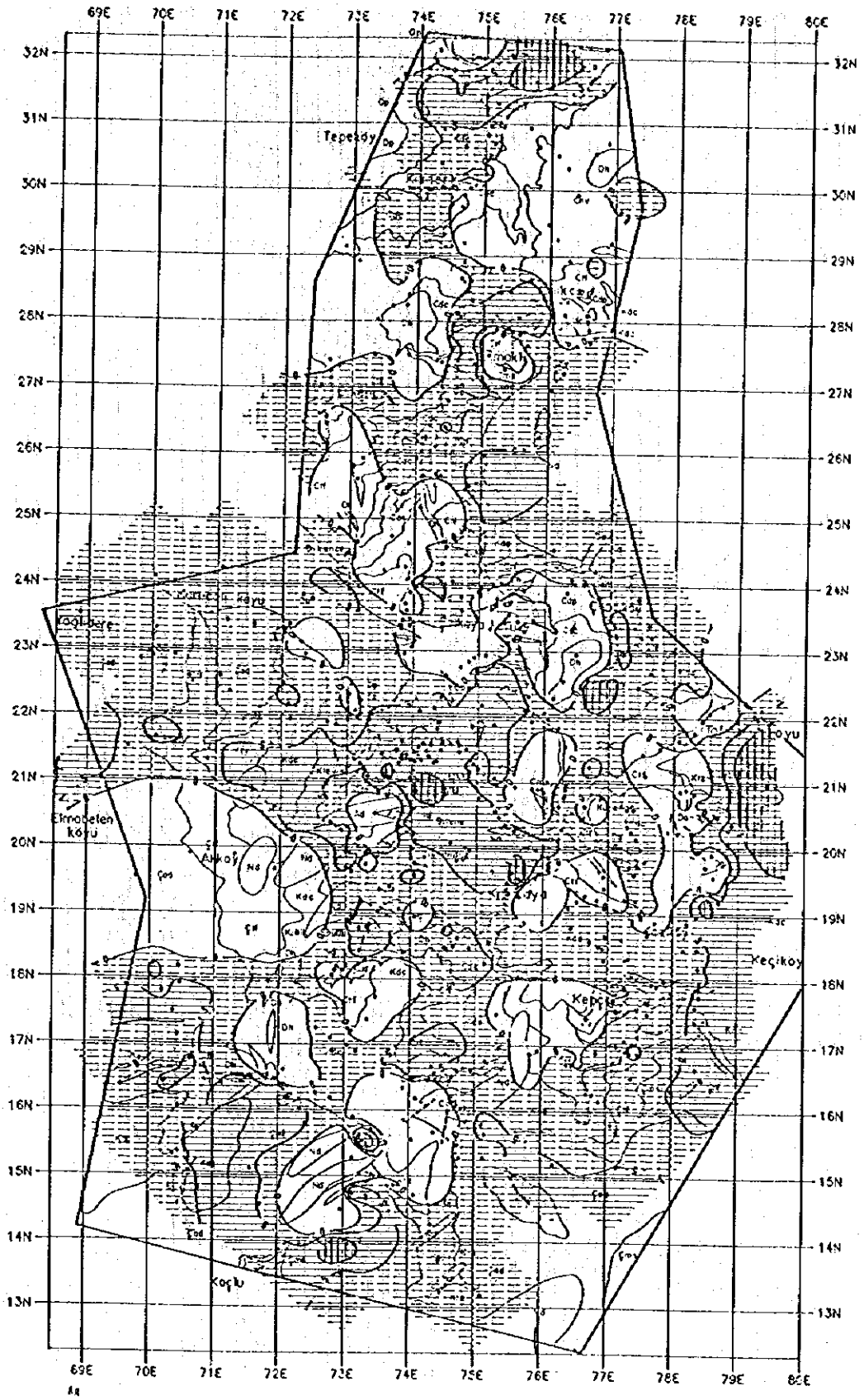


Fig. 4-2 Geochemical Distribution Map by Rock Samples (Ag)

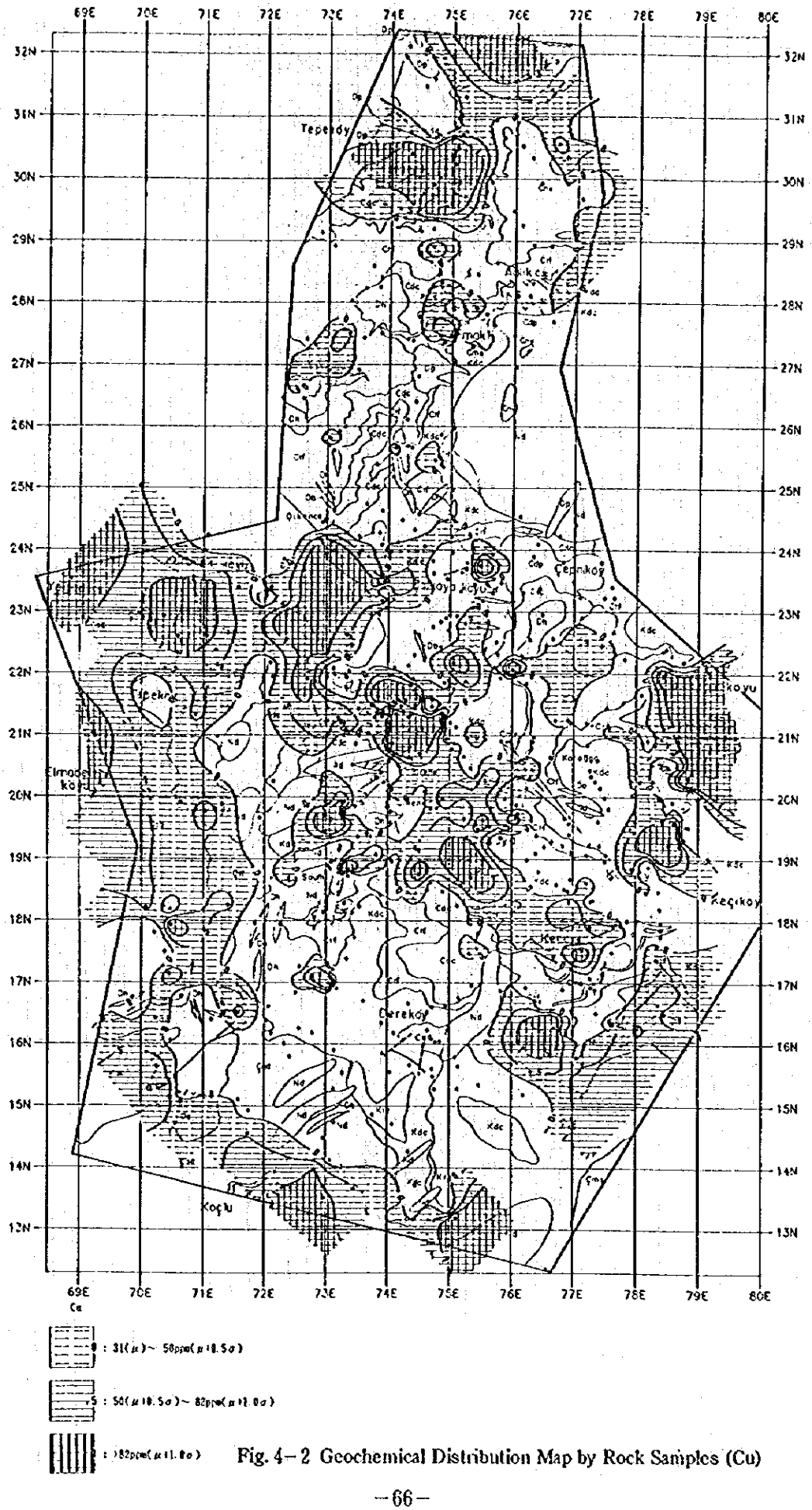
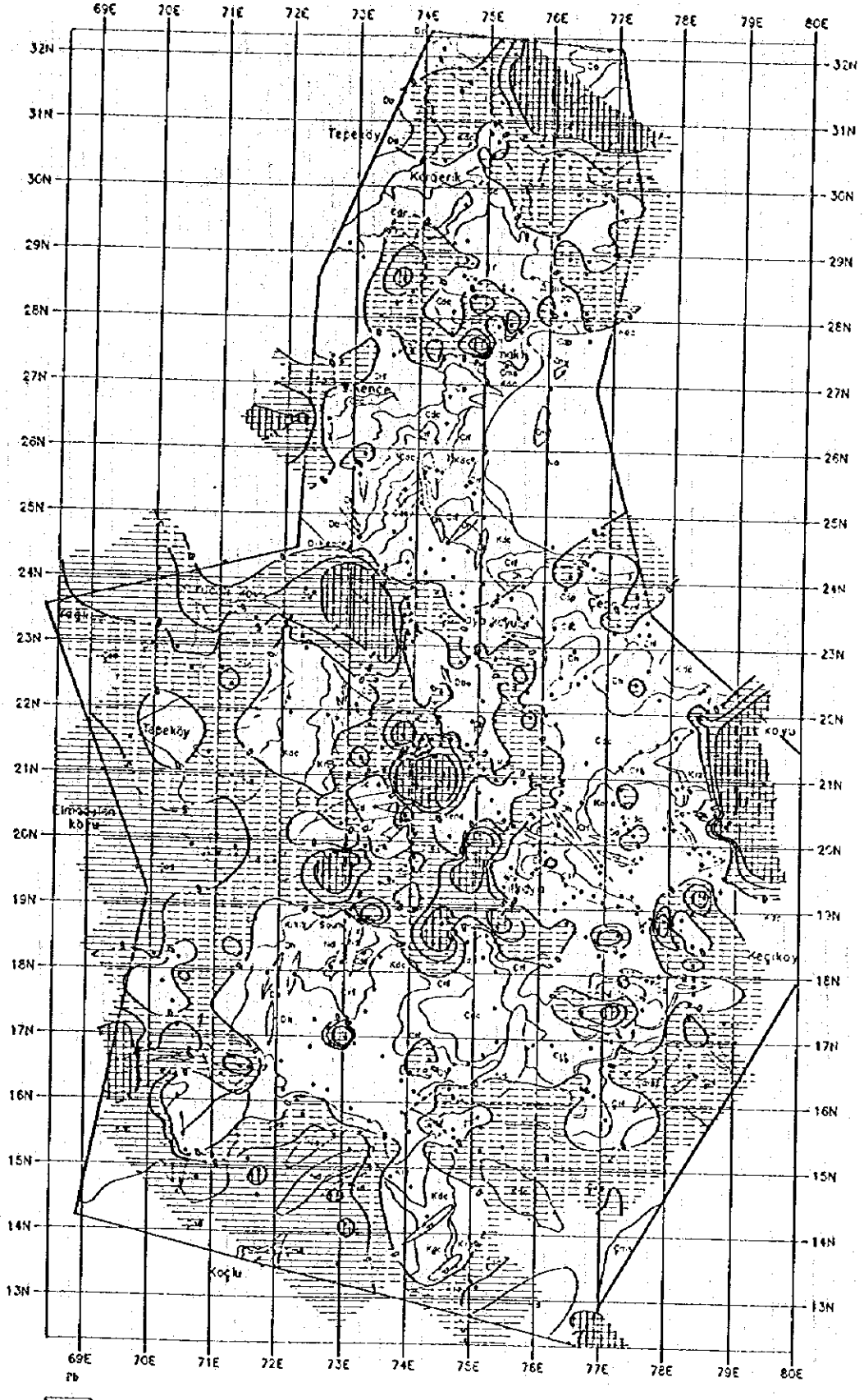


Fig. 4–2 Geochemical Distribution Map by Rock Samples (Cu)



4 : 94(μ)~120ppm(μ+0.5σ)

5 : 120(μ+0.5σ)~154ppm(μ+1.0σ)

6 : >154ppm(μ+1.0σ)

Fig. 4-2 Geochemical Distribution Map by Rock Samples (Pb)

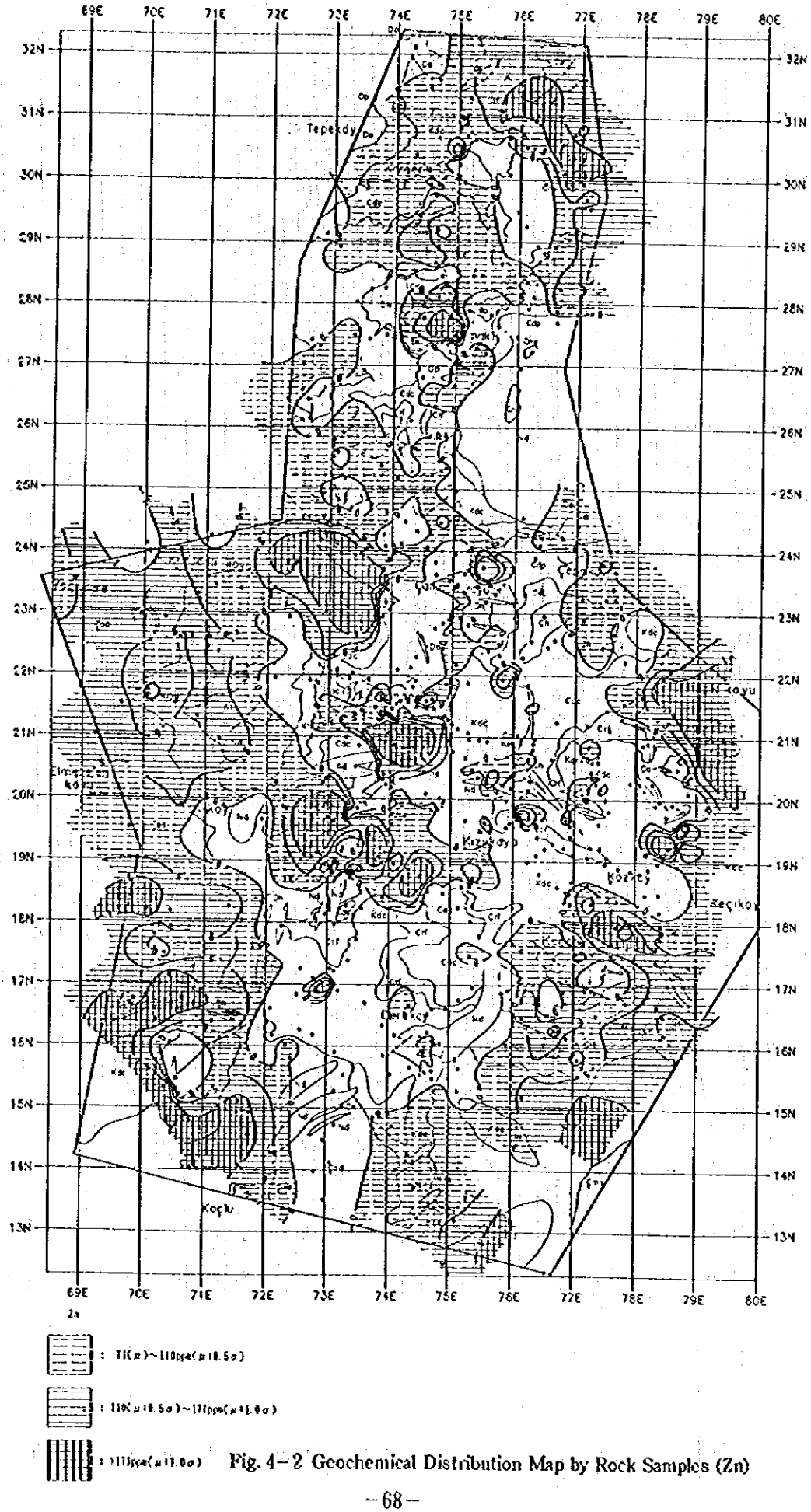


Fig. 4-2 Geochemical Distribution Map by Rock Samples (Zn)

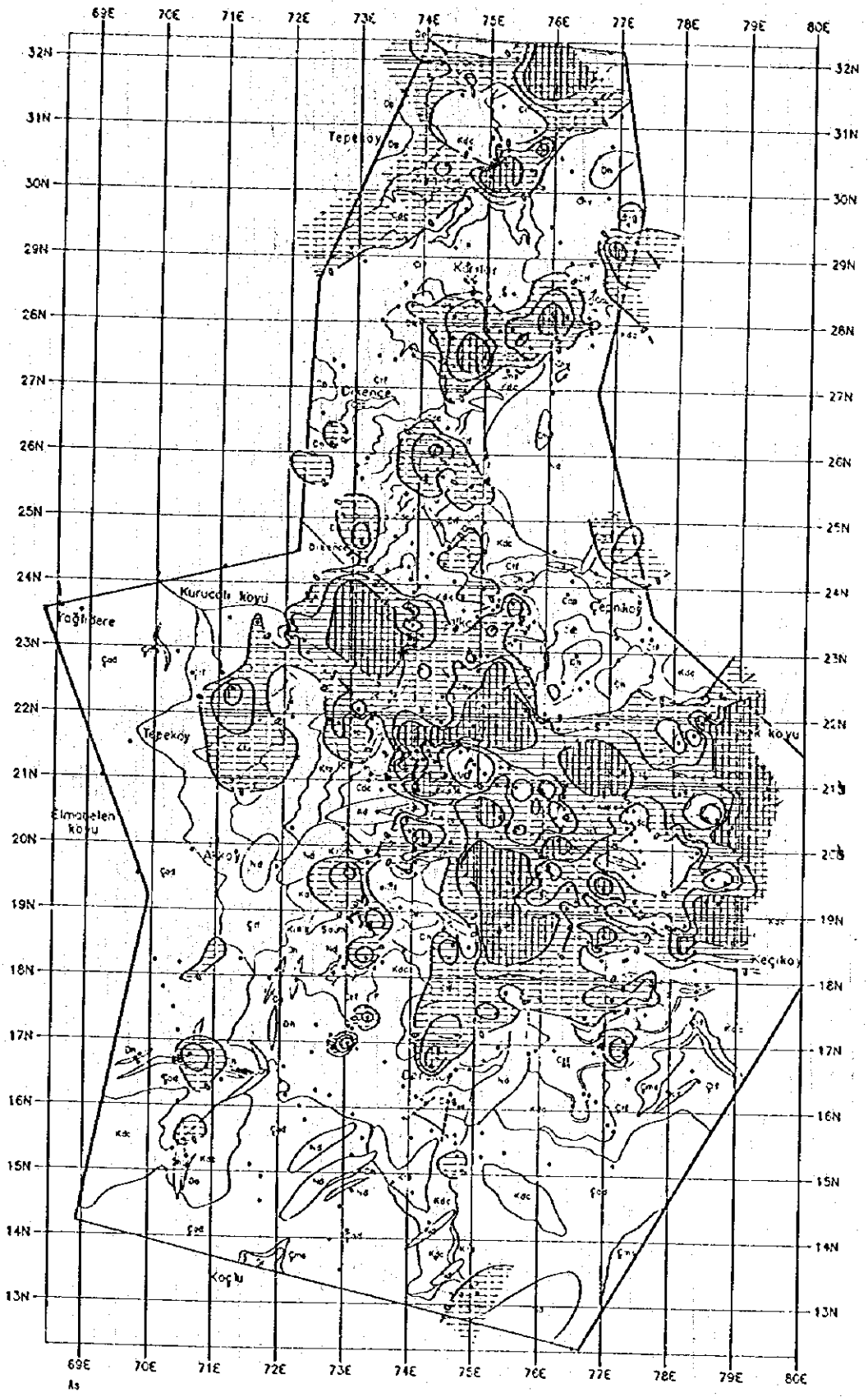


Fig. 4-2 Geochemical Distribution Map by Rock Samples (As)

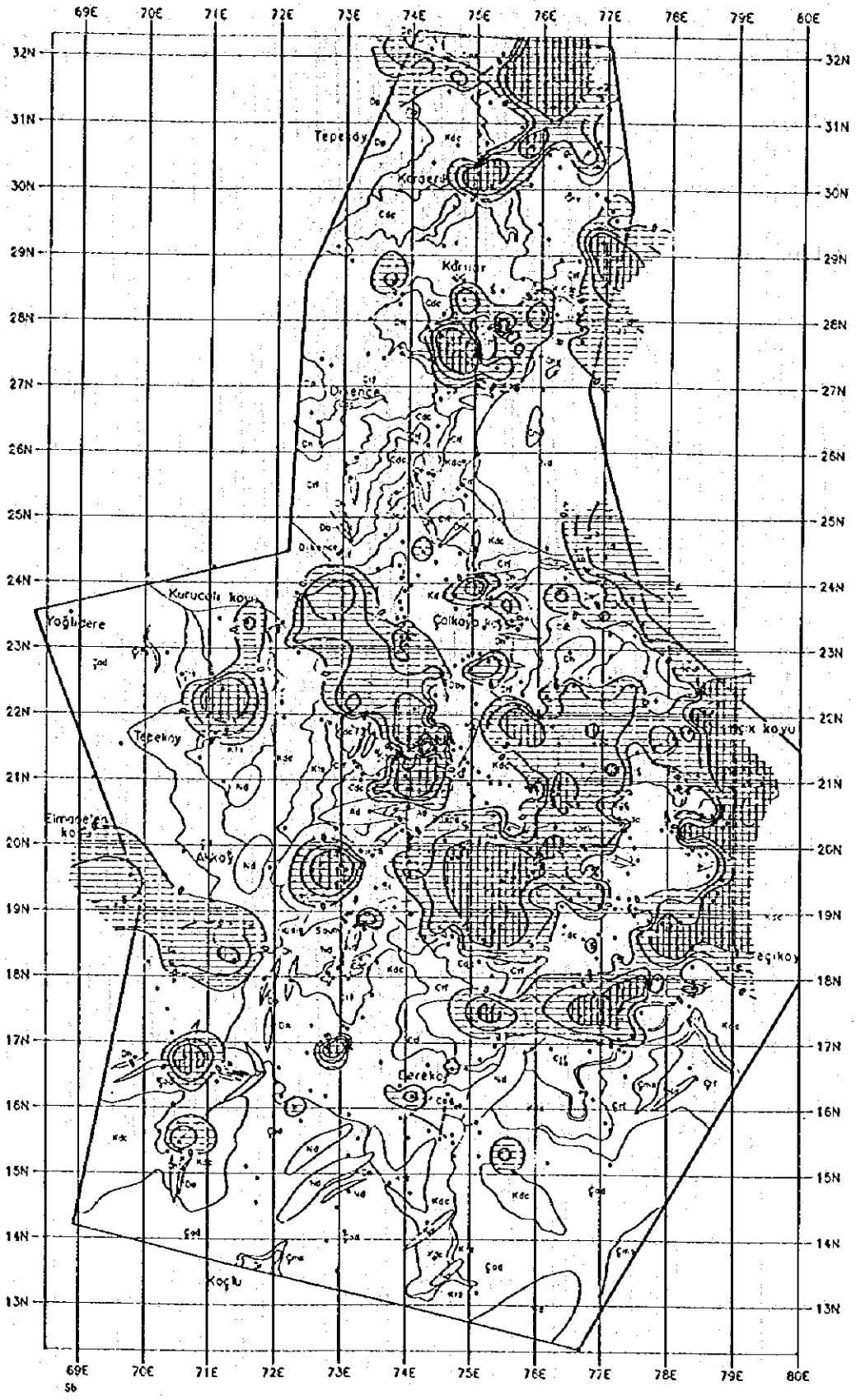


Fig. 4--2 Geochemical Distribution Map by Rock Samples (Sb)

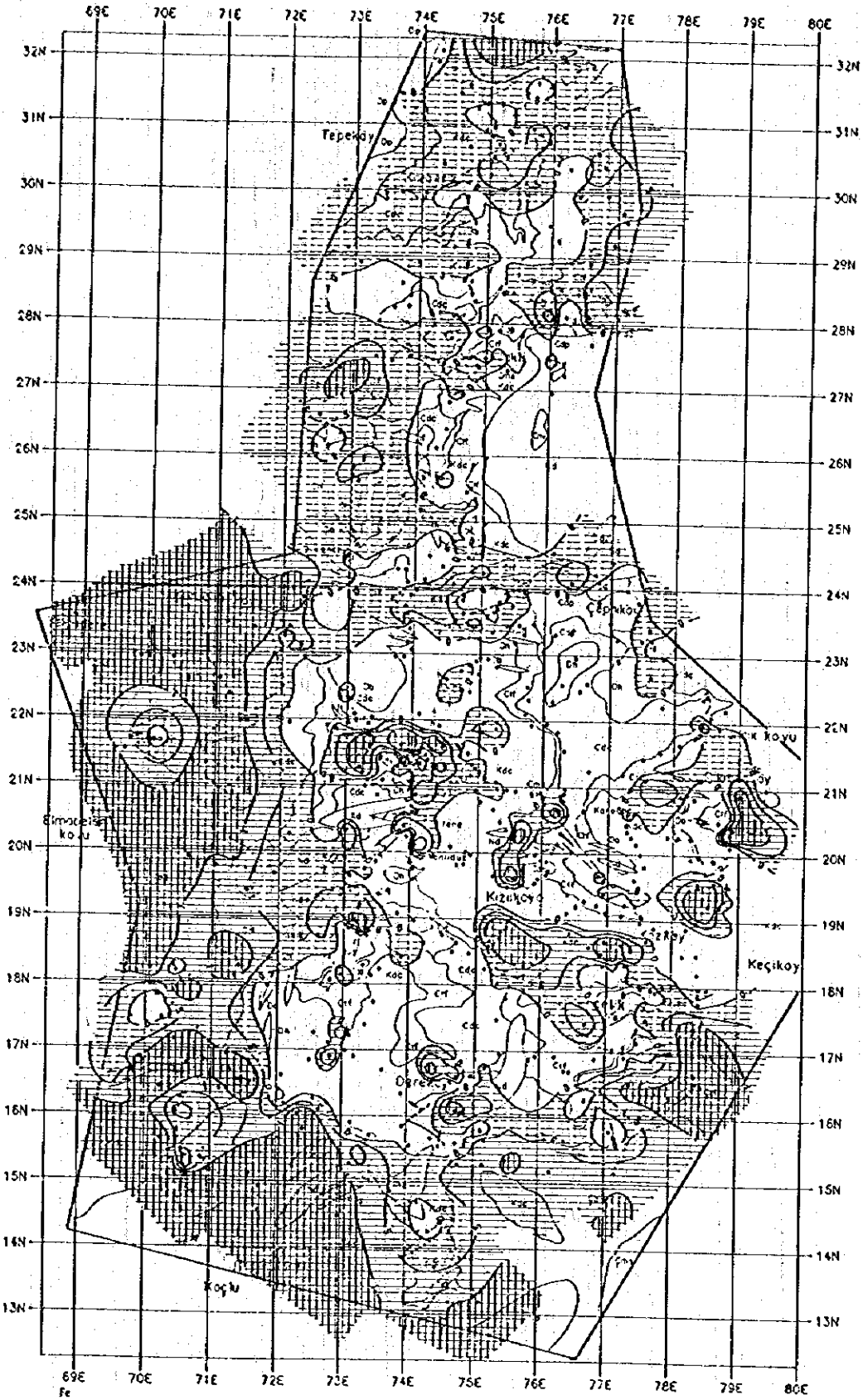


Fig. 4-2 Geochemical Distribution Map by Rock Samples (Fe)

