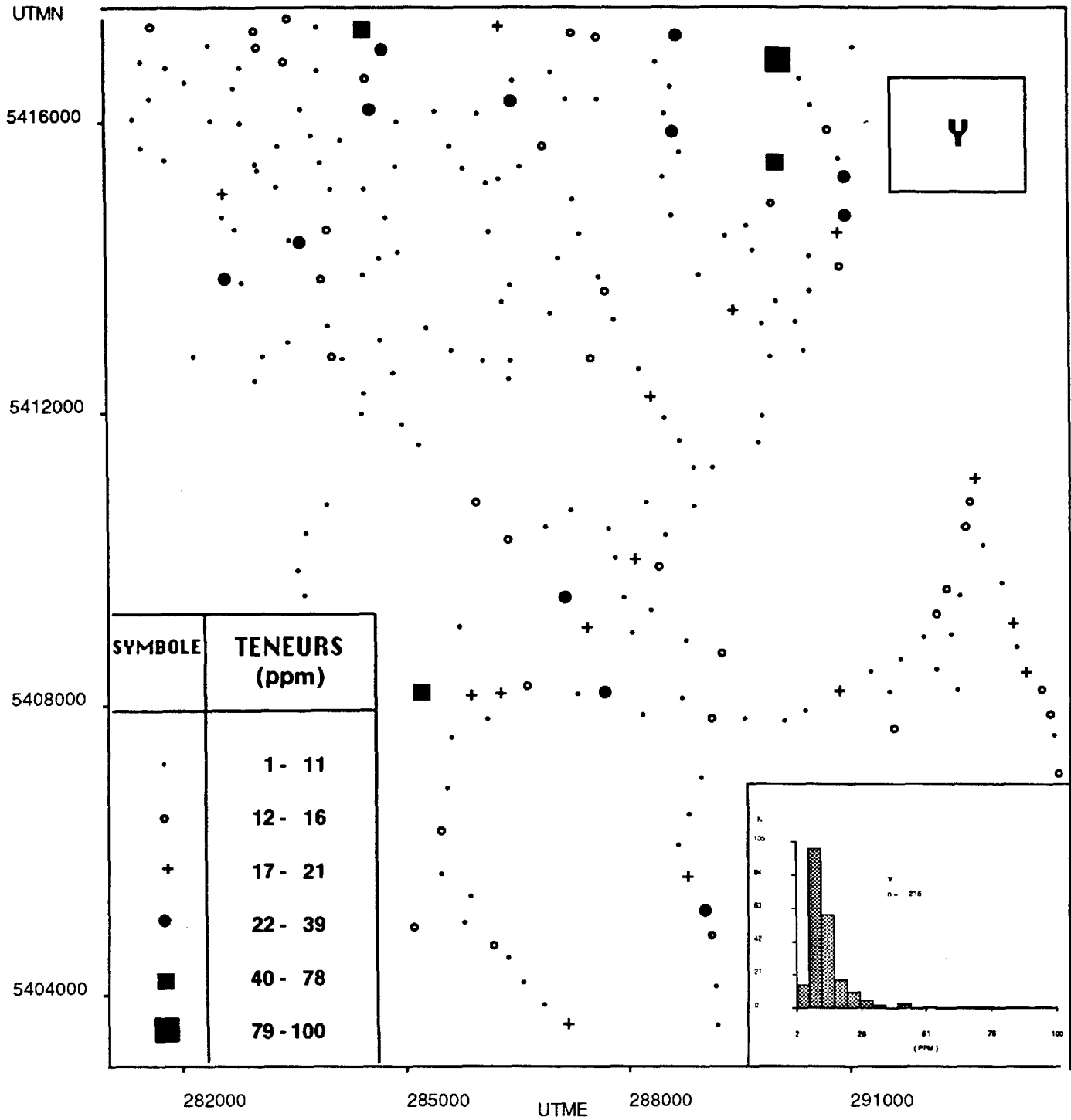


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)

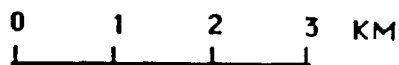


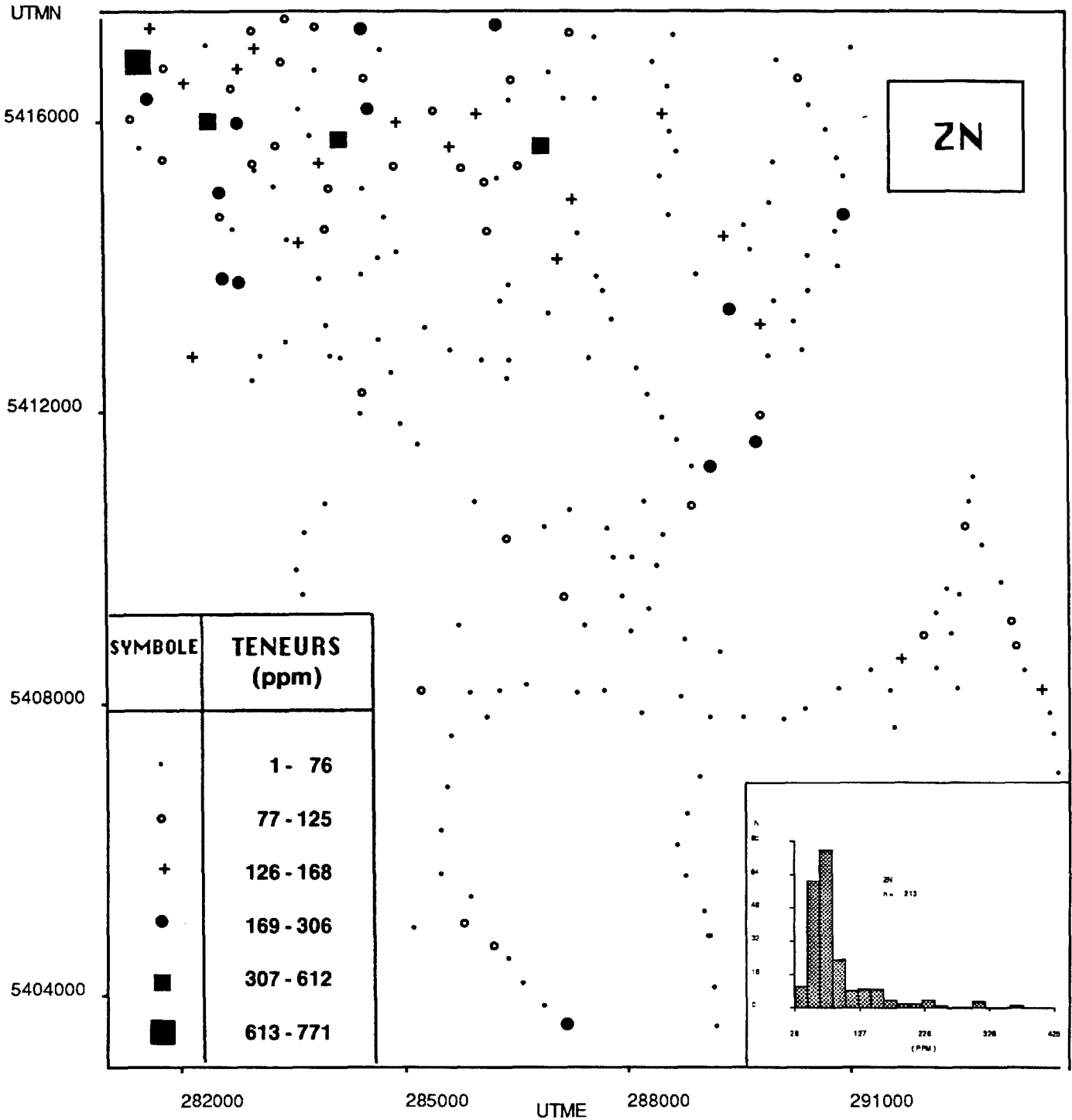


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C; fraction < 80 m)





GEOCHIMIE DES SOLS

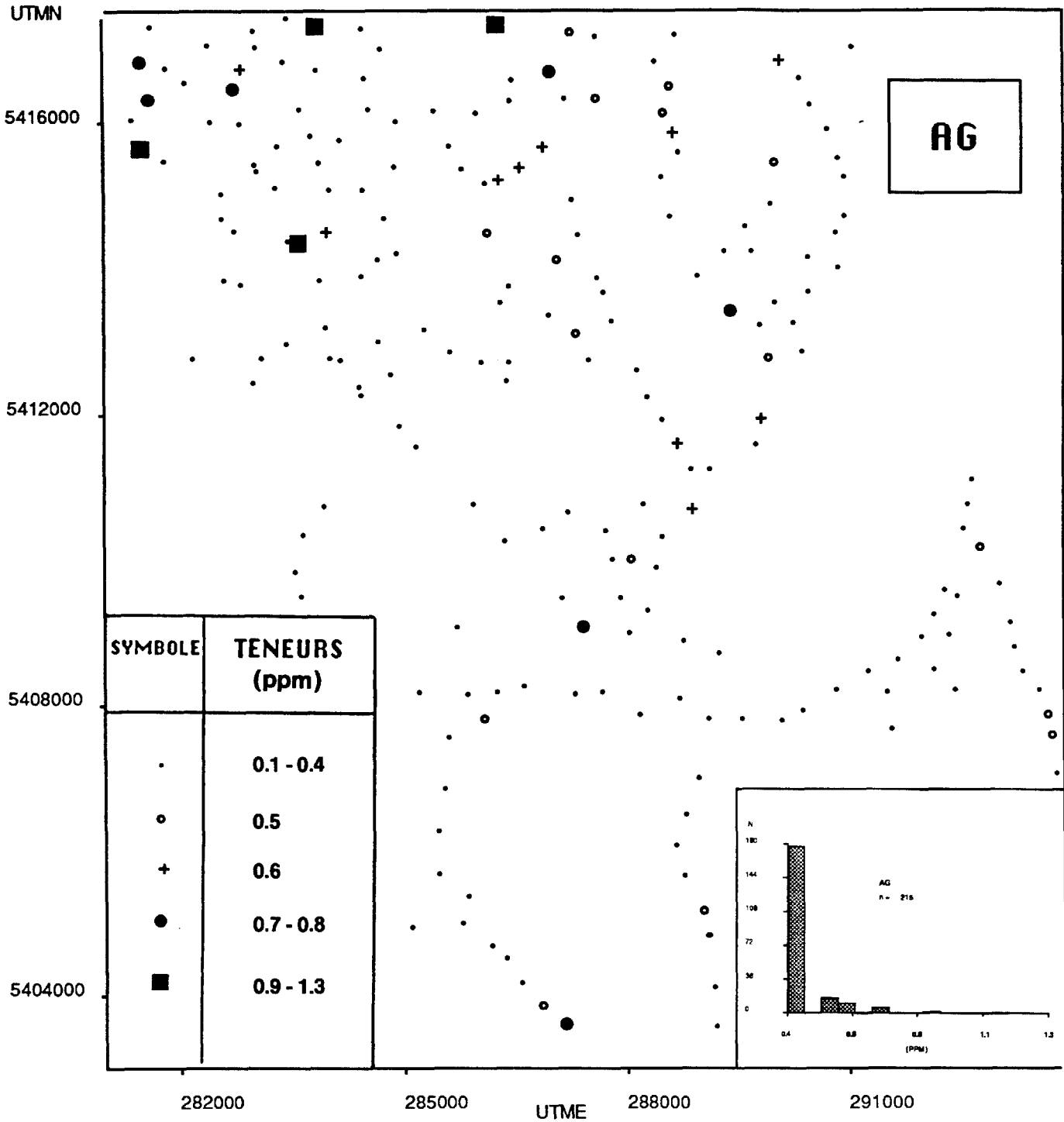
REGION DE SULLIPEK

(Horizon C; fraction < 80 m)



CARTES

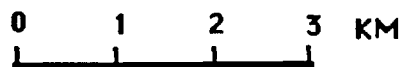
HORIZON C - Fraction < 230 m

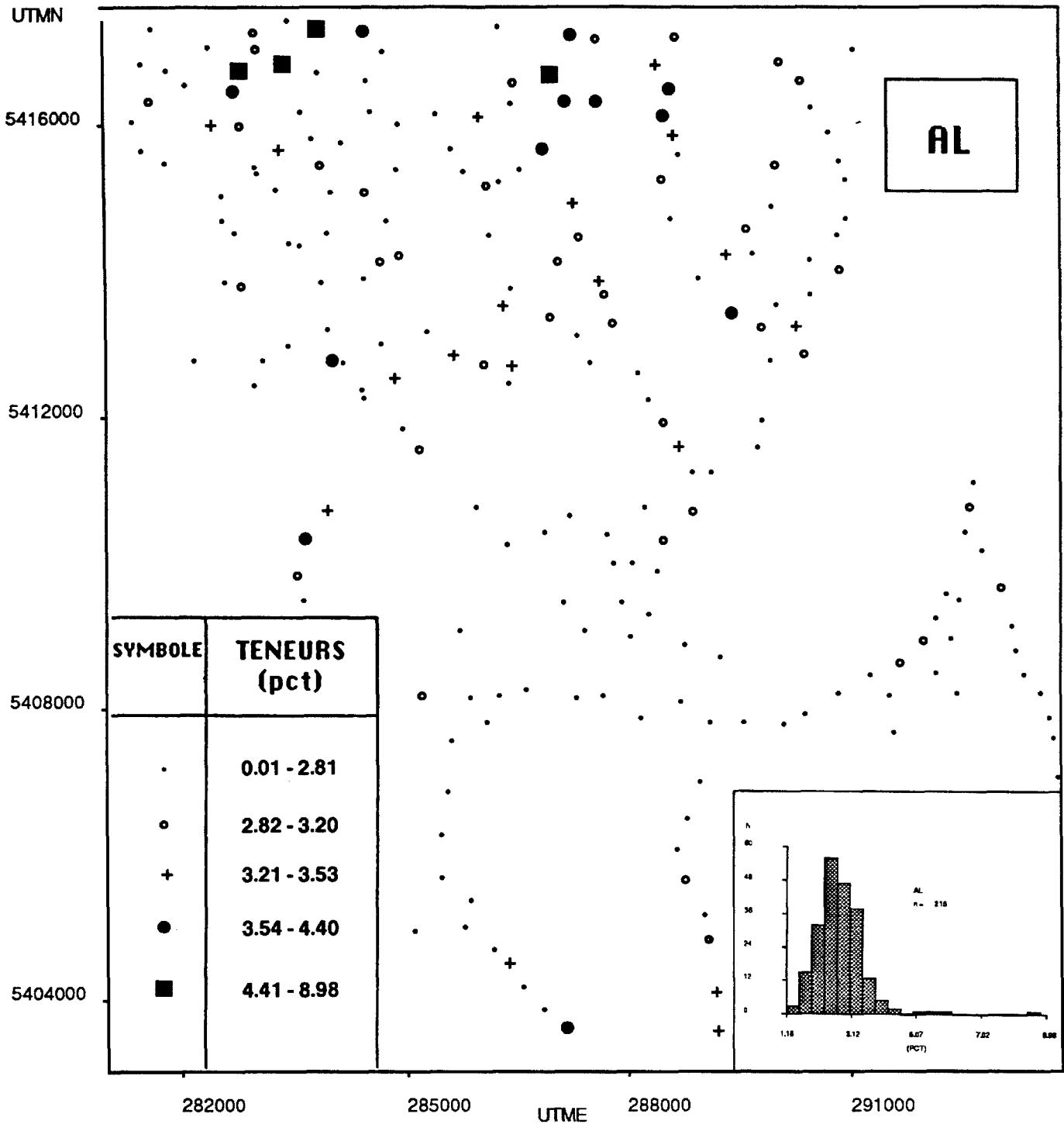


GEOCHIMIE DES SOLS

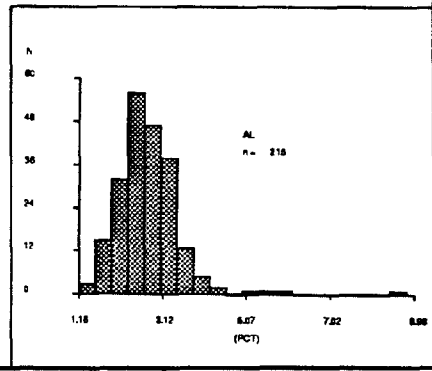
REGION DE SULLIPEK

(Horizon C ; fraction < 230m)





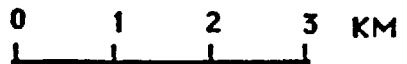
SYMBOLE	TENEURS (pct)
.	0.01 - 2.81
o	2.82 - 3.20
+	3.21 - 3.53
●	3.54 - 4.40
■	4.41 - 8.98

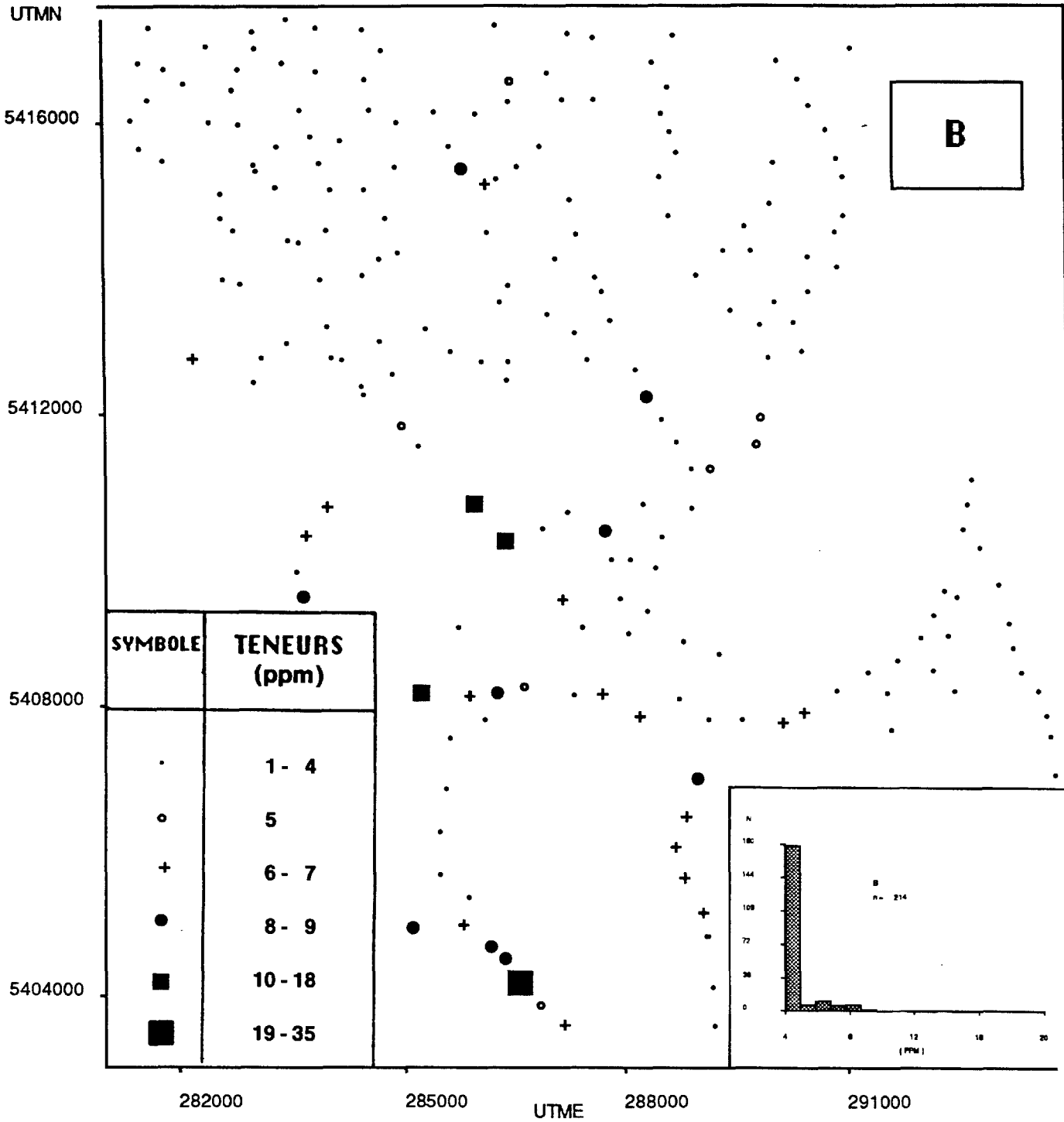


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

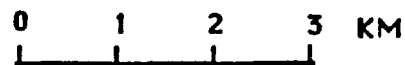


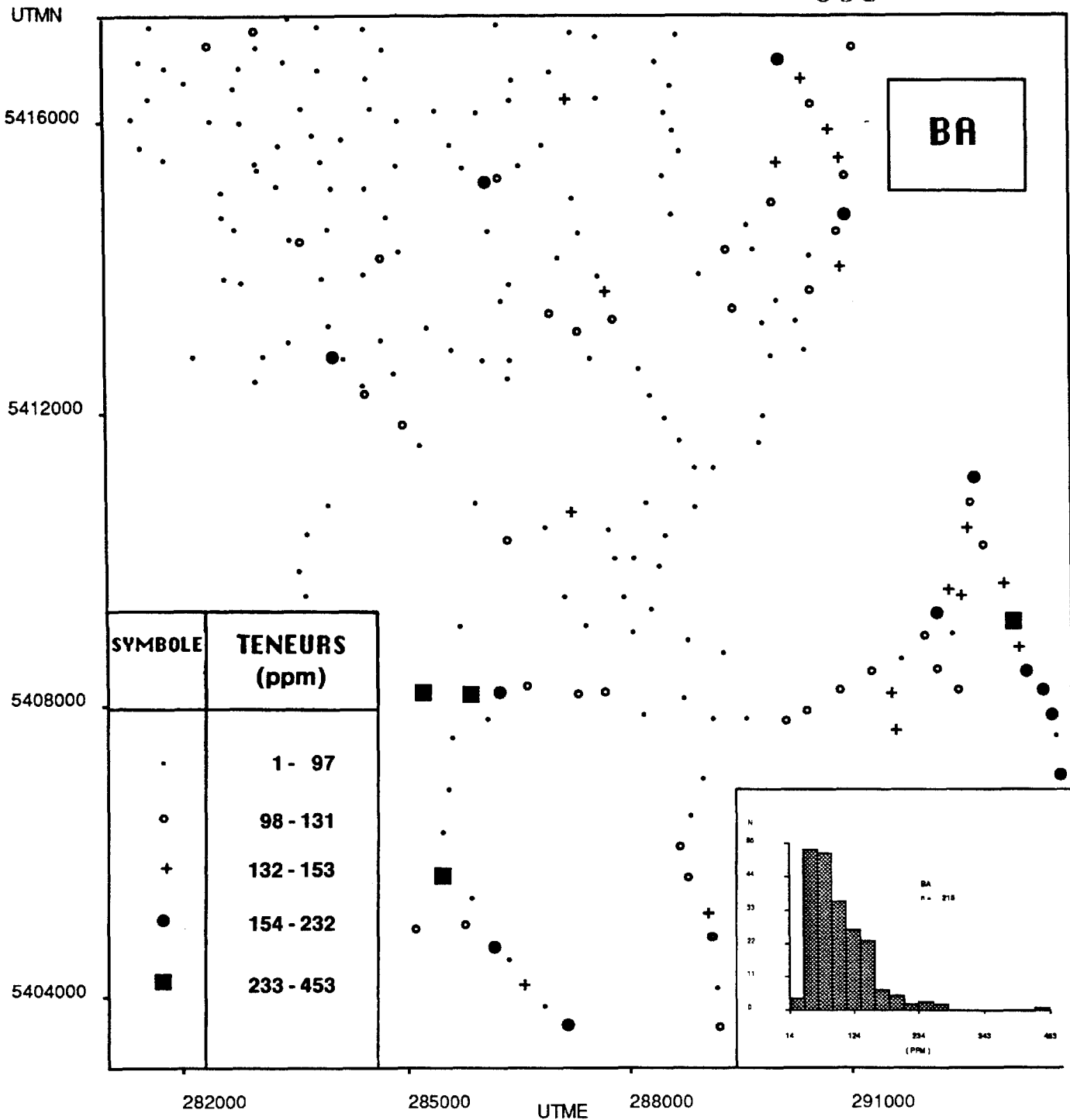


GEOCHIMIE DES SOLS

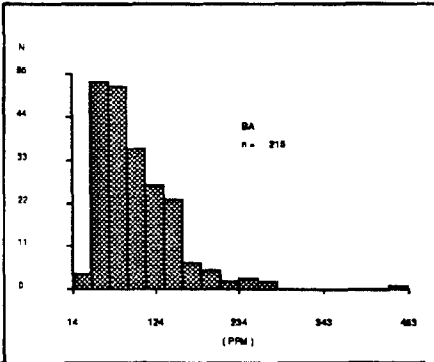
REGION DE SULLIPEK

(Horizon C ; fraction < 230m)