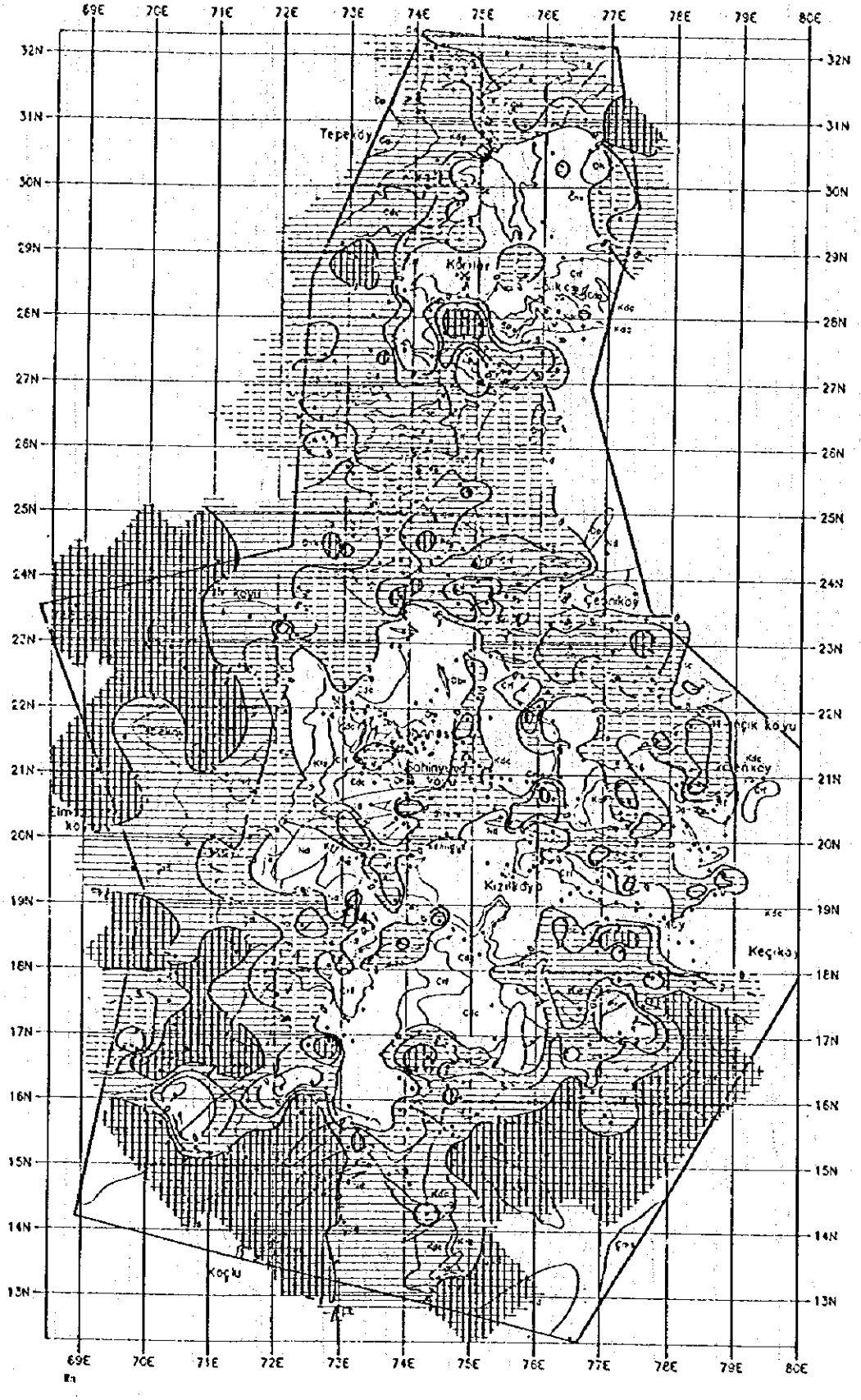


Fig. 4-2 Geochemical Distribution Map by Rock Samples (Mn)

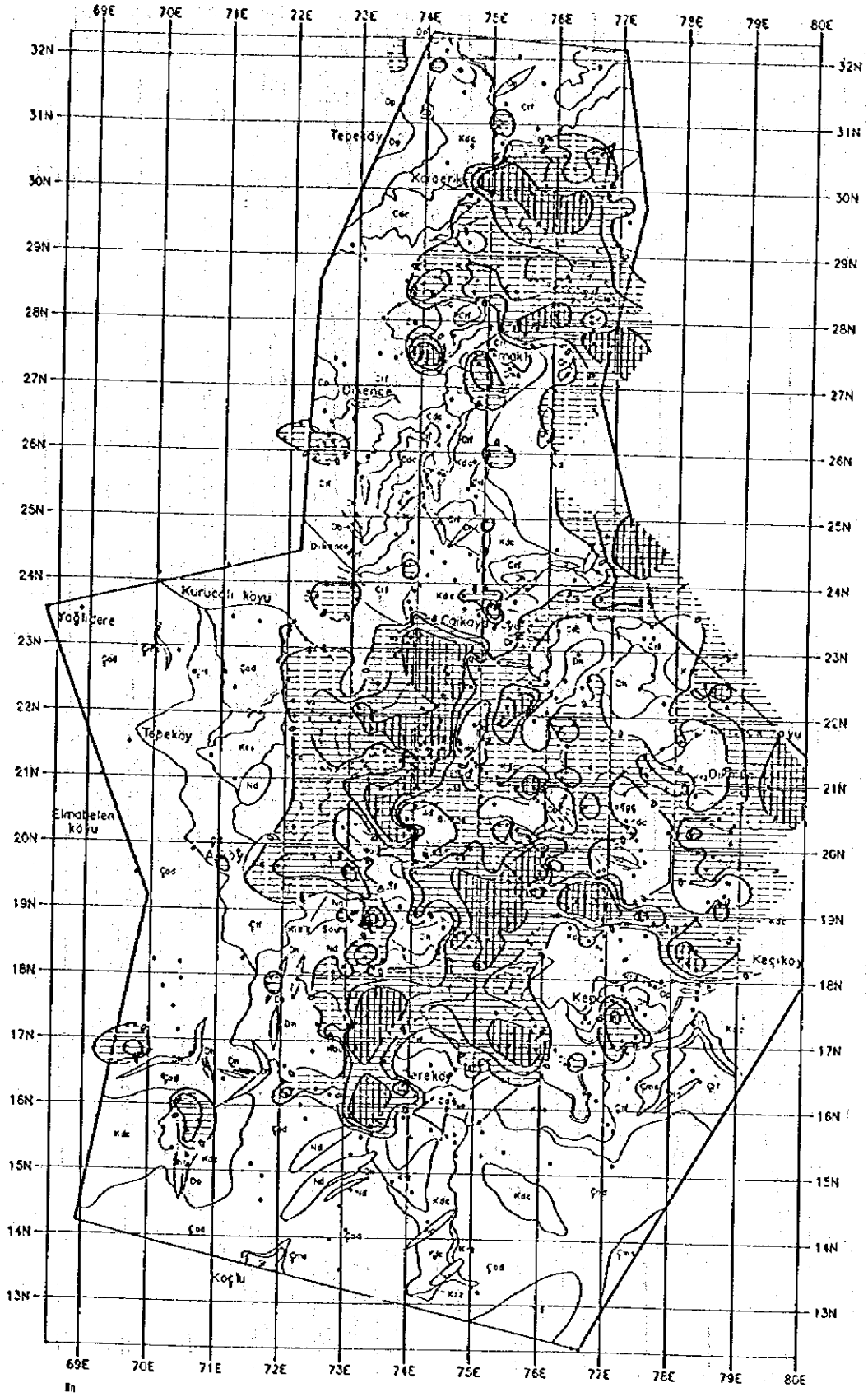


Fig. 4-2 Geochemical Distribution Map by Rock Samples (Mn)

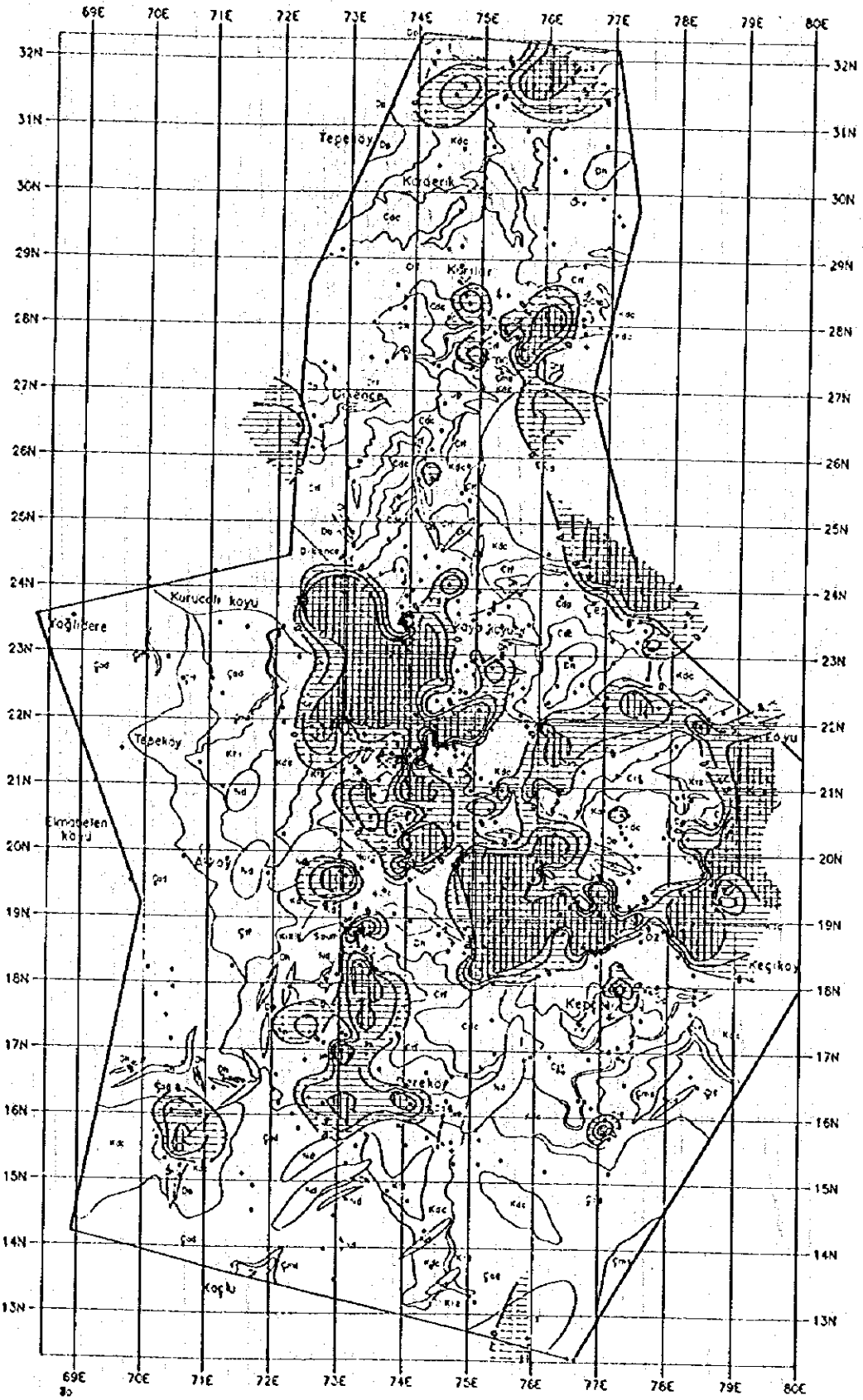


Fig. 4-2 Geochemical Distribution Map by Rock Samples (Mo)

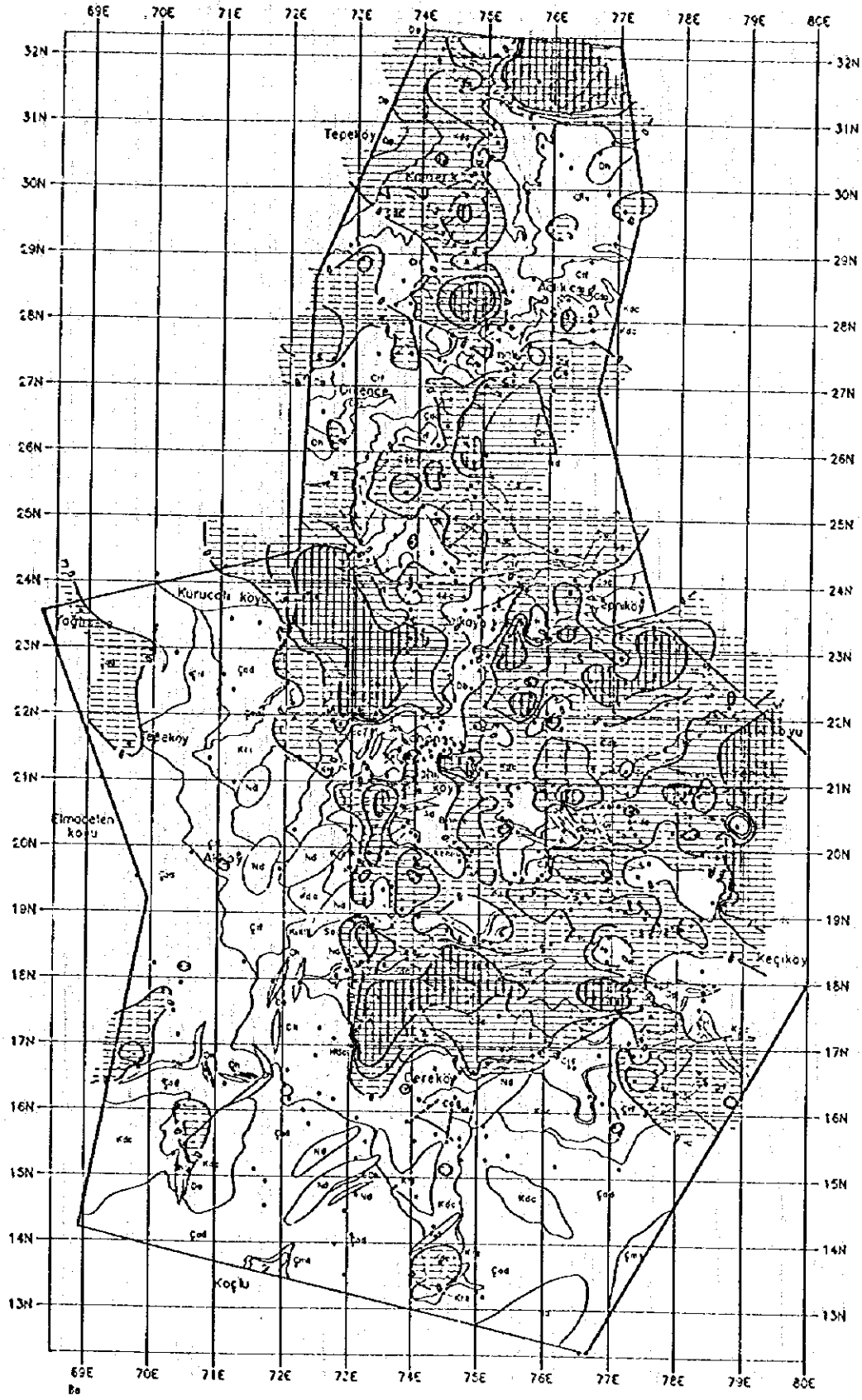


Fig. 4－2 Geochemical Distribution Map by Rock Samples (Ba)

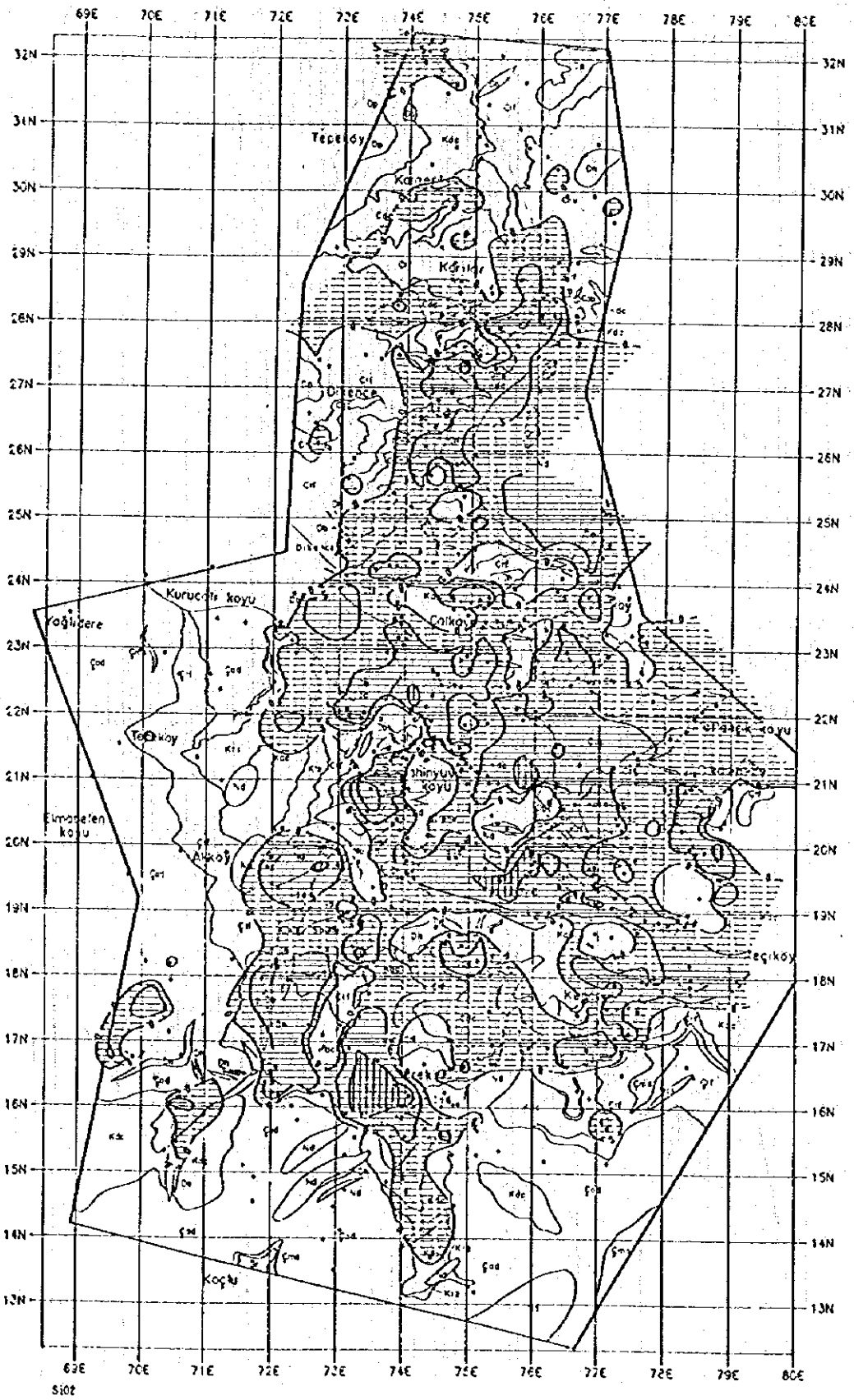


Fig. 4-2 Geochemical Distribution Map by Rock Samples (SiO2)

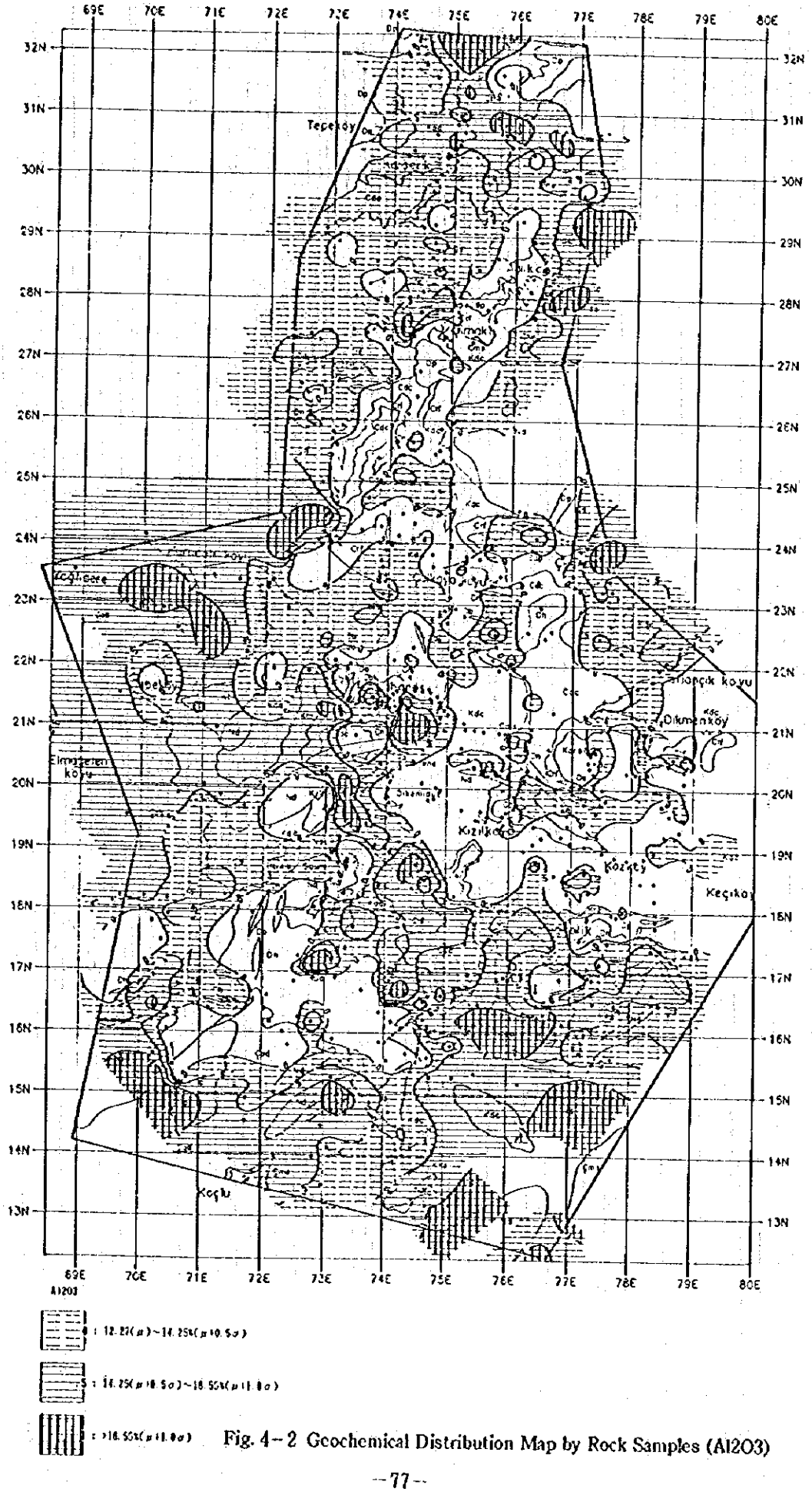


Fig. 4-2 Geochemical Distribution Map by Rock Samples (Al2O3)

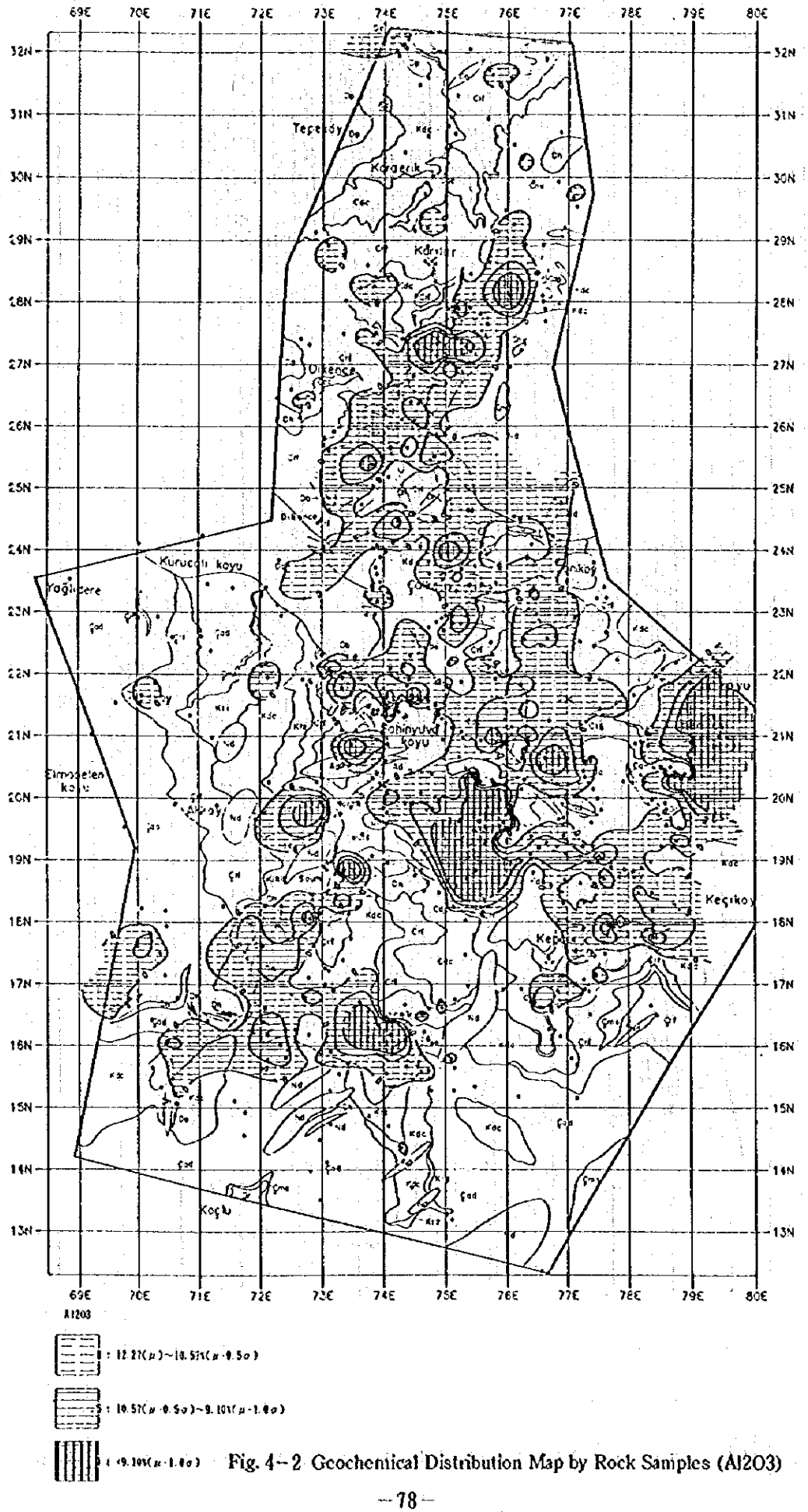


Fig. 4-2 Geochemical Distribution Map by Rock Samples (Al_2O_3)

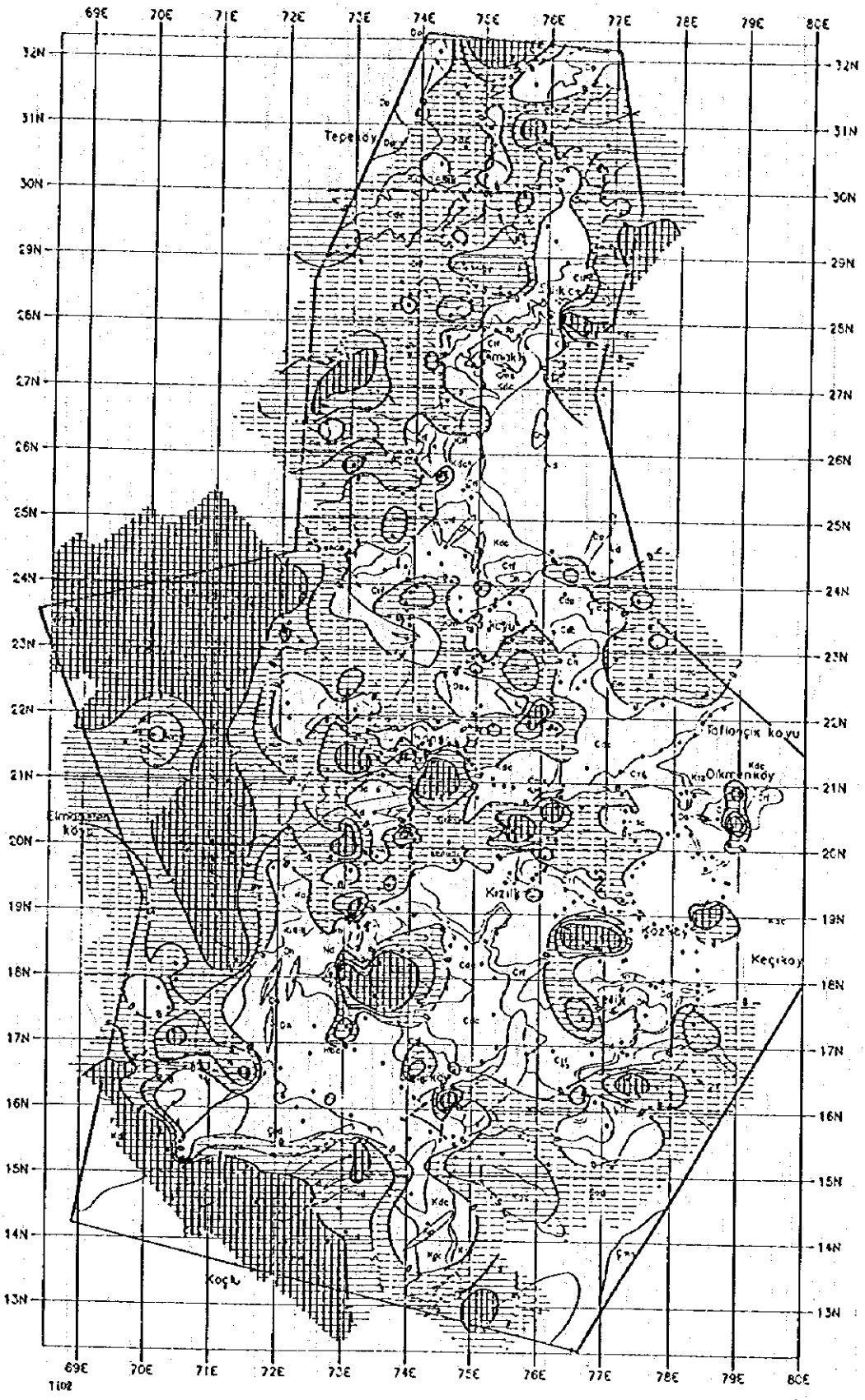


Fig. 4-2 Geochemical Distribution Map by Rock Samples (TiO_2)

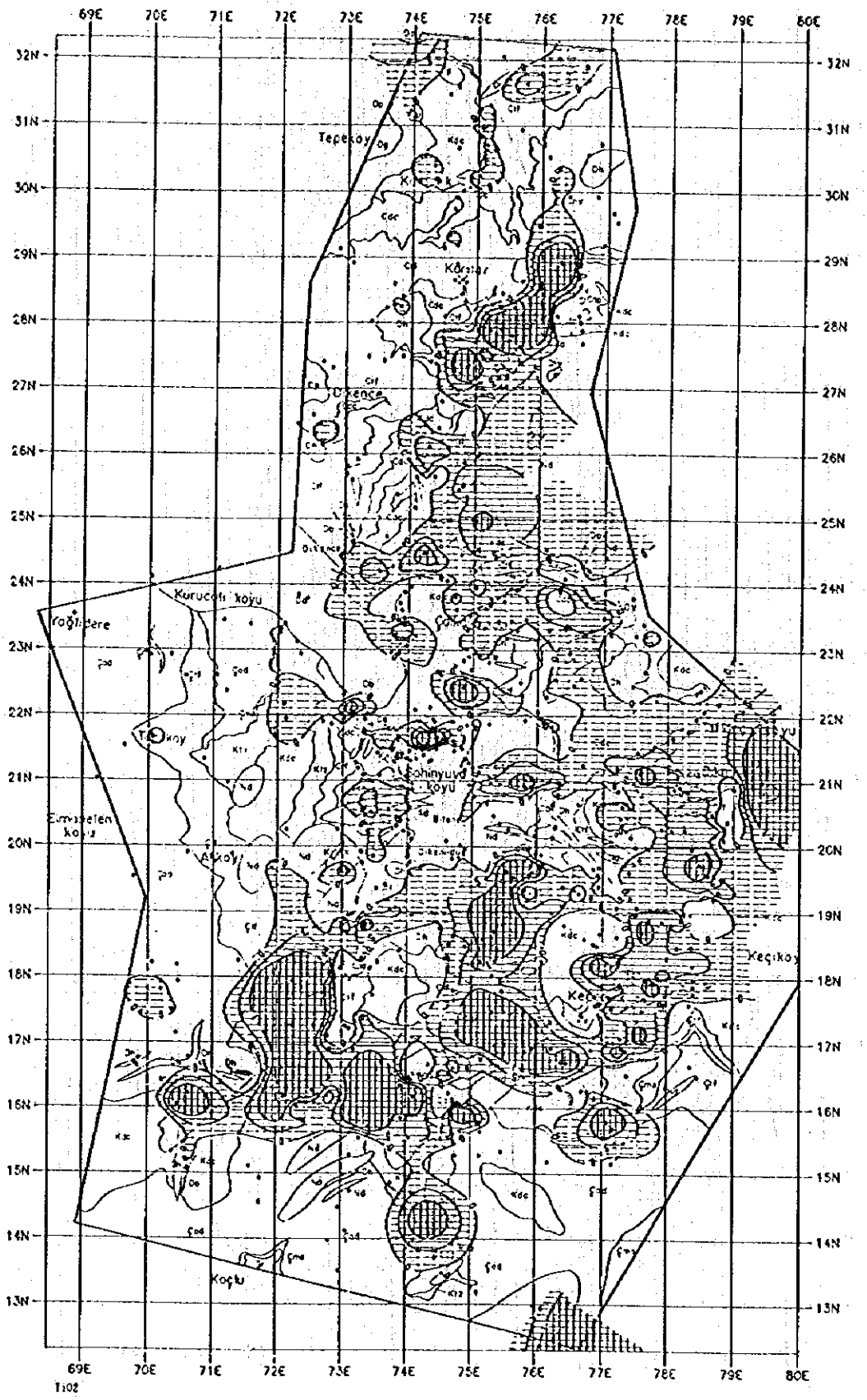


Fig. 4-2 Geochemical Distribution Map by Rock Samples (TiO_2)

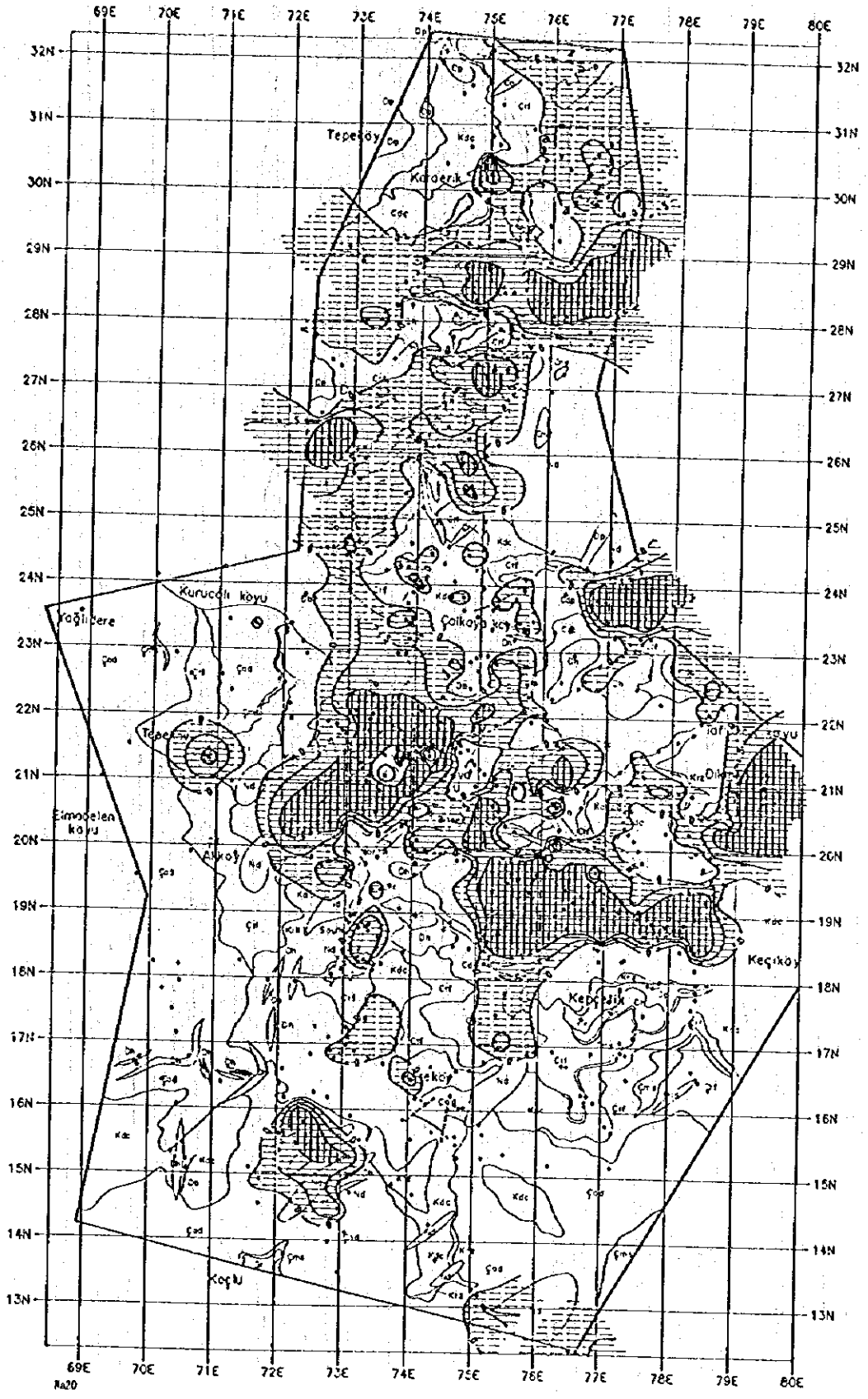


Fig. 4-2 Geochemical Distribution Map by Rock Samples (Na2O)

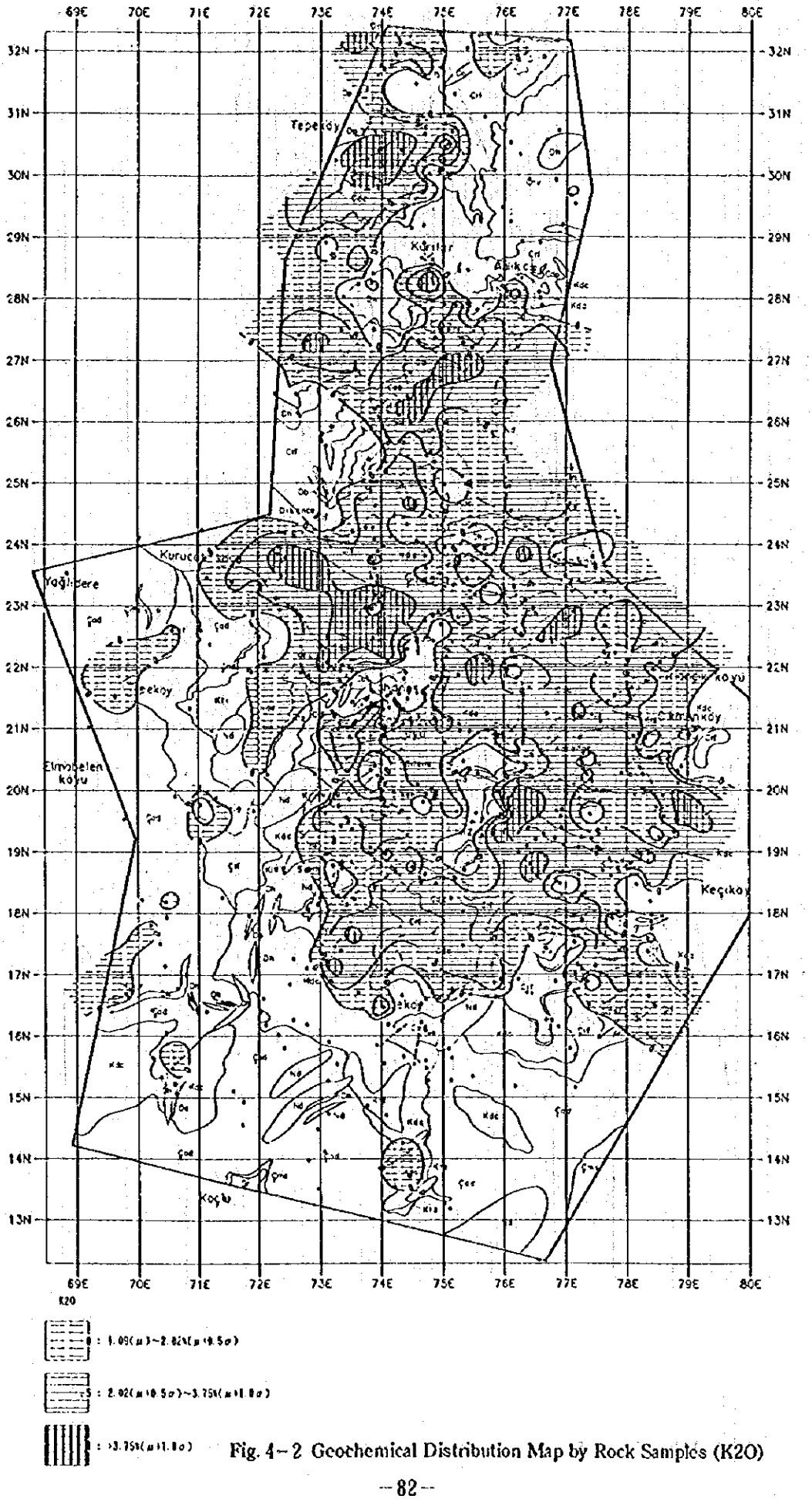


Fig. 4-2 Geochemical Distribution Map by Rock Samples (K2O)

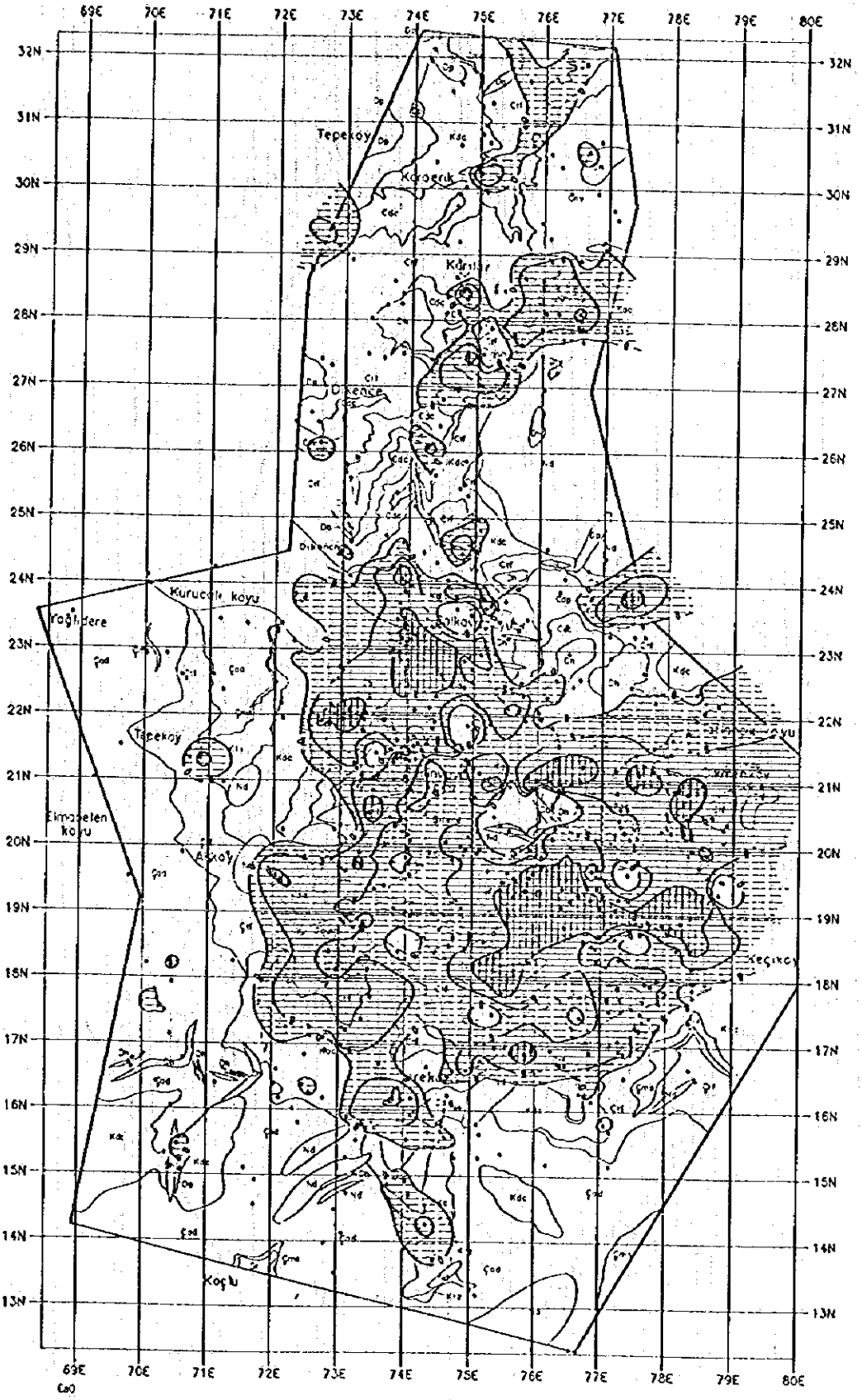


Fig. 4-2 Geochemical Distribution Map by Rock Samples (CaO)

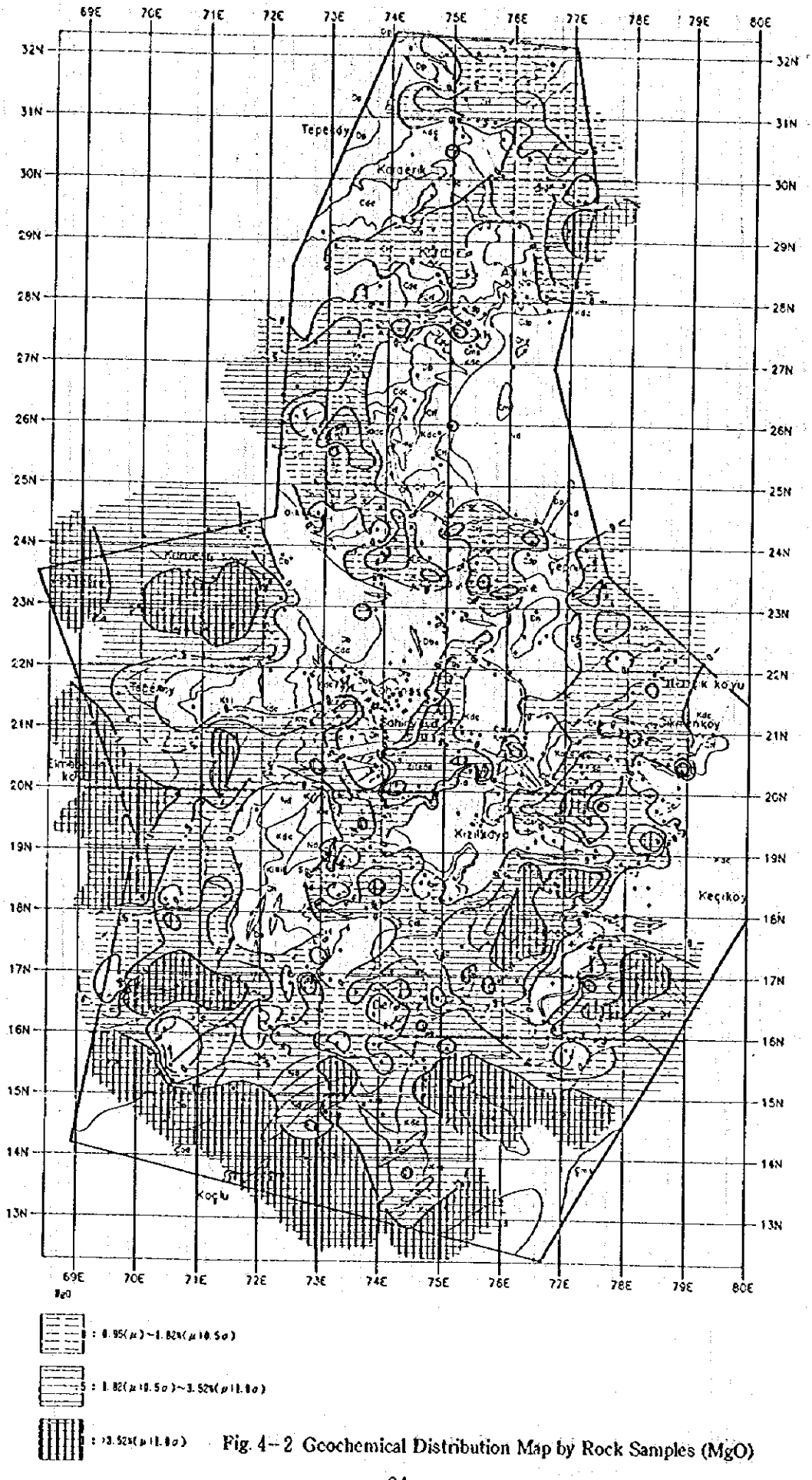


Fig. 4-2 Geochemical Distribution Map by Rock Samples (MgO)

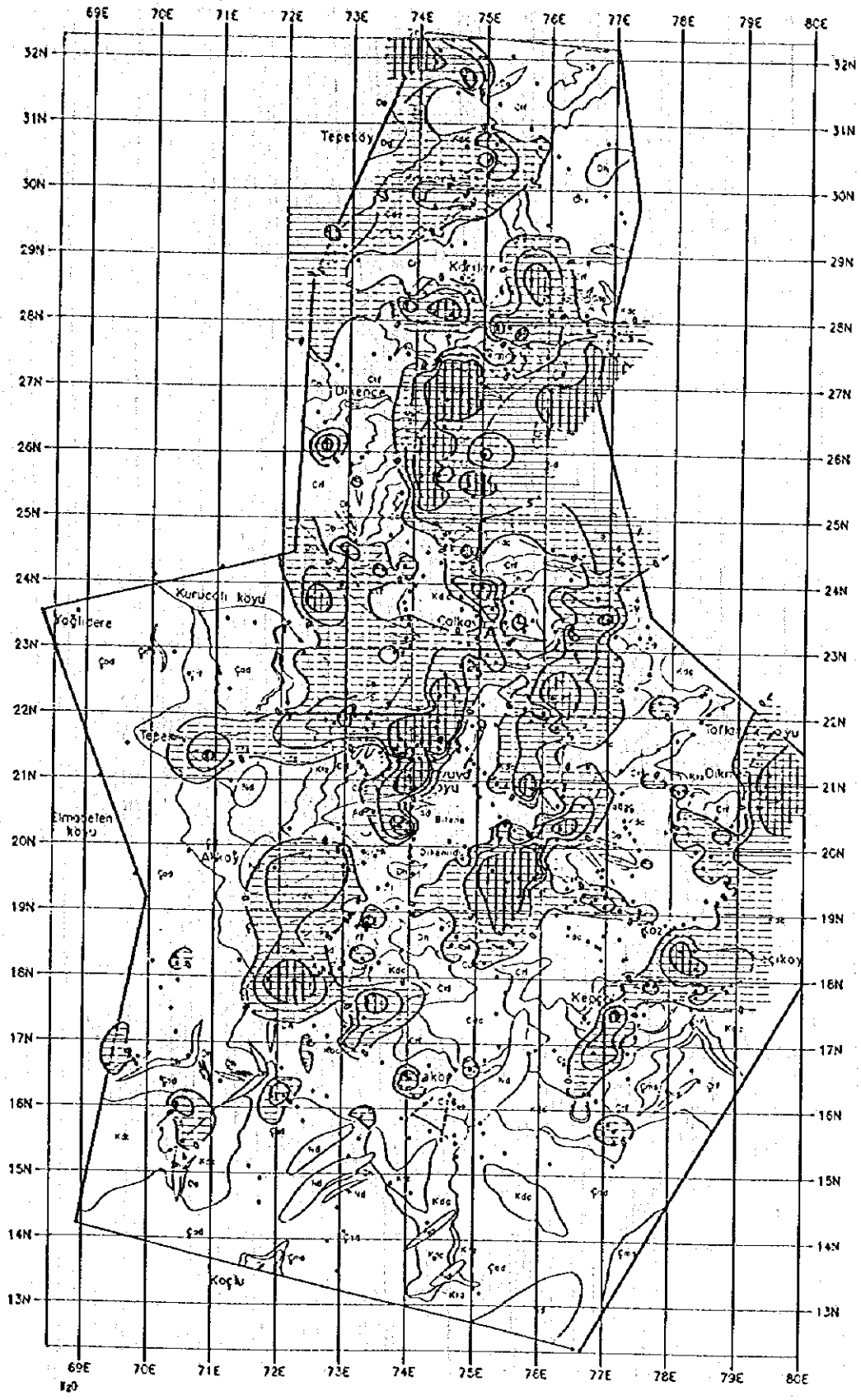


Fig. 4－2 Geochemical Distribution Map by Rock Samples (MgO)

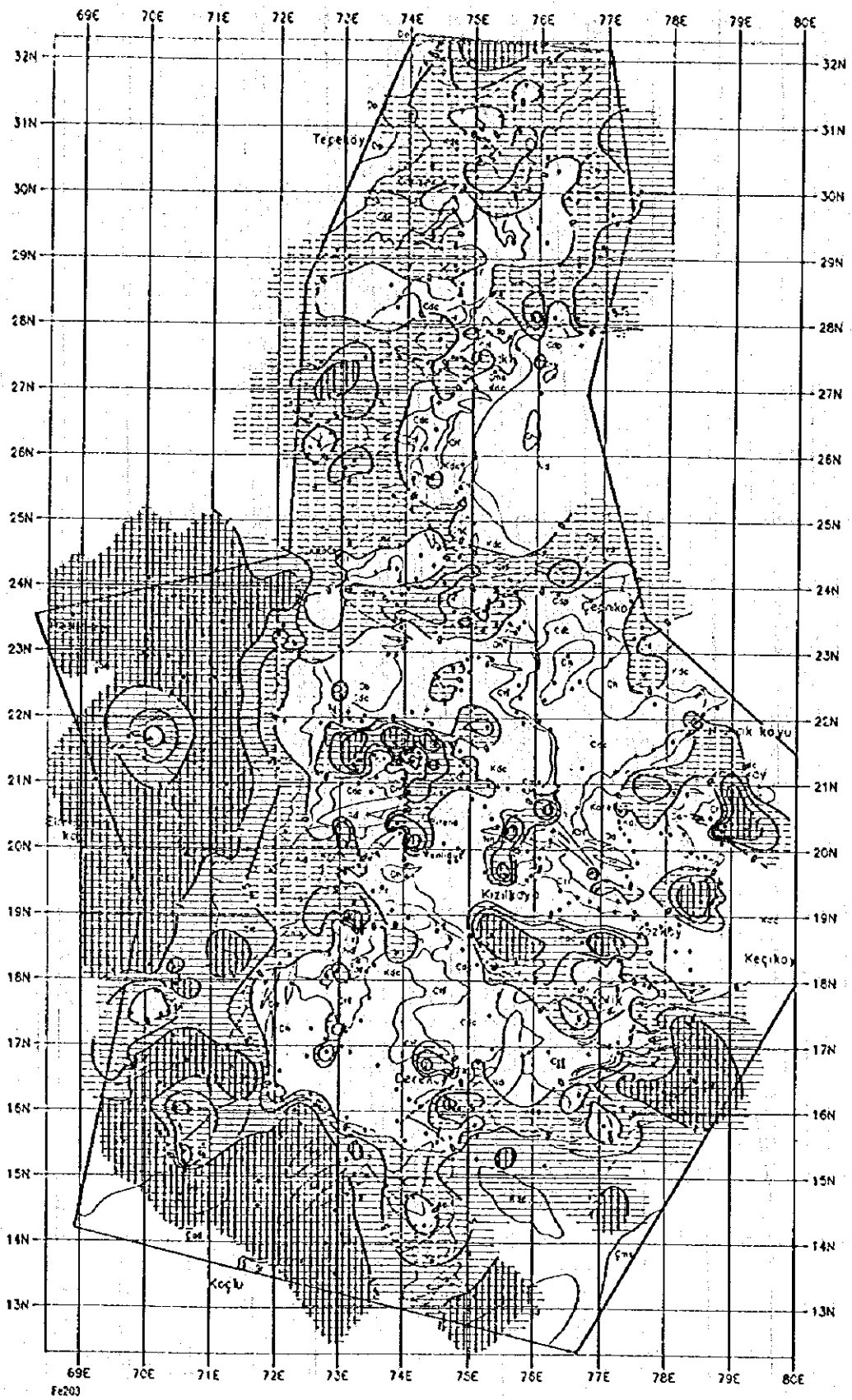


Fig. 4--2 Geochemical Distribution Map by Rock Samples (Fe2O3)