SYMBOLE	TENEURS (ppm)
.	1 - 97
○	98 - 131
+	132 - 153
●	154 - 232
■	233 - 453

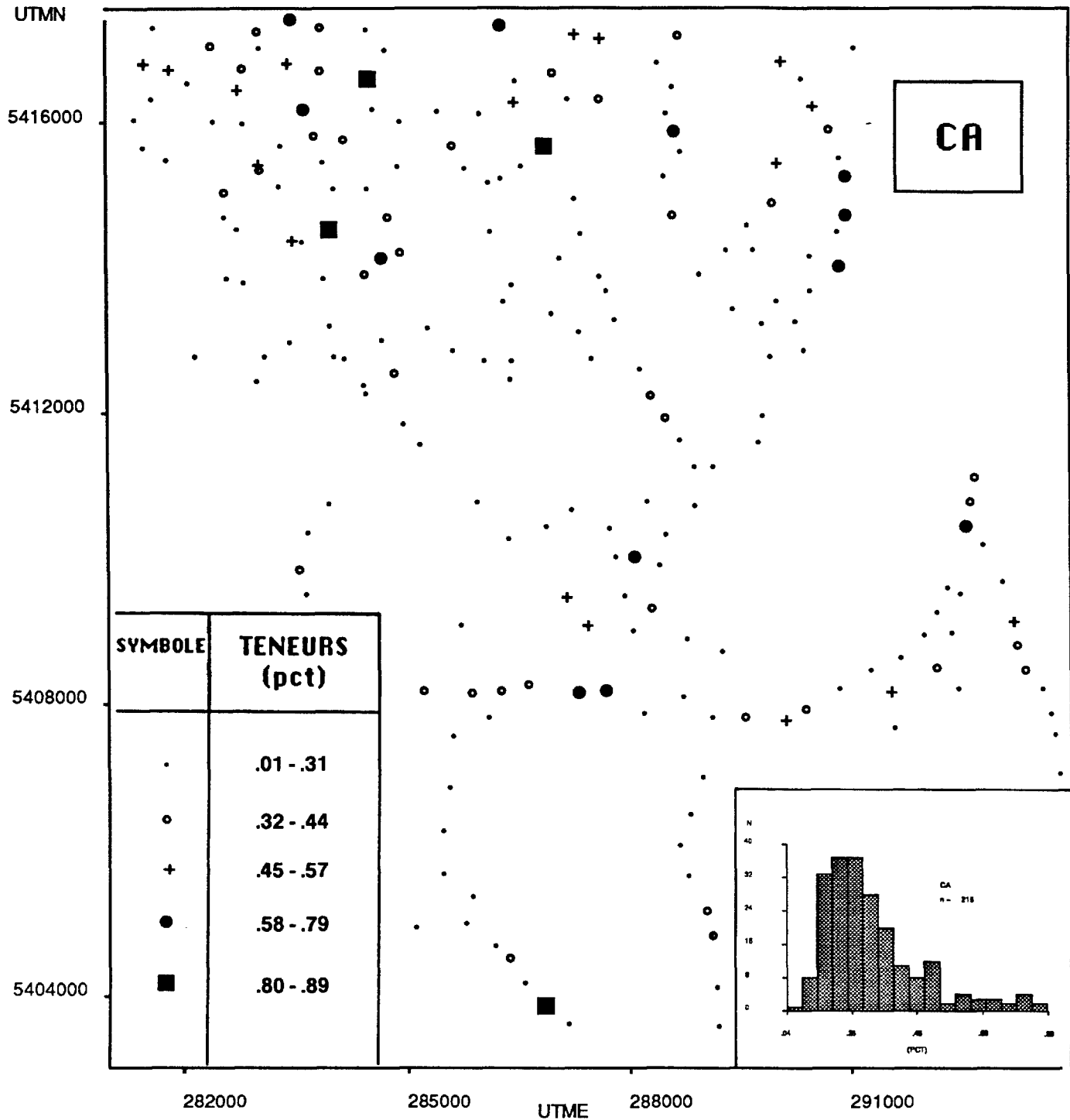


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

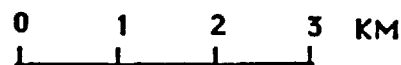


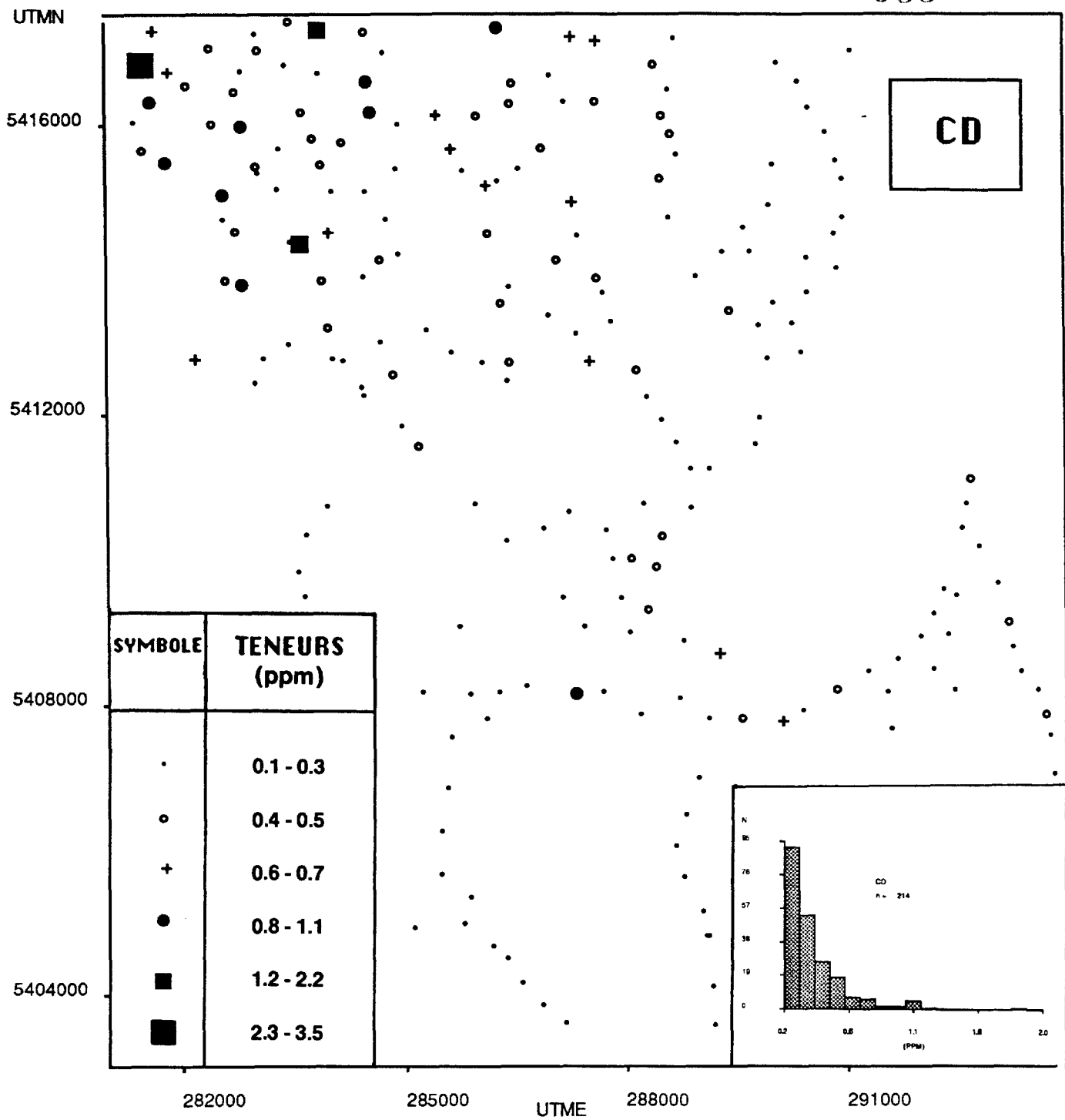


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

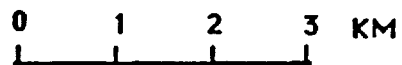


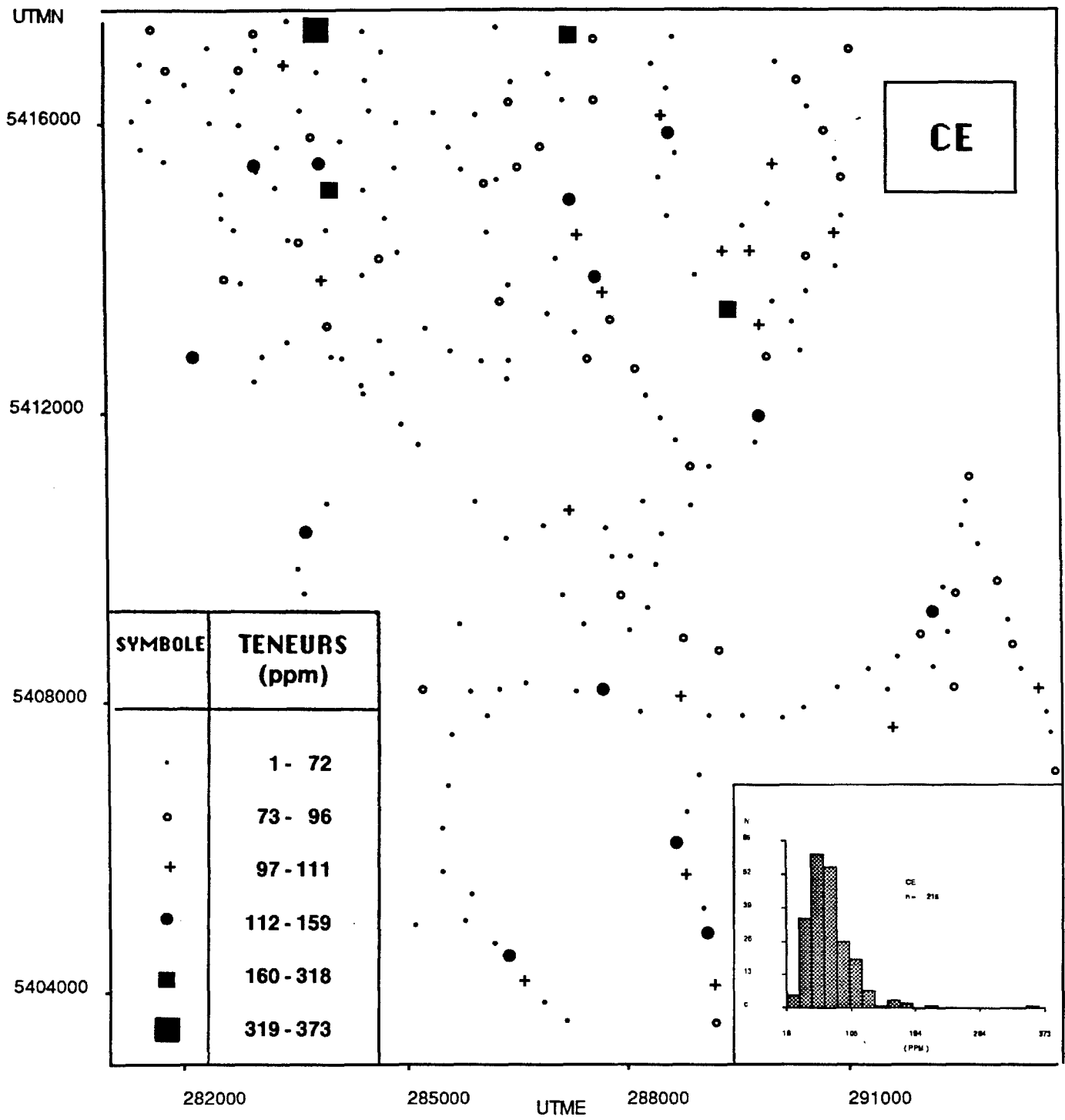


GEOCHIMIE DES SOLS

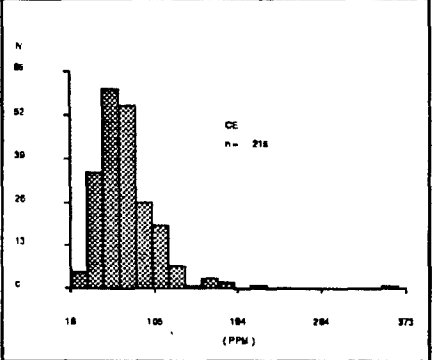
REGION DE SULLIPEK

(Horizon C ; fraction < 230m)





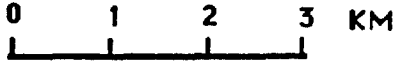
SYMBOLE	TENEURS (ppm)
.	1 - 72
o	73 - 96
+	97 - 111
●	112 - 159
■	160 - 318
■	319 - 373