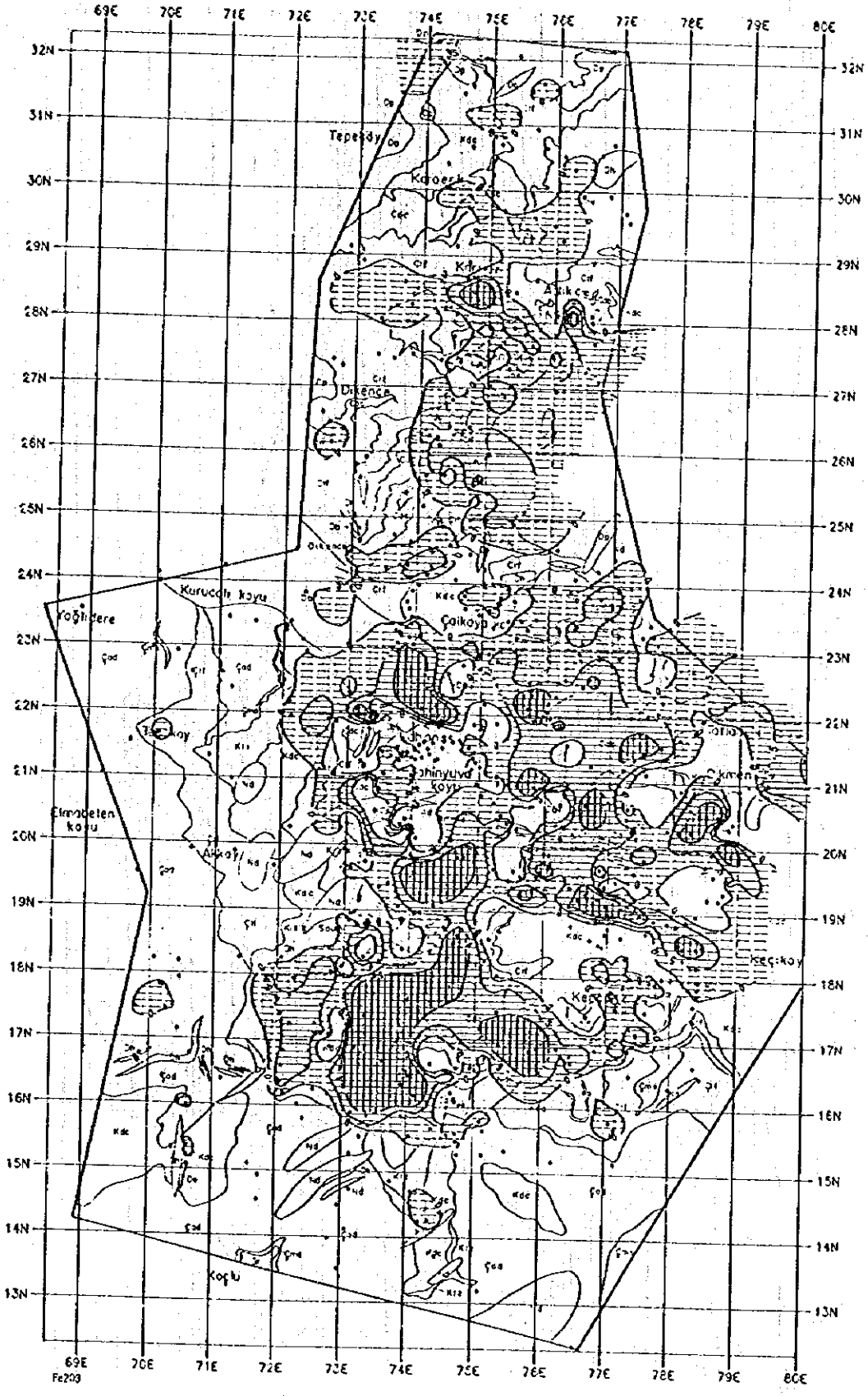


Fig. 4－2 Geochemical Distribution Map by Rock Samples (Fe2O3)

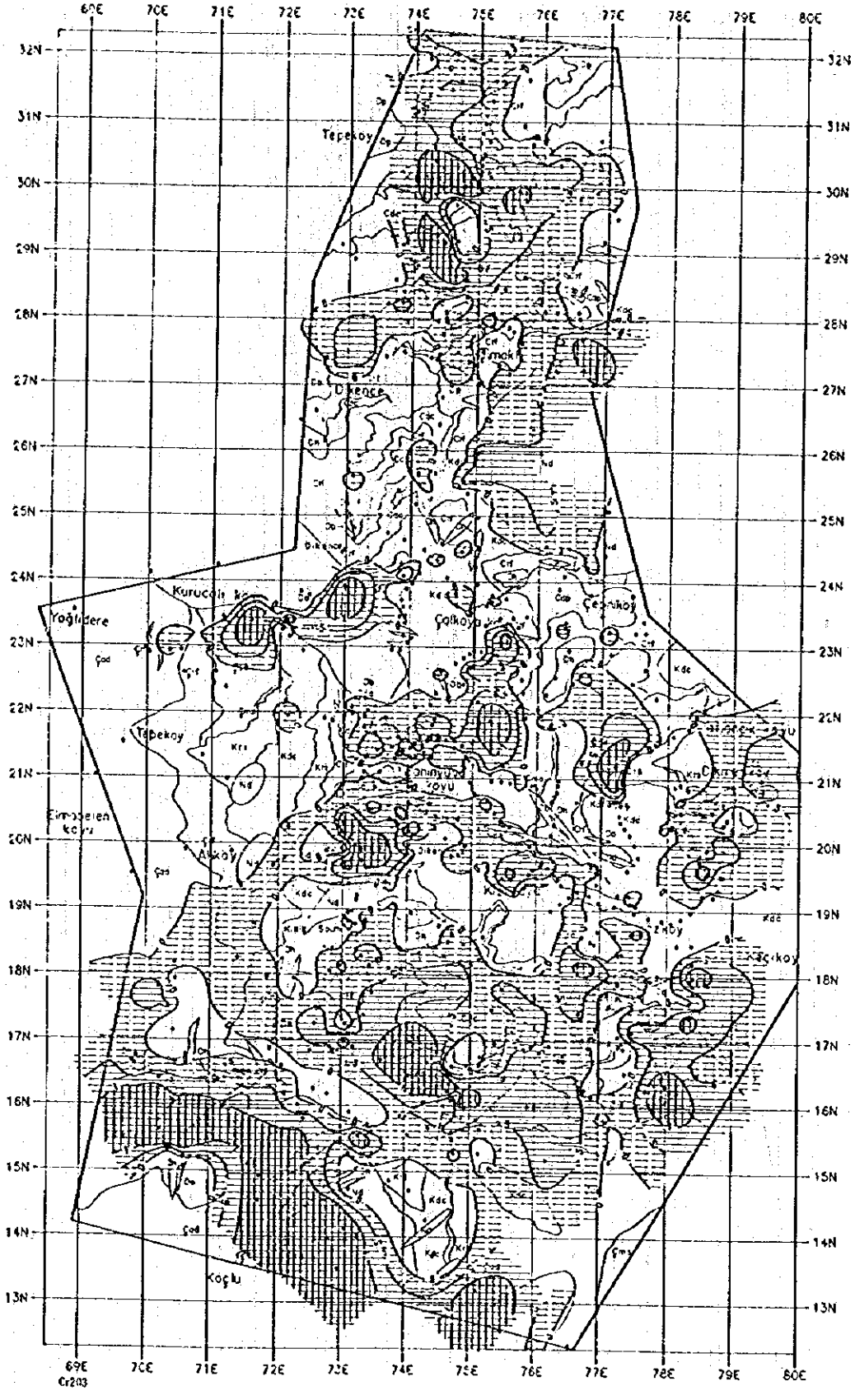


Fig. 4－2 Geochemical Distribution Map by Rock Samples (Cr2O3)

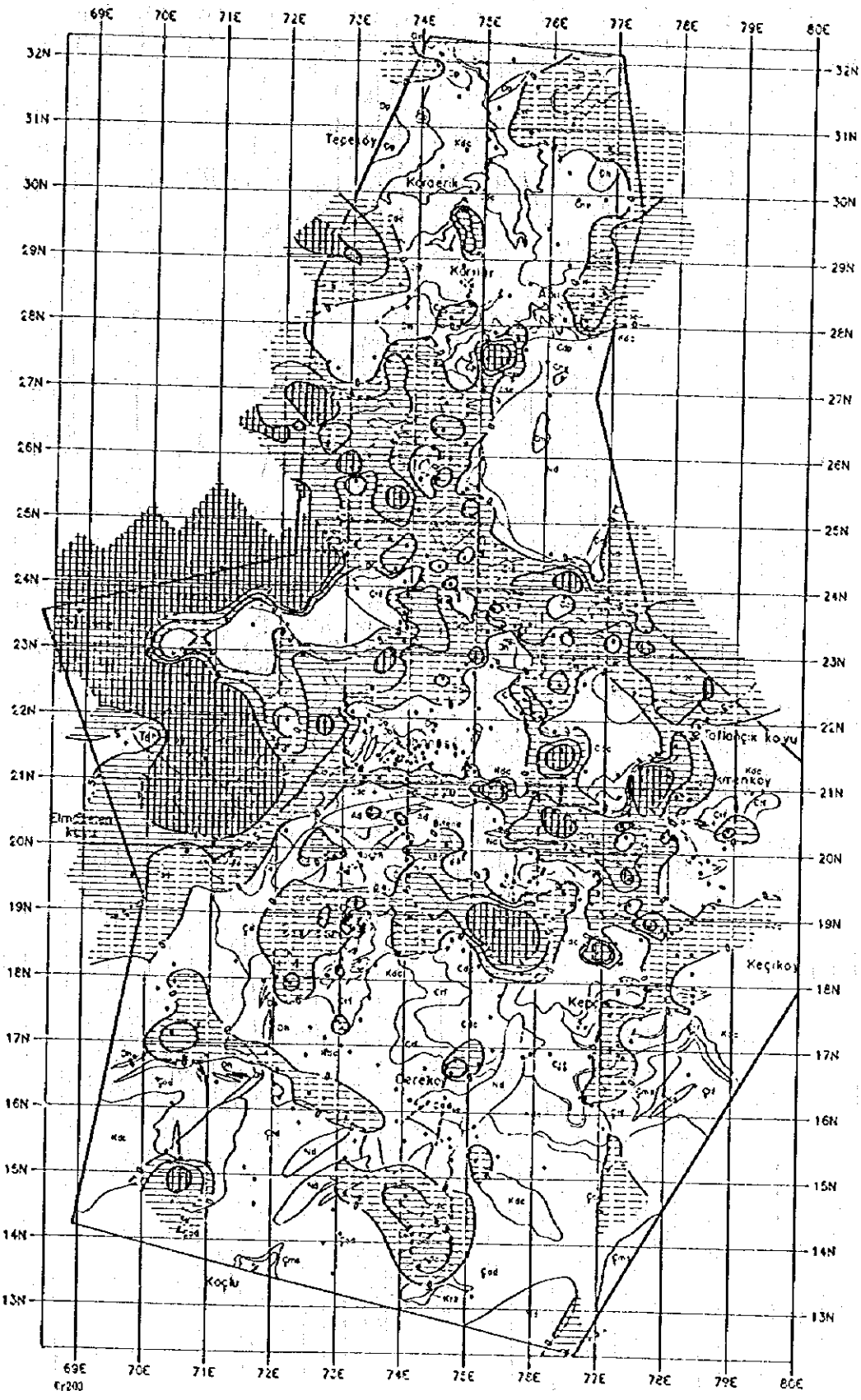


Fig. 4-2 Geochemical Distribution Map by Rock Samples (Cr_2O_3)

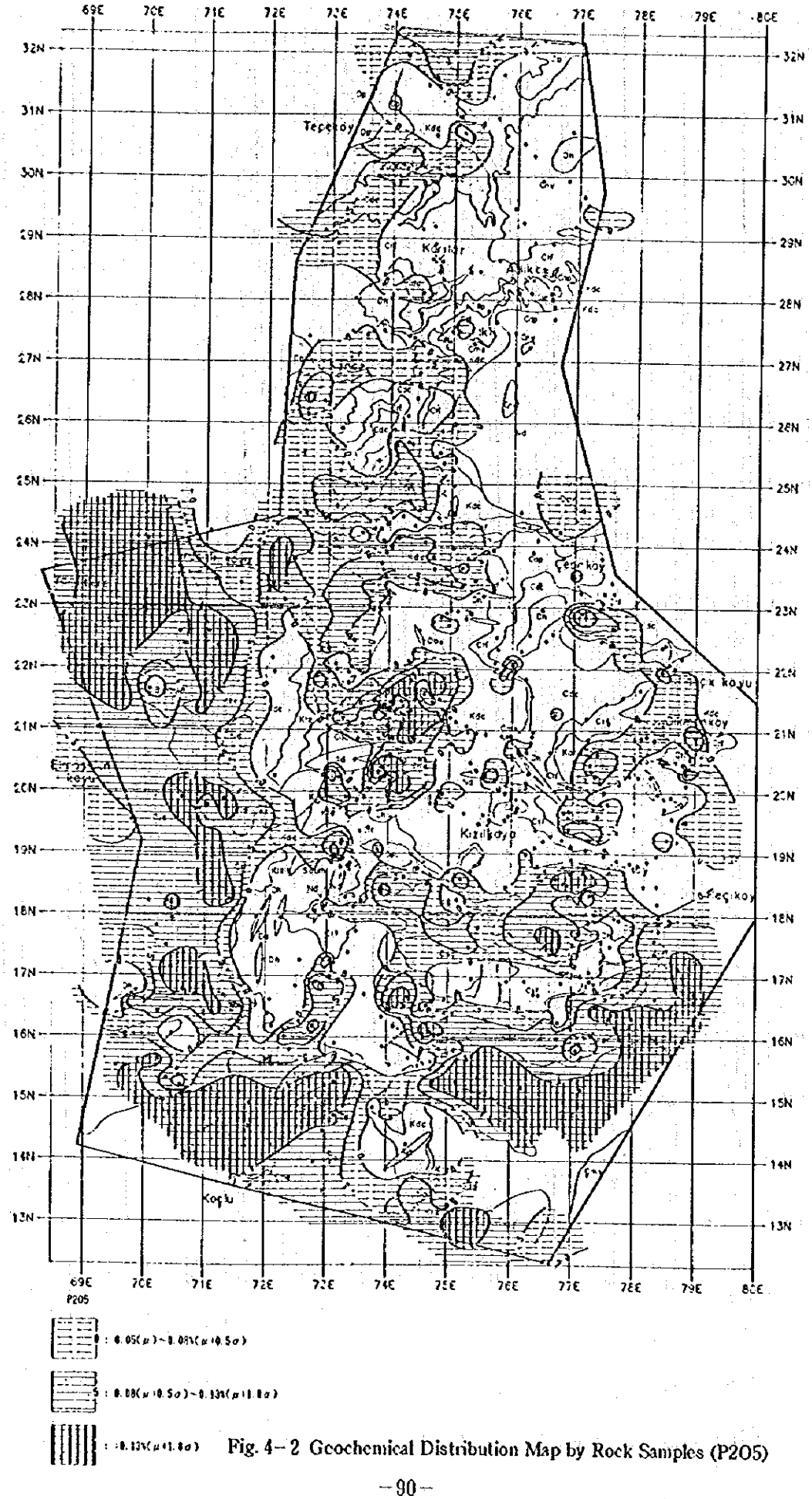


Fig. 4–2 Geochemical Distribution Map by Rock Samples (P2O5)

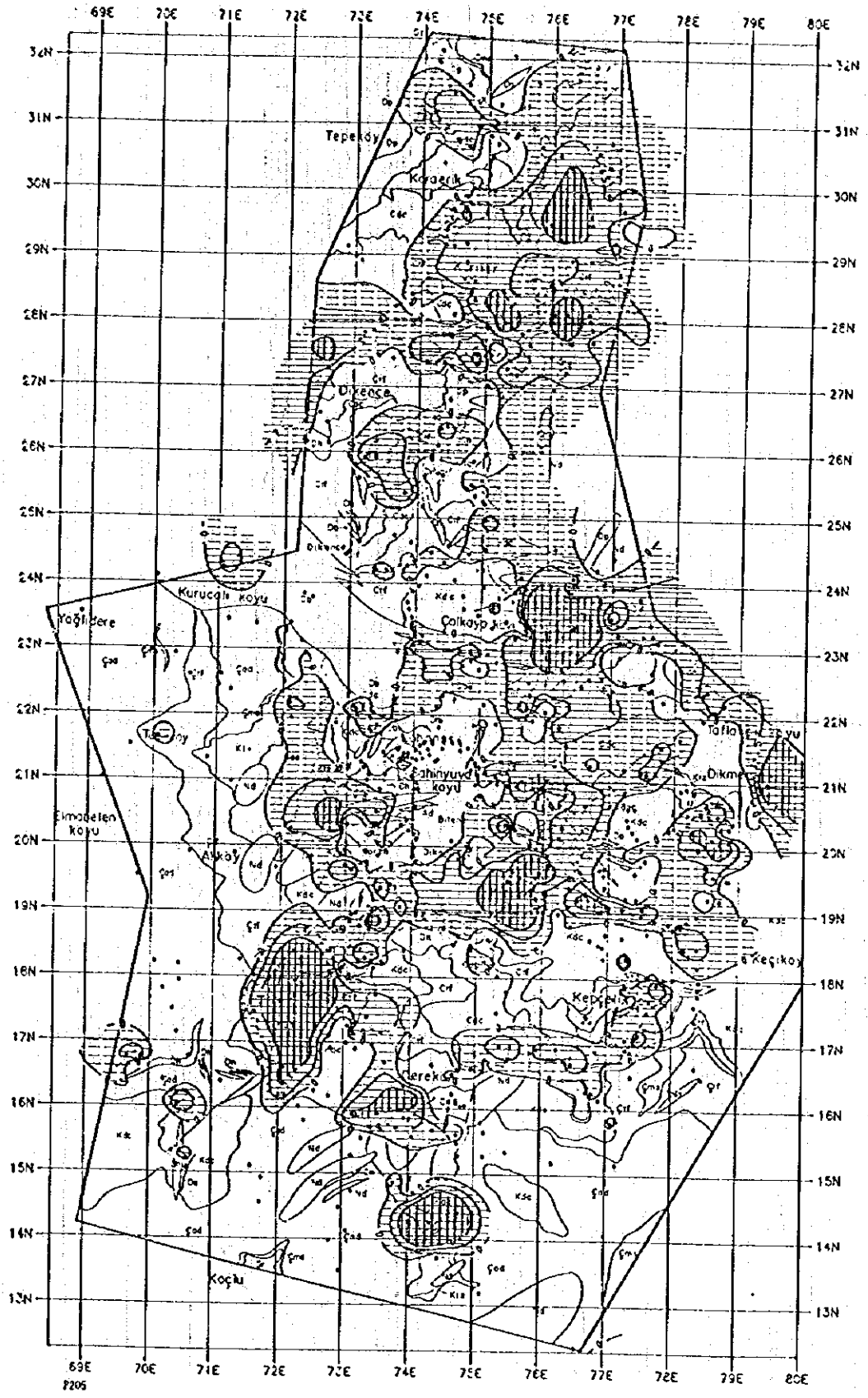


Fig. 4-2 Geochemical Distribution Map by Rock Samples (P_2O_5)

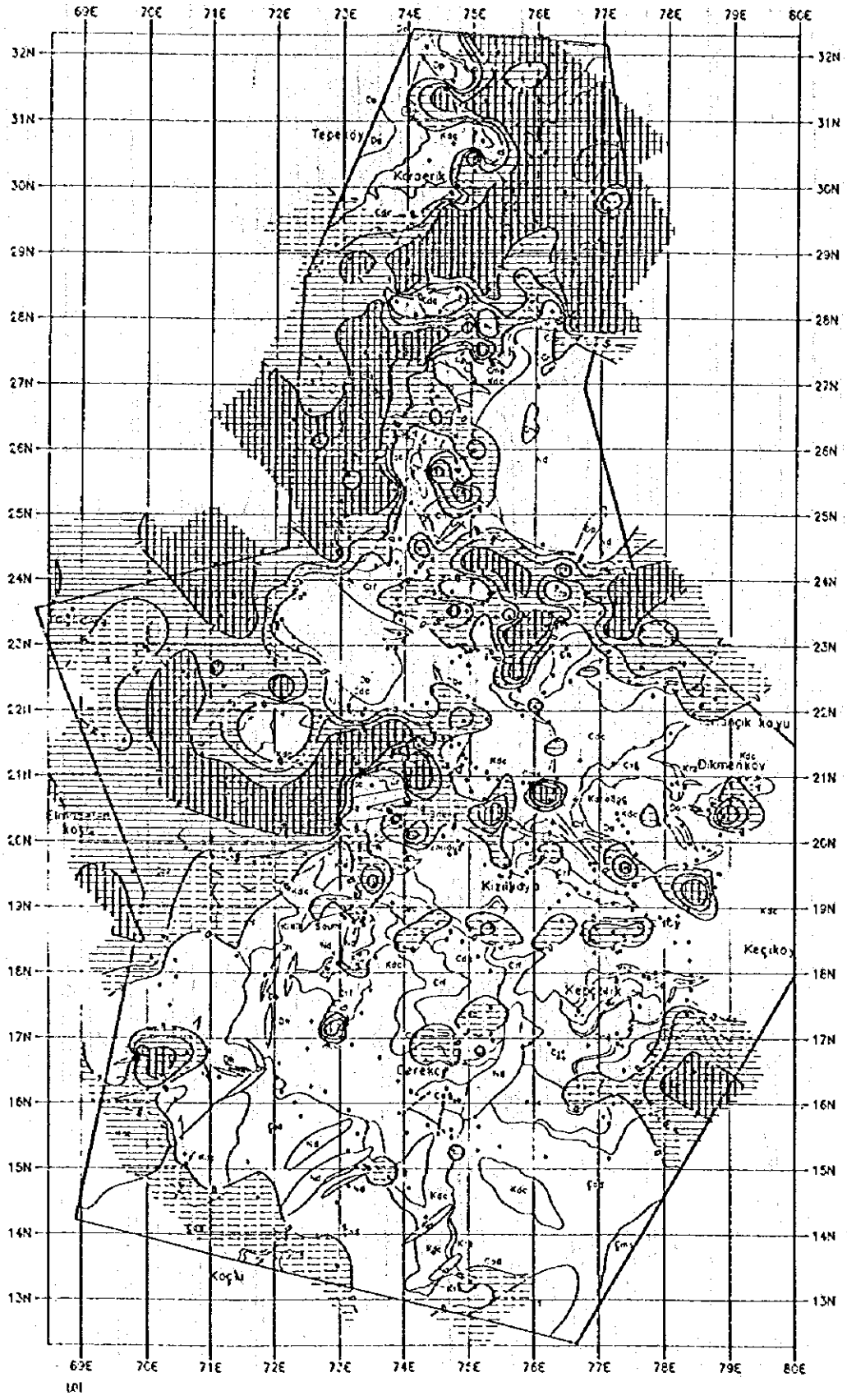


Fig. 4-2 Geochemical Distribution Map by Rock Samples (LOI)

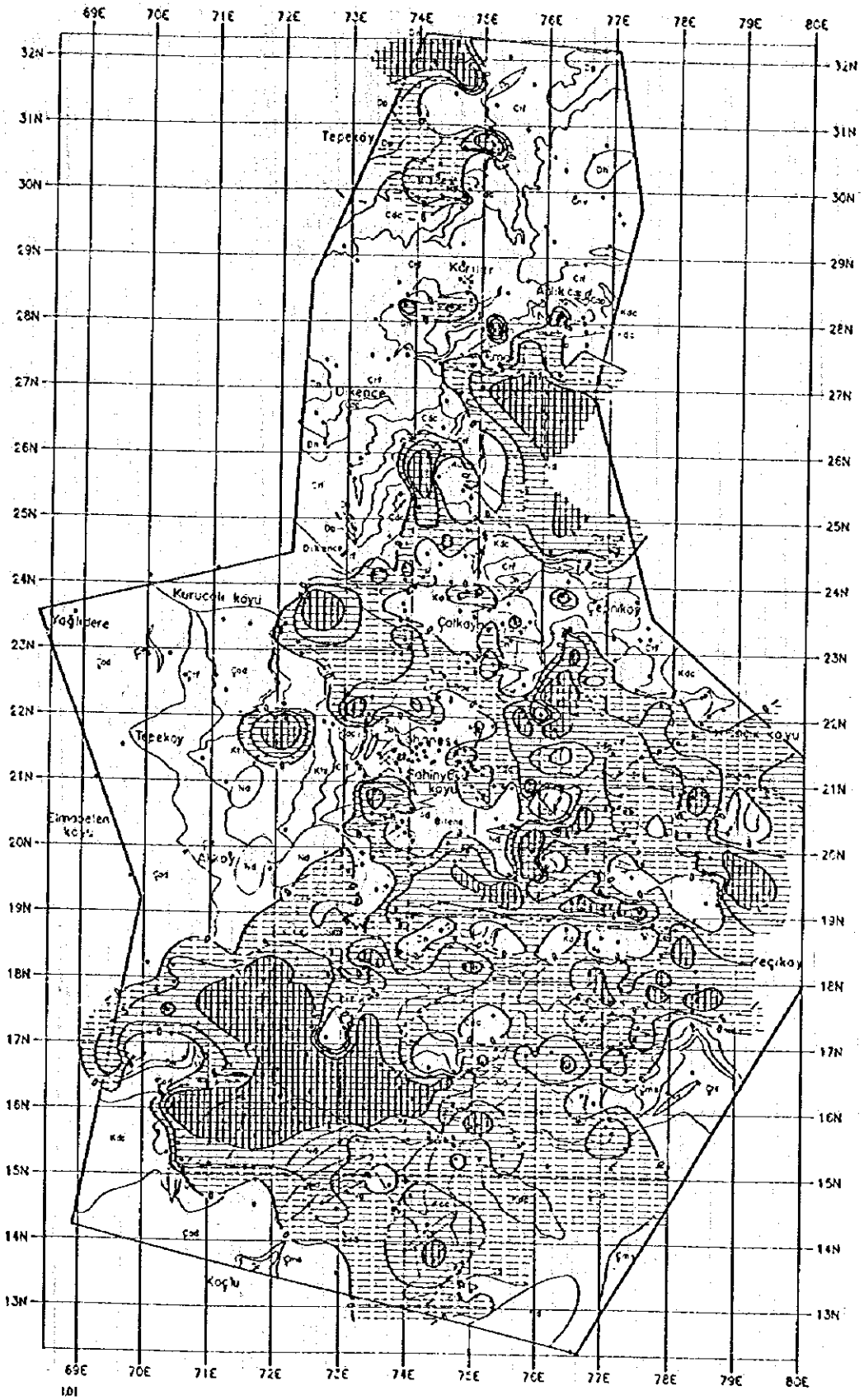


Fig. 4-2 Geochemical Distribution Map by Rock Samples (LOI)

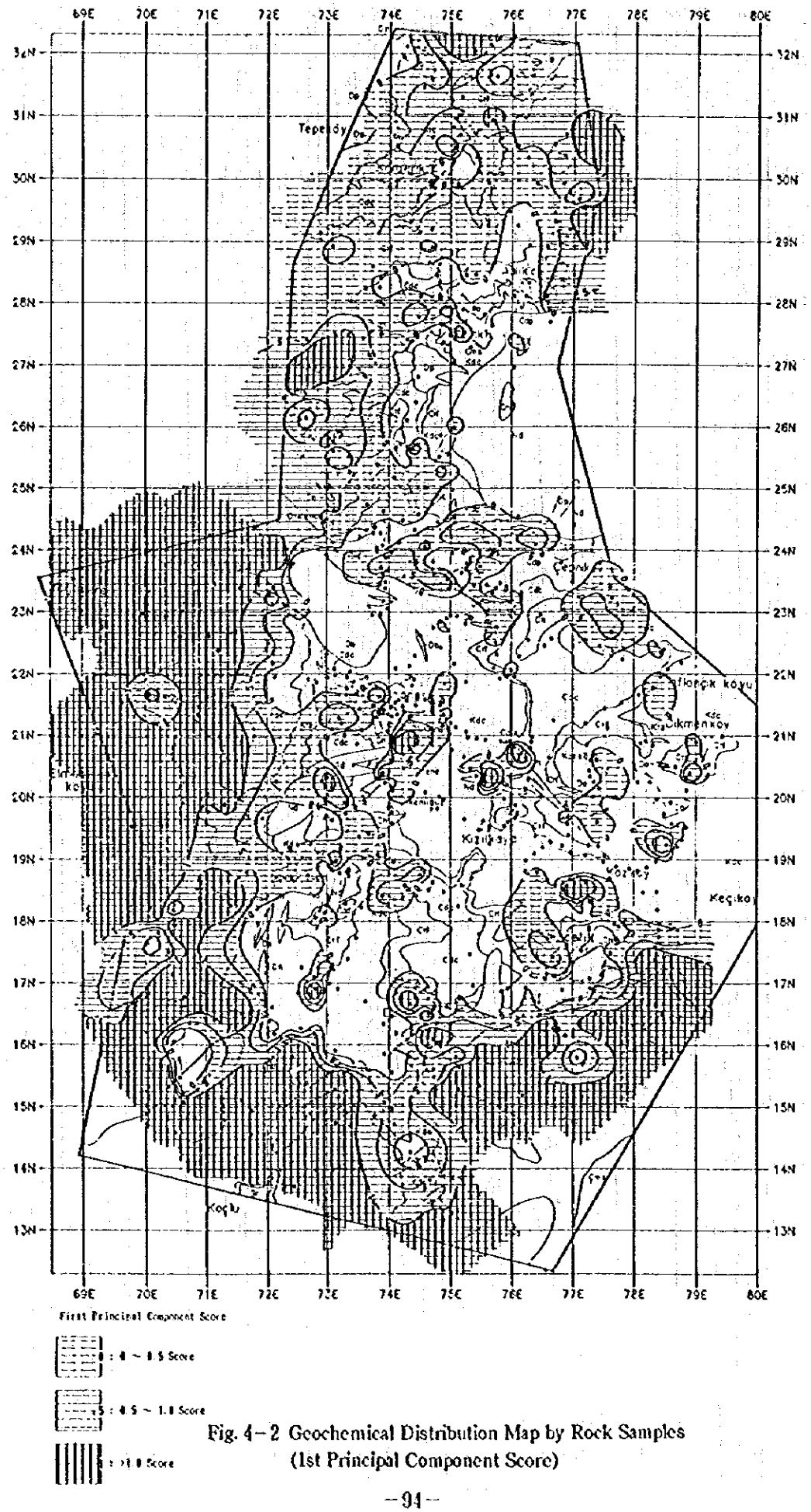


Fig. 4-2 Geochemical Distribution Map by Rock Samples
(1st Principal Component Score)

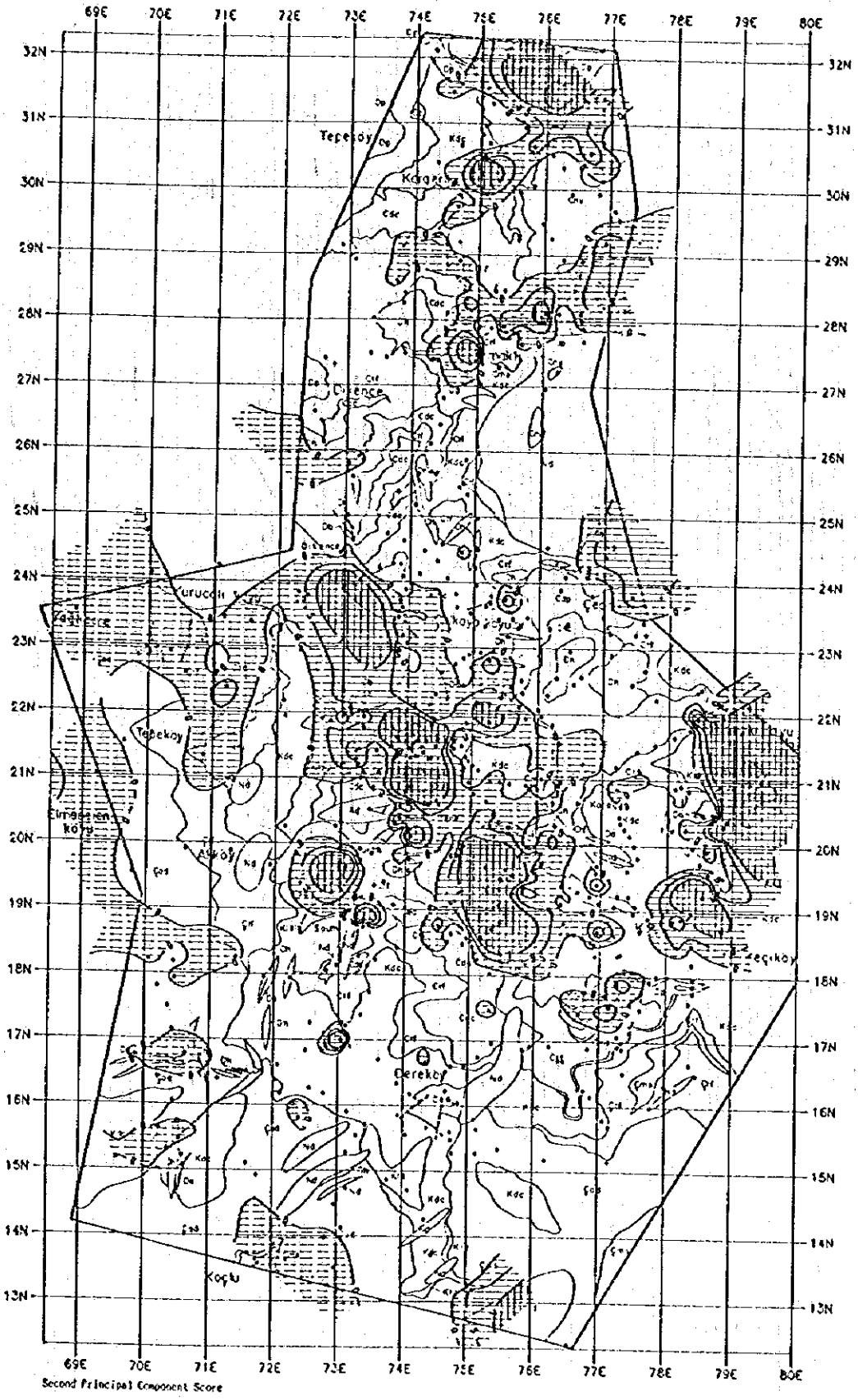


Fig. 4-2 Geochemical Distribution Map by Rock Samples
(2nd Principal Component Score)

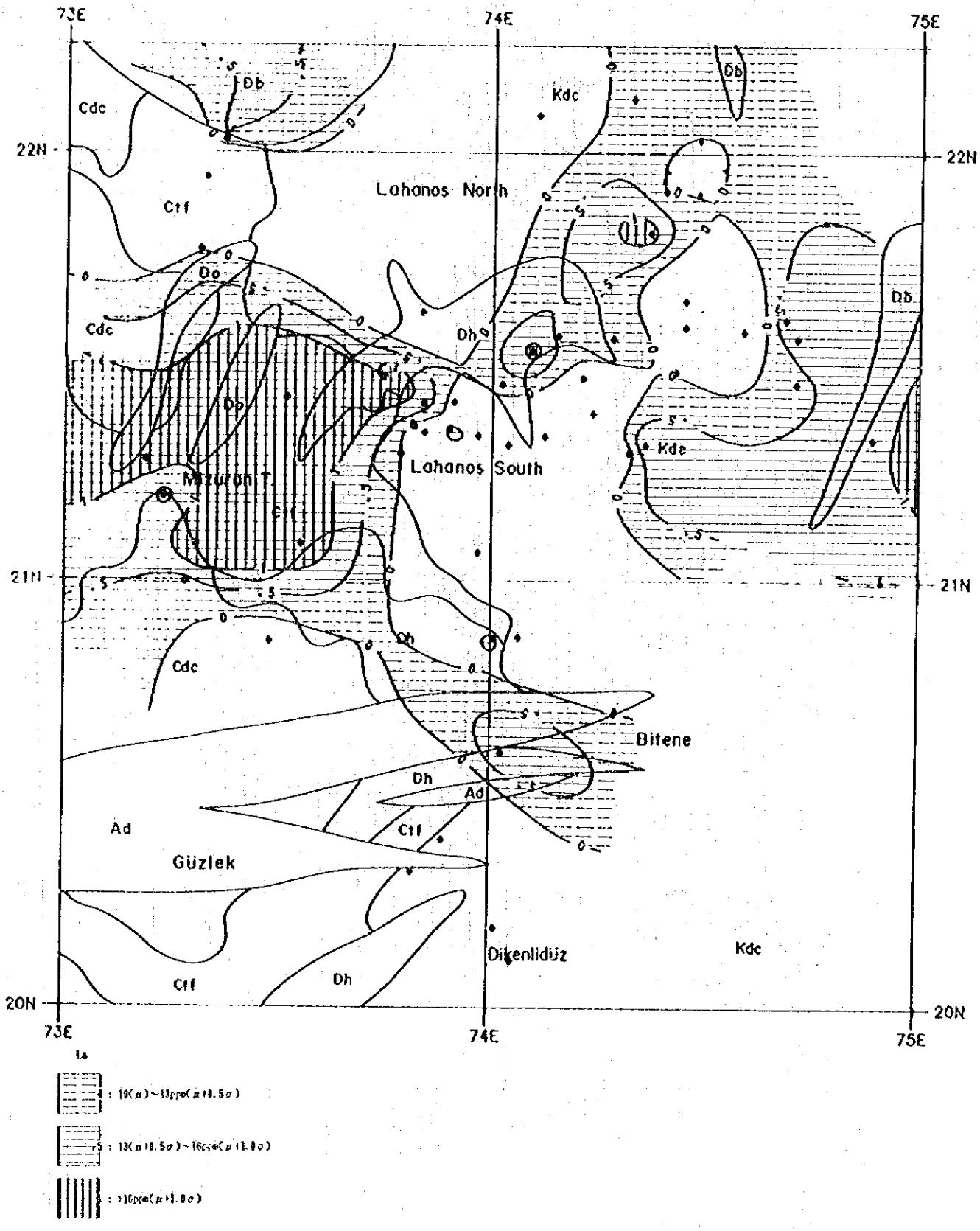


Fig. 4-2 Geochemical Distribution Map by Rock Samples (La)

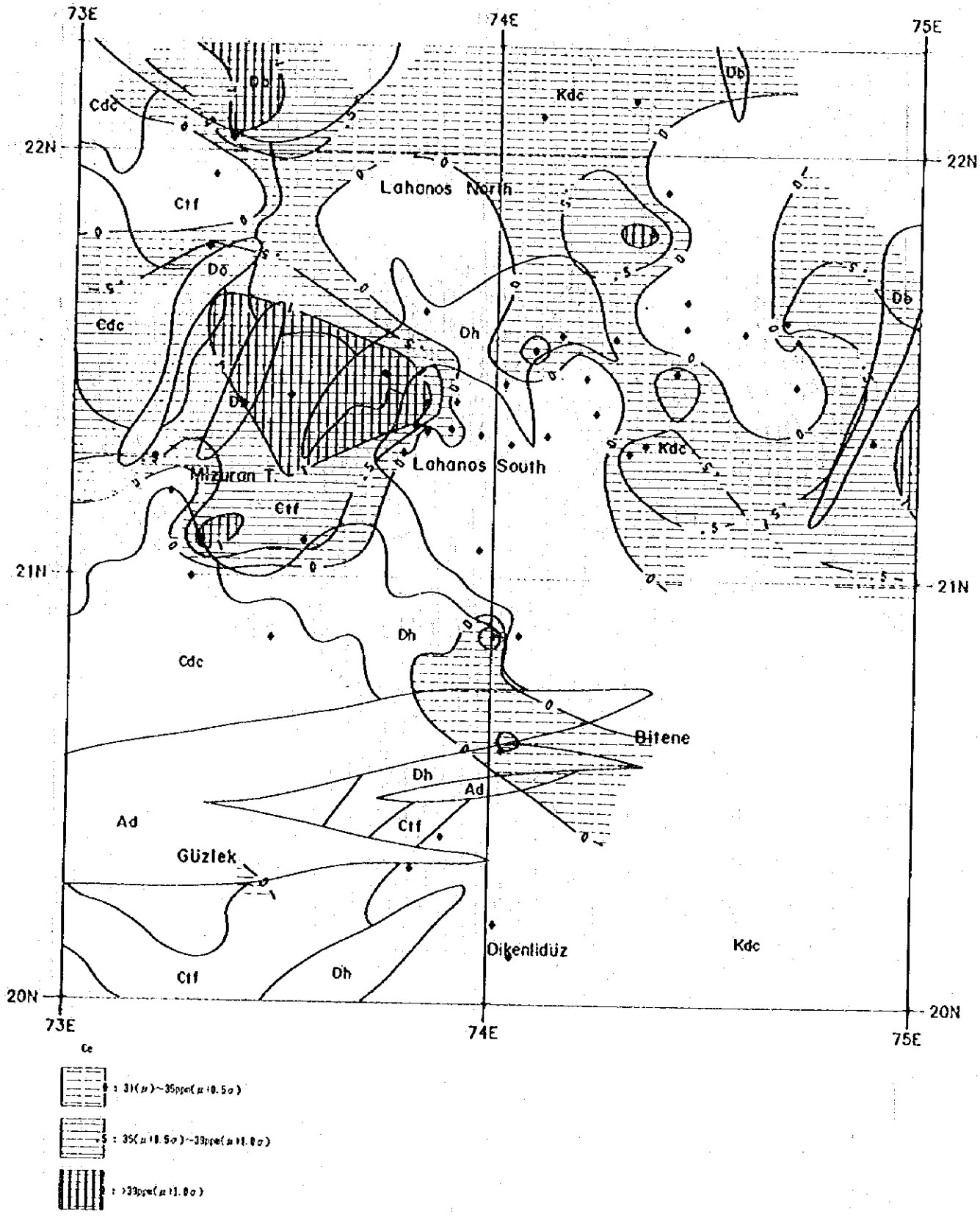


Fig. 4－2 Geochemical Distribution Map by Rock Samples (Ce)

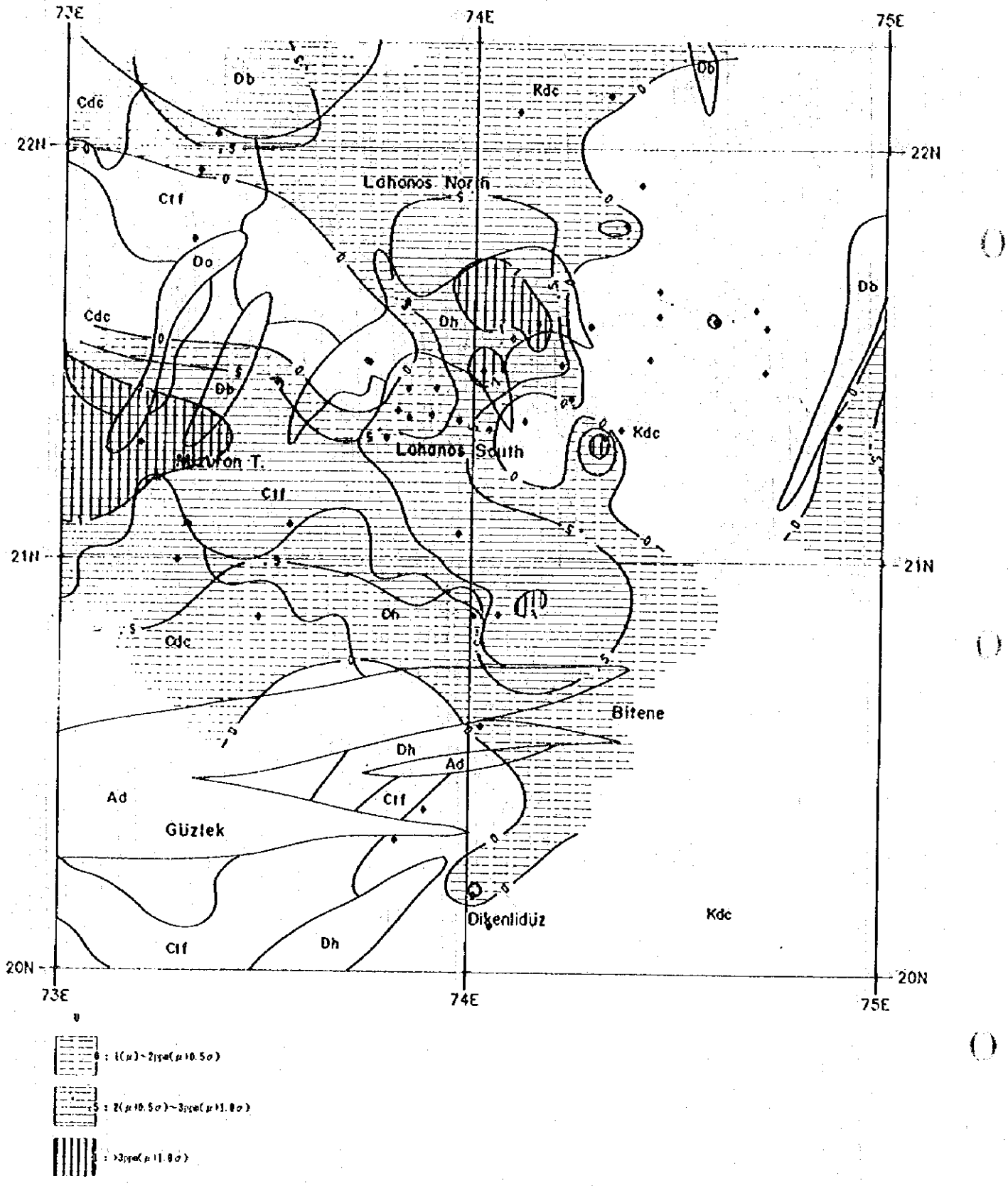


Fig. 4-2 Geochemical Distribution Map by Rock Samples (U)

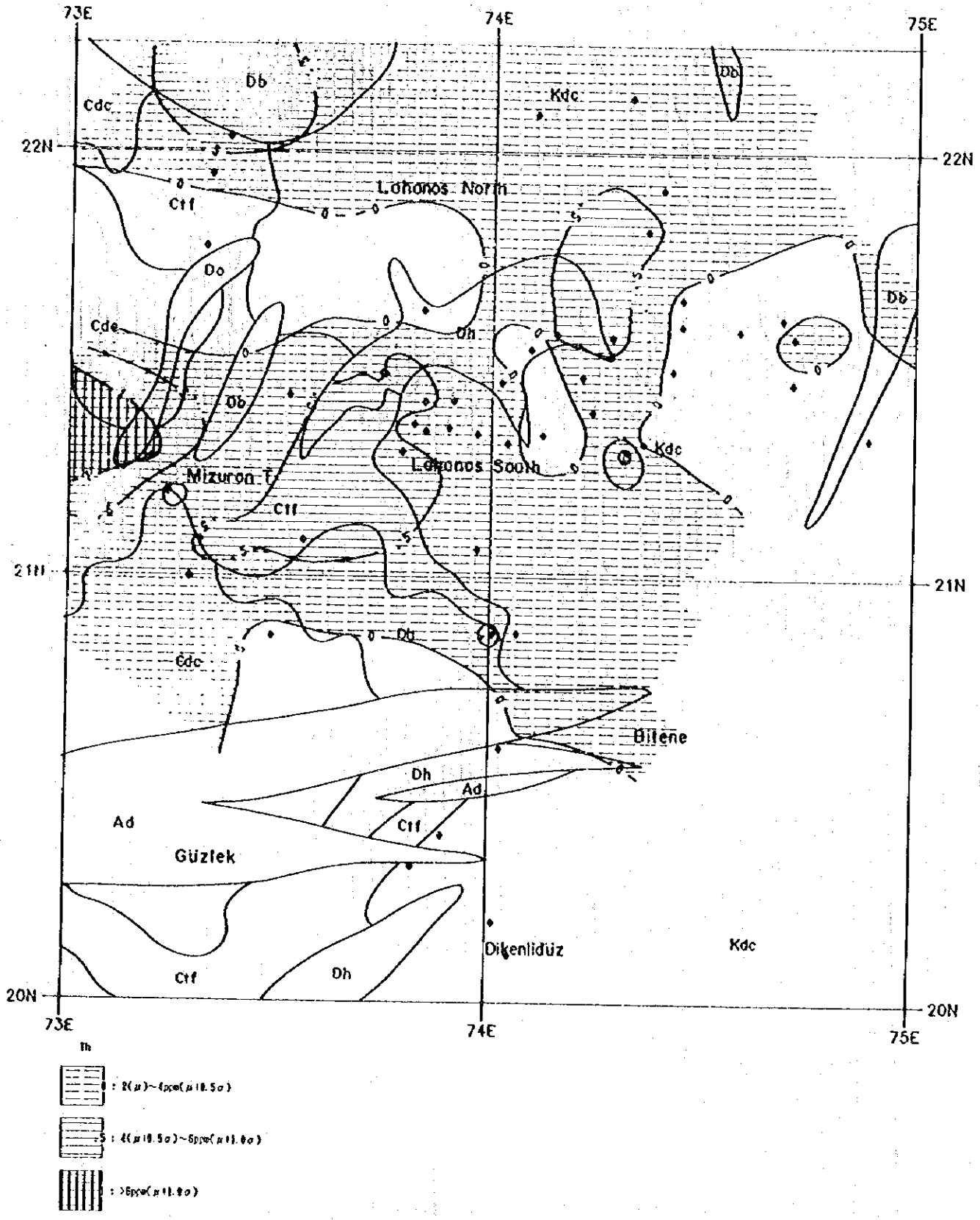


Fig. 4-2 Geochemical Distribution Map by Rock Samples (Th)

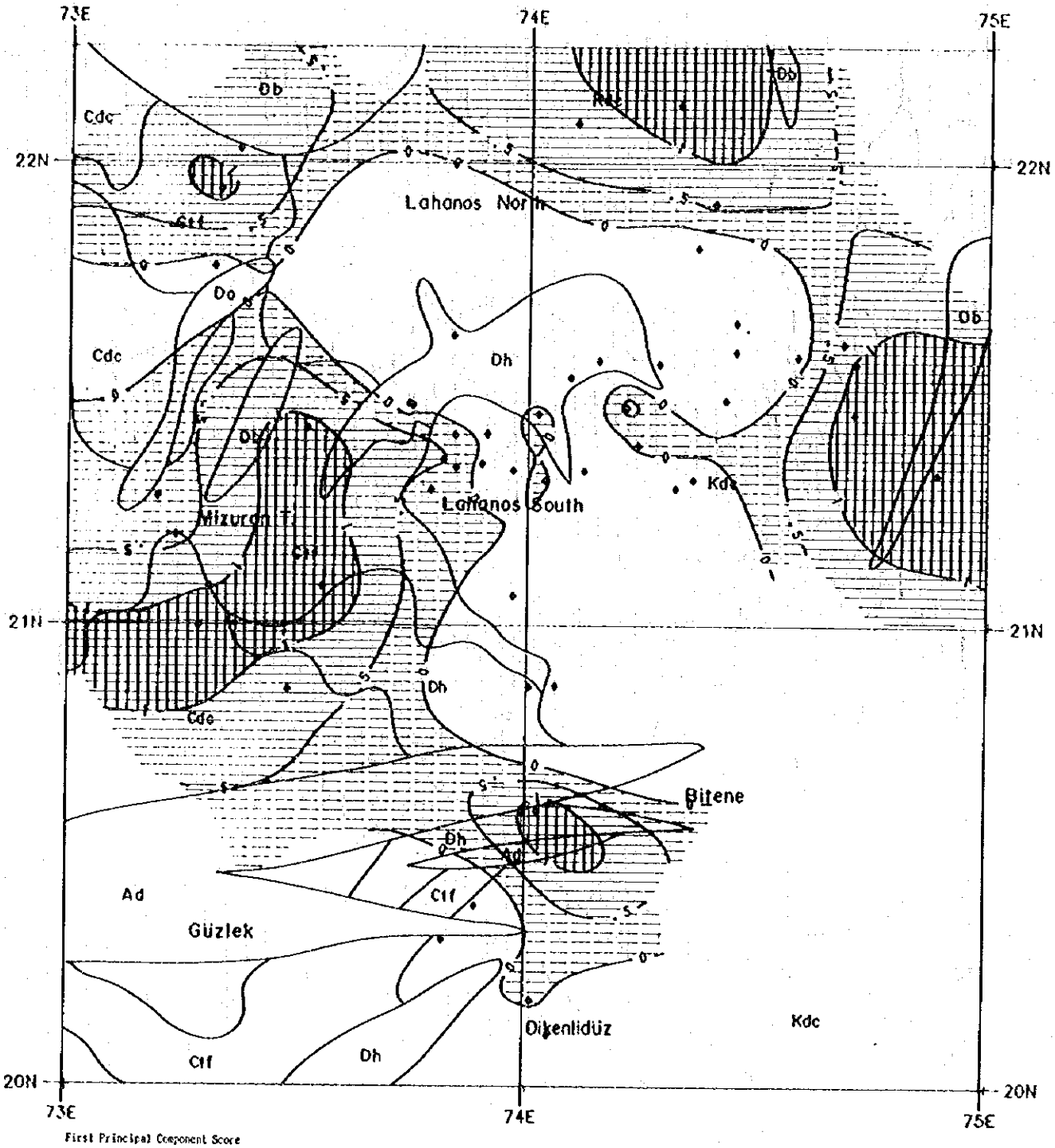


Fig. 4-2 Geochemical Distribution Map by Rock Samples
(1st Principal Component Score)