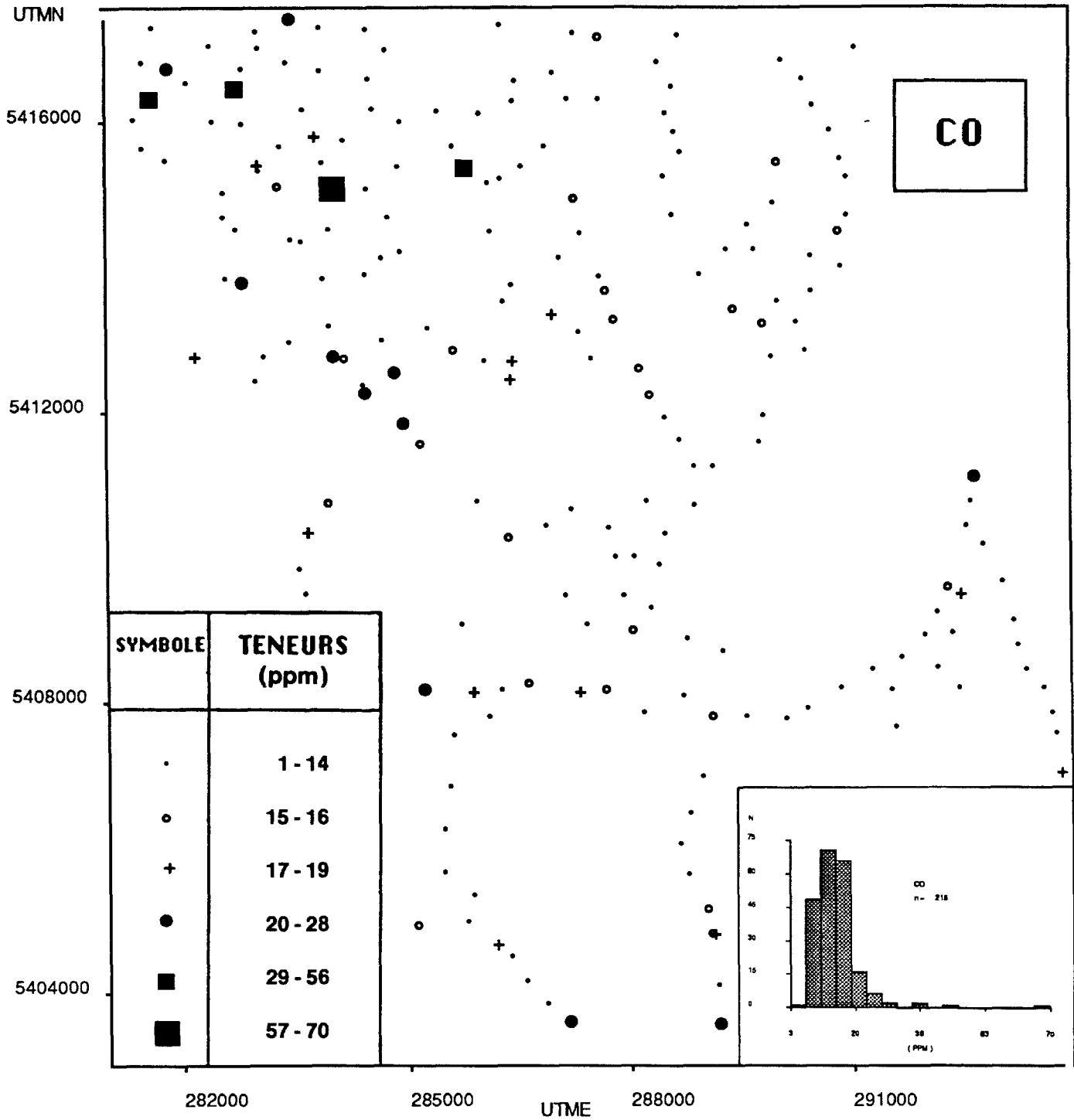


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

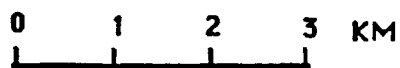


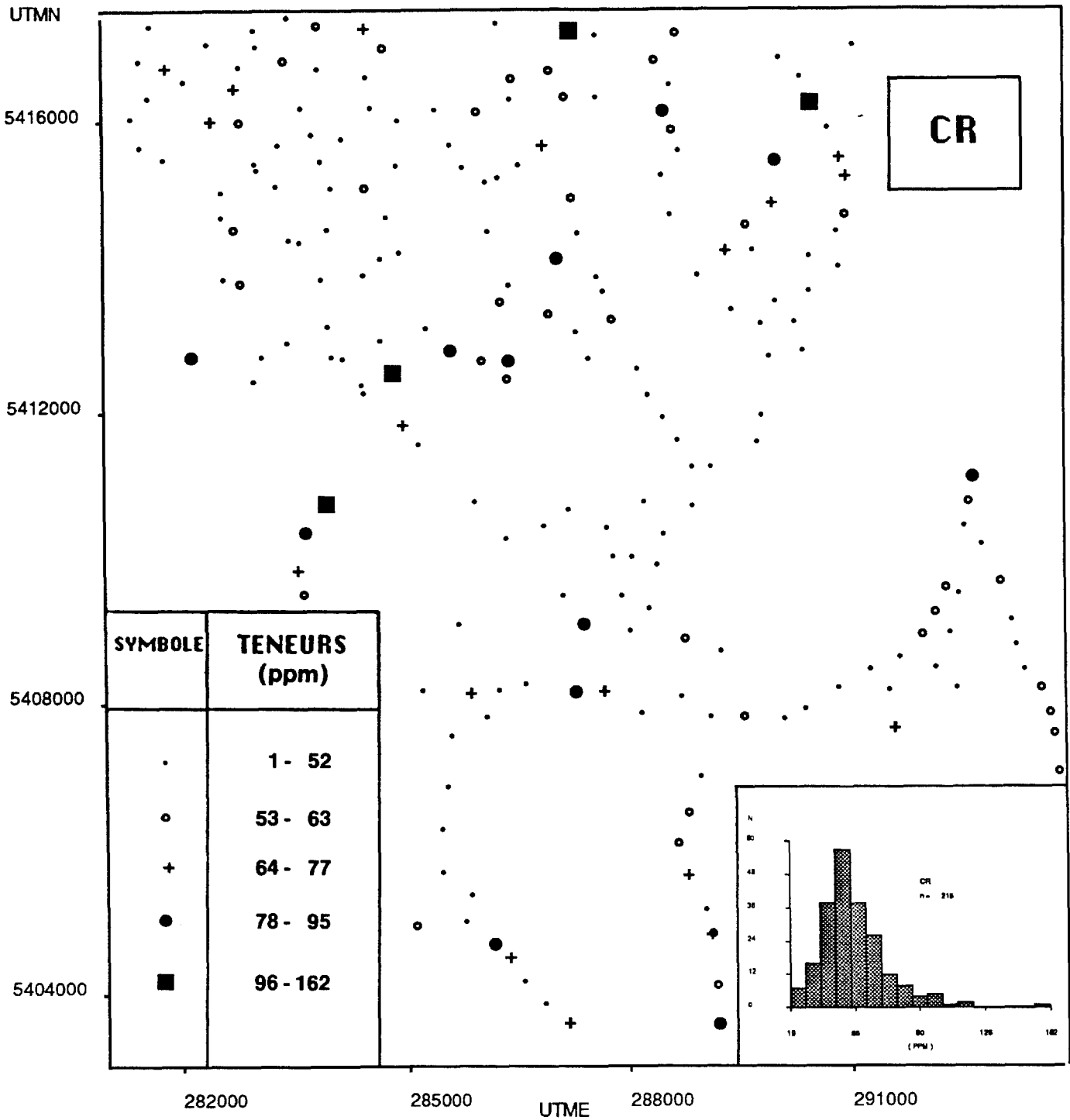


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

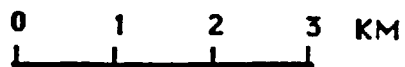


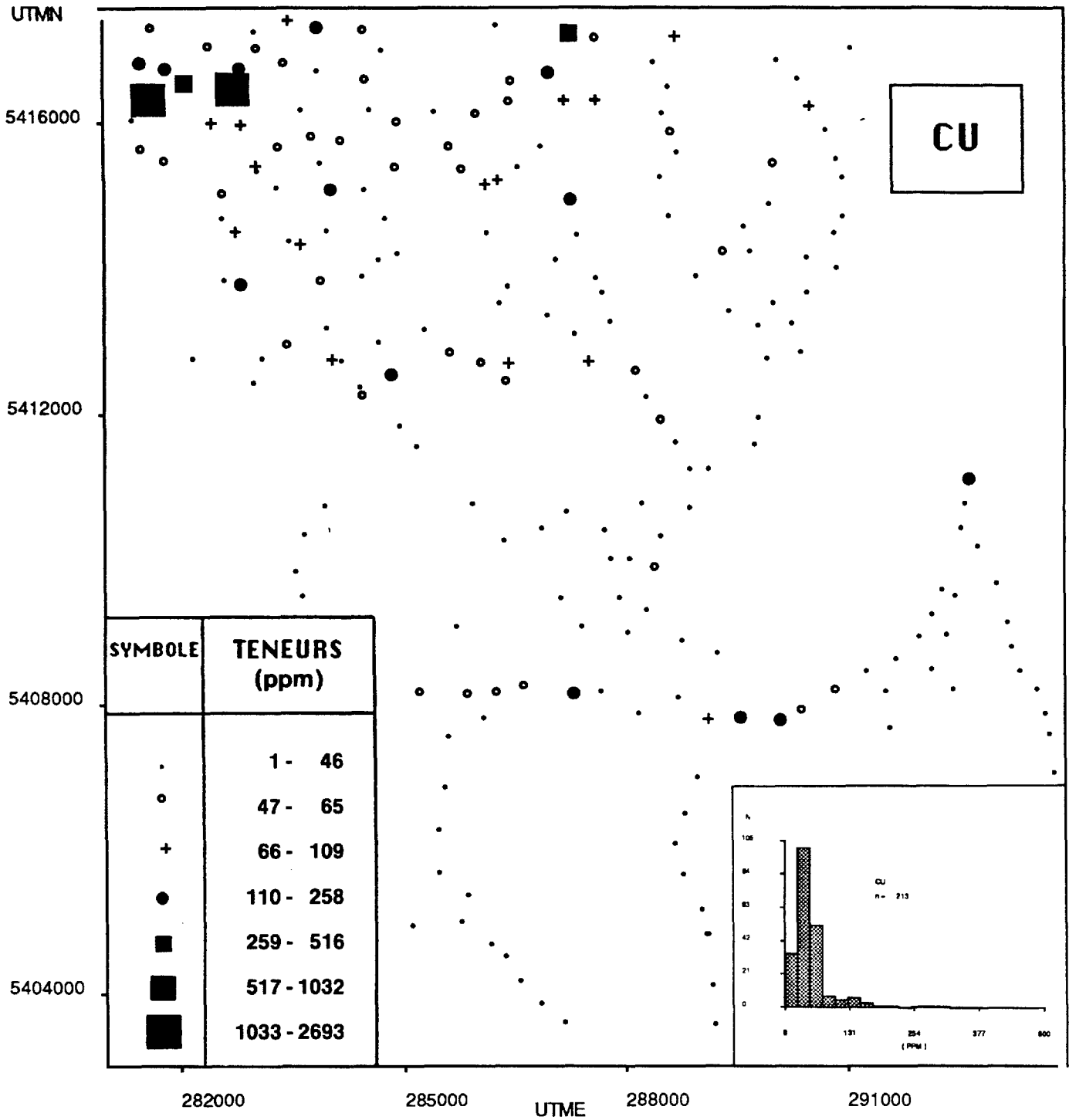


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

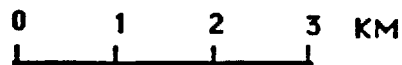


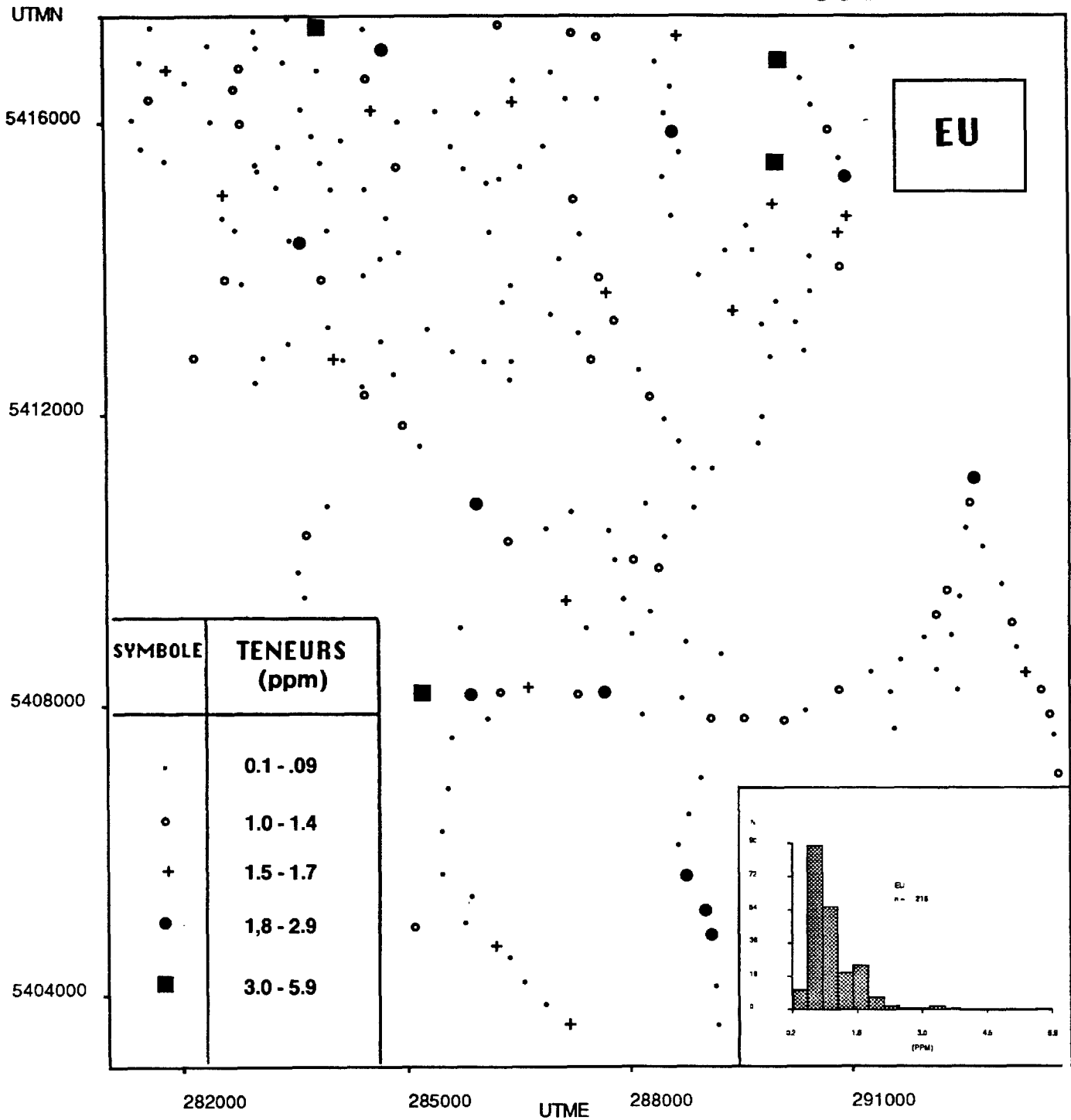


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

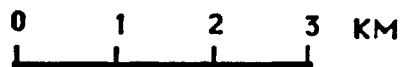


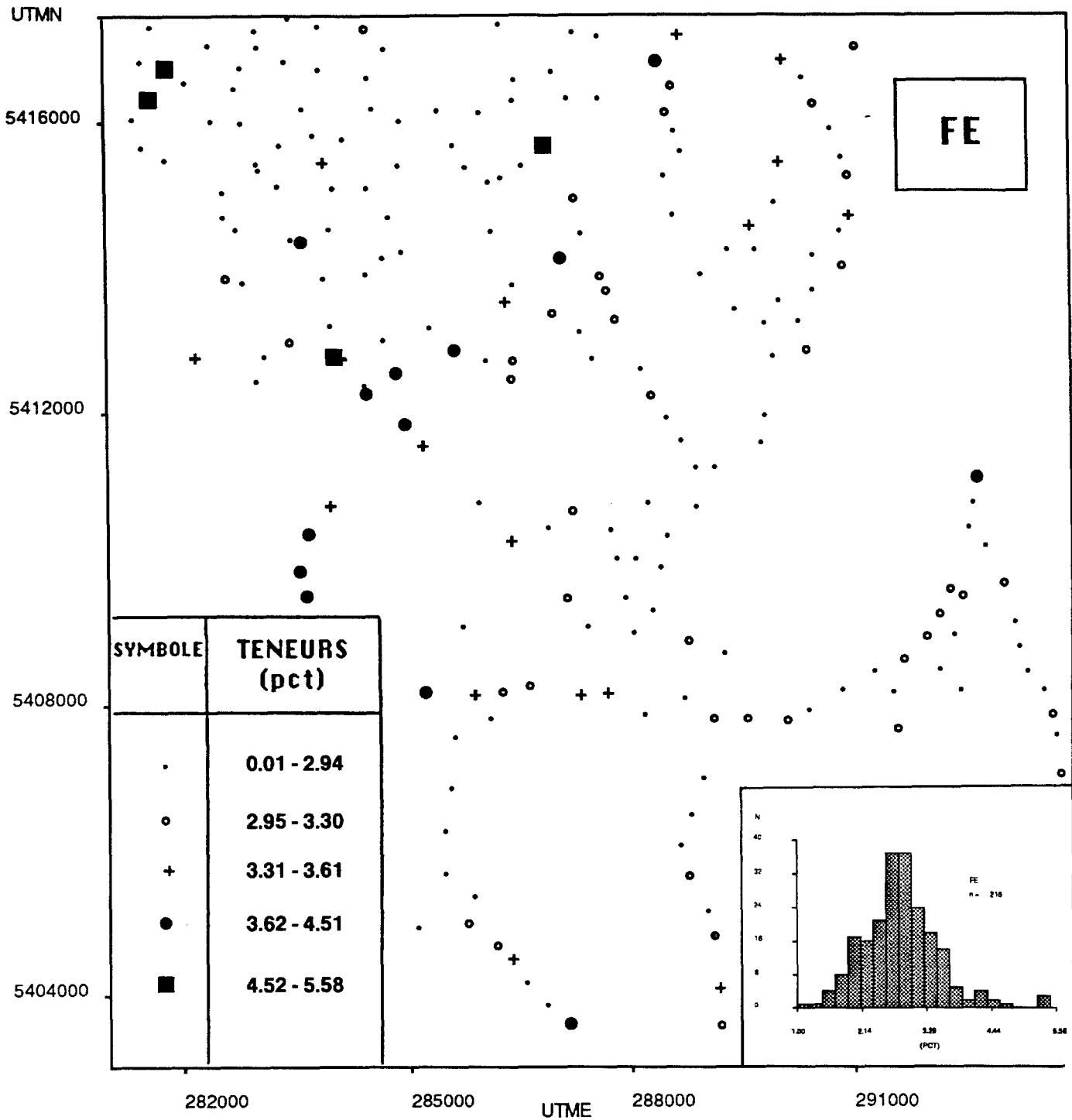


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

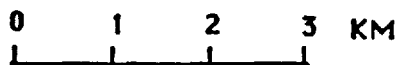


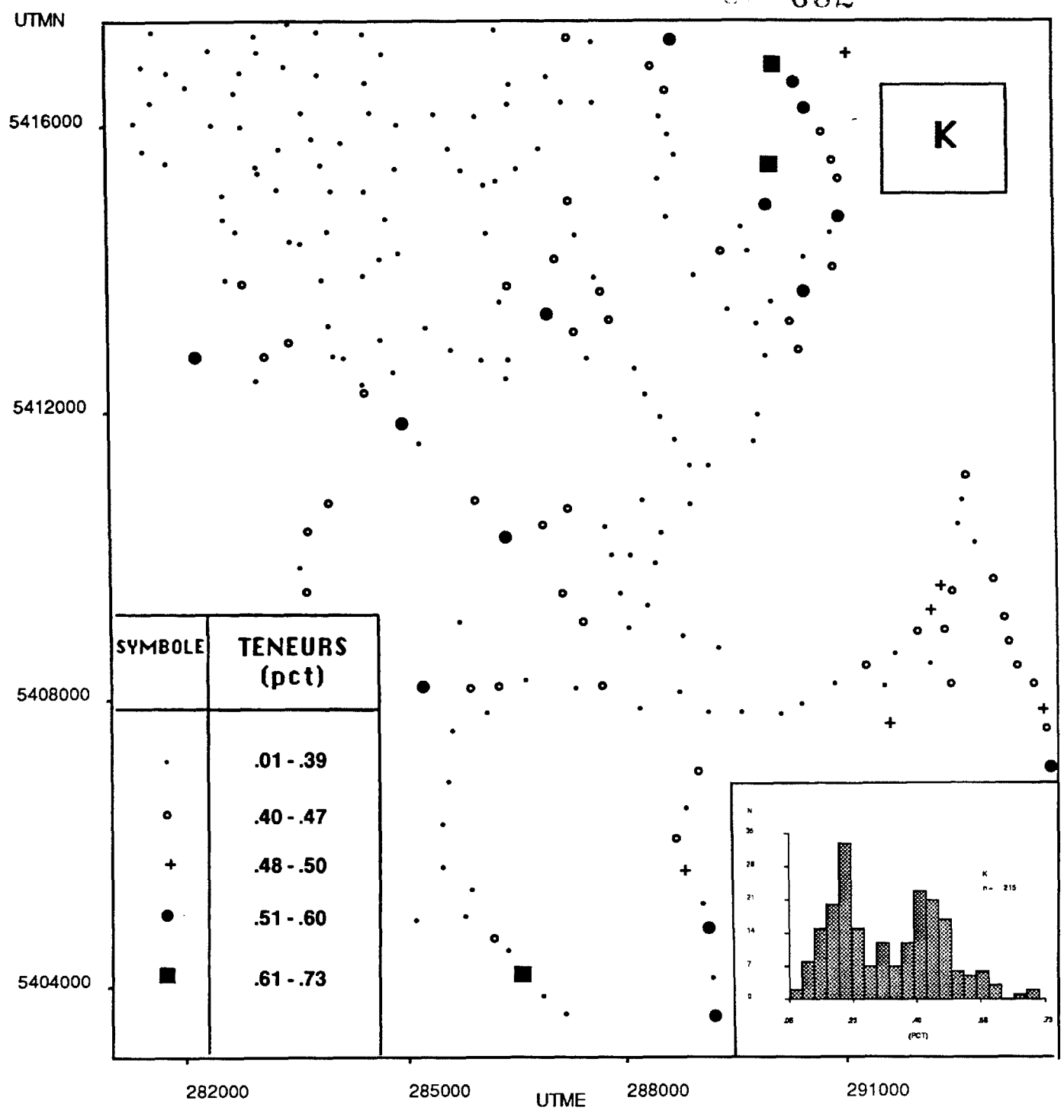


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

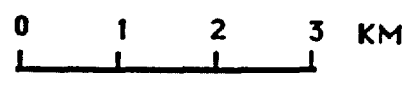


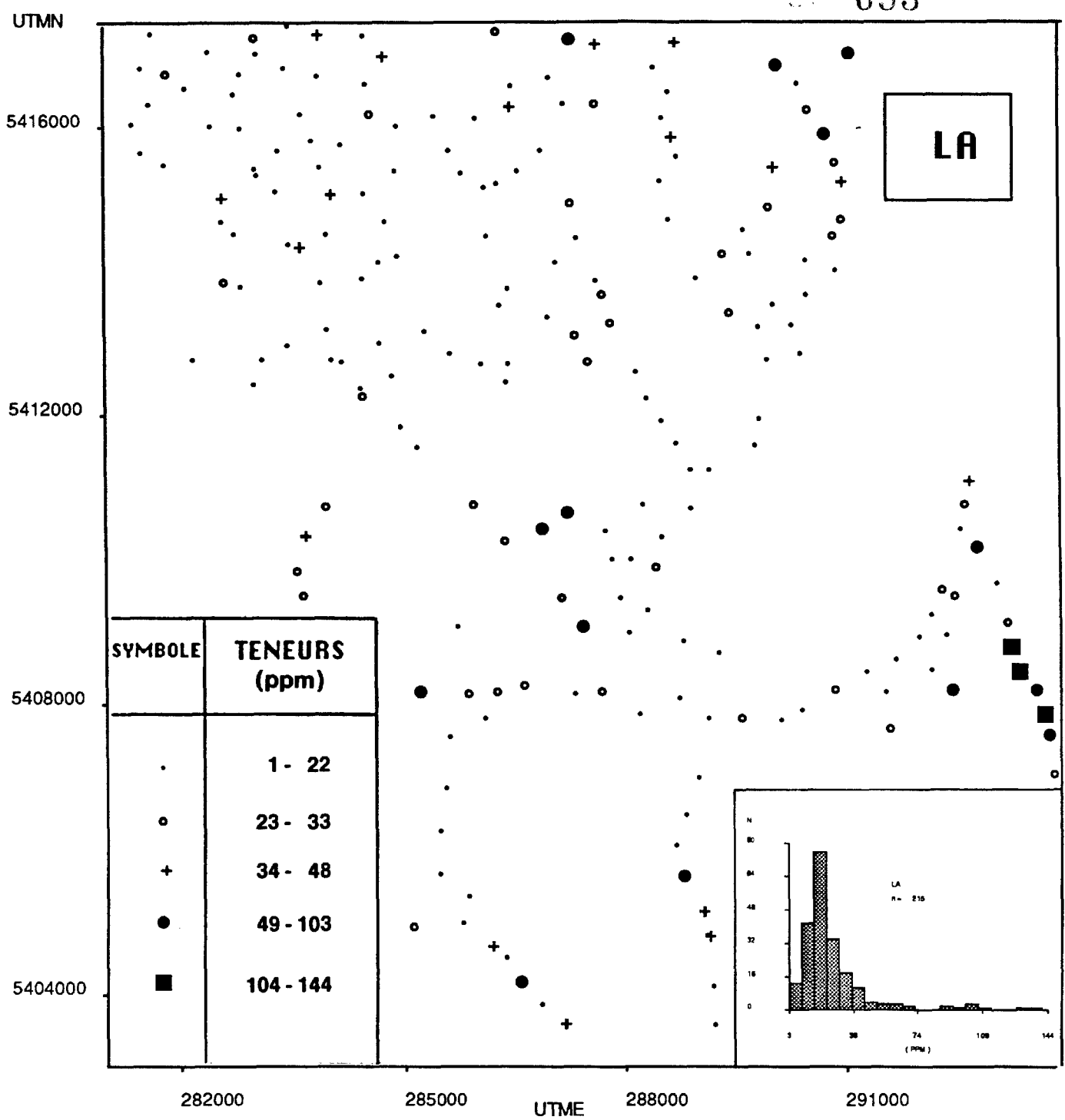


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

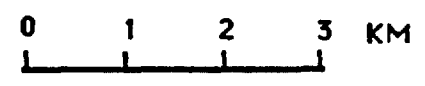


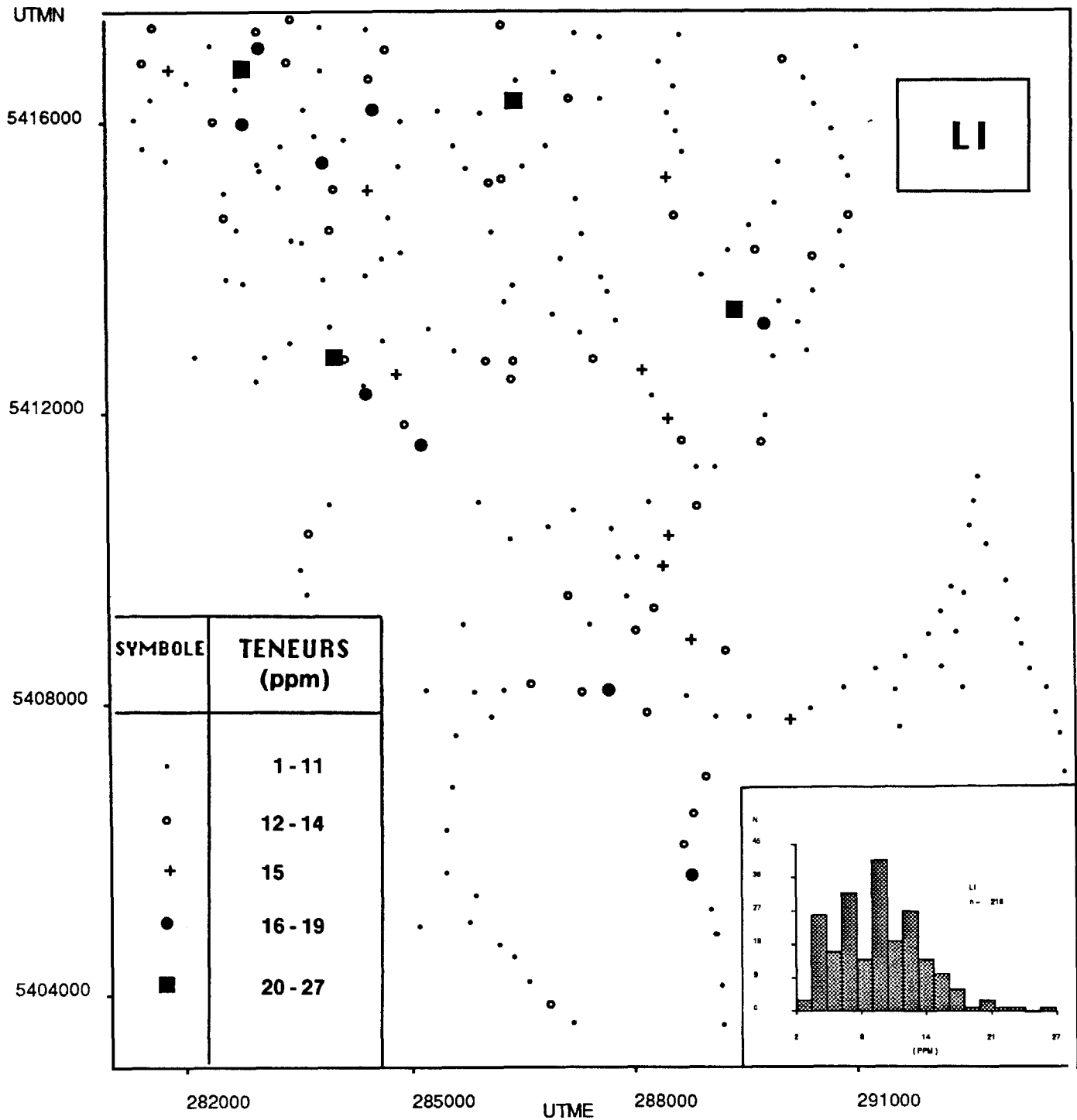


GEOCHIMIE DES SOLS

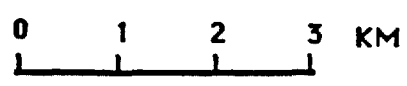
REGION DE SULLIPEK

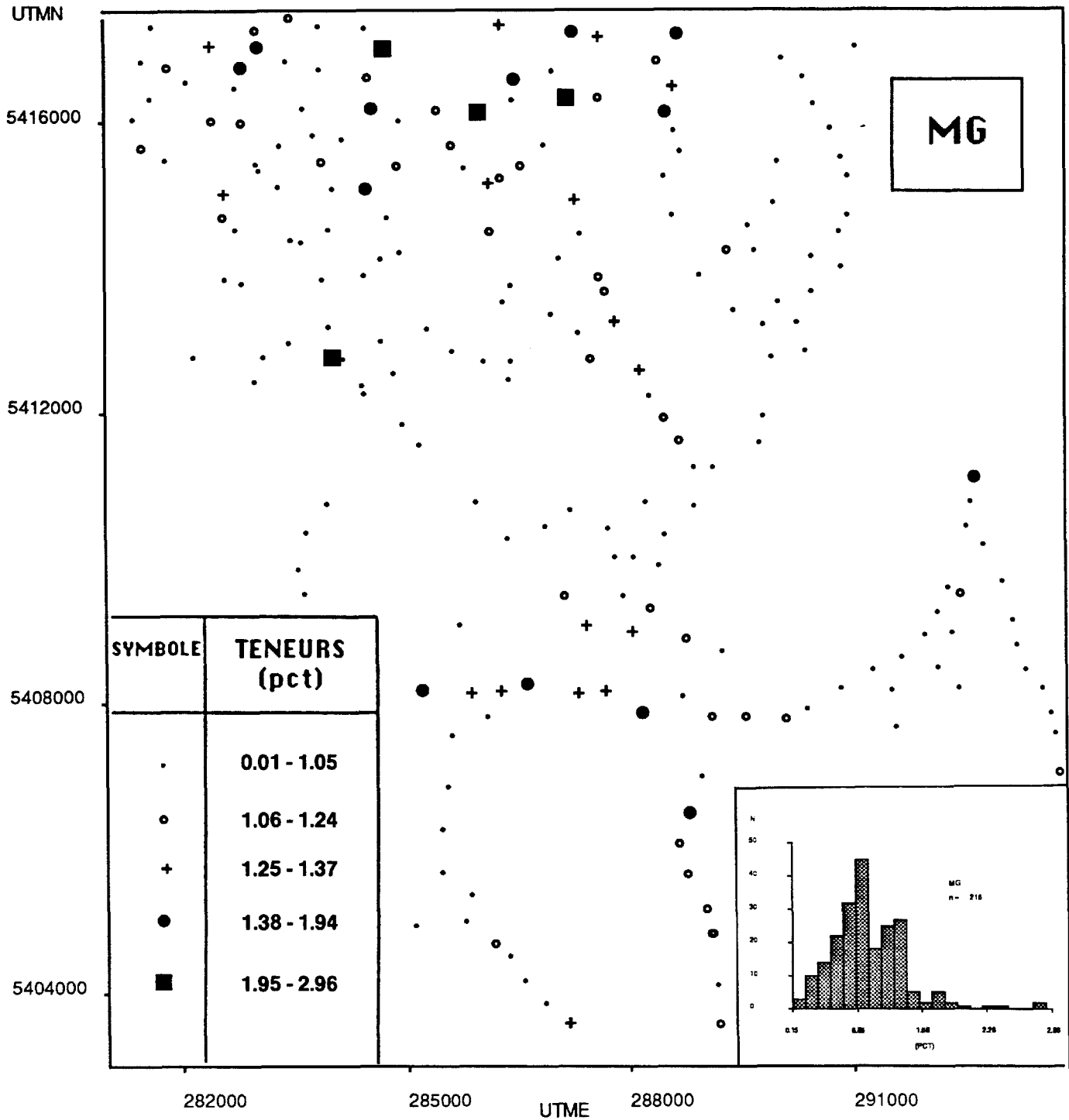
(Horizon C ; fraction < 230m)





GEOCHIMIE DES SOLS
REGION DE SULLIPEK
 (Horizon C ; fraction < 230m)

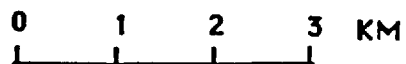


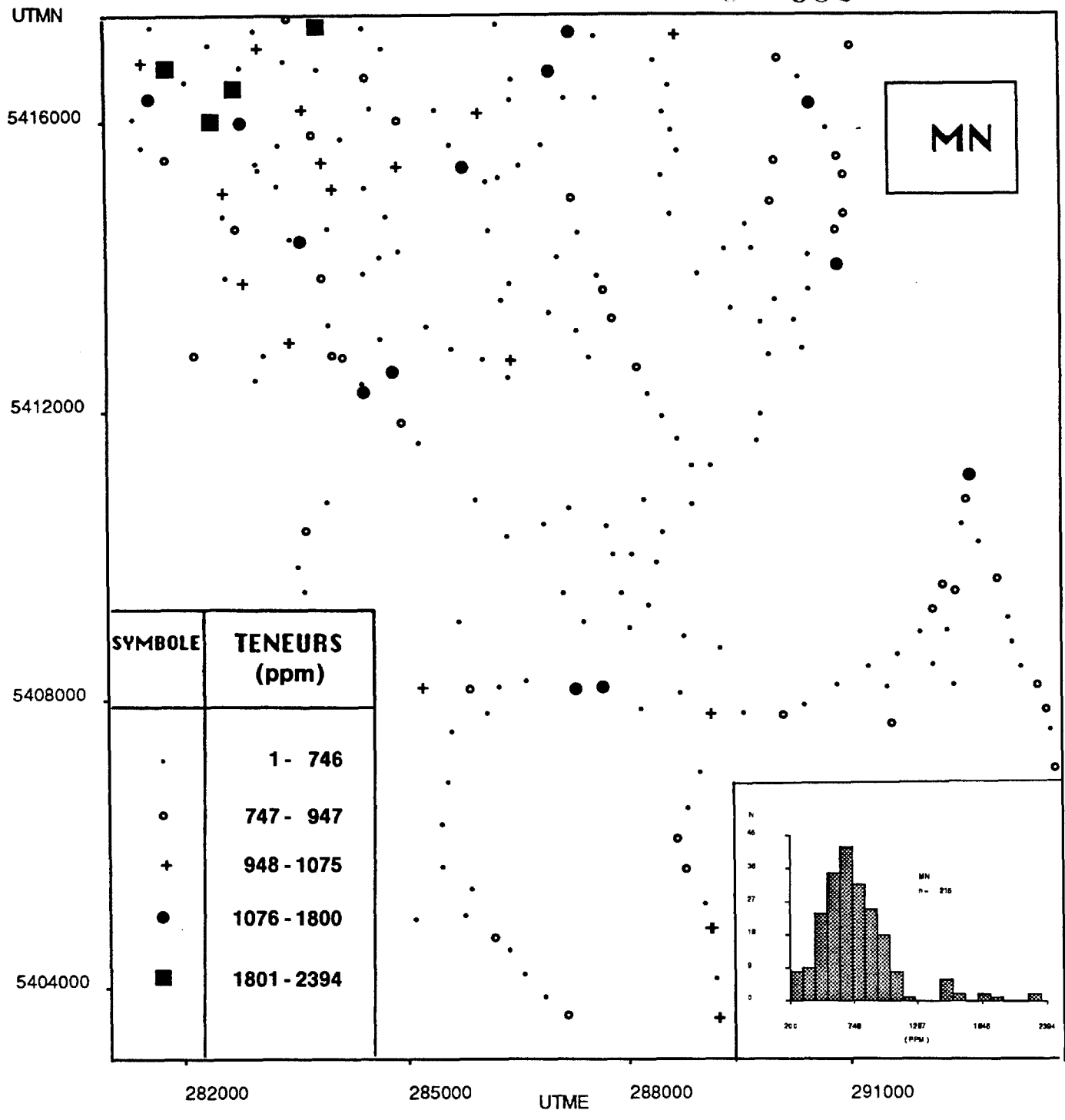


GEOCHIMIE DES SOLS

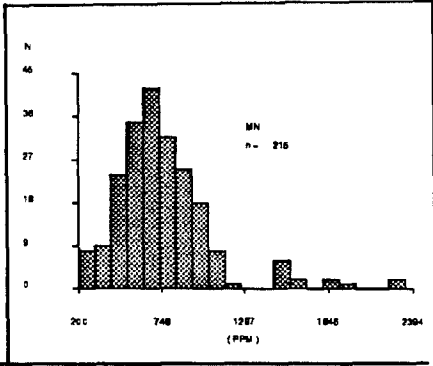
REGION DE SULLIPEK

(Horizon C ; fraction < 230m)





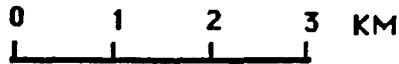
SYMBOLE	TENEURS (ppm)
.	1 - 746
o	747 - 947
+	948 - 1075
●	1076 - 1800
■	1801 - 2394

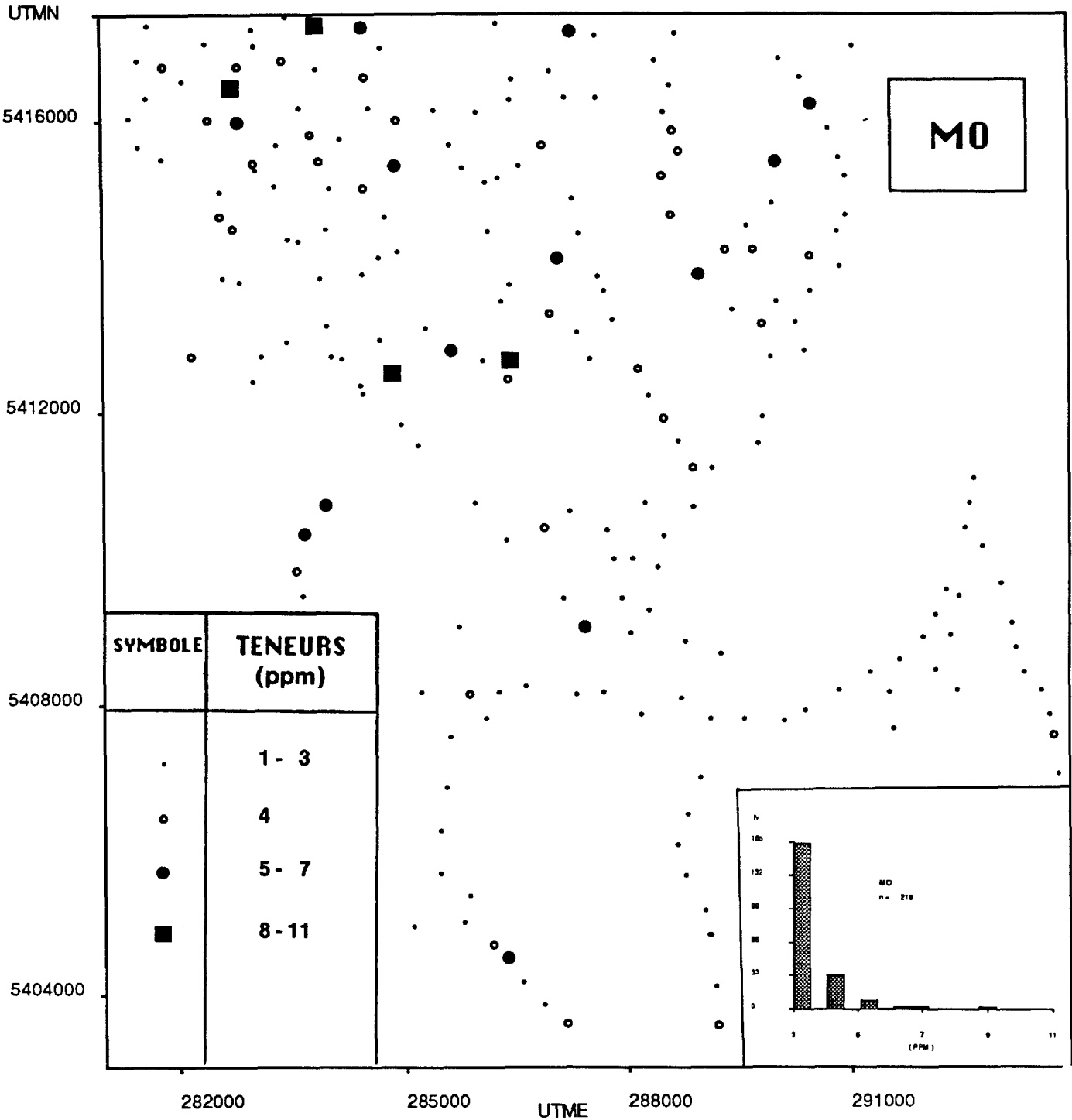


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)



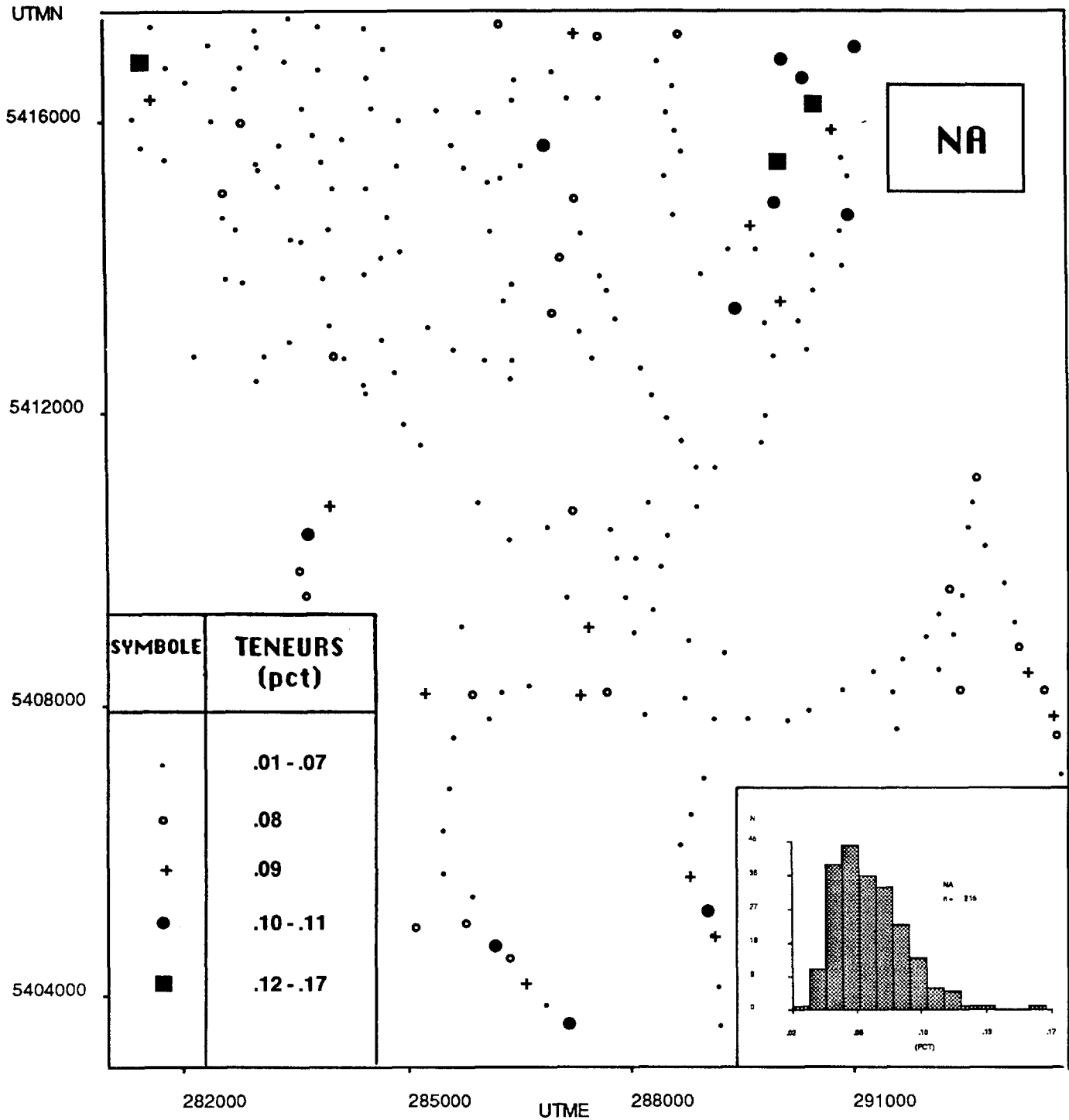


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

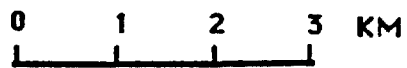


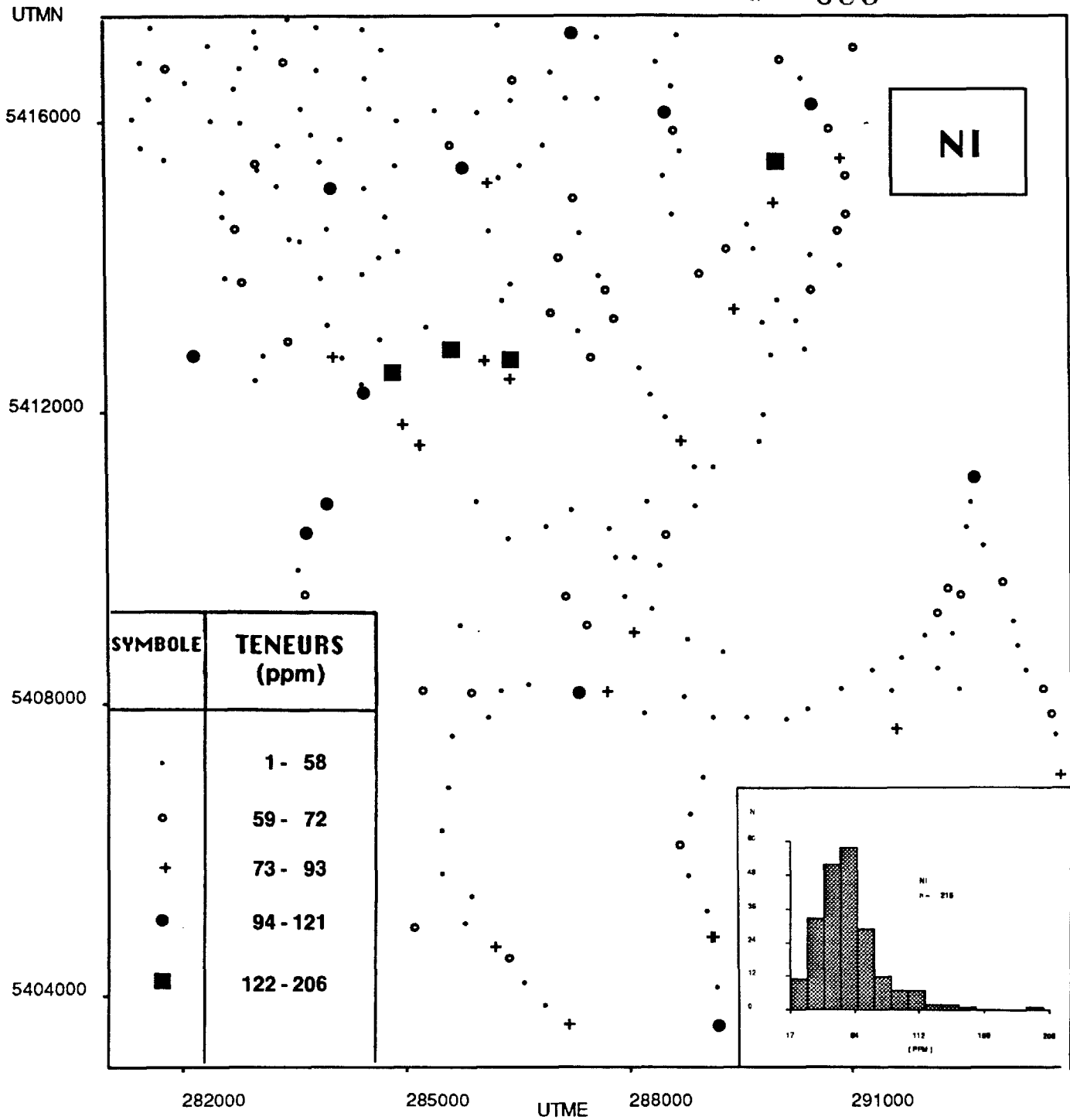


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)



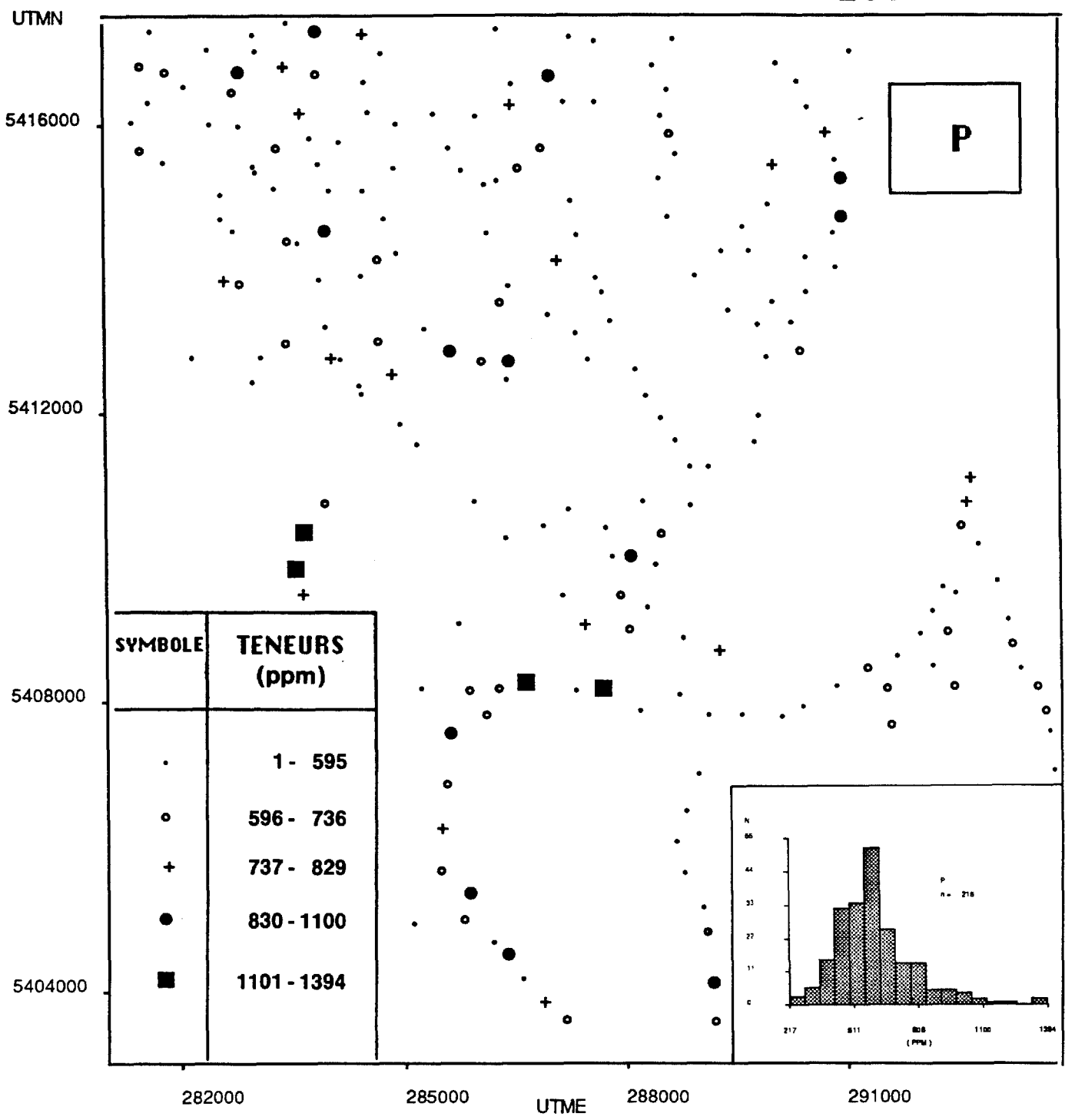


GEOCHIMIE DES SOLS

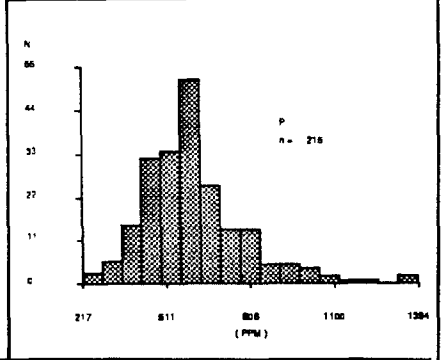
REGION DE SULLIPEK

(Horizon C ; fraction < 230m)





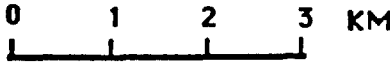
SYMBOLE	TENEURS (ppm)
.	1 - 595
o	596 - 736
+	737 - 829
●	830 - 1100
■	1101 - 1394

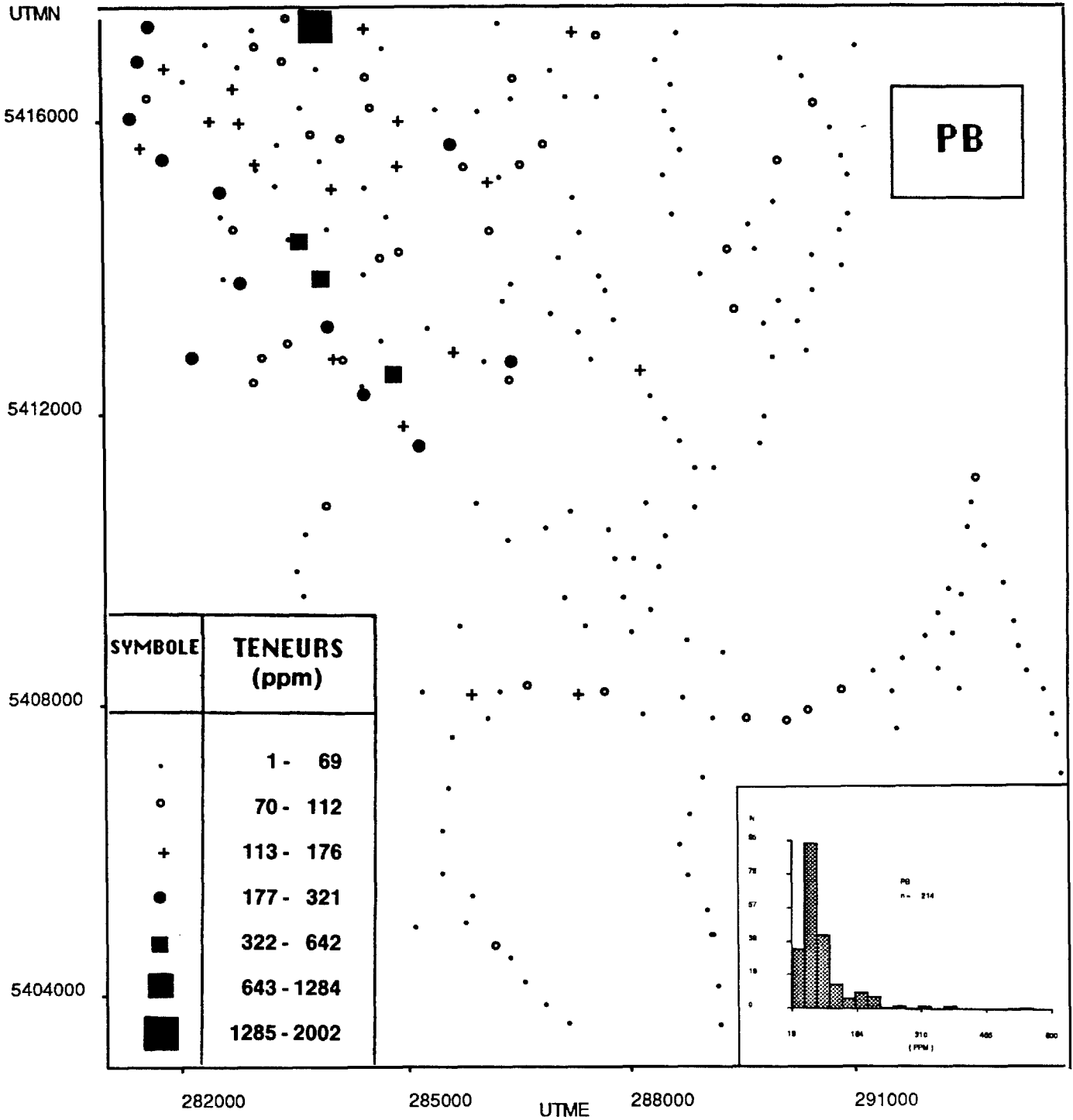


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

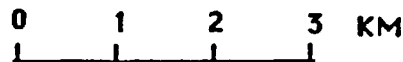


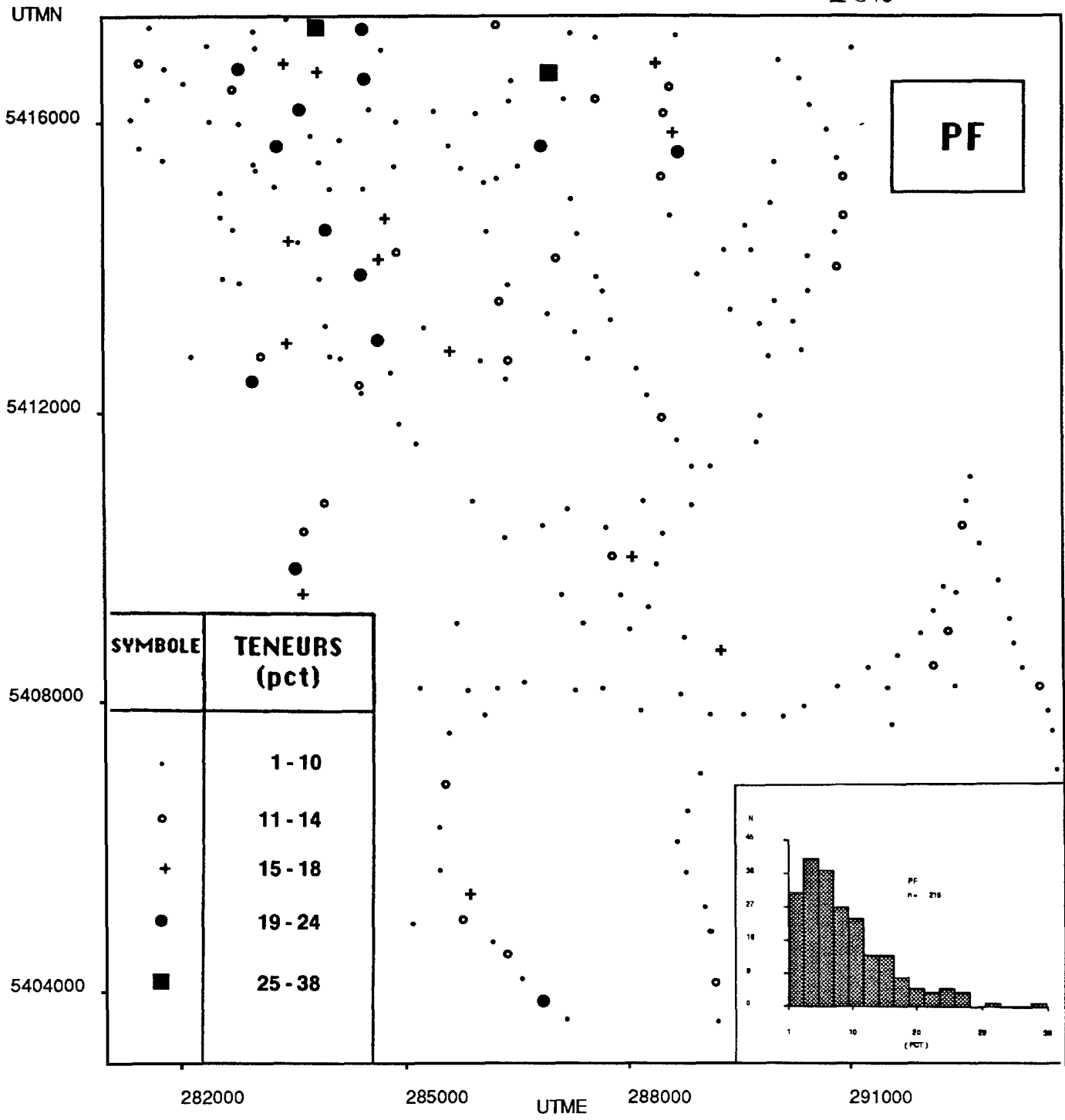


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

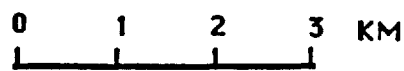


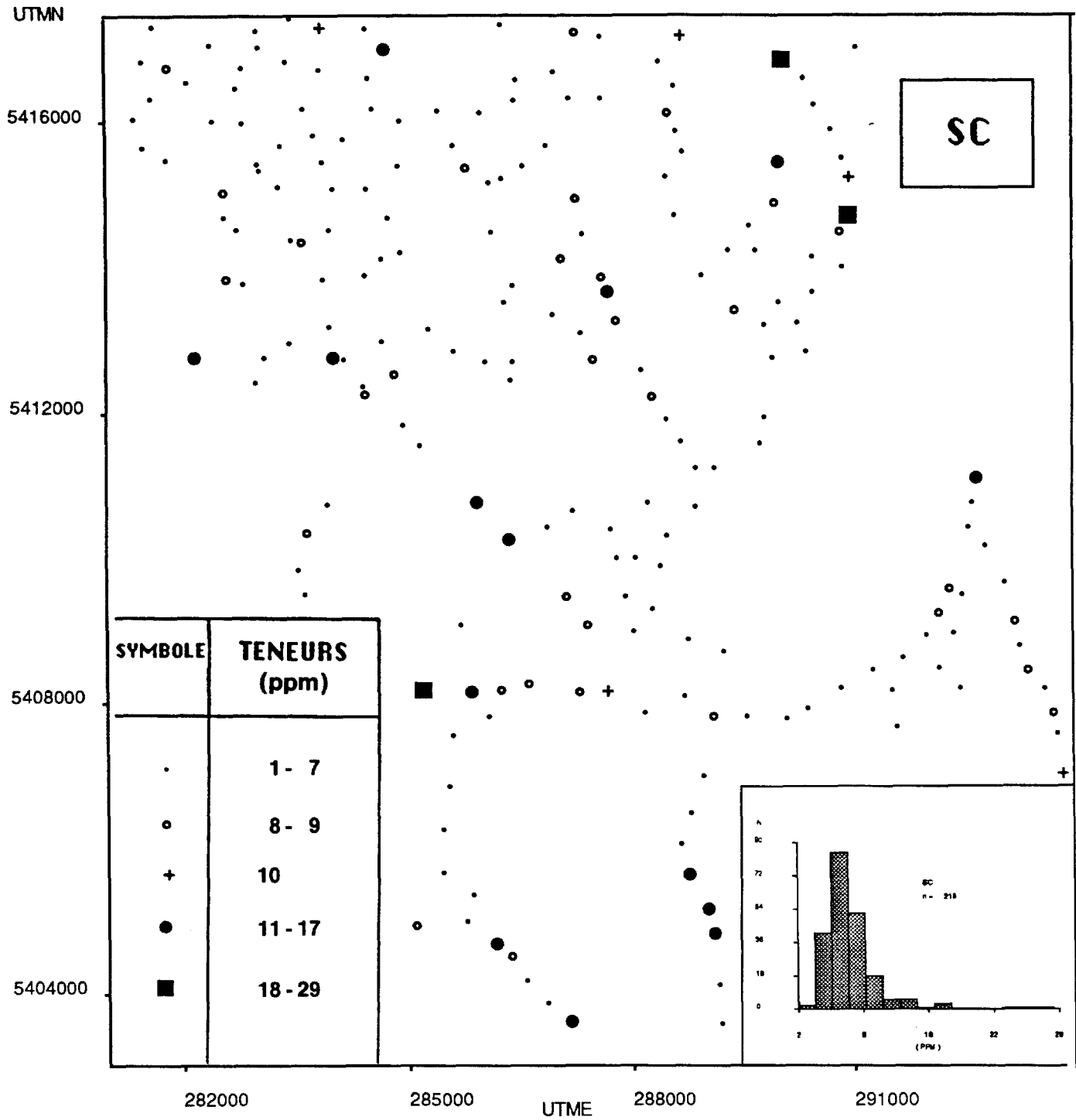


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)



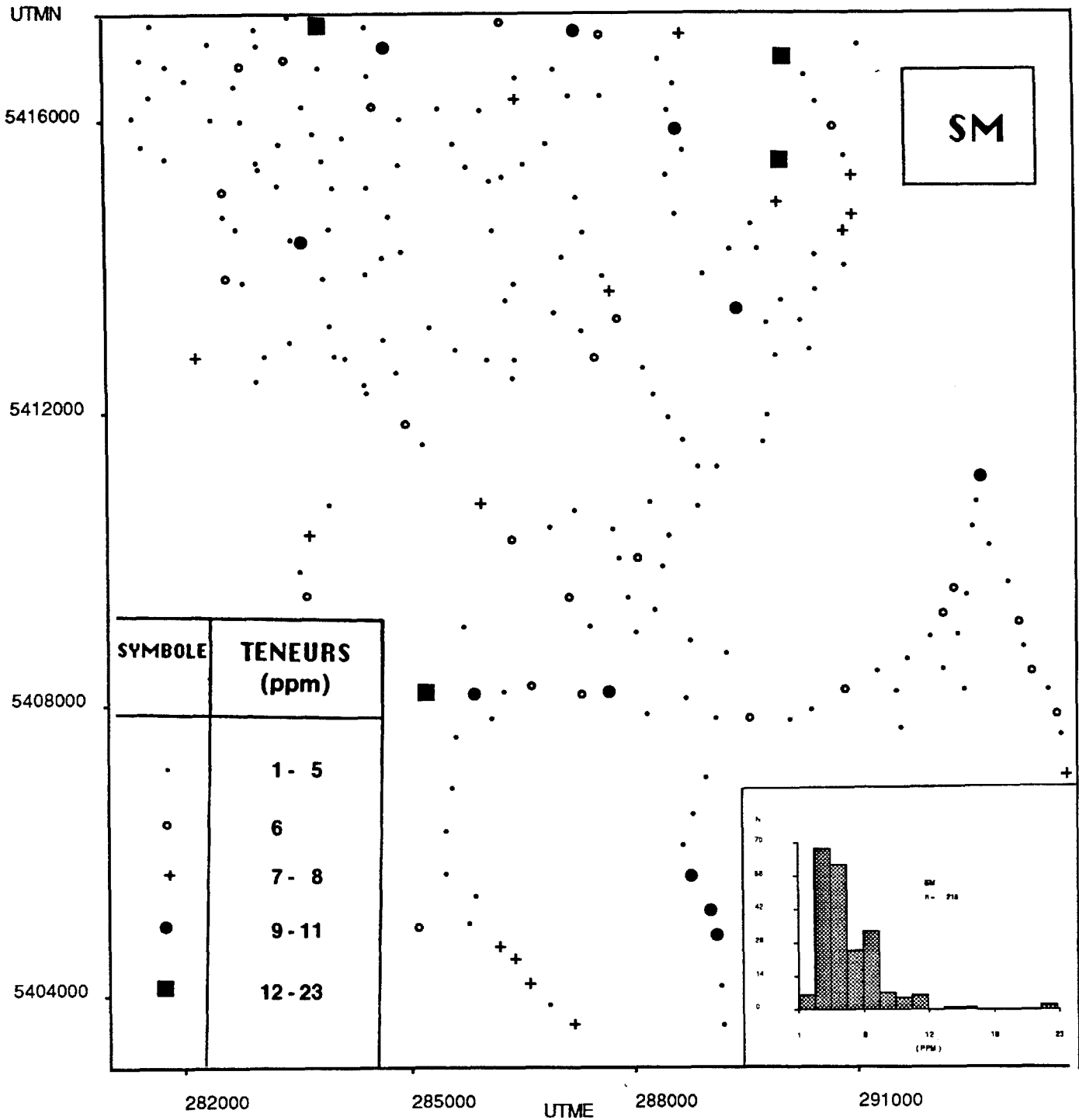


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

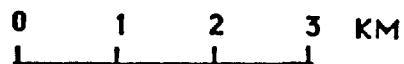


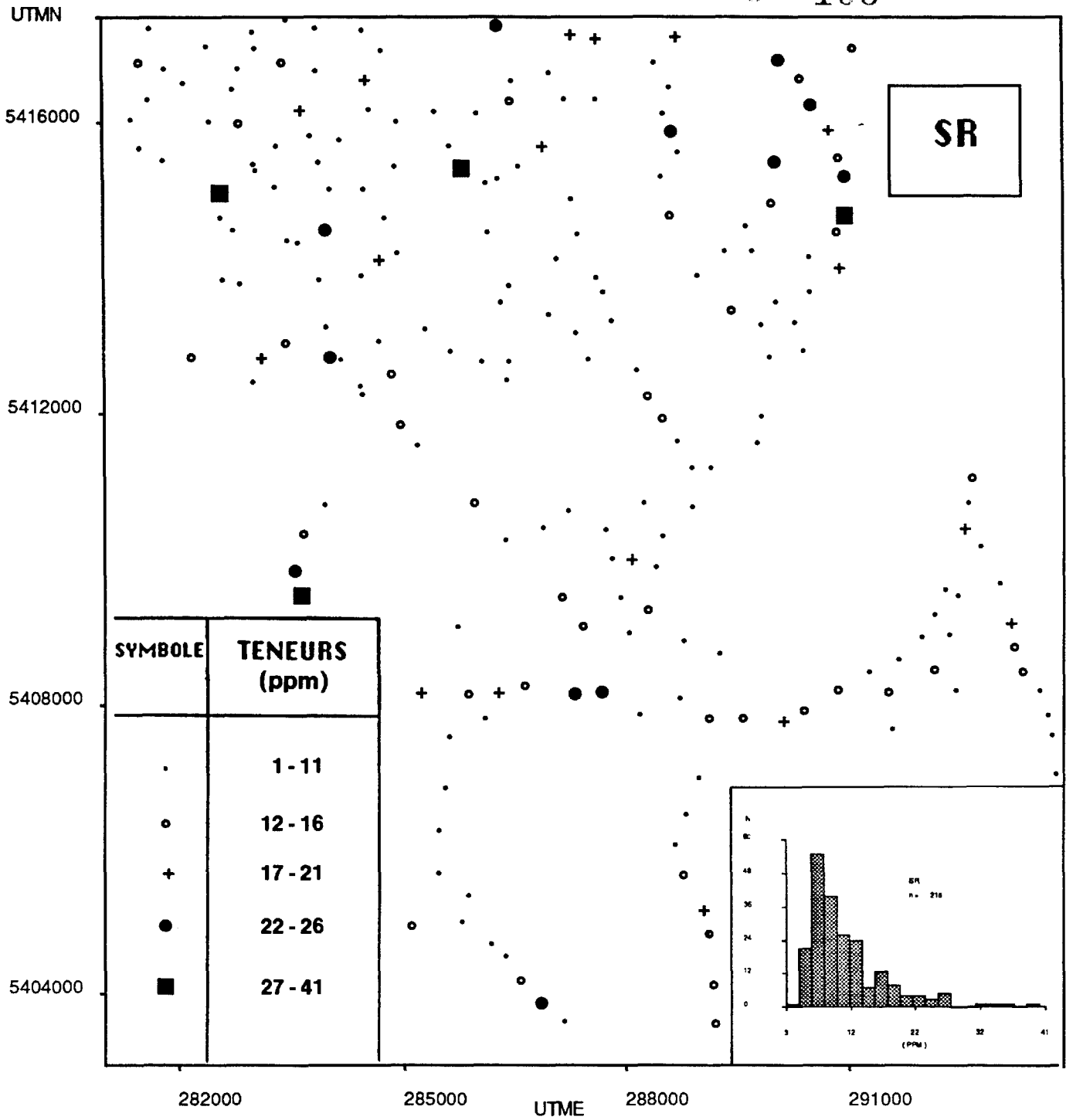


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)