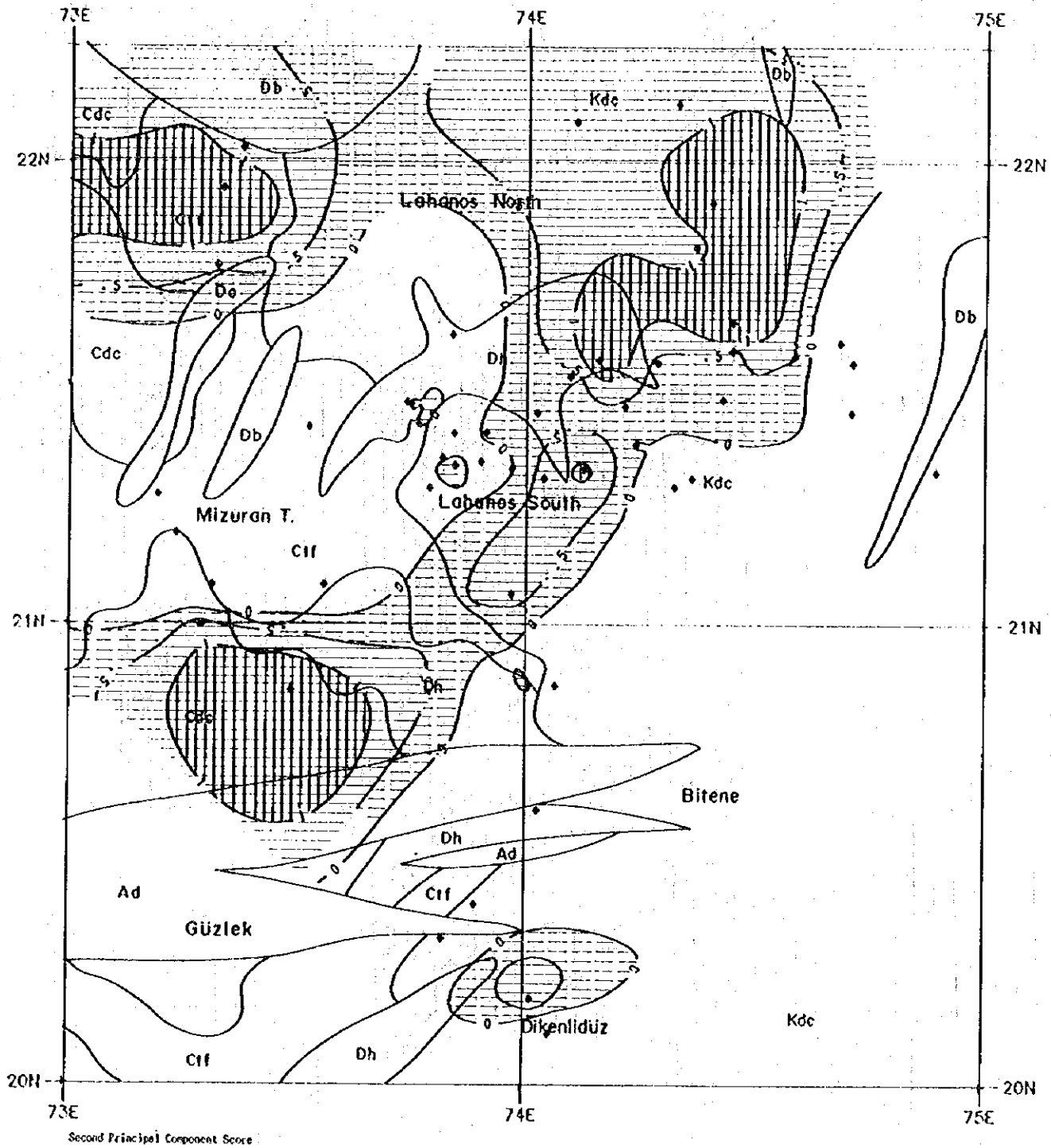
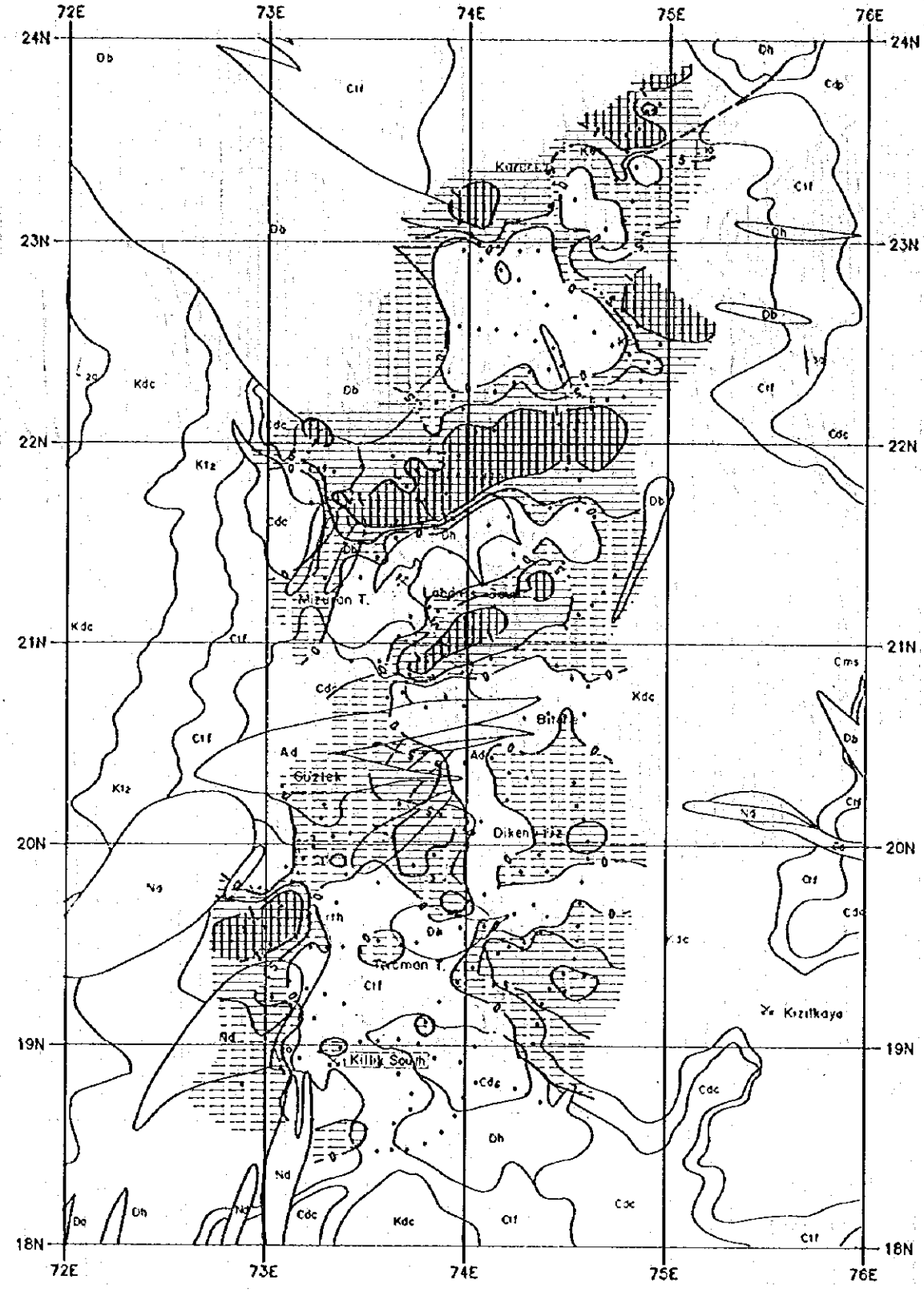


Fig. 4-2 Geochemical Distribution Map by Rock Samples
(2nd Principal Component Score)



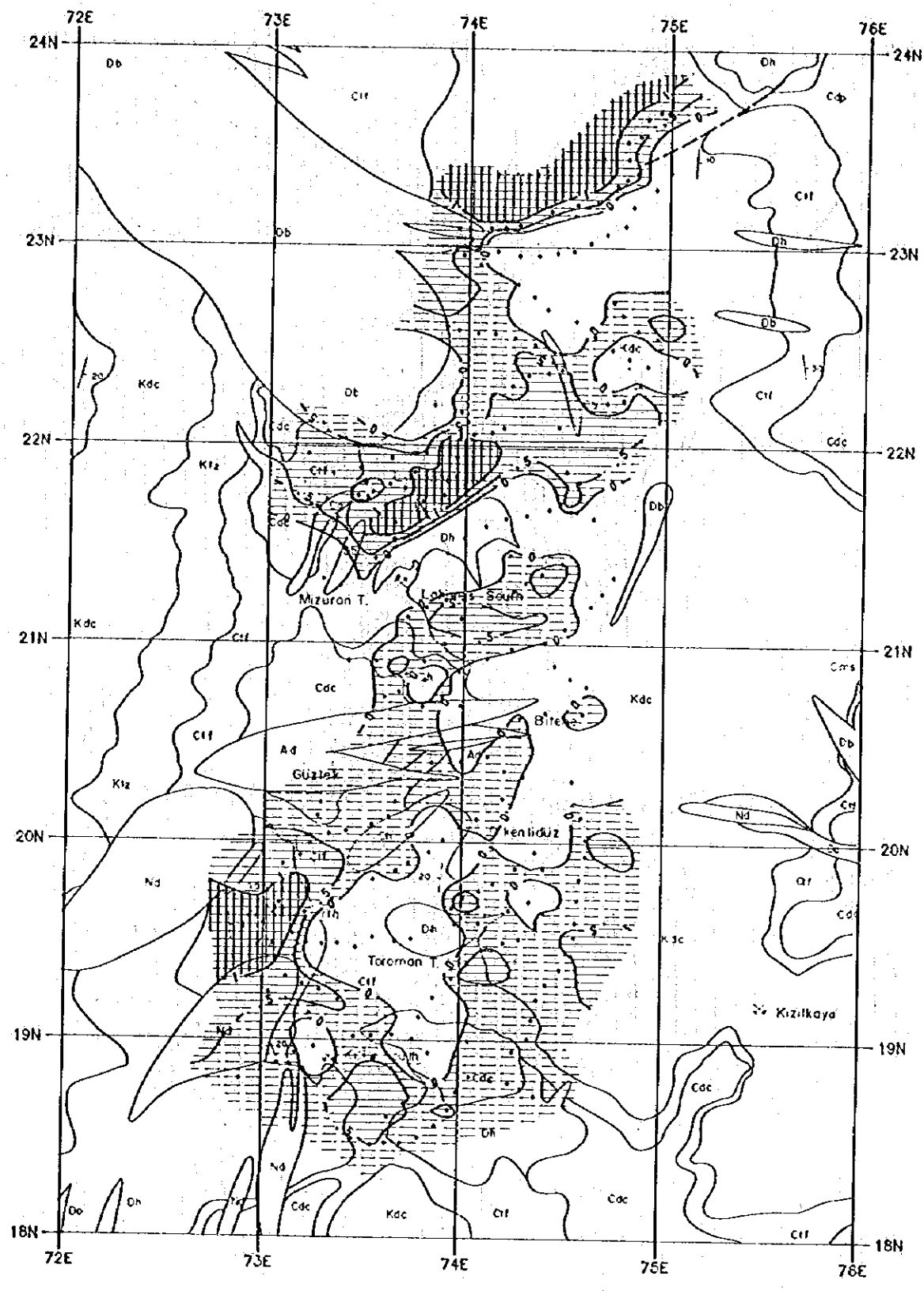
Au

: 0.02(μ)~0.05ppm(μ+0.5σ)

: 0.05(μ+0.5σ)~0.1ppm(μ+1.0σ)

: >0.1ppm(μ+1.0σ)

Fig. 4-3 Geochemical Distribution Map by Soil Samples (Au)



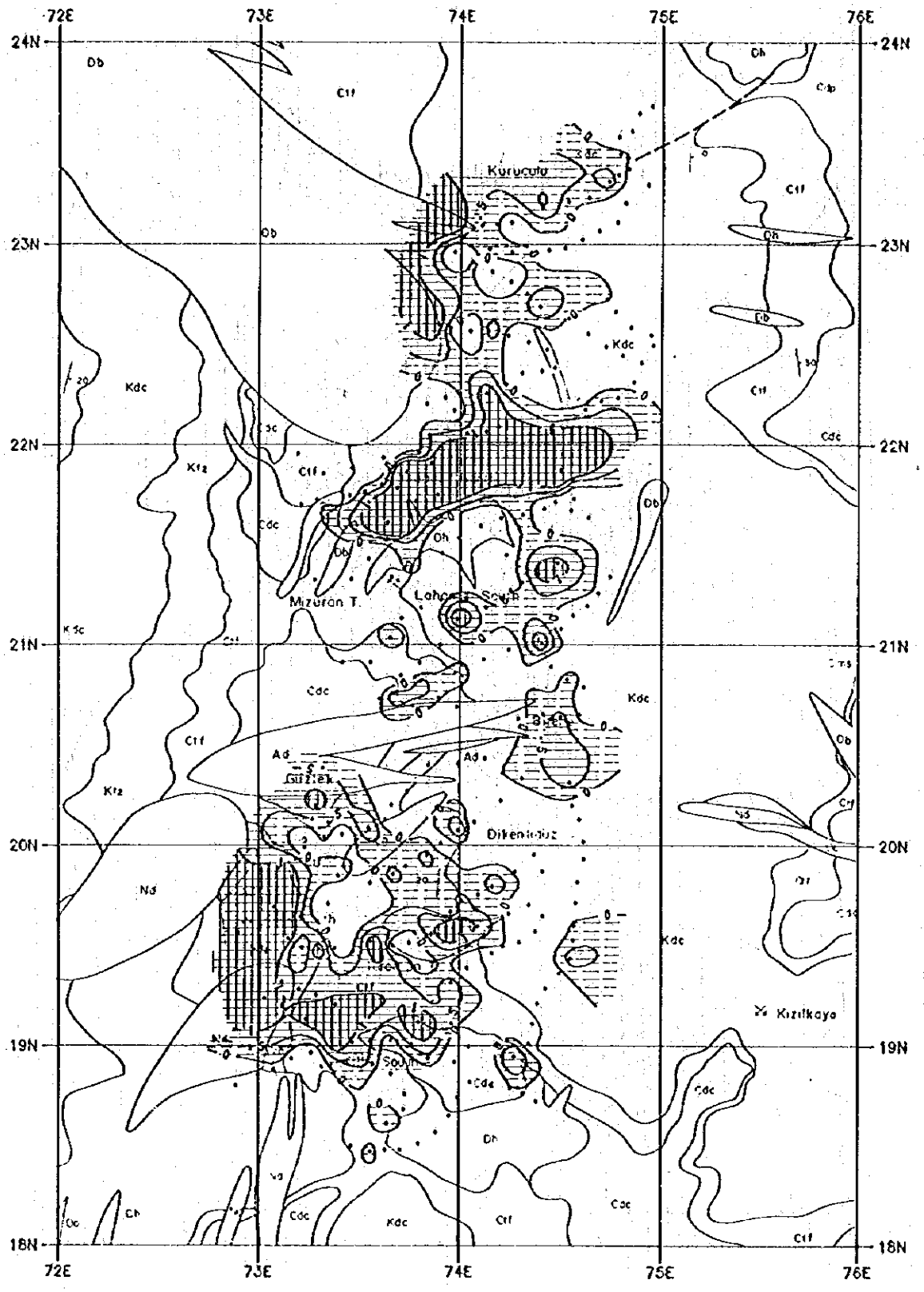
Ag

0 : 0.22(μ)~0.86ppm(μ+0.5σ)

S : 0.86(μ+0.5σ)~3.27ppm(μ+1.0σ)

: >3.27ppm(μ+1.0σ)

Fig. 4-3 Geochemical Distribution Map by Soil Samples (Ag)



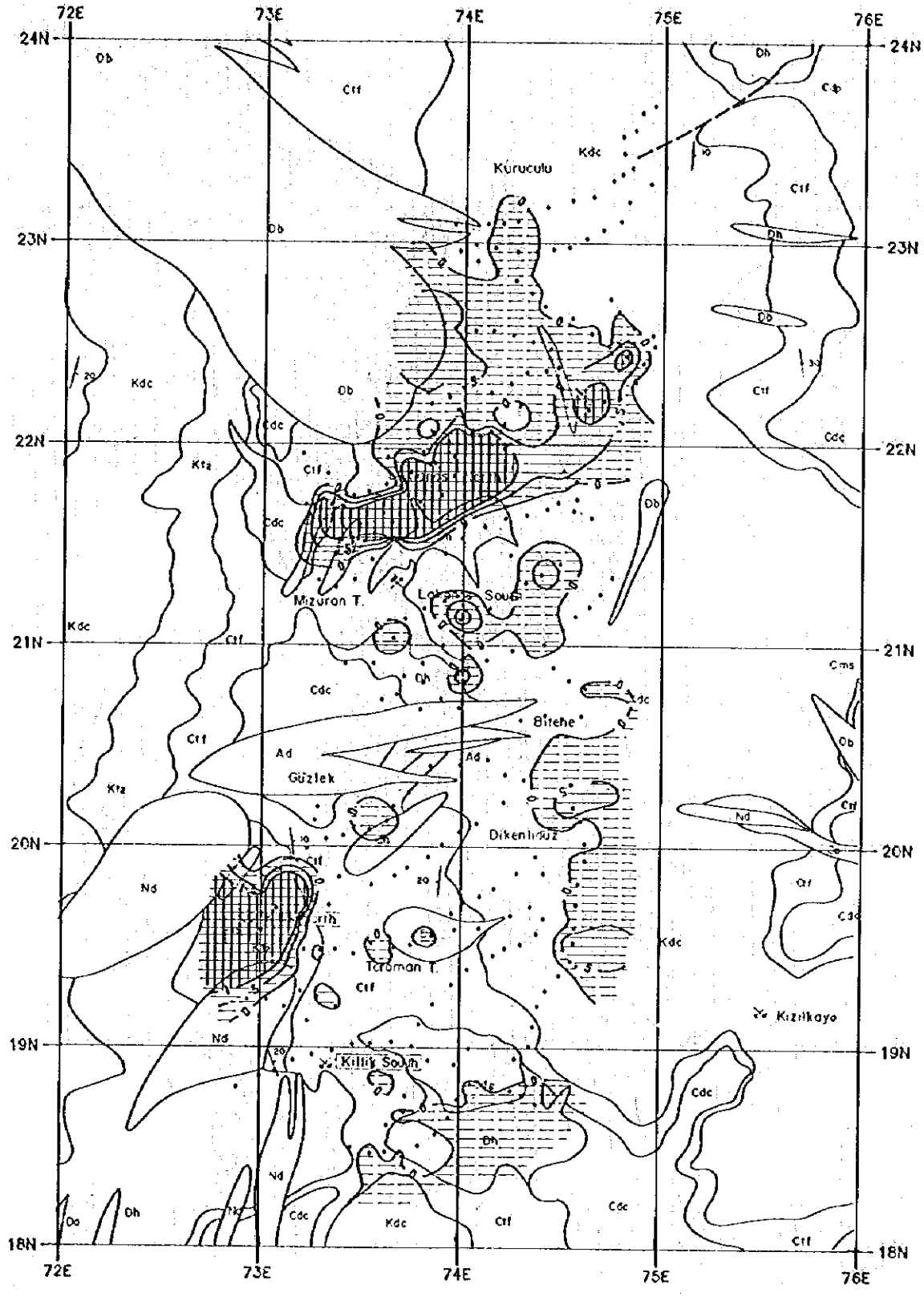
Cu

: 64(μ)~106ppm(μ+0.5σ)

: 106(μ+0.5σ)~176ppm(μ+1.0σ)

: >176ppm(μ+1.0σ)

Fig. 4-3 Geochemical Distribution Map by Soil Samples (Cu)



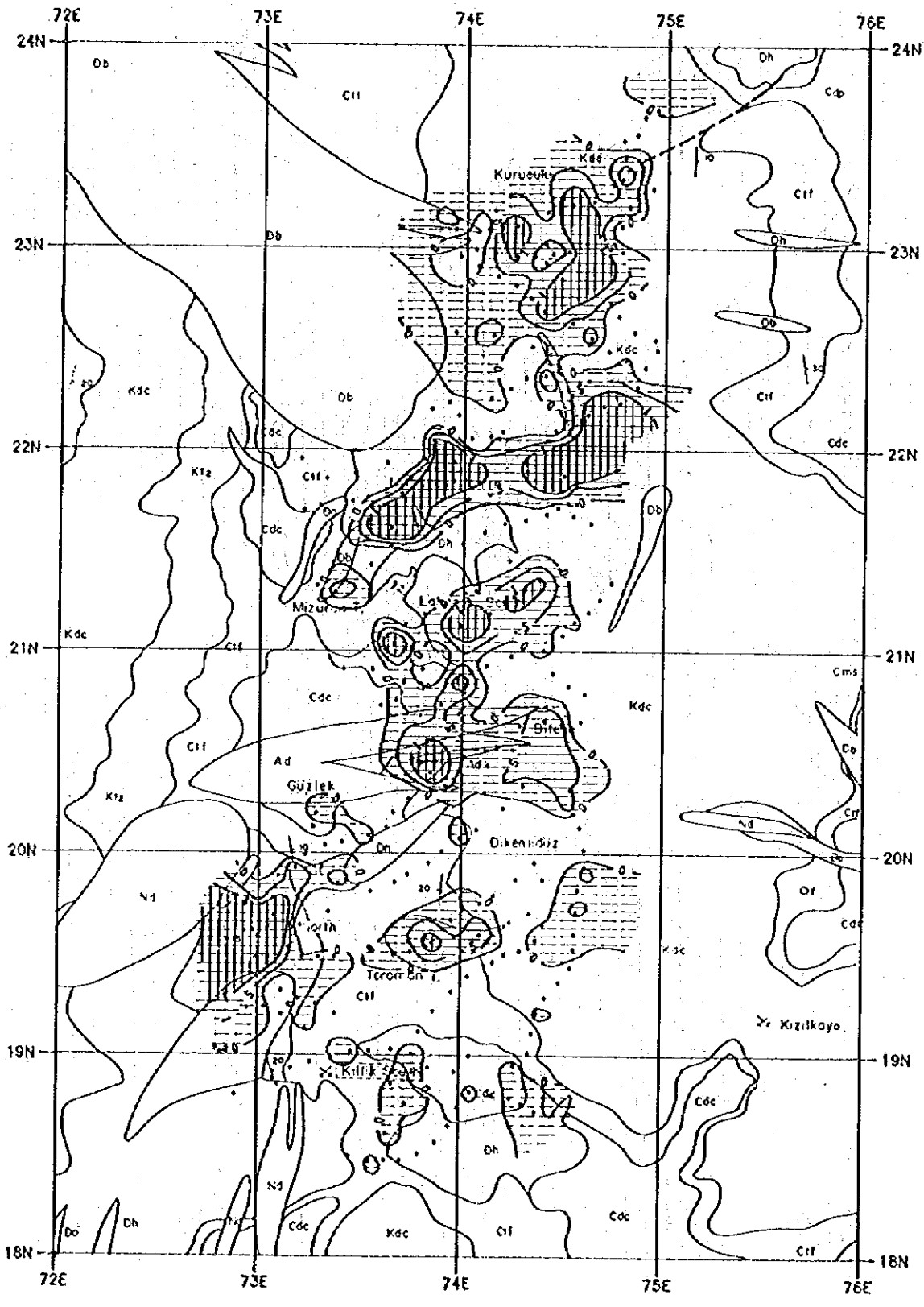
Pb

: 133(μ)~184ppm(μ+0.5σ)

: 184(μ+0.5σ)~254ppm(μ+1.0σ)

: >254ppm(μ+1.0σ)

Fig. 4-3 Geochemical Distribution Map by Soil Samples (Pb)



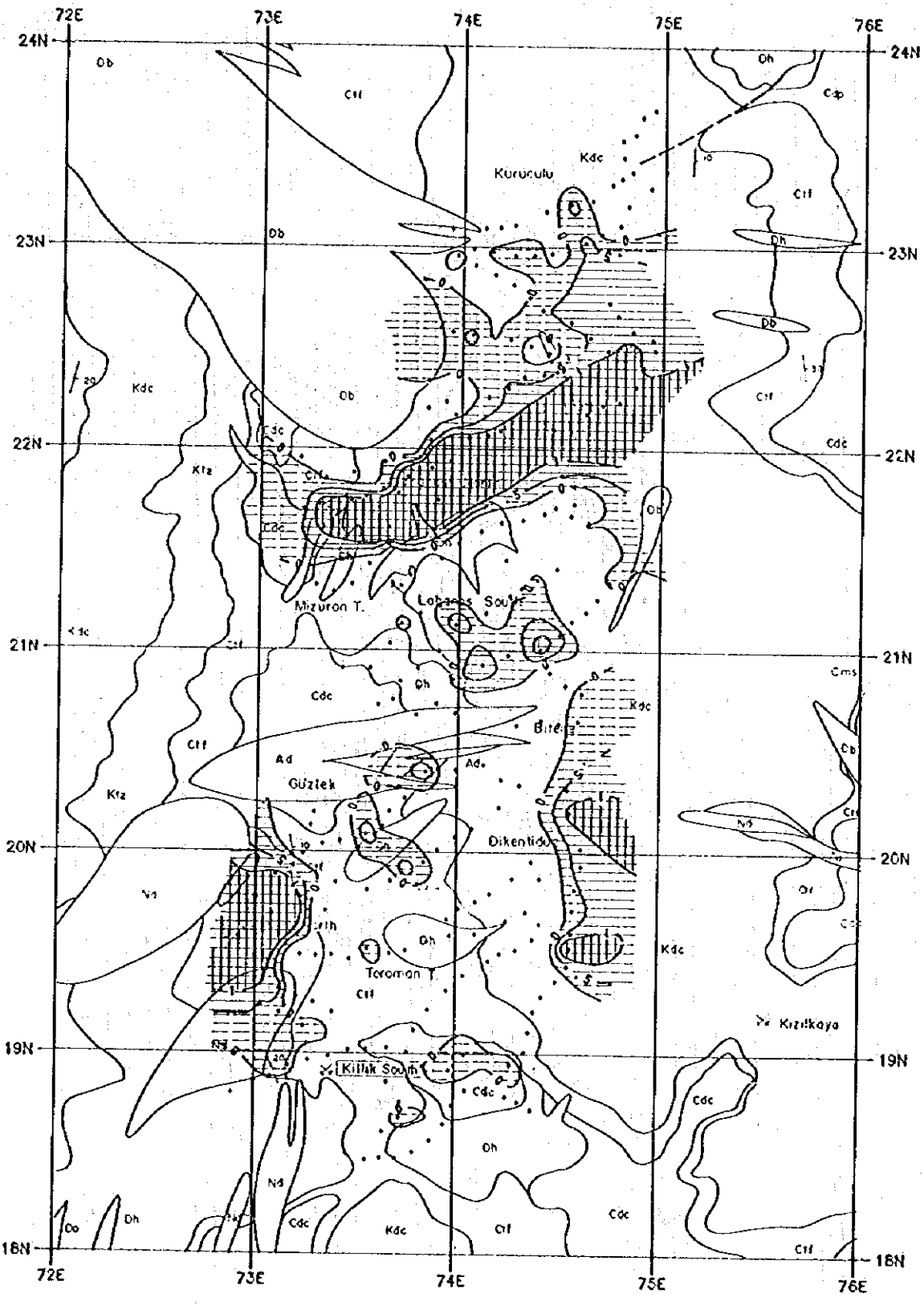
Zn

: 104(μ)~138×exp(μ+0.5σ)

: 138(μ+0.5σ)~184×exp(μ+1.0σ)

: >184×exp(μ+1.0σ)

Fig. 4-3 Geochemical Distribution Map by Soil Samples (Zn)



As

: 22(μ)~38ppm(μ+0.5σ)

: 38(μ+0.5σ)~64ppm(μ+1.8σ)

: >64ppm(μ+1.8σ)

Fig. 4-3 Geochemical Distribution Map by Soil Samples (As)