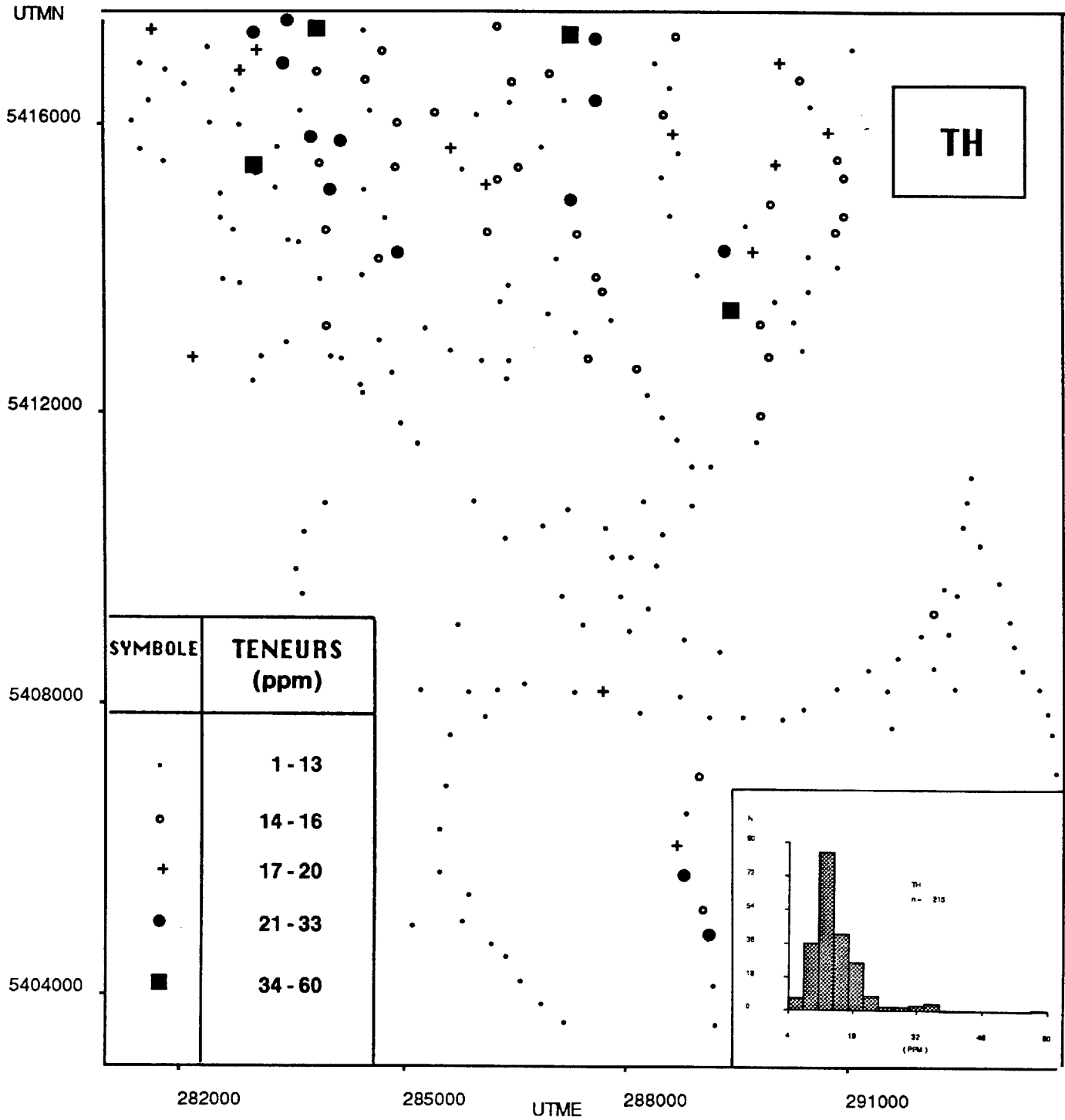


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

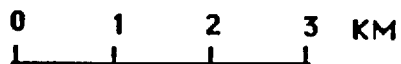


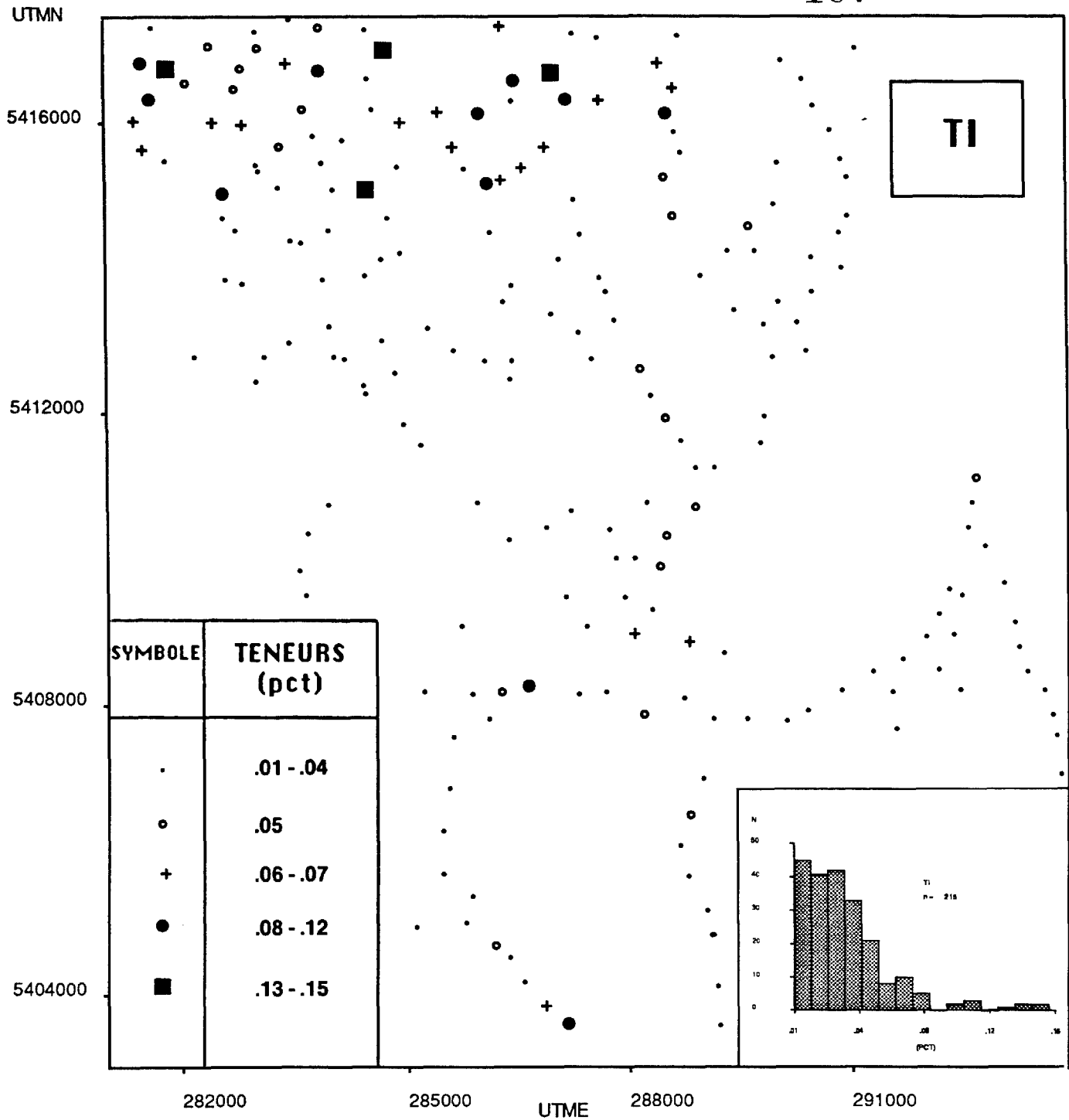


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

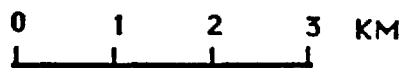


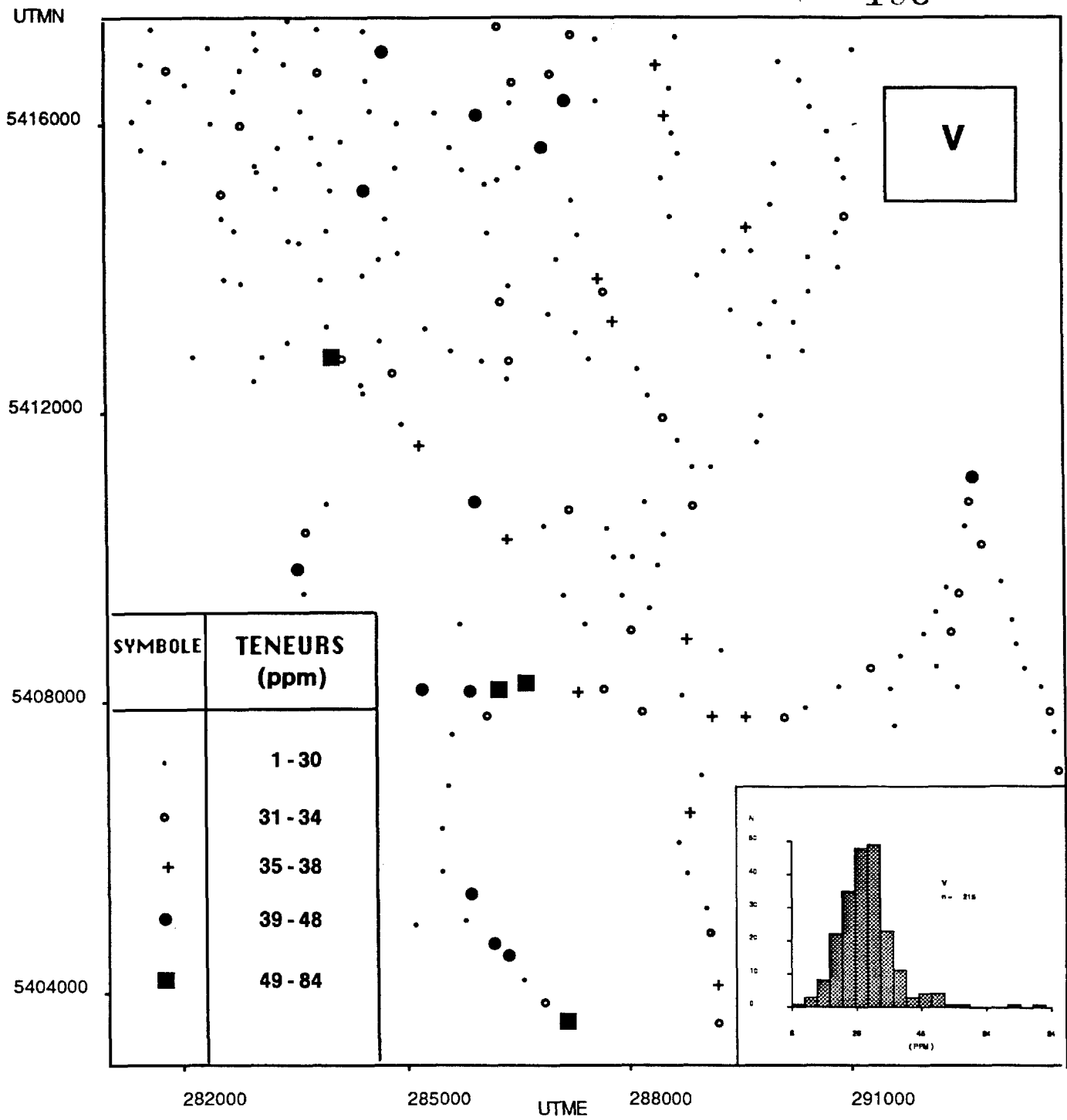


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

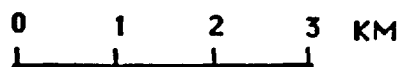


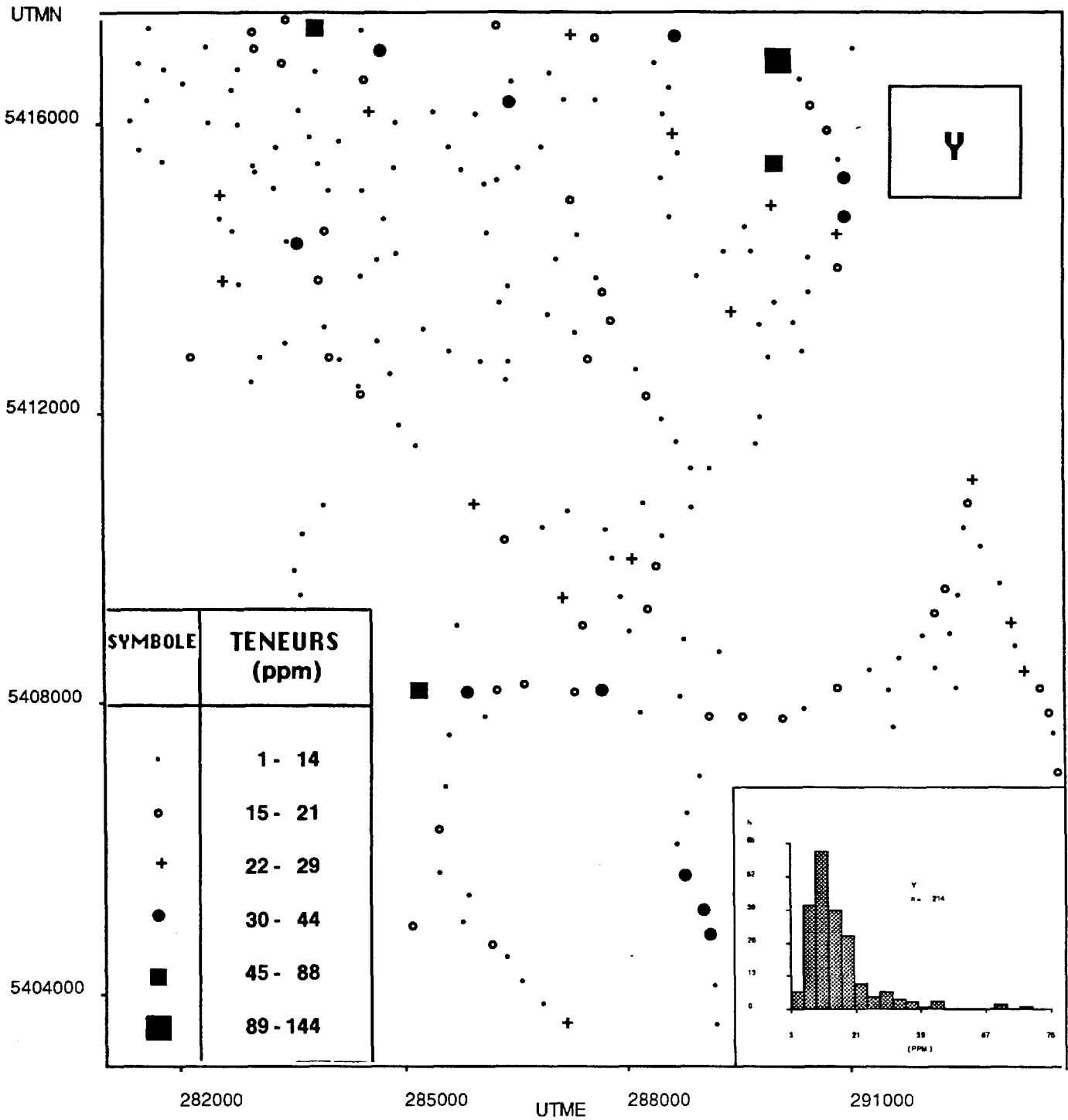


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

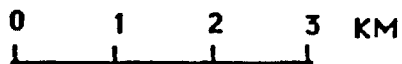


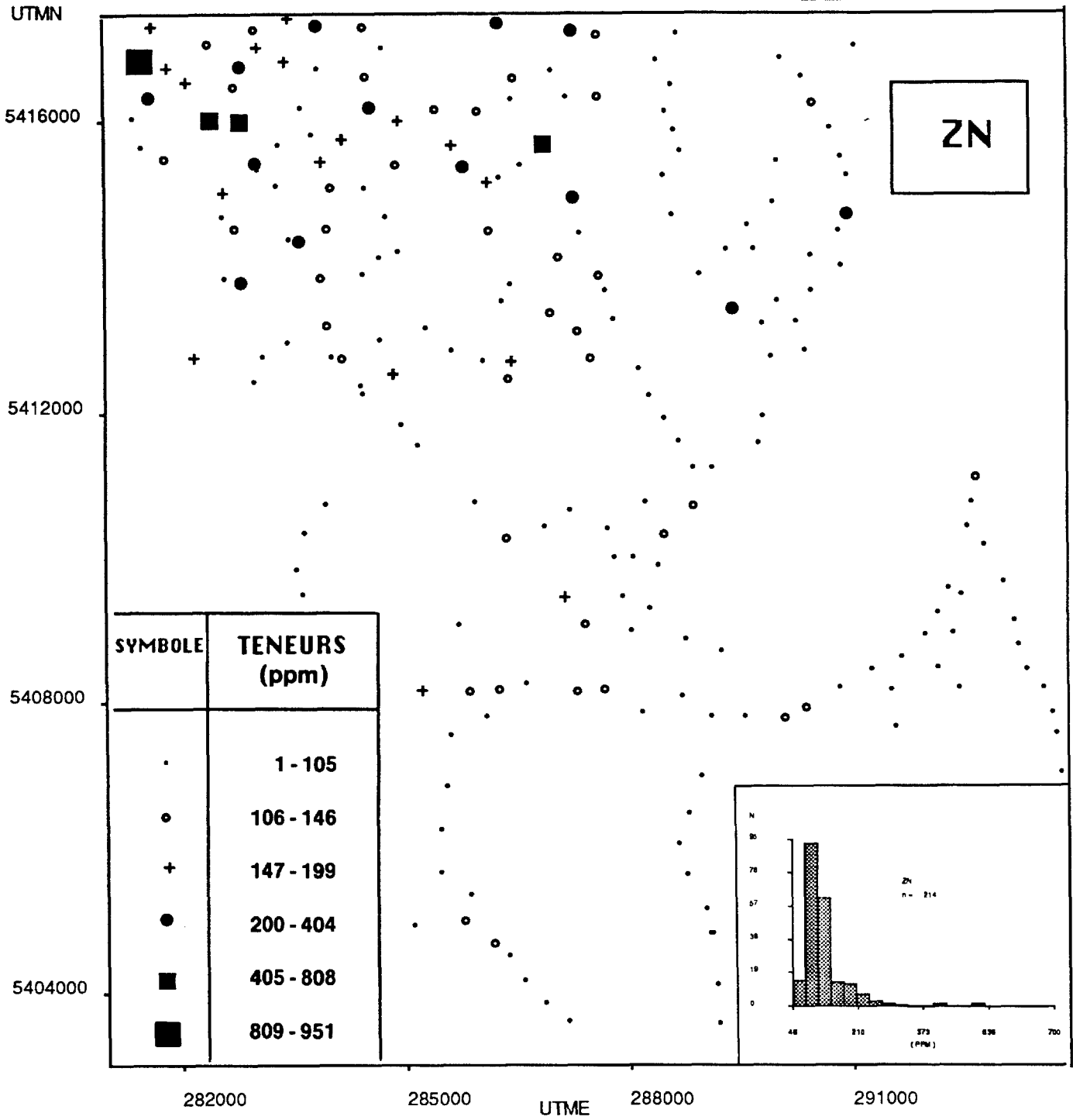


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; fraction < 230m)

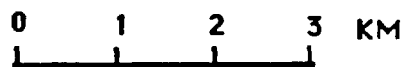




GEOCHIMIE DES SOLS

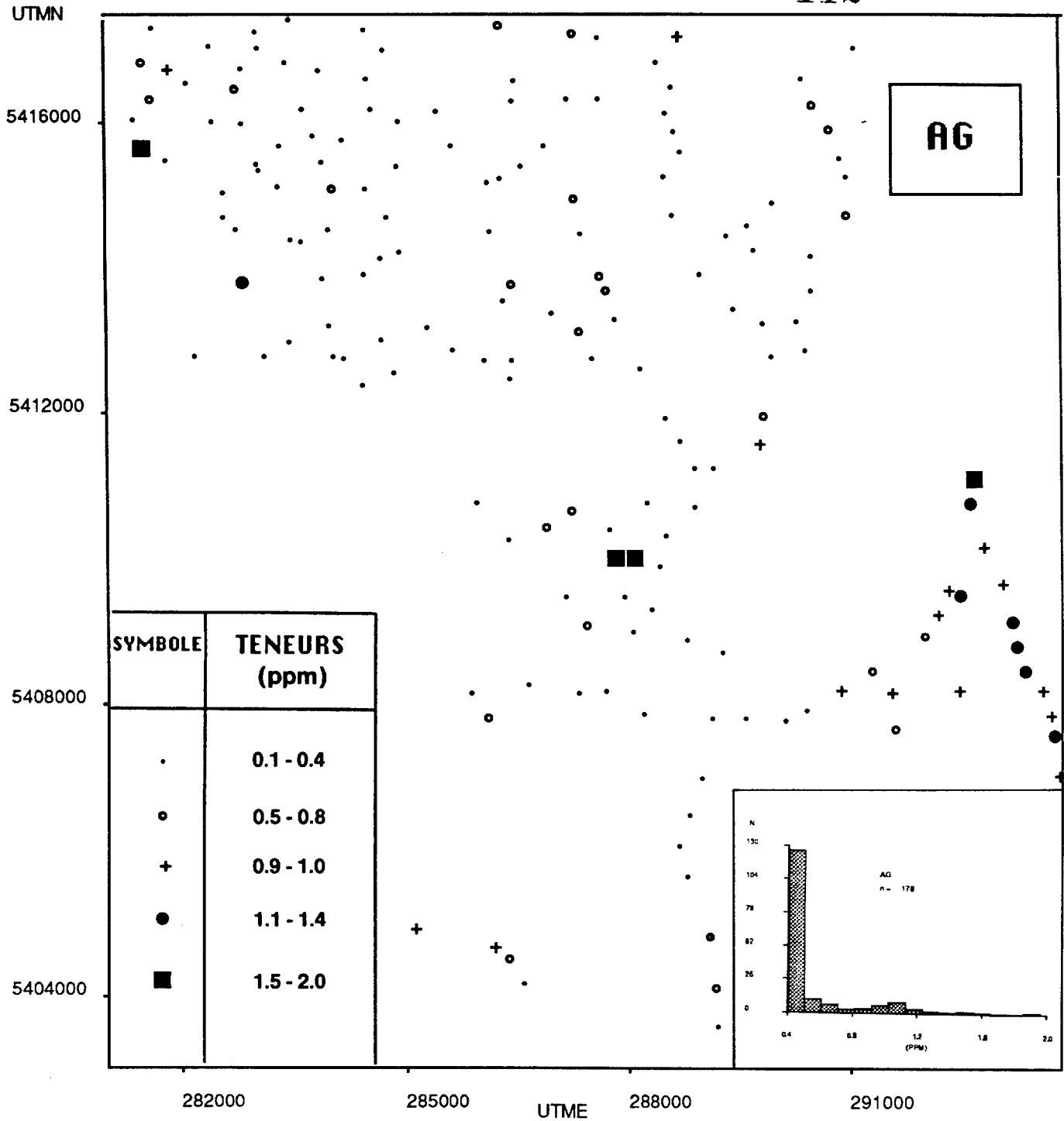
REGION DE SULLIPEK

(Horizon C ; fraction < 230m)



CARTES

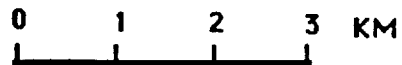
HORIZON C - 230 m < Fraction < 35 m

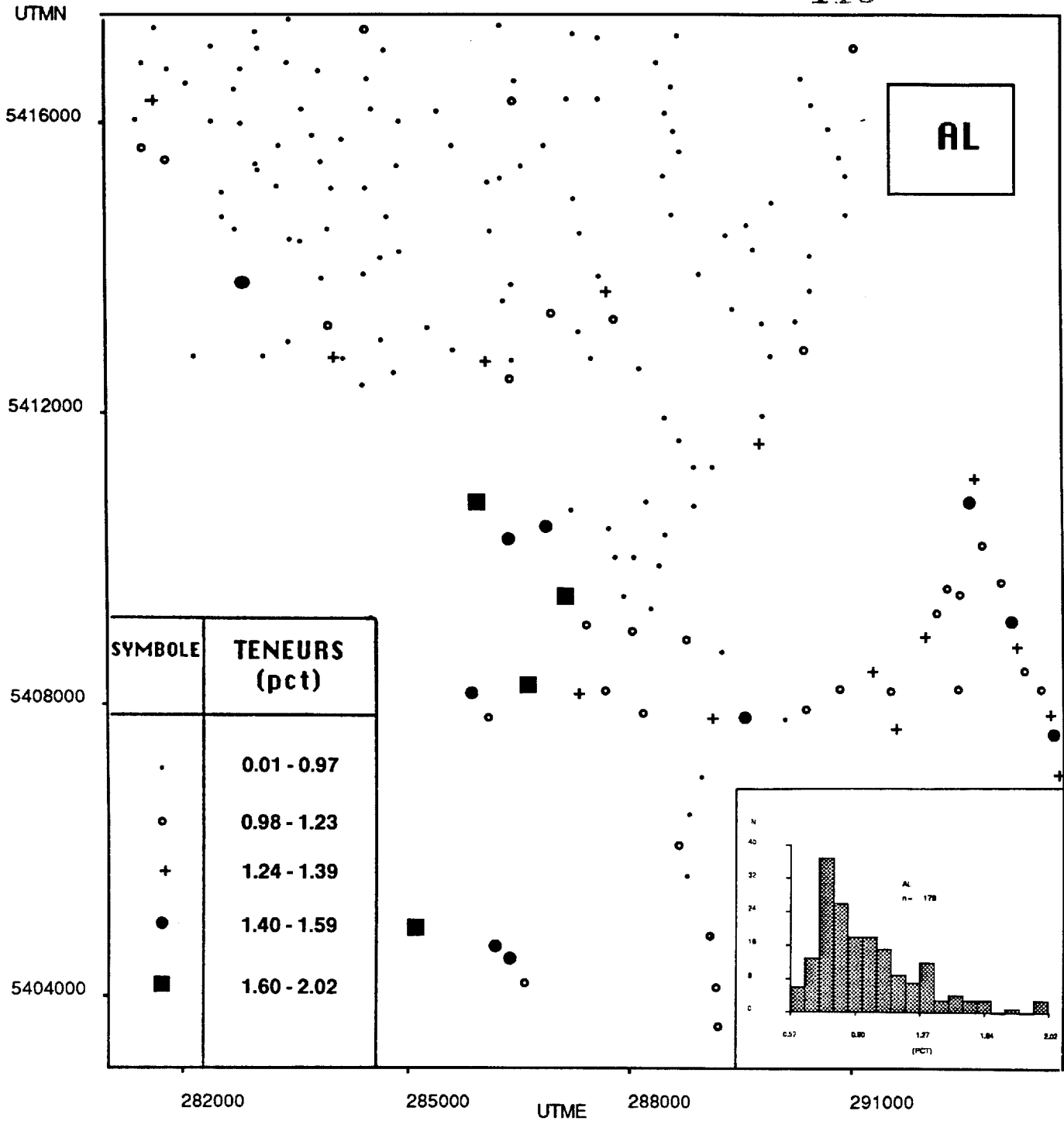


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

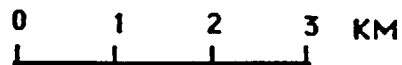


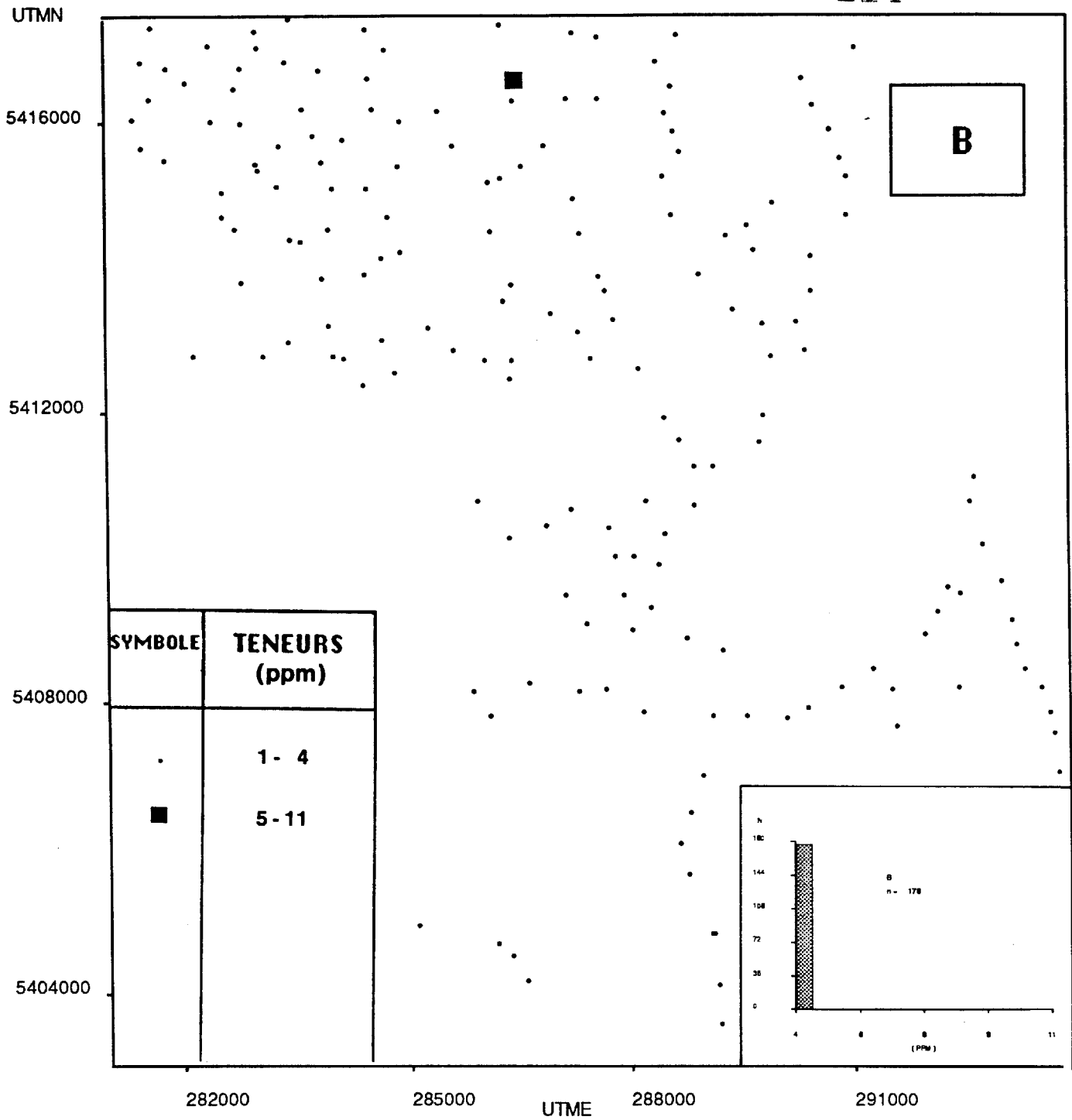


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)



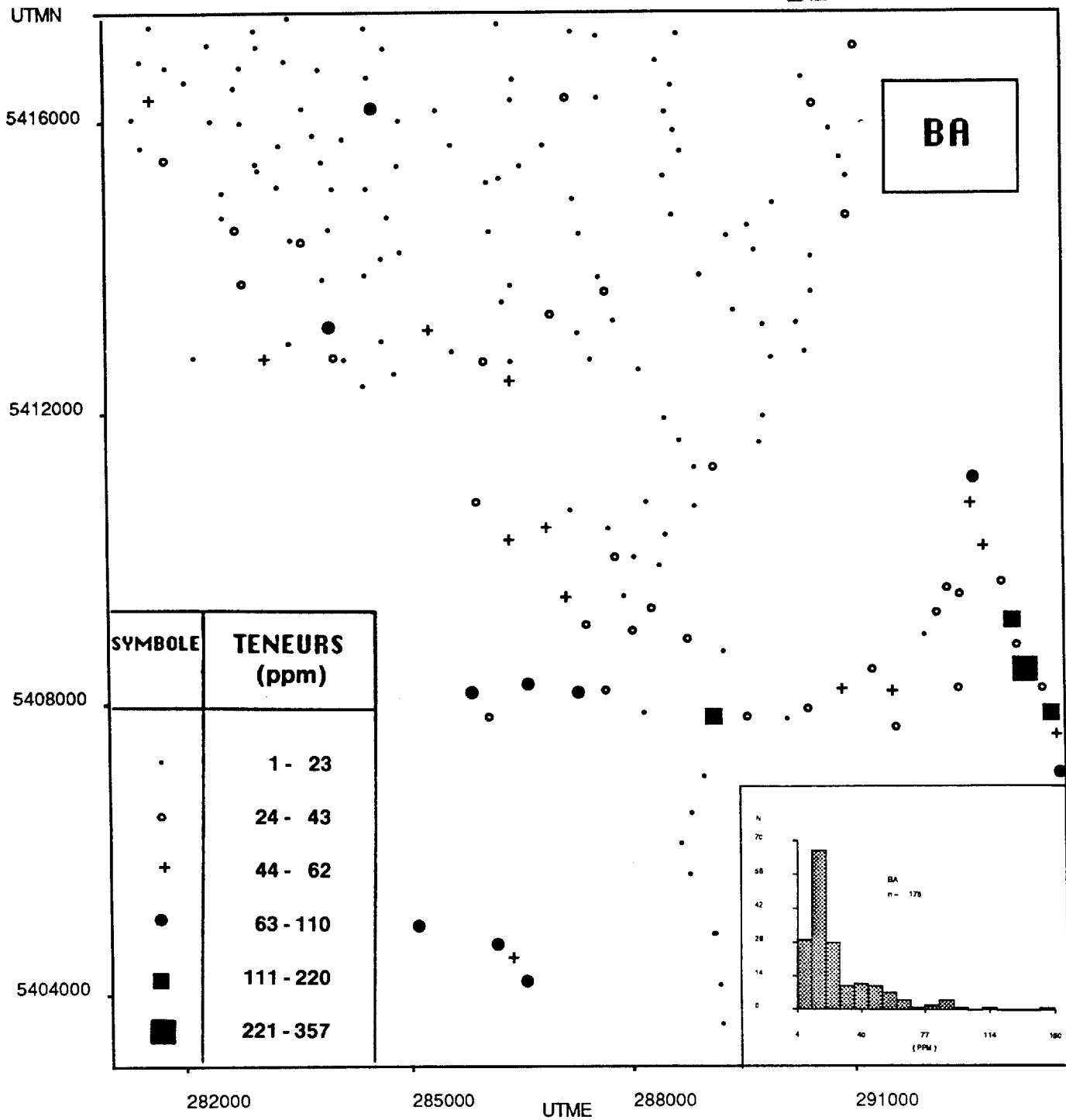


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

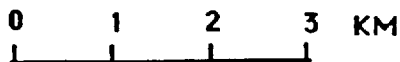


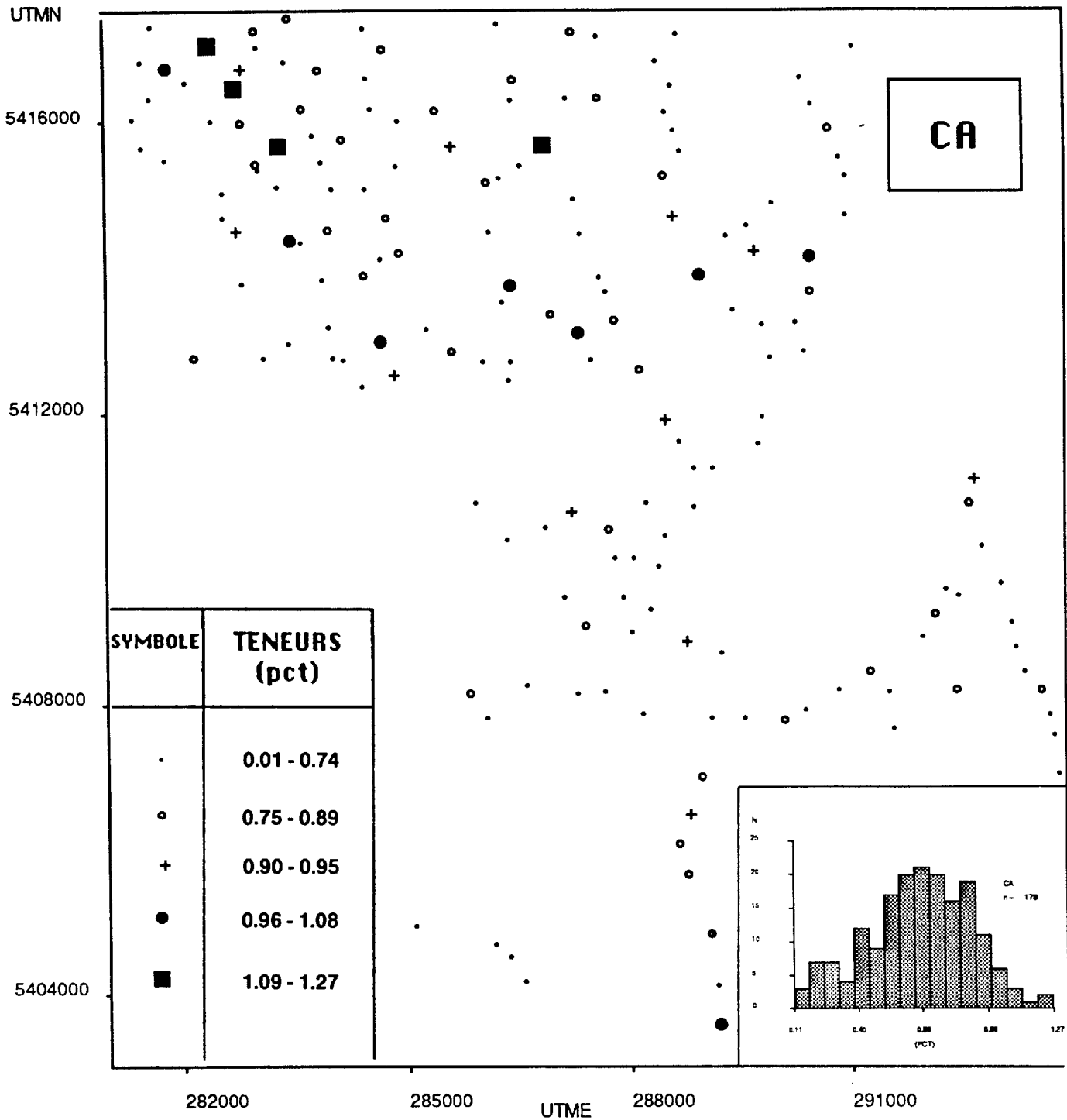


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

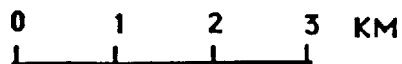


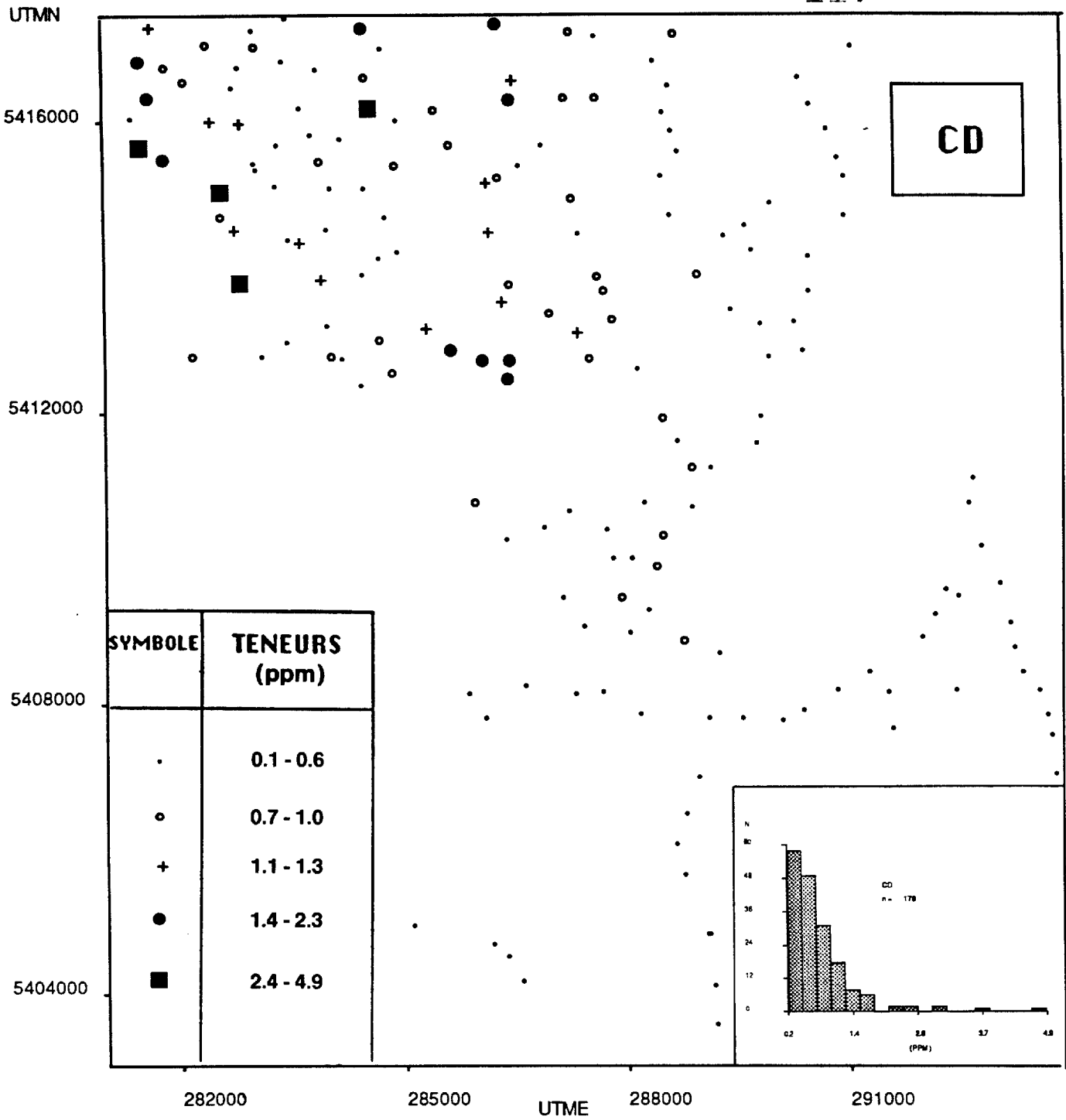


GEOCHIMIE DES SOLS

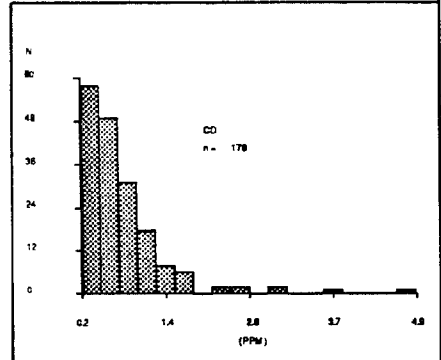
REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

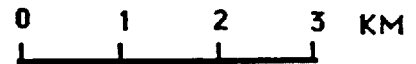


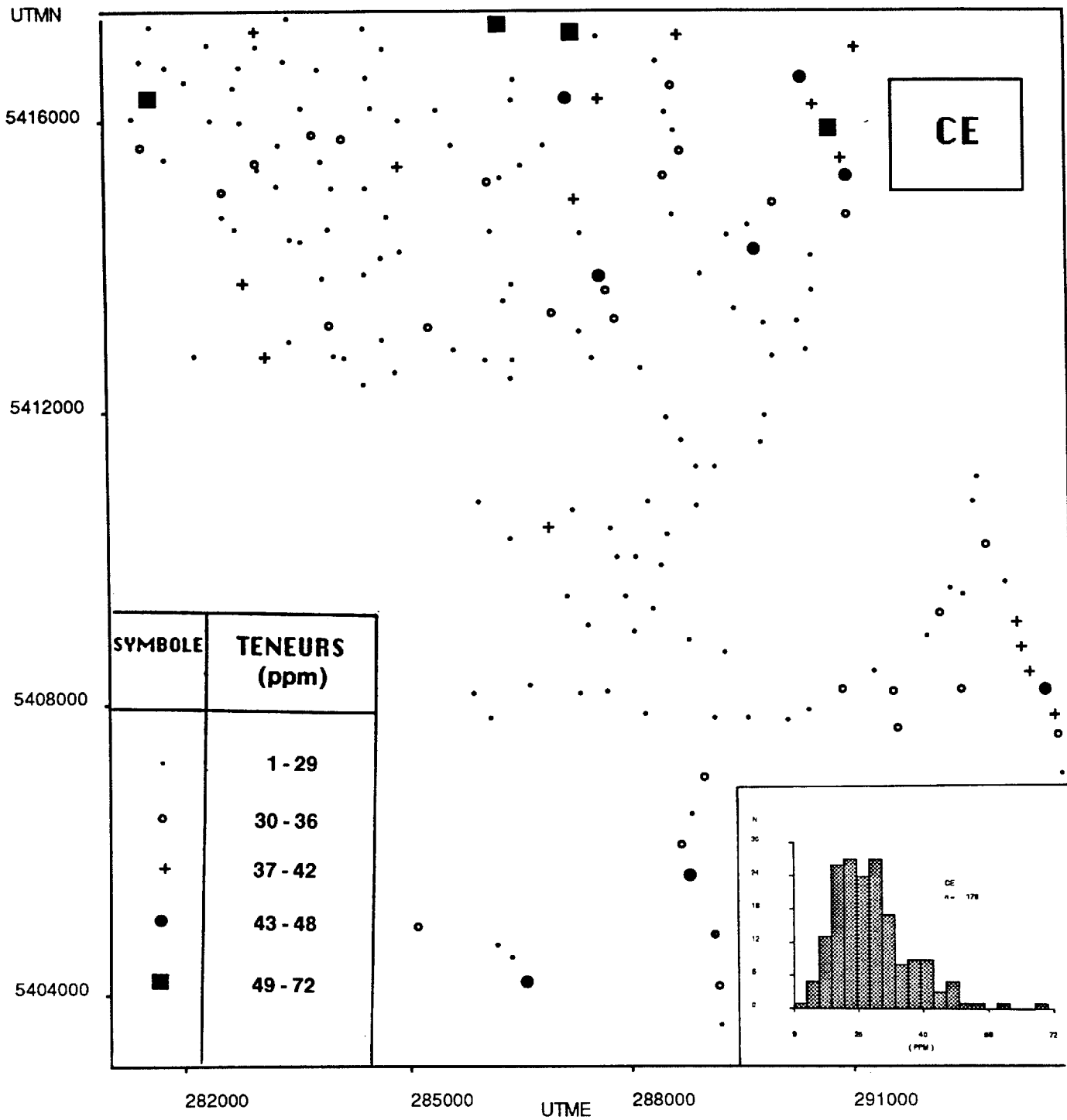


SYMBOLE	TENEURS (ppm)
.	0.1 - 0.6
○	0.7 - 1.0
+	1.1 - 1.3
●	1.4 - 2.3
■	2.4 - 4.9

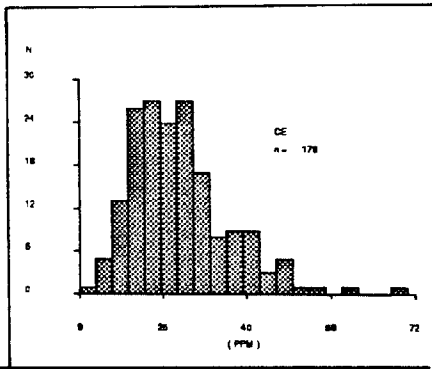


GEOCHIMIE DES SOLS
REGION DE SULLIPEK
 (Horizon C ; 230m < fraction < 35m)





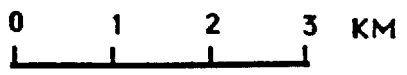
SYMBOLE	TENEURS (ppm)
.	1 - 29
o	30 - 36
+	37 - 42
●	43 - 48
■	49 - 72

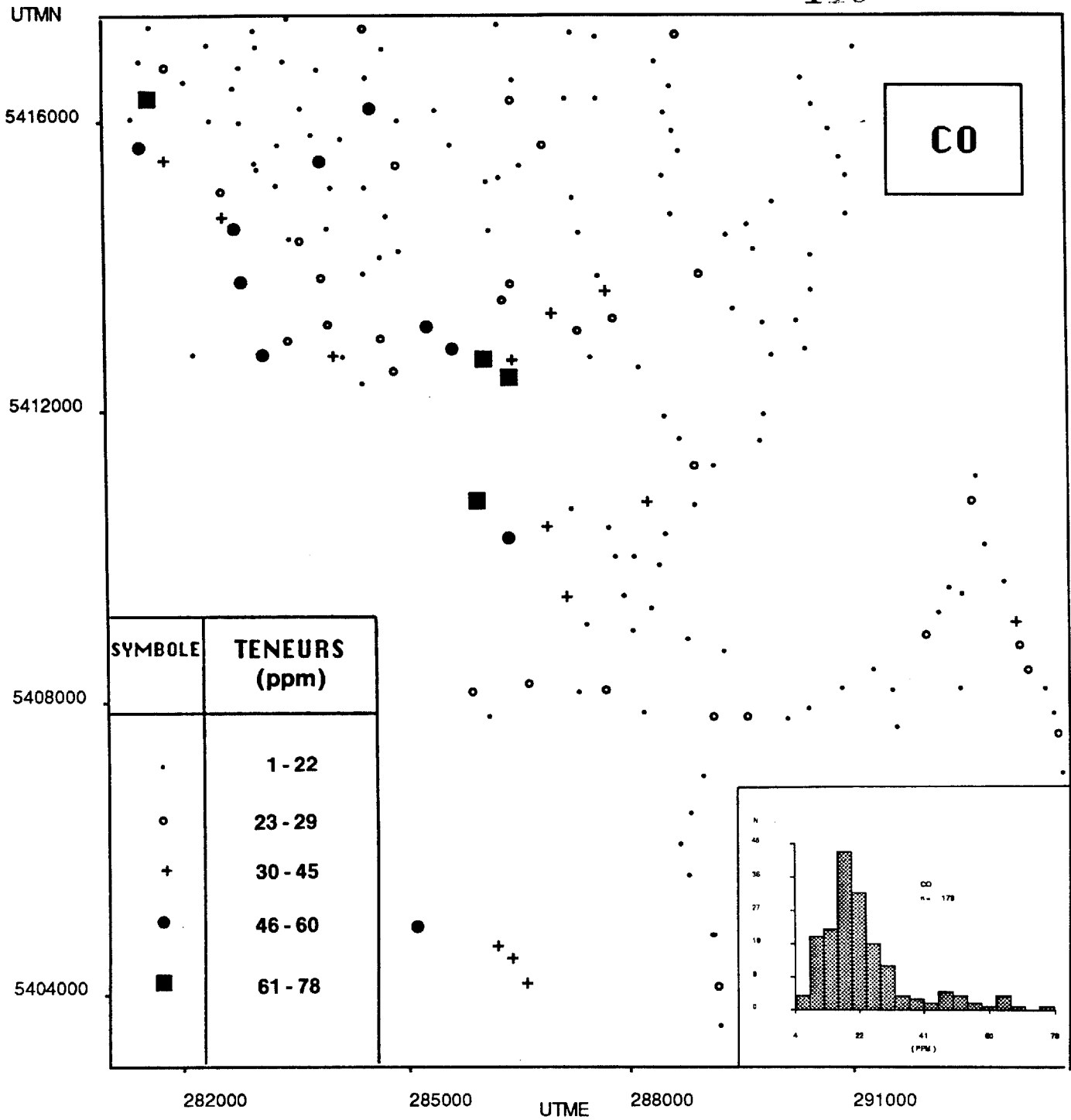


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

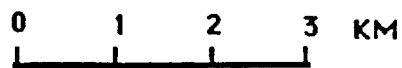


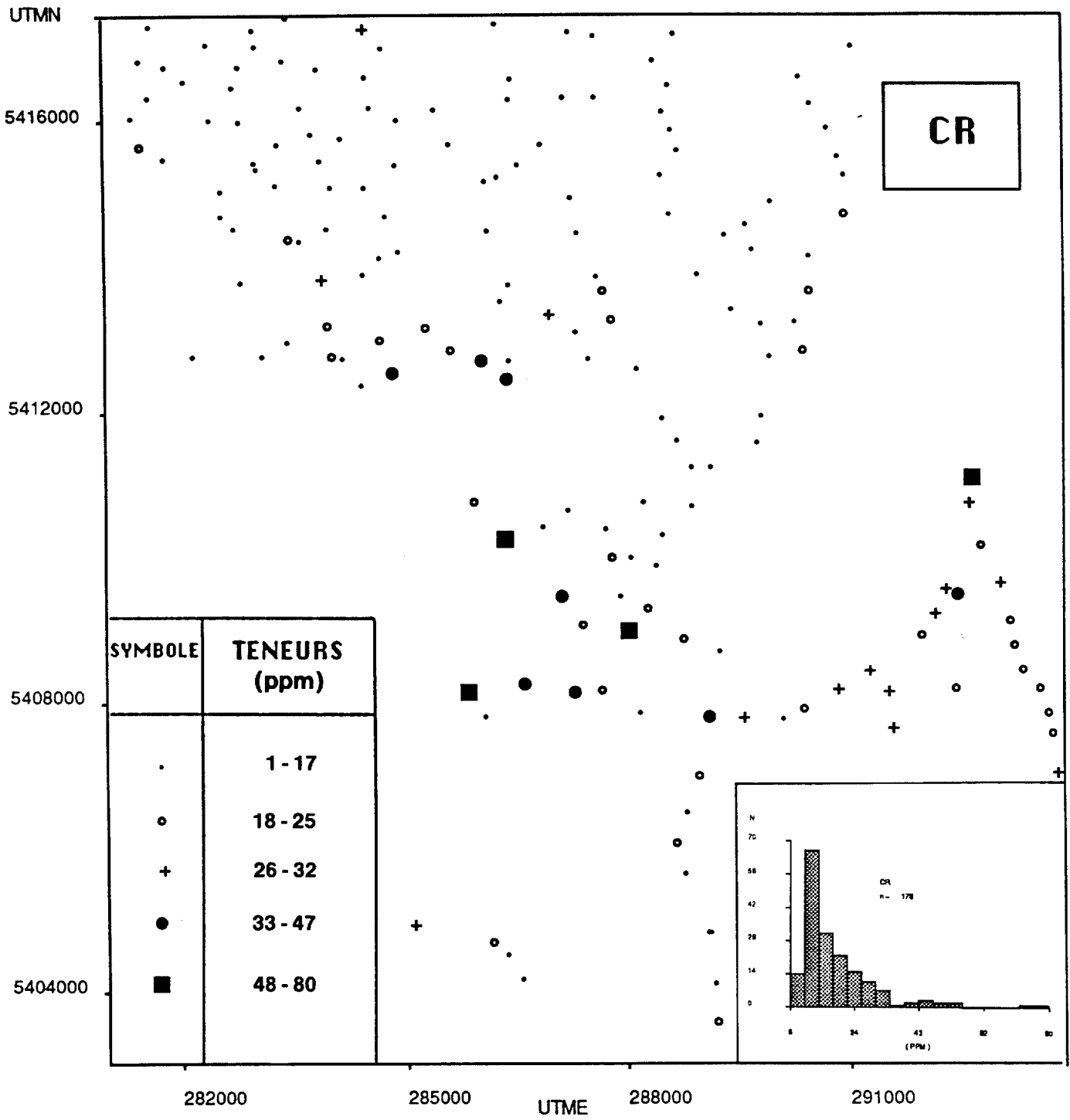


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)



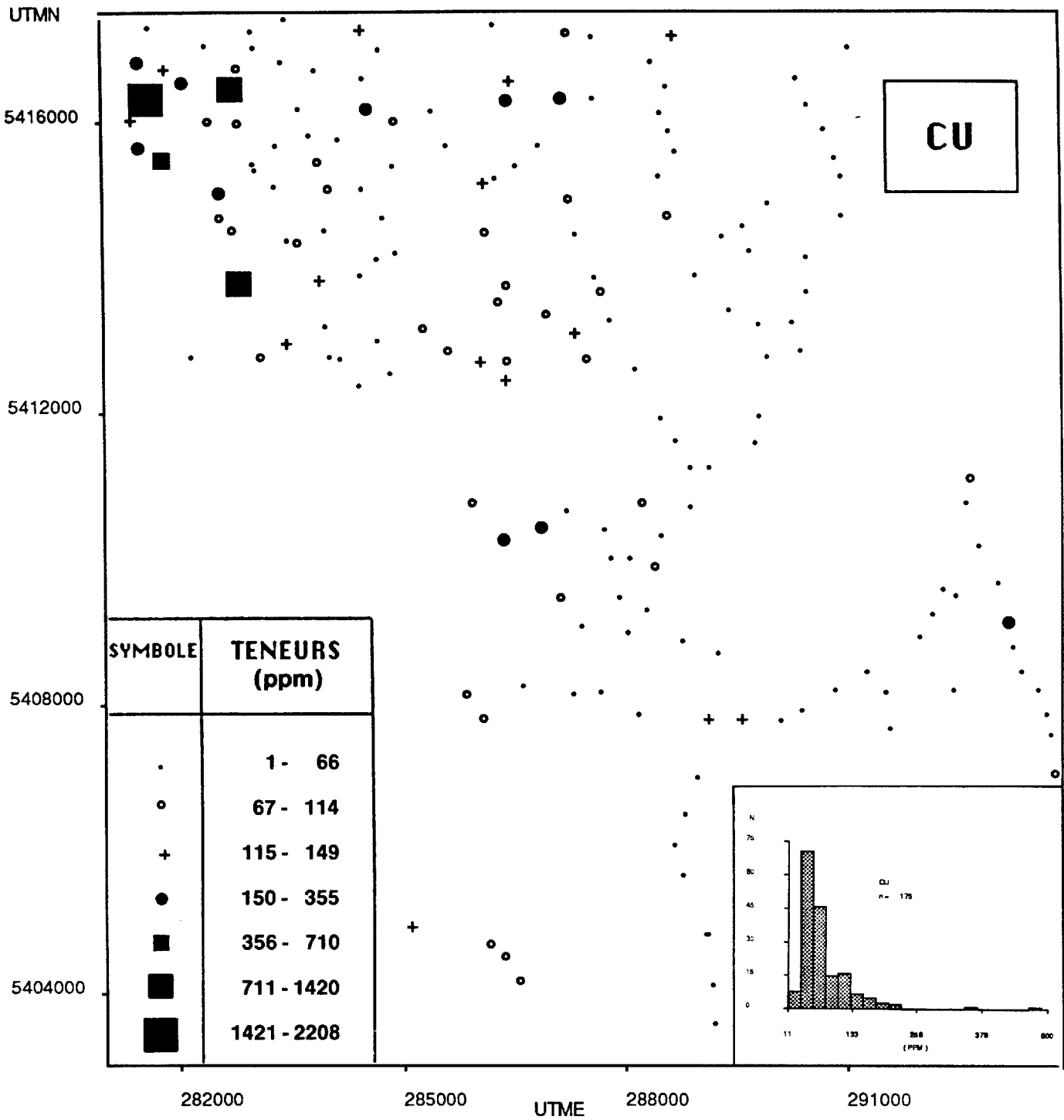


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

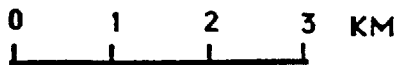


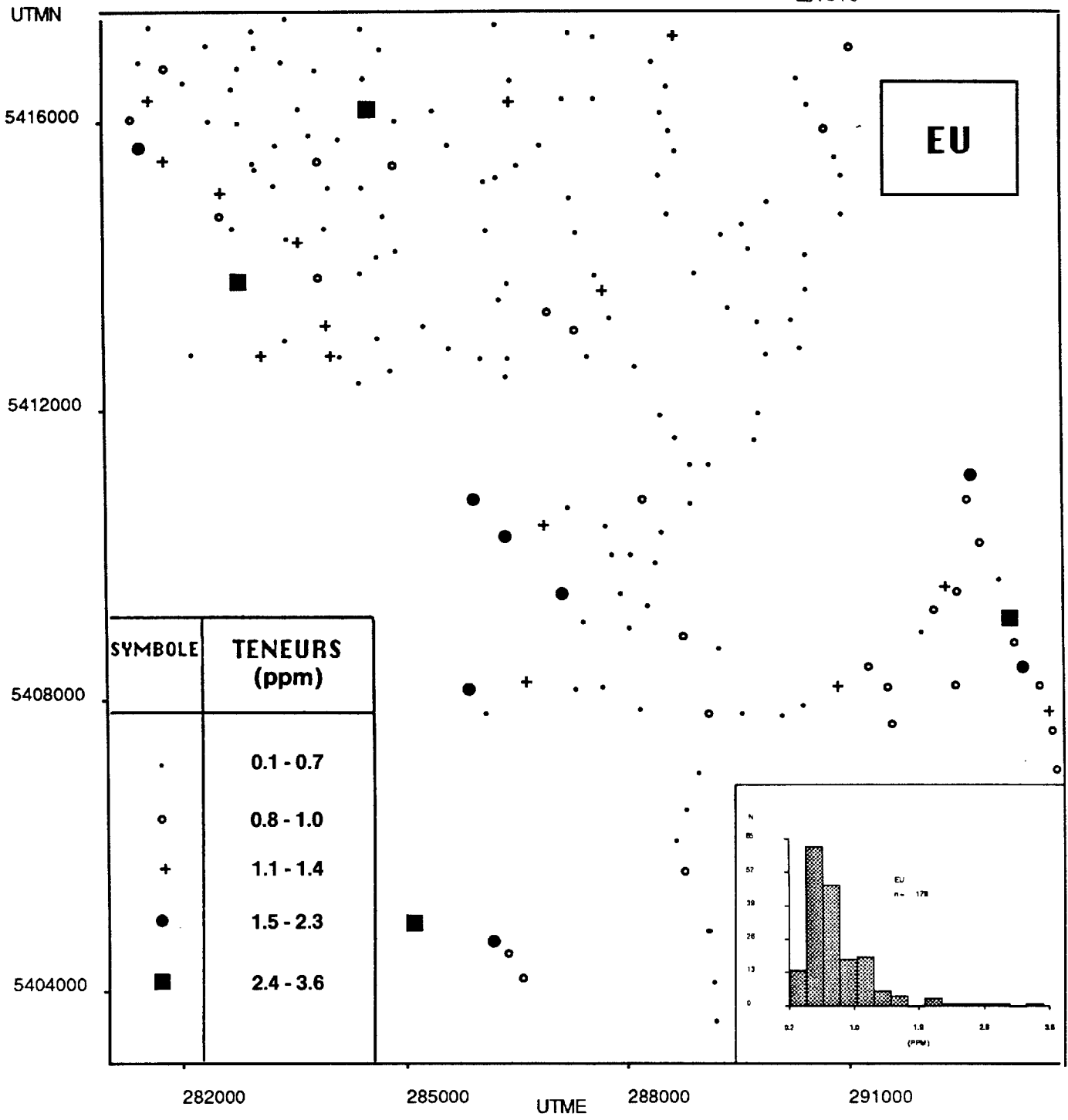


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

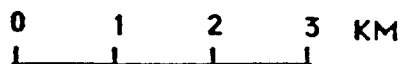


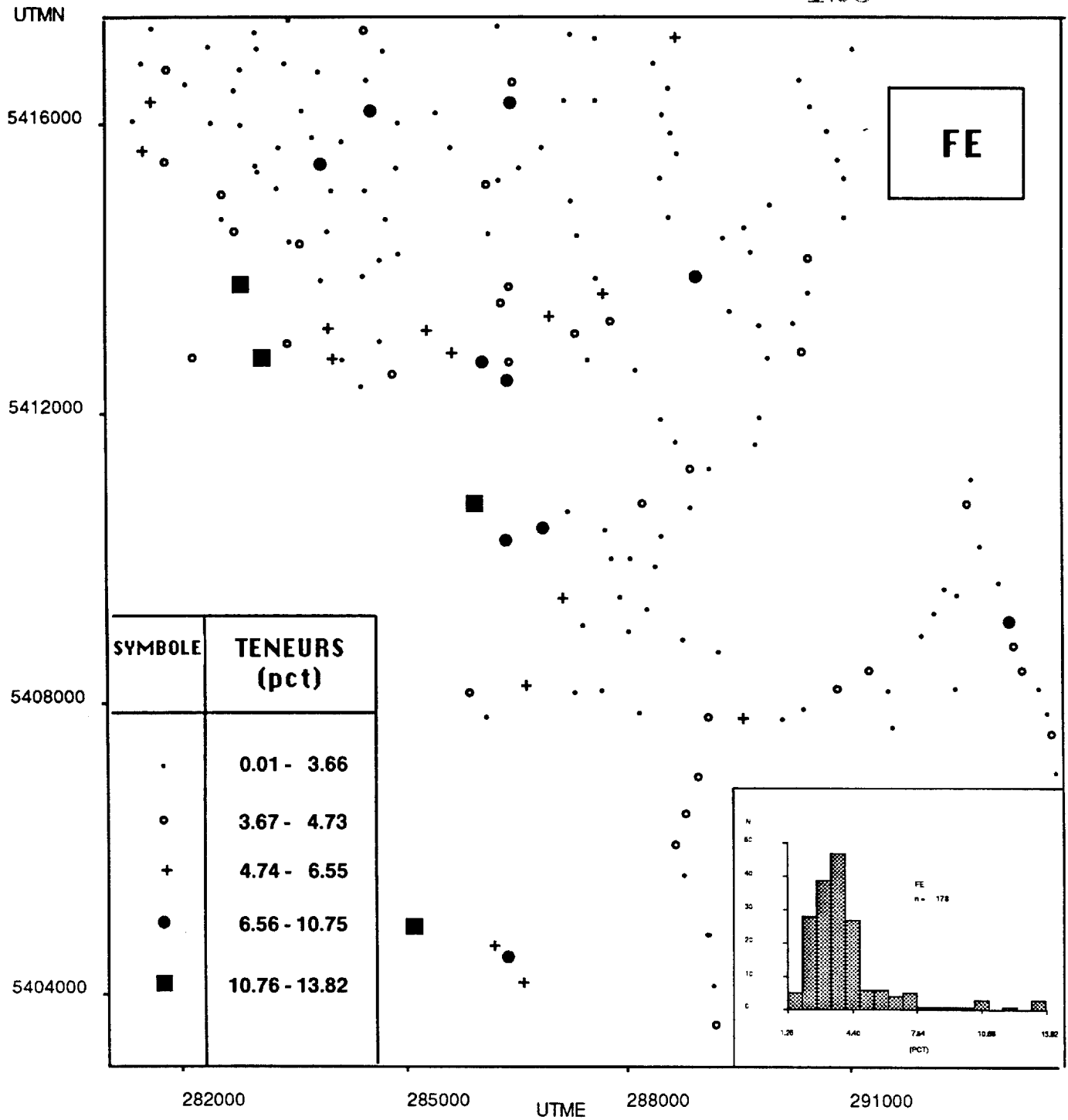


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

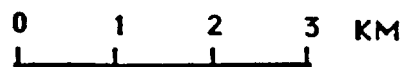


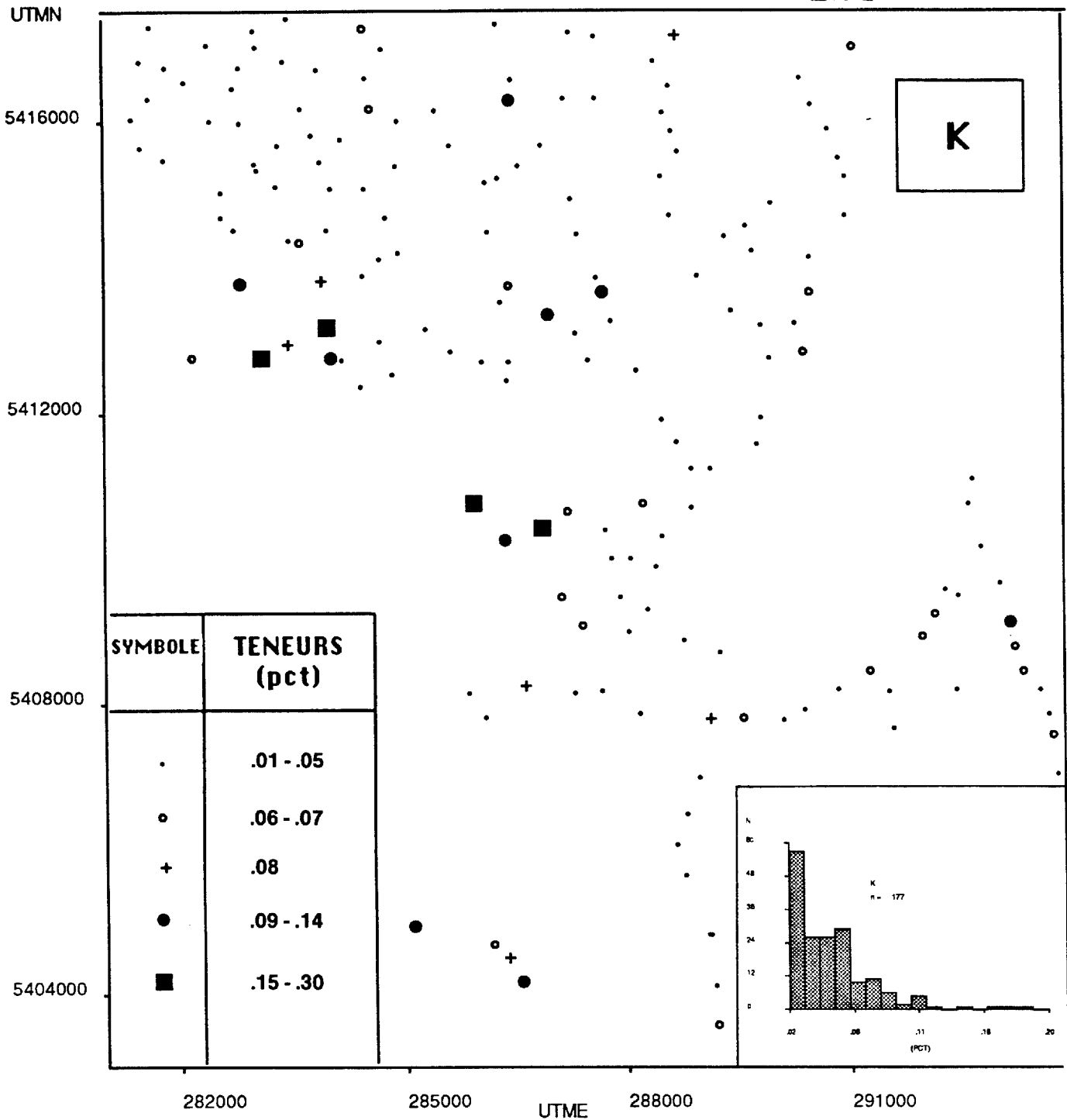


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

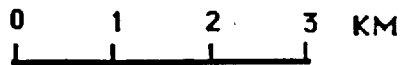


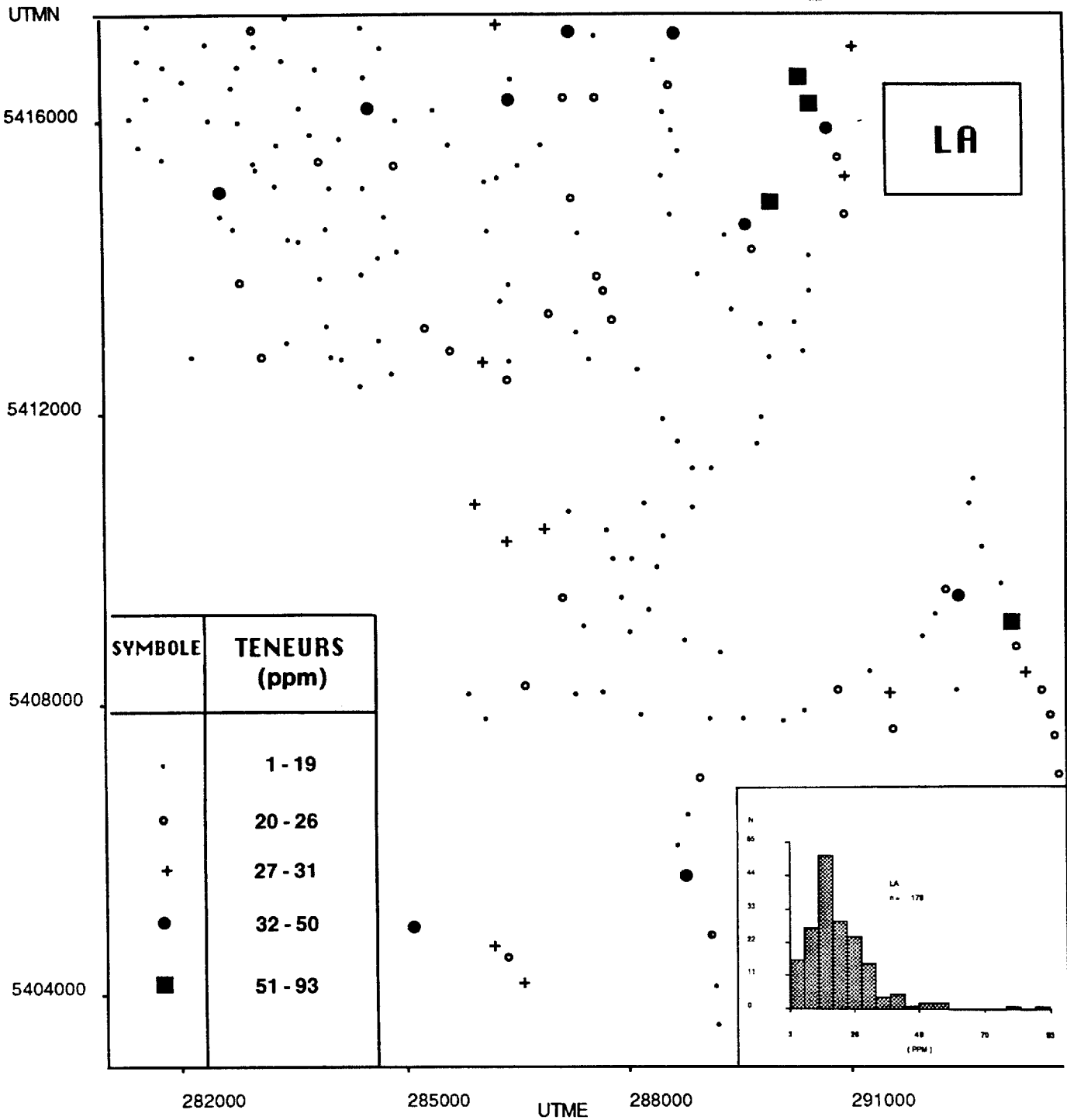


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)



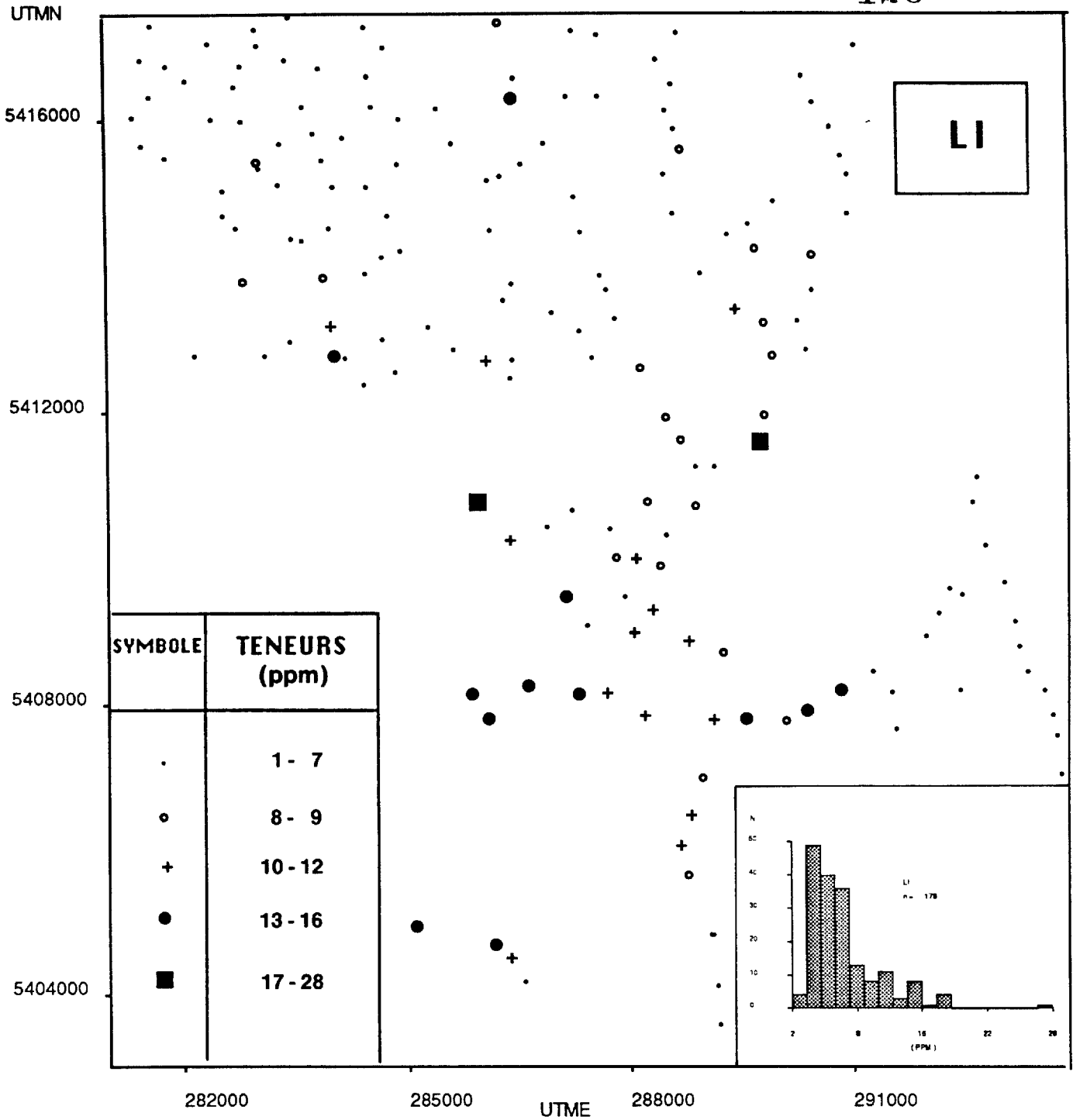


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

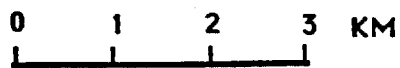




GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)