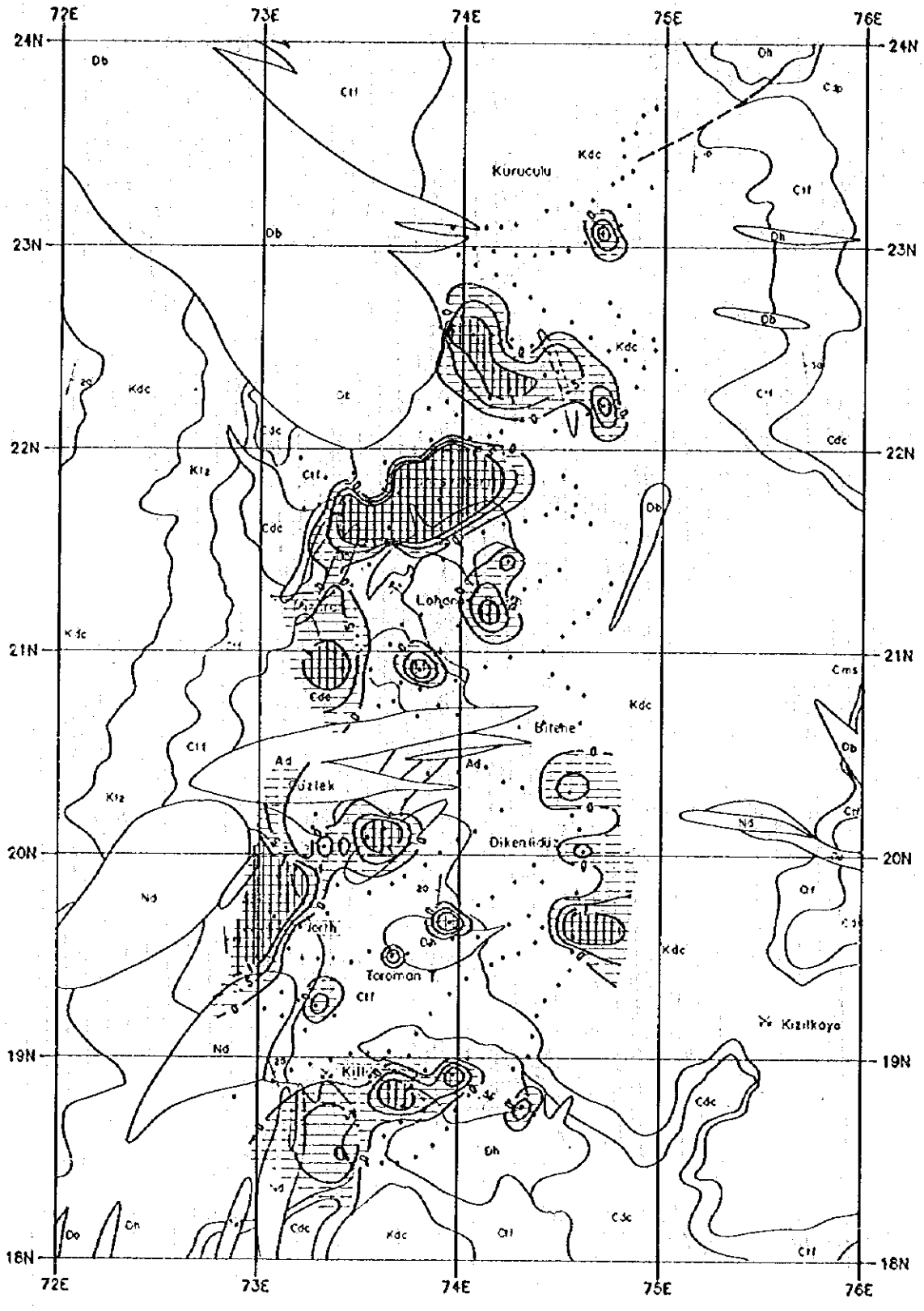


Fig. 4-3 Geochemical Distribution Map by Soil Samples (Sb)

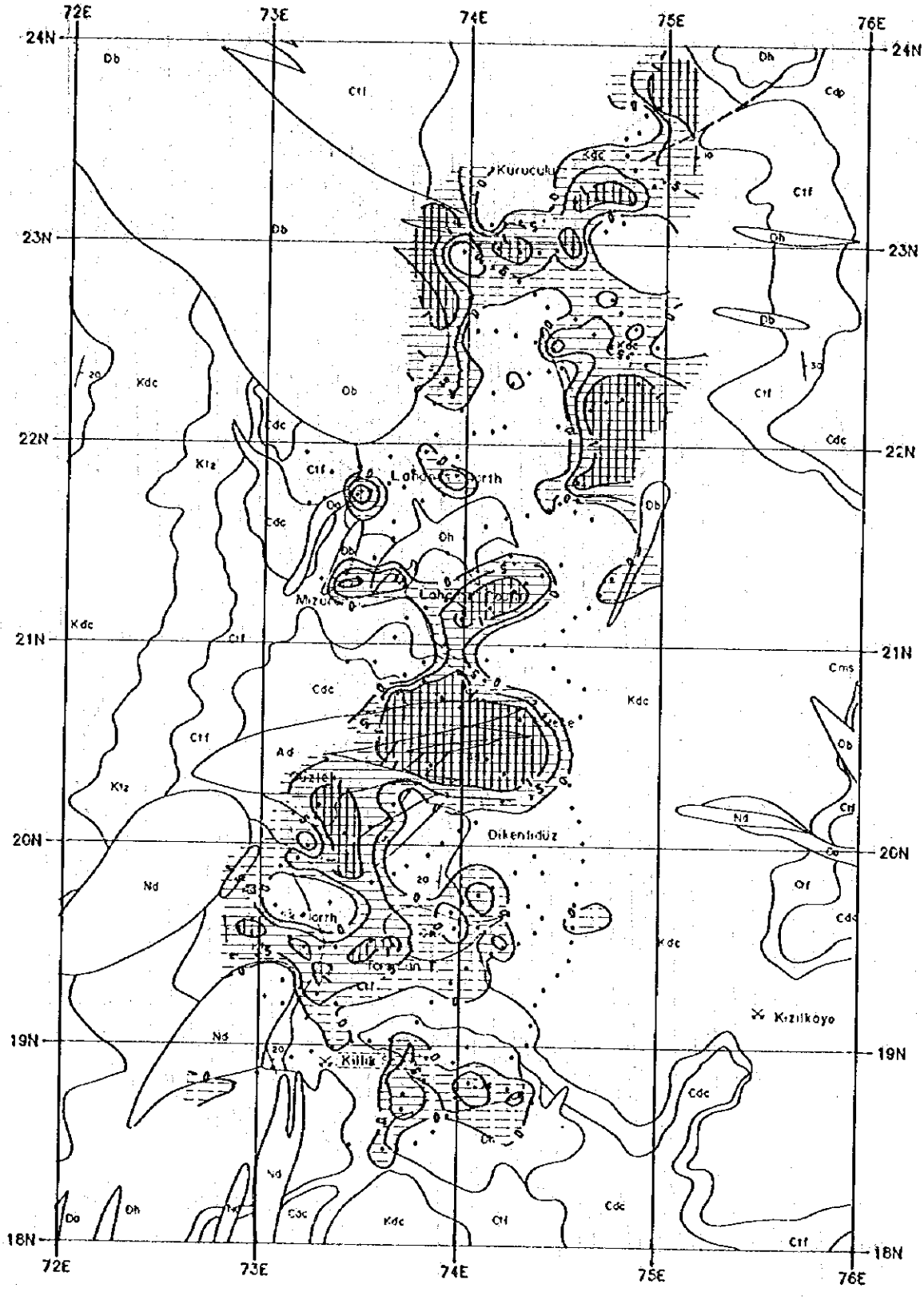


Fig. 4－3 Geochemical Distribution Map by Soil Samples (Mn)

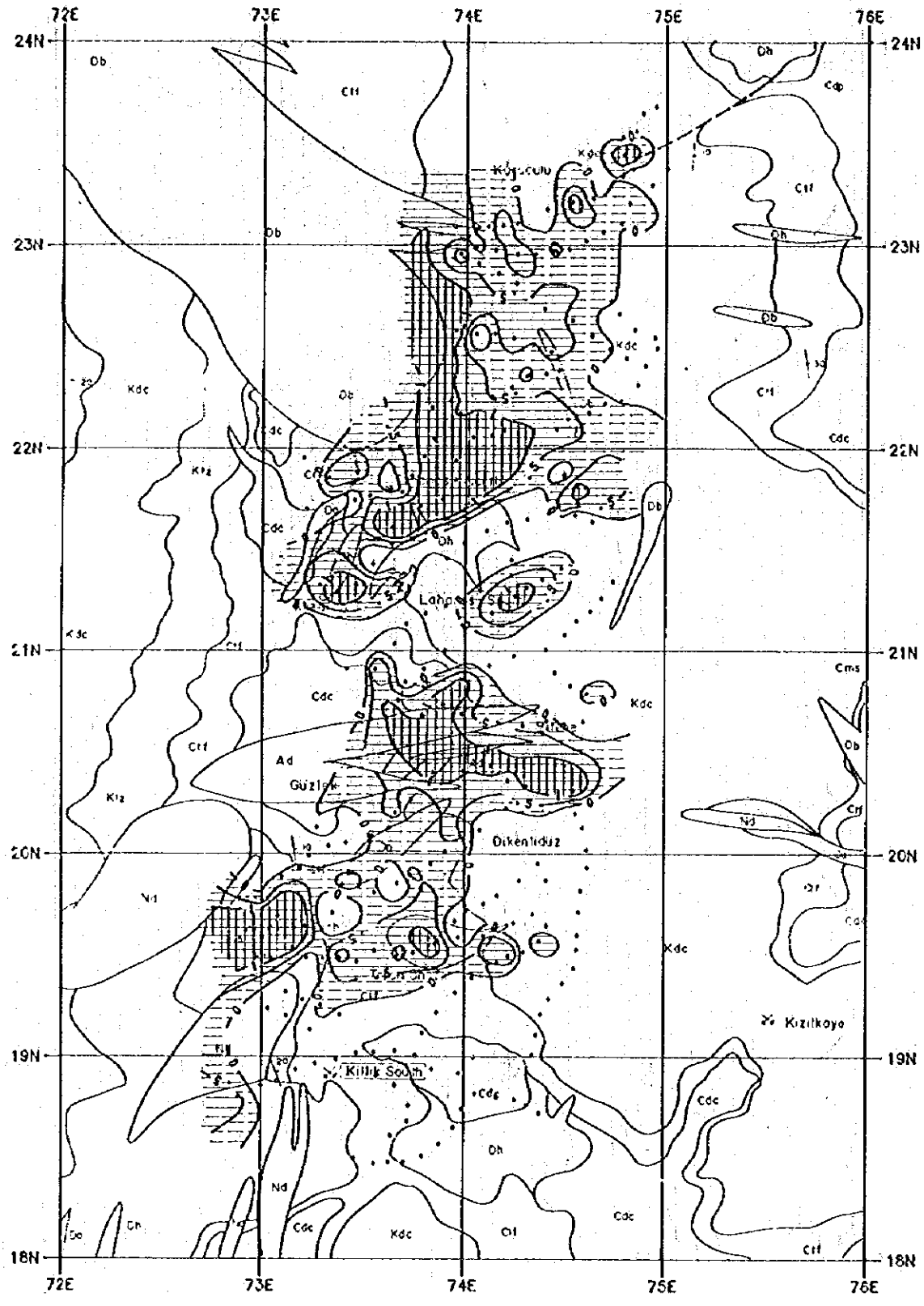
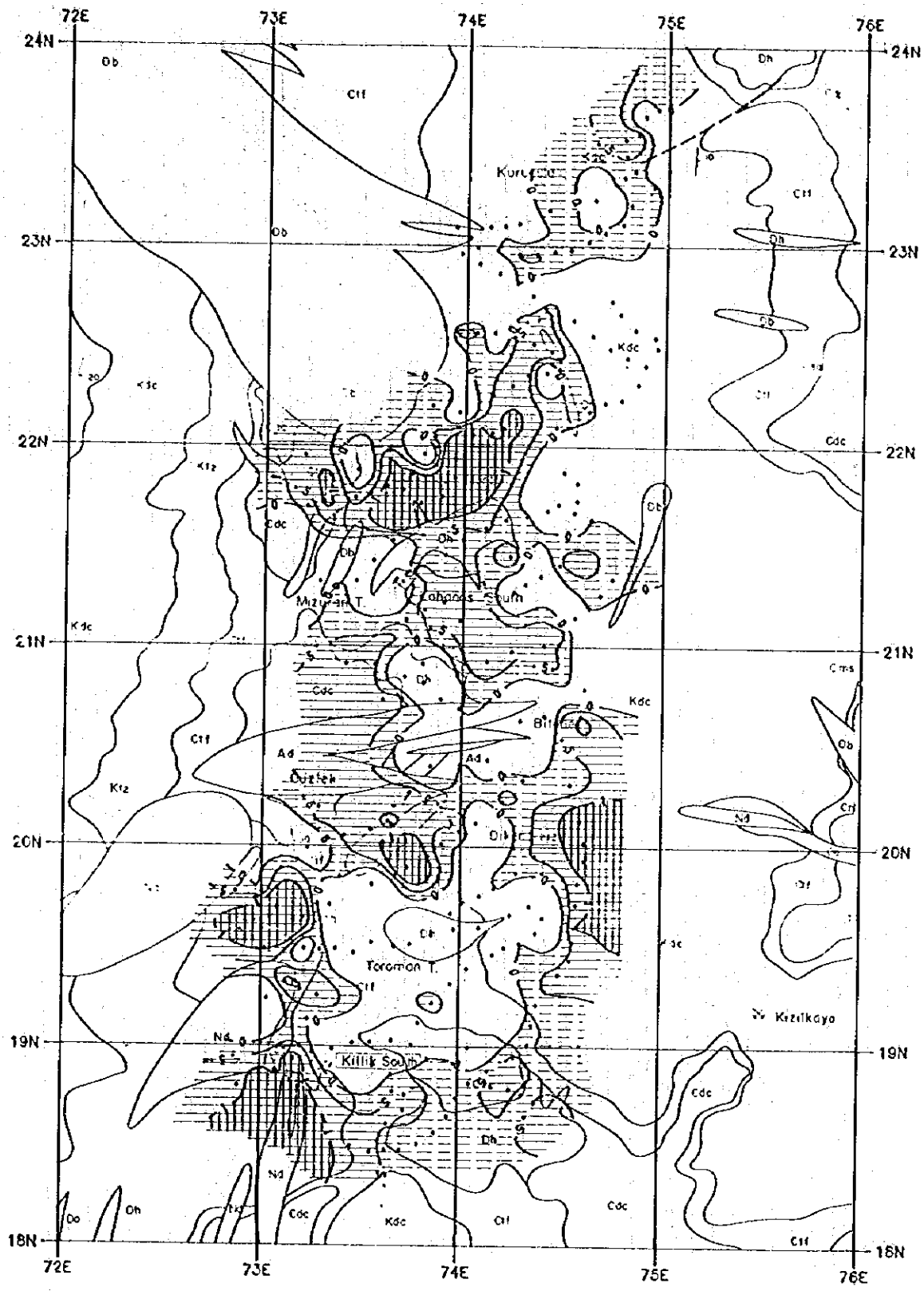


Fig. 4－3 Geochemical Distribution Map by Soil Samples (Fe)



Mo

: 1(μ)~2ppm(μ+0.5σ)

: 2(μ+0.5σ)~4ppm(μ+1.0σ)

: >4ppm(μ+1.0σ)

Fig. 4-3 Geochemical Distribution Map by Soil Samples (Mo)

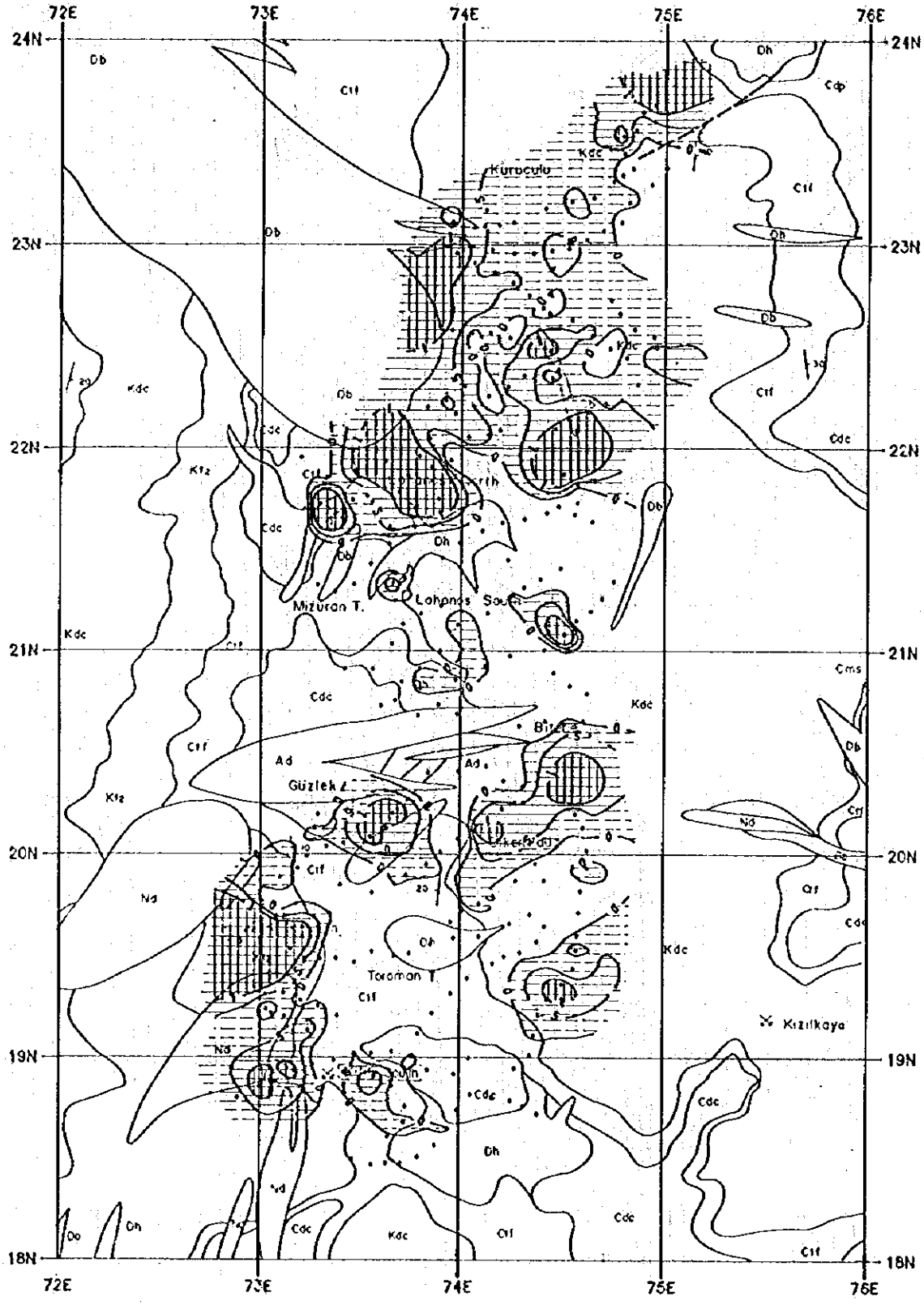
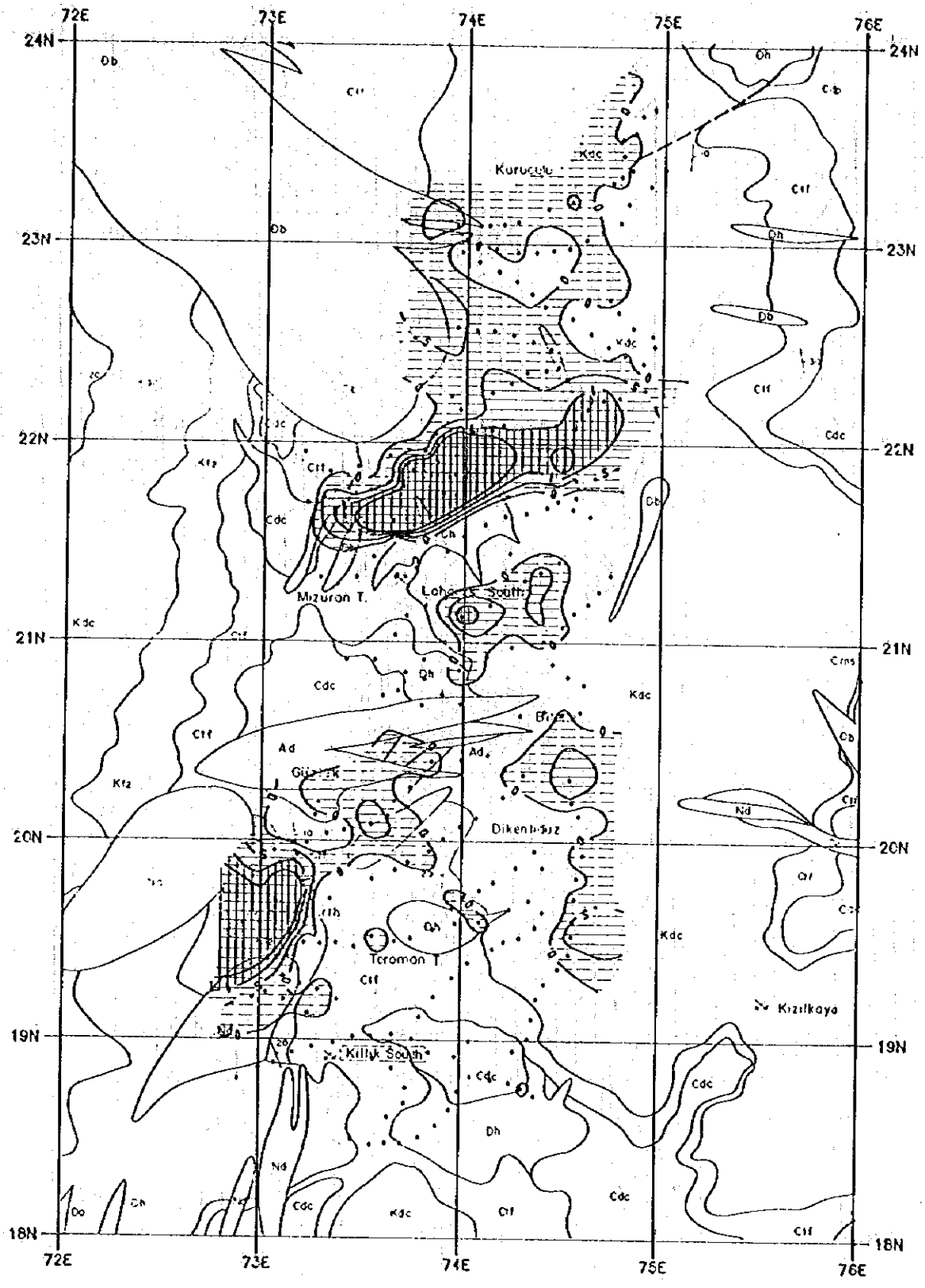


Fig. 4-3 Geochemical Distribution Map by Soil Samples (Ba)



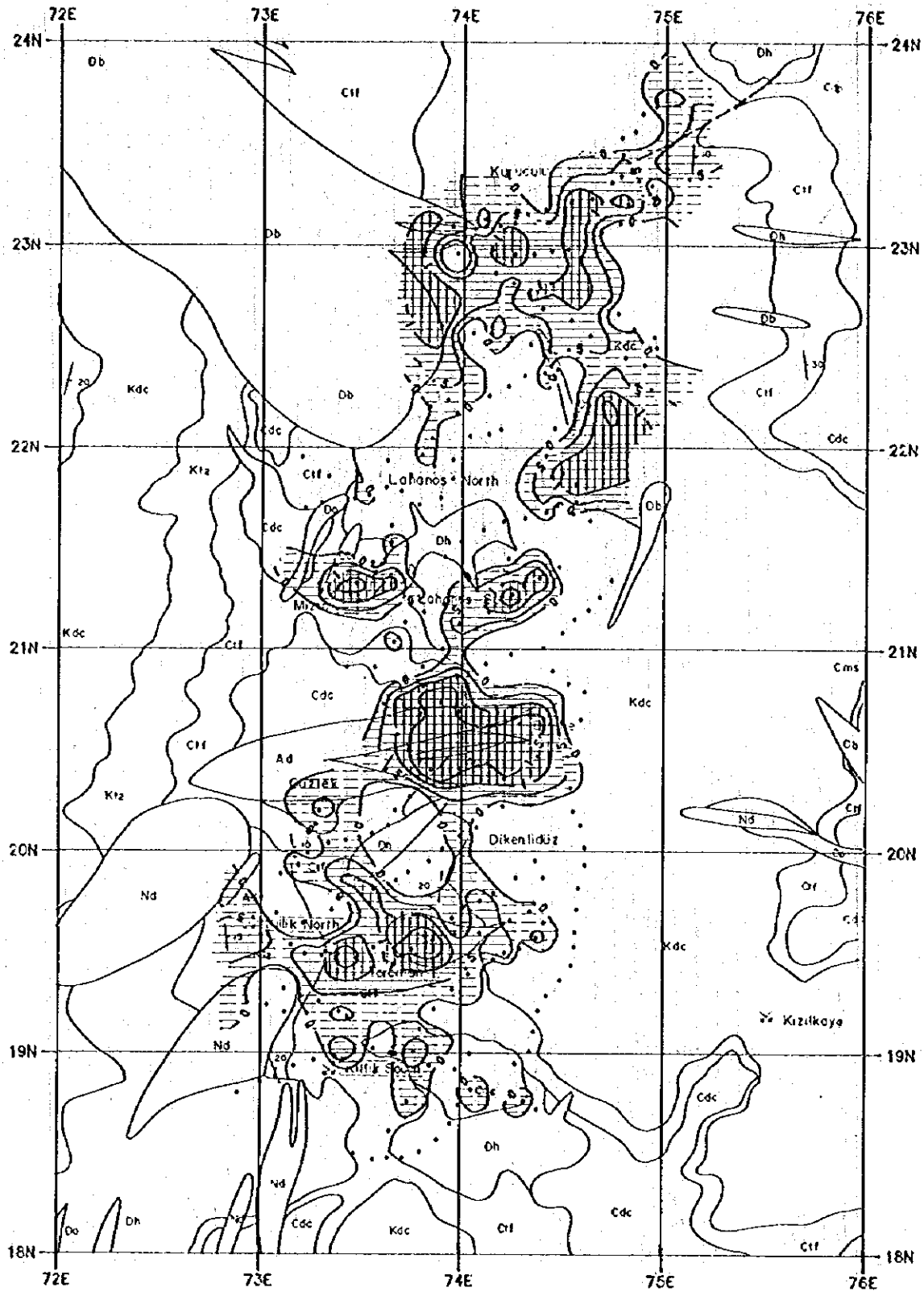
First Principal Component Score

: 0 ~ 0.5 Score

: 0.5 ~ 1.0 Score

: >1.0 Score

Fig. 4-3 Geochemical Distribution Map by Soil Samples
(1st Principal Component Score)



Second Principal Component Score

: 0 ~ 0.5 Score

: 0.5 ~ 1.0 Score

: >1.0 Score

Fig. 4-3 Geochemical Distribution Map by Soil Samples
(2nd Principal Component Score)

Table 2-1 Microscopic Observation by Polished Rock Thin Section

No.	Formation	Rock Name	Phenocryst								Groundmass						Frag.		Alteration									Texture
			Q	Pl	Ab	Bio	Hn	Au	Ol	Fe	Ap	G	Q	Pl	Px	Op	Fe	Dc	Ad	Q	Py	Cl	Ch	Ser	Cal	Ep	Op	Hm	Fe	
HM-236	Intrusive (Db)	Biotite Dacite	○	○		○	△				△	◎	○	△		△				◎	△	◎	◎							Microfel. Porp.
YH- 36	Intrusive (Nd)	Nevaditic Dacite	◎	◎		△	△			△		◎	○	△		△				◎			△	△		△				Microfel. Porp.
HM-212	Intrusive (Nd)	Nevaditic Dacite	◎	◎			△			△		◎	○	△						◎										Microfel. Porp.
YH- 69	Intrusive (Do)	Dolerite		△				△	△			◎		◎	○	○														Interserta]
YH- 14	Intrusive (Ad)	Andesite		△			△			△		○		○		△				◎			◎		△					Microfelsic
HM- 19	Intrusive (Dp)	Porphyritic Dacite	△	○		△				△		◎	○				△			◎			△	△						Microfel. Porp.
HM-294	Intrusive (Dh)	Hematite Dacite					△					◎	○							◎	△	◎								Aphyric
KM- 8	Intrusive (Dh)	Hematite Dacite		△						△		◎	○							◎			△					○		Microfelsic
HM-100	Caglayan F. (Ctf)	Dacitic Tuff Breccia										◎	○	△				◎		◎		◎					△			
KM-140	Caglayan F. (Ctf)	Dacitic Tuff										◎	○	△				○		◎		◎					△			
HM-352	Kızılkaya F. (Kt2)	Dacitic Tuff										◎		○		△				◎	△	◎						◎		Ferruginous
HM- 97	Kızılkaya F. (Kt2)	Tuff										◎	△	◎			△					◎	◎			△				
YH- 2	Kızılkaya F. (Kdc)	Dacite Lava	○	◎						△		◎								◎	△		○	○						Microfelsic
YH- 86	Kızılkaya F. (Kdc)	Dacitic Tuff Breccia										◎		○	△	△		◎		◎		◎		△						
HM-275	Kızılkaya F. (Kdc)	Dacite Lava										◎								◎	△	◎								
HM-289	Kızılkaya F. (Kdc)	Dacite Lava										◎								◎	△	◎								Microfelsic
HM- 52	Kızılkaya F. (Kt)	Dacitic Tuff										◎		△	△	△		○		◎	△	◎	◎		△				△	
YH- 13	Çatak F. (Ctf)	Tuff										◎		◎		△				△		◎			△					
HM-253	Çatak F. (Cad)	Andesitic Tuff Breccia										◎		△					◎	△	△		△	△	△	△	△			Hyalopil. Porp.
YH- 82	Çatak F. (Cad)	Andesite Lava		○			△					◎		△			△			△			△	△	△					