UTMN

5416000

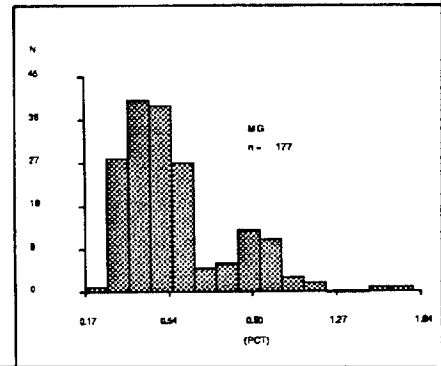
5412000

5408000

5404000

MG

SYMBOLE	TENEURS (pct)
.	0.01 - 0.54
o	0.55 - 0.83
+	0.84 - 0.95
●	0.96 - 1.10
■	1.11 - 1.64



282000

285000

UTME

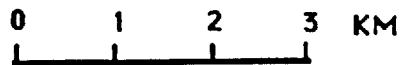
288000

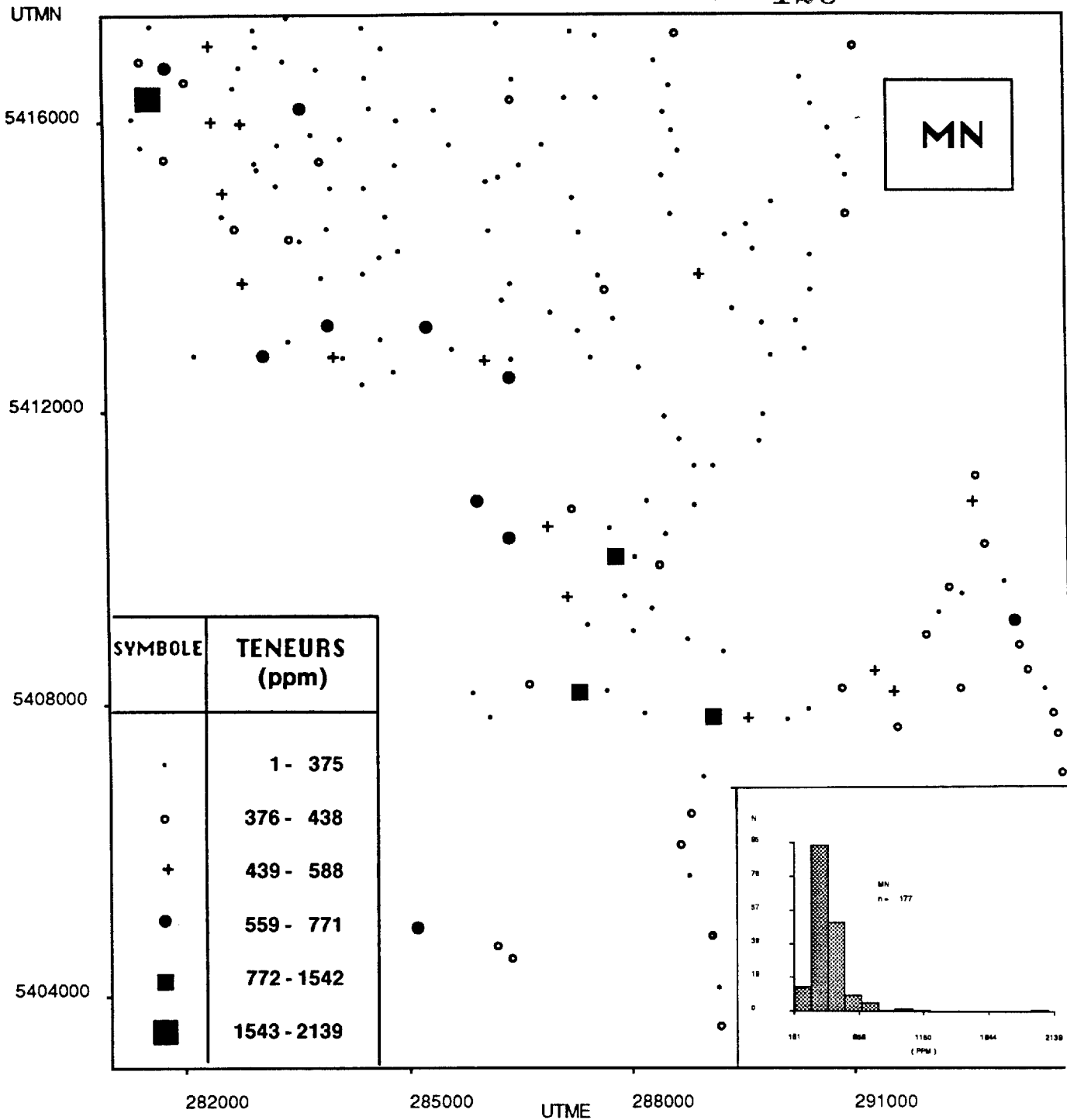
291000

GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)



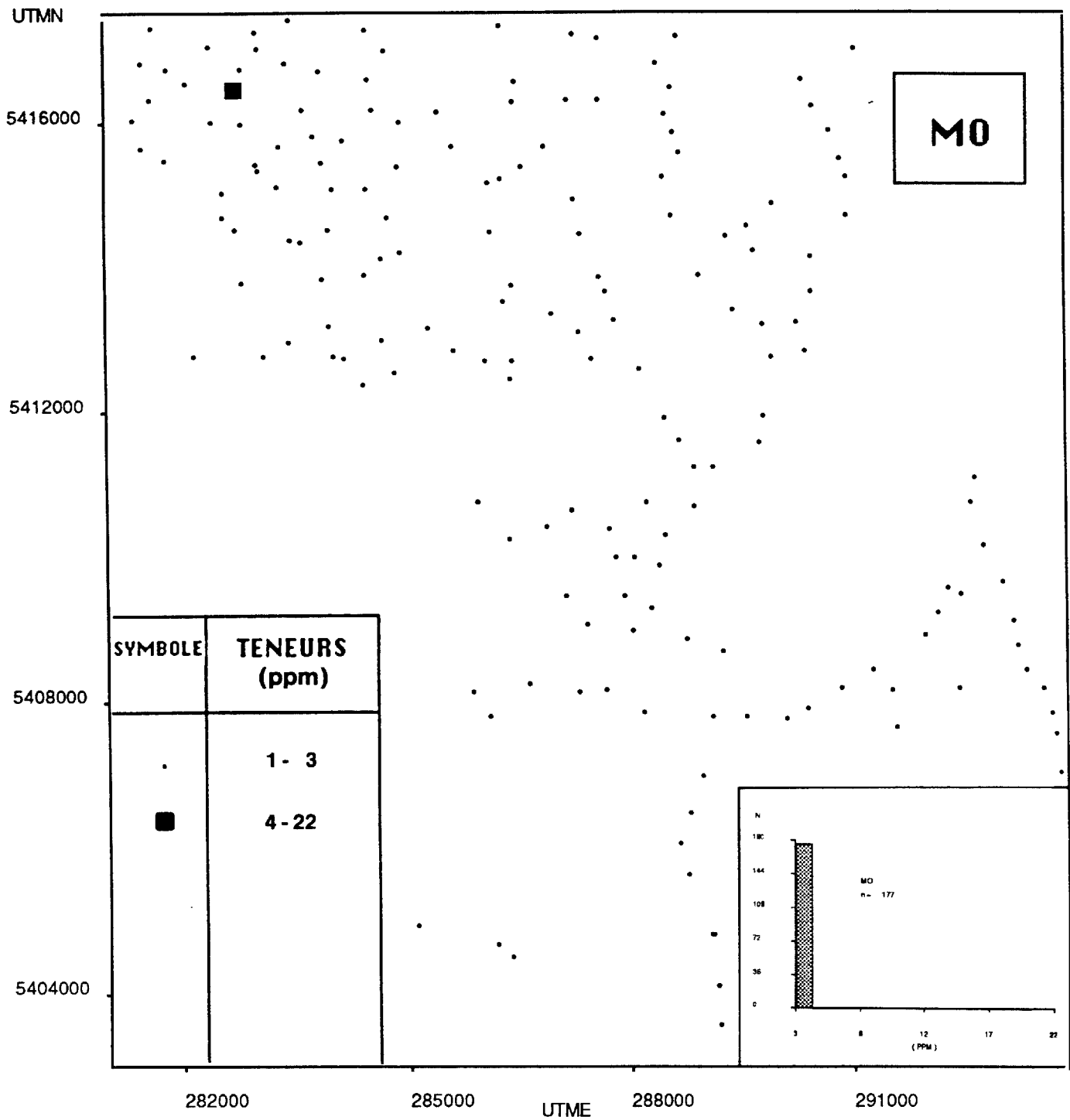


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

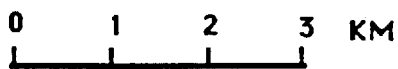




GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)



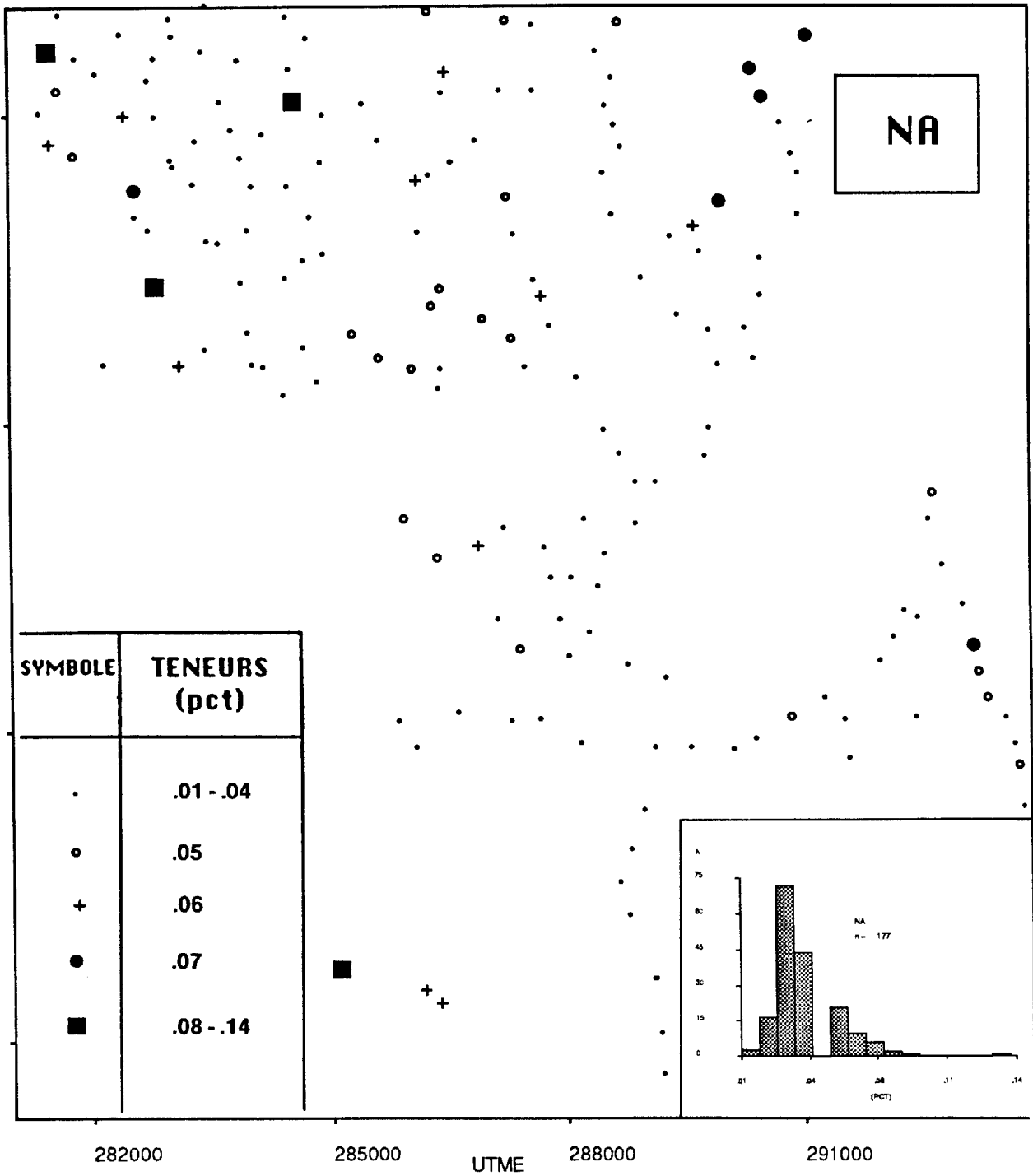
UTMN

5416000

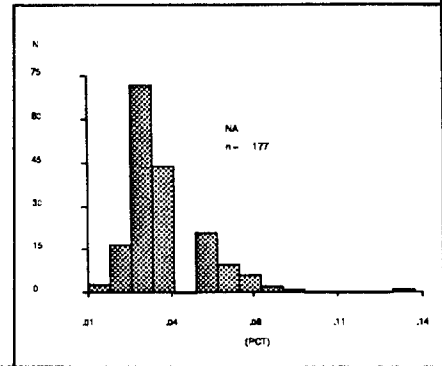
5412000

5408000

5404000



SYMBOLE	TENEURS (pct)
.	.01 - .04
o	.05
+	.06
●	.07
■	.08 - .14



282000

285000

UTME

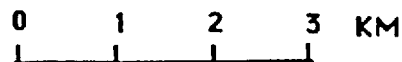
288000

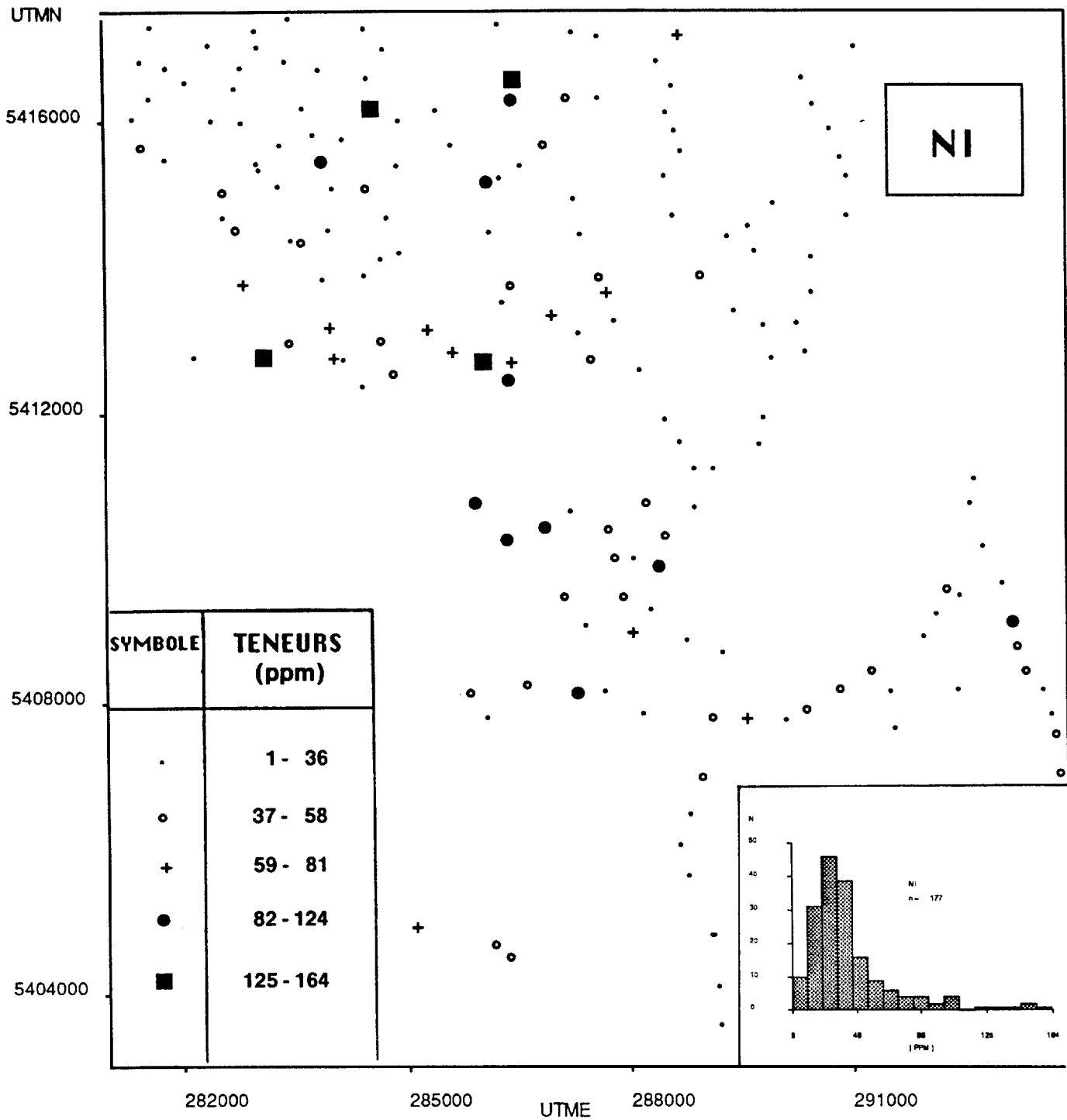
291000

GEOCHIMIE DES SOLS

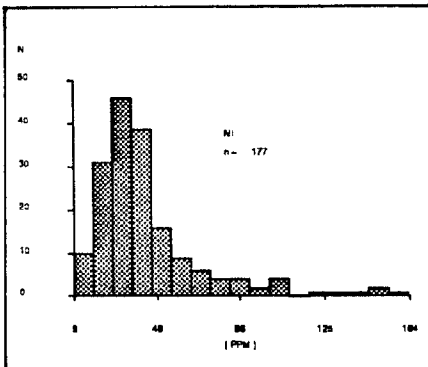
REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)





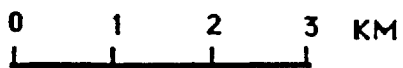
SYMBOLE	TENEURS (ppm)
.	1 - 36
○	37 - 58
+	59 - 81
●	82 - 124
■	125 - 164

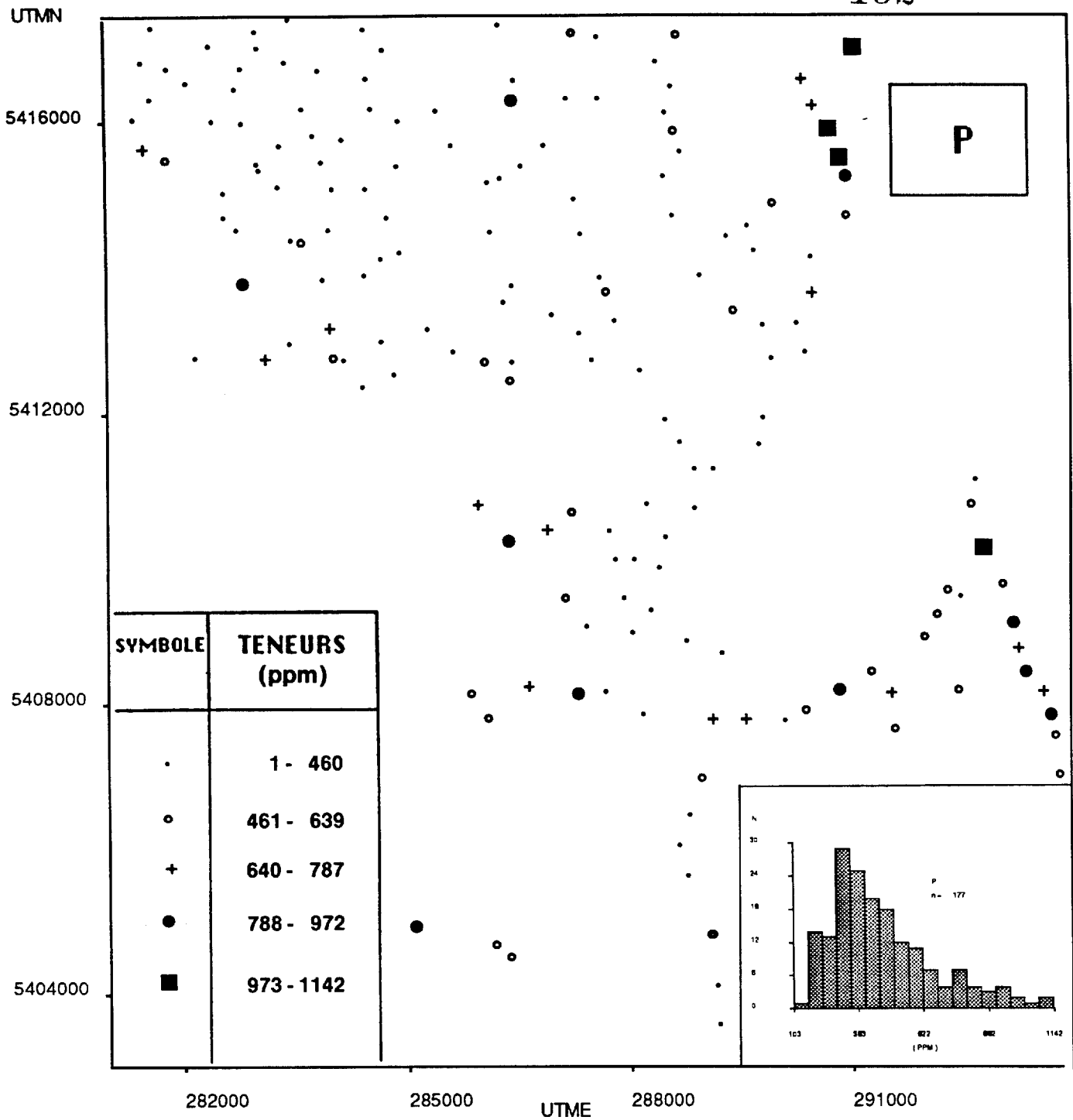


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)



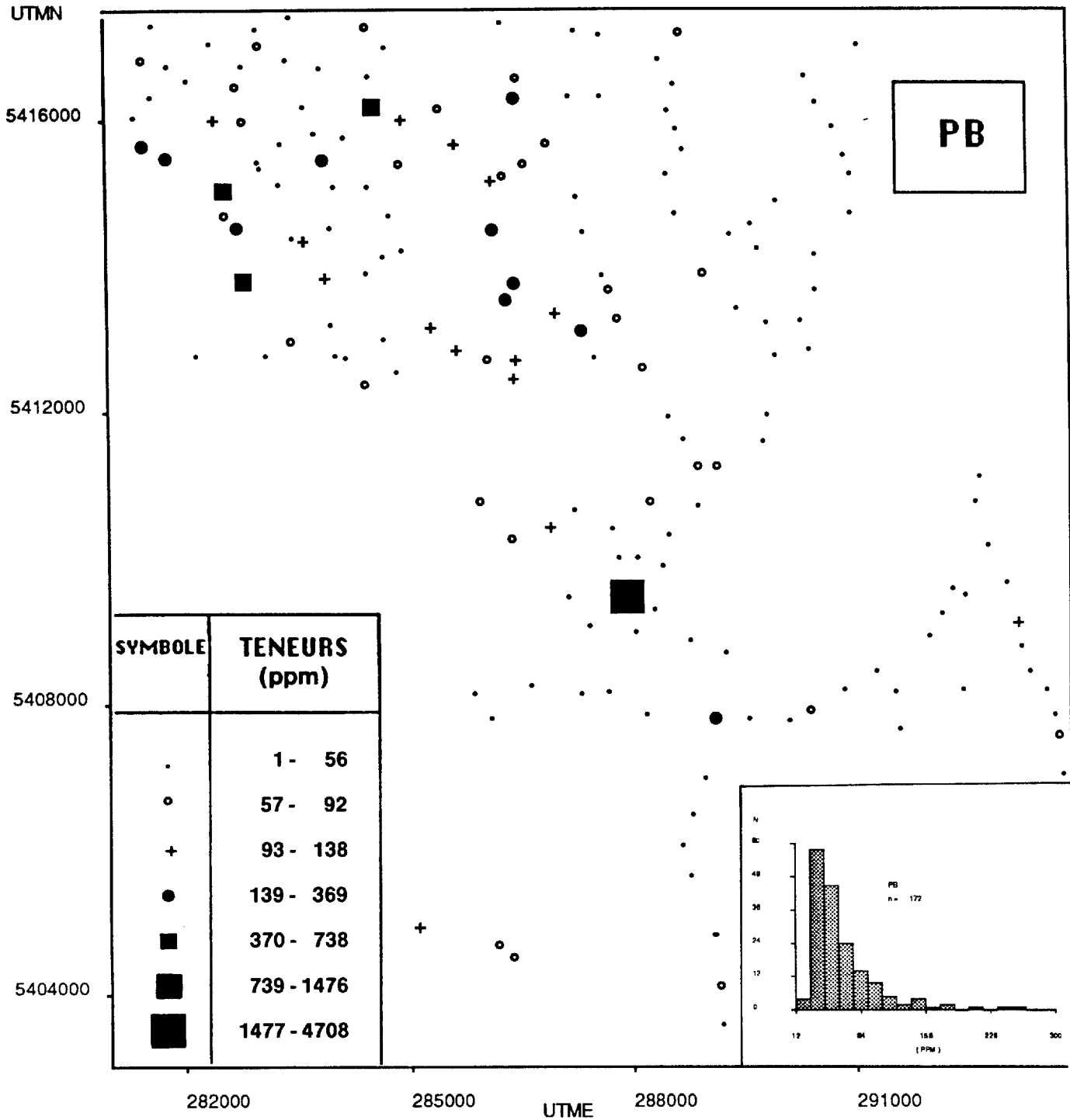


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

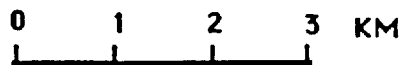


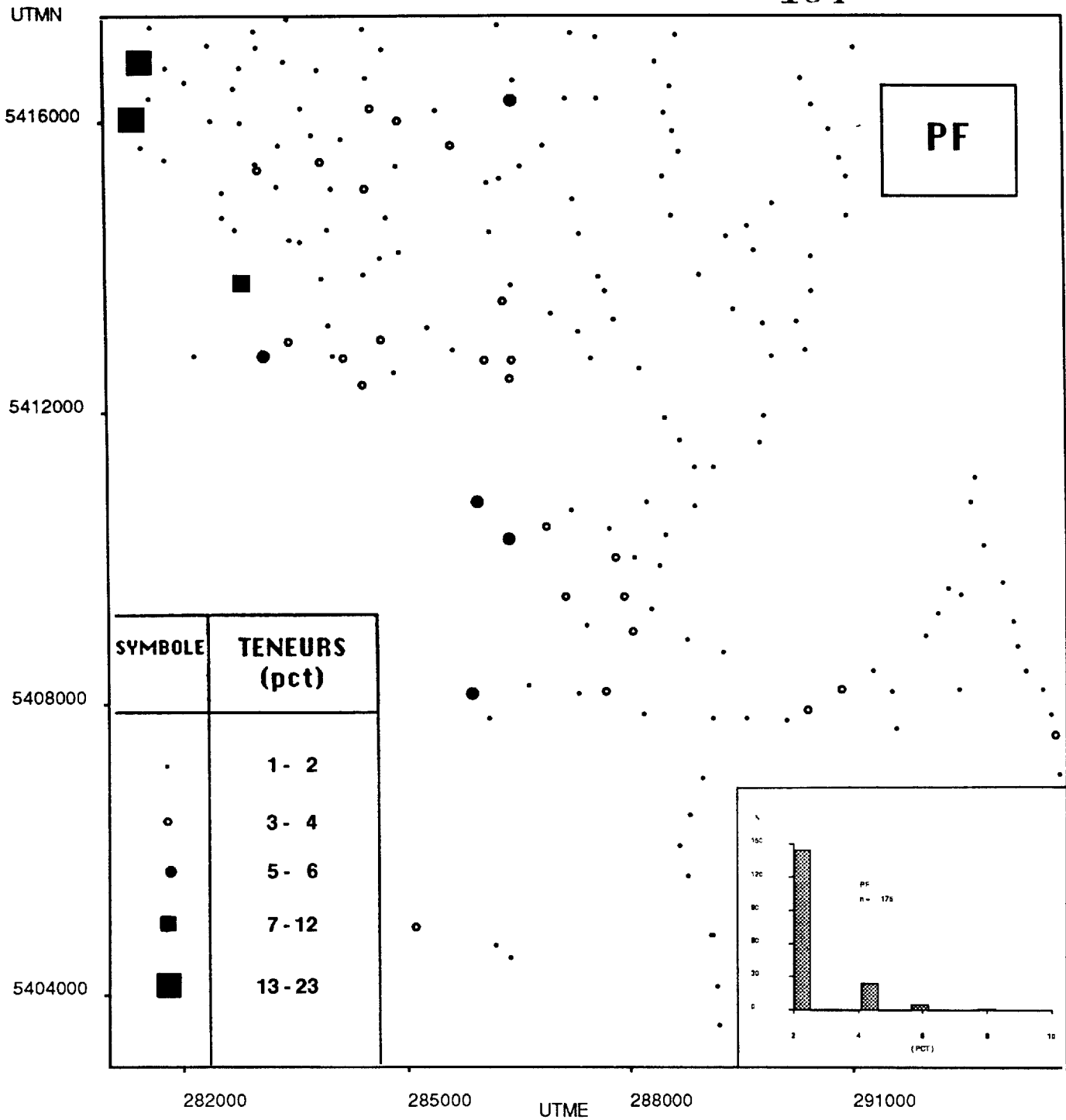


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)



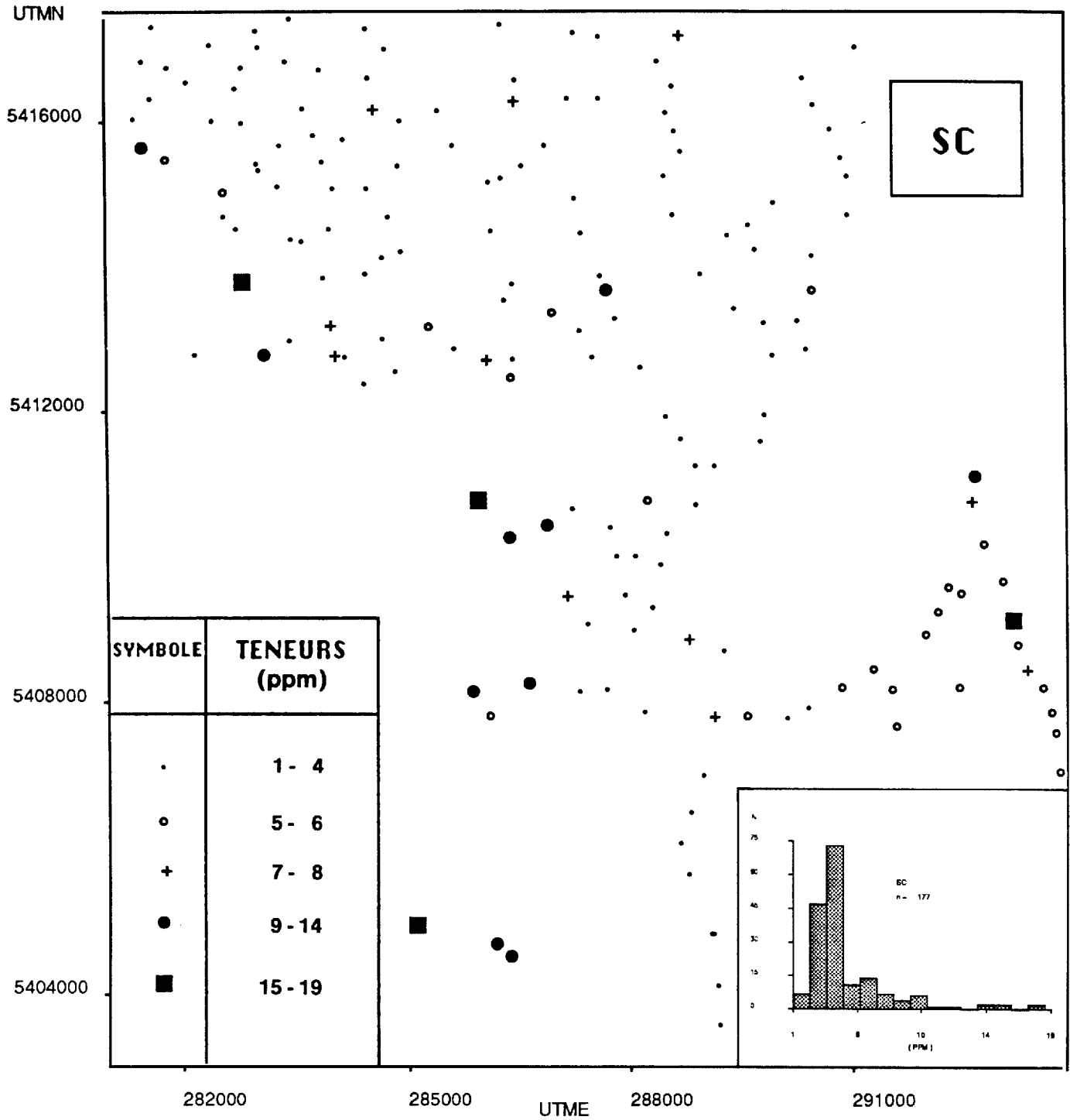


GEOCHIMIE DES SOLS

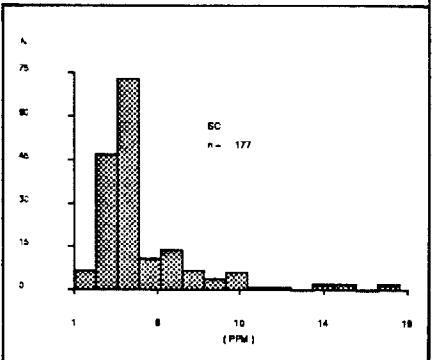
REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)





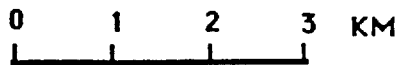
SYMBOLE	TENEURS (ppm)
.	1 - 4
o	5 - 6
+	7 - 8
●	9 - 14
■	15 - 19

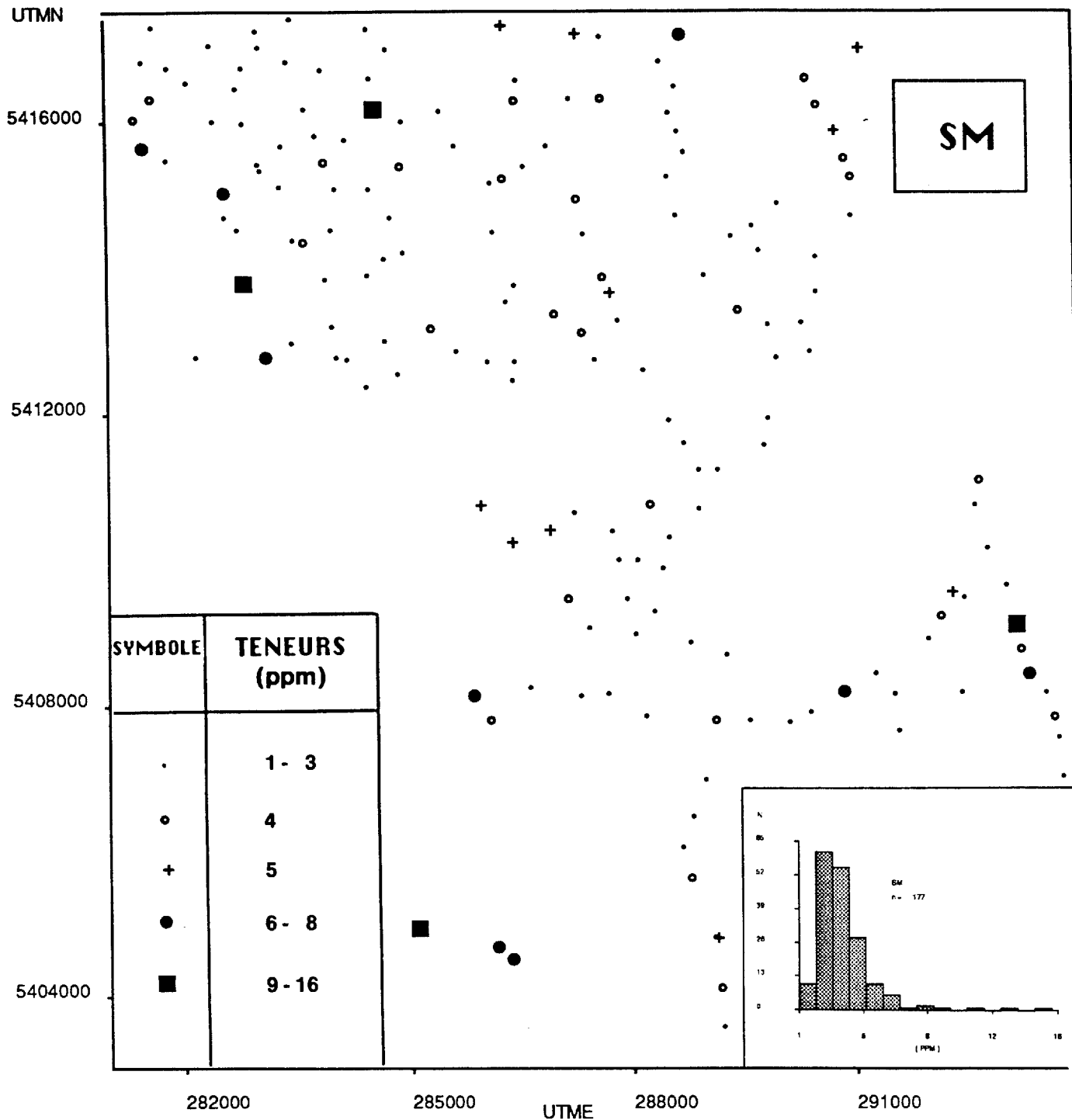


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

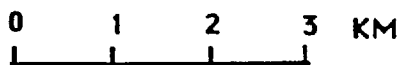


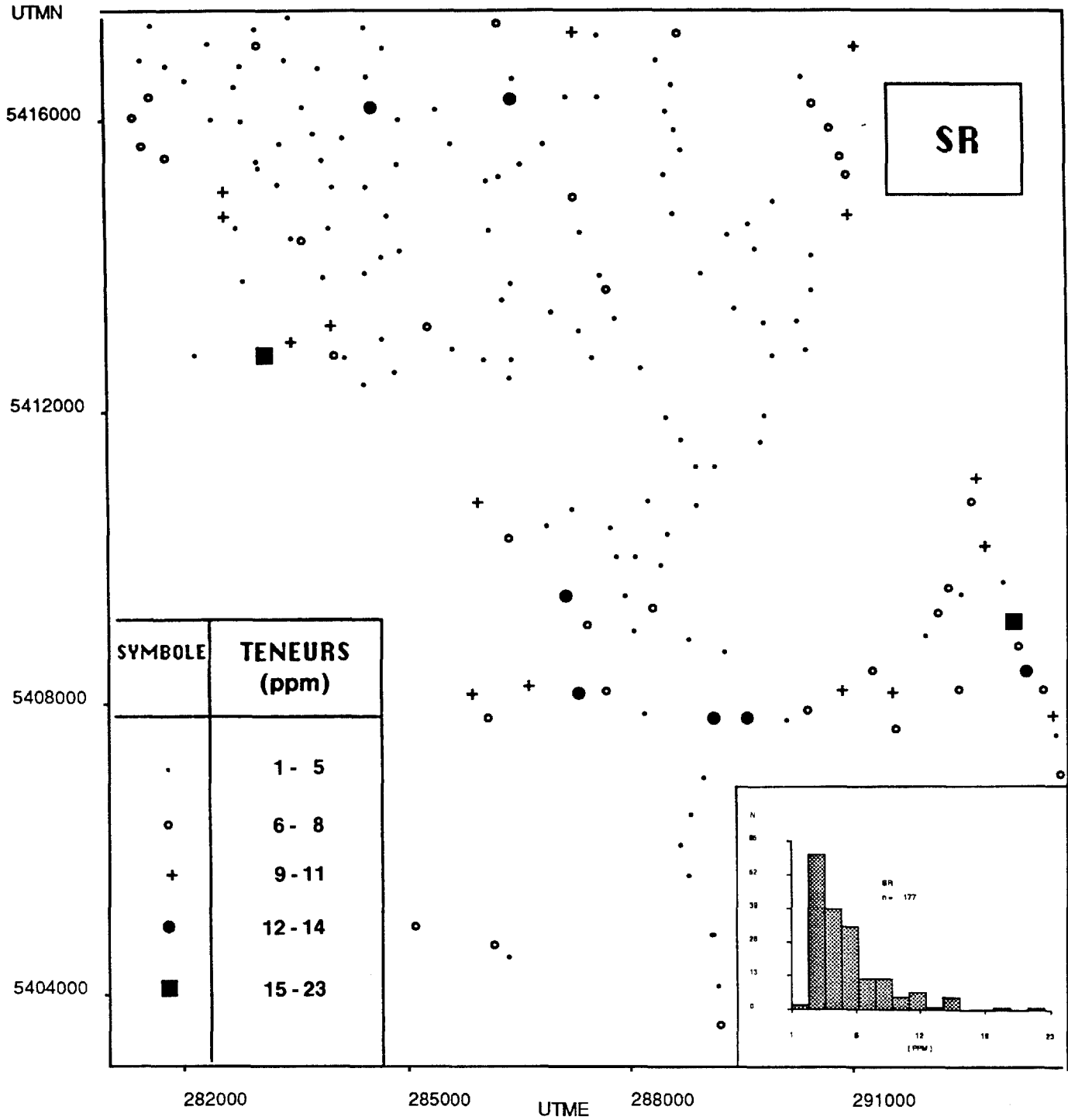


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

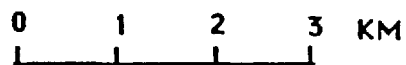


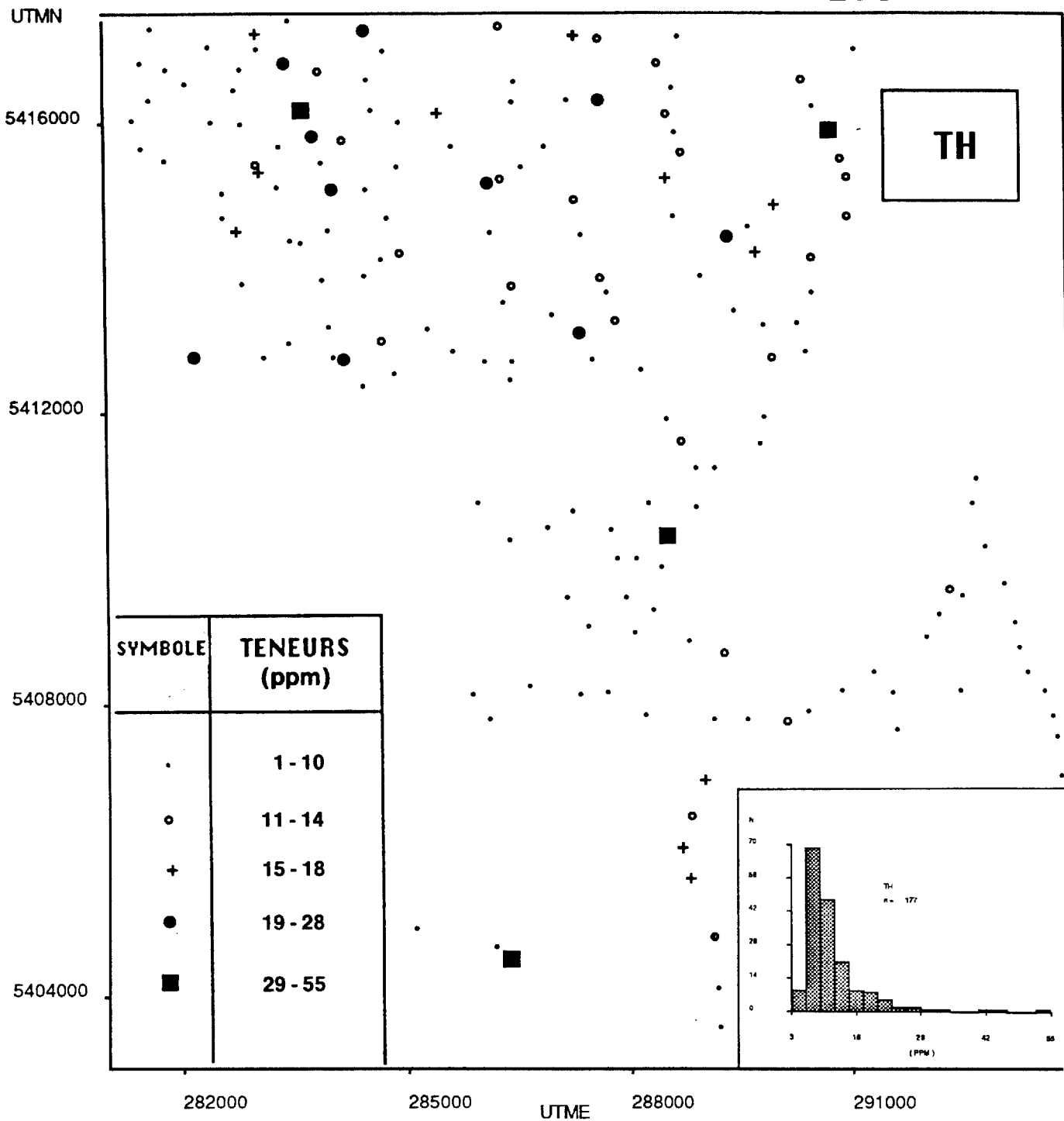


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

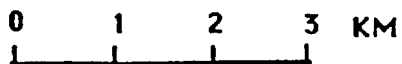


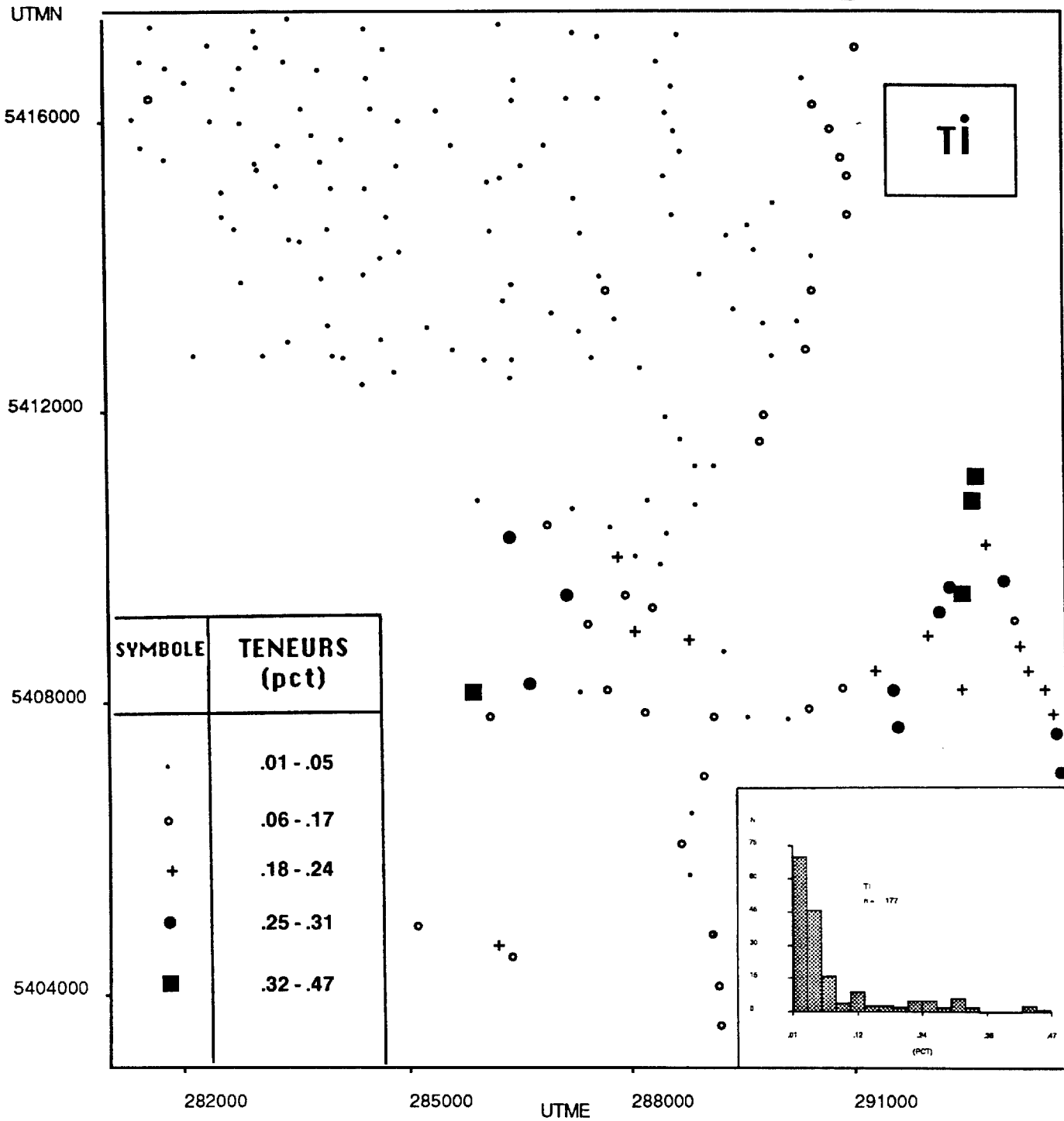


GEOCHIMIE DES SOLS

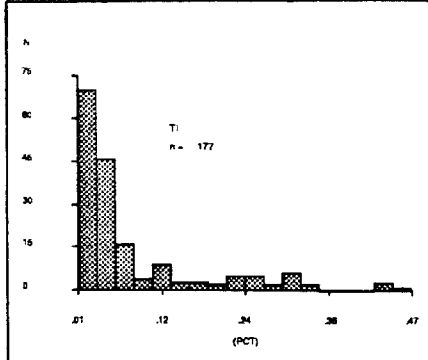
REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)





SYMBOLE	TENEURS (pct)
.	.01 - .05
○	.06 - .17
+	.18 - .24
●	.25 - .31
■	.32 - .47

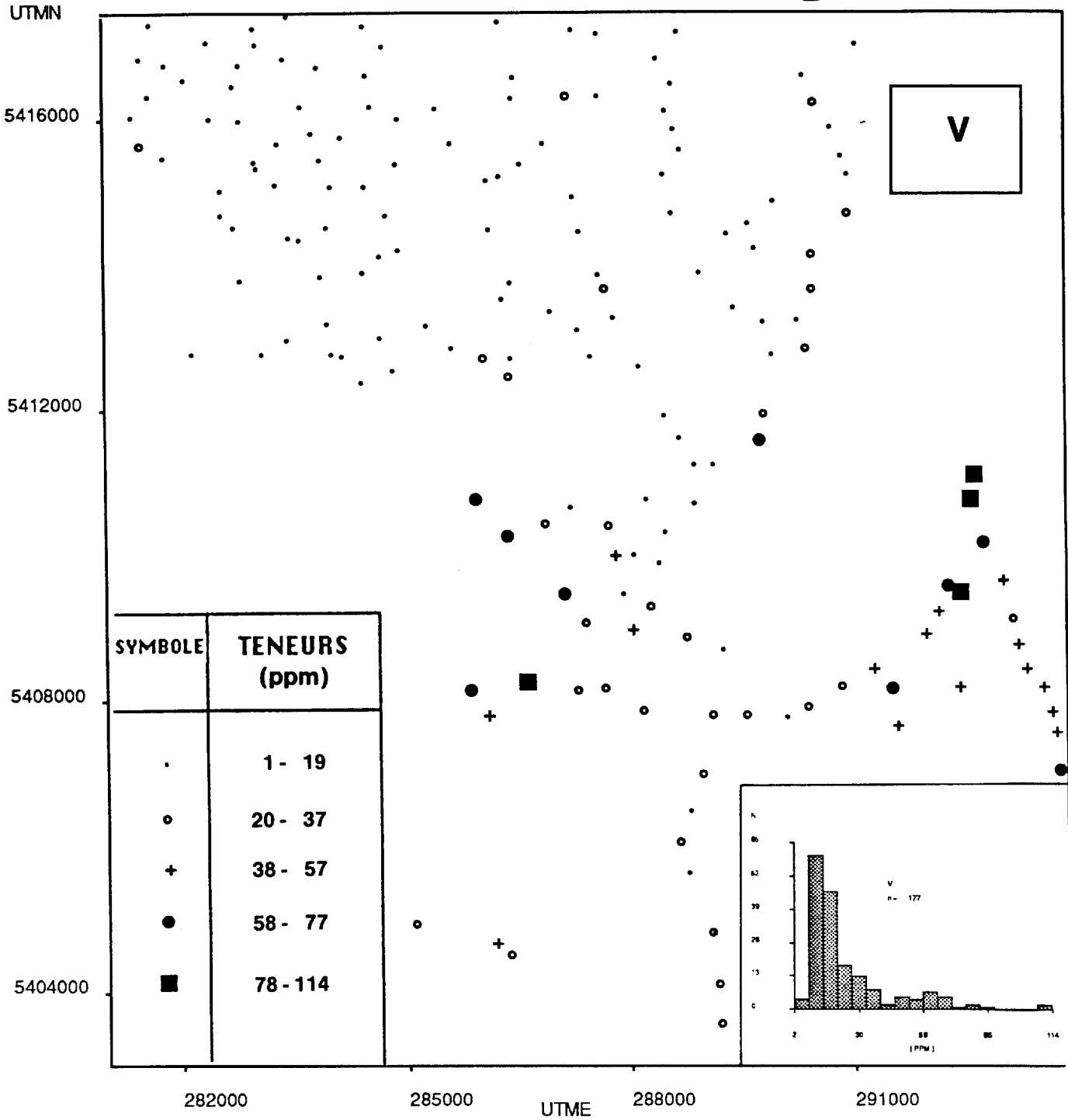


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

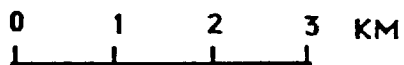


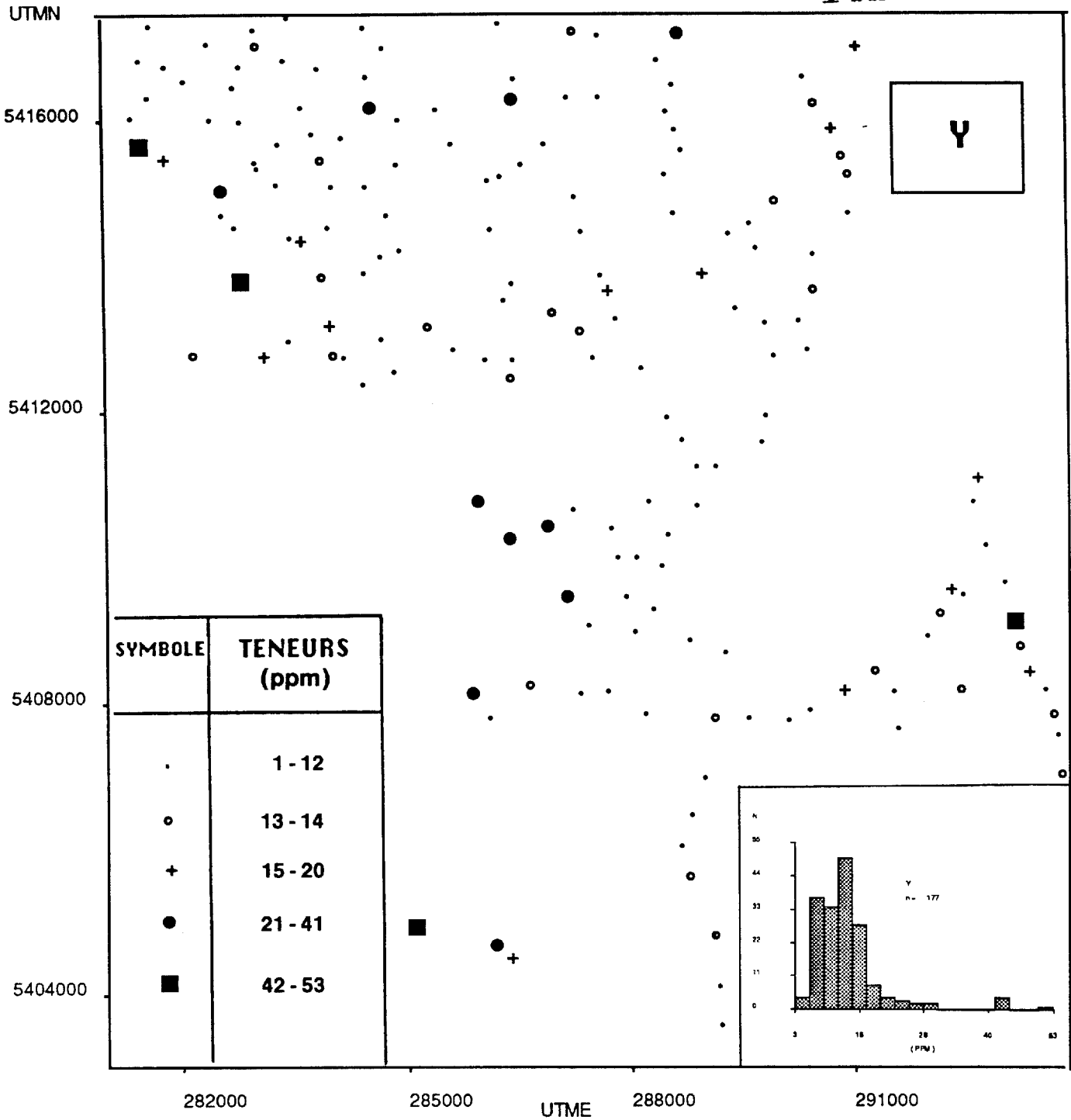


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

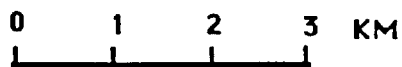


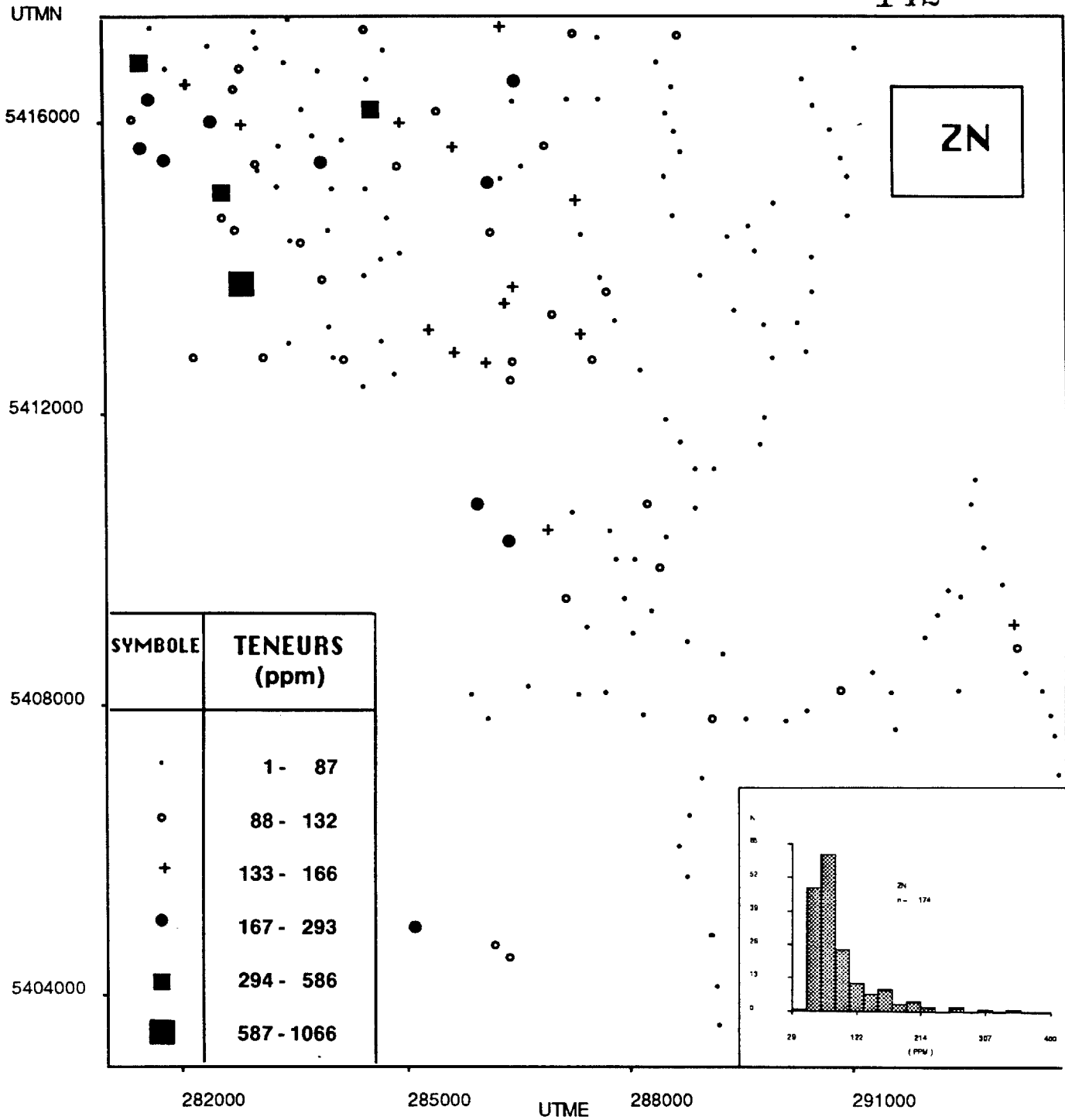


GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)





GEOCHIMIE DES SOLS

REGION DE SULLIPEK

(Horizon C ; 230m < fraction < 35m)