◎:abundant, ○:common, △:few, Q:quartz, Pl:plagioclase, Ab:Albite, Bio:Biotite, Hn:Hornblende, Au:Augite, Ol:Olivine, Fe:Iron Mineral, Ap:Apatite, G:Glass, Q:Quartz, Px:Pyroxcene
Op:Opaque Mineral, Dc:Dacite, Ad:Andesite, Py:Pyrite, Cl:Clay Mineral, Ch:Chlorite, Ser:Sericite, Cal:Calcite, Ep:Epidote, Hm:Hematite, Microfel:Microfelsic, Porp:Porphyritic

Table 3-1 Chemical Analysis Data of Ore Samles

No.	Sample No.	Location	Ore Type	Au (ppm)	Ag (ppm)	Cu (%)	Pb (%)	Zn (%)	Fe (%)	Mn (%)	Ba (%)	La (ppm)	Ce (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Tb (ppm)	Lu (ppm)	Yb (ppm)	U (ppm)	Th (ppm)
1	TK- 1	Lahanos Mine	Yellow Ore, Brecciated	2.92	76.30	3.97	0.11	3.96	29.40	<0.01	9.17	< 1	4	< 5	< 1	< 1	< 1	< 1	1	4	< 1
2	TK- 2	"	"	3.15	73.50	4.31	0.02	1.40	26.70	<0.01	15.00	< 1	1	< 5	1	< 1	< 1	< 1	1	4	< 1
3	TK- 3	"	"	6.32	112.00	1.97	0.24	8.45	17.00	<0.01	21.60	< 1	6	< 5	2	< 1	< 1	< 1	1	4	< 1
4	TK- 4	"	Yellow Ore, Compact	3.16	181.00	23.60	0.93	2.50	33.00	<0.01	2.36	< 1	4	< 5	< 1	< 1	1	< 1	1	6	< 1
5	TK- 5	"	"	4.90	490.00	24.20	3.64	5.42	27.70	<0.01	2.64	< 1	7	< 5	< 1	< 1	2	< 1	1	4	< 1
6	TK- 6	"	"	4.00	175.00	19.10	1.70	5.17	27.70	<0.01	7.19	< 1	5	< 5	< 1	< 1	1	< 1	1	6	< 1
7	TK- 7	"	"	5.77	339.00	22.90	0.35	1.94	32.30	<0.01	3.90	< 1	8	< 5	2	< 1	1	< 1	1	9	< 1
8	TK- 8	"	"	3.56	139.00	18.80	0.19	0.87	36.30	<0.01	2.04	< 1	5	< 5	7	< 1	2	< 1	1	4	< 1
9	TK-10	"	Yellow Ore, Brecciated	2.22	58.40	3.44	1.50	12.40	21.30	<0.01	13.50	< 1	6	< 5	3	< 1	2	< 1	1	9	< 1
10	TK-11	"	"	3.01	50.90	3.80	0.44	9.16	21.90	<0.01	14.10	< 1	5	< 5	< 1	< 1	< 1	< 1	1	4	< 1
11	TK-13	"	"	0.41	7.39	2.71	0.03	0.76	34.80	0.08	0.07	3	13	< 5	< 1	< 1	< 1	< 1	1	10	1
12	TK-14	"	"	1.25	81.40	2.89	< 0.01	9.14	20.10	<0.01	16.60	< 1	13	< 5	< 1	< 1	< 1	< 1	1	4	< 1
13	TK-15	"	Sub-Black Ore	3.70	58.40	1.77	3.44	20.00	9.61	<0.01	20.40	< 1	11	< 5	2	< 1	< 1	< 1	< 1	< 1	< 1
14	TK-16	"	Yellow Ore, Powdery	1.11	9.58	0.85	3.10	0.92	36.00	0.03	0.05	< 1	13	< 5	< 1	< 1	3	< 1	1	5	< 1
15	TK-18	"	Pyrite Ore	0.46	7.24	0.28	0.01	0.31	45.80	<0.01	0.01	< 1	12	< 5	< 1	< 1	4	< 1	1	3	< 1
16	TK-19	Bitene Area	Pyrite Ore, Banded	0.20	2.56	0.06	0.01	0.01	31.20	<0.01	0.58	5	8	< 5	< 1	< 1	< 1	< 1	2	13	3
17	TK-20	"	Siliceous Ore	< 0.01	1.27	< 0.01	< 0.01	< 0.01	5.22	<0.01	0.04	2	5	< 5	2	< 1	2	< 1	2	3	4
18	TK-21	Killik South	Yellow Ore	4.12	181.00	16.20	2.22	3.61	29.80	<0.01	0.73	2	6	< 5	2	< 1	< 1	< 1	1	6	< 1
19	TK-22	"	"	2.38	79.00	9.93	0.09	1.05	29.50	<0.01	11.30	< 1	1	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1
20	TK-24	Killik North	Pyrite Ore	6.98	90.50	8.33	0.26	1.72	25.20	0.01	12.00	< 1	< 1	< 1	< 5	< 1	< 1	< 1	2	< 1	< 1
21	TK-25	"	"	3.26	33.80	1.36	< 0.01	1.21	28.10	0.01	17.50	< 1	< 1	< 1	< 5	< 1	< 1	< 1	2	< 1	< 1
22	TK-26	Killik South	Yellow Ore, Brecciated	3.58	132.00	15.20	1.83	5.79	27.20	<0.01	2.96	< 1	5	< 5	1	< 1	2	< 1	1	4	< 1
23	TK-27	"	Sub-Black Ore	3.39	119.00	5.24	0.34	1.91	27.90	<0.01	9.81	< 1	2	< 5	< 1	< 1	2	< 1	1	2	< 1
24	TK-28	"	Siliceous Ore	0.08	2.17	0.13	< 0.01	0.02	6.10	<0.01	0.29	8	19	9	2	< 1	2	< 1	2	2	1
25	TK-29	"	"	0.17	4.94	0.02	< 0.01	0.05	7.97	<0.01	0.65	< 1	9	< 5	2	< 1	< 1	< 1	2	2	1
26	TK-30	"	"	0.59	7.69	0.04	0.11	1.18	13.40	<0.01	7.21	< 1	3	< 5	< 1	< 1	2	< 1	1	1	< 1
27	TK-31	Kizıl kaya Mine	Pyrite Ore, Powdery	1.43	36.50	0.03	< 0.01	0.33	11.20	<0.01	33.90	< 1	4	< 5	1	< 1	2	< 1	1	2	< 1
28	TK-32	"	Black Ore	2.71	212.00	0.02	14.70	4.26	1.20	<0.01	31.10	< 1	< 1	< 5	< 1	< 1	3	< 1	< 1	< 1	< 1
29	TK-33	"	Pyrite Network	0.18	1.84	0.08	0.02	0.01	33.20	<0.01	0.08	3	11	< 5	< 1	< 1	4	2	< 1	< 1	2
30	TK-34	"	Silicous Ore	0.27	5.77	0.02	< 0.01	< 0.01	12.70	<0.01	0.01	1	3	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
31	TK-36	"	Silicous Ore	0.09	2.21	< 0.01	< 0.01	< 0.01	10.40	<0.01	0.02	6	13	< 5	< 1	< 1	< 1	< 1	1	1	2
32	TK-37	Kepcelik Mine	Sub-Black Ore	3.33	281.00	3.06	3.01	9.32	32.20	<0.01	0.57	< 1	1	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
33	TK-38	"	"	1.32	43.00	3.35	0.13	31.20	16.70	0.03	0.09	< 1	< 1	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
34	TK-39	"	"	1.47	259.00	24.50	10.50	6.06	22.30	<0.01	1.07	< 1	7	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
35	TK-40	"	Siliceous Ore	3.75	43.90	0.02	1.56	1.17	7.75	<0.01	0.02	< 1	7	< 5	< 1	< 1	1	< 1	< 1	4	< 1
36	TK-41	Dikmen Mine	Silicous Ore	0.17	29.80	0.03	0.62	7.51	7.15	<0.01	0.08	2	8	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
37	TK-42	"	"	0.01	1.98	0.02	0.06	0.02	2.91	<0.01	0.05	< 1	2	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
38	TK-43	"	"	0.05	9.58	1.28	< 0.01	0.22	8.00	<0.01	0.02	2	8	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
39	TK-44	"	Pyrite Network	0.04	1.22	0.42	< 0.01	< 0.01	3.21	<0.01	0.04	3	10	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
40	TK-45	"	Pyrite Ore	0.02	0.89	< 0.01	< 0.01	< 0.01	23.10	<0.01	0.01	5	10	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
41	TK-46	Afşalik Mine	Pyrite Ore	0.72	15.60	< 0.01	0.02	0.08	45.50	<0.01	0.10	< 1	2	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
42	TK-47	"	"	0.78	31.20	0.05	0.02	0.18	44.20	<0.01	0.93	< 1	3	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
43	TK-49	Karıjlar Mine	Pyrite Ore	0.07	1.32	< 0.01	< 0.01	0.02	44.60	<0.01	0.01	1	6	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
44	TK-50	"	"	0.07	2.26	0.05	< 0.01	0.03	46.50	<0.01	< 0.01	< 1	3	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
45	TK-51	Karaerik Mine	Pyrite Ore	0.55	1.79	0.02	< 0.01	0.01	46.60	<0.01	< 0.01	< 1	< 1	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
46	TK-52	Calkaya Area	Silicous Ore	2.74	20.70	0.01	0.09	0.08	9.05	<0.01	0.01	4	8	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
47	TK-53	Kepcelik Mine	Silicous Ore	0.01	2.12	0.05	< 0.01	0.44	8.19	<0.01	0.12	< 1	3	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
48	TK-56	Topluca Area	Quartz Vein	0.27	7.03	0.04	2.16	3.23	7.78	<0.01	0.01	< 1	3	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1
49	TK-58	Kizıl Dere Area	Pyrite Dissemination	0.05	0.90	< 0.01	< 0.01	< 0.01	20.70	<0.01	0.04	16	38	20	2	< 1	2	< 1	< 1	< 1	< 1
50	TK-59	"	"	0.01	1.23	< 0.01	< 0.01	< 0.01	36.40	<0.01	0.02	< 1	2	< 5	< 1	< 1	< 1	< 1	< 1	< 1	< 1

Table 3-2 Microscopic Observation by Polished Ore Section

No.	Location	Ore Type	Py	Sp	Cp	Gl	Th	Bn	As	Cv	Q	Ba	Gg	
TK- 1	Lahanos Mine	Yellow Ore, Brecciated	◎	○	△	△	△	△	△			○		Colloform(Py, Sp), Framboidal(Py)
TK- 2	"	"	◎	△	○	△	△					◎		Colloform(Py, Cp)
TK- 3	"	"	○	○	△	△	△					○		Colloform(Py, Cp)
TK- 5	"	Yellow Ore, Compact	○	△	◎	△	△	△					△	
TK- 6	"	"	○	△	◎	△	△	△					△	Colloform(Py, Cp, Sp)
TK- 7	"	"	○	△	◎	△	△	△					△	Colloform(Py)
TK- 8	"	"	○	△	◎	△							△	
TK- 10	"	Yellow Ore, Brecciated	◎	○	○	△	△					◎		Colloform(Py, Sp)
TK- 11	"	"	◎	○	○	△	△		△			○		Colloform(Py), Framboidal(Py)
TK- 13	"	"	◎	△	○		△	△					◎	
TK- 14	"	"	○	◎	○	△	△					◎		Zonal Structure
TK- 15	"	Semi-Black Ore	◎	◎	○	△	△					○		Zonal Structure
TK- 18	"	Pyrite Ore	◎	△	△	△	△							
TK- 19	Bitene Area	Pyrite Ore, Banded	◎	△								○	△	Framboidal(Py)
TK- 21	Killik South	Yellow Ore	○	○	◎	△								Colloform(Py)
TK- 24	Killik North	Yellow Ore	○	○	◎	△	△						○	Colloform(Py)
TK- 25	"	Pyrite Ore	◎	△	△		△					◎		Colloform(Py), Framboidal(Py)
TK- 27	Killik South	Semi-Black Ore	◎	○	○							◎		Colloform(Py)
TK- 30	"	Silicous Ore	○	○							◎		○	
TK- 31	Kızıl kaya Mine	Pyrite Ore, Powdery	○	△	△							◎		Zonal Strucuture(Py)
TK- 32	"	Black Ore	△	◎	△	○	△							Colloform(Py)
TK- 37	Kepçelik Mine	Semi-Black Ore	○	◎	○		△						△	
TK- 38	"	"	○	○	○	△	△				○		○	
TK- 39	"	"	△	○	◎	○	△						○	Colloform(Py), Framboidal(Py)
TK- 45	Dikmen Mine	Pyrite Ore	◎	○									◎	
TK- 46	Ağalik Mine	Pyrite Ore	◎	○										
TK- 49	Karalar Mine	Pyrite Ore	◎	○							△			
TK- 50	"	"	◎	△	△									
TK- 51	Karaerik Mine	Pyrite Ore	◎	△										
TK- 53	Kepçelik Mine	Silicous Ore	○	△								○	○	

◎:abundant, ○:common, △:few

Py:pyrite, Sp:sphalerite, Cp:chalcopyrite, Gl:galena, Th:tetrahedrite

Bn:bornite, As:arsenopyrite, Cv:covelline, Q:quartz, Ba:barite, Gn:gangue minerals

Table 4-1 Statistical Values of Geochemical Data

Soil

	Au (ppm)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	As (ppm)	Sb (ppm)	Mn (ppm)	Fe (%)	Mo (ppm)	Ba (ppm)
No. of Samples	255	255	255	255	255	255	255	255	255	255	255
Arithmetric Min.	< 0.01	< 0.01	9	54	17	4	< 1	29	0.89	< 1	52
Arithmetric Mean	0.13	2.06	136	252	125	70	5	436	3.25	3	304
Arithmetric Max.	8.79	175.00	3,600	10,100	799	4,000	313	2,670	13.40	65	3,830
Arithmetric σ	0.64	12.06	343	957	102	298	29	363	1.71	6	330
Geometric Mean	0.02	0.22	64	133	104	22	0.2	319	2.93	1	239
Geometric 0.5σ	0.05	0.84	106	184	138	38	0.4	480	3.64	2	325
Geometric σ	0.14	3.27	176	254	184	64	1.0	722	4.51	4	444
Background Value	0.002	0.1	15	17	36	7.5	2	320	2.10	2.5	300

Rock(1)

	Au (ppm)	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	As (ppm)	Sb (ppm)	Mn (ppm)	Fe (%)	Mo (ppm)	Ba (ppm)
No. of Samples	557	557	557	557	557	557	557	557	557	557	557
Arithmetric Min.	< 0.01	< 0.01	5	18	8	< 1	< 1	12	0.08	< 1	10
Arithmetric Mean	0.04	1.37	78	110	120	25	2	517	2.65	1	332
Arithmetric Max.	1.69	57.10	7,860	1,360	3,020	3,640	134	8,030	31.62	46	3,630
Arithmetric σ	0.11	2.90	373	102	252	162	8	764	3.06	4	378
Geometric Mean	0.01	0.56	31	94	71	6	0.3	229	1.74	0.2	210
Geometric μ 0.5σ	0.02	1.60	50	120	110	12	0.6	447	2.76	0.5	346
Geometric μ 1.0σ	0.05	4.60	82	154	171	26	1.4	874	4.39	1.1	568
Background Value	0.002	0.04	12	18	51	2.1	0.2	390	1.42	1.3	840

Rock(2)

	SiO2 (wt%)	TiO2 (wt%)	Al2O3 (wt%)	Fe2O3 (wt%)	Cr2O3 (ppm)	MnO (wt%)	CaO (wt%)	MgO (wt%)	Na2O (wt%)	K2O (wt%)	P2O5 (wt%)
No. of Samples	557	557	557	557	557	557	557	557	557	557	557
Arithmetric Min.	19.10	0.04	1.72	0.11	< 1	< 0.01	0.02	< 0.01	0.04	0.01	< 0.01
Arithmetric Mean	69.53	0.42	12.76	3.79	141	0.07	1.34	1.83	2.12	1.76	0.07
Arithmetric Max.	94.94	1.66	30.86	45.21	4,144	1.04	29.20	15.91	8.18	7.29	0.42
Arithmetric σ	11.20	0.25	3.30	4.37	273	0.10	2.98	2.20	1.93	1.33	0.06
Geometric Mean	68.44	0.36	12.27	2.48	67	0.02	0.30	0.95	1.25	1.09	0.05
Geometric μ 0.5σ	75.23	0.48	14.25	3.95	135	0.05	0.70	1.82	2.20	2.02	0.08
Geometric μ 1.0σ	82.70	0.68	16.55	6.29	273	0.13	1.63	3.52	3.88	3.75	0.13

Rock(3)

	LOI (wt%)	La (ppm)	Ce (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Tb (ppm)	Yb (ppm)	Lu (ppm)	U (ppm)	Th (ppm)
No. of Samples	557	50	50	50	50	50	50	50	50	50	50
Arithmetric Min.	0.66	3	18	1	< 1	< 1	5	< 1	< 1	< 1	< 1
Arithmetric Mean	5.75	11	32	6	3	< 1	13	0.6	0.8	2	3
Arithmetric Max.	24.98	24	49	17	17	1	34	3	3	6	7
Arithmetric σ	4.21	5	8	55	3	< 1	6	0.9	0.8	2	1
Geometric Mean	4.55	10	31	3	2	< 1	12	0.2	0.4	1	2
Geometric μ 0.5σ	6.39	13	35	7	4	< 1	15	0.5	0.7	2	4
Geometric μ 1.0σ	8.98	16	39	13	8	< 1	17	0.9	1.4	3	6
Background Value	-	55	57	-	-	-	-	-	-	3.9	20

Table 4-2 Correlation Coefficient of Geochemical Data (1)

Soil

	Au	Ag	Cu	Pb	Zn	As	Sb	Mn	Fe	Mo	Ba
Au	-										
Ag	0.29	-									
Cu	0.32	0.30	-								
Pb	0.42	0.37	0.56	-							
Zn	0.19	0.16	0.57	0.54	-						
As	0.44	0.36	0.46	0.74	0.36	-					
Sb	0.25	0.30	0.33	0.60	0.30	0.56	-				
Mn	-0.05	-0.05	0.10	-0.01	0.46	-0.11	-0.01	-			
Fe	0.33	0.18	0.41	0.52	0.50	0.34	0.31	0.31	-		
Mo	0.23	0.24	0.24	0.37	-0.01	0.39	0.31	-0.28	0.11	-	
Ba	0.29	0.28	0.29	0.34	0.10	0.41	0.24	0.00	0.21	0.22	-

Rock(1)

	Au	Ag	Cu	Pb	Zn	As	Sb	Mn	Fe	Mo	Ba
Au	-										
Ag	0.13	-									
Cu	0.24	0.25	-								
Pb	0.27	0.21	0.51	-							
Zn	0.05	0.22	0.50	0.60	-						
As	0.31	0.20	0.32	0.28	0.09	-					
Sb	0.28	0.21	0.31	0.33	0.15	0.63	-				
Mn	-0.24	0.05	0.03	0.08	0.42	-0.33	-0.30	-			
Fe	0.05	0.12	0.36	0.37	0.47	0.10	-0.01	0.50	-		
Mo	0.30	0.15	0.21	0.14	-0.09	0.47	0.41	-0.42	-0.14	-	
Ba	0.01	0.05	-0.05	-0.02	-0.16	0.17	0.15	-0.24	-0.41	0.20	-

Rock(2)

	SiO2	Al2O3	TiO2	Na2O3	K2O	CaO	MgO	Fe2O3	Cr2O3	MnO	P2O5	LOI
Au	0.01	-0.19	-0.10	-0.26	-0.04	-0.20	-0.21	0.05	0.13	-0.23	0.00	-0.01
Ag	-0.11	-0.08	0.04	-0.08	-0.03	0.00	-0.02	0.12	0.06	0.01	0.14	-0.02
Cu	-0.36	0.00	0.08	-0.15	-0.13	0.05	-0.05	0.36	0.03	0.00	0.16	0.24
Pb	-0.43	0.09	0.24	-0.14	-0.12	0.10	0.11	0.37	0.00	0.06	0.28	0.33
Zn	-0.45	0.20	0.27	0.11	-0.16	0.28	0.25	0.47	-0.06	0.40	0.25	0.35
As	0.06	-0.29	-0.07	-0.40	0.18	-0.36	-0.30	0.10	0.03	-0.33	0.01	-0.02
Sb	0.09	-0.42	-0.15	-0.33	0.08	-0.28	-0.27	-0.01	0.09	-0.30	-0.14	-0.07
Mn	-0.49	0.35	0.36	0.43	-0.18	0.62	0.57	0.50	-0.11	0.96	0.39	0.18
Fe	-0.70	0.21	0.38	0.11	-0.36	0.42	0.34	1.00	-0.16	0.47	0.47	0.46
Mo	0.17	-0.34	-0.18	-0.43	0.16	-0.39	-0.25	-0.14	0.06	-0.43	-0.16	-0.17
Ba	0.37	-0.14	-0.12	-0.12	0.61	-0.27	-0.14	-0.41	-0.02	-0.19	-0.16	-0.21

Rock(3)

	Au	Ag	Cu	Pb	Zn	As	Sb	Mn	Fe	Mo	Ba
La	-0.24	-0.22	0.03	-0.17	0.16	-0.41	-0.20	0.09	-0.09	-0.14	0.14
Ce	-0.03	-0.11	0.15	-0.12	-0.14	-0.26	-0.08	-0.02	-0.14	-0.02	0.05
Nd	-0.14	-0.21	0.16	-0.15	-0.10	-0.28	-0.13	0.29	0.02	-0.16	0.06
Sm	0.07	-0.16	-0.02	-0.24	-0.25	-0.21	-0.23	0.16	0.13	-0.14	0.07
Eu	0.00	-0.02	0.07	0.01	0.03	-0.05	-0.15	0.06	0.10	-0.12	-0.09
Tb	-0.03	-0.06	-0.21	-0.12	-0.14	-0.06	-0.05	0.06	-0.16	0.11	0.26
Yb	-0.23	-0.19	-0.28	-0.13	0.04	-0.35	-0.40	0.08	-0.28	-0.15	0.03
Lu	0.03	-0.08	0.05	-0.10	-0.02	-0.05	0.04	0.08	0.07	-0.31	0.09
Th	-0.10	-0.03	0.08	0.00	-0.07	-0.21	0.05	-0.34	-0.42	-0.05	0.33
U	0.09	0.06	0.05	0.13	0.21	-0.04	0.10	-0.05	-0.18	0.02	0.09

Table 4-2 Correlation Coefficient of Geochemical Data (2)

Rock(4)

	SiO2	Al2O3	TiO2	Na2O	K2O	CaO	MgO	Fe2O3	Cr2O3	MnO	P2O5	LOI
La	0.07	0.22	0.00	0.07	-0.04	0.30	0.14	-0.09	-0.01	0.21	0.15	0.15
Ce	0.01	0.36	0.06	0.07	-0.02	0.22	0.05	-0.14	-0.05	0.11	0.12	0.16
Nd	0.01	0.28	0.04	0.13	0.01	0.46	0.27	0.02	-0.05	0.31	0.42	0.19
Sm	-0.02	0.07	0.23	0.12	0.04	0.27	0.16	0.13	0.22	0.18	0.19	0.01
Eu	-0.16	0.18	0.24	-0.06	0.02	-0.05	0.15	0.10	-0.02	0.12	-0.05	0.26
Tb	0.20	-0.31	0.14	-0.09	0.15	0.08	0.08	-0.16	0.08	-0.02	-0.03	-0.29
Yb	0.07	0.24	0.25	0.27	0.17	0.29	0.32	-0.28	-0.09	0.09	-0.16	0.07
Lu	0.12	-0.08	0.13	-0.03	0.10	-0.10	0.02	0.07	0.15	0.19	-0.21	0.08
Th	0.06	0.30	0.09	+0.12	0.07	-0.15	-0.05	-0.42	0.01	-0.20	-0.33	-0.10
U	-0.10	0.10	0.43	-0.06	0.40	0.01	0.26	-0.17	-0.10	-0.07	-0.36	0.01

Rock(5)

	La	Ce	Nd	Sm	Eu	Tb	Yb	Lu	Th	U
La	1.00									
Ce	0.81	1.00								
Nd	0.68	0.67	1.00							
Sm	0.14	0.26	0.26	1.00						
Eu	0.20	0.09	0.15	0.15	1.00					
Tb	-0.07	-0.15	-0.05	0.21	-0.06	1.00				
Yb	0.28	0.14	0.18	-0.02	0.23	-0.03	1.00			
Lu	0.28	0.18	0.06	-0.02	0.18	-0.03	0.17	1.00		
Th	0.42	0.38	0.07	-0.10	0.16	0.02	0.25	0.25	1.00	
U	0.13	0.04	-0.05	-0.09	0.20	0.06	0.40	0.18	0.51	1.00

Table 4-3 Principal Components Analysis of Geochemical Data

1. Soil Sample

	Ratio	Factor Loading										
		Au	Ag	Cu	Pb	Zn	As	Sb	Mn	Fe	Mo	Ba
First Component	0.38	0.57	0.51	0.61	0.81	0.67	0.71	0.88	0.62	0.08	0.44	0.50
Second Component	0.16	-0.15	-0.23	0.62	-0.22	-0.13	0.19	-0.02	0.41	0.83	-0.55	-0.19

2. Rock Sample

	Ratio	Factor Loading										
		Au	Ag	Cu	Pb	Zn	As	Sb	Mn	Fe	Mo	Ba
First Component	0.29	-0.17	0.06	0.22	0.33	0.55	-0.28	-0.30	0.79	0.77	-0.45	-0.44
Second Component	0.16	0.54	0.37	0.68	0.67	0.43	0.72	0.67	-0.24	0.38	0.52	-0.01

	Ratio	Factor Loading										
		SiO2	Al2O3	TiO2	Na2O	K2O	CaO	MgO	Fe2O3	Cr2O3	MnO	P2O5	LOI
First Component	0.29	-0.82	0.57	0.59	0.38	-0.41	0.70	0.63	0.77	-0.17	0.76	0.55	0.54
Second Component	0.16	-0.27	-0.24	0.05	-0.50	-0.08	-0.21	-0.21	0.38	0.03	-0.27	0.13	0.27

3. Rock Sample(with rare earth elements)

	Ratio	Factor Loading										
		Au	Ag	Cu	Pb	Zn	As	Sb	Mn	Fe	Mo	Ba
First Component	0.19	-0.54	-0.67	-0.68	-0.63	-0.45	-0.76	-0.62	0.29	-0.71	-0.21	0.56
Second Component	0.15	0.00	-0.14	-0.26	-0.39	-0.51	0.09	0.17	-0.65	-0.32	0.35	0.26

	Ratio	Factor Loading										
		SiO2	Al2O3	TiO2	Na2O	K2O	CaO	MgO	Fe2O3	Cr2O3	MnO	P2O5	LOI
First Component	0.19	0.58	0.14	0.19	0.48	0.34	0.24	0.49	-0.71	0.02	0.27	-0.30	-0.57
Second Component	0.15	0.50	-0.51	-0.49	-0.38	-0.34	-0.65	-0.61	-0.32	0.24	-0.67	-0.26	-0.54

	Ratio	Factor Loading									
		La	Ce	Nd	Sm	Eu	Tb	Yb	Lu	Th	U
First Component	0.19	0.37	0.25	0.27	0.19	0.03	0.20	0.44	0.11	0.26	0.12
Second Component	0.15	-0.35	-0.32	-0.50	-0.24	-0.29	0.18	-0.29	-0.12	0.09	-0.16